Appendix A

ARIZONA HEALTH-E CONNECTION
CLINICAL / TECHNICAL COMMITTEE CHARTER
FINAL DRAFT

Mission

The Arizona Health-e Connection Clinical/Technical Committee is committed to improving healthcare in Arizona by supporting health information technology and exchange efforts around the state. The committee will promote and/or endorse electronic health record system functionality as well as system interoperability standards. To assist and guide the healthcare community, the committee will work with other AzHeC committees to communicate and coordinate this information to ensure successful exchange of data.

Objectives

To align the activities of the committee with its mission, the following objectives and related activities have been adopted by the committee. These items have been identified as critical ingredients for the success of the state and will serve as the foundation for a long-term state-wide HIE strategy:

1. ENDORSE APPROPRIATE INTEROPERABILITY STANDARDS FOR USE IN THE STATE
   - Determine which standards should be used for specific data transfer between entities (conduct an assessment of what standards are currently being used by vendors as part of this analysis and determination).
   - Once standards are determined, develop implementation profiles for these standards to be used by Arizona entities.
   - Create policies (or leverage those created by other AzHeC committees) for managing and exchanging information.
   - Educate the community (including vendors) as to which standards are suited for various tasks.
   - Ensure consistency and eliminate any conflicts between this objective and the encouragement of broader EHR adoption (Objective #2 below).

2. ENCOURAGE BROADER EHR AND E-PRESCRIBING ADOPTION
   - Prioritize categories of data that are most important to exchange between EHRs and other HIT/HIE infrastructure (ie, lab results, radiology, medication history, etc.)
   - Compile these data categories, as well as minimum internal functions, into an ideal set of minimum EHR functionalities for Arizona providers. These functionalities will also include e-prescribing and the support of accepted standards for e-prescribing.
   - Determine EHR vendors that meet the minimum functionality as determined by the committee, and endorse these vendors.
     - Consider the possibility of ASP model EHR solutions
     - Consider products that may be ideal for certain size or specialty physician organizations.
   - Establish processes for publishing the technical standards and endorsement process for the vendor community
   - The committee will either negotiate discounts with these accredited EHR systems or possibly issue an RFP and have multiple awards for approved EHR systems.
   - Consider negotiating discounts with third party vendors (ie, contracting or implementation service organizations) for Arizona providers

3. COORDINATE STRATEGIES BETWEEN HEALTH INFORMATION EXCHANGE ORGANIZATIONS IN ARIZONA
   - Ensure that developing HIEs in the state are communicating, especially as it relates to adopting interoperable technical and process standards.

- Assess, adapt and adopt additional standards (security, privacy, etc.) as necessary for adoption by all Arizona HIEs. This assessment could result in a need for addendums to be created for such standards.
- Develop (as necessary) and stay compliant with appropriate legal and regulatory standards. All legal and regulatory work will be addressed in coordination with the Arizona Health-e Connection Legal Committee.
- Identify other entities that may store patient data (ie, PHR, public health, etc.) and determine what particular standards may need to be accommodated.

Project Plan and Timeline

The following timeline is to complete the initial work for objectives 1-3. After the initial completion of these activities, the committee will regularly revisit these work products, re-evaluating them and revising as necessary.

Endorse Appropriate Interoperability Standards (Timeframe: approximately 6 months)

- Define areas of information to standardize and eventually endorse (1 month)
- Review details of the standard and how it works (2 months)
    - Determine which standards are available for each area of information
    - Research current recommendations by national/state bodies
    - Determine which standards are best to use in Arizona
    - Determine if the creation of an implementation profile is needed for the standard
- Endorse standard or standards for each area of information (1-2 months)
    - Bringing the recommendations to the clinical/technical committee
    - What are the incentives to be consistent with the endorsement?

Encourage Broader EHR Adoption (Timeframe: approximately 6 months)

- Define categories of data and functionalities (1-2 months)
    - Confirm that categories and functionalities are in line with capabilities of mainstream EMR vendors
- Establish processes for publishing the standards (1 month)
- Publish the standards on AzHeC website and encourage vendor submission for endorsement
- Endorsement (2-3 months, and ongoing)
    - Receive vendor applications
    - Review and approve/decline for official AZ endorsement

Coordinate Strategies (Timeframe: Ongoing)

- Coordinate and communicate with health information exchange organizations around the state.
- Ensure distribution of and compatibility with standards from objectives #1 and 2

ARIZONA HEALTH-E CONNECTION
Clinical/Technical Committee Meeting Minutes
November 14, 2007
4:30 to 6:00 pm
Sonora Quest Laboratories - Phoenix

ATTENDEES: Bruce Bethancourt, Bob Dowd, Bill Johnson, Lisa Stillwell, Brad Tritle, Cleo Long, Byron Davies, Dan Desmond, Kim Snyder, Marc Leib, Mary Kay McDaniel, Eric Thomas, John Nelson, Anita Murcko, Lorie Mayer, Tom Watkins, Chris Meyers, Kalyanraman Bharathan, Perry Yastrov, Melissa Rutala

Meeting Minutes 9/12/07

- Bob Dowd called the meeting to order and welcomed the committee.
- There were no questions regarding the minutes from 9/12/07, **and they were approved.**

Best Practices Subcommittee Update (Mary Kay McDaniel)

- The subcommittee is planning to give a full presentation of their findings on 11/29
- Initially identified functioning HIEs
    - There are a lot of pilots, but not very many fully functioning HIEs
    - Out of the handful of functioning exchanges, majority are one-way exchanges of information
    - Many different types of standards of data exchange exist
- Final report will provide an overview of different types of standards
- Selected 6 HIEs to speak with and learn from… to include Indiana HIE (IHIE), HealthBridge, Marquette (MI), Inland Health Services (WA)
- Regarding standards, some HIEs implemented standards when they could, but some implemented systems without standards based on what they wanted to share.

Health Privacy Project Direction (Kim Snyder)

- Reviewed project summary and impact analysis report.
- Briefly reviewed the work of the legal working group to date.
- Several items were discussed with respect to the method by which providers should be authenticated and allowed to access the HIE:
    - Considering HL7 Role-based access, but committee feels that HL7 Role based access would prohibit progress
    - If someone has been credentialed by a CDO, that should suffice.
    - Health plans credential providers, but AHCCCS does not credential providers.
    - It was noted that we would only need to know that a physician is licensed in AZ. However, one issue is that 12% of AHCCCS claims coming through are from out-of-state providers. Also, VA and IHS providers do not have to be licensed in AZ.
    - Using NPI as a provider identifier was suggested, but not everyone has a NPI.
    - Nurse practitioners, physician assistants, etc. would likely need to have access to the HIE, but there is no central system that is able authenticate these individuals.
    - It was also noted that it is a false assumption that the logon / passwords will not be shared by doctors with their mid-levels and admin staff
    - It was noted that there are two issues at work: One is determining how an individual will gain access to the system, and the other is a workflow issue
    - Regarding workflow, access should be limited from HIE initiative to the practice and require the practice to ensure ID accessing is that person

    - Suggested that the HIE should handle the large population of physicians first, and then handle outliers as they come up.
    - In the end, the only thing securing the system is the password and/or token (where physical passwords continue to change).
    - What patients is a particular provider allowed to see? Maybe the patient should have a release code that they provide to their physician.
    - The question was asked: Does ever provider need to have a NPI? If so, maybe it is this committee's responsibility to implement a NPI solution (ie, statewide NPI iniative for providers.
    - In the end, it was noted that the legal committee should be responsible for handling access regulation and the technical committee should be responsible for finding the technical solution i.e. authentication, use of token, logons, permissions, etc.
- The legal working group (LWG) has drafted a participant/organization agreement to be signed by providers before participating. A participating organization would download form, sign & authorize, electronically submit and store within HIE. LWG will distribute participation agreement by Thanksgiving
- Kim Snyder will distribute the legal/functional report as part of the RTI report due November 30.
- Credentialing and authentication will be a continuing discussion
- On a related note, the ONC has asked different HISPC states to form a multi-state collaborative.
    - Kim Snyder is the co-chair of the overall project, which is submitting a proposal on Friday morning regarding interoperability across states.
    - Kristen Rosati is also involved as the chair of the legal committee.
    - Funding is pending January 2008
    - After the proposal is submitted, Kim will send it to the committee to read.
    - Members of the committee or their designee may be asked to participate in working groups.

Clinician HIT/HIE Survey Direction (Eric Thomas)

- The Clinician HIT/HIE Long Survey has been coordinated with AHCCCS to gain information from clinicians on health information technology adoption
- Question proposed: Is AzHeC willing to champion and pilot this with funding from GITA, AHCCCS, SAHIE? AzHeC is the neutral body within state of AZ that could collect data to obtain a baseline, and then subsequently measure annually.
- Brad Tritle noted that he was in support of AzHeC conducting the survey, but wants to ensure that it is statistically significant.
- SLHI is very interested in collecting data in collaboration with AzHeC.
- The survey instrument will be presented to the AzHeC Executive Committee
- It was noted that the survey will need the ability to subdivide results by locality, specialty, demographics, and other parameters
- Survey audience is yet to be determined

AHCCCS HIeHR Presentation/Request (Perry Yastrov)

- Perry Yastrov reviewed his PowerPoint presentation to provide an overview of the AHCCCS HIeHR project
    - Phase I - Connect people with data to the exchange; web-based viewer is being built (non-aggregate)
    - Phase II - Patient centric aggregate view, with applications for providers to do e-prescribing, etc.

    - Phase III - Repository for access of member information, track population, quality measurements
    - June 08 - HIE, record locator, access patients via web-based viewer, access patient data, gateways for exchange
    - Open source software – MA-SHARE, services defined, patient index
    - Messaging standards - new standards defined by HL7
    - System will list where data (to include records, history, discharge, lab results, advance directory, etc.) is located (all data stored at original source)
    - Meeting with the hospitals to begin to integrate the model into the state
    - Evolution vs. Revolution Rollout strategy
    - Long-term they want the whole picture of an integrated health record, including education, etc.
- He asked for feedback and support from AzHeC regarding the standards HIeHR plans to adopt, once they are finalized.
- It was suggested that when Phase 1 is promoted/rolled-out to physicians that appropriate expectations are set (ie, complete longitudinal data will not be available at first) so that providers understand the short vs. long term goals of the project.

ePrescribing Review

- AzHeC has been looking to see what is happening in other states.
- Hope to potentially launch initiative in conjunction with the Governor's office.

EMR "User Group"

- Brad Tritle wanted to gauge potential interest in forming EMR User Groups among the provider community. Potentially would like to have providers who are currently using EMRs head this committee.
- It is hoped that the user groups will be established in the next month.
- Bob Dowd expressed interest in being involved.
- CIGNA will volunteer to attend as technical representatives
- Most likely these user groups will meet quarterly

Other Items

- None

ARIZONA HEALTH-E CONNECTION
Clinical/Technical Committee Meeting Minutes
November 29, 2007
4:30 to 6:00 pm
Sonora Quest Laboratories - Phoenix

ATTENDEES: **Bob Dowd, Kim Harris-Salamone, Brad Tritle, Byron Davies, Kim Snyder, Marc Leib, Mary Kay McDaniel, Eric Thomas, John Nelson, Anita Murcko, Lorie Mayer, Marilyn Teplitz, Bob Thompson, Kalyanraman Bharathan, Perry Yastrov, Melissa Rutala**

Meeting Minutes 11/14/07

- Bob Dowd called the meeting to order and welcomed the committee.
- There were no questions regarding the minutes from 11/04/07, **and they were approved.**

Standards Subcommittee Report (Mary Kay McDaniel and Kim Harris-Salamone)

- The standards subcommittee researched standards within HIEs and then interviewed individuals at a number of different HIEs to determine more specifics regarding their use of standards. HIEs interviewed included, but were not limited to:
    - HealthBridge
    - Regenstrief Institute/Indiana Health Information Exchange
    - Inland Northwest Services
    - Utah Health Information Network
    - New England Healthcare EDI
- The subcommittee concluded that once we define what the purpose of an AZ data exchange is, we can then proceed with determining what data needs to be exchanged and determine appropriate standards
- More detailed information is available in the presentation sent out prior to the meeting

Health Privacy Project Update (Kim Snyder)

- RTI will be managing the multi-state collaborative funding
- The RTI Health Privacy report is being finalized this week, and will be sent out to the group by Monday of next week
- Kim would appreciate review of the final report and any subsequent feedback

Provider Survey Update (Eric Thomas)

- Eric requested feedback specifically on the survey instrument regarding what areas are good and what need further investigation/tweaking.
- Eventually an RFP will be developed to involve the services of a consultant who is an expert at survey design and implementation
- A committee member suggested splitting up the survey into a packet for the office manager and a packet for the physician, depending on the type of information that is being requested.
- It was noted that there will likely be an ongoing survey over time
- It was also noted that the survey should be field tested, and also that, although costly, the most accurate way to get information is by conducting a telephone survey.
- Eric explained that field testing is going on right now, and there should be a formal report in early January.
- Eric requested feedback on the survey instrument by the end of next week. A reminder will be sent out mid-week.

Rural Grant Program Update (Eric Thomas)

- GITA is currently designing a grant regarding rural RHIO formation or participation. Currently, they are in the process of selecting the consultant who will help design an RFG.
- Request for Grant will be published early next year.
- Funding for last year resulted in 7 grant awards. Due to lack of project management among some grant awardees, a small component of this year's grant money is going towards providing project management assistance to awardees going forward.

ePrescribing Review (Brad Tritle)

- APIPS eRx subcommittee has been reviewing activities in other states.
- ePrescribing is being considered as a component of SAHIE and AHCCCCS HIeHR. Also being considered as an initiative of AzHeC.
- Formally established an Ad hoc eRx committee at Tuesday's Board of Directors meeting
- Currently looking at potential funding sources
- The main component of the initiative, should it move forward, would include education for and communication with the physician community.

AHCCCS HIeHR Update (Perry Yastrov)

- Overall project and philosophy presented at last meeting
- Continuing with focus groups for feedback on future phases
- Coordinating with data providers to figure out what it will take to obtain the data
- Determining what documentation and collateral material is needed to facilitate the process.
- MA-SHARE software is in the development phase at AHCCCS.
- Production environment will likely be housed at the Department of Administration

Other Items

- Kim Snyder inquired as to the status of formation of Physician EMR User Groups. There has not been any work on this initiative since the last committee meeting. Kim noted that she would like to participate once coordination of user groups begins.

ARIZONA HEALTH-E CONNECTION
Clinical/Technical Committee Meeting Minutes
January 3, 2008
4:30 to 6:00 pm
Sonora Quest Laboratories - Phoenix

ATTENDEES: Bob Dowd, Bruce Bethancourt, Brad Tritle, Kim Snyder, Emilie Sundie, Eric Thomas, Byron Davies, Anita Murcko, Greg Leach, Rob Lo Greco, Eric Leader, Lorie Mayer, Alan Pitt, Marc Leib, Terri Warholak, Scott Endsley, Mary Kay McDaniel, Lisa Stillwell, Beth Schermer, Shez Partovi, Chris Meyers

Meeting Minutes 11/14/07

- Bob Dowd called the meeting to order and welcomed the committee.
- There were no questions regarding the minutes from 11/29/07, **and they were approved.**

Updates

ePrescribing (Brad Tritle)

- Announced formation Steering Committee. Mindy Rasmussen (Exec. Director- AZ Pharmacy Alliance) and Dr. Brad Croft (ePrescribing D.O. from Flagstaff) will chair the committee.
- The committee will be meeting in mid-January and reviewing some of the presentations Terri Warholak has compiled. They will determine the direction the state should pursue in this area.
- Regarding the ePrescribing grant proposal submitted to United Health, we should hear back in March.

Provider Survey (Eric Thomas)

- Met with SLHI and they have agreed to partner with us- both with time and money. Jill Rissi will be working with us to get the process started. A meeting has been scheduled and we look forward to the progress.

Rural Grant Provider Survey Update (Eric Thomas/Emilie Sundie)

- Mosaica is the consultant that has been hired to conduct rural RHIO workshops.
- Rural coverage did not seem to present any barriers to the consultant. Many rural areas were planned to participate in a workshop (by area). Format of workshops is to give rise to educational and exchange of ideas. Also, need to understand each areas local needs and inform consultants so that they can assist in developing the grant program. All workshops will be identical.
- For details on the grant workshops, look on the GITA website (www.azgita.gov/rhio).
- GITA is looking to develop a robust list of professionals to invite (professional groups, medical associations, individual health care providers, etc.) Solicitation of names or organizations are welcome.
- M.K. McDaniel noted that personal home care is typically left out. May want to do a special reach out to those folks. To get in touch with small providers, she suggested going through clearinghouses, because they typically have a clearinghouse to submit claims. Marc Leib will ask around and see if he can find some contact information. However, participation may be limited due to the travel and technology challenges.
- Overall, the workshops are meant to be more inclusive than exclusive.

Legal Working Group (Beth Schermer)

- The LWG decided is to wait until the next legislative session to introduce a package to the legislature.
- Also working on a common framework, which includes a participation agreement. Model policies and a model agreement. Policies are very preliminary because technologies of an exchange have to be developed further. There are still unresolved questions, but further than expected.
- Model participation agreement was discussed in detail:
    - Only writing an agreement at this point for those who are putting information into an exchange or taking out the information.
    - It is for treatment only. Do not address research, administration, etc. at this time.
    - Have met with special interest groups such as ArMA, AOMA, hospitals, etc. to collect comments from different sources.
    - Will have a model agreement in the next few weeks with the basic terms. At the same time, also trying to prepare a model agreement for the AHCCCS proposed exchange.
    - Distinct philosophy in putting the agreement together- wanted it to be non-restrictive, getting into and out of the exchange is easy, so that hesitant providers will not be dissuaded from participating.
    - A few more areas working on: the main one is the question of consent. While AZ law does not require consent when using health information for treatment purposes, they are carefully exploring all options so that political, consensus, and public trust/perceiving can be addressed. There is no consensus nationally, as 1/3 have opt-in, 1/3 have opt out, and 1/3 have no consent. Consent issue has not been resolved, will continue to be discussed by AHCCCS, AzHeC Board and other involved parties.
    - RHIO to RHIO agreements will be step 2. The current agreement contemplates the possibility of RHIO to RHIO transfers. The eventual goal is to have all HIEs using the model agreements and model policies.
    - More analysis of this is critical. More exposure is critical and distribution/dialog must continue to ensure correct outcomes. For instance, if patients are allowed a partial opt out, more complications ensue. Data can become less reliable and incomplete. That presents concerns as well. Legislature will decide some of these outcomes, but open access will not be likely with current state legislature.
    - AHCCCS Agreement: An institution will sign up to be a data provider and/or a data user. Some organizations will be both provider and user. Model agreement may be Rx, Lab and Discharge Summary. Logical extension of additional information is planned. First, use data that is readily available and is easy to start with that adds the most value.
    - Dr. Partovi noted the additional complex processes that will be incurred by institutions depending on what consent policy is adopted.
    - John Nelson asked how data manipulation/storage is defined? Means aggregation and the use of information for other purposes. There will be a record of all transactions, but not of the content. Various users providing treatment will use different systems. Different EMRs dictate data structure and storage. No restructure is planned or transformed. No electronic farm is planned, but a tag that the exchange took place. There was some concern for this topic.
    - MK McDaniel asked whether or not this falls in line with the Medicaid requirement that all provider requests of patient data be tracked over a 12 month period. It was noted that a record of the transaction will be tracked at the exchange level.
    - Haven't addressed whether treatment would include experimental treatment, but potentially should address this in the future

HISPC- AZ Health Privacy Project (Kim Snyder)

- Provided an update about the standards collaborative work with 10 other states. Submitted proposal on December 31st- has yet to be approved, but are expecting funding. Goal is to develop some basic minimum policy requirements for exchanging data across state lines.
- Want to start a Security Subcommittee under this committee. Start looking at Security Standards and Technical Security requirements. Looking for volunteers- hands on technically- from a security standpoint. Volunteer someone who works for you, etc.
- Melissa will send out a reminder to get volunteers after the meeting.
- A commitment of 8-10 hours a month from subcommittee members is requested.
- Once the subcommittee is formed, they will develop a charter.
- Volunteered to be a modeling state, and will be focusing on the AHCCCS progam that will be starting in June.

Standards Subcommittee

- Adjourned for the holidays.

Catholic Healthcare West Presentation (Eric Leader)

- As RHIOs were proliferating in CA and other stats, CHW drafted a policy document regarding participation of CHW in RHIOs. CHW consists of 43,000 employees 43 hospitals.
- CHW found that there was no consolidated consistent way of addressing a RHIO's request for participation. The document Eric Leader presented is not an official corporate policy, but a document that addresses how CHW handles RHIO requests.
- How did they get it done? Started high in the organization- chief privacy and security admin, VP for clinical systems, office of CMO, office of CFO, COO, and risk/legal, chief technical architect.
- The document addresses how they should react when approached by a RHIO. Divided into sections of principles: Clinical, Business, Privacy/Confidentiality, Security/Standard, and Legal.
    - Clinical Principles - RHIO needs access to all clinically relevant information. Quick and easy to access. Source has to be identified and date/time stamped.
    - Business Principles - CHW invested in RHIO's that have failed. With that in the past, governance of the RHIO must address patients, perspective of the funders and care-givers. Must have long term funding, and a grant is not considered a funding source (but useful for R&D). Where do the costs go? Consumers, etc. There has to be an return on investment. Why make the investment? Contradictory information, unless government requirement.
    - Governance – RHIOs must be fully engaged in any state-wide entities that exist. For example AZ Health-E Connection.
    - Security - Rather than reinvent, referred to Connecting for Health Common Framework.
    - Legal – There must be responsibilities and liability for the success of the RHIO. For some California RHIOs, governance is/was loose, was run by consultants, and the Board was not engaged. There also must be effective remedies for the RHIO; ie, if a physician misuses data, how do you address this? The by-laws for participation in the RHIO must manage these issues. Who possesses the data? Court issues are considered.
- CHW is engaged in the AZ Health-e Connection at high level. Have to exchange data for government interest and for disease management. Funding is where CHW is actively investing - Santa Barbara RHIO.
- CHW was an early participant in CalRHIO.
- Participating in the leadership level with some, and are considering Interfacing with some RHIOs. Recently backed out of participation with the Long Beach RHIO.

- People are welcome to use this document, without attribution to CHW. Eric will send out an updated copy after the meeting.

Other Items

- It was requested that anyone who has ideas for future educational sessions submit them to Brad or Melissa. Several items to be covered during future meetings were mentioned: DOQ-IT presentation, provider index, patient index, personal health records.
- Health Capable Presentation- As part of educating the board and the committees as to different strategies for HIE, we are coordinating another introductory Health Capable webinar (January 31st, 8 am). M.K. McDaniel also suggested looking into CCRCentric.com, a local company that has a similar approach to HIE.
- It was noted that due to the need to develop a strong ROI/Business Model for whatever strategy is pursued, that possibly we may need to form a Business Model working group. It was also suggested that we get in touch with CalRHIO, as they formed a Business Subcommittee that may have performed similar work; perhaps they could make a presentation to the committee.
- It was also suggested that perhaps Dr. Bill Johnson's AZ Health Query could convene health plans and research the duplication of services to predict potential savings that could result in AZ as a result of HIE.

Adjourn

- The meeting was adjourned at 5:50 pm.

Arizona Health-e Connection
Clinical/Technical Committee Meeting Minutes
February 7, 2008
4:30 to 6:00 p.m.
Sonora Quest Laboratories – Tempe

Attendees: Bob Dowd, Brad Tritle, Byron Davies, Mike Popovich, Shez Partovi, Kim Snyder, Emile Sundie, Perry Yastrov, Bob Zierneke, John ---, woman with long blonde hair, Woman with short dark hair to Brad's left, Man to Joni's left, red-haired man to Shez Partovi's left and by phone: Ron DeVries, Anita Murko, Kathy Graff, Dr. Barathan, Mary Kate (?), AHCCCS HIeHR Team , Mike Wharthen, Initiate, Nancy Kole, Initiate, and Linda Zernel, Initiate, Lisa Stillwell

Meeting Minutes 01-03-08

- Mr. Dowd called the meeting to order at 4:30 p.m.
- There were no questions regarding the minutes from January 3, 2008 and they were approved.

Updates

EAzRx (Brad Tritle)

- The Steering Committee proposed EAzRx as the name for the Initiative.
- Terry Warholak from the University of Arizona College of Pharmacy gave an overview of initiatives in various states to the Committee at its first meeting.
- The Committee will take that information presented to a core group to develop what the initiative will look like and then present it to the whole Steering Committee, hopefully before HIMSS.

Rural Grant Program (Emilie Sundie)

- There were - 97 attendees total at the RHIO workshop that was presented in 7 cities around Arizona.
- They had two breakout sessions. The first one asked the attendees to identify critical community wants and needs and then identify key issues and concerns around those. The second asked the attendees to complete a RHIO readiness assessment document and what was urgent and important in that area.
- One thing they discovered was that hospitals have heavy influences in the area.

Legal Working Group (Kim Snyder)

- Incorporated Stakeholder comments into the Model Participation Agreement and released it to AHCCCS. The Legal Working Group will reconvene when they get the "go-ahead" to get started on the contract.

Multi-State Collaborative (Kim Snyder)

- RTI has signed their contract with ONC and has to go through the individual state contracts. ONC has to approve all of those before Arizona gets theirs. There is a tentative start date of January 29th. (I think she meant February 29th.)

Security Subcommittee (Kim Snyder)

- They have a good pool of volunteers who will receive an update on the contract status.

- GITA has established a Security and Privacy Office and those officers will join the Subcommittee.
- There will be a vendor demo presented to the Subcommittee at the next meeting.

HIE Infrastructure Updates

SAHIE Update (K. Barathan)

- Vendor demos in December were followed up by site visits to locations in Delaware, Virginia, West Virginia, and Tennessee. Dr. Barathan gave a brief overview of their status and systems. Dr. Barathan will provide detailed notes on his trip upon emailed request.
- SAHIE will decide in the next month or so which vendor to choose for their system.
- They are fine tuning and reviewing the ideas they have had on the governance structure.

AHCCCS HIeHR Update (Perry Yastrov)

- Mr. Yastrov gave a PowerPoint presentation (included in the Committee's handouts) on the conceptual mechanics of how their exchange will work.

Initiate Presentation (Nancy Kole, Mike Wharthen)

- Ms. Kole and Mr. Wharthen gave a web summary and demonstration on their product.

Other Items

- Mr. Tritle announced the Summit dates and location and advised the Committee to look for a Save the Date notice to be put out soon.

Looking Ahead

- The list on the agenda was reviewed.

The meeting was adjourned at 6:00 p.m.

Arizona Health-e Connection
Clinical/Technical Committee Meeting Minutes
March 6, 2008
4:30 to 6:00 p.m.
Sonora Quest Laboratories – Tempe

Attendees: Bob Dowd, **Brad Tritle, Byron Davies, Eric Thomas, John Nelson, Adrian Gillette, Emilie Sundie, Kim Harris-Salamone, Perry Yastrov and by phone: Anita Murcko, Bob Thompson, Mark Lieb, Mike Popovitch, Kim Snyder, Mary Kay McDaniel, Cathy Graeff, Lorie Mayer and Bob Sarnecki**

Meeting Minutes 02-07-08

- Mr. Dowd called the meeting to order at 4:30 p.m.
- There were no questions regarding the minutes from February 7, 2008 and they were approved.

Updates

EAzRx (Brad Tritle)

- The Steering Committee will be meeting next week and reviewing/approving a draft strategy for the initiative.
- Arizona was recognized this week as one of the top 10 e-Prescribing states (Arizona was #8)- this was in the form of a Safe Rx award by SureScripts. Anita Murcko, Terri Warholak and Debra Nixon attended the ceremony in Washington, DC to accept the award on behalf of the state.
- Terri Warholak from the University of Arizona College of Pharmacy gave an overview of initiatives in various states to the steering committee at its first meeting.
- Only have 181 e-Prescribers in the state, and our e-Prescribing percentage is approximately 3%.

Rural Grant Program (Emilie Sundie)

- Released the formal findings on the workshops, these were distributed at the meeting.
- The summary report includes a breakout of the attendees- hospitals represented over 20% of the individuals who were present.
- The report findings validated that more education is needed for the rural communities.
- The RHITA program is currently in the process of developing further educational materials on how to develop a workshop.

AzHeC Summit

- A brief overview of the Summit was presented, to include sponsors to date, the tentative agenda, and Summit logistics.

Legal Committee/Working Group (Kim Snyder)

- Stakeholder comments have been incorporated into the Model Participation Agreement and the updated agreement has been released to AHCCCS. The Legal Working Group will reconvene when they get the "go-ahead" to get started on the contract.

Multi-State Collaborative (Kim Snyder)

- Regarding a final contract for the HISPC project, ONC is combing through all of the states budgets. They are going to call the individual states to verify even more details regarding the budgets.
- Nothing has been approved to begin working on that project, although they are confident that it is going to come through.

Security Subcommittee (Kim Snyder)

- A Security Standards webinar was presented to the committee on Tuesday- it provided an overview on authentication and audit and an overview of all of the existing standards.
- The presenters recommended that Arizona work with the national guidelines group.
- HIMSS/GSA Authentication whitepaper was also referenced several times.

- It was a great presentation, and down the road we may be interested in allowing them the opportunity to demo their product.
- The different levels of security were reviewed, and the cost/risk ratio that comes along with each higher level of security was also acknowledged.
- It was noted that they didn't show where the overlaps were within the different standards. This is something that the Security Subcommittee can explore.

HIE Infrastructure Updates

SAHIE Update (K. Bharathan)

- There was no update from SAHIE at this meeting.

AHCCCS HIeHR Update (Perry Yastrov)

- Last month Mr. Yastrov gave a PowerPoint presentation on the conceptual and technical mechanics of how the AHCCCS exchange will work. There are no other updates at this time.

DOQ-IT (Kim Harris-Salamone)

- Ms. Harris Salamone provided an overview of the DOQ-IT program and also gave a demo of the DOQ-IT University website. DOQ-IT University information is available to anyone who wants to access it.
- HSAG will be working on the organizational changes in the 9th scope of work as well. For 9th scope of work, HSAG will have to provide 2 hours of DOQ-IT University training to providers.
- DOQ-IT is only allowed to work with docs who have implemented an EHR and are using it for at least 75% of their patients.

Other Items

- None

The meeting was adjourned at 6:00 p.m.

Arizona Health-e Connection
Clinical/Technical Committee Meeting Minutes
April 3, 2008
4:30 to 6:00 p.m.
Sonora Quest Laboratories – Tempe

Attendees: Bob Dowd, **Brad Tritle, Byron Davies, Eric Thomas, John Nelson, Adrian Gillette, Emilie Sundie, Kim Harris-Salamone, Perry Yastrov, Anita Murcko, Mary Kay McDaniel, Robert Grenert, Doug Grim, Shez Partovi, Marilyn Teplitz, and Melissa Rutala**

Meeting Minutes 02-07-08

- Mr. Dowd called the meeting to order at 4:30 p.m.
- There were no questions regarding the minutes from March 2008 and they were approved.
- Mr. Dowd also mentioned the need for the committee to develop a charter and mission with concrete "to dos". He noted that Tony Rodgers has requested that the committee work to develop standards. It is hoped that the Clinical/Technical Committee will make significant progress towards this end by the end of the calendar year, so there will be many activities in the coming months.

Updates

EAzRx (Brad Tritle)

- The EAzRx strategy has been reviewed and approved by the eRx Steering Committee and the AzHeC Board.
- Mr. Tritle also announced that Arizona has been recognized nationally as the #8 e-prescribing state
- The top 25 e-prescribers in Arizona will be recognized at the upcoming 2nd Annual Summit.
- Mr. Tritle reviewed the approved strategies for the initiative
- Committee members noted that we should consider how practice management systems interface with eRx systems, and should also work with organizations like NCPDP.

Rural Grant Program (Emilie Sundie)

- The first of two 2nd round workshops for the RHITA grant program was held in Sierra Vista.
- The RHITA team is also communicating with the boards of various hospitals to continue education.

AzHeC Summit (Melissa Rutala)

- Ms. Rutala provided a review of the Summit agenda, as well as reported on other key Summit items. Due to the Summit on May 2nd and 3rd, the Clinical/Technical Committee meeting will not meet as regularly scheduled on May 1st.

Legal Committee/Working Group (Kim Snyder)

- Melissa Rutala reported the following updates on behalf of Kristen Rosati.
- Currently, the Legal Working Group is conducting an analysis of how the Stark and Anti-Kickback laws would apply to funding of EHRs for physicians by a consortium of stakeholders. Many institutions are concerned about individually subsidizing physician purchases of EHR, due to concerns with potentially violating the Stark and AKS laws, and the hope is that funding through a consortium will alleviate this concern and promote wider adoption of EHRs by physicians. They will report their findings to the Board at its April meeting.
- A Consent White Paper, which will discuss the various options available and the perceived advantages and disadvantages of each option, is being written by Kristen Rosati. AzHEC hopes that the White Paper will provide guidance to stakeholder communities developing HIEs throughout the state. The draft of the white paper will be discussed at the April Board meeting.
- The committee is finalizing the AHCCCS HIeHR participation agreement for Phase 1, and the template HIE participation agreement for use by other HIEs across the state.

- The template HIE policies are also being finalized. The largest gap in the HIE policies is guidance on security issues (role-based access, authentication and audit). The HISPC Phase 3 project will develop the content for this part of the policies.
- An HIE proposed legislative package, which will hopefully be introduced in January 2009, is being drafted. When the draft is completed, the committee will vet it with a large range of stakeholders, including members of the Legal Working Group.
- Finally, when the HISPC Phase 3 project gets underway, further Legal Work Group meetings will be scheduled to work on the above projects.

Subcommittee Updates

Laboratory Subcommittee

- Dr. Murcko reported on a new ad hoc subcommittee that she would like to form related to laboratory descriptors.
- She would like to determine descriptor areas for labs that includes more information than simply stating "lab" but less information than the specific test that was performed.
- To date, there is no national standard and no state standard either.
- She has had a few volunteers step up to work on this subcommittee and asked for anyone else who is interested to be in contact with her.
- The laboratory descriptors subcommittee will report up to the Clinical/Technical committee. Due to the urgent need for this information for the HIeHR project, this ad hoc committee will have a quick turnaround time for its work.
- Shez Partovi, Byron Davies and Bob Dowd volunteered; additionally, John Nelson volunteered to find someone at DHS to help.

HIE Infrastructure Updates

SAHIE Update (K. Bharathan)

- There was no update from SAHIE at this meeting.

AHCCCS HIeHR Update (Perry Yastrov)

- Mr. Yastrov announced that AHCCCS has identified a potential free option for multi-factor authentication in Phase 1.
- Also, they have released an RFP regarding medication history. There is a possibility of a bidding conference and/or pull-back and re-release of the RFP.

National HIT Definitions (Brad Tritle)

- Mr. Tritle reviewed the current report from the ONC regarding definitions for common HIT and HIE terms. This report is open for public comment now, and he requested feedback from the Clinical/Technical Committee so that AzHeC can submit a response.
- Some suggestions were made and noted at the meeting, however, feedback was also requested after the meeting. All comments should be submitted to Brad and Melissa by Monday, April 7th COB. They will then be compiled and submitted.
- Kim Harris-Salamone noted that some of the definitions are not congruent with the ISO/CEN definitions that HL7 currently has adopted and uses

AZ One Pass Presentation (Shez Partovi)

- Dr. Partovi, along with Mr. Grim, presented his model for a provider registry and portal. This concept will also be presented to the Board of Directors at the April board meeting.

Other Items

- The meeting on May 1st has been cancelled due to the 2nd Annual Summit. The next meeting will be on Thursday, June 5th at 4:30pm.

The meeting was adjourned at 6:00 p.m.

Arizona Health-e Connection
Clinical/Technical Committee Meeting Minutes
June 5, 2008
4:30 to 6:00 p.m.
Sonora Quest Laboratories – Tempe

Attendees: Bob Dowd, **Craig Parker, Perry Yastrov, Kalyanraman Bharathan, Byron Davies, Eric Thomas, Adrian Gillette, Kim Harris-Salamone, Robert Grenert, Madan Gopal, Kim Snyder, Bob Sarnecki, Bob Thompson, Cathy Graeff, Marc Leib, and Melissa Rutala**

Meeting Minutes 04-03-08

- Mr. Dowd called the meeting to order at 4:30 p.m.
- There were no questions regarding the minutes from June 2008 and they were approved.
- Mr. Dowd also introduced Dr. Craig Parker as the new Clinical/Technical Committee co-chair. Dr. Parker gave a brief overview of his background. He is currently a research faculty member at ASU, but is primarily working with AHCCCS on the HIeHR project. He brings a wealth of medical informatics knowledge to Arizona and will be an asset as the committee moves forward with standard development.

AzHeC Strategic Alignment & Clinical/Technical Committee Direction

- Ms. Rutala explained that AzHeC is currently proceeding through a strategic alignment to ensure that the initiatives around the state continue to be in line with the roadmap, and to re-align the direction of the organization if needed. This process will continue through mid-July and a report will be presented to the board of directors at the August meeting.
- Due to this strategic alignment process and the need for the clinical/technical committee to develop a charter and specific goals and objectives, the co-chairs and AzHeC staff will be working in the coming weeks to draft a charter which incorporates the needs of the organization and the state at large. A draft of the charter will be presented at the next clinical/technical committee meeting.

Written Updates

- Written updates will now be provided in place of oral reports for AzHeC initiatives that are not directly related to the work of the clinical/technical committee. This is to ensure that significant time is allotted for the work of the committee.

Subcommittee Updates

Security Subcommittee/Working Group

- Kim Snyder provided an update on the status of the security subcommittee/working group. Work continues on the three security aspects of the projects- the use case mapping, authentication research, and the environmental scan.

HIE Infrastructure Updates

SAHIE Update (K. Bharathan)

- Bharathan provided a brief update on SAHIE activities.
- At this point, SAHIE has narrowed down their vendor choices but have decided to focus on what their corporate structure will be (i.e. LLC, for profit, not for profit, or a subsidiary of the Pima County Access program). Currently, they are considering becoming a not for profit standalone entity.
- Additionally, SAHIE is revisiting their business plan and confirming their funding.
- They are participating in the AzHeC Strategic Alignment project and will play a key part in that process.

AHCCCS HIeHR Update (Perry Yastrov)

- Mr. Yastrov provided an update on the HIeHR project, noting that the Phase 1 proof of concept is scheduled to go live in September. AHCCCS is currently working with their data partners to ensure that the participant agreements are complete.

Other Items

- It was noted that the Office of the National Coordinator recently published a 5 year Strategic Plan. This is suggested reading, to ensure that the national agenda continues to be in line with what is happening here in Arizona.
- It was decided that the July meeting will be postponed one week, from Thursday, July 3rd to Thursday, July 10th, due to the 4th of July holiday weekend. The meeting will take place at the same time and place on July 10th.

The meeting was adjourned at 5:00 p.m.

Arizona Health-e Connection
Clinical/Technical Committee Meeting Minutes
July 10, 2008
4:30 to 6:00 p.m.
Sonora Quest Laboratories – Tempe

Attendees: Bob Dowd, **Perry Yastrov, Kalyanraman Bharathan, Byron Davies, Eric Thomas, Anita Murcko, Kim Snyder, Chris Myers, Marilyn Teplitz, Bob Thompson, Marcia Core, Brad Tritle, and Melissa Rutala**

Meeting Minutes 04-03-08

- Mr. Dowd called the meeting to order at 4:30 p.m.
- There were no questions regarding the minutes from July 2008 and they were approved.

Clinical/Technical Committee Direction & Charter

- The committee reviewed the draft charter and reviewed suggested changes, additions, and deletions.
- All comments were either incorporated into the charter or included in the "notes" section of the charter. Please see the charter document for more details. The chairs and staff of the committee will draft a committee mission and project plan that are in alignment with the committee objectives and will present a final draft at the next committee meeting.

Subcommittee Updates

Security Subcommittee/Working Group

- The subcommittee continues work on its three strands- research on authentication concepts, use case mapping (for medical management and lab results) using AHCCCS as the state model, and the environmental scan (to include AHCCCS, SAHIE, and CAPAZ-MEX)
- The work of the security subcommittee will culminate in determination of basic minimum requirements for authentication and audit (for cross-state information transfer)
- The next subcommittee meeting will take place on July 17th, and a state report of findings from the use case mapping and environmental scan will be complete by July 31st.

Laboratory Descriptors Subcommittee

- The subcommittee met in April with two tasks in mind:
    - To create high level lab descriptors
    - To develop a policy recommendation for AHCCCS and SAHIE to limit display of information to non-sensitive, non-controversial labs.
- There is a functional correlation between lab tests and corresponding categories, such as behavioral health, HIV, genetics, pregnancy, pathology and STIs.
- The subcommittee categorized CPT codes based on exclusion items (for top 3000 codes). A matrix was then developed based on the CPT codes, and the CPT codes were mapped to Sonora Quest proprietary codes.
- Currently the subcommittee work is being reviewed by the AHCCCS legal committee and then a recommendation will be made to the AHCCCS Steering Committee.
- It was suggested that this work be submitted to AzHeC to determine how this may apply to any other HIE efforts in the state.

HIE Infrastructure Updates

SAHIE Update (K. Bharathan)

- There has been no further recent work on the technical front for SAHIE, as they are primarily focusing on their governance and legal structure.

AHCCCS HIeHR Update (P. Yastrov)

- The core applications will be completed by August 6th.
- There are currently project plans in place for all data providers.
- AHCCCS awarded the Medication History contract for Phase 1 to RxAccord (based in Tucson). This contract will cover the Proof of Concept only.
- The HIeHR Phase 1 Proof of Concept will go live in late September and will run through December. Security for the Proof of Concept is single factor, but the URL for the site will not be navigable.

Written Updates

- Written updates were provided for EAzRx (e-prescribing), the RHITA program, and the legal committee.

Other Items

- There were no additional items to discuss.

The meeting was adjourned by Bob Dowd at 5:50pm.

Arizona Health-e Connection
Clinical/Technical Committee Meeting Minutes
August 14, 2008
4:30 to 6:00 p.m.
Sonora Quest Laboratories – Tempe

Attendees: Bob Dowd, **Perry Yastrov, Marc Leib, Craig Parker, Eric Thomas, Anita Murcko, Kim Snyder, Kim Salamone, Bob Thompson, Marcia Core, Adrian Gillette, Deb Littlejohn, Mary Kay McDaniel, Elizabeth Messina, Brad Tritle, and Melissa Rutala**

Meeting Minutes 07-10-08

- Mr. Dowd called the meeting to order at 4:30 p.m.
- There were no questions regarding the minutes from July 2008 and they were approved.

Clinical/Technical Committee Direction & Charter (All)

- The committee reviewed the final draft of the committee charter and made suggestions and changes during the meeting. These comments, suggestions and changes included, but were not limited to:
    - Removing a repetitive statement under Objective #1
    - Adding e-prescribing to the description of Objective #2
    - In Objective #3, ensuring that the committee works with other AzHeC bodies to develop and/or stay compliant with appropriate legal and regulatory standards
- Upon thorough review, the final draft (with all changes) was approved and adopted by the committee.
- Volunteers and leaders for each of the three subcommittees were solicited. The lead of each subcommittee will contact the volunteers and schedule an initial meeting of the group as soon as possible.

Subcommittee Updates

Security Subcommittee/Working Group (K. Snyder)

- The subcommittee continues work on its three strands- research on authentication concepts, use case mapping (for medical management and lab results) using AHCCCS as the state model, and the environmental scan (to include AHCCCS, SAHIE, and CAPAZ-MEX)
- Determination by the subcommittee of basic minimum requirements for authentication and audit (for cross-state information transfer) will occur at their September 15th meeting. An interim conference call of the Clinical/Technical Committee is scheduled for September 19th at 9am. This call will allow Kim to review the recommendations of the subcommittee and will culminate in approval of these recommendations by the full committee. The recommendations will then be reviewed by the AzHeC Executive Committee before being submitted in a report to the HISPC administrators.

Laboratory Descriptors Subcommittee (A. Murcko)

- While most of the work of this subcommittee is complete, an interesting development occurred as work was completed to allow the HIeHR project to exchange laboratory results via their viewer.
- Original review of the AZ statutes impacting HIE did not identify any issues with lab results sharing, and the subcommittee's focus was on specific lab tests and their display.
- As the HIeHR project moved though the process of getting Participation Agreements in place, however, Sonora Quest counsel very conservatively interpreted the statutes which regulate the ordering, performance and release of lab test results. This culminated in a need for AzHeC's legal workgroup to review the statute and recommend a statutory re-interpretation.
- The regulatory agency in AZ on this matter is ADHS, and ADHS is reviewing the recommendations from Coppersmith Gordon. These recommendations conclude that AZ law permits clinical labs to release results to HIE where the HIE restricts access to health care providers for treatment purposes or other purpose permitted by HIPAA and AZ law.

- A final result from ADHS is expected within the next 7-10 days, and the committee will be updated on this issue at the next meeting.

HIE Infrastructure Updates

SAHIE Update (K. Bharathan)

- There has been no further recent work on the technical front for SAHIE, as they are primarily focusing on their governance and legal structure.

AHCCCS HIeHR Update (P. Yastrov)

- The HIeHR project will be in a production environment in early September. They are very excited about their progress and the value that the viewer will bring to the provider users.
- The project staff continue to make progress with the data partner agreements so that all agreements are in place by the September 29th go-live date.
- The project was recently contacted by BNETAL, security experts who also offer multi-factor authentication solutions. It is possible that HIeHR may be able to use BNETAL's multi-factor authentication products for the Proof of Concept. This would consist of a login/password plus a digital certificate that is installed on the computer being used.

Written Updates

- Written updates were provided for EAzRx (e-prescribing), the RHITA program, and the legal committee.
- Verbal updates were provided by M. Rutala regarding the CMS Special Listening sessions for eRx, AzHeC's proposal to be a co-sponsor of the CMS e-prescribing conference in early October, and the new eRx incentive payments for Medicare providers who e-prescribe.

Other Items

- It was noted that there would be a conference call of the clinical/technical committee on Friday, September 19th at 9am. This call is scheduled to review and approve the recommendations of the security subcommittee. Kim Snyder will send out the recommendations of the subcommittee a couple days prior to the conference call so that committee members have a chance to review.
- Mary Kay McDaniel noted that she has created a diagram which identifies all national standard setting organizations and how they relate to one another. She asked that this document be distributed to the committee, and that any feedback/suggestions/comments be directed to her.

The meeting was adjourned by Bob Dowd at 5:40pm.

Arizona Health-e Connection
Clinical/Technical Committee Meeting Minutes
September 4, 2008
4:30 to 6:00 p.m.
Arizona Health-e Connection- Phoenix

Attendees: Craig Parker, **Perry Yastrov, Marc Leib, Eric Thomas, Anita Murcko, Kim Snyder, Kim Salamone, Bob Sarnecki, Marcia Core, Adrian Gillette, Marilyn Teplitz, Mary Kay McDaniel, Mike Popovitch, Scott Whyte, Richie Piovanetti, Emilie Sundie, Brad Tritle, and Melissa Rutala**

Meeting Minutes 08-14-08

- Dr. Parker called the meeting to order at 4:30 p.m.
- There were no questions regarding the minutes from August 2008 and they were approved.

Subcommittee Updates

New Subcommittees

- The leaders of the new Clinical/Technical subcommittees will be Bob Dowd, Craig Parker and Brad Tritle. For those who signed up to participate in a subcommittee, you will be contacted by the leader of the subcommittee in the coming weeks to set-up an initial meeting.

Security Subcommittee/Working Group (K. Snyder)

- The subcommittee continues work on its three strands- research on authentication concepts, use case mapping (for medical management and lab results) using AHCCCS as the state model, and the environmental scan (to include AHCCCS, SAHIE, and CAPAZ-MEX)
- The subcommittee will finalize their minimum policy recommendations and present those to the Clinical/Technical Committee on Friday, September 19th at 9am. This call will allow Kim to review the recommendations of the subcommittee and will culminate in approval of these recommendations by the full committee. The recommendations will then be transformed into policy by Kristen Rosati, who chairs the HISPC legal committee.

Laboratory Descriptors Subcommittee (A. Murcko)

- Follow-up to the laboratory statute which regulates the ordering, performance and release of lab test results was provided. The Arizona Attorney General is currently reviewing the statute and will either issue a letter or create a substantive policy to clear up the confusion on this issue. A final result from ADHS is expected soon, and the committee will be updated on this issue at the next meeting.

HIE Infrastructure Updates

SAHIE Update (K. Bharathan)

- There has been no further recent work on the technical front for SAHIE, as they are primarily focusing on their governance and legal structure.

AHCCCS HIeHR Update (P. Yastrov)

- The HIeHR project has changed names and is now called the Arizona Medical Information Exchange (AMIE). AHCCCS has completed contracts with St. Joe's and the implementation interfaces are currently being developed. Thirty nine total users are currently committed to participate in AMIE once the system goes live at the end of September.

Written Updates

- There were no new written updates to provide, so committee members were asked to reference the written updates from the last meeting, or ask questions on a specific item. There were no questions.
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Other Items

- It was noted that there would be a conference call of the clinical/technical committee on Friday, September 19th at 9am. This call is scheduled to review and approve the recommendations of the security subcommittee. Kim Snyder will send out the recommendations of the subcommittee a couple days prior to the conference call so that committee members have a chance to review.

Presentation (S. Whyte, Catholic Healthcare West)

- Scott Whyte presented to the committee on a sharing solution between CHW hospitals and associated clinics which was recently implemented in California. The solution, MobileMD, was offered to doctors who already had an EMR system in their practice- it covered 17 practices and 60 total physicians. There was extensive discussion on the system and the impact it has had on the community in California, as this system may be piloted in CHW Arizona locations in the future.

The meeting was adjourned by Craig Parker at 6:00pm.

Arizona Health-e Connection
Clinical/Technical Committee Meeting Minutes
November 5, 2008
3:00 to 4:30 p.m.
Arizona Health-e Connection- Phoenix

Attendees: Craig Parker, Bob Dowd, Adrian Gillette, Emilie Sundie, Eric Thomas, **Kim Snyder, Kalyanraman Bharathan, Kristen Rosati, Richie Piovanetti, Marilyn Teplitz, Brad Tritle, and Melissa Rutala, and by phone Perry Yastrov, Bob Thompson, Kim Salamone, Bob Sarnecki, Mary Kay McDaniel, and Marc Leib.**

Meeting Minutes 10-10-08

- Bob Dowd called the meeting to order at 3:00 p.m.
- There were no questions regarding the minutes from October 2008 and they were approved.

Subcommittee Updates

HIE Coordination Subcommittee

- Brad reported on the recent work of the HIE Coordination Subcommittee. This subcommittee will monitor the HIE certifications being developed by both CCHIT and EHNAC. The subcommittee is working to have a presentation from Laura Kolkman on the EHNAC progress and from Chris Muir on the CCHIT progress.
- The additional 2 subcommittees had not met as of this meeting, and will report at the next meeting of the committee.

HIE Infrastructure Updates

SAHIE Update (K. Bharathan)

- SAHIE is still working on their contract negotiations.
- An action plan on communications and outreach to providers and consumers is also in development. The current target is to begin implementation of this action plan in late 2008 or early 2009.

AHCCCS HIeHR/AMIE Update (P. Yastrov)

- Usage of the AMIE Proof of Concept is steady, and continues to steadily increase.
- The number of records being continuously imported into the system is increasing as well.
- Finally, AHCCCS has received very favorable feedback from clinicians.

Written Updates

- The written updates were provided, and a verbal update was also given regarding the developing eRx utilization project.

Discussion- Legislative Package and Consent (K. Rosati)

- Kristen Rosati reviewed the current state of the legislative package and the goal of the legislation:
    - To identify barriers in existing laws to the exchange of health information.
        - Written records
        - Records recorded in ink
        - A few other technical issues.
    - To craft rigorous accountability and enforcement mechanisms in Arizona.
    - To determine consensus about how the consent issue should be handled with respect to health information exchange.
- Comments regarding the legislation and consent issue (mainly the consent issue) were as follows:
    - One consideration is whether it has to be either/or when looking at who provides the information to clinicians.

    - It was also noted that a detailed policy to inspect information as it relates to HIE should be explored.
    - If too little restrictions are put in place, it will end up being a free-for-all, but if the system is too complex, than HIE will be a waste of time.
    - One consideration is that EMRs today are not currently codified to segregate information, therefore with today's technology, it will be difficult to implement a very complex consent policy.
    - There could be huge issues if there was any type of required consent to put information into the exchange. This individual agreed with the possible consent to access information.
    - Arizona is growing too fast to make consent to put information into the exchange a viable option.
    - When comparing Arizona to Rhode Island, it is important to note that RI has larger, multi-specialty clinics and in that sense is not at all like Arizona. An opt-in policy would be very difficult here in Arizona.
    - Most important factor is interoperability with other systems.
    - It is important to separate out interests and the points that match up with those interests. The discussion should subsequently be conducted in terms of these use cases:
        - Ex. Consumers- Do I have to be all in, or can information be segmented?
        - Providers- Where is consent granted?
        - Health Plans
        - Legislature- Self perception that relates to all three.
- The entire discussion was very valuable and will be incorporated into the final recommendation to the AzHeC Board.

The meeting was adjourned at 6:00pm.

Arizona Health-e Connection
Clinical/Technical Committee Meeting Minutes
February 5, 2009
4:30 to 6:00 p.m.
Sonora Quest Laboratories- Tempe

Attendees: Marilyn Teplitz, Bob Kaye, K. Bharathan, Craig Parker, Eric Thomas, Richie Piovanetti, Marc Leib, Bronwyn Joplin, Brad Tritle, Melissa Rutala and By phone, **Randy Jackson, Kim Snyder, Perry Yastrov, Art Schenkman, Cathy Graeff, Madan Gopal, Anita Murcko and Kim Salamone.**

Meeting Minutes 01-08-09

- Craig Parker called the meeting to order at 4:30 p.m.
- There were no questions regarding the minutes from January 2009 and they were approved.

Subcommittee Updates

HIE Coordination Subcommittee

- Brad reported that this subcommittee will have its next meeting after the Summit.
- He noted that a presentation given to the AzHeC Council of Initiatives by CCHIT, including their new HIE certification program, would be distributed to the subcommittee for review. It is expected that there will be a much better understanding about further CCHIT direction at the next meeting of the subcommittee as well.
- Perry Yastrov noted that he would like to learn more about the cost of the HIE certification and any potential for scholarship.

eRx/EHR Standards Subcommittee

- The first meeting of the subcommittee has occurred and the subcommittee objectives were reviewed. The members of the subcommittee have assignments to pull research on current EMR and eRx standards, and will discuss these items at their next meeting.

Interoperability Standards Subcommittee

- The subcommittee had their first meeting last week, where they reviewed objectives, created a wiki for all subcommittee docs, and scheduled their next call.

Security Subcommittee

- Kim will be sending out the authentication and audit policy to the security subcommittee for review soon.
- Cross-state policies will be completed by next week
- The authentication white paper will be completed by the end of March.

HIE Infrastructure Updates

SAHIE Update

- SAHIE has received approval from their executive committee to incorporate. They expect to be incorporated this month.
- They are more than ½ way through their vendor negotiations and plan to finish negotiations in 6-8 weeks.
- The target is to start implementation early in the 2nd quarter of 2009.

AHCCCS HIeHR/AMIE Update (P. Yastrov)

- Grant funding will allow AMIE to continue to exand

    - Expansions will likely include pharmacy claims data from RBHAs across the state as well as adding some RBHA users
    - There is also the possibility of expanding the information available to include radiology, lab data and possibly ER discharge reports
    - AMIE leadership is also speaking with other hospitals who have an interest in joining the exchange
- As of this meeting, the following statistics on AMIE usage were available:
    - 1.6 million unique patients
    - Over 2 million total records

Written Updates

- The written updates were provided. An additional verbal update was provided by Eric Thomas regarding the RHITA program:
    - GITA will not be offering additional RHITA grants to the current recipients.
    - The grant program funding will end and all related activities will be wrapped up by the end of March.
    - Most of the current recipients will continue to work with the HIE development tools in some capacity, and will see what additional funding may be available.

Other Items

- The following other subjects were briefly discussed:
    - Update on the Western States Health-e Connection Summit & Trade Show.
    - Brief discussion of the Economic Stimulus Package, in its current state in congress
    - Discussion of a potential AzHeC EHR initiative, to be determined by the Board of Directors

The meeting was adjourned at 5:30pm.

Arizona Health-e Connection
Clinical/Technical Committee Meeting Minutes
March 12, 2009
4:30 to 6:00 p.m.
Sonora Quest Laboratories- Tempe

Attendees: Bob Dowd, Bob Kaye, Craig Parker, Eric Thomas, Marc Leib, Linda Campbell, Anita Murcko, Perry Yastrov, Kim Snyder, Bronwyn Joplin, Brad Tritle, Melissa Rutala and By phone, **Randy Jackson, Art Schenkman, Marcia Core, Bob Thompson, and Mary Kay McDaniel.**

Meeting Minutes 01-08-09

- Craig Parker called the meeting to order at 4:30 p.m.
- There were no questions regarding the minutes from February 2009 and they were approved.

Subcommittee Updates

HIE Coordination Subcommittee

- Brad reported that this subcommittee has not met, but will be scheduling their next meeting soon.

eRx/EHR Standards Subcommittee

- The subcommittee is scheduled to meet next Wednesday. The subcommittee meeting was delayed so that they could benefit from any outcomes decided at the Board Retreat on Friday, March 13th.

Interoperability Standards Subcommittee

- The subcommittee had not had a second meeting by the time of this committee meeting.

Security Subcommittee

- The implementation guide being developed as part of the HISPC project will allow any RHIO to pick up the guide and know how to implement security policies for authentication and audit.
- The guide has been tested using an immunization test case, even though the policy was not designed for it. The functionality crossed over and the testing was a success.
- For Arizona, Kim is taking the uniform security policy designed by the HISPC collaborative and is adding in additional requirements that would be in place for Arizona (including detail behind password management and a few other specifics).
- After completion, these policies will be built into the master participation agreement and policies and the update will be posted to the AzHeC website.
- The authentication white paper and a next steps document will be finalized as well.

HIE Infrastructure Updates

SAHIE Update

- SAHIE has officially incorporated as an organization.
- They announced their decision to use Wellogic as their HIE vendor, and they have signed a letter of intent.
- SAHIE has also formed a technical committee to begin working on implementation plans.

AHCCCS HIeHR/AMIE Update (P. Yastrov)

- AMIE has been in production for five and a half months.

- The system now includes pharmacy claims medication history data from RBHAs across the state.
- They have added 50 behavioral healthcare providers.
- March to May will be the behavioral health evaluations.
- As of the meeting, AMIE included 1.87 million patients and over 3 million records.
- At the HISPC conference, AMIE staff presented on the progress of AMIE and what is happening in Arizona.

PACeHR Update (A. Murcko)

- Open demonstrations of the PACeHR Finalists will occur on April 30th and May 1st.
- Current funding includes approximate funding to support the infrastructure described for 6-12 months.
- Regarding management post-implementation, AHCCCS health plans have offered provider relations employees to help pre- and post-implementation.
- The deadline for submission of responses has been extended to March 30th.
- The target is to have 3-5 pilot practices up and running in June.
- Demonstration scripts for the demos have been developed from those used in other bade-offs. Gartner consultants will also help to finalize the test scripts. Bob Kaye offered to help develop the scripts for the demonstrations.
- Reporting functions included in the requirements include mammography, diabetes, and EPSDT.
- Bob Kaye commented that there needs to be a stringent evaluation on the financial viability of the potential vendors.
- Dr. Murcko also noted that the PACeHR program will be creating physician groups and focus groups as the program matures. Health Services Advisory Group has been very active in this process.

Written Updates

- The written updates were provided. No questions were asked.

Other Items

- The following other subjects were briefly discussed:
    - The economic stimulus package, and Arizona Health-e Connection's role in the federal funding that will become available.
    - It was noted that Jim Alperson is heading up the stimulus funds coordination in Arizona.
    - Dr. Murcko suggested that Dr. Craig Parker be nominated to serve on the National HIT Standards Committee and Brad agreed to submit the formal nomination from Arizona Health-e Connection.

The meeting was adjourned at 5:30pm.

Arizona Health-e Connection
Clinical/Technical Committee Meeting Minutes
April 2, 2009
4:30 to 6:00 p.m.
Sonora Quest Laboratories- Tempe

Attendees: Bob Dowd, Bob Kaye, Emilie Sundie, Randy Jackson, Byron Davies, Perry Yastrov, Kim Snyder, Bronwyn Joplin, Brad Tritle, Melissa Rutala and By phone, A**rt Schenkman, Kim Salamone, Anita Murcko, Madan Gopal, David Coe, Eric Thomas and Mary Kay McDaniel.**

Meeting Minutes 03-12-09

- Bob Dowd called the meeting to order at 4:30 p.m.
- There were no questions regarding the minutes from March 2009 and they were approved.

Subcommittee Updates

HIE Coordination Subcommittee

- This subcommittee has not met since the last Clinical/Technical Committee meeting.
- It was noted that HITSP has announced a 90-day timeout from their work to review the federal stimulus funds and necessary related action.

eRx/EHR Standards Subcommittee

- The subcommittee met last month and provided some feedback to AzHeC staff regarding several new HIT initiatives which may be included in the AzHeC Business Plan, which is currently under development.

Interoperability Standards Subcommittee

- This subcommittee has not met since the last Clinical/Technical Committee meeting.

Security Subcommittee

- Please see the HISPC policy analysis section below.

HIE Infrastructure Updates

SAHIE Update

- SAHIE provided a written update which was read aloud to the committee during the meeting. The hard copy of the update was sent to the committee after the meeting.

AHCCCS HIeHR/AMIE Update (P. Yastrov)

- AMIE continues to see approximately 20-30 logins to the AMIE viewer each week.
- The trend is gradually improving with respect to clinicians finding a match when they search the system. Now approximately 75% of searches result in a matched record.
- Physicians seem to know better when to look for their patients in the system (for lab tests, etc.)

PACeHR Update (A. Murcko)

- Open demonstrations of the PACeHR Finalists will occur on April 30th and May 1st.
- PACeHR has received 16 responses to their RSI.
- The PACeHR Evaluation Panel is composed of 16 clinicians and 4 non-clinicians.
- The Save the Date and link to register for the demonstrations was sent to the clinical/technical committee directly after the meeting.
-

Written Updates

- The written updates were provided. No questions were asked.

HISPC Policy Review

- The policy around provider authentication and audit with respect to health information exchange were reviewed by Kim Snyder. These policies were developed as part of the HISPC program.
- There was a motion that the policies be approved, with the understanding that more details on dynamic signature would be included in the authentication paper, and that the requirements in the spreadsheet would be written into policy statements. This motion was withdrawn when significant discussion pursued.
- A second motion was made that the policy and authentication whitepaper be updated and brought back to the Clinical/Technical Committee in a month in final form, including the caveats from the original motion. This motion was seconded and approved.

Other Items

- No other items were discussed.

The meeting was adjourned at 5:30pm.

Arizona Health-e Connection

Clinical/Technical Committee Updates
June 5, 2008

EAzRx (e-Prescribing) Initiative

Mindy Rasmussen & Bradford Croft, Co-Chairs
Brad Tritle & Melissa Rutala, Staff

- Summit Day 2 created a lot of excitement. Many extremely pleased with the panel of physicians who have already been e-prescribing.
- Many additional stakeholders are interested in participating moving forward – including state associations for nurses, physician assistants and nurse practitioners.
- APIPS proposed several workgroups to support the Initiative; staff and chairs are meeting to discuss rolling these workgroups directly under AzHeC's EAzRx.
- Next EAzRx Steering Committee meeting is scheduled for mid-June.

Legal Committee

Kristen Rosati, Chair
Kim Snyder, Staff

AzHeC Legal Counsel has been meeting on behalf of AHCCCS with hospitals, relative to data security and privacy standards and policies, for Phase 1 of the AHCCCS HIeHR Utility Project.

The Adoption of Standards Collaborative will be working on Basic Security Policy Requirements for Authentication and Audit for provider access to the health information exchange across state lines. The project began April 1, 2008 and will end on March 21, 2009. More details will be provided in a separate document from the Security Subcommittee.

The Legal Work Group will convene jointly with the Security Work Group to begin reviewing audit standards and policies. (June 12th)

Rural Health Information Technology Adoption (RHITA) Grant Program

Chris Cummiskey, Board Representative
Eric Thomas, Staff

- Request for Grant Proposals released; proposals due June 9
- RHIO Formation Guide has been published and is available for download from the GITA website at: *www.azgita.gov/ehealth/RHITA*

Arizona Health-e Connection

Clinical/Technical Committee Updates
June 5, 2008

EAzRx (e-Prescribing) Initiative

Mindy Rasmussen & Bradford Croft, Co-Chairs
Brad Tritle & Melissa Rutala, Staff

- The Steering Committee received a briefing from Shannon Nelson of United Healthcare regarding e-prescribing pilots in other states.
- AzHeC staff is currently working with the Governor's Office to set up a standing meeting with all state agencies impacted by the e-prescribing Executive Order. AzHeC staff is already communicating closely with both AHCCCS and GITA staff.
- AzHeC staff is working to coordinate continuing medical education for e-prescribing and EMR content with clinician associations at related events.

Legal Committee

Kristen Rosati, Chair
Kim Snyder, Staff

- GITA HISPC Legal Work
  - Legal Working Group (LWG) convened on June 23rd with 30 volunteers in attendance.
  - Kristen Rosati and Kim Snyder reviewed the HISPC project and the work of the LWG to date.
  - Beth Schermer chaired the discussion on creating an accountability/enforcement framework for Arizona. The committee reviewed existing protections under the contract, policies and procedures, and existing federal and state law. The committee had a wide-ranging discussion of whether criminal enforcement was appropriate, the role of the Arizona Attorney General's Office in enforcing civil penalties, and whether a private right of action already exists for privacy violations.
  - Our next step is to collect statutes from other states with HIE regarding accountability and enforceability and to collate that information for the LWG's consideration. We will begin drafting suggested legislation for the LWG's review and feedback.

- Non-HISPC Work
  - Beth Schermer attended the strategic alignment meeting involving AzHEC, AHCCCS, and SAHIE; both Beth and Kristen Rosati will be in attendance at the next strategic alignment meeting.
  - Sam Coppersmith advised Brad Tritle on the current status of the IRS treatment of HIEs as tax-exempt organizations.

Rural Health Information Technology Adoption (RHITA) Grant Program

Chris Cummiskey, Board Representative

Eric Thomas, Staff

- On June 30, GITA notified 6 rural communities that $685,535 would be granted under the RHITA Grant Program. This year's program focuses on the development of Regional Health Information Organizations (RHIOs) to facilitate health information exchange among Arizona's rural health care providers.

- RHIOs lead to greater quality and efficiency in health care delivery, enable health information exchange with other providers, and lower health care costs. The RHITA grants are part of the implementation efforts of the Arizona Health-e Connection Roadmap.

- In addition to the direct grants, the 2008 RHITA program provided **$298,663** in consulting and educational services to health care organizations in rural communities. These services raised awareness of the benefits of e-health in rural communities through 10 community meetings throughout the State and will support the grant awardees by guiding them through successful RHIO formation. RHIO Participation and Formation Guides - were also created and placed on the GITA web site to benefit of all Arizona communities in their e-health efforts http://www.azgita.gov/ehealth/rhita.

Arizona Health-e Connection

Clinical/Technical Committee Updates
November 5, 2008

EAzRx (e-Prescribing) Initiative
Mindy Rasmussen & Dr. Bradford Croft, Co-Chairs
Brad Tritle & Melissa Rutala, Staff

The EAzRx initiative has been moving along quite rapidly over the last 30-60 days. At the last meeting on September 19th, tactics for improving e-prescribing adoption and success in Arizona were presented to the committee. There was widespread agreement on the tactics, and the committee is currently working to prioritize them to determine next steps. Other items of interest include:

- The new AzHeC Blog went LIVE on Friday, October 3rd, in time for AzHeC staff and others to blog live from the National eRx Conference in Boston, MA (October 6th and 7th). We are planning to add more subject matter experts as guest authors on other topics of HIT and HIE.
- AzHeC was a co-sponsor of the National eRx Conference in Boston, MA. At least 8 individuals from Arizona attended, and there was a wealth of information gained by all. Details about the conference are posted on the AzHeC Blog (www.azhecblog.org) and will also be shared widely through email communications, AzHeC website and distribution to the EAzRx Steering Committee members.
- Kate Berry, Senior VP of Business Development for SureScripts-RxHub and Executive Director of the Center for Improving Medication Management, is planning a special trip to Az to meet with key stakeholders regarding EAzRx and how SureScripts-RxHub can assist in the acceleration of eRx adoption in Arizona. Meetings are set-up with the EAzRx Co-Chairs, Dr. Terri Warholak, the Incentives Subcommittee, State Agencies & the Governor's Office, Cigna, Humana, Schaller Anderson, AHCCCS, and possibly BCBS-AZ. We hope to explore with Kate possible pilot programs for Arizona, as well as other strategies to assist providers and pharmacists in the transition from paper to electronic Rx.

Legal Committee and GITA HISPC Activity (AZ Health Privacy/Security Projects)
Kristen Rosati, J.D., Chair; Kim Snyder, Staff

Health Information Security Privacy Collaboration (HISPC) grant:

- Kristen Rosati, Beth Schermer and Mayan Tahan continued research on other state laws on accountability and enforceability in HIE, drafted a proposed legislative package regarding same, and participated in Legal Working Group meeting to provide feedback on proposal.
- Kristen conducted outreach to the Arizona Consumers Council and the Arizona Association of Health Care Lawyers on the proposed legislative package.
- Kristen provided feedback to the Clinical and Security Work Group regarding questions on authentication and audit policies.

Non-HISPC Legal Work:

- Kristen continued her work with the Arizona Department of Health Services, the Arizona Attorney General's Office and the federal CLIA office regarding whether state clinical laboratories will be permitted to release lab results to HIEs; ADHS has issued a substantive policy statement permitting such a release to a federated HIE (structured like the AHCCCS HIE).
- Kristen facilitated initial discussions on consumer choice/consent policy for HIE in Arizona.
- Kristen reviewed the SAHIE Letter of Intent with its vendor to ensure acceptability of basic contract terms in the event the contract is assigned in the future to AzHeC.
- Kristen and Beth assisted with obtaining year 2 of the AHCCCS funding.

- Sam Coppersmith advised Brad Tritle regarding permissible lobbying expenditures by a 501(c)(3) exempt organization and analysis of 501(h) election, corporate governance, director elections, membership dues, and tax status issues.

Rural Health Information Technology Adoption (RHITA) Grant Program
Chris Cummiskey, Board Representative; Eric Thomas, Staff

The RHITA grant program this year focuses on the development of Regional Health Information Organizations (RHIOs) to facilitate health information exchange among Arizona's rural health care providers. The following progress has been made:

- Project Plans adopted by the teams in August are being executed against to achieve the identified goals.
- Specific outcome goals for the identification and engagement of key Community Stakeholders continue to be refined.
- Identification of the Business Foundation and Governance requirements has begun and multiple teams have made progress in these two key areas.
- Region-specific consumer and provider surveys regarding health information exchange are being developed based on examples provided by Mosaica Partners.
- All teams are effectively using Central Desktop, the collaborative workspace tool provided by Mosaica Partners. The first grantee-led web meetings have been successfully held.
- Project status reporting for the first grant reporting cycle is predominantly complete.

The teams continue to make progress, with GITA and Mosaica Partners participating in a supportive role.

Arizona Health-e Connection

Clinical/Technical Committee Updates
February 5, 2009

EAzRx (e-Prescribing) Initiative
Mindy Rasmussen & Dr. Bradford Croft, Co-Chairs
Brad Tritle & Melissa Rutala, Staff

- The EAzRx Steering Committee met briefly in December to bring the committee members up to speed with current Az eRx developments. Listed below are updates on the eRx ongoing projects:
- EAzRx Utilization Team: The business plan for this project is scheduled to be complete by January 16th and will be presented to the EAzRx Steering Committee for review and approval at their January meeting. After the business plan is finalized, AzHeC staff will meet with health plan executives to review the plan and request funding for the project.
- AzHeC staff submitted a grant proposal to United Healthcare in December 2008 to fund a direct-to-consumer advertising campaign, educating consumers on the benefits of e-prescribing, and involving them in the process.
- The AHRQ grant proposal that was due in late January has been postponed. The grant team continues to work on the grant proposal and will submit their proposal in several months, before the next deadline of May 25th. This proposal is designed to help facilitate the successful adoption of electronic prescribing technology by Arizona community health centers.
- Brad Tritle and Melissa Rutala are scheduled to present to all ADHS primary care contractors (including most of the CHCs) on Wednesday, January 21st. The presentation will focus on Arizona's e-prescribing efforts to date, and how these contractors can begin utilizing e-prescribing technology.

Legal Committee and GITA HISPC Activity (AZ Health Privacy/Security Projects)
Kristen Rosati, J.D., Chair; Kim Snyder, Staff

- Health Information Security Privacy Collaboration (HISPC) grant:
  - Kristen Rosati and Beth Schermer continued work on the legislative package on accountability and enforceability in HIE, including compromise proposal for implementation of consumer consent requirements for HIE.
  - Kristen presented the legislative package to the Executive Committee, and Beth facilitated the Legal Committee on December 15.
  - Kristen conducted the legal review for the HISPC ASC Collaborative on the authentication and audit policy requirements.

- B. Tritle Legislative Package update –
  - At the December Board meeting, the Legislative package was deferred to the 2010 session. BCBS legal counsel has offered to provide pro bono support and update the legislative package, in accordance with the concerns of the board and some

outstanding concerns of the legal committee. Any board member who is able to provide additional pro bono support towards this effort is very welcome.

- Through consultation with BCBS Counsel and AzHeC Executive Director, it was determined that additional consumer feedback via focus groups would be valuable to the process. BCBS and AzHeC Staff will work together on this process, and invite any other Board member organizations to participate.
- Once the legislative package is updated, it will be returned to the Legal Committee for review, discussion and approval. The goal is to have the legislative package complete and ready for board approval by May/June.
- To ensure that there is distributed representation on the legal committee, all board members are requested to contribute a member of their legal counsel or an equivalent representative to participate in Legal Committee activities moving forward.
- Once the legislative package is complete and approved by the AzHeC Board, a legislative committee will be established, consisting of lobbyists from Board organizations. This group will, with the leadership of Board Chair, David Landrith, work to educate legislators and gain the necessary support needed for the passage of the legislation in 2010.

Rural Health Information Technology Adoption (RHITA) Grant Program
Eric Thomas, Staff

The RHITA grant program this year focuses on the development of Regional Health Information Organizations (RHIOs) to facilitate health information exchange among Arizona's rural health care providers. During August, each of the six grant stakeholder groups adopted a project Mission Statement and approved a working Project Plan identifying project activities, milestones, outcome goals and timelines. Since the last report, the following progress has been made:

- A Mid-Project Assessment has been completed by GITA and Mosaica Partners. The findings were reviewed with the grant recipients and have been incorporated into their project plans.
- Project status reporting submissions for the third grant reporting cycle are largely complete.
- Four teams are working on consumer survey projects. The consumer survey and cover letter jointly designed by the two Yuma grant teams has been developed in English and Spanish.
- A presentation on Health Information Exchange and RHIO Formation was held in Show Low. It was well attended by local stakeholders who expressed interest in learning more about a potential RHIO serving that part of the state.
- GITA released a Request for Grants to provide additional funding to successful RHITA grant recipients engaged in RHIO planning. The objective is to build on the work undertaken during the current grant cycle.

Clinical/Technical Committee Updates
March 12, 2009

EAzRx (e-Prescribing) Initiative
Mindy Rasmussen & Dr. Bradford Croft, Co-Chairs
Brad Tritle & Melissa Rutala, Staff

- The EAzRx Steering Committee meeting for February 19 was canceled, due to Summit preparations and needed finalization of the eRx Utilization Business Plan by AzHeC staff.
- Awaiting response by UnitedHealthcare to the grant proposal for consumer outreach.

Legal Committee and GITA HISPC Activity (AZ Health Privacy/Security Projects)
Kristen Rosati, J.D., Chair; Kim Snyder, Staff

- Health Information Security Privacy Collaboration (HISPC) grant: In February through the first week of March, Kristen Rosati completed a legal report discussing all of the federal and state legal issues involved in authentication and audit policies. This included a detailed examination of Arizona state laws, as an example of state law analysis for the national collaborative. She also completed review of the Collaborative's Uniform Security Policy. Kristen, Kim Snyder, Emilie Sundie, and Brad Tritle attended the national HISPC conference in Washington DC, on behalf of Arizona; Kim and Kristen gave presentations at the conference about the Collaborative's work.
- AzHEC non-HISPC legal work: Beth Schermer and Kristen reviewed and revised a vendor member agreement. Sam Coppersmith worked on Arizona Corporation Commission annual report and IRS tax exempt organization application.

Rural Health Information Technology Adoption (RHITA) Grant Program
Eric Thomas, Staff

The RHITA grant program this year focuses on the development of Regional Health Information Organizations (RHIOs) to facilitate health information exchange among Arizona's rural health care providers. Each of the six grant stakeholder groups adopted a project Mission Statement and approved a working Project Plan identifying project activities, milestones, outcome goals and timelines. Since the last report, the following progress has been made:

- All six grant recipients participated in the Western States Health-e Connection Summit. They found great value from the sessions and, in particular, gained from the information provided about the American Reinvestment and Recovery Act which holds great promise for funding HIT/HIE efforts.
- The teams continue to make progress toward their respective goals. Onsite and web meetings were held with the participation of Mosaica Partners. Work continues on consumer surveys, governance development and business plan development.

The RHITA Grant program for FY 2008 will conclude at the end of March. Grant recipients will submit their final reports and a summarized final report will be made available shortly thereafter.

Arizona Health Security Project

Recommended Minimum Policy Requirements for Privacy and Security

Generated by the stakeholders supporting Arizona's participation in Phase III of the Health Information Security & Privacy Collaboration. The Collaboration is supported and funded by the U.S. Department of Health and Human Services.

In cooperation with the Arizona Government Information Technology Agency and Arizona Health-e Connection
6-15-2009

Table of Contents

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Introduction

Purpose	The purpose of the following policy requirements is to foster Data exchange for Health Information Organizations. This policy is intended to be agnostic to the state-specific health information exchange model(s) and is recommended by the Arizona Health-e Connection Clinical/Technical Committee. Health Information Organizations (HIO) participating in Health Information Exchange (HIE) may have different policies, but should incorporate these basic policy requirements. For provider authentication the HIO must (1) register, (2) execute an agreement with, (3) verify the identity of, (4) provide digital identification for, and (5) maintain an account for all Users. Each of these processes has a set of minimal requirements that must be defined in order for the participants of the HIO to trust their trading partners and Users. The HIO must implement procedures for auditing access in HIE to confirm appropriate use. Pursuant to the American Reinvestment and Recovery Act of 2009, Title XIII, Subtitle D, the HIO and any business associates of Covered Entities must comply with the Privacy and Security Law (and associated provisions) of the Health Insurance Portability and Accountability Act (HIPAA) of 1996.
Disclaimer	This policy has not been fully tested and is not intended to represent a complete security policy for health information exchange. This work is intended as a general resource (or reference) and is not meant to provide legal advice to any person or entity that receives a copy of the work. Readers should consult with competent counsel to determine applicable legal requirements, as well as privacy and security experts.

Publication Version Control

Version	Date	Name	Purpose of Revision
Original	11-7-07	CSB	Initial Draft
Version 1.0	6-2-09	Kim Snyder	Add ASPC Policy / reformat document
Version 2.0	6-15-09	Kim Snyder	AzHeC review
Version 3.0	6-30-09	Kim Snyder	AzHeC review

Policy Definitions

- Authorized User (User) means a Participant and its employees and agents authorized by Participant to use the Health Information Organization (HIO) to access Data for the purposes of medical treatment and health care services to Participant's Patients.

- Data means Patient health information provided to an HIO by a Participating Entity and accessible to Authorized Users. For the purposes of this Agreement, Data means Protected Health Information (PHI) as defined by Standards for Privacy of Individually Identifiable Health Information, and the Security Standards, 45 C.F.R. Part 160 et seq. as amended from time to time.

- Data Provider means Participant who provides Data to the HIO.

- Electronic Credential means the credential used by the system to authenticate a User (i.e. digital signature).

- Health Care Provider means a clinician, hospital, pharmacy, laboratory, etc. that provides medical treatment or health care services to Patients and who has entered into an HIO Participation Agreement.

- Health Information Exchange (HIE) means the electronic movement of health-related information among organizations according to nationally recognized standards.

- Health Information Organization (HIO) means the organization that oversees and governs the exchange of health-related information among organizations according to nationally recognized standards.

- Non-repudiation means a party in a dispute cannot repudiate, or refute the validity of a statement or contract.

- Participant, Participating Health Care Provider or Participating Entity means a Health Care Provider who has entered into an HIO Participation Agreement, either as a Data Provider or a Data User. This can also be referred to as the "organization".

- HIO Participation Agreement means an agreement between a Participant and the HIO.

- Identity Service Provider means a service provider that stores identity profiles and offers services for managing those profiles.

- Patient means an individual receiving medical treatment or health care services from a Participant.

- Policies mean these HIO policies.

- Protected Health Information (PHI) means confidential, personal, identifiable health information about individuals that is created or received by a health plan, provider, or health care clearinghouse and is transmitted or maintained in any form.

- Registration Authority means an entity that is responsible for identification and authentication of Users.

- Regulated Healthcare Organization means an officially registered organization that has a main activity related to health care services or health promotion.

- Regulated Health Professional means a User who is authorized by a nationally recognized body and qualified to perform certain health services.

- Use Agreement means the Data sharing agreement between a Data Provider and the HIO.

- Permitted Use means the permitted use of health information by a covered entity under HIPAA as follows:[1]
    - §164.502. A covered entity is permitted to use or disclose protected health information as follows;
    - To the individual who is the subject of the information;
    - For treatment, payment, or health care operations, as permitted by and in compliance with §164.506;
    - Incident to a use or disclosure otherwise permitted or required by subsection (a)(1) of §164.502 provided that the covered entity has complied with the applicable requirements of subsection (b) of §164.502, subsection (d) of §164.514, and subsection (c) of §164.530;
    - Pursuant to and in compliance with an authorization that complies with §164.508;
    - Pursuant to an agreement under, or as otherwise permitted by, §164.510; and
    - As permitted by and in compliance with subsection (a)(1) of §164.502, §164.512, or subsections (e),(f), or (g) of §164.514.

[1] HIMSS Privacy and Security Toolkit Managing Information Privacy & Security in Healthcare, Protected Health Information: General Rules on Use and Disclosure, By Sandra J. Sinay, JD, LLM and Barbara Demster, MS, RHIA, CHCQM © January 2007 Healthcare Information and Management Systems Society. http://www.himss.org/content/files/CPRIToolkit/version6/v6%20pdf/D19_Protected_Health_Information_General_Rules_on_Use_and_Disclosure.pdf.

Note: The following section on patient consent contains what the policy should cover, however it does not define what the policy is. This section of the policy will be updated when a consent policy is determined in Arizona.

Consent Policy

Section 1

1.1 Patient Consent for Submission of PHI to an HIO

Three types of consent can be considered when asking Patients to allow their PHI to be part of the HIO:

- Opt-in;
- Opt-out; or
- No consent required.

The Policy should cover:

- What Participant/Participating Entity administers opt-in or opt-out process and secures relevant document (broadly called the "consent document" in this policy)
- Timing and duration of opt-in or opt-out
- Form of consent document
- Maintenance of consent document
- Access to consent document
- Data covered by the consent document
- Restrictions on Data subject to consent document
- Revocation/amendment of consent document

1.2 Notice of HIO Practices

The HIO will create a document ("Notice") containing the following information:

- Description of the HIO.
- A statement that the patient Data is included in the HIO.
- A statement that Authorized Users may access the Data for Patient's care and treatment.
- If opt-in or opt-out approach is adopted, how the Patient can have his or her Data added to or removed from the HIO, respectively. Note: Process will have to be identified for removing Data or limiting access even if Data not removed.
- If technology permits, whether/how the Patient can have access to the Data submitted to HIO.

1.3 Provision to Patients

The HIO will maintain the Notice and make it available to the public through the common portal. [In addition, a Participant will provide the Notice to a Patient at the date of first service delivery after the Participant's agreement to participate in the HIO and anytime requested by a Patient.]

Authentication Policy

Section 1 - Use Agreement

1.1 Requirement - Use Agreement

Health Information Organizations (HIOs) should have a Data sharing agreement with participating Providers that defines the privacy and security obligations of the Participants in the HIO. These agreements should require the use of appropriate authentication methods for Users of the HIO that depend on the Users' methods of connection and the sensitivity of the Data that will be exchanged. In addition, these agreements should reasonably ensure sufficient auditing requirements to determine access and use of the system, as well as secure transport of health information across the network, as appropriate.

Where there is cross-HIO exchange of Data, authentication and audit requirements should be defined through a Data Use and Reciprocal Support Agreement (DURSA). The DURSA should define their relationship between the HIOs and ensure, among other things, appropriate authentication and audit of Users and queries across HIOs.[2]

Each Participant is responsible for determining which of its employees and agents will be Authorized Users. A Participant may allow access to the HIO only to those employees and agents who need to use the HIO to access Data related to the Participant's care and treatment of Patients on behalf of the Participant.

Each Participant will develop and implement a training program for its Authorized Users. The training will include a detailed review of these Policies. In addition, each Authorized User must sign a certification that the Authorized User received, read, and understands these Policies and completed the training.

The HIO may also have a training requirement that must be taken into consideration during the User's training.

Section 2 - Identity Registration

2.1 Required Data Set for Authentication

A directory of Data sources within the HIO will include primary contact information of registered Users and identity attributes of Users, Participants and systems.

[2] Markle Foundation – Connecting for Health - http://www.connectingforhealth.org/ Reference: M2: A Model Contract for Health Information Exchange and P2: Model Privacy Policies and Procedures for HIE.

2.1.1 Data Source

A directory of Data sources within the target HIO is required, and must include name of the HIO and any Data sources within that HIO. The primary contact information for the Data in the directories should include primary contact name and any contact phone numbers.

2.1.2 User Identity Attributes

The HIO will collect the attributes as needed for unique identification of the User accessing the information in the HIO.[3] Required elements are profession, role, name, the practice address (not home address), identity service provider and Participant affiliation, business/legal address and License/ID. Other attributes that are required, if they exist for this User, includes:

- Specialization / specialty,
- Email address,
- National Provider Identifier (NPI), if applicable,
- Digital identity, and
- DEA Number, if one exists.

Every User of the HIO must be identified and affiliated with at least one Participation Agreement and the HIO system should allow for multiple affiliations. The HIO must have a method for identifying administrative Users who are working at the HIO with access to PHI.

2.1.3 Participant Identity Attributes

Identifying the Participant requires collecting the following attributes: organization name and email address. Other attributes are required if they exist, including:

- Digital identity,
- Electronic Data Interchange (EDI administrative contact,
- Clinical information contact,
- Service location, and
- Predecessor name and date of change.

If the HIO is a Regulated Healthcare Organization, all supporting Participant attributes above are required, as well as:

- License/ID,
- License status,
- Registered name, and
- Registered address.

Participants must have unique and persistent organization identifiers, and unambiguously equate to a corresponding Participation Agreement.

[3] 45 C.F.R. § 164.312(a)(2)(i) (requiring assignment of a unique name or number for identifying and tracking User identity).

2.1.4 Identity Attributes of the Data Source System

Identifying the Data source system requires the attributes of:

- System name,
- Digital identity,
- Participant affiliation,
- System IP address, and
- System domain name.

If there is no system domain name, the system IP address may be used. For purposes of identifying the originating electronic Data sources, it is required that a date stamp and at least one of the following is provided: the (1) system name, (2) IP system address, or (3) system domain name. Any identifying system types, such as the laboratory information systems, electronic health record system, emergency medical system, etc. should also be included.

2.2 Role-based Access

Proper registration requires the establishment of a defined role associated with the registered User. If role-based access is established it must be in accordance with the current RBAC (role-based access control) national standards, established by Health Level 7 (HL7).

2.2.1 Role

The individual's Participant role[4] is required for role-based access and should include the context of the Participant. If the healthcare functional role[5] or the structural roles[6] exists, they are also required.

Section 3 - Verifying Identity

3.1 Processes Used to Verify Identity

Identity is verified through authentication of the User, the Participant and the HIO's system.[7]

3.1.1 User Authentication

The methods for User identity vetting include both verifying the identity in person by a trusted authority and verification through the use of a demonstrated government-issued ID.

At a minimum, an HIO should establish a trusted relationship with a Participant where the authority to identify the Users is delegated to the Participant affiliated with that User (see AzHeC Model Participation Agreement as an example).

[4] As defined in the American Health Information Community (AHIC) Use Cases.
[5] The functional role is dynamic and is a function of the role in which you are acting.
[6] A structural role is persistent and can be mapped to professions that are recognized.
[7] 45 C.F.R. § 164.312(d) (requiring "procedures to verify that a person or entity seeking access to electronic protected health information is the one claimed").

A User requesting an identity tied to a regulated health professional must have provider licensure validation. It is acceptable that this occur along with the validation required of any employee of a licensed provider Participant.
Also, the HIO use of a specific naming convention as a primary identifier is required with a minimum assurance level used of Medium (knowledge/strong password/shared secret).

Identifiers can be issued by the HIO or they can be adopted from an external source as long as that source guarantees the uniqueness and persistence of any identifier.

3.1.2 Participating Entity Authentication

Participating Entity identity vetting can be accomplished through personal knowledge of a Registration Authority, affirming that the Participant is who they say they are by a demonstrated documentation of corporate existence.

The HIO is required to use a specific naming convention as a primary identifier, and this would include the use of object identifier (OID) or idiosyncratic naming, if either of these exists.

Participants must sign a Participation Agreement.

The minimum assurance level required for Participant authentication is Medium (knowledge/strong password/shared secret).

3.1.3 System Authentication

System identity vetting, ensuring the Data are coming from the system that they are supposed to be coming from, requires the assertion by an authorized Participant representative and/or the demonstration of association with another licensed Participant.

The system IP address is required.

The minimum assurance level required for system authentication is High (PKI/Digital ID).

3.2 Variations Based On Type and Location of User

3.2.1 User Identity, Role and Affiliation Verification

The User identity, role and affiliation must be checked for both revocation and expiration at the time of logon to the system. If either case pertains, use would be denied.

3.2.2 Signature Verification

The HIO is responsible for digital verification of non-repudiation signer credentials. Verification implies that:

- The credential was issued by a trusted authority,
- The credential is current,
- The credential is not suspended or revoked, and
- The credential type is appropriate (for example, physician or pharmacist), based on the role.

3.2.3 Assurance Level

It is required that the level of assurance be declared and should be communicated in terms of the then current National Institute of Standards and Technology (NIST) requirements. For the HIO to migrate Data to the User, an assurance level of at least Medium (knowledge/strong password/shared secret) is required.

3.2.4 Relationship to Patient

If the HIO is exchanging Data for purposes of treatment, the User seeking access needs to demonstrate or certify that they have a treatment relationship with the Patient.

3.2.5 Persistence

The use of persistence[8] of the source signature is required and is the responsibility of the HIO with its own Participants. The attributes required are persistent User signature, persistent Participant signature and persistent system signature. Non-repudiation of origin is also the responsibility of the HIO with its own Participants, and includes the attributes of User, Participant and system accountability. If source authentication exists it is also required.

3.3 Accommodations for Cross-HIO Verification and Data Integrity

3.3.1 Restricted Data Sharing and Data Integrity

The transmission of caveats regarding Data completeness is required to indicate that an entire record may not have been transmitted. The use of any existing, pertinent state-specific caveats should be included in the transmission.

3.3.2 Authentication of Recipient Identity (Organization / System / User)

The identity of the recipient must be established and the method of identifying recipients of communications can include, but is not restricted to: (1) derived from ordering system communications, (2) selected from a provider directory, or (3) derived from identifiers included in the request for information.

[8] Persistence indicates proof that Data has not been altered and is only valid during the communication session.

3.3.5 Data Integrity

For the purposes of cross-HIO verification, the ability to use digital signatures is required at the User level, if available, in order to ensure data integrity. If the digital signature is not available, cross state exchange is still permitted.

3.3.6 Persistence

The use of persistence of the source signature is required and is the responsibility of the HIO with its own Participants. The attributes required are:

- Persistent User signature,
- Persistent Participant signature and,
- Persistent system signature.

Non-repudiation of origin is also the responsibility of the HIO with its own Participants, and includes the attributes of:

- User Accountability,
- Participant Accountability, and
- System accountability.

If source authentication exists, it is also required, however if source authentication is not available cross state exchange is still permitted.

3.3.7 Data Authentication

For purposes of Data authentication, the use of a timestamp is required at the point of signature application.

3.3.8 Data Validation

Data validation of signer credentials issued by a trusted authority should be current, and the credential should not be suspended or revoked, and the credential type should be appropriate (for example, physician, pharmacist or hospital). For purposes of Data integrity, the Data validation should indicate that the Data has not been changed since the signature, and should have a timestamp at the point of signature application.

3.3.9 Type of Requestor

For verification purposes the requestor type should identify the HIO, Participant (entity) and the User (individual).

3.3.10 Signature Purpose

The signature purpose should be included as a minimum requirement, and any of the captured signature elements that exist should be included.

Section 4 - Identity Provisioning

4.1 Types and Levels of Factor Provisioning

Refer to Section 3 for the required assurance levels for User, Participant and system authentication

Section 5 – Identity Maintenance

5.1 Registration Data

5.1.1 Type of Data Maintained

The following types of Data should be maintained for each User:

- NPI, if applicable,
- DEA,
- Name,
- Specialty,
- Address,
- Email, and
- License Number.

5.1.2 Responsible for Maintenance

If the Users are registered by a Participating Entity then the maintenance is shared. Once the HIO receives the User profile from the Participant, it should be processed in a reasonable timeframe. For Users who are accessing the HIO through the Registration Authority, procedures will need to be in place at the HIO for maintaining the information.

Participants that provide the User credentials to the HIO should be responsible for validating who the Users are based on the User access at the Participant organization.

5.2 Re-registration

5.2.1 Forced Timeframes

Participant is responsible for informing the HIO of any change in status of any User whose access is regulated / controlled by the HIO and the HIO in turn is required to reset access as needed within a specified timeframe.

All Users must be affiliated with at least one Participation Agreement.

5.2.2 Information Validity at Re-registration

Information received at re-registration should be validated by the HIO using the same process used for a new registration**.** Re-registration must occur on at least a yearly basis.

5.3 Password Maintenance

Password Maintenance applies to the revoking of passwords, forgotten passwords and forced timeframes.

Password policy should apply to all servers, applications, databases, computer workstations, laptops, mobile computing devices and network equipment used to access PHI. Password procedures must cover the following:

- Password expiration timeframe,
- Prohibition against re-use of passwords,
- Minimum age of a password,
- Timeframes for locking passwords due to invalid logon attempts,
- Process for reissuing lost passwords, and
- Password strength defined using the National Institute of Standards and Technology (NIST) guidelines.

Suggestions for password maintenance include:

- Passwords expire every 90 days,
- A password can't be re-used for one year,
- Default passwords are changed on initial logon,
- A password can't be left blank,
- The minimum age for a password is one day,
- An individual account is locked after three consecutive invalid logon attempts,
- A lost password will require the User to logon and answer a security question to get the password reset, and
- A strong password is 8 characters in length using at least one upper case letter, one lower case letter, one number and one symbol.

5.4 Automatic Logoff

Automatic logoff procedures must be defined in the HIO policy. Recommendation is that a User be automatically logged off the system after 15 minutes of inactivity.

5.5 Simultaneous Logon

Simultaneous logon is allowed as long as there is a process in place to notify the User that they are logged in more than once and giving the User the option of logging out on the idle computer. Also an automatic logoff procedure should be in place to log a User off after a period of inactivity (see Section 6.4).

An audit check for abnormal logon patterns should be in place.

5.6 Delegated Maintenance Functions

Maintenance of the User access to the HIO is delegated to the Participant.

5.7 Termination Policies and Procedures

There must be a minimum timeframe for freezing / suspending an account for inactivity by a User. The recommended timeframe is 90 days.

A participant must terminate an Authorized User's access to HIO if:

- A User is no longer an employee or agent of the Participant,
- The Participant decides to terminate Users access to HIO for any reason,
- A User doesn't comply with terms and conditions of the Participation Agreement or Policies, or
- The HIO requests that a User's access be terminated. The Participant will notify the HIO immediately when the User's access to the HIO ends for any reason and the HIO will remove the User from the HIO.

Data Use Policy

Section 1 – Access

1.1 Patient Access

A Participant must provide a Patient with the Patient's medical record, including Data secured from the HIO upon the Patient's request.

1.2 Authorized User Access

An Authorized User may access Data only for care and treatment of a Participant's Patients.

Section 2 – Non-Compliance

2.1 Non-Compliance

Each Participant must implement procedures to discipline and hold Authorized Users accountable for violating these Policies or using, disclosing, or requesting a Patient's Data for any reason other than Participant's care and treatment of the Patient.

The disciplinary measures must include, but not be limited to, verbal and written warnings, demotion, and termination. The disciplinary measures may provide for retraining where appropriate.

Authorized Users must report to the Participant any noncompliance with these Policies or the Participant's policies on Data access, use or disclosure. Each Participant must have a process for Patients participating in the HIO to report to the Participant and/or HIO any non-compliance with these Policies and any concerns about Data access, use or disclosure. A Participant must immediately report any noncompliance with the HIO's or Participant's policies for Data access, use or disclosure to the HIO.

Data Submission

Section 1 – Data Submission

1.1 Accuracy
Participants may not provide the HIO with Data that they know is not accurate.

1.2 Amending Information
Each Participant must comply with applicable federal, state and local laws and regulations regarding Patient rights to request amendment of Data.

1.3 Limiting Information Provided to HIO
If a Participant agrees to a Patient's request for restrictions, the Participant must comply with the restrictions when providing Data to the HIO. If an agreed-upon restriction could affect another Participant's use of the Data, the Data Provider must notify the HIO of the fact that certain Data has been restricted, without disclosing the content of the restricted Data.

1.4 Special Information
Some Data may be subject to special protection under federal or state laws and regulations (for example, substance abuse treatment information held by federally-assisted substance abuse treatment programs, psychotherapy notes, and genetic testing information). The HIO will determine and identify special protection that may apply to Data under applicable law and notify Participants of these restrictions. Each Participant will be responsible for identifying Data subject to these special protections and following HIO rules regarding provision of this Data to the HIO.

Audit Policy

Section 1 - Logging and Audit Controls

1.1 Logon Monitoring[9]

As a part of logon monitoring, an audit log is required to be created to record when a User logs on to the network or a software application of the HIO. This includes all attempted and failed logons.

The generated audit logs must be reviewed on a regular basis that is based on an audit criteria developed in advance. Anomalies must be documented and appropriate mitigating action documented. The HIO should determine how long its state laws and risk management policies would require retention of this documentation.

The HIO will audit use of the system to assure appropriate use by Participants and authorized Users and system accuracy.

Random audits of Participants and Authorized Users may be conducted.

Random audits will be conducted by the HIO or an HIO-authorized third party. The HIO will notify the relevant Participant of any inappropriate use, or any privacy and / or security breach identified through the audit.

Unsuccessful logon attempts and access violations within the system must be logged.

1.2 Information Systems Review[10]

All HIE systems must be configured to create audit logs that track activities involving electronic PHI. The review of information systems shall include software applications, network servers, firewalls and other network hardware and software. The generated audit logs shall be reviewed on a regular basis based on audit criteria developed in advance. All anomalies must be documented and appropriate mitigating action taken and documented. All system logs must be reviewed. The review shall include, but not be limited to, the following types of actions: read, write, update, delete or copy. The HIO

[9] HIPAA Security Rule: 45 C.F.R. § 164.312(b) (requiring "hardware, software, and/or procedural mechanisms that record and examine activity in information systems that contain or use electronic protected health information"); 45 CFR § 164.308 (a)(5)(ii)(C) (requiring procedures for monitoring logon attempts and reporting discrepancies).

[10] HIPAA Security Rule 45 CFR § 164.308 (a)(1)(ii)(D) (requiring covered entity to "regularly review records of information system activity, such as audit logs, access reports, and security incident tracking reports").

should determine how long its state laws and risk management policies would require retention of this documentation.

Specifically:

- Network intrusion detection system activity logs must be reviewed.
- System Administrator authorizations and activity must be reviewed.
- Security Administrator functions must be logged and reviewed.
- Audit records must be readily available for 90 days and archived for a minimum of two years, or up to the six years used for the archiving of HIPAA disclosure.
- All destruction of audit logs and materials will cease in the event that there is knowledge of or involvement in a lawsuit.
- The HIO will develop and follow policies and procedures for document retention and destruction policies that will apply to audit logs and other documents produced.

1.3 System Review

Information system reviews should be conducted on a regular and periodic basis, as determined by the HIO.

Required system logging includes:

- System to system
- Source device
- Destination device
- Activities by each gateway
- Emulator and exchange website
- All Databases
- IP monitoring

1.4 Security Audit Practice

The frequency of performing regular security audits shall be determined at a specified frequency for the HIO. Auditing frequency typically varies by state/HIO (for example, Nebraska conducts audits annually, and Washington conducts quarterly audits). Audits shall be conducted at least annually as a minimum requirement, and the comprehensive audit procedures should be developed, documented and available. The HIO should also conduct periodic external audits.

1.5 Audit Trail and Node Authentication (ATNA)

The Audit Trail and Node Authentication Integration Profile[11] requires the use of bi-directional certificate-based node authentication for connections to and from each node. The use of certificates or encryption is required when the Data are signed or when it is specified by the HIO policy.

[11] IHE: Integrating the Healthcare Enterprise

Section 2 - Periodic Internal Compliance Audits

In order to appropriately assure the security of PHI, the HIO shall perform internal audits to evaluate their process and procedures.

Technical, physical and administrative safeguards established by the policies of the Participant are reviewed at least annually or when a major business process or technical change occurs.

2.1 Evaluation[12]

Under HIPAA security standards, administrative safeguards are required in order to exchange electronic PHI. Users of the HIO need to comply with all privacy and security regulations when exchanging electronic PHI.

Additionally, periodic technical and non-technical evaluations are required to reasonably ensure that the covered entity is compliant with the provisions of the HIPAA Security Rule. Audit criteria must be developed and documented in advance for this type of evaluation, known as a "compliance audit." Evaluations shall be performed at least annually and when any major system or business change occurs. The evaluation shall include:

- The generation of a compliance audit findings report,
- The documentation that an identified deficiency has been addressed, will be addressed in order of priority, or represents a risk that the Participant is willing to accept, and
- The retention of evaluation documentation for a minimum of six years.[13] Some states, however, may have longer retention requirements.

Section 3 - Information Access

3.1 Audit Controls[14]

Under HIPAA security standards, technical safeguards are required including policy, Data, and system requirements. All entities and their business associates must implement technical processes that accurately record activity related to access, creation, modification and deletion of electronic PHI.

3.2 Subject of Care Identity

To identify the identity of the Patient, a matching criteria policy is a required (for example, a match on Date of Birth, First Name, Last Name, Address, etc…)

[12] HIPAA Security Rule 45 CFR § 164.308 (a)(8) – Evaluation

[13] 45 C.F.R. § 164.316 (requiring retention for six years of policies and any required activity that must be documented under the rule). While 45 C.F.R. § 164.308(a)(8) does not require documentation of the compliance audit, it is a good business practice to do so and to retain that documentation for risk management purposes.

[14] HIPAA Security Rule 45 CFR § 164.312(b) – Audit Controls

3.3 Demographics That May Be Logged

An additional audit log should be performed by the HIO for a subset of the subject identity attributes that have been used when a Patient is found.

Section 4 - Need to Know/ Minimum Necessary for Data Management and Release

4.1 Information Disclosure

For purposes of information disclosure, a written policy is required which includes documentation of the following:

- The date and time of the request,
- The reason for the request,
- A description of the information requested, including the Data accessed, the Data transmission, any changes to the Data (adds, changes, deletes), and whether the Data were transmitted to another party,
- The ID of person/system requesting disclosure,
- The ID/verification of the party receiving the information,
- The ID of the party disclosing the information,
- The device used to authenticate the User, if applicable,
- The source Participant of an access request.

4.2 Auditing Access Where Individual Consent or Authorization is required

An authorization policy must be in place for any exchange of PHI, and requires the audit log to identify whether the release requires an authorization and, if so, whether the authorization was obtained.

A consent ID would be required, if it exists, for transactions that require a consent or authorization to be tracked for audit purposes.

Section 5 - Need-to-Know Procedure/ Process for User Access to PHI

5.1 Information Request

For purposes of information requests, a written policy is required that includes the following components:

- The date and time of the request,
- The reason for the request,
- A description of information requested, including the Data accessed, Data transmission, any changes to the Data (adds, changes, deletes), and whether the Data were transmitted to, or printed by another party,
- The ID of User/Participant/system requesting disclosure,
- The ID/verification of the User/Participant receiving the information,
- The ID of the Participant disclosing the information,

- The method used for verification of the requesting Participating Entity's identity.

An authorization policy must be in place for any exchange of PHI and requires the audit log to identify whether the release requires an authorization and if so, whether the authorization was obtained.

A consent ID is required, if it exists, for transactions that requires a consent or authorization to be tracked for audit purposes.

5.2 Audit Log Process

The HIO's audit log procedure shall be developed and documented prior to any HIO exchange of PHI and shall include identifying who is responsible for reconstitution and sharing audit log information. This includes identifying who is authorized to request the audit log. Also, the procedure shall identify whether or not the audit log information is available to individuals and if so, how that request is handled.

5.3 Data Authentication

If a document is shared with a patient, methods for assurance shall be established and shall indicate that Data have not been modified.

5.4 Preparing a Query Message

When an HIO generates a registry stored query, a registry or Record Locator Service (RLS) will be asked if there are records for this Patient [Refer to HITSP IS01].

Section 6 - System Capabilities

6.1 Audit Controls[15]

Audit logs are required to record activity specified by the HIO and the HIO shall periodically review the generated audit logs. This review of the audit logs is based on established audit criteria and shall include documentation of any anomalies. The HIO will document its mitigating action (including sanctions, security incident response team activation, etc., as appropriate). Audit logs must include at least the following:

- Unique User name/ID,
- Date/time stamp, and
- All actions taken (read, write, update, delete or copy).

Audit logs should either be in readable form or translatable by some easy to use tool to be in readable form, and must be examined with some frequency appropriate to the HIO in order to detect improper use.

[15] HIPAA Security Rule 45 CFR § 164.312(b) – Audit Controls

Additional audit controls include:

- A User's log recording logon and logoff Data will be maintained,
- Audit logs must be kept of HIO-enabled functionality with respect to accessing confidential and restricted Data initiated by Authorized Users and systems for access directly supported by the HIO,
- The system should have the ability to log queries; or alternatively the tables read must be logged,
- Row-level logging must be available on demand,
- A Participating Entity's identifier must be unique and persistent and unambiguously equate to a corresponding Participation Agreement, Identifiers can be issued by the HIO or they can be adopted from an external source as long as that source guarantees the uniqueness and persistence of any identifier,
- An HIO User's identifier must be unique and persistent,
- Audit records must include the User's identifier,
- Audit records will include the source (the Participating Entity) of the access request, and
- The User must have at least one Participant Agreement on record.

6.2 Audit Log Content

The HIO's audit logs shall include:

- User ID,
- A date/time stamp,
- Identification of all Data transmitted, and
- Any authorizations needed in order to disclose the Data.

The audit log shall include any system activity of use and disclosure of Data, and shall retain a record of information systems activity that occurs at established periodic time frames. The audit log for the use and disclosure of Data is also required to have a set report in place. Actions that have been identified in the event of discovered anomalies/breaches shall be included in the audit log. Also, logon auditing is required as noted under the HIPAA Security Rule auditing standard. If it exists, any state-specific[16] consent policy under which the Data were disclosed shall be tracked. This may be a global consent policy or a specific consent for each access.

If sensitivity restricted information exists, the HIO may choose to implement restrictions as permitted under their state.

6.3 Information Integrity

Information integrity is audited by logging that no change has occurred since the signature was applied and shall include a valid date/time stamp.

6.4 Data Authentication

[16] For example, the consent policy of the State of Massachusetts.

For purposes of Data authentication, the use of a valid date/time stamp is required.

6.5 Data Validation

For the purposes of Data validation, the signer credentials must be from a trusted authority (certificate authority), and the credential must be current and without constraints, and the credential must be of the appropriate type for the requested Data (for example, physician or pharmacist). To ensure Data integrity, credentials shall indicate that no change has occurred since the signature was applied and must have a valid date/time stamp.

6.8 Simultaneous Logons

Multiple concurrent logons must be logged and reviewed.

Arizona Health Security Project

Overview of Basic Authentication Concepts Useful to Health Information Organizations

Generated by the stakeholders supporting Arizona's participation in Phase III of the Health Information Security & Privacy Collaboration. The Collaboration is supported and funded by the U.S. Department of Health and Human Services.

In cooperation with the Arizona Government Information Technology Agency and Arizona Health-e Connection
3/31/2009

Table of Contents

1. Introduction and Purpose

Managers responsible for the security environment of a health information organization (HIO) focus on services associated with the 4 "A"s – Authorization, Authentication, Access and Audit. One of the 4As - *Authentication* - includes the responsibility for managing the identity credentials of those attempting to access healthcare data. The proper management of identity credentials allows an organization to *authenticate*, or unambiguously verify, who a user is before authorizing that user's right to access specific categories of information.

The purpose of this whitepaper on authentication is to provide an overview of authentication system characteristics, identify ways those systems can be evaluated, and provide a basic subset of common authentication options commonly used in the healthcare environment.

2. Context and Definitions

This paper discusses managing identity credentials in the context of authenticating healthcare providers accessing a health information exchange for treatment purposes. While the authentication of healthcare providers is just one example of the identity management services performed by HIOs, the fundamentals underlying provider authentication can be applied to other users of the system.

The following concepts apply to this authentication discussion below:

Identity – Identity is an individual person or institution needing access to healthcare data. An identity is not merely a role; it is an actual person or institution. It is not enough to know that the user is a doctor, but that the user is Howard M. Williams, MD.

Identifier – An identifier is an attribute that points unambiguously and uniquely to an identity. For instance, an employee ID number identifies only one employee in an organization.

Authentication – Authentication requires a user with an established identity to provide an identifier that will prove identity, establishing that the user is who he/she claims to be.

Health Information Exchange (HIE) – HIE means the electronic movement of health-related information among organizations according to nationally recognized standards.

Health Information Organization (HIO) - HIO means the organization that oversees and governs the exchange of health-related information among organizations according to nationally recognized standards.

3. Authentication System Characteristics

There are different factors and combinations of factors used in an authentication system. These factors are commonly grouped into the following three categories:

- Something you know (a password)
- Something you have (ID badge, cryptographic key, proximity card)
- Something you are (voice print or other biometric)

Section 4 of this report provides details of some commonly used authentication factors in each of the above categories. There is a brief description of how each factor works and a summary of the pros and cons associated with each factor.

Authentication systems can be made stronger by requiring a combination of factors to authenticate users. A system requiring two different categories of factors is stronger than one requiring two types of the same category. For example, a system requiring both a password (something you know) and a fingerprint scan (something you are) is stronger than one requiring a password and a PIN (both something you know). When more than one category of factor is used, the system is referred to as having multi-factor authentication (two-factor or three-factor). Using one or more methods that all belong to the same category is termed single-factor authentication. In all cases, the terms can apply to either people or objects. Thus, a computer can present its identifier to another computer using something like a digital certificate, just as a user can provide an identifier consisting of a password or a token.

The goal of a healthcare authentication system is to protect healthcare data, but the system must always balance the user's need for quick and easy access against the requirement to keep the healthcare data secure by applying stringent requirements for establishing a user's identity. HIOs understand that they can only create and maintain trust in their systems by avoiding authentication errors.

To better understand possible authentication errors, it is helpful to identify, describe and compare the varying levels of authentication. The National Institute of Standards and Technology (NIST) in its Electronic Authentication Guideline identified four levels of assurance. Those levels and their characteristics are summarized in the table below: (William E. Burr, April 2006)

Level #	**Type**	**Level of Assurance**	**Characteristics**
Level 1	Single factor, no identity proofing	Little confidence user is who they claim to be	Simple password challenge-response protocol allowed – secrets may be revealed to verifiers
Level 2	Level 1 + identity proofing	Somewhat confident user is who they claim to be	Passwords, PINs, tokens; requires approved cryptographic techniques
Level 3	Level 2 + multi-factor authentication	Very confident user is who they claim to be	Three types of tokens – soft cryptographic token, hard cryptographic token and one time password tokens can be used

Level #	Type	Level of Assurance	Characteristics
Level 4	Level 3 + hardware cryptographic tokens	High confidence user is who they claim to be	Hard cryptographic tokens are required

In addition to understanding the relative ease of use and characteristics of each authentication level, HIOs must consider the expense and complexity associated with implementing and maintaining each level. Increased levels of assurance can be costly and complex. Complex systems often then suffer from low user acceptance. When determining the level of assurance needed, organizations must carefully balance expense and complexity against the risk associated with an authentication failure.

4. Authentication Options

The following section provides detailed examples of authentication methods by category and provides general information about how specific authentication factors work, along with important pros and cons of using that authentication factor.

Something You Know

The factor category of *Something You Know* authentication includes security factors based on information an individual retains by memory or in a written form that can be replicated and communicated by standard communication means, e.g., mail, fax, over the phone, or e-mail. Security may be associated with distributing the information, but the information itself is not encrypted. Examples of these factors may be passwords or phrases, PINs, or responses to pre-determined questions in a challenge/response scenario. The advantage of these factors is their widespread current use for access to networks and application systems, the user community's familiarity with them, and their universality of use across cultural and political environments. Costs of these factors are primarily limited to the distribution and re-issuance of the information through a help desk or through a web-based application/e-mail redelivery scenario like those used by most web subscription services. Their major drawback is that the information (the password or phrase) can be forgotten or lost, disclosed to inappropriate individuals, or guessed/hacked by software programs. In these cases, re-issuing the factor is the only available method of recovery. Installation and implementation costs are relatively low, and range from current provider-based systems which might carry no implementation cost, to standalone software products that would require costs of up to $8,000 for software and $3,000 for servers. These higher-end systems would easily sustain thousands of user access records, bringing the per user cost down below the $1 threshold. It is generally accepted that *Something You Know* factors are the least secure factors and are not sufficient as a single factor for authentication. Multiple instances of *Something You Know* can be used to increase the security level, but multiple instances are also likely to

increase the error rate as every response must be correct to complete the authentication session.

USER PASSWORD

How the technology works	The user generally provides an *identifier* (User ID) previously obtained by providing appropriate proof of *identity* to the managers of the authentication system. The user then chooses a password to be used with the identifier to gain access to the system. The managers of the authentication system know and manage all the User IDs associated with the system, but only the user knows both the identifier and the chosen password.
Pros	• High user acceptance and widespread use • Most systems have the capability to enforce secure passwords built in, allowing organizations to acquire and configure authentication controls easily and inexpensively • Low per user cost
Cons	• When password formats become complex enough to heighten security, users have increasing difficulty remembering and using them appropriately • Requires creation and continual enforcement of strong associated security policies to provide effective protection • Users can easily share their passwords and may do so inadvertently by retaining written records of them • Become less secure over time because users reselect the same password for multiple applications and because these applications generally do not require PINs to be reset at frequent intervals

Because the requirement to provide a User ID and Password for authentication is ubiquitous in today's security environment, it is worth examining requirements for user passwords in detail. Many systems contain configurable password requirements that allow organizations significant control over the level of security actually in effect. It is essential that organizations review the default password requirements set in their systems and reconfigure those requirements to meet their specific security needs. Some good options that can be chosen to improve security include:

- Allowing or requiring a mix of upper and lower case characters, numbers and special characters, and requiring a minimum password length
- Automatically forcing passwords to expire periodically and restricting reuse of passwords
- Restricting the number of consecutive unsuccessful attempts to log in
- Setting sound security procedures in place for revoking and resetting passwords
- Making system users responsible for securing their passwords and accountable for system activities performed under their logins
- Associating a user ID and password with one specific individual, never with multiple individuals such as those performing the same role.

Training system users about the value of sound security policies can increase their acceptance of stronger password requirements and significantly reduce the risk of an authentication failure.

PERSONAL IDENTIFICATION NUMBER (PIN)

How the technology works	A PIN is a 4 to 7 digit number chosen by a user, usually as one part of a multi-factor authentication system. The user is expected to commit the number to memory and provide it as an electronic signature that allows the system to authenticate the user. PINs are normally entered using a keypad and are usually not sent across the network to avoid interception.
Pros	• Quick and easy to enter • Short enough to be committed to memory • Can easily be used on devices without full keypads
Cons	• Not secure enough to be used as a single factor to authenticate • Often shared with friends or relatives • Become less secure over time because users reselect the same PIN for multiple applications and because these applications generally do not require PINs to be reset at frequent intervals

CHALLENGE/RESPONSE QUESTIONS

How the technology works	A system may ask a user for multiple pieces of information, or for information, such as a previous address, that is historically based and not normally found somewhere like the user's wallet. The system may also vary the information requested with each access to decrease an imposter's likelihood of having the necessary information. The challenge/response scenario can be made even more secure if users are able to configure some of the challenge questions.
Pros	• High user acceptance and widespread use • Allows validation of a broad range of users such as consumers, who do not have consistent unique identifiers such as an employee number or license number associated with the system they are accessing • May be required as needed to protect systems sometimes accessed from public or shared computers
Cons	• Requires additional data to be stored for each user • Challenge/response scenarios are typically implemented by more complex and expensive systems • Time requirements to complete the authentication process can be too lengthy for some business processes

Something You Have

Authentication can be based on something a user has. Various token and card technologies support this type of authentication. Two-factor authentication is an important

authentication process that involves two independent means of authenticating the user. Something the user knows, such as a secret password (for example, PIN or password) can be required, as well as the possession of a device. Without two-factor authentication, a stolen device would allow an attacker to impersonate the user of the device, but with two-factor authentication, the attacker would still have another authentication requirement to meet.

Authentication factors based on something a user has include:

MAGNETIC STRIPE CARDS

How the technology works	Magnetic Stripe Card technology has been in use for decades and is found in credit cards and ID cards, and is used for building access, mass transit and many other uses. The stripe uses magnetic material to store data. Data is encoded by setting the polarities of the magnets, and the readers detect changes in polarity signifying a binary value of "0" or "1." Magnetic Stripe Cards are commonly one part of a two-factor authentication process requiring the user to know a 4 to 7 character PIN whenever the card is used.
Pros	• User acceptance is high • Has a history of successful use in everyday applications • Add security because they are not in human readable form • No moving components, physically robust
Cons	• Easy and inexpensive to duplicate • Can easily be lost or stolen • Data can be damaged by stray magnetic fields • Requires close contact with the card reader

DIGITAL CERTIFICATES

How the technology works	Digital Certificates are issued by a server and are unique for each user. Users can be sent an email containing their user ID, a one-time password and a digital certificate enrollment web address. The user installs the digital certificate (software) on the computer that is used to access a secure website. Upon login, the server sends its own digital certificate to the user's computer and requests the user's unique digital certificate. After these certificates are exchanged and verified, the login is completed and the user can access the secure website.
Pros	• Less expensive than implementing a hardware token solution for two-factor authentication • Easy to use because the user ID is filled in by the certificate and the user supplies only a password • Hard to hack because the user would have to modify the certificate without disturbing its validity

Cons	• If the user computer containing the certificate is stolen, only the user password is needed to complete two-factor authentication • Issuing certificates inside the organization requires modification to every user's Internet browser • Outsourcing issuance of certificates to a trusted third party can be expensive

CHALLENGE/RESPONSE CARDS (SMART CARDS) AND CRYPTOGRAPHIC CALCULATORS

How the technology works	Challenge/Response Cards and Cryptographic Calculators are cards sized like credit cards with an embedded Integrated Circuit Chip providing medium to high data storage capabilities. The card has a small gold plate on the front instead of a magnetic stripe on the back. The card can make decisions about the data stored and can perform cryptographic calculations. The Smart Card is inserted into a reader and the user generally establishes identity via a PIN or biometric. Electrical connectors transmit data to and from the microchip.
Pros	• More secure than magnetic stripe cards and supports laws to protect individual data privacy • Optimize portable solutions for information access • Have a large enough capacity to store broad profiles • Can have information easily added or deleted from the memory • Can perform decision making via the chips processing capabilities to enable such things as data encryption • Meet user demands for small and secure ways to carry data
Cons	• Cards are inexpensive, but the readers can be costly • Liability issues if lost or stolen • Difficulty assessing responsibility for lost data and transactions when activity occurs offline • Cards and card accepting devices have to be manufactured to identical specifications

PROXIMITY CARDS OR RADIO FREQUENCY IDENTIFICATION DEVICE (RFID) FOR AUTHENTICATION

The proximity devices described below represent a sub-category of *Something You Have* authentication factors sometimes referred to as *Somewhere You Are* devices.

How the technology works	Proximity Cards are contactless cards that have an embedded antenna and communicate by radio frequency signals without physical contact. The cards are powered by inductive coils and send a signal through capacitive plates. Controllers validate the cards and perform read/write functions. Information is then sent to the host computer which makes appropriate decisions. One prevalent form of these cards is the RSA SecurID. This key fob device continuously displays a numeric code (an encrypted form of the time), and each SecurID encrypts with a different key. An RSA SecurID card user responds to server challenges by typing the numeric code. The server knows what key is associated with each user's card, and can then authenticate a user. Wal-Mart is putting RFID tags on every product they shelve and both the German and U.S. governments are including them in passports. There are two types of RF proximity cards: passive and active. Passive cards are not powered, and use the RF energy from a requesting device to reply with information stored by the card. Active cards are powered and broadcast information, allowing a receiver in range to query the card.
Pros	• More secure than magnetic stripe cards and support laws to protect individual data privacy • Optimize portable solutions for information access • No contacts to deteriorate • No chance of an electric shock passing through the contacts and damaging the integrated circuit • Clear technical specification standards are established
Cons	• Liability issues if lost or stolen • Cannot be updated in real time • Less able to support multiple applications • Some proprietary standards are currently in use

Proximity cards have the following special characteristics:

a. Since these security factors are based on the location from which the individual is attempting to initiate access to health information, being in the location may validate the appropriateness of the context for the requested access to data. Example locations could be within the Emergency Department of a trusted hospital facility or a room housing the computer system used to access the health information database. In these examples, a passive proximity card could be activated and authenticate a user when the user carrying the device approaches within a designated distance from the secure location.

b. Having the context in which data will be used can be very important in a healthcare application. For example, requests that originate from within an emergency facility may qualify for data overrides allowing otherwise restricted information to be made available. A disadvantage is that a proximity card is not inherently personal to the individual. Anyone in possession of the card would be allowed access to the location, and more than one individual may be present in

the location at a time. Secondary checks, such as a user ID/password would need to be employed to link a specific individual to the access scenario.

c. The error rate for such devices is very low. The cards have no moving parts, and they generally do not malfunction. The readers similarly have few moving parts and are often used in less than ideal physical locations. Speed of authentication is measured in seconds with two or three seconds being typical.

d. Hardware for turnkey proximity systems tend to be sized for large enterprises with licensing for software scalable to the size of the individual facility. A hardware "vault" (a secure and redundant server with a paired secondary server) may typically cost around $19,000 and have the capacity to handle 25,000 users. A single card reader may be relatively inexpensive at under $200, while individual cards may be around $6 each. Licensing for the software may start at $20 to $30 per user with discounts starting at blocks of 500 users. It is realistic to consider that implementation of a turnkey system could be done in five days at a cost of $10,000. Support and maintenance of these systems require minimal staff time. Typical installations of 200,000 users can be supported by one half-time employee. A 400-user installation would only require a few hours a week of support time.

e. Use of proximity devices can be adversely affected by the presence of metal on or near the individual and their range of sensitivity is reduced by the presence of water. Since the body is largely water, placement of the card on the individual can reduce its effectiveness.

f. Implementation can be streamlined because self-enrollment can be done by the individual if a user ID/password is assigned with deployment of the card. Recovery from failure can also be managed by the individual when a user ID and password is used as a backup authentication method.

Something You Are

For security factor purposes, the category of *Something You Are* includes technologies that measure and identify biological characteristics (or biometrics) of an individual, such as her fingerprints, hand structure, facial features, iris patterns, etc. Additionally, biometric technologies often also include analyzing human behavioral characteristics, such as voice recognition and signature dynamics. All biometric technologies are very effective for identification, due to the distinct characteristics of each person. Additionally, since this type of technology is integral to something that a person is, the technology is more reliable, cannot be forgotten, and is less likely to be lost, stolen or otherwise compromised. The performance of a biometric device is usually measured in terms of its "false accept rate."
The following table compares characteristics of biometrics.[1]

[1] Yun, Y. W. (2003). *The '123' of Biometric Technology.* http://www.cp.su.ac.th/~rawitat/teaching/forensicit06/coursefiles/files/biometric.pdf.

- Universality indicates how common the biometric is found in each person;
- Uniqueness indicates how well the biometric separates one person from the other;
- Permanence indicates how well the biometric resists the effect of aging;
- Collectability measures how easy it is to acquire the biometric for processing;
- Performance indicates the achievable accuracy, speed and robustness of the biometrics;
- Acceptability indicates the degree of acceptance of the technology by the public in their daily life; and
- Circumvention indicates the level of difficulty to circumvent or fool the system into accepting an imposter.

Biometrics	Universality	Uniqueness	Permanence	Collectability	Performance	Acceptability	Circumvention
Face	H	L	M	H	L	H	L
Fingerprint	M	H	H	M	H	M	H
Hand Geometry	M	M	M	H	M	M	M
Keystroke Dynamics	L	L	L	M	L	M	M
Hand Vein	M	M	M	M	M	M	H
Iris	H	H	H	M	H	L	H
Retina	H	H	M	L	H	L	H
Signature	L	L	L	H	L	H	L
Voice	M	L	L	M	L	H	L
Facial Thermogram	H	H	L	H	M	H	H
DNA	H	H	H	L	H	L	L

Ranking: H=High, M=Medium, L=Low

While details in the security technology table include hand geometry, retina/iris patterns, facial recognition, voice recognition, signature dynamics, palm scan, keystroke dynamics and fingerprint scan, most of these technologies would not be acceptable for regular use in the healthcare environment. The types of biometric technologies that are most likely to be used in healthcare include fingerprint scan, palm scan, signature dynamics or keystroke dynamics. Therefore, we will explore these biometric technologies in greater detail.

The information in the security technology tables below, unless otherwise noted, came from the Biometric Technology Application Manual.[2]

FINGERPRINT SCAN

How the technology works	Fingerprint verification systems identify locations of small lines or ridges found in the fingerprint. The system stores features from impressions created by the distinct ridges.
Pros	• Robust • Accuracy and reliability is good for most systems • Fingerprints are stable throughout an individual's lifetime • Systems are easy to use, typically requiring the user to touch a plate with his/her forefinger • Most systems are relatively inexpensive and easy to integrate
Cons	• Systems are not highly mobile. They generally need to reside in the location of a computer within the healthcare entity. Remote implementation requires installation of fingerprint plates on laptops, keyboards or mice and an Internet connection for verification. • User error can be high if individuals are not accurately trained in system usage or are not motivated to cooperate when placing their finger on the reader. • Condition variation, such as wet or moist fingers, cuts, dirt or grease on fingers may alter the authentication process. • Occupational impact (such as hands in constant contact with abrasive or chemicals) may interfere. This may be especially applicable to healthcare, depending on the environment.

SIGNATURE DYNAMICS

How the technology works	Relies upon the manner in which a signature is written, using a stylus on a pressure sensitive tablet to track hand movements (specifically, the changes in pressure, position and velocity of the pen during the course of signing). A pressure-sensitive tablet or a PDA can be used.
Pros	• Very difficult to duplicate behavioral characteristics of signing a signature • Reasonably accurate in operation • High level of resistance to impostors • Considered non-invasive because people are very accustomed to signing their signature for transaction authorization
Cons	• Some systems have problems with individuals whose signature is different each time it is signed and with left-handed individuals. • Data acquisition difficulties exist: • Signatures can't be too long or short.

[2] *Biometric Technology Application Manual Volume One: Biometric Basics.* (Summer 2008). www.nationalbiometric.org: National Biometric Security Project.

	• User must complete enrollment and verification in same conditions (i.e., sitting, standing, etc.) • Prone to an increase in the error rate over time. • Has not become a market leader like other biometric technologies. Most likely biggest market application will be in document verification and authorization.

PALM SCAN

How the technology works	Made up of principal lines, wrinkles and ridges, categorized into "geometry" features (width, length, area), line features (principal lines, course wrinkles, fine wrinkles) and point features (minutiae and delta points). Similar to fingerprints.
Pros	• Stable throughout one's lifetime, are unique and cannot be forged or transferred • Less likely to be worn away (unlike fingerprints) due to excessive wear or occupational abuse (note: there is no data to support this claim) • Could be combined with fingerprint technology or hand geometry systems as an additional layer of security or a back-up in case one of the other technologies doesn't read correctly
Cons	• Similar limitations to fingerprint technology • Excessive dirt, grime or oils on the skin can dirty the platen, causing possible false reads or non-reads of users. • Some users hesitant to touch something that many people have touched before them. • Failure to touch all or enough of their palm onto the imaging platen can cause false or inadequate reading.

KEYSTROKE DYNAMICS

How the technology works	Also referred to as typing rhythms. An automated method of analyzing the way a user types at a terminal or keyboard, examining dynamics such as speed, pressure, total time taken to type particular words, and the time elapsed between hitting certain keys. Two distinct variables: "dwell time"- amount of time a person holds down a particular key, and "flight time"- which is the amount of time it takes between keys.
Pros	• One of the easiest biometric technologies to implement and administer. Completely software-based, no new hardware needed. Utilizes the existing computer and keyboard. • Easily integrated with other, existing authentication processes. • Minimal training required, since most people are already used to typing in a user ID and password. • Static vs. continuous approaches. Static approaches provide more robust user verification than simple passwords, but do not provide continuous security. Continuous verification monitors the user's typing behavior throughout the course of the interaction.

	• The extent of statistical correlation needed to declare a match between the enrollment template and verification measures can be modified to accommodate the required security level. • Allows for a more robust authentication system than traditional password-based alternatives alone.
Cons	• Does not ease the burden of having to remember multiple passwords, nor does it decrease the administrative costs of having to reset passwords or enhance convenience to the individual using the system. • Cannot be used in one-to-many verification applications due to the limitations in the matching accuracy. • Has not been fully tested in wide-scale deployments.

DIGITAL SIGNATURES

While this document's primary purpose is to provide information on managing the identity credentials of those attempting to access health records for treatment purposes, it would be remiss if the concepts of digital signature for the authentication and non-repudiation of a signer were not included. Electronic documents containing digital signatures are becoming more prevalent in the healthcare industry, and requirements for using them continue to be proposed as part of many health privacy and security efforts.

When a medical record is digitally signed, a unique electronic "fingerprint" is added to the record. The "fingerprint" is unique to the combination of signer and document and binds them together. When the same individual digitally signs a second record, the combination of the signer and the new document generate a different "fingerprint." Thus the primary use of digital signatures is to guarantee the integrity of a signed document and to link the signer to the document. It ensures the intent and accountability of the user with respect to the document and makes certain that it has not been changed since it was signed.

While the terms *"electronic signature"* and *"digital signature"* are sometimes used interchangeably, they serve different purposes. Electronic signature usually refers to a graphical or digitized image of a person's handwritten signature, a symbol, or even a voiceprint. Signature pads used to capture electronic signatures are low in cost and readily available. Electronic signatures are physically or logically incorporated in a document, and may even be added without the signer's knowledge as a standard for the organization. They are generally considered to be forgeable.

Digital signatures, conversely, are based on Public Key Infrastructure (PKI), an industry standard. They cannot be copied or altered, and are preferred for sealing and authenticating documents.

How the technology works	A user presents credentials to a Certificate Authority or a trusted third party and, if the credentials are certified, receives a pair of keys, one public and one private. The keys are used together to encrypt data using a process called hashing that converts the document into a unique "digest" representing the original document. The private key is kept solely by the user, and is used to validate incoming messages and sign outgoing messages. The public key is used to validate the private key owner's signature and the integrity of the signed document.
Pros	• Supports all signature properties - uniqueness, persistence, transportability, independent verifiability, integrity and non-repudiation • Becoming the preferred method for sealing and authenticating electronic documents • Standards for healthcare applications are already being published • The federal government has standardized its use of digital signatures
Cons	• Can be expensive and costly to administer • Not yet integrated into many vendor applications • Has many other implications for the organization with respect to interoperability, policies and procedures, complexity of upgrading applications and capabilities for handling digital documents

5. Evaluating Authentication Methods

In order to develop an appropriate authentication system, HIOs should evaluate a variety of authentication methods and choose a method or combination of methods that will make electronic health information both secure and usable. Comparison tools used include the following:

- Error Rate
- Cost
- Ease of Use
- Ease of Implementation
- Ease of Maintenance

Error Rate

Two types of error rates are associated with authentication methods. The first type is a False Acceptance Rate (FAR) specifying the likelihood that an imposter will access the system. FAR is related to the speed of the system, with systems that quickly verify identities generally having higher error rates. The second type of error rate is a False Reject Rate (FRR). FRR specifies the likelihood that a genuine user will be rejected by the system. FRR errors generate a very high level of frustration on the part of system users and can have serious consequences in the healthcare environment. The FRR and FAR are commonly plotted on graphs. The False Acceptance Rate (FAR) goes down as the sensitivity of the system increases, while the False Rejection Rate (FRR) increases as

the system becomes more sensitive. The point at which the FRR and FAR are equal is call the Crossover Error Rate (CER). The CER is a standard assessment point used to compare the accuracy of different authentication methods. Figure 1 below illustrates the statistical concept of these error measurements.

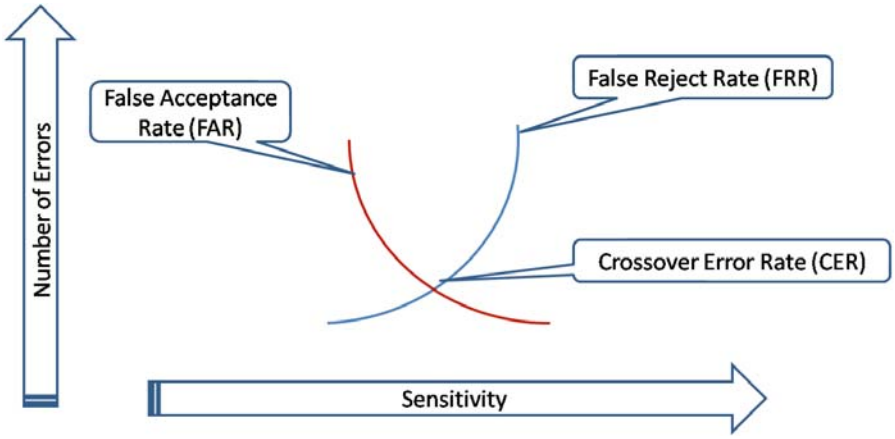

Figure 1

Cost

There are several costs associated with an authentication method, only one of which is the *initial purchase cost* of the hardware and software used for authentication. The *implementation cost* includes the work done to plan, test and integrate the authentication method into the health information exchange system. This cost can be particularly significant if legacy systems remain operational. All system users and support personal require training and there are *training costs* both initially as the system goes into operation and ongoing as personnel change and the system requires updating to maintain or increase its effectiveness. The *maintenance and replacement costs* associated with some authentication devices can be a significant part of the overall system cost, and there are ongoing costs associated with maintaining and upgrading authentication software. *Labor costs* vary widely. For example, the cost per user can rise quickly when users are widely dispersed and there are "hands on" support requirements.

An effective strategy for providing the labor required to support user access and maintain systems availability must be designed around the specific authentication method(s) to be used. In assessing the cost of an authentication method, it is important to use the most current information available, as the cost of more commonly used systems often decreases as their associated technologies mature and more tools to manage them become available.

Ease of Use

Three important characteristics relate to ease of use. They are the user's view of the system, the technical view of the system and the context in which the system is being used.

For health information applications, the primary system user considered is generally the healthcare provider. The provider needs to be authenticated quickly and easily. Since systems having quick and easy access also have higher error rates, the challenge is to find an authentication method that reduces errors but is still acceptable to the provider. Other system users may be able to tolerate a work flow that requires a more complex authentication system. For example, administrative users continually working with healthcare demographics would generally be more accepting of a multi-factor or multi-step authentication process. It is possible that having more than one authentication method in place would be desirable.

From a technical perspective, an organization must have the appropriate resources to support its authentication system. One of the most common and straightforward authentication processes requires users to provide a user ID and password to gain access to the system. Up to half of help desk calls, however, are related to password problems. An organization unable to provide immediate support for password-related problems will not pass an ease of use test. If the authentication system is device-dependent, evaluating both the user's acceptance of the device, and the technician's ability to keep it operational, are necessary.

Considering the context in which authentication takes place is critical. Systems requiring complex passwords are highly recommended. But entering a complex password on a mobile device without a standard keyboard can be challenging for users, especially in time-critical situations. Allowing users to be logged on to more than one system device may make sense in an emergency department. But if the same user is permitted to log on at two separate remote locations simultaneously, there may be an authentication system failure, depending on the authentication policy. The authentication system and its context of use must be complementary.

Ease of Implementation

Technical, training and time requirements all contribute to the ranking of ease of implementation. Multi-factor authentication systems raise all three requirements significantly.

Technical and training efforts to implement authentication systems are interrelated. If technical support for implementation will be provided from within the organization, the technicians should be fully trained and involved at the outset of the project. If technical support for implementing the authentication system will come from outside the organization, then the training needs to focus on transferring the more limited skills necessary to internally support the system when it becomes operational. Availability of users for training is a challenge in the healthcare environment, and small, intensive training sessions may be required along with larger forums to prepare all users for the system

All authentication systems require both system administrators and users to follow well-defined security policies and procedures. New authentication systems invariably require new or upgraded security policies and procedures to be in place within the organization.

These policies and procedures must be developed, and sufficient related training provided, in addition to any required hardware and/or software training.

Ease of Maintenance

Evaluating statistics around help desk requests can be very helpful when comparing systems with respect to ease of maintenance. Organizations using authentication systems similar to those being evaluated will often have service level agreements (SLAs) in place and manage service calls through an automated incident management system (e.g., issuance and tracking of trouble tickets). They can easily provide data indicating what kind of maintenance effort may be required.

Many authentication systems provide management tools that can effectively reduce the overall cost of maintenance. These tools can be expensive, but also often offer high returns on investment. When the management tool cost is compared to the related system administration labor savings, over the expected life of the authentication system, management tools are often easier to justify.

6. Organizational Factors

Organizational factors play a big role in selection of an authentication system. Authentication requirements must be viewed in the context of an organization's unique business operations and address the specific level of risk identified in those operations. The organization must then manage those risks with an effective audit program.

Risk

Risk analysis considers the probability of a negative event occurring and its impact on the organization. Risk management involves identifying risks, assessing them and taking steps to reduce them to an acceptable level. Organizations need to identify what areas of risk pose the greatest danger to their business. For any healthcare organization, failure to properly authenticate users accessing a system to obtain protected health information poses a significant risk. The degree of risk is related to such elements as the organization's size and general security environment, as well as the type of data available to system users. New healthcare regulations increasingly expect organizations to be fully accountable for securing their information and outline significant penalties for noncompliance. Enforcement of these penalties sharply increases the risks of tolerating lower standards for security-related actions, like authentication. In the healthcare field, a loss of trust can have even more important consequences and a serious security breach can jeopardize the business viability of the organization itself. Having a secure and appropriate user authentication process in place for all system users is one essential way to help build and maintain trust in the organization.

Audit

An effective audit process evaluates an organization's ability to manage risk, documents adherence to security policies and procedures, assesses the security environment and confirms adherence to regulatory requirements. With respect to an authentication system, an audit process is required to determine who accessed the system after the fact, and it

must be sufficient to assure accountability. It requires that all users be authenticated before they are given any data, and that a record of the user's access is created for subsequent audit. The concept of non-repudiation is critical. Non-repudiation refers to the ability to provide proof of the integrity and origin of data that can be verified by any party. A secure authentication system allows an organization to prove who accessed the system (during the provision/creation of data), thus supplying one very critical piece of the information needed to establish non-repudiation.

7. Conclusion

The components of an organization's security policy are commonly referred to as the 4As – Authorization, Authentication, Access and Audit. This Overview of Basic Authentication Concepts Useful to Health Information Organizations introduces some basic concepts essential to authentication. Having a proper authentication system in place for a system user means that an organization can unambiguously verify who a user is before permitting access to protected health information. This capability is essential to building the trust needed to allow organizations to exchange health information, and furthers the goal of having complete and correct health information available when and where it is needed.

The information provided in this paper is a starting point for organizations forming or reviewing the systems they will use to authenticate their users. It should be considered along with the most current technical and standards information available, and the recommendations from a thorough risk assessment, to select a secure and appropriate authentication system for the organization.

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Guide to Adoption of Uniform Security Policy

March 2009

Table of Contents

Introduction

This Guide to Adoption of Uniform Security Policy ("Adoption Guide") was developed by the Adoption of Standard Policies Collaborative (ASPC), part of the Health Information Security and Privacy Collaboration (HISPC) initiative. Sponsored by the Office of the National Coordinator (ONC) for Health Information Technology, HISPC was formed to address privacy and security issues that may be barriers in sharing electronic health records.

One of the major challenges identified during the HISPC project was that organizations were hesitant to electronically exchange health information with each other because of mistrust due to the variation in their privacy and security policies. The Adoption of Standard Policies Collaborative was formed to develop an approach and process to identify and reconcile the variation in how organizational security policies are implemented across different electronic health information exchange models. [1]

This Adoption Guide outlines a process to define and harmonize minimum policy requirements specifically for authentication and audit and provides a framework to assist health information organizations (HIOs) as they seek consensus on privacy and security to support the exchange of electronic health information. The context for application of these policies is providers accessing patient health information for treatment purposes across HIOs.

Throughout this document the terms "minimum policy requirements" and a "Uniform Security Policy" have specific meanings, as follows:

- **Minimum policy requirements** are an agreed upon consensus set. They refer specifically to the policy requirements that the ASPC developed through extensive individual state review of current policy and the subsequent comparison and negotiation of these requirements across the 10 states in the collaborative. These minimum policy requirements become the framework across which the Uniform Security Policy was built. They are reflected in the Individual Requirements Review document, which can be found within the Final Report of the Adoption of Standards Policies Collaborative, located on the following website: www.okhca.org/aspc
- The **Uniform Security Policy** is an aggregated set of policies that the ASPC recommends organizations adopt as a minimum policy to allow for interoperability with other organizations for health information exchange.

This document is the culmination of a 12 month effort to develop consistent common and minimum policies for authentication and audit. The states that participated in the ASPC were Arizona, Colorado, Connecticut, Maryland, Nebraska, Ohio, Oklahoma, Utah, Virginia, and Washington. Each state, through their governor's office, had the approval of the state government to participate in the Collaborative.
Additionally, many other policies and business practices that support exchange among organizations must be examined and because only 10 states and respective organizations within them were involved in this effort, further work remains to make the Uniform Security Policy applicable nationwide.

[1] Please refer to www.okhca.org/aspc for detailed information about the process and work products of the Adoption of Standards Policies Collaborative.

To define minimum policies for authentication and audit, the Adoption of Standard Policies Collaborative (ASPC) developed an approach and process to identity and reconcile variations in differing security policies among the collaborating states. At a high level, this approach included:

An environmental scan of existing best practice for authentication and audit policies and procedures, that included a:

- Review of literature and standards for authentication and audit concepts
- Design of a standard set of questions to determine existing policy within each collaborative state for authentication and audit
- Development of security policy templates for authentication and audit, use case documentation and analysis

A negotiation of requirements for authentication and audit and policy development that included:

- Comparison of each state's use case mapping, articulating similarities and arbitrating differences
- Development of the Uniform Security Policy
- Legal review of the Uniform Security Policy
- Stakeholder outreach
- Development of the Guide to Adoption of Uniform Security Policy

The Adoption of Standard Policies Collaborative (ASPC) planned to replicate this approach when they evaluated policy needs for authorization and access to protected health information.

The products the Adoption of Standard Policies Collaborative (ASPC) authored include the following publications: [2]

- *Uniform Security Policy* (USP) and
- *The Guide to Adoption of Uniform Security Policy*.

Lessons Learned

To responsibly articulate a model security policy for trusted multi-state health information exchange is a significant undertaking. The variability in architectures, methods of exchange, organizations, processes and other elements served to complicate the environmental scan. The elements of a security policy, authorization, authentication, access, and audit are not truly discreet in practice and have many interdependencies.

To facilitate the success of future efforts the scope of the project needs to be very clearly defined initially and methodology specified with concrete delineation of the work to be completed. Scope creep occurs without intention. For example, when the collaborative addressed system and data authentication, there were new requirements in the audit parameters. The minimum necessary to assure audit component compliance meant that timestamp needed to be communicated and stored in order to run a valid audit report. Another example was that consumer matching is critical to authentication and audit and was outside of the project scope.

[2] The *Uniform Security Policy* is included as Appendix B and contains the actual policies developed and vetted by the ASPC. The *Guide to Adoption of Uniform Security Policy* is available as a separate publication.

Consensus-based decision making was limited by attempts to negotiate model neutral policy requirements. This was evident with the health record bank patient/consumer controlled model. Specifically, the Washington Health Record Bank (HRB) model for interoperability gives patients web based electronic access to their medical data from multiple sources and the patient controls access. The patient also supplies information to validate medications and advance directives. The patient-controlled HRB fosters patient activation and is designed to be shared electronically by the patient action. To design universal authentication and audit requirements that would fit this model and a provider to provider exchange lead to fewer agreed to elements in the Uniform Security Policy. Developing a typology of architectures and functionalities to overlay onto the security requirements would expedite future analysis.

Policies cannot be static if they are to address the changing landscape of health information exchange. Formulation of policies that conform to current standards also must address the need to evolve with changes across the industry. For audit, there were too many variations in the methods for identifying entities responsible. The specificity needed to identify what has been transmitted (data), to which entities (system) and what record (audit) is to be held in which location are all subject to industry practice and standards that are still evolving. The responsibility for tracking audit information is architecture dependent and rules about data transmission are subject to interpretation.

The following elements were critical to the collaborative's success and were essential to developing the policy requirements:

- A common glossary of terms and definitions
- A baseline of existing policies within each collaborative state that accurately represented the practices and procedures of the negotiating parties
- Identification of relevant standards and detailed documentation of their relationship to the HIO policies being developed

Concepts that were helpful in reaching consensus were:

- An understanding that current common practices and the current level of technological development may fall short of the ideal for effective, reasonably-priced and secure exchange of health information. Policies must be established to support the present reality and must be improved cyclically as health information exchange processes evolve.
- Acknowledgement of the necessity for a minimum policy that is acceptable to organizations whose size, available resources, and complexity vary widely. Organizations will vary in their determination of what policies they will adopt, and what minimum policies they require their exchange partners to have in place. The USP is offered as a best practice solution.
- Outreach throughout the process to stakeholders responsible for policy implementation

While the goal of the ASPC was to define standard policies to achieve interoperability in health information exchange (HIE) on multiple organizational levels including state-wide health information organizations (HIOs), state and regional HIOs and HIOs in another state, this document will be pertinent to any exchange between any two entities. This adoption guide describes the process for working through and coordinating the efforts of several organizations as minimum requirements for authentication and audit are explored.

The Uniform Security Policy was developed to apply to any type of health information exchange architecture. Therefore, your organization's own experiences will be instrumental in building upon the ASPC's initial experience and shaping the process for adoption into one that meets the

unique needs of your state or organization. This adoption guide, along with tools in the appendices, should serve as a helpful starting point as security policies are developed.

Overview

The Adoption Guide includes the following sections:

Introduction

The Adoption Process
This section details a 7-step process for Adopting the Uniform Security Policy. It includes information on gaining consensus from stakeholders and adapting the Uniform Security Policy to meet the unique needs of your specific organization as well as your state.

The following 7 steps are described in detail:

1. Goal and Scope
2. Resources
3. Desktop Review and Risk Analysis
4. Consensus Building
5. Legal Assessment
6. Documentation of Policy
7. Implementation: Testing, Training, Deployment and Production (including Evaluation and Maintenance)

Anticipated Challenges and Recommended Mitigation Strategies
This section provides an illustration of how health information organizations (HIOs) who participate in health information exchange will benefit from adopting the Uniform Security Policy. It also provides a chart of potential challenges that can be expected during the adoption process, along with recommended mitigation strategies.

Summary and Next Steps
Recommendations made by the ASP collaborative are summarized and next steps are indicated.

Appendices

- **Appendix A: Feasibility – Preparing for Change and Process Checklist**
  An organization interested in assessing the feasibility of adopting the Uniform Security Policy must first be prepared for the significant changes that will be required to adopt and implement these standards. This appendix includes both a framework for preparing for change and a checklist to assist organizations in tracking progress of their implementation of the Uniform Security Policy.
- **Appendix B: Uniform Security Policy**
- **Appendix C: Other Useful Resources**
- **Appendix D: Glossary**
- **Appendix E: References**
- **Appendix F: Contributors**

Audience

The Guide is appropriate for both of the following audiences: 1) organizations just beginning their HIE efforts and therefore are adopting new policies, and 2) organizations that have HIE policies in place who need to verify that their current policies, procedures, and practices meet the minimum requirements and possibly make some minor changes of what they already have in place.

This includes individual organizations (hospitals, health systems, healthcare providers,[3] and managed care organizations), HIOs, RHIOs, and state agencies (Medicaid, Health Departments).

Purpose

The purpose of the Guide to Adoption of Uniform Security Policy is to provide support and guidance to entities as they review and adopt the Uniform Security Policy. The guide can be used to:

- Provide a framework for establishing inter and intra-state authentication and audit policies through the use of minimum (core) policies that have been vetted by an inter-state collaborative effort.
- Demonstrate how alignment of local policies with broadly-accepted policies can facilitate health information exchange agreements.

[3]The Adoption of Standard Policies Collaborative (ASPC) chose and used the definition of "provider" as given in the HIPAA Regulation, 45 CFR 160.103 and the privacy rule, 45 CFR 164.501.

Figure 1: **Problem**: With one-to-one policy agreements, each of the entities must negotiate with each of the other parties. Here the ten states of the ASPC are illustrated. As the number of entities grows, the number of bilateral agreements grows almost exponentially; thus, for ten states, there would need to be 36 bilateral agreements. Were one to consider all of the U.S. states and territories, the number of bilateral agreements needed would exceed 1000, a daunting number of negotiations.

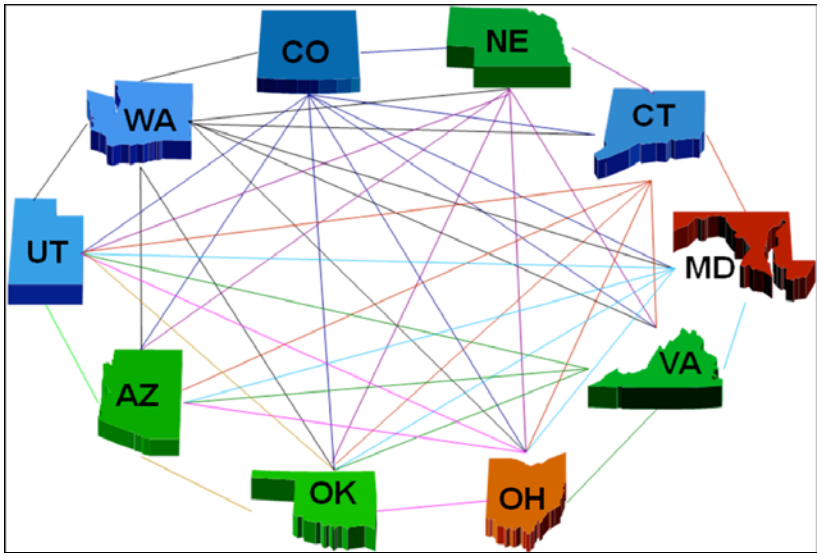
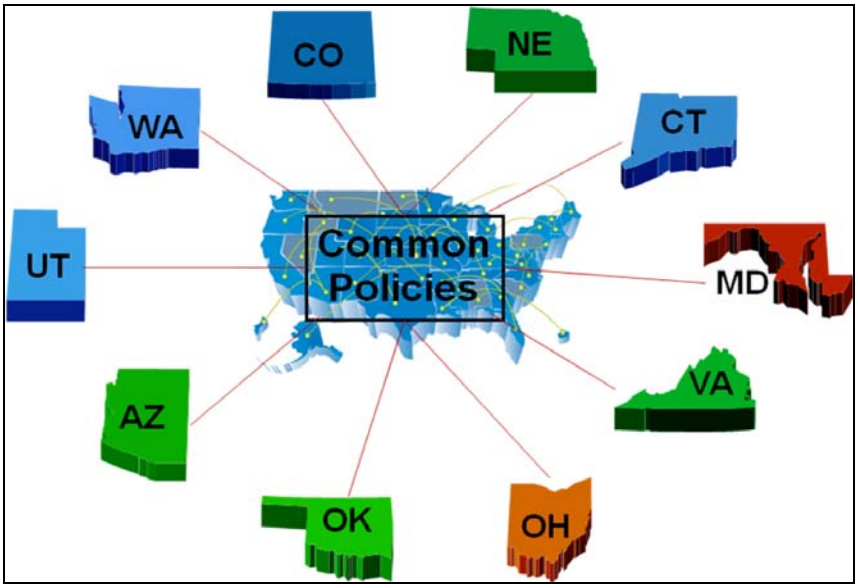


Figure 2: **Solution**: Adoption of the Uniform Security Policy offered in this Guide to Adoption of Uniform Security Policy will create common policies for HIE by all the participants. To illustrate this benefit, consider that for the ten states in the ASPC, the hard work of achieving consensus has provided the common policies.



Highlights of the Uniform Security Policy

In this Adoption Guide, a common policy, titled the "Uniform Security Policy" is recommended by the HISPC Adoption of Standard Policies Collaborative (ASPC). This policy, which currently includes requirements for Authentication and Audit, has been publicly vetted and accepted and can be used to establish baseline privacy and security protections for organizations engaged in exchanging electronic health information for treatment purposes.

Health information organizations (HIOs) participating in health information exchange (HIE) may have variations in security policies. Adoption of the Uniform Security Policy will help establish common business practices for registering and authenticating users, to benefit the individual users and the participating organizations. The guide will also help establish minimum audit requirements, consistent with the HIPAA Security Guidelines.

In order to successfully exchange health information electronically, HIOs must at least register; execute an agreement with; verify the identity of; provide digital identification for; and maintain an account for all users.

Each of these five processes has a set of minimal requirements that must be defined in order for HIOs to reliably trust their HIE trading partners and users and to be able to exchange health information with appropriate security rules in place.

The HIO must also consider the audit requirements for the HIE following the HIPAA Security Guidelines; The Uniform Security Policy provides minimum requirements for audit which include:

1. logging and audit controls
2. periodic internal compliance audit
3. information access
4. need to know / establish minimum necessary for data management and release
5. need to know procedure / establish process for personnel access to personal health information, and
6. system capabilities

NOTE:

- While the ultimate scope of a comprehensive security policy should include services that support operations and payment as well as treatment, the scope of the current Uniform Security Policy is specific to electronic authentication and audit policies and process when a healthcare provider requests patient health information through an HIO **for the purpose of treatment**.

- The ASPC did not address the policies needed to govern provider authorization or access to specific types of health information permitted after the authentication process is complete. The project did develop the corresponding policies required to audit provider authentication as defined in the project. Since the audit policies considered both the authentication action and subsequent access to the records requested, the scope of the audit policies became broader.

- These policies do not necessarily pertain to the secondary use of data such as the exchange of data for the purposes of public health improvement or the detection and control of outbreaks; however, the process that the ASPC used to work toward common policies across the ten states of the collaborative is likely to be generic enough to use as these other areas of data exchange are explored.

- The policy is determined as a minimum to be built upon. It can be more stringent depending on an organization's individual need and state-specific requirements.

- Also, throughout this document the term "state" is generic and includes any of the states, the District of Columbia, and/or territories of the United States.

The following table lists some key authentication and audit features of the Uniform Security Policy regarding use agreement, identity management, audit log data elements, audit reports and enforcement.

Table 1: **Key Authentication and Audit Features of the Uniform Security Policy**

<table>
<tr><th colspan="3">Authentication</th></tr>
<tr><td colspan="2">Use Agreement
• Information is true, complete & accurate
• Agree to comply with Federal and State laws
• Act in good faith & be truthful at all times
• Access and use information only as permitted
• Confidentiality, integrity and accessibility will be reasonably ensured</td><td>Identity Management
• Unique identifier
• Affiliation
• Role</td></tr>
<tr><th colspan="3">Audit</th></tr>
<tr><td>Audit log data elements
• Unique Universal ID of viewer
• Role
• Data elements viewed, created, modified, deleted or transmitted
• Date and time/duration of access</td><td>Audit reports
• Routine scheduled reports
• Routine surveillance
• Ad hoc reporting by request or on suspicion of inappropriate access</td><td>Enforcement
• Common policy on enforcement necessary for public trust of HIE, regulatory compliance and limiting legal risk.</td></tr>
</table>

Benefits of the Uniform Security Policy include:

- **Commonality *Across* States** (because the Policy defines what is required in terms of the data set)
    - From a regulatory standpoint, it is important to adopt a policy set that supports systematic processes needed for ever-expanding HIE.
- **Commonality *Within* States**
    - Inter-state exchanges can model their policies based on nationwide adopted standards.
- **Starting Point for New HIOs**
    - A starting framework for policy development would help any HIO as a floor for standardizing and develop consistent expectations prior to exchanging protected health information among organizations.

An outline of the Policy, including the focus of each section and sub-category covered, is listed in the tables that follow. The full Uniform Security Policy can be found in the appendix.

Table 2: **Minimum Policy Requirement categories for Uniform Security Policy: Authentication**

Authentication
Section 1: Use Agreement
1.1 Requirement – Use Agreement
Section 2: Identity Registration
2.1 Required Data Set for Authentication
2.1.1 Data Source
2.1.2 Provider Identity Attributes
2.1.3 Organization Identity Attributes
2.1.4 Identity Attributes of the Data Source System
2.2 Role-based Access
2.2.1 Role
Section 3: Verifying Identity
3.1 Processes Used to Verify Identity
3.1.1 User Authentication
3.1.2 Organization Authentication
3.1.3 System Authentication
3.2 Variations Based on Type and Location of User
3.2.1 User Identity, Role, and Affiliation Verification
3.2.2 Signature Verification
3.2.3 Assurance Level
3.2.4 Relationship to Patient
3.2.5 Threshold Calculation
3.2.6 Digital Signature
3.2.7 Persistence
3.3 Accommodations for Cross-HIE Verification and Data Integrity
3.3.1 Restricted Data Sharing and Data Integrity
3.3.2 Authenticate Recipient Identity (Organization / System / User)
3.3.3 Required Elements for Matching
3.3.4 Matching Criteria
3.3.5 Digital Signature
3.3.6 Persistence
3.3.7 Data Authentication
3.3.8 Data Validation
3.3.9 Type of Requestor
3.3.10 Signature Purpose
Section 4: Identity Provisioning
4.1 Types and Levels of Provisioning
Section 5: Identity Maintenance
5.1 Registration Data

Table 3: **Minimum Policy Requirement categories for Uniform Security Policy: Audit**

Audit

The Adoption Process

To facilitate the adoption of minimum policy requirements for authentication and audit the following major steps and questions described in Table 4 should be addressed. The remainder of the Adoption Process section of the Guide will walk through each of these seven steps in detail.

Table 4: **Checklist – 7 Critical Steps to Adoption**

Step		☑	Questions Guiding the Interstate Process
It is recommended you consult this checklist as needed throughout the adoption process.			
1	**Goal and Scope**		• What are the goals for this process? • What is the scope of the project; which use case will be used; what is the business model?
2	**Resources**		• What team resources are required for this project? • Who are the stakeholders and what impact will adopting these policies have on them?
3	**Desktop Review and Risk Analysis**		• Do you already have authentication and audit policies in place? • What business process are you trying to resolve? • How will you measure the risk associated with the business process?
4	**Consensus Building**		• How will you build consensus among the team and stakeholders? • What specific methods will you use to achieve consensus? • How will barriers to consensus be addressed as you proceed?
5	**Legal Assessment**		• How will you assure legal requirements, including HIPAA guidelines are incorporated into your policy? • Does your state have any laws that would dictate or affect the proposed policy requirements? • Do you need to work toward changing existing laws or introducing new legislation?
6	**Documentation of Policy**		• How will you document the policy for end users? • How will you ensure that all policies are semantically accurate for digital translation prior to technical team implementation?
7	**Implementation** **a. Testing** **b. Training** **c. Deployment** **d. Production**		• How will you test that the software performs as expected, and only as expected? • How will you test the minimum policy requirements? • How will you resolve issues that result from testing? • How will users of the policy be trained? • How will you deploy the agreed-on minimum policy requirements? • How will the implementation efforts be evaluated? • What are the outcomes to be measured? • How will you maintain the policy and assure that it is not only adopted but also adhered to?

NOTE: Although these steps appear chronologically and as stand-alone, some steps may be performed simultaneously. For instance, while defining your goals and scope, you may find that your team needs to have the appropriate resources in place to help with the goal definition process.

1. Goal and Scope Definition

The first step in the adoption of Uniform Security Policy is to establish a clear and realistic set of goals and to define the scope of the initiative.

Goals

Goals describe the end product that the HIO is trying to achieve. For purposes of adopting the Uniform Security Policy the goal would be to implement the minimum policy requirements needed to support HIE between two or more states. If the organization is also going to adopt the Uniform Security Policy for use within the state, the goal should encompass that as well. The goal should be agreed-on by all participating parties and should be distributed as a written document to which the team may refer at each meeting throughout the process. A clearly stated, common goal helps define the project scope (described below). As an organization develops the goal statement, consider the different models and sizes of participating HIOs, as this will impact the means by which organizations can adopt these policy requirements. For instance, it may be unreasonable to expect a very small rural HIO to implement 2-factor or biometric authentication measures that a larger, urban and more-sustainable hospital has already implemented.

Scope

The project scope defines a common understanding of what is included in the project and what is outside the project. For instance, the idea of defining requirements for authentication and audit can encompass many different areas ranging from consumer authentication to auditing of system behavior. It is important to define the scope for adopting the minimum policy requirements for authentication and audit (and by extension, the Uniform Security Policy). Further, it is recommended that the scope include the context. For example, if a HIO decides the project will address provider access to the HIO for treatment purposes only, public health improvement or detection would be outside the project scope. The scope should clearly document the intent of the project as well as how the project will impact the key stakeholders. A well-defined scope increases the likelihood of attaining the goal and will help drive the business process analysis.

In identifying the scope of the project, there may be areas (such as authorization, access, and patient consent issues) which need to be included at a high level in order to complete some of the audit policy requirements. For example, when addressing the audit requirement of knowing which provider accessed which patient's record, it would be necessary to understand how the patient was identified.

A strong scope statement for adoption of the Uniform Security Policy could be: "Analyze and define the authentication and audit requirements for a hybrid model HIO to use when allowing providers to access the HIE for treatment purposes, based on a medication management use case. " A very specific scope will help keep the project focused.

Role of Use Cases[4]

It is sometimes difficult to conceptualize what is involved in a process; therefore, it is recommended that "use cases" are included as the project scope is defined. These use cases are workflows that a specific system user would perform in order to obtain information. For instance, a HIO may exchange laboratory data. The use case would document a description of an event and the actor who might need to be a part of the event. See, for example: ***Sample 1:***

[4] The ASPC found the AHIC use cases a starting point for our discussion, Although the AHIC were found to contain far too much detail for our purposes, the ASPC used the AHIC use cases to develop templates to capture the actors, actions, events and policy requirements pertinent to authentication and audit for each use case; and extracted the corresponding policy information from the AHIC use cases into the template. See the ASPC Final Summary Report at www.okhca.org/aspc.

"*Use Case / Business Requirements Analysis for HIOs Without a Current Security Policy,"* which outlines the method for defining a use case as well as how to proceed in mapping the use case to the minimum policy. Selection of use cases helps center discussion around which components of authentication and audit are essential to include as policy. The use case should apply to the planned organizational goal and should be pertinent to all the business models present in the HIOs involved. Spending an appropriate amount of time on each use case and organizational goals will be critical to facilitating the conversation between the business and technical teams within the organization.

Role of the Architecture of Business Models

The HIE business model includes the enterprise architecture in use, or planned for use in HIE, and is pivotal in determining the project scope. It is necessary to have a documented, detailed HIO enterprise architecture in order to determine the points in the system where authentication and audit are required. In the case of individual organizations, the same is true – it is necessary to document the detailed HIE structure that exists within an organization and between organizations. The architecture model may be one or a combination of several types of models, including but not limited to: (1) centralized, (2) federated, (3) health record banking, and (4) hybrid models.

The model is used in conjunction with a use case to determine what policies should be required for authentication and audit. In order to reach consensus on minimum policy requirements, a state or organization with several HIE business models, must be certain that all models are accommodated. Many states will want to work with other states to define minimum policy requirements and in that case, each state should be prepared to document its business model or models in order to perform use case mapping that then becomes the basic policy requirements.

2. Resource Planning

Team Resources

In addition to time and material resources, human energy and activity are required to perform the business process/use case mapping and analysis to determine the recommendations for adopting the Uniform Security Policy. Recommended resources for adoption include a project manager, business analyst, security analyst, technical support, legal counsel and episodic availability of stakeholders. This team would be responsible for bringing the project to a successful conclusion, as well as ensuring consensus among stakeholders. It is important to invest in having the correct resources and to continually evaluate these resources as the project matures, to ensure that they are available and devoted to support the adoption of the Uniform Security Policy.

Stakeholders

How to Involve Stakeholders

Stakeholders might be asked to participate in a working group and meet on a monthly basis to help review and evaluate the Uniform Security Policy. Assignments for this group would include use case mapping, documentation of standards, and detailed review of the minimum policy requirements for authentication and audit. The recommended approach is to provide the stakeholders with the goals and scope as well as the detailed scheduled, outlining when input will be expected and what type of input will be needed from them. Since the stakeholders will have a vested interest in how these policies work, it is important to include them in major decisions around the adoption of the minimum policy requirements. A Steering Committee or other review body will take the work completed by the working group and approve the policy implementation. A steering committee would be comprised of high level stakeholders, such as those from leadership and managerial ranks from the medical community mentioned above. This group could meet monthly or quarterly to review the progress and results from the efforts in adopting minimum policy requirements for authentication and audit. Having “buy-in” from this group is important to success overall, as they, too, can become advocates for the results.

Organizations from which community stakeholders may be drawn include:

- Hospitals and hospital associations
- Medical groups
- Schools of Medicine/Osteopathy/Nursing/Pharmacy
- Medical association chapters (for example, of the American Medical Association)
- Behavioral health organizations
- State and/or local healthcare and public health departments and agencies
- Community health center representatives
- Quality improvement organizations
- Health/managed care plans
- Forming or existing HIOs
- Local sections of the Healthcare Information and Management Information System Society (HIMSS)
- Advocacy groups (for example, the American Association of Retired Persons)
- Law offices specializing in health law
- Consumers
- Employers

Participation of various stakeholders in analyzing and reviewing the authentication and audit minimum policy requirements is critical to the success of the adoption process. Not only should stakeholders be involved in setting new policy but they should be involved in adopting an existing

policy. This will ensure broad consensus as you move forward. Representation from the community and a diversity of disciplines is recommended to achieve consensus.

3. Desktop Review of Business Processes and Risk Assessment

Desktop review of business processes

In order to determine if the Uniform Security Policy is going to be adopted by your organization, it is first necessary to perform a desktop review of the business process the authentication and audit will apply to. Each component of the Uniform Security Policy needs to be reviewed against each actor and event applicable to the business process.

Step one in the business analysis process is to use the selected use case to define the actors, the information they would need to access, and the authentication and audit requirements. If specific policy requirements are not in place, the use case can help define what policies would be needed for a specific use case and business model. If there are existing policy requirements in place, these can be used as a comparison tool to determine if the Uniform Security Policy can be adopted. If policies for authentication and audit do not exist, it is necessary to analyze the business requirements for providers accessing the HIO for treatment purposes. The first step in this analysis is to determine who the actor is that will be processing transactions through the HIO for the use case selected. It may be necessary to reiterate that the basic minimum policy requirements are only for providers accessing the HIO for treatment purposes. This method of analysis can be used to determine the business process requirement for each person accessing the HIO and the patient information that person would need to access. The business requirement is compared to the authentication and audit requirement to validate that this is a point at which the actor would need to be authentication and subsequently, audited.

The sample below illustrates how this process would work, citing a portion of the applicable security policy element. Some Uniform Security Policy statements may require more than one test scenario. For example, in Appendix B, Section 3, element 3.1.1 addresses the registration of the provider and the authentication method. It is necessary to test each of these elements individually.

Sample 1: **Use Case / Business Requirements Analysis for HIOs without a Current Security Policy** [5]

Actor	Event	Authentication / Audit Requirement	ASPC Recommended Basic Policy Requirement	Issues	Resolution
Clinician	Laboratory results for a patient	Clinician is identified by the trusted authority Clinician logs into system using password and login name	**Authentication Section 3 – Verifying Identity** 3.1.1 User Authentication HIO use of a specific naming convention as a primary identifier is required with a minimum assurance level used of Medium (knowledge/strong password/shared secret).	Current system only allows for password	Upgrade system security to allow for shared secret
HIO	List and review of people accessing the HIO	HIO must be able to audit access to the HIO by providers	**Audit Section 1 – Logging and audit controls** 1.1 Log-in Monitoring Audit log is required and must be reviewed on a regular basis.	No issue	NA

Once the business process analysis is completed, issues should be discussed with the team and the stakeholders. For instance, if a "shared secret" is the business requirement, any HIO participant system that does not provide for a "shared secret" as part of the authentication process will need to determine how to provide this functionality, for those who want to exchange with other HIO participants.

The next step in the business process analysis is to map the future requirements for authentication and audit to the business model defined in the project scope, using the selected use case(s). This can be accomplished by constructing a flow chart of the relevant HIO architecture and identifying points at which authenticating a user or system, or auditing access to the HIO should be conducted, based on the use case. The mapping of the use case to the system architecture will confirm that all the authentication and audit requirements for secure transmission of medical data have been identified.

If there is already a security policy in place, a desktop review of business requirements analyses can be performed by comparing policy requirements within the Uniform Security Policy to the organizations existing security policies. Existing security policies might be entity-specific, i.e. your hospital's policies, HIO policies, policies associated with a particular business model or state agency, policies that pertain to a particular application like an immunization registry. The purpose of the desktop review when existing policy is in place is to check for gaps and propose recommendations in order to adopt the Uniform Security Policy. The desktop review can be completed by using the following format to track and compare your local policy requirements to the minimum policy requirements in the Uniform Security Policy.

[5] The authentication / audit requirement in the sample contains one element of that requirement. Refer to the full Uniform Security Policy in Appendix B for all elements.

Sample 2: **Format for Business Process Analysis for Organizations having a Security Policy[6]**

Uniform Security Policy Requirements	Local Policy	Gaps	Recommendation	Solutions
Authentication Section 1- Use Agreement 1.1 Use Agreement Health Information Organizations should have a data sharing agreement with participating providers that defines the privacy and security obligations of the parties participating in the HIO. These agreements should require the use of appropriate authentication methods for users of the HIO that depend on the users' method of connection and the sensitivity of the data that will be exchanged.	Local one-to-one contracts	Stricter than minimum	Accept a less strict policy for cross-state sharing only	Allow for cross-state sharing of HIE
Authentication Section 2- Identity Registration 2.1 Required Data set for Authentication A directory of data sources within the target HIO is required, and includes primary contact information of registered members, identity attributes of providers, organization and systems.	Same	None	Accept minimum policy requirements	
Authentication Section 2- Identity Registration 2.1.1. Data Source A directory of data sources within the target HIO is required and includes name of the HIO and any data sources within that HIO.	None	Currently no such data source	Need new system capability	Install and deploy X
Authentication Section 2- Identity Registration 2.1.2 Provider Identity Attributes The HIO will collect the attributes as needed for unique identification of the individual accessing the information in the HIO. Required elements are profession, role, name, practice address, business/	Required but no field in the system for role	Roles not codified and assigned	Add field for role	Update application

[6] The authentication / audit requirement in the sample contains one element of that requirement. Refer to the full Uniform Security Policy in Appendix B for all elements.

legal address and License/ID.				

Once the desktop review is completed and gaps and/or issues have been identified in the authentication and audit process, a risk analysis should be completed. It is also possible to begin the risk analysis during the desktop review process.

Risk Analysis

A risk analysis should be preformed when adopting the Uniform Security Policy. This assessment will be critical in determining what threats and vulnerabilities may impact the users and systems and what security controls have been implemented to protect against identified threats and vulnerabilities. The risk analysis can be performed at the inception of this process as the desktop review is being completed. A risk analysis should also be completed whenever a significant business or technical change occurs following implementation. This assessment involves reviewing the data, hardware, people and networks, prioritizing those items and determining what threats and vulnerabilities exist, what security controls are already established and where action may be necessary to prevent regulatory, liability, financial and reputation issues. Further the risk assessment will help define the type of audit reports you need to have as well as the type of monitoring requirements you need in place. The risk assessment should be done in relationship to the Uniform Security Policy.

The following steps should be followed when conducting a risk assessment of an HIO:

- Definition of System Boundaries
- System inventory (hardware, software, facilities and data)
- Identification of information owners (electronic and non-electronic data)
- Identification of workforce members with access to stored data by hardware/software
- Mapping data flow and identifying data exchange points (for example, where data is transmitted from one system to another, from the system to an individual or entity, etc.)
- Conducting an inventory of data storage (including non-electronic data)
- Assessment of criticality (for example, mission critical, important, ancillary, etc.)
- Vulnerability identification
- Threat identification
- Security control analysis using the Uniform Security Policy
- Likelihood determination (for example, how likely will an identified threat or vulnerability impact the organization given existing security controls)
- Impact analysis (for example, what is the cost if an identified threat or vulnerability impacts the organization given existing security controls)
- Risk determination (based on likelihood and impact)
- Security control changes/mitigation recommendations
- Results Documentation (includes mitigation plan and documentation of risks that will be accepted by the organization such as threats or vulnerabilities that will likely impact the organization and with a low impact cost)

Please refer to the **National Institute of Standards Technology (NIST) 800 series** of publications on this topic in order to complete a risk assessment (http://www.nist.gov/index.html).

4. Consensus Building

After each HIO within a state or across state lines has mapped the recommended basic policy requirements to the individual models, negotiations with the project team and stakeholders may be necessary to reach consensus about the adoption process. Conflicts may be inevitable but can also be productive in the negotiation process. In a negotiation process, it is important to have a neutral facilitator who will manage all meetings during the negotiation process (e.g., setting meeting schedules, keeping minutes and tracking both policies agreed upon and areas that require further negotiation). The facilitator should have the knowledge and skills to articulate differences in the types of authentication and audit, be an experienced facilitator and bring the group to consensus about which will work as a basic minimum policy requirement. It will be important to emphasize the positive elements of adopting this policy, for example, the value of having a Uniform Security Policy in place will enhance an organization's ability to exchange electronic health records. The legal considerations should be highlighted and discussed as well so there is an understanding of legal compliance. It will also be important for each stakeholder to understand the impact of the policy on other stakeholders. For instance, a provider will have a different view of what should be audited than a consumer.

The following should be taken into consideration at the consensus building phase:

- Documented desktop review of business processes for each HIO represented should be available
- Appropriate personnel including the business analyst, security analyst and technical support
- A decision maker who has the authority to make decisions about the policy in case of negotiation should be included in any negotiations
- Issues will need to be tracked as "parking lot issues" and resolved before the policy analysis is complete
- It may be necessary to involve the legal counsel as negotiations progress in order to be sure any state or federal legal requirements are taken into consideration

The following are some techniques commonly employed by organizations to achieve consensus and improve group decision-making. A brief definition is included below to describe each technique and each will involve several steps that reference how to successfully execute the method.

- **Delphi technique:** This technique collects and uses opinions of individuals with certain expertise by mail. Responses are ranked, compiled, and computed. The consensus is used to make a decision. This would involve listing the items from the policy that you are unable to reach consensus on, providing the detail around those items and collecting responses for ranking.
- **Nominal group process:** This technique involves small groups of individuals who systematically present and discuss their ideas before privately voting on their preferred solution. The most preferred solution is accepted as the group's decision.
- **Stepladder technique**: This technique may be used to minimize the tendency for group members unwilling to present their ideas by adding new members to a group one at a time and requiring each to present ideas independently to a group that already has discussed the

problem at hand.[7]

[7]Greenberg, J. and Baron, R. 2007. **Behavior in organizations**. Upper Saddle River, NJ: Prentice Hall.

5. Assessment of Legal Requirements

Integral to the adoption of standard policies is a complete legal review of HIPAA, other federal laws (such as CLIA regulations and federal substance abuse treatment regulations) and of relevant state statutes and regulations. Given the complexity of legal requirements that affect security policies for HIE, it is important to include legal expertise during the process of adopting these minimum policy requirements for authentication and audit. Although HIPAA and other federal regulations were taken into consideration in drafting the Uniform Security Policy, adopting states should review their own states laws that may impact the adoption process (and should keep abreast of federal laws issued after the date the policy was issued, as well).

The legal review should be completed once the use case has been mapped to the model architecture, because legal requirements for authentication and audit may change with different HIE architecture and use cases (who will have access to the information and for what purpose). In addition to considering federal and state laws that apply in the adopting state, the legal review should also encompass ways to minimize legal risk in the policy. Many states tie these requirements to HIE participation agreements as well, in order to require HIE participants to comply with the applicable policies.

Once the legal review is completed, the team should give serious consideration to any legal issues that may hinder the adoption of the minimum policy requirements. At this point, it may be necessary to return to the desktop review phase and reconsider some of your recommendations. Or, you may need to go back to the consensus building process and get buy-in on the changes required as a result of the legal review. Alternatively, it is possible to go back to the State Legislature and get statutes changed or work with the appropriate state agency for rule/regulation amendment.

If your state is considering interstate exchange with other states, consider conducting the legal review with representatives from the other states to facilitate identification of different state laws (or different interpretations of federal laws) that may pose barriers to exchange.

6. Documentation of Policy

After the legal review and final negotiation of policy is complete, the policy should be documented not only for the end users but for the technical team. The Uniform Security Policy should be documented as it applies to the organization. Please refer to Appendix ___ for a standard format for documentation of the policy. It is important to ensure that the written policies agreed upon can be understood by the users and the technical team.

At this point it will also be necessary to document the configuration of existing applications. This will ensure that the written policies can be executed with your applications. This means that special care must be expended in drafting the specifications that are passed to the technical team that will be configuring appropriate applications, customizing those applications, or developing the needed applications. Because of the sensitivity to unauthorized disclosure of protected health information (PHI) and the compliance rules with which the HIO must be cognizant, this is an important step in the process. The technical team will need specific instructions in order to implement solutions that do not permit illicit activity. By careful drafting of the application specifications, this type of activity can be avoided. The implemented applications will do what is expected, but no more. An example of this type of specification follows:

Sample 3: **Technical Specification of a Policy Statement**[8]

Policy Statement	Technical Specification	Date Completed	Issues Reported
Authentication Section 2 -Identity Registration 2.1.2 Provider Identity The HIO will collect the attributes as needed for unique identification of the individual accessing the information in the HIO. Required elements are profession, role, name, practice address, business/ legal address and License/ID.	Coding must include a role.	Ex. 2-27-10	Custom code required to add field for role.
Audit Section 6 – System Capabilities 6.4 Data Authentication For purposes of data authentication the use of a valid date/time stamp is required.	Coding of the system and the audit reports must include the valid data / time stamp required. Data stamp needs to print on the audit report.	Ex. 3-5-09	Audit report doesn't include time of access.

[8] The authentication / audit requirement in the sample contains one element of that requirement. Refer to the full Uniform Security Policy in Appendix B for all elements.

7. Implementation

The implementation phase of the adoption process includes:

- **Testing** – functional, regression, system, integration and load testing
- **Training** – training the end users and the support team
- **Deployment** – deploying the new policy to the end users and the systems
- **Production** – post implementation review, modification and support

Testing

The testing phase is critical to the successful adoption of the Uniform Security Policy. Testing of the new policy against the applications is completed so that the users can determine if the new policy is going to satisfy requirements for using the system from a security viewpoint. It is important that testing validate that the system is responding as expected to the new policy; however, it is more important the users can abide by the new policy and that the user's work load is not increased.

Preparing to Test
The purpose of testing is to determine if the Uniform Security Policy and technical requirements of the policy will operate as planned within a given organization's technical environment. It is critical that test scripts are developed to reflect the use case and workflow as well as the authentication and audit points that are required based on the basic minimum policy requirements and the work completed in the desktop review of business processes. Having formal test scripts will help track areas where gaps may be present or identify any type of system malfunction that occurs while testing the policy.

As you are preparing for the testing phase, it is important to develop test scripts that reflect the workflow expected with the Uniform Security Policy. They can be used for each testing phase and should reflect the actual workflow that the HIO performs. The test scripts can be developed by determining the action a user or (actor) would perform based on the policy element from the Uniform Security Policy. Each element in the policy needs to be tested. Below is an example of how a test script should be designed. This example reflects adding a provider to the system and authenticating the provider.

Sample 4: **Test Script Sample – HIO entering Provider Data** [9]

Script Number	Test Script Name / Policy Reference	Action	Actor	Expected Results	Issues
1	Identity Registration: ref. 2.1.2 Provider Identity Attributes	Add a new provider to the system, using the required attributes: profession, role, name, practice address, business/ legal address and License/ID	HIO	Successful addition of provider to the system, issuance of login and password	None
2	Verifying Identity: 3.1.1 User Authentication	Provider is accessing lab results using login and password	HIO	Provider uses assigned login and password to access the system	Provider Unable to login in. Fix and retest

It is critical to also have a list of standard data that the testers will use in their testing. (This list will likely grow over time as more use cases are added). A sheet of allowable attributes for testing can be developed to be referred to depending on the script. It is required to have data for each test script. Using predetermined data for entry gives the users and the technical team the ability to track that data through the system, validating that the data went into the right fields and shows up on the audit reports. It can also help when debugging the system. The figure below is an example of predetermined data.

Sample 5: **List of Provider Data for Testing for Script #1 and #2**

Profession	**Name**	**Role**	**Address**	**Business Address**	**License #**	**Test Login**	**Test Password**
MD	Dr. J.	Provider	6 Oak Street	6 Oak Street	123456	Drj	Drjej!23J34*
PA	Tim Jones	Physician Assistant	8 Tree Street	8 Tree Street	123454	Timj	DF$c56J23#

The database and applications must be configured to reflect the Uniform Security Policy prior to testing. The application specifications provided in the Documentation of Policies section provides the basis for the technical work. This can be done using configuration methods but in some cases may require custom coding. The process involves converting the policies into digital rules on a test database that should be a replicate of existing HIE database and applications.

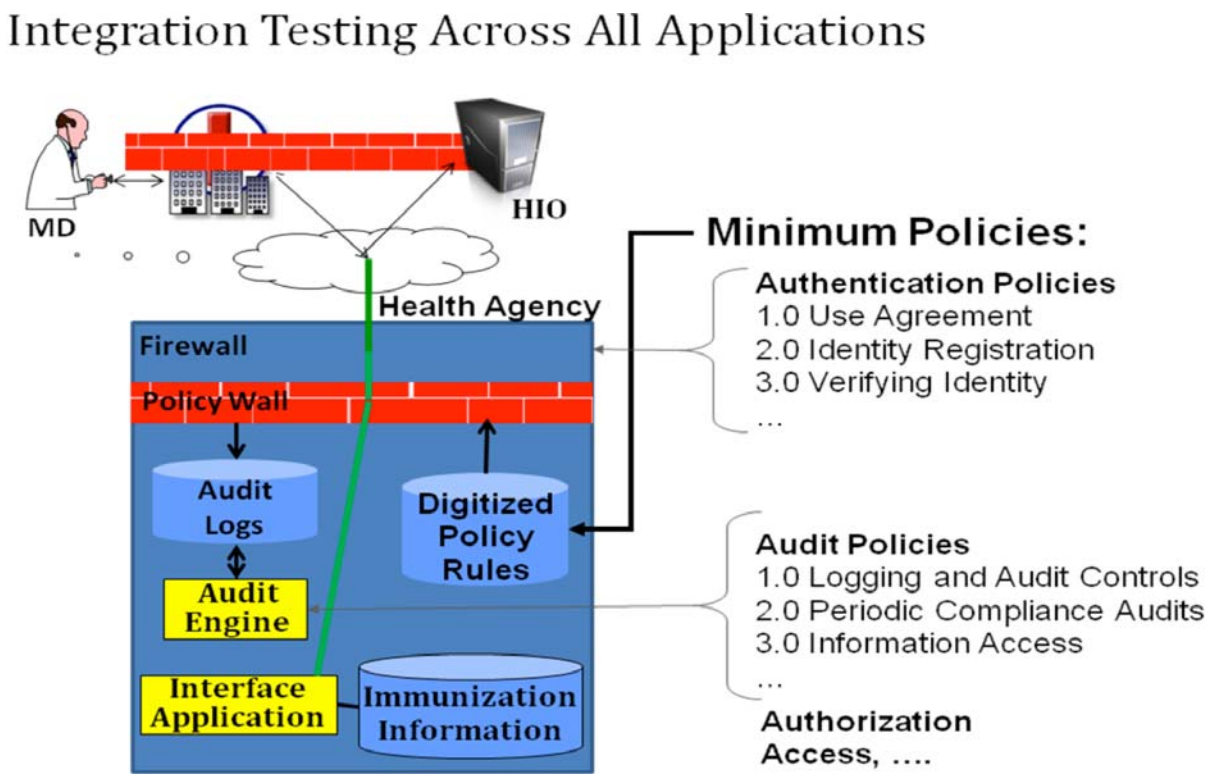
[9] Each element of the Uniform Security Policy components must be tested. There may be more than one action in (for example) authentication policy 2.1.2

IMPORTANT NOTE:

Because testing involves many different types of users, it is critical to de-identify the data used for the test in order to protect patient identity. Testing should also be limited to a test environment using valid logins and passwords that apply only to that environment.

Figure 3: **Testing of Applications and Infrastructure**

This figure is a graphical representation of policy integration. As a transaction enters an organization's system, it typically passes thru a "firewall" that provides an initial security screening. Policies need to be digitally implemented in the next layer of security, a policy rules engine or "Policy Wall." Basic policies (written in English) are converted to Digitized Policy Rules which are parsed according to the type of transaction and implemented with a minimum amount of human intervention. The authentication policy invoked by a particular type of transaction should determine the success or failure of passing thru the Policy Wall. Both incoming and outgoing transactions should pass thru the Policy Walls rules checking. Because the audit policies are meant to record activity "after the fact," they are not intended to be an upfront screen function. However, it is necessary to ensure that the correct information is being recorded.



Next are the five levels of testing that should be completed while evaluating adoption of the Uniform Security Policy. A description of each level of testing follows:

1. Functional Testing
2. Regression Testing
3. System Testing
4. Integration Testing
5. Load Testing

Functional Testing
The first phase of testing the Uniform Security Policy is the functional testing. This should be completed to prove that the system configuration for the security policies is working on each individual software application. For example, if there is a Master Provider Index, a test would be completed on that application to ensure that the test script for entering provider data is validated and in the system. Information entered into the fields in the Master Provider Index should be checked to confirm it is the expected result. The process should be completed for each application in the architecture.

Regression Testing
Within the testing phase regression testing proves that the system does not work when it should not work. An example of this would be to prepare test scripts knowing that the data for adding a provider to the system is missing an attribute. For instance, the Uniform Security Policy requires that the provider license be entered into system when you register the provider. This testing phase would purposely leave out the license number for a provider during the data entry. The result should be that the system doesn't accept that provider. The tester will enter the data they do have for the provider and the expected result is an error message "all fields are required, provider entry cannot be completed". To validate this error, check the Master Provider Index to make sure the provider did not get entered into the system. Regression testing should be completed at each phase of the testing.

System Testing
System testing is the testing of the database and applications within the HIE of the Uniform Security Policy. This phase of testing is still at the organization level and tests the workflow for a provider accessing a patient record for treatment purposes all the way through the system, touching each application as required in order to prove that the Uniform Security Policy will work throughout the applications. The same test scripts from the functional test can be used, however, each application must be checked to validate that the provider data is where it is supposed to be and that the authentication of that provider works as the Uniform Policy states. The auditing process should be checked thoroughly during this phase as well. Once all the test scripts have been completed, audit reports should be generated and checked against the test scripts to be sure all applicable information is on the audit log. Again, the audit reports should reflect the components of the Uniform Security Policy. Any and all issues should be resolved before moving into integration testing.

Integration Testing
Integration testing occurs after the system testing. This is the testing where the HIO is validating that all interfaces to external or internal systems are working properly based on the Uniform Security Policy. Integration testing involves the test of sending transactions that relate directly to the Uniform Security Policy, between multiple applications and/or organizations to determine if interfaces work, the data transmitted is what is expected and the established policies are supported as data moves between organizations. As these policies are meant to apply to sharing of electronic health information across state lines, it is necessary to have any partner HIOs involved in the testing process. The check points tested include adding a provider, authenticating that provider and an audit record of what the provider accessed and when.

Again, all of this is based on the Uniform Security Policy and a test script should be developed for each policy element.

The methods for testing in the system test also apply to the integration testing. Both methods of testing need to ensure that each use case transaction invokes the proper policy rules at the appropriate level of testing. Any issues that are found should be classified by type of issue and resolved by reviewing and modifying the workflow, the software and hardware functionality or the policy.

Once the issues have been resolved it is necessary to completely test the system and the integration until you can get through all your test scripts with all issues resolved. At that point it is appropriate to move to the next phase of testing.

Load Testing

Load testing is the testing of the system to examine scalability issues. This type of testing is done in order to ensure that the software applications will be able to handle the normal workload, with the Uniform Security Policy in place. Load testing is completed by using the test scripts already developed and having several people perform each transaction at the same time. If the system becomes slow, it may be necessary to tune the database and/ or have a hardware review. At this point the technical team may also need to review the policy configuration or the custom coding, if applicable.

As a final step, the testing team needs to document that all testing was successful. This documentation will be important for Certification and Authorization to operate using the Uniform Security Policy. The documentation should ultimately be approved by the project team and stakeholders.

Training

Creation of a training plan is an essential step in assuring properly implemented Uniform Security Policies for authentication and audit. The plan should reflect system roles and access requirements, define users, document functionalities of the system and how they integrate with subsystems, as this relates to the Uniform Security Policy. The plan needs to identify who will be trained in what role level, what methodology and curriculum will be used, who will conduct the training, how frequently the training will be repeated and how the training will be evaluated. Ongoing training beyond "go live" should be offered whenever the authentication and audit policy changes, a new application and/or HIO is added or new system users are brought on board.

Initial feedback from the stakeholder group should be included in the design of curriculum and care should be taken to have the curriculum reviewed by the privacy, security and legal professionals assigned to the team.

The training plan should include the groups targeted as well as standard messaging about the organizational minimum policy requirements. It is critical that all training materials be consistent across all HIOs with emphasis on the group you are targeting. HIPAA and other applicable federal and state laws should be included in the training materials so everyone is aware that by adopting the Uniform Security Policy, regulatory requirements have been addressed and are being adhered to.

To assure transparency and to ensure public "buy-in" for the project, it is recommended that a structured public education/outreach effort be undertaken with the following groups:

- **State Government** – State Government should be informed about the Health Information Security and Privacy Collaboration at a high level with emphasis on the Adoption of Standard Policies Collaborative and the basic minimum policy requirements around authentication and audit.
- **HIOs** – The detailed basic minimum policy requirements as well as the Uniform Security Policy should be shared with all HIOs and adoption should be encouraged so they are able to effectively achieve interoperability with other HIOs.
- **Provider Community** – The provider community will need to be aware of the Uniform Security Policy and how it will impact them. It is recommended that the HISPC Provider Education Toolkit be reviewed as a tool to help make providers aware of these policies.
- **Consumer Community** – The Uniform Security Policy should be shared with consumers so they can be assured that their health information is protected in a consistent, safe manner.

Deployment

Once system testing is complete and the system users have been trained, it is time to deploy the Uniform Security Policy. The following steps should be taken during the deployment phase:

1. Determine a "go live" date for the Uniform Security Policy across HIOs.
2. Complete and document the training phase with all system users.
3. Ensure that all new or modified applications (off the shelf or custom programmed) to accommodate the Uniform Security Policy have been installed and correctly tied to the production database by having the technical team document new or modified applications that need to be moved into the production database and creating a checklist to follow.
4. Have the appropriate support in place to handle questions that may arise with the use of the Uniform Security Policy. For the first week or two it may be necessary to have additional staff on your support team in order to ensure fast response times for systems users. This support team should be a combination of business analysts and technical personnel.
5. Communicate the "go live" to the systems' users, provide copies of the policy and a documented support mechanism (this could be your "help desk" procedure).
6. Post copies of the policies and user guides to each organization's intranet or co-locate them on a common secure web site.
7. As users begin using the system and the new policy requirements, keep track of any issues that may arise.
8. Regularly review issues and make modifications as necessary to training material, FAQs, policy verbiage and other supporting material.
9. Regularly schedule follow up/refresher training for all users required to adhere to the new policies.

Production

The production phase involves the actual "go live" and the ongoing evaluation and maintenance of the Uniform Security Policy. The first item that should be addressed at "go live" is the support requests received from your users. These requests can include many different types of issues. Many times when a user needs support, it can be attributed to user error, system error (bug) and/or a workflow process. The support requests should be continually evaluated and may require decisions around several areas. Some of the questions to ask when reviewing support requests are:

- Is the workflow efficient when using the Uniform Security Policy? For example: is the authentication practice efficient for a provider to use during a patient encounter? Should business process analysis be completed again?
- Are there software bugs in the application when implemented in a production environment and/or integrated with the production database? Remember: A system and/or integration testing must be completed again after the bug fix is applied to the test database. You may find that users have workflow that will need to be added to the test data.
- Was training sufficient for the users? Are there groups or sub-groups of users that need more instruction on the policies, procedures, and or practices? Should the training material and the material posted on an organization's intranet site or common web site be revised?

In addition, the HIO should have answers to the following questions regarding the production phase:

- How will you measure the successful application of policies after they are moved to production?
- How will you evaluate on a regular basis if the policy is current and/or needs to be modified because of regulatory changes, changes in the environment, technical changes, etc.?
- Who is responsible for policy updates, ongoing monitoring for effectiveness and follow up training, especially when policies change?

By keeping track of the support requests, the HIO can begin to measure the effectiveness of the adoption of the Uniform Security Policy. It is possible to create reports that can show the types of issues encountered, who encountered the issue, the response time to resolution and improvements in system use. This will be very valuable as the effectiveness of the adoption process is measured.

It is important to have a process in place to continue evaluating and maintaining the usefulness of the Uniform Security Policy as the policy may be impacted by several issues. It is suggested that the steps in this adoption guide be used to evaluate the Policy if any of the following events occur within your organization:

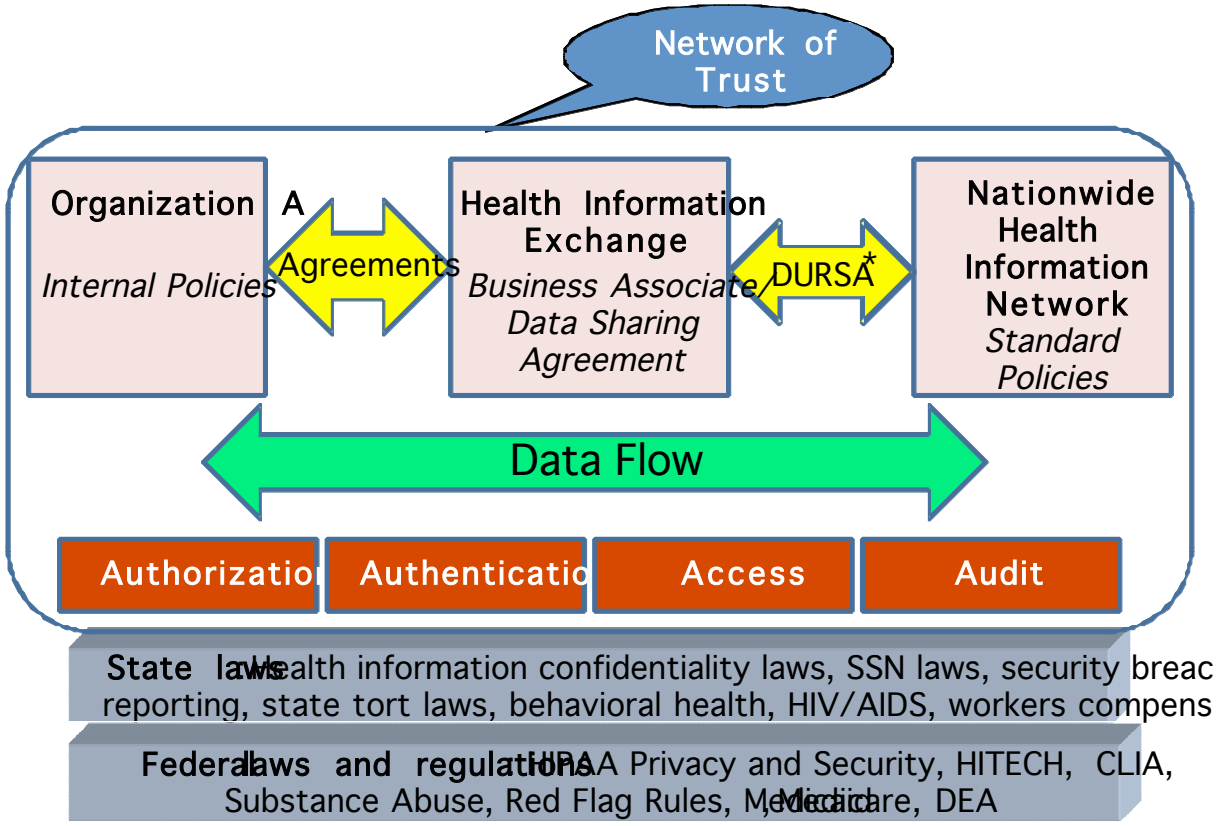
- Addition of any new business process to your workflow
- A change in workflow
- An upgrade of your software applications
- An upgrade to your hardware infrastructure
- Results from regularly conducted risk analyses and compliance audits
- A change in federal or state law related to privacy and security

Anticipated Challenges and Recommended Mitigation Strategies

Figure 4: **How Health Information Exchange Fits in the Legal and Security Context**
As depicted in the graphic below, the focus of health information exchange is the secure transmission of meaningful health data across organizational boundaries. The legal and policy context of health information exchange is found in federal rules and laws that are further modified by state laws. The technical foundations for secure and private transport of health information are principles used to control the "**4 As**":

- **Authorization** (who gets to view and edit the data)
- **Authentication** (how we know them to be who they assert)
- **Access** (what data they can access)
- **Audit** (the record of who has seen and changed what data)

The applications of the principles outlined by the 4As are specified in legal agreements among organizations, health information exchanges, and the Nationwide Health Information Network. This network of trust will benefit from the Uniform Security Policy recommended by the Adoption of Standard Policies Collaborative.



*Data Use and Reciprocal Support Agreement

The following table delineates some anticipated challenges that your organization may face during the adoption process and some potential mitigation strategies to effectively address these categories:

Table 5: **Anticipated Challenges and Recommended Mitigation Strategies**

	Anticipated Challenge	Mitigation Strategy
BUSINESS	Local or regional solutions do not conform to national standards	Educate member organizations on standards and the benefits of standards
	Nomenclature varies across organizations	Use the technical work group to map nomenclature to the standard
	Funding is not available	Write the business plan; solicit funding
	National standards have not been adopted	Review draft national standards and coordinate local/regional standards development to match, where feasible, draft new national standards; inform national standards organizations of lack of standards
	Administrative, physical and/or technical safeguards are not adequately addressed	Incorporate regularly scheduled and comprehensive review of policies, procedures and practices into the business plan. Regularly schedule risk analysis and audit (periodic and compliance). Provide regular training to new and existing users and management.
LEGAL	Granularity of audit logs are not adequate for reports	Evaluate system triggers; implement more granular data capture
	Too many or too few audit logs are generated but do not capture either what is needed or more than can be reviewed in a timely manner.	Perform a legal review of audit plans and procedures as well as proposed content of logs to reduce legal risk, meet appropriate security standard requirements and address regulatory requirements.
	Identifying data specified in policy: o Behavioral Health o HIV/AIDS o Sexually transmitted diseases o Alcohol and Chemical Dependency o Worker's Compensation o Medicaid o Medicare o Certain Minor Information o Genetic o Reproductive	Establish a legal work group to review policies, law and practices related to consent, authorization and specific "more stringent than HIPAA" requirements.

	Anticipated Challenge	Mitigation Strategy
POLITICAL	Lack of transparency	Educate the stakeholders; develop a web site for documentation and dissemination.
	Assumptions are not clearly defined	Improve governance processes to include better communication and greater specificity.
	Complaints of lack of inclusiveness from stakeholder groups	Widen reach by adding more stakeholders. Communicate with stakeholders who had been invited to participate and elected not to be involved, re-inviting them to the table.
TECHNICAL	Varying authentication practices	Define the minimum requirements by adopting the standard policies.
	System performance/ scalability	Provide a technical evaluation of changes recommended to effect improvement including resources and timeline.
	Identifying data specified in policy: o Behavioral Health o HIV/AIDS o Sexually transmitted diseases o Alcohol and Drug o Worker's Compensation o Medicaid o Medicare o Certain Minor Information o Genetic o Reproductive	Present a list of all available data elements to have reviewed by legal. When feedback is provided implement the ability to "lock"/ "unlock" data elements by role.
	Legislation or regulations are required to implement the policy.	Identify models and educate the lawmakers and/or regulators.
EDUCATIONAL	Policy implementation requires legislation or regulation	Prepare whitepapers identifying models. Provide proposed statutory or regulatory language to the legislature or regulating body.
	Importance of security parameters is not understood by all	Educate all users and governance groups.
GOVERNANCE	Policy conflict in member organizations	Specify mechanisms to be used in conflict resolution as part of the legal agreements.

Summary and Next Steps

Since health information technology will be a significant component in national plans to improve healthcare, the importance of privacy and security has become preeminent. However, the specifications to ensure standard application of best security practices across organizations have not been addressed. The Adoption of Standard Policies Collaborative (ASPC) has begun this work. This Guide to the Adoption of the Uniform Security Policy provides a framework designed to assist groups as they seek consensus on privacy and security practices to support the electronic exchange of health information and clears the path for addressing more of the critically important concerns that lie ahead.

Specifically, model policies for interstate exchange of health information are offered for authentication and audit. The other two security domains, authorization and access, were outside of the scope of the work of the ASPC during this specific project. However, having prioritized authentication as one cornerstone of privacy and security, and audit as the foundation for accountability and trust, a few aspects of authorization and access bled into the discussion. The more complete standardization of policies for these areas is one that remains open for the work of other groups. The framework used by the Adoption of Standard Policies Collaborative provides a solid basis for developing standard policies for authorization and access.

Next steps in developing standard security policies and practices include evaluating and testing the viability of this framework as it is adopted and implemented for interstate health information exchange. No matter what legal mechanisms are used to establish a network of trust among health information exchange organizations, specificity is required for security policies and practices. The framework offered here is intended as a starting point to be augmented, expanded, and tested as health information exchange becomes the modality to provide accurate clinical information at the point of care to improve healthcare quality.

The Adoption of Standard Policies Collaborative recommends the following:

1. Testing the framework in environments (for example, Virginia/Tennessee and Washington/Oregon) that implement and assess the viability of the standard policies for authentication and audit.
2. Documenting the types of use cases and transactions that will and do occur in health information exchanges, to provide paradigms for policy and practice development for authorization, access, disaster recovery, archiving, and other intersecting domains.
3. Establishing or designating a rigorous and transparent policy review process, using the standards development organizations methodologies and practices.
4. Standardizing the testing of the technology supporting these policies for the vendor market.
5. Evaluating the capacity to adhere to and support these policies as demonstrated in the certification of health information exchanges.
6. Providing funding for prototypes to test policy standards as they are technologically implemented.

In summary, the focus of health information exchange is the secure transmission of meaningful health data across organizational boundaries. The legal and policy context of health information exchange is found in federal rules and law that is further modified by state laws. The technical foundations for secure and private transport of health information are principles used to control:

- **Authorization** (who gets to view and edit the data)
- **Authentication** (how we know them to be who they assert)
- **Access** (what data they can access)
- **Audit** (the record of who has seen and changed what data)

The application of the principles outlined by these "**4As**" is specified in legal agreements among organizations, health information exchanges, and the Nationwide Health Information Network. This network of trust will benefit from specified standard policies like those recommended by the Adoption of Standard Policies Collaborative.

APPENDICES

Appendix A: Feasibility: Preparing for Change and Process Checklist

If your organization is interested in assessing the feasibility of adopting the Uniform Security Policy must first be prepared for the significant changes that will be required to adopt and implement these standards. The steps that follow in the change process are articulated in the Checklist that follows in Section 2.

Section 1: Preparing for Change

To provide background for adopting the Uniform Security Policy, it is critical to understand the nature and context of organizational change, as change is a prerequisite to adoption. The organizational change perspective focuses on contextual features that enable an organization to respond to both internal pressures and external influences. The ASPC adapted its framework from Rogers' work on diffusion of innovative practices.[10] The diffusion model emphasizes characteristics of the policy/practice that may increase the likelihood of adoption by individuals and organizations. These complementary perspectives provide the framework that informed the recommendations for the adoption process proposed by the ASP Collaborative.

It is important to remember that any organizational change needs to involve senior organizational leadership for both public and private sector organizations. There needs to be a demonstrated value that can be bought in before senior leadership will consider adoption of the Uniform Security Policy, especially when that policy stretches beyond the bounds of an individual organization.

[10] Rogers, E. 2003. Diffusion of Innovations. New York: Free Press

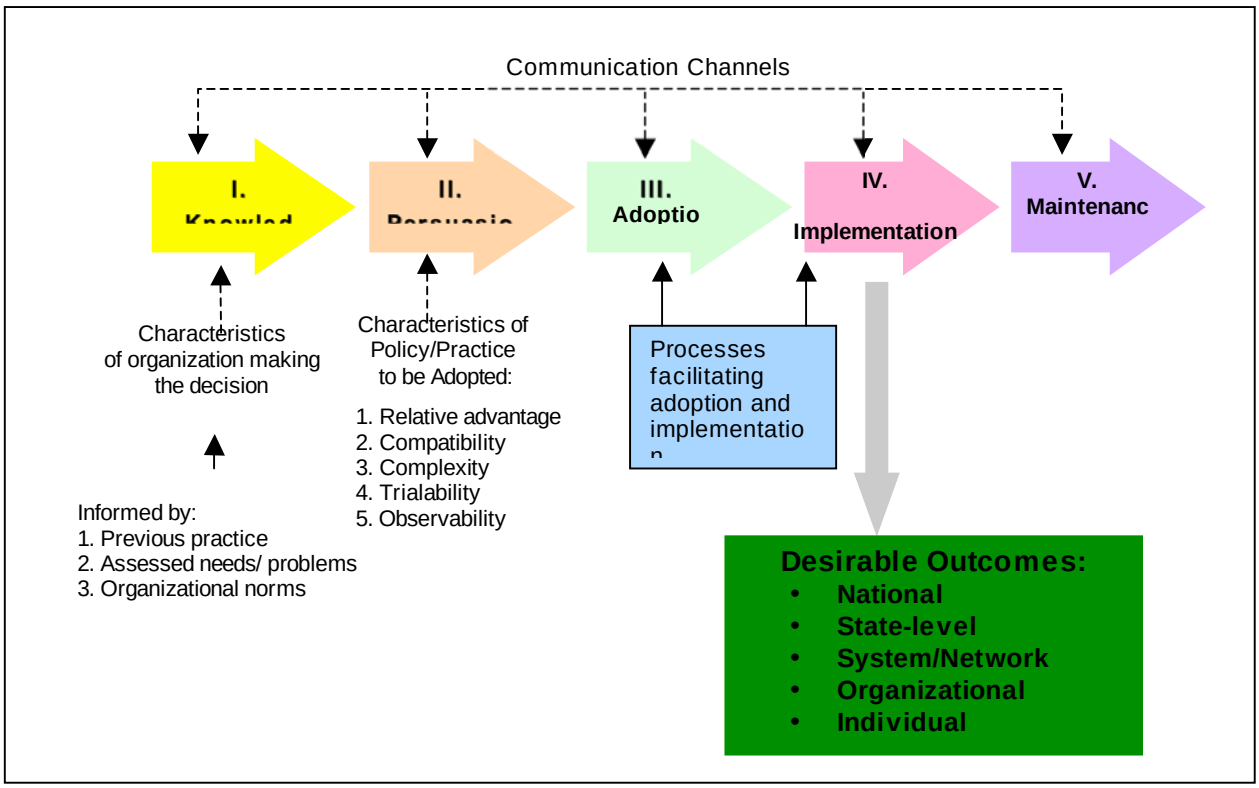


Figure 8: Diffusion of Innovations Model[11]

To use this framework to prepare for change, consider the following:

1. Is your organization prepared to assure ***communication*** among organizational members as the central focus of all steps in the change process?
   - ✓ Transparent
   - ✓ Across many organization levels
   - ✓ Develop respect for the input of all
   - ✓ Organizational structure is important in facilitating the communication

2. Does your organization have the ***knowledge*** that it needs to implement minimum security standards for health information exchange?
   - ✓ Assess current policies, procedures, and practices
     - Internal
     - Industry-specific
   - ✓ Needs assessment or gap analysis
   - ✓ Factors that impact change
     - Organizational culture
     - Professional norms

[11] Rogers, E. 2003. Diffusion of Innovations. New York: Free Press p.170

3. Is your organizational leadership ***persuaded*** to pursue this change to implement minimum security standards for health information exchange?
    - ✓ Relative advantage
        - Cost perception vs. value
    - ✓ Compatibility
        - Ease of transition
    - ✓ Complexity
        - Number of business units affected
    - ✓ Trial-ability
        - Proof of concept: Can we test the proposed innovation?
    - ✓ Observe-ability
        - Does system output reflect all processes
        - Transparent functionality

4. Is your organizational leadership ***adopting*** minimum security standards for health information exchange?
    - ✓ Accept the proposed idea or innovation as a valued institutional goal
    - ✓ Awareness of the changes that will be required to adopt
    - ✓ Determined to proceed
    - ✓ Prepared to develop a change management plan and strategy, including:
        - Solicit feedback
        - Assess adopter involvement or user attitude
        - Commit to the organizational investment (such as training and resources)
        - Commit to the timeliness of delivery, ease of use
        - Evaluate the perceived efficiency and relevance of the policies and practices
        - Channel information to organizational members
        - Convey the salience of the practice
        - Actively enable a change in behavior
        - Documenting the change process

5. Is your organizational leadership prepared to ***implement*** minimum security standards for health information exchange?
    - ✓ Require a focus of both management commitment of resources and research efforts
        - Aware of the types of change taking place within the organization
        - Internal barriers and facilitators
    - ✓ Require system-wide alterations and major changes at all levels of the organization
        - Requirements of resources
        - Centrality of consensus
    - ✓ Been adopted and accepted throughout the organization as standard practice
        - Systematic and continuous evaluation
        - Monitor outcomes
    - ✓ Recording and communicating the progress of the change process

Section 2: Checklist

The following checklist is offered as a summary of steps described in the adoption guide. The purpose is to assist organizations in tracking progress of their adoption of the Uniform Security Policy. It may also be useful in assigning tasks and functions to actors in the HIO.

Goal and Scope		
	☑	**Notes**
Consider Pre-existing Structure		
Determine if this is an existing health information organization (HIO) or if an HIO is being planned		
If the HI0 exists, what level is it organized at: **Local** **Sub state region** **Sub state region that crosses state lines** **State** **Multi-state**		
What are the existing agreements?		
Do these agreements include references to standards for: **Authentication** **System to NHIN** **System to system** **Entity or individual to system** **Individual to participating entity**		
Authorization **License or credential checking** **Use of digital certificates** **System certification** **Automatic checks for changes**		

Goal and Scope (continued)		
	☑	Notes
Access **Role definition:** **What are roles** **What roles see what data** **Web, intranet or closed network** **Data use** **Use for treatment** **Use for medical analysis and consultation on behalf of a patient** **Secondary use of data** **Research** **Public Health** **Other (define)**		
Audit **Log generation (for example, network level, application level, transaction level, etc.)** **Log content specification** **Sharing logs/log reporting** **Failed logins/logins at inappropriate hours** **Audit policies and procedures (periodic and compliance)** **Investigation/mitigation/action for inappropriate use and disclosure** **Capability to change audit criteria and what is tracked**		
Establish a privacy, technical security and administrative/business security work group[12]		
Goal and Scope (continued)		

[12]Due to potential breaches, this group needs to include representation from the general technical side, the general business side, the security side (administrative, physical and technical), the compliance side and the privacy side. (Compliance needs to be included due to potential state law issues, differing federal laws such as GLBA for health plans, etc.)

	☑	Notes
Membership **Chief Information Officer (CIO) from the highest level of organization** **Network Engineer** **Application engineer** **Legal/compliance** **Human resources** **Chief Security Officer (CSO)** **Chief Privacy Officer (CPO)** **Management (business side)** **User** **Administrative policy** **Legislator** **Government (executive branch)** **Public information officer/communications** **Liaisons from other organizations, government, etc.**		
Goal and Scope Milestones ✓ **Document the business model of the Health Information Organization** ✓ **Collect and analyze existing agreements** ✓ **Establish a privacy, technical security and administrative/business security**		

Planning: Resources, Use Case, Risk Analysis and Legal		
	☑	Notes
Existing policy and legal requirements are identified **Legal counsel of the Health Information Organization governing authorities** **HISPC phase 1 and 2 findings[13] (if available for your state)** **CMS, OCR, other federal agencies, state agencies/attorney generals' office(s)** **Consent or authorization requirements**		
Enacting the standards policy **Legislation needed** **Regulation needed** **Contractual terms needed** **Inter-organizational agreement or Memorandum of Understanding (MOU) needed**		
Define the scope **Structure of the HIO: Treatment (individual) health vs. Secondary use of data (such as Public Health business case)** **Use case definition** **Resource availability (fiscal, workforce)** **Realistic time line** **Budget parameters (development and implementation as well as on-going)**		
Planning Milestones: ✓ **Summary report on organizational, state, local, regional legal and institutional (hospital, pharmacy, public health, workers compensation, prisons, behavioral health, etc.) policy environment** ✓ **Written plan to authorize the standards policy** ✓ **Written plan to implement policy for the HIE**		
Implementation: Consensus, Testing and Deployment		
	☑	Notes

[13] See the RTI International website (www.rti.org) for information that pertains to the states and territories that you are working with. Another helpful resource would be the ASPC's ***Final Report***.

Establish the implementation team **Technical personnel** **Business Managers** **Governance group for the organization** **Representatives from the user community**		
Determine type of exchange to be tested **Data elements** **Data formats** **Nomenclature**		
System requirements **Authentication** **Authorization** **Access** **Audit**		

Implementation: Consensus, Testing and Deployment (continued)		
	☑	Notes
Business requirements **Risk Analysis** **Legal Analysis (state and federal, and other regulatory or accreditation requirements appropriate to your situation)** **Policies and procedures** **Training (management and end users)** **Processes** **Participation** **Administrative Safeguards (partial list)** **Authorization, Authentication, Access and Audit** **Disaster Recovery/Emergency Mode Operations Plan (DRP/EMOP)** **Physical Safeguards** **Facility security** **Facility contingency plan (see DRP)** **Data Backup and Recovery** **Media and portable device management and controls** **Remote access management and controls** **Data and media disposal and re-use** **Security and Privacy Enforcement**		
Testing Plan **Minimum requirements specified** **Testing team** **Time line and resources** **Data, applications and processes to be tested**		

Implementation: Consensus, Testing and Deployment (continued)		
	☑	Notes
Testing **Remediation and Documentation of Testing Results** **Approval** **Identification of who has authority to validate test results**		
Re-testing **Acceptable completion** **Identification of who has authority to validate test results**		
Deployment to production **Certification and Accreditation** **Deployment to production** **Production rules and procedures** **Incidence Response**		
Implementation Milestones: ✓ **Documentation of testing and remediation** ✓ **Documentation for C&A** ✓ **Go live**		

Evaluation: Production, Training and Deployment		
	☑	Notes
Risk analysis		
Review of audit reports		
Audit of authorized users		
Review of system performance		
Security breaches		
Data quality review		
User access data reviewed		
Evaluation Milestones: ✓ **Report to the Governing group** ✓ **Report to funding source(s)** ✓ **On-going training** ✓ **Feedback to standards setting groups on the viability of minimum requirements** ✓ **Required mitigation and mitigation plan development** **Required policy, training, audit criteria, etc. review and revision** ✓ **Documentation, document retention and document destruction**		

Uniform Security Policy

March 31, 2009

Table of Contents

Introduction

Purpose	The purpose of the following authentication and audit minimum policy requirements is to foster cross state and cross model data exchange. This policy is intended to be agnostic to the state-specific health information exchange model(s) and is recommended by the HISPC Adoption of Standards Policy Collaborative (ASPC) as a set of basic, minimum policy requirements that have been publicly vetted and accepted. Through consensus negotiations between 6 states[14] and facilitation/support with the other ASPC states[15], the ASPC has established baseline privacy and security protections for organizations engaged in exchanging electronic health information. Health Information Organizations (HIO) participating in Health Information Exchange (HIE) may have different policies, but should incorporate these basic policy requirements for registering and authenticating users, both individual users and organizations, wishing to participate. The HIO must (1) register, (2) execute an agreement with, (3) verify the identity of, (4) provide digital identification for, and (5) maintain an account for all users. Each of these processes has a set of minimal requirements that must be defined in order for the participants of the HIO to trust their trading partners and users. The HIO must implement procedures for auditing access in HIE to confirm appropriate use. Pursuant to the American Reinvestment and Recovery Act, 2009 Title 13 Subpart D, the HIO and its business associates must submit to the Health Insurance Portability and Accountability Act (HIPAA) of 1996.
Scope	The scope of this policy is limited and specific only to electronic authentication and audit policies and process when a health care provider requests patient health information through an HIO for the purpose of treatment. The component parts included in this policy represent the requirements agreed to by participating states. The full scope of the requirements considered for negotiation is available in the ASPC full report at: www.okhca.org/aspc
Draft	March 27, 2009

[14] Arizona, Connecticut, Colorado, Nebraska, Oklahoma, and Washington.
[15] Maryland, Ohio, Utah, and Virginia.

How To Use	This policy does not serve as a standalone document. For more information on the HISPC Project, go to: http://www.hhs.gov/healthit/privacy/execsum.htm
Disclaimer	This policy has not been fully tested and is not intended to represent a complete security policy for health information exchange. This work is intended as a general resource (or reference) and is not meant to provide legal advice to any person or entity that receives a copy of the work. Readers should consult with competent counsel to determine applicable legal requirements, as well as privacy and security experts. Upon publication/public release of this document, please contact the Office of the National Coordinator (ONC) for Health Information Technology, Health and Human Services (HHS) for additional information. Email: onc.request@hhs.gov

Publication Version Control

Version	Date	Name	Purpose of Revision
Original	Jan 26, 2009	Chris Doucette Francesca Lanier	Initial Draft
Version 1.0	Feb 5, 2009	Chris Doucette	Add ASPC states / Legal / TAP comments
Version 2.0	Feb 25, 2009	Chris Doucette Francesca Lanier	Add Stakeholder Review Comments
Version 3.0	March 10, 2009	Chris Doucette Francesca Lanier	Add final Legal comments / Final Draft submittal to ONC.
Version 4.0	March 27, 2009	Chris Doucette Francesca Lanier	Final ASPC project deliverable

Authentication Policy

Section 1 - Use Agreement

1.1 Requirement - Use Agreement

Health Information Organizations should have a data sharing agreement with participating providers that defines the privacy and security obligations of the parties participating in the HIO. These agreements should require the use of appropriate authentication methods for users of the HIO that depend on the users' method of connection and the sensitivity of the data that will be exchanged. In addition, these agreements should reasonably ensure sufficient auditing requirements to determine access and use of the system, as well as secure transport of health information across the network, are appropriate.

Where there is cross-HIO exchange of data, authentication and audit requirements should be defined through a Data Use and Reciprocal Support Agreement (DURSA). The DURSA should define their relationship between the HIOs and ensure, among other things, appropriate authentication and audit of users and queries across HIOs.[16] Reference: M2: A Model Contract for Health Information Exchange and P2: Model Privacy Policies and Procedures for HIE.

Section 2 - Identity Registration

2.1 Required Data Set for Authentication

A directory of data sources within the HIO will include primary contact information of registered members, identity attributes of providers, organization and systems.

2.1.1 Data Source

A directory of data sources within the target HIO is required, and includes name of the HIO and any data sources within that HIO. The primary contact information for the data in the directories should include primary contact name and any contact phone numbers. *DAT 2*[17]

[16] Markle Foundation – Connecting for Health - http://www.connectingforhealth.org/

[17] AUT *, AUD *, DAT *, SYS *, POL * - refers to a negotiated minimum policy requirement and can be referenced the Cross State technical source document.

2.1.2 Provider Identity Attributes

The HIO will collect the attributes as needed for unique identification of the individual accessing the information in the HIO[18]. Required elements are profession, role, name, the practice address (not home address), identity service provider and organization

DAT 2 Attribute also considered:
Service location

affiliation, business/legal address and License/ID. Other attributes that are required, if they exist for this individual, includes:

- Specialization / specialty,
- Email address,
- National Provider Identifier (NPI), and
- Digital identity. *DAT 10*

DAT 10 Requirements also considered:

Directory of all HIO's
Included in the directory: Contact fax numbers
Master provider index to query by provider for a specific patient

2.1.3 Organization Identity Attributes

Identifying the organization requires collecting the following attributes: organization name and email address. Other attributes are required if they exist, including:

- Digital identity,
- EDI administrative contact,
- Clinical information contact,
- Service Location, and
- Predecessor name and date of change.

If the HIO is a regulated healthcare organization, all supporting organization attributes above are required, as well as:

- License/ID,
- License status,
- Registered name, and
- Registered address. *DAT 11*

[18] 45 C.F.R. § 164.312(a)(2)(i) (requiring assignment of a unique name or number for identifying and tracking user identity).

DAT 11 Attributes also considered:
Identifying an organization requires -License status

If the HIO is a regulated healthcare organization-
Address
NPI
Organization address, National Provider Identifier (NPI), organization affiliation, closure date, and successor name

2.1.4 Identity Attributes of the Data Source System

Identifying the system requires the attributes of:

- System name,
- Digital identity,
- Organization affiliation,
- System IP address, and
- System domain name.

If there is no system domain name, the system IP address may be used. For purposes of identifying the originating electronic data sources, would require a date stamp and at least one of the following is required: the system (1) name, (2) IP address, or (3) domain name. Any identifying system types, such as the laboratory information systems, electronic health record system, emergency medical system, etc should also be included. *DAT 12*

2.2 Role-based Access

Proper registration requires the establishment of a defined role associated with the registered user.

2.2.1 Role

The individual's organization role[19] is required for role based access and should include the context of the organization. If the healthcare functional role[20] or the structural roles[21] exists, they are also required. *DAT 1*

Section 3 - Verifying Identity

3.1 Processes Used to Verify Identity

Identity is verified through authentication of the user, the organization and the HIO's system.[22]

3.1.1 User Authentication

The methods for user identity vetting include both verifying the identity in person by a trusted authority and verification through the use of a demonstrated government-issued ID. The trusted authority is recognized by the state or federal government.
An applicant requesting an identity tied to a regulated provider type must have provider licensure validation. It is acceptable that this occur along with the validation required of any employee of a licensed provider organization.

[19] As defined in the American Health Information Community (AHIC) Use Cases.
[20] The functional role is dynamic and is a function of the role in which you are acting.
[21] A structural role is persistent and can be mapped to professions that are recognized.
[22] 45 C.F.R. § 164.312(d) (requiring "procedures to verify that a person or entity seeking access to electronic protected health information is the one claimed").

Also, the HIO use of a specific naming convention as a primary identifier is required with a minimum assurance level used of Medium (knowledge/strong password/shared secret). *AUT 1*

AUT 1 Requirements also considered:

The use of a Notary for user identity vetting;
HIO using of an Object Identifier (OID) as a specific naming convention for the primary identifier;
The User handling sensitive information, given the state's legal/regulatory restrictions on records including HIV, mental health, substance abuse, sexual health, prison health and/or genetic information

3.1.2 Organization Authentication

Organization identity vetting can be accomplished through personal knowledge of a registration authority, that the organization is who they say they are by a demonstrated documentation of corporate existence.
The HIO is required to use a specific naming convention as a primary identifier, and this would include the use of object identifier (OID) or idiosyncratic naming, if either of these exists. This is a requirement at the state level and the ASP Collaborative recommends development of a naming convention that can be registered and identified nationally.
The minimum assurance level required for organization authentication is High (PKI/Digital ID). *AUT 5*

3.1.3 System Authentication

System identity vetting, ensuring the data are coming from the system that they are supposed to be coming from, requires the assertion by an authorized organization representative and/or the demonstration of association with another licensed organization.
The minimum assurance level required for system authentication is High (PKI/Digital ID). *AUT 3*

AUT 5 Requirements also considered:

Organization identity vetting using a certification such as Joint Commission, SAS-70 Compliance, or ENHAC Compliance
The Organization handling sensitive information, given the state's legal/regulatory restrictions information including HIV, mental health, substance abuse, sexual health, prison health and/or genetic information.

AUT 3 Requirements also considered:

System identity vetting through in-person site visits, certification such as FDA or CCHIT, or verifying the system IP address and system domain name
The System handling sensitive information, given the state's legal/regulatory restrictions information including HIV, mental health, substance abuse, sexual health, prison health and/or genetic information.

3.2 Variations Based On Type and Location of User

3.2.1 User Identity, Role and Affiliation Verification

The user identity, role and affiliation must be checked for both revocation and expiration at the time of logon to the system. If either case pertains, use would be denied. *SYS 13*

SYS 13 Requirements considered as optional:

Authentication method checking and challenge/response checking

3.2.2 Signature Verification

The HIO is responsible for digital verification of non-repudiation signer credentials. Verification implies that:

- The credential issued by a trusted authority,
- The credential is current,
- The credential is not suspended or revoked, and
- The credential type is appropriate (for example, physician or pharmacist).

If the signed-by-person claimed (non-repudiation) exists, it should also be verified. *SYS 11*

3.2.3 Assurance Level

It is required that the level of assurance be declared and should be communicated in terms of the then current National Institute of Testing and Standards (NIST) requirements. For the HIO to migrate data an assurance level of at least Medium (knowledge/strong password/shared secret) is required. *DAT 3*

3.2.4 Relationship To Patient

If the HIO is exchanging for purposes of treatment, the provider seeking access needs to demonstrate or certify that they have a treatment relationship with the patient. *POL 12*

POL 12 Requirement also considered:
A system ability to calculate some value that represents the quality of a match based on an algorithm, for purposes of tracking measurements

3.2.5 Threshold Calculation

Patient matching content out of scope[23]. *SYS 5*

3.2.6 Digital Signature

The HIO is required to have the ability to use digital signatures, if they exist, at least at the provider level. *SYS 9*

SYS 9 Requirement also considered:

A policy allowing the organization to accept or express data without signature or would it express with a caveat or some marker that no signature was received

3.2.7 Persistence

The use of persistence[24] of the source signature is required and is the responsibility of the HIO with its own participants. The attributes required are persistent user signature, persistent organization signature and persistent system signature. Non-repudiation of origin is also the responsibility of the HIO with its own participants, and includes the attributes of user, organization and system accountability. If source authentication exists it is also required. *DAT 8*

3.3 Accommodations for Cross-HIE Verification and Data Integrity

3.3.1 Restricted Data Sharing and Data Integrity

The transmission of caveats regarding data completeness is required to indicate that an entire record may not have been transmitted. The use of pertinent state-specific caveats should be included in the transmission. *POL 2*

3.3.2 Authenticate Recipient Identity (Organization / System / User)

The identity of the recipient must be established and the method of identifying recipients of communications can include, but is not restricted to: (1) derived from ordering system

[23] This requirement is outside the limited scope of the ASPC effort, however the states elected to collect this information due to the subject matter and relevancy as it related to the selected use cases. For more information see the ASPC Individual Requirements Review (IRR) document.
[24] Persistence indicates proof that data has not been altered and is only valid during the communication session.

communications, (2) selected from a provider directory, or (3) derived from identifiers included in the request for information. *AUT 6*

3.3.3. Required Elements for Matching

Elements for patient matching are considered out of scope[25], including if patient matching is necessary for the authentication or audit functionality. *DAT 6*

DAT 6 Elements considered for patient matching include:
Identifiers (Patient Account Number, SSN, Driver License, Mother's ID, MRN, Alt Patient ID);
Patient Name (First, Middle, Last, Family Name, Suffix, Prefix/Title, Type);
Mother's Maiden Name (Family Name, Surname); Patient DOB; Gender, Patient Previous Name; Race;
Patient Home Address (Home Street, Street or mailing Address, Street Name, Dwelling Number, Other Designation (second line of street address), City, State/Province, Zip, Country, Address type, County Code);
Patient Daytime Phone (country code, Area/City Code, Local Number, Extension, any other text); Work Telephone; Primary Language; Marital Status; Religion; Patient Ethnicity; Birth Place; Multiple Birth Indicator; Birth Order; Citizenship; Veteran's Military Status; Nationality; Deceased (Date/Time, Deceased Indicator)

3.3.4 Matching Criteria

Patient matching criteria is considered out of scope[26], including if patient matching is necessary for the authentication or audit functionality. *DAT 7*

DAT 7 Requirement also considered:

Defining a minimum number of three (3) data elements to query another system

3.3.5 Digital Signature

For the purposes of cross-HIE verification, the ability to use digital signatures is required at the provider level. *SYS 9*

[25] This requirement is outside the limited scope of the ASPC effort, however the states elected to collect this information due to the subject matter and relevancy as it related to the selected use cases. For more information see the ASPC Individual Requirements Review (IRR) document.
[26] This requirement is outside the limited scope of the ASPC effort, however the states elected to collect this information due to the subject matter and relevancy as it related to the selected use cases. For more information see the ASPC Individual Requirements Review (IRR) document.

3.3.6 Persistence

The use of persistence of the source signature is required and is the responsibility of the HIO with its own participants. The attributes required are:

- Persistent user signature,
- Persistent organization signature and,
- Persistent system signature.

Non-repudiation of origin is also the responsibility of the HIO with its own participants, and includes the attributes of:

- User Accountability,
- Organization Accountability, and
- System accountability.

If source authentication exists, it is also required. *DAT 8*

3.3.7 Data Authentication

For purposes of data authentication, the use of a timestamp is required at point of signature application. *AUT 4*

AUT 4 Requirement also considered, but is difficult to implement:

Signature Purpose (ASTM E1762)

3.3.8 Data Validation

Data validation of signer credentials should be issued by a trusted authority, should be current, and the credential should not be suspended or revoked, and the credential type should be appropriate (for example, physician, pharmacist or hospital). For purposes of data integrity, the data validation should indicate that the data has not been changed since the signature, and should have a timestamp at point of signature application. *AUT 7*

3.3.9 Type of Requestor

For verification purposes the requestor type should identify the exchange, organization (institution) and the user (individual). *DAT 4*

3.3.10 Signature Purpose

The signature purpose should be included as a minimum requirement, and any of the captured signature elements that exist should be included. *DAT 13*

The DAT 13 elements that were considered include:

Author's signature, Coauthor's signature ,Co-participant's signature, Transcriptionist/Recorder, Verification signature, Validation signature, Consent signature, Witness signature, Event witness signature, Identity witness signature such as a Notary, Consent witness signature, Interpreter, Review signature, Source signature, Addendum signature, Administrative, Timestamp, Modification, Authorization, Transformation and Recipient

Section 4 - Identity Provisioning

4.1 Types and Levels of Factor Provisioning

Refer to Section 3 for the required assurance levels for user, organization and system authentication [HISPC ASP reference AUT 1, 5 & 3 respectively]

Section 5 - Identity Maintenance

5.1 Registration Data

No current minimum policy requirements exist.

Audit Policy

Section 1 - Logging and Audit Controls

1.1 Log-In Monitoring[27]

As a part of log-in monitoring, an audit log is required to be created to record when a person logs on to the network or a software application of the HIO. This includes all attempted and failed logons.

The generated audit logs must be reviewed on a regular basis that is based on an audit criteria developed in advance. Anomalies must be documented and appropriate mitigating action and documented. The HIO should determine how long its state laws and risk management policies would require retention of this documentation. *POL 16*

1.2 Information Systems Review[28]

All HIE systems must be configured to create audit logs that track activities involving electronic Protected Health Information (PHI). The review of information systems shall include software applications, network servers, firewalls and other network hardware and software. The generated audit logs shall be reviewed on a regular basis based on audit criteria developed in advance. All anomalies must be documented and appropriate mitigating action taken and documented. All system logs must be reviewed. The review shall include, but not limited to, the following types of information: data modification, creation, and deletion. The HIO should determine how long its state laws and risk management policies would require retention of this documentation *POL 15*

1.3 System Review

Information system reviews should be conducted on a regular and periodic basis, as determined by the HIO. *SYS 4*

SYS 4 Requirement also considered:

Automatic trigger exists for any out of state access; Automated Audit review to permit ready review of any interstate access exists

1.4 Security Audit Practice

The frequency of performing regular security audits shall be determined at a specified frequency for the HIO. Auditing frequency typically varies by state/HIO for example Nebraska conducts audits yearly, and Washington conducts quarterly audits. Audits shall be conducted at least annually as a minimum requirement, and the comprehensive audit procedures should be developed, documented and available. The HIO should also conduct periodic external audits. *SYS 8*

[27] HIPAA Security Rule: 45 C.F.R. § 164.312(b) (requiring "hardware, software, and/or procedural mechanisms that record and examine activity in information systems that contain or use electronic protected health information"); 45 CFR § 164.308 (a)(5)(ii)(C) (requiring procedures for monitoring log-in attempts and reporting discrepancies **).**

[28] HIPAA Security Rule 45 CFR § 164.308 (a)(1)(ii)(D) (requiring covered entity to "regularly review records of information system activity, such as audit logs, access reports, and security incident tracking reports").

SYS 8 Requirement also considered:

The sharing of risk scores with other RHIOs

The sharing of risk scores with other RHIOs

1.5 Audit Trail and Node Authentication (ATNA)

The Audit Trail and Node Authentication Integration Profile[29] requires the use of bi-directional certificate-based node authentication for connections to and from each node. The use of certificates or encryption is required when the data are signed or when it is specified by the HIO policy. *SYS 6*

Section 2 - Periodic Internal Compliance Audits

In order to appropriately assure the security of Protected Health Information HIO's shall perform internal audits to evaluate their process and procedures.

2.1 Evaluation[30]

Under HIPAA security standards, administrative safeguards are required in order to exchange electronic PHI. Users of HIO exchanges needs to comply with all privacy and security regulations when exchanging electronic health information.

Additionally, periodic technical and non-technical evaluations are required to reasonably ensure that the covered entity is compliant with the provisions of the HIPAA Security Rule. Audit criteria must be developed and documented in advance for this type of evaluation, known as a "compliance audit". Evaluations shall be performed at least annually and when any major system or business changes occur. The evaluation shall include:

- The generation of a compliance audit findings report,
- Documentation that an identified deficiency has been addressed, will be addressed in order of priority, or represents a risk the organization is willing to accept,
- The documentation on the evaluation shall be retained for minimum of six years[31] however some states may have longer retention requirements. *POL 17*

Section 3 - Information Access

3.1 Audit Controls[32]

[29] IHE: Integrating the Healthcare Enterprise

[30] **HIPAA Security Rule 45 CFR § 164.308 (a)(8) – Evaluation**

[31] 45 C.F.R. § 164.316 (requiring retention for six years of policies and any required activity that must be documented under the rule). While 45 C.F.R. § 164.308(a)(8) does not require documentation of the compliance audit, it is a good business practice to do so and to retain that documentation for risk management purposes.

Under HIPAA security standards, technical safeguards are required including policy, data, and system requirements. All entities and their business associates must implement technical processes that accurately record activity related to access, creation, modification and deletion of electronic PHI. *POL 18*

3.2 Subject of Care Identity

To identify the identity of the subject of care, a matching criteria policy is a required (for example, a match on DOB, First Name, Last Name, Address, etc…) *AUT 2*

AUT 2 Requirements also considered:

The collection and processing of patient demographics includes the collection of SSN and driver's license;
The provider needs to demonstrate proof of the identity of the subject of care

3.3 Demographics That May Be Logged

An additional audit log should be performed by the HIO for a subset of the subject identity attributes that have been used when a person is found. *DAT 9*

Section 4 - Need to Know/ Minimum Necessary for Data Management and Release

4.1 Information Disclosure

For purposes of information disclosure, a written policy is required which includes documentation of the following:

- The date and time of the request,
- The reason for the request,
- A description of the information requested, including the data accessed, the data transmission, any changes to the data (adds, changes, deletes), and whether the data were transmitted to another party,
- The ID of person/system requesting disclosure,
- The ID/verification of the party receiving the information,
- The ID of the party disclosing the information. *AUD 2*

AUD 2 Requirement also considered:

The description of the information requested also includes whether data was printed from another party

4.2 Auditing Access Where Individual Consent or Authorization is Required

An authorization policy must be in place for any exchange of PHI, and requires the audit log to identify whether the release requires an authorization and, if so, whether the authorization was obtained.
A consent ID would be required, if it exists, for transactions that require a consent or authorization to be tracked for audit purposes. *AUD 2*

[32] HIPAA Security Rule 45 CFR § 164.312(b) – Audit Controls

Section 5 - Need-to-Know Procedure/ Process for Personnel Access to PHI

5.1 Information Request

For purposes of information requests, a written policy is required that includes the following components:

- The date and time of the request,
- The reason for the request,
- A description of information requested, including the data accessed, data transmission, any changes to the data (adds, changes, deletes), and whether the data were transmitted to, or printed by another party,
- The ID of person/system requesting disclosure,
- The ID/verification of the party receiving the information,
- The ID of the party disclosing the information,
- The method used for verification of the requesting entity's identity.

An authorization policy must be in place for any exchange of PHI and requires the audit log to identify whether the release requires an authorization and if so, whether the authorization was obtained.

A consent ID is required, if it exists, for transactions that requires a consent or authorization to be tracked for audit purposes. *AUD 1*

5.2 Audit Log Process

The HIO's audit log procedure shall be developed and documented prior to any HIE exchange and shall include identifying who is responsible for reconstitution and sharing audit log information. This includes identifying who is authorized to request the audit log. Also, the procedure shall identify is the audit log information is available to individuals and how that request is handled. *POL 9*

5.3 Data Authentication

If a document is shared with a patient, methods for assurance shall be established and shall indicate that data have-not been modified. *POL 10*

5.4 Preparing a Query Message

When an HIO generates a registry stored query, registry or Record Locator Service (RLS) will be asked if there are records for this patient [Refer to HITSP IS01]. *SYS 1*

SYS 1 Requirement also considered:

The ability of the HIO to generate an HL7 message

Section 6 - System Capabilities

6.1 Audit Controls[33]

Audit logs are required to record activity specified by the HIO and the HIO shall periodically review the generated audit logs. This review of the audit logs is based on established audit criteria and shall include documentation of any anomalies. The HIO will document its mitigating action (including sanctions, security incident response team activation, etc. as appropriate). Audit logs must include at least the following: unique user name/ID, date/time stamp, and all actions taken (add, change, delete). Audit logs should

[33] **HIPAA Security Rule 45 CFR § 164.312(b) – Audit Controls**

either be in readable form or translatable by some easy to use tool to be in readable form, and they need to be examined with some frequency appropriate to the HIE in order to detect improper use. *POL 18*

6.2 Audit Log Content

The HIO's audit logs shall include:

- User ID,
- A date/time stamp,
- Identification of all data transmitted, and
- Any authorizations needed in order to disclose the data. *SYS 3*

The audit log shall include any system activity of use and disclosure of data, and shall retain a record of information systems activity that occurs at established periodic time frames. The audit log for the use and disclosure of data is also required to have a set report in place. Actions that have been identified in the event of discovered anomalies/breaches shall be included in the audit log. Also, login auditing is required as noted under the HIPAA security rule auditing standard. If it exists, any state-specific[34] consent policy under which the data were disclosed shall be tracked. This may be a global consent policy or a specific consent for each access.
If sensitivity restricted information exists, the HIO may choose to implement restrictions as permitted under their state. *SYS 2*

SYS 3 Requirements also considered:

Ability to share responsibilities for identifying what has been transmitted, which entities are responsible for tracking on specifics, and whether data can be transmitted to another party

6.3 Information Integrity

Information integrity is audited by logging that no change has occurred since the signature was applied and shall include a valid date/time stamp. *SYS 12*

6.4 Data Authentication

For purposes of data authentication the use of a valid date/time stamp is required. *AUT 4*

AUT 4 Requirement also considered, but is difficult to implement:

Signature Purpose (ASTM E1762)

6.5 Data Validation

For the purposes of data validation, the signer credentials must be from a trusted authority, and the credential must be current and without constraints, and the credential must be of the appropriate type for the requested data (for example physician or pharmacist). To

[34] For example, the consent policy of the State of Massachusetts.

ensure data integrity, credentials shall indicate that no change has occurred since the signature was applied and must have a valid date/time stamp. *AUT 7*

Requirements Out of Scope

1.0 Electronic Signature *SYS 10*

SYS 10 Requirement also considered:

Ability for electronic signature (distinct from a digital signature)

2.0 Interim Reports *POL 1*

POL 1 Requirement also considered:

Interim reports made available for sharing once the ordering physician has signed off on the results, and has been discussed with patient where this is required by policy. There was a difference in state perspective (ie border states) about withholding information from a patient

3.0 Returning More Demographics *POL 8*

POL 8 Requirement Also Considered:

The identification of risk issues– e.g. Data authentication not a high risk in this scenario

4.0 Risk Assessment *POL 13*

POL 13 Requirement also considered:

The returning of more demographic information to the end user than was entered

5.0 Signature / Data Validation Checking *POL 14*

POL 14 Requirements also considered:

Signature and Data Integrity conducted prior to allowing the following procedures:
Using data communicated through secured methods (e.g. VPN);
Using data communicated through insecure methods (e.g. patient USB);
Storing data;
Submitting data to shared resource

References

Connecting for Health Common Framework (from the Markle Foundation) - See http://www.connectingforhealth.org/

M2 – A Model Contract for Health Information Exchange
P2 – Model Privacy Policies and Procedures for Health Information Exchange
P5 – Authentication of System Users
P7 – Auditing Access to and use of a Health Information Exchange

Appendix C: Other Useful Resources

- **American Health Information Community (AHIC)**
- **American Health Information Management Association (AHIMA)**
- **Connecting for Health**
- **eHealth Initiative (eHI)**
- **Healthcare Information Management Systems Society (HIMSS)**
- **Healthcare Information Technology Standards Panel (HITSP)**
- **Integrating the Healthcare Enterprise (IHE)**
- **North Carolina Healthcare Information and Communications Alliance, Inc (NCHICA)**

American Health Information Community (AHIC)

www.hhs.gov/healthit/ahic

The American Health Information Community (AHIC) was formed to help advance efforts to reach President Bush's call for most Americans to have electronic health records within ten years. The Community is a federally-chartered advisory committee and provides input and recommendations to HHS on how to make health records digital and interoperable, and assure that the privacy and security of those records are protected, in a smooth, market-led way.

AHIC has developed a set of use cases outlining events and actions for different types of access to the health information exchange. The use case documents are available for download at the AHIC website.

The following use cases were utilized in developing the ASC standard policies:

- Laboratory Reporting
- Medication Management

American Health Information Management Association (AHIMA)

www.ahima.org

The American Health Information Management Association (AHIMA) is the premier association of health information management (HIM) professionals. AHIMA is committed to advancing the Health Information Management profession in an increasingly electronic and global environment through leadership in advocacy, education, certification and lifelong learning.

The Foundation of Research and Education (FORE) of AHIMA under contract to ONC has developed many practice and policy guidance documents for state-level HIE initiatives in the areas of governance, structure, operations, financing and HIE polices. The documents, as well as a tool kit, are available on the AHIMA website.

Connecting for Health

www.connectingforheatlh.org

Connecting for Health **is** a public-private collaborative with representatives from more than 100 organizations across the spectrum of healthcare stakeholders. Its purpose is to catalyze the widespread changes necessary to realize the full benefits of health information technology (HIT), while protecting patient privacy and the security of personal health information. **Connecting for Health** is continuing to tackle the key challenges to creating a networked health information environment that enables secure and private information sharing when and where it's needed to improve health and healthcare.

The Common Framework helps health information networks to share information among their members and nationwide while protecting privacy and allowing for autonomy and innovation. It consists of 17 mutually-reinforcing technical documents and specifications, testing interfaces, code, privacy and security policies and model contract language. The documents are available for download at the Connecting for Health website.

The following framework documents were used in the development of the ASC standard policies:

- M1 – Key Topics in a Model Contract for Health Information Exchange
- M2 – A Model Contract for Health Information Review
- P5 – Authentication of System Users
- P7 – Auditing Access To and Use of a Health Information Exchange

Healthcare Information Management Systems Society (HIMSS)
www.himss.org

The Healthcare Information and Management Systems Society (HIMSS) is the healthcare industry's membership organization exclusively focused on providing global leadership for the optimal use of healthcare information technology and management systems for the betterment of healthcare.

HIMSS provides resources, relevant news and a toolkit to keep its membership and the community informed about the every-changing areas of RHIOs and HIEs. The resources are available on their website.

Health Information Technology Standards Panel (HITSP)
www.hitsp.org

The Healthcare Information Technology Standards Panel (HITSP) was founded in October 6, 2005 when awarded a contract award from the Office of the National Coordinator for Health and Information Technology (ONC) offered to advance President Bush's vision for widespread adoption of interoperable health records (EHR) within ten (10) years. The contracted targeted the creation of process to harmonize standards, certify EHR applications, develop nationwide health information network prototypes and recommend necessary changes to standardized diverse security and privacy policies.

The American National Standards Institute (ANSI), in cooperation with strategic partners HIMSS, Booz Allen Hamilton and Advanced Technology Institute, was selected to administer the standards harmonization initiative. The resulting collaboration became HITSP.

The Panel's work is driven by a series of priorities (Use Cases) issued by the American Health Information Community (AHIC). HITSP produces recommendations and reports in Interoperability Specifications and related Constructs that guide the standard implementation of each use case.

Appendix B: Glossary and Abbreviations

The constructs consist of Interoperability Specifications, Transaction Packages, Transactions and Components. The recommendations, constructs and reports as well as a more in depth explanation of the harmonization process are available on the HITSP website.

The HITSP Specifications and documents applicable to the use cases of Lab Reporting and Medication Management were utilized by the ASPC to harmonize policies with the use cases.

Integrating the Healthcare Enterprise (IHE)
www.ihe.net

IHE is an initiative by healthcare professionals and industry to improve the way computer systems in healthcare share information. IHE promotes the coordinates use of established standards such as DICOM and HL7 to address specific clinical need in support of optimal patient care. Systems developed in accordance with IHE communicate with one another better, are easier to implement, and enable care providers to use information more effectively. The IHE Technical Framework documents are available on the IHE website.

North Carolina Healthcare Information and Communications Alliance, Inc (NCHICA)
www.nchica.org

The North Carolina Healthcare Information and Communication Alliance (NCHICA) is a nationally recognized nonprofit consortium that serves as an open, effective and neutral forum for health information technology initiatives that improve health and healthcare in North Carolina.

NCHICA's leadership in conducting demonstration projects, hosting educational sessions, and fostering collective efforts within North Carolina helps position the state as a vanguard of national HIT acceleration efforts. NCHICA has developed a *Toolkit for State-Level HIE* to assist other communities, regions and states develop a nonprofit similar to theirs. The Toolkit is located on the NCHICA website, under the "Health IT" tab.

eHealth Initiative (eHI)
www.ehealthinitiative.org

The eHealth Initiative and the Foundation for eHealth Initiative are independent, non-profit affiliated organizations whose missions are the same: to drive improvement in the quality, safety, and efficiency of healthcare though information technology. eHI focuses on the following topics to support its mission:

- Monitoring, assessing and reporting out changes in the policy environment
- Developing multi-stakeholder consensus
- Developing and disseminating tools and resources
- Providing "hands-on help"
- Launching learning laboratories
- Expanding its coalition

Information about the eHI Blueprint and the eHealth Initiative Toolkit are available on their website.

Appendix B: Glossary and Abbreviations

National Institute of Standards Technology (NIST) 800 series of publications
http://www.nist.gov/index.html

Founded in 1901, NIST is a non-regulatory federal agency within the U.S. Department of Commerce. NIST's mission is to promote U.S. innovation and industrial competitiveness by advancing measurement science, standards, and technology in ways that enhance economic security and improve our quality of life.

Special Publications in the **800 series** present documents of general interest to the computer security community. The Special Publication 800 series was established in 1990 to provide a separate identity for information technology security publications. This Special Publication 800 series reports on ITL's research, guidelines, and outreach efforts in computer security, and its collaborative activities with industry, government, and academic organizations.
http://csrc.nist.gov/publications/PubsSPs.html

Appendix D: Glossary and Abbreviations

The following glossary includes the definition of key terms found in this Adoption Guide. A common understanding and use of these terms is critical in the consensus and adoption process.

This glossary represents an excerpt of terms included in a broader Glossary developed by the HISPC Adoption of Standard Policies Collaborative (ASPC) for the purposes of developing the Uniform Standard Policy. The full ASPC glossary can be found in the ASPC Final Report.

Term	*Definition*	*Source of definition*
4 As	Authorization, Authentication, Access and Audit	HIPAA
Access Control	Prevention of unauthorized use of information assets **(ISO 7498-2).** It is the policy rules and deployment mechanisms, which control access to information systems, and physical access to premises (OASIS XACML).	HITSP Glossary
Accountability	Property ensures that the actions of an entity may be traced to that entity.	[ISO 7498-2:1989]
AHIC	American Health Information Community.	Emergency Responder Use Case
AHIMA	The American Health Information Management Association	N/A
AHRQ	The Agency for Healthcare Research and Quality	N/A
Alliance	The State Alliance for E-Health	N/A
Assurance	In the context of NIST SP 800-63, assurance is defined as 1) the degree of confidence in the vetting process used to establish the identity of an individual to whom the credential was issued, and 2) the degree of confidence that the individual who uses the credential is the individual to whom the credential was issued.	NIST 800-63-1
Audit Trail and Node Authentication (ATNA)	Establishes the characteristics of a Basic Secure Node: 1. It describes the security environment (user identification, authentication, authorization, access control, etc.) assumed for the node so that security reviewers may decide whether this matches their environments. 2. It defines basic auditing requirements for the node	[Vol. 1 (ITI TF-1): Integration Profiles, Rev. 4.0 Final Text 2007-08-22 (p. 16)]

Term	Definition	Source of definition
	3. It defines basic security requirements for the communications of the node using TLS or equivalent functionality. 4. It establishes the characteristics of the communication of audit messages between the Basic Secure Nodes and Audit Repository nodes that collect audit information. 5. This profile has been designed so that specific domain frameworks may extend it through an option defined in the domain specific technical framework. Extensions are used to define additional audit event reporting requirements, especially actor specific requirements. The Radiology Audit Trail option in the IHE Radiology Technical Framework is an example of such an extension.	
Authentication	The process of establishing confidence in the identity of users or information systems.	NIST 800-63-1
Authorization	The granting of rights, which includes the granting of access based on access rights.	[ISO 7498-2:1989]
Availability	The property of being accessible and useable upon demand by an authorized entity.	[ISO 7498-2:1989]
Care	Relieving the suffering of individuals, families, communities, and populations by providing, protecting, promoting, and advocating the optimization of health and abilities.	Emergency Responder, Medication Management Use Case
CCHIT	Certification Commission for Healthcare Information Technology.	Medication Management
Claimant	A party whose identity is to be verified using an authentication protocol.	NIST 800-63-1
Clinicians	Healthcare providers with patient care responsibilities, including physicians, advanced practice nurses, physician assistants, nurses, and other credentialed personnel involved in treating patients.	Medication Management Use Case

Term	Definition	Source of definition
CMS	Centers for Medicare & Medicaid Services, a federal agency within the Department of Health and Human Services.	Medication Management Use Case
Confidentiality	Property that information is not made available or disclosed to unauthorized individuals, entities, or processes.	[ISO 7498-2:1989] 45 CFR § 164.304 Definitions
Consumers	Members of the public who may receive healthcare services. These individuals may include: caregivers, patient advocates, surrogates, family members, and other parties who may be acting for, or in support of, a patient in the activities of receiving healthcare.	Medication Management Use Case
Credential	An object that authoritatively binds an identity (and optionally, additional attributes) to a token possessed and controlled by a person.	NIST 800-63-1
Credentialed Personnel	A degree, certificate or award which recognizes a course of study taken in a certain area, and acknowledges the skills, knowledge and competencies acquired. In the health field, personnel are usually required to register with the credentialing body or institution not only in their discipline, but also in the state, locality, and institution where they practice.	Emergency Responder Use Case
Demographics	Basic patient identifying information such as name, age, gender, and primary language spoken.	Emergency Responder Use Case
Department of Health and Human Services (HHS)	This is the federal agency responsible for human health, and has oversight over many other federal agencies such as FDA, the National Institutes of Health (NIH), the Centers for Disease Control and Prevention (CDC), CMS, the Agency for Health Research and Quality (AHRQ), the Substance Abuse and Mental Health Services Administration (SAMHSA), and others.	Medication Management Use Case
Digital Identity	A digital representation of a set of claims by one party about itself or another digital subject	ASPC Negotiated Definition
Digital Signature	Data appended to, or a cryptographic transformation of a data unit that allows a recipient of the data unit to prove the source and integrity of the data unit and protect against	[ISO 7498-2:1989]

Term	Definition	Source of definition
	forgery, e.g. by the recipient.	
DRP/EMOP	Disaster Recovery Plan/Emergency Mode Operation Plan	N/A
eHI	The eHealth Initiative	N/A
Electronic Authentication	The process of establishing confidence in user identities electronically presented to an information system.	NIST 800-63-1
Electronic Health Record	An electronic record of health-related information on an individual that conforms to nationally recognized interoperability standards and that can be created, managed, and consulted by authorized clinicians and staff across more than one health care organization.	National Alliance For Health Information Technology
FDA	Food and Drug Administration; a federal agency within the Department of Health and Human Services responsible for the safety regulation of foods, dietary supplements, vaccines, drugs, medical devices, veterinary products, biological medical products, blood products, and cosmetics.	Immunization, Medication Management Use Case
Functional Roles	Functional roles reflect the essential business functions that need to be performed. Functional roles are defined by a set of standard healthcare tasks (e.g., Neurologist).	Neuman/ Strembeck
Health Information Exchange	The electronic movement of health-related information among organizations according to nationally recognized standards.	National Alliance For Health Information Technology
Health Information Organization	An organization that oversees and governs the exchange of health-related information among organizations according to nationally recognized standards.	National Alliance For Health Information Technology
Health Record Banking	Entities/mechanisms for holding an individual's lifetime health records. This information may be personally controlled and may reside in various settings such as hospitals, doctor's offices, clinics, etc.	Immunization Use Case
Health Registry	A health registry is an organized system for the collection, storage, retrieval, analysis, and dissemination of information on individual persons who have either a	Emergency Responder Use

Term	Definition	Source of definition
	particular disease, a condition (e.g., a risk factor) that predisposes to the occurrence of a health-related event, or prior exposure to substances (or circumstances) known or suspected to cause adverse health effects.	Case
Healthcare Organization	Officially registered organization that has a main activity related to health care services or health promotion. *EXAMPLES:* Hospitals, Internet health care web site providers and health care research institutions. *NOTE 1:* The organization is recognized to be legally liable for its activities, but need not be registered for its specific role in health. *NOTE 2:* An internal part of an organization is called an organizational unit, as in X.501.	[ISO IS 17090]
HIMSS	The Healthcare Information and Management Systems Society is the healthcare industry's membership organization exclusively focused on providing global leadership for the optimal use of healthcare information technology and management systems for the betterment of healthcare.	The Healthcare Information and Management System Society
HISPC	Health Information Security and Privacy Collaboration	N/A
HITSP	The American National Standards Institute (ANSI) Healthcare Information Technology Standards Panel; a body created in 2005 in an effort to promote interoperability and harmonization of healthcare information technology through standards that would serve as a cooperative partnership between the public and private sectors.	Immunization, Medication Management Use Case
Identification	Performance of tests to enable a data processing system to recognize entities.	[ISO/IEC 2382-8:1998]
Identifier	Piece of information used to claim an identity, before a potential corroboration by a corresponding authenticator.	[ENV 13608-1]
Identity	A unique name of an individual person. Since the legal names of persons are not necessarily unique, the identity of a person must include sufficient additional information (for example an address, or some unique identifier such as an employee or account number) to make the complete name unique.	NIST 800-63-1

Term	Definition	Source of definition
IHE	Integrating the Healthcare Enterprise is an initiative by healthcare professionals and industry to improve the way the computer systems in healthcare share information. IHE promotes the coordinated use of established standards such as DICOM and HL7 to address specific clinical need in support of optimal patient care.	Integrating the Healthcare Enterprise
Integrity	Proof that the message content has not been altered, deliberately or accidentally, in any way during transmission.	Adapted from ISO 7498-2:1989
Medication	Medication includes any prescription medications, sample medications, herbal remedies, over-the-counter drugs, vaccines, and diagnostic and contrast agents used on or administered to persons to diagnose, treat, or prevent disease or other abnormal conditions. This also includes any product designated by the FDA as a drug with the exception of eternal nutrient solutions, oxygen, and other medical gases.	Medication Management Use Case
Medication Management	The system for how healthcare organizations handle medications. The medication management process includes ordering and prescribing, preparing and dispensing, administration, monitoring, medication selection and procurement (i.e., formulary considerations), and medication storage.	Medication Management Use Case
Minimum Policy Requirements	An agreed upon consensus set. They refer specifically to the policy requirements that the ASPC developed through extensive individual state review of current policy and the subsequent comparison and negotiation of these requirements across the 10 states in the collaborative. These minimum policies requirements become the framework across which the Uniform Security Policy was built.	Adoption of Standard Policies Collaborative
NCHICA	The North Carolina Health Information and Communications Alliance	N/A
Network	An open communications medium, typically the Internet, that is used to transport messages between the Claimant and other parties. Unless otherwise stated no assumptions are made about the security of the network; it is assumed to be open and subject to active (e.g., impersonation, man-in-the-middle, session hijacking…) and passive (e.g., eavesdropping) attack at any point between the parties	NIST 800-63-1

Term	Definition	Source of definition
	(Claimant, Verifier, CSP or Relying Party).	
NHIN	The Nationwide Health Information Network is being developed to provide a secure, nationwide interoperable health information infrastructure that will connect providers, consumers and others involved in supporting health and healthcare.	The U.S. Department of Health and Human Services
NIST	The National Institute of Standards and Technology is a non-regulatory agency within the U.S. Department of Commerce. NIST's mission is to promote U.S. innovation and industrial competitiveness by advancing measurement science, standards and technology in ways that enhance economic security and improve our quality of life.	The National Institute of Standards and Technology
Node Authentication	Node Authentication - Describes authenticating each computer system in a network that can host one or more databases. [Each node in a distributed database system can act as a client, a server, or both, depending on the situation.]	Oracle
ONC	Office of the National Coordinator for Health Information Technology; serves as the Secretary's principal advisor on the development, application, and use of health information technology in an effort to improve the quality, safety, and efficiency of the nation's health through the development of an interoperable harmonized health information infrastructure.	Emergency Responder, Medication Management, Immunization Use Case
Organization Roles	Organizational roles correspond to the hierarchical organization in a company in terms of internal structures.	Neumann/ Strembeck
Password	A secret that a Claimant memorizes and uses to authenticate his or her identity. Passwords are typically character strings.	NIST 800-63-1
Patient/Consumer	Person who is the receiver of health related services and who is an actor in a health information system.	ASPC Negotiated Definition
Patients	Members of the public who receive healthcare services.	Immunization, Medication Management Use Case
Privacy	Freedom from intrusion into the private life or affairs of an individual when that intrusion results from undue or illegal gathering and use of data about that individual.	[ISO/IEC 2382-8:1998]

Term	Definition	Source of definition
Providers	The healthcare clinicians within healthcare delivery organizations with direct patient interaction in the delivery of care, including physicians, nurses, psychologists, and other clinicians. This can also refer to healthcare delivery organizations.	Immunization Use Case
Regional Health Information Organization	A health information organization that brings together health care stakeholders within a defined geographic area and governs health information exchange among them for the purpose of improving health and care in that community.	National Alliance For Health Information Technology
Registration	The process through which a party applies to become a Subscriber of a CSP and an RA validates the identity of that party on behalf of the CSP.	NIST 800-63-1
Role	A set of competences and/or performances that are associated with a task	[ISO TS21298]
RTI	RTI International	N/A
Security	Combination of availability, confidentiality, integrity, and accountability.	[ENV 13608-1]
SLHIE	The State Level Health Information Exchange	N/A
Shared Secret	A secret used in authentication that is known to the Claimant and the Verifier.	NIST 800-63-1
Structural Role	A structural role is a type of healthcare personnel warranting differing levels of access control. Also known as “basic role,” “organizational role,” or “role group.” For a listing of healthcare structural roles see ASTM E 1986-98 (e.g., Attending Physician)	ASTM E 1986-98
Subscriber	A party who receives a credential or token from a CSP.	NIST 800-63-1
Token	Something that the Claimant possesses and controls (typically a key or password) used to authenticate the Claimant’s identity.	NIST 800-63-1

Term	*Definition*	*Source of definition*
Trading Partners	Entities that exchange (submit or receive) data electronically with each other. Examples include any pairing of physicians, providers, billing services, clearinghouses, health plans or third-party administrators.	45 CFR 160.103 Trading Partner Agreements
Uniform Security Policy	Aggregated set of policies that the ASPC recommends organizations adopt as minimum policy to allow for interoperability with other organizations for health information exchange.	Adoption of Standard Policies Collaborative
Verifier	An entity that verifies the Claimant's identity by verifying the Claimant's possession of a token using an authentication protocol. To do this, the Verifier may also need to validate credentials that link the token and identity and check their status.	NIST 800-63-1

Appendix E: References

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Arizona Common Framework—Background

- Arizona Health-e Connection—fostering the development of health information exchanges in Arizona
  - Community-based forum for statewide action
  - Education and communication on HIE issues
  - Development of common HIE standards, practices and policies

Arizona Common Framework—Background

- What is a common framework?
  - Common practices for health information exchanges
  - Compatible rules
    - How is information transferred?
    - Who has access to health information and why?
    - How do consumers participate in exchange?
    - How is information safeguarded?
    - How do systems connect?

Arizona Common Framework--Background

- Building a road for health information: common standards and policies to exchange information—local, statewide, national interoperability
- Establishing trust between participants—everyone working from same rules
  - Making key information available at point of care
  - Focus on health information privacy and security
- Accountability and safeguards
- Avoiding reinvention through common policies and technical standards

Arizona Common Framework—Background

- National effort: Markle Foundation *Connecting for Health Common Framework*
  - http://www.connectingforhealth.org
  - http://www.markle.org

Arizona Common Framework Projects

- ***Model participation agreement*** for health information exchange
- ***Model policies and procedures*** for health information exchange
- ***Proposed legislation*** to remove barriers to health information exchange and to ensure rigorous accountability and enforcement

6

Community Input

- AzHEC Legal Work Group
- AzHEC Clinical and Technical Work Group
- Health Information Security and Privacy Collaboration (HISPC) volunteers—
  - Consumers
  - Physicians and other providers
  - Hospitals, home health agencies, nursing homes, clinical laboratories
  - Payors and employers
  - Universities and community colleges

7

Community Input

- AzHEC Board of Directors—stakeholder representatives
- AzHEC Consumer Advisory Group
- Hospital and medical society involvement

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Model Participation Agreement

Model Participation Agreement

Setting the Rules of the Road

- Who:
  - Health care providers, health information sources,health information exchanges
- What:
  - Clinical information
- Why:
  - Treatment
  - Other purposes agreed to by stakeholders

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Model Participation Agreement

- Guiding principles
  - Focus on key requirements for a secure and effective exchange of information
  - Voluntary participation in HIE—providers can leave if the exchange is not helpful
  - Build on existing practices between physicians and patients

Model Participation Agreement

- Participants and permitted use
- Privacy and security measures
  - Authentication of providers
    - Organization and individual users
    - Role-based, focus on treatment purpose
- Accountability
  - HIE policies and standards
  - Compliance programs: monitoring & enforcement
  - Termination if participants don't follow requirements

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Model Participation Agreement

- Template agreement for health information exchanges
- Emphasis on readability and implementation
- Incorporates best practices from other exchanges across country

Model Policies and Procedures

Model Policies and Procedures: In Development

- Security issues:
  - Authentication: How do we know an individual is who he says he is?
  - Role-based access: Once an individual is authenticated, what information can she see based on her role?
  - Audit: What information has an individual accessed, and was access appropriate?

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Model Policies and Procedures

- Accountability and Enforcement
  - Termination of individual access
  - Requirement that participating entity take disciplinary action for inappropriate access
  - Termination of HIE agreement with participating entity
  - Reporting compliance to HIE
  - Mitigating impact of noncompliance on consumers

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Model Policies and Procedures

- Reasons for access
  - Treatment
  - Other purposes agreed to by stakeholders
- Consumer involvement
  - Notice of HIE practices
  - Access to information in exchange
  - Consent to exchange health information

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Model Policies and Procedures

- Consent to exchange information: see White Paper in materials
  - What do different stakeholders think about the consent issue?
  - What is current law and practice?
  - What other issues will affect the decision on how to implement consumer direction?
  - Options: “opt-in”; “opt-out”; “notice only”; combination

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Proposed Legislation

Removing Barriers to HIE and Protecting Privacy

- Legal Work Group developed proposals over 2007—seeking feedback of stakeholders and introduction in January 2009
- See Executive Summary of proposed legislation on AzHEC Web site
  - Addresses communicable disease, mental health, genetic testing and immunization information
  - Addresses protection of medical records requested by subpoenas

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Removing Barriers to HIE and Protecting Privacy

- Summary:
  - Remove requirements for "written" records or records "recorded in ink"-- inconsistent with electronic exchange
  - Remove redisclosure prohibitions and permit redisclosure of records to permitted individuals
  - Permit HIE to handle medical records on behalf of health care providers (and make HIEs subject to more protective medical records subpoena statute)

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Accountability and Enforceability

- Convening Legal Work Group to draft new statute or amendments to existing statutes to ensure rigorous accountability for those who access health information through an HIE
  - Meeting: June 12, 2008: contact Kim Snyder at ksnyder@azgita.gov to get involved

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Questions???

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ARIZONA DEPARTMENT OF HEALTH SERVICES
OFFICE OF THE DIRECTOR
SUBSTANTIVE POLICY STATEMENT # SP-

The purpose of this substantive policy statement is to notify the public of the Department's interpretation that a clinical laboratory may share a patient's clinical laboratory test results with a Health Information Exchange organization (HIE).

An HIE is a record locator service that facilitates electronic communication between a source of health information (such as a clinical laboratory) and a physician who has certified that the physician has a treatment relationship with the patient whose information is being sought. An HIE does not store any clinical laboratory test results.

A.R.S. 36-461 exempts all CLIA certified laboratories from state regulation by Title 36, Chapter 4.1, Article 2. However, A.R.S. 36-470 is still instructive for CLIA certified laboratories. CLIA regulations require an "authorized person" to order laboratory tests and direct test results to be released only to "authorized persons and, if applicable, the individual responsible for using the test results and the laboratory that initially requested the test." 42 C.F.R. §493.1241 and 493.1291. An "authorized person" is "an individual *authorized under State law* to order tests or receive test results or both." 42 C.F.R. §493.2. Therefore, CLIA regulation points to state law to determine what parties may receive clinical laboratory test results.

A.R.S. § 36-470(A) permits any person licensed under Title 32, chapters 7 (Podiatry), 8 (Chiropractic), 11, Article 2 (Dentistry), 13 (Medicine and Surgery), 14 (Naturopathic physicians), 17(Osteopathic Physicians), 29 (Homeopathic physicians) to order tests to be completed at a clinical laboratory. Additionally, persons licensed to practice medicine or surgery in another state or a person authorized by law or department rules may order tests to be completed at a clinical laboratory. A.R.S. § 36-470(A). A.R.S. § 36-470(B) directs a clinical laboratory to report test results to the person who authorized the laboratory test. Arizona law is silent on any other disclosure of clinical laboratory test results.

However, federal law provides further direction as to clinical laboratory test disclosures. HIPAA permits clinical laboratories to report test results to a non-ordering physician in order to treat a patient. 45 C.F.R. §164.506. Both clinical laboratories and physicians are HIPAA covered entities permitted to share patient information for the purposes of treatment. Also, HIPAA permits disclosure of a patient's protected health information to an HIE if the HIE has the required business associate agreement.

As defined above, the HIE would not receive or store clinical laboratory results. The role of the HIE is to facilitate communication between the patient's health care provider and entities, such as clinical laboratories, that possess clinical laboratory test results. According to the Department's interpretation, A.R.S. § 36-470 neither permits nor prohibits a clinical lab from disclosing clinical laboratory test results to an HIE. Because there is no prohibition on such a disclosure in Arizona law, disclosure of a patient's clinical laboratory test results to an HIE consistent with HIPAA does not conflict with state law. Therefore, the Department believes a clinical laboratory may share clinical laboratory test results with an HIE when done in compliance with HIPAA.

Consumer Consent for Health Information Exchange: An Exploration of Options for Arizona's HIEs

Kristen Rosati
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April 2008

Introduction

The rise of Health Information Exchanges (HIEs)[1] across the country is an exciting development that promises to improve the quality of care, increase the efficiency of health care services by making health information available at the point of care for every patient, and empower consumers by making information about their care more available to them. Of course, the development of HIEs also poses real challenges in how to structure HIEs to ensure that consumer information is available to providers and consumers for those purposes, yet ensure rigorous health information confidentiality protections are in place.

This White Paper discusses one other fundamental policy challenge that every HIE must make in establishing its operations: whether and how to seek consumer consent to exchange a consumer's health information through the HIE. As this White Paper explores in detail, this is a difficult issue to resolve because different stakeholders in the health care community—consumers, health care providers, HIE administrators and others—often have different and sometimes strongly held beliefs about this issue. In addition, decisions about consumer consent will have an impact on the way an HIE's technology is structured, and some of those decisions may be too difficult or expensive to implement.

The consumer consent issue is a complicated policy decision that should be made only after a thorough consideration of all the issues involved, and by balancing the needs of the participants in the system. This White Paper presents a discussion on the options available to HIEs.

What issues will affect the decision on consumer consent to exchange health information through an HIE?

The policy decision of whether and when to seek consumers' consent to exchange health information through the HIE is a nuanced decision that depends on many interrelated factors:

- Do state laws or regulations require consumer consent to exchange health information? If so, in what circumstances?
- What type of information will be submitted through the HIE? Does any of the health information exchanged require additional protection, such as substance abuse treatment information?
- Who will access the exchange? For example, is access limited to health care providers or will health plans and others also have access?
- For what purposes is the HIE used? Will it be limited to treatment purposes, or are other uses of the health information contemplated?
- Can consumers trust that the HIE is secure?
- Is there accountability in the event someone inappropriately uses the exchange?

If the answer to any one of these questions changes, it may alter the policy decision about whether and how consumer consent would be sought. For example, if an HIE is used only by health care providers for treatment purposes, the decision on consumer consent may be different than if the HIE is used by health plans for payment purposes. It's three dimensional policy chess!

What do different stakeholders think about the consent issue?

It is important to keep in mind that a person's membership in a certain category of stakeholder does not dictate that person's ideas about consumer consent. So, this discussion will obviously contain generalizations that may not ring true to specific individuals.

Consumers: Not surprisingly, consumers appear to hold varied attitudes about whether they should have the ability to consent before their health information is exchanged via an HIE. Consumers who have chronic care needs, or who have children who have serious illnesses or

disabilities, often express tremendous support for HIE in order to facilitate communication between different parts of the care team and to avoid the need to be the coordinator for the information. These consumers are primarily concerned with the immediate availability of their health information to health care providers and may not support the need to get up-front consent if it will interfere with or slow down the transmission of their health information.

Other consumers are primarily concerned about their privacy, particularly if they have received care for conditions they feel would be stigmatizing or could lead to the denial of insurance coverage. For example, the organization Patient Privacy Rights is a strong advocate of the right to consent in advance of transmission of health information, even to providers for treatment purposes.

Both perspectives are completely legitimate, of course, and there are many individuals and organizations that fall somewhere between these perspectives. Ultimately, an individual's approach to consent depends on an individual's particular life circumstances and experiences.

Health care providers: Health care providers also have varied opinions on this subject. Many are, not surprisingly, primarily concerned with ensuring that they have complete information available about a patient at the time they provide care. In New Hampshire, for example, the legislature is considering a bill (HB 1587) that would allow patients to block provider access to information in electronic health records and in HIEs; hospitals, physicians, nursing homes and other providers have opposed the legislation because they believe it would compromise their ability to get complete information.

Other health care providers, particularly physicians who are involved in providing mental health care or treatment for other sensitive conditions, are extremely concerned that the lack of consumer consent to exchange health information will discourage some individuals from obtaining care at all.

HIE administrators: Individuals involved in creating and running HIEs are concerned with ensuring that the HIE is valuable to their communities. They want to provide a robust service to participating health care providers, and so must respond to the needs of those providers. They also are concerned about the cost of building and maintaining the HIE so that the HIE can be an ongoing service to the community.

Of course, health care providers and HIE administrators are also consumers of health care. Anyone involved in making a policy decision on the consent issue should keep that health care consumer "hat" firmly in place.

What does Arizona law require?

Arizona law does not require consumer consent to exchange health information for treatment purposes. Arizona law also generally does not require consumer consent for providers to exchange health information for a variety of other purposes, such as getting paid for the treatment they provide, for various business functions called "health care operations" (such as quality assurance activities), for public health purposes, and for research where an Institutional Review Board has reviewed the research and approved doing the research without consent (if there is sufficient privacy protection in place).

This analysis starts with the general medical records law for providers in Arizona,[2] which states that providers may follow the Health Insurance Portability and Accountability Act (HIPAA) regulations[3] in their disclosures of health information. HIPAA permits disclosures for treatment, payment, "health care operations" (general business activities, such as quality assurance), public health purposes, and research, without consumer consent or authorization.

We then look to determine whether any of the health information being exchanged is "special" health information that is subject to any greater restrictions. Arizona law has special statutes for genetic testing information,[4] mental health information held by licensed behavioral health providers,[5] and HIV and communicable disease information.[6] All of this information may be disclosed for treatment purposes without consumer consent. This information may also be disclosed for some public health purposes and research where an Institutional Review Board has reviewed the research and approved a waiver of consent. And except for genetic testing information, health care providers may also exchange this health information for payment and "health care operations" without advance consent.

For health care providers that are federally-assisted substance abuse treatment programs, however, the federal regulations on substance abuse treatment information set additional restrictions on the exchange of health information without consumer consent, even for treatment purposes. These restrictions are substantial, so any HIE should exclude information that comes from these providers.

In summary, Arizona law does not require advance consumer consent to exchange information through an HIE for most purposes. It is therefore a *policy* decision on whether consumer consent will be required to exchange health information through an HIE, and for what purpose. A complete explanation of these Arizona and federal laws is included in the Arizona Health-e Connection Briefing Paper at pages 25-29 and 44-53, which can be found on the Arizona Health-e Connection website (www.azhec.org) in the "About AzHeC" section.

What are the options for Arizona HIEs?
Generally, there are four options for HIEs to consider in making the decision about whether and how consumers consent to the electronic exchange of health information:

- **Option 1- Opt In**
  Seek advance consent from consumers to include their health information in an HIE;
- **Option 2- Opt Out**
  Provide consumers the right to "opt out" of having their health information in an HIE;
- **Option 3- Notice Only**
  Include all consumers' health information in an HIE, with notice to or education of consumers about the process; or
- **Option 4- Combination**
  Take a blended approach, employing Options 1-3 as appropriate, depending on the particular uses of information and who has access to the HIE.

HIEs are coming to very different decisions on this issue and are fairly evenly split across the country. Whichever approach is chosen, it should be transparent to consumers through extensive public education!

Option 1: Opt In
Seek advance consent from consumers to include their health information in an HIE. What are the advantages and disadvantages, and how would it work?

Advantages:
Consumer control: Consumers have a very legitimate interest in controlling their health information. Ideally, each consumer would have the right to determine who could see his or her health information and determine the purpose for which that health information is used.

Risk management for the HIE: From the HIE perspective, seeking advance consent could serve a risk management function. The consent form would educate individuals about how health information is exchanged, who will have access to it, and what consumer rights are vis-à-vis the HIE and the participants in the HIE. This proactive education through the consent process could

reduce liability to an HIE in the event a participant misuses the exchange.

Enabling better patient record matching: If the process of seeking advance consent is done through an in-person process, that consent process could eventually support the collection of biometric identifiers, such as fingerprints. These biometric identifiers would permit accurate patient record matching by the HIE—two individuals may have the same names (and sometimes even same birthdates), but they don't have the same fingerprints. At this time, biometric identifiers are not commonly used. Patient access to their own information in an HIE could also assist in increasing the accuracy of records in the system.

Disadvantages:

Delay in getting information to providers for treatment: The primary disadvantage of the opt-in process is that the need to obtain advance consent from a consumer to exchange health information could delay the transmission of that information to providers. Consumers may not have the opportunity to consent before their information is needed, particularly in an emergency.

Less support from physicians: Another substantial disadvantage of the opt-in process is that seeking advance consent to include health information in the exchange may not garner support by physicians and other health care providers for two reasons. First, physicians consistently report that if an exchange does not have complete information on their patients, physicians will not view the exchange as reliable. For liability purposes, physicians want as complete information as possible and may not rely on a source of information from which their patients could withhold information. Second, physicians may not be willing to work an HIE into their office workflow if the information is not complete. In Massachusetts, for example, the Massachusetts Health Data Consortium reportedly discontinued its MedsInfo-ED project because the project could not collect certain medication information without advance patient consent. When physicians consistently found the project did not contain medication information about the patient presenting for care, the physicians stopped using the MedsInfo-ED database.

Granularity of consent: Next, the "granularity" of consent is problematic. Will the HIE seek all-or-nothing consent? In other words, will consumers be forced to make a decision between including all of their information in the exchange or none of it? Or will they be able to consent to the sharing of specific pieces of information? How will this process work?

Expense and administrative burden. The final disadvantage is that an opt-in process would be expensive to support, and may create unwelcome bureaucracy for consumers. In administering a consent process, the following operational issues may be challenging to implement:

- Who will seek the consent? Health care providers may be tasked with seeking consent from their patients, as providers' face-to-face interactions with patients will facilitate the consent process and give them the chance to explain how the HIE works. However, some providers may object to the time that would be required to explain HIE participation to their patients, to fill out the necessary paperwork, and to transmit that paperwork to the appropriate entities.

- Will one consent be sufficient for a consumer to participate in the system as a whole, or will it be necessary for each provider to seek consent from that provider's patients? If the latter, how will this work?

- How will a consumer's consent to participate be communicated to the HIE? To other providers?

- What will the process be for revoking consent? How will revocation affect

information already in the HIE? How will revocation be communicated to others?

Option 2: Opt Out

Provide consumers the right to "opt out" of having their health information in an HIE. What are its advantages and disadvantages, and how would it work?

Advantages:

Consumer control. As discussed above, consumers have a very legitimate interest in controlling who sees their health information and to determine the purpose for which that health information is used. Under an opt-out system, consumers would be required to contact an HIE (or their health care providers) to be removed from the system, but that still would provide a level of control to consumers.

As the National Committee on Vital and Health Statistics noted in a February 2008 report, "where individuals have the right to put restrictions on disclosure of sensitive health information, people rarely elect to do so, but they strongly value having the right and ability to do so."[7] The Indiana Network for Patient Care (INPC), administered by the Regenstrief Institute and one of the longest operating HIEs in the country, had an opt-out system for many years; a representative of the INPC reported that very few individuals opted out of its system.

Disadvantages:

Granularity of opt-out: As with the "opt-in" option, the "granularity" of the opt-out is problematic. Will the HIE require an all-or-nothing opt-out? Will it be specific to the type of use? To the type of information? To who will access the information? The HIE architecture will have a substantial affect on the consent management options.

Expense and administrative burden: The final disadvantage is that an opt-out process may be administratively difficult to support. In administering the opt-out process, the following operational issues may be challenging:

- Who will collect consumer opt-outs? If health care providers are tasked with collecting opt-outs for their patients, they may object to the time that may be required to explain participation to their patients, to fill out the necessary paperwork, and to transmit that paperwork to the appropriate entities.

- If opt-outs are collected at the provider level, will the opt-out be effective only for that provider? Or will the opt-out apply to the entire system and be effective with regard to all providers' information?

- How will a consumer's opt-out be communicated to the HIE? To other providers?

- What will the process be for a consumer to change his or her decision and later participate in the system?

- How will subsequent opt-outs be handled? Will a later opt-out affect information already in the HIE? How will the opt-out be communicated to others?

Option 3: Notice Only

Include all consumers' health information in an HIE, with notice to or education of consumers. What are its advantages and disadvantages, and how would it work?

Advantage:

More flexibility for coordination with other HIEs and response to developing technology. Because multiple HIEs are developing in Arizona, it is important to ensure consistency among HIE policies to permit them to exchange health information with each other. The "early on the scene" HIEs may decide to adopt option 3 to facilitate coordination with other HIE policies. (If an early HIE chooses to implement an opt-in or opt-out process, it may be more difficult them to roll out an alternative policy later.) Moreover, HIE consent management technology is evolving, which hopefully will allow in the

future more granular control by consumers to sequester certain types of sensitive health information.

Results in most useful HIE: An HIE that includes all available patient information—subject to stringent privacy and security protections—is the most valuable for health care providers. When health care providers know they can rely on an HIE to provide complete information on their patients, health care providers will trust the HIE as a source of valuable information and will integrate access to the HIE into their workflows. An exchange that contains complete patient information also will be extremely valuable for public health purposes (such as bioterrorism surveillance across multiple records) and research, if those uses are approved by HIE policy decision makers.

Easy to administer: Because option 3 does not have an opt-in or opt-out process to implement, the HIE will be easier to administer. Particularly while HIEs are struggling with methods to finance the delivery of this important service, that is a significant consideration.

Of course, providing notice to consumers does entail some costs and implementation questions such as:

- How will notice be provided to consumers? Will it be provided by the HIE to the public at large? Will providers participating in the HIE be required to provide notice to their patients?

- If notice is provided by health care providers, will the HIE develop common content for all providers to use?

- How will notice be coordinated with other HIEs, particularly to support exchange between HIEs?

These costs are substantially less than in Options 1 or 2.

***Disadvantages*:**
Less consumer control: As discussed above, consumers have a legitimate concern with deciding who may see their health information and for what purpose. While e-health exchange will essentially function as an electronic version of the types of exchanges that happen in health care in paper form today, it is possible that some consumers will be more concerned now that the exchanges will occur electronically. Consumers with sensitive conditions may decide not to provide complete information when receiving care in order to keep that sensitive information out of the HIE.

Option 4: Combination
Take a blended approach, employing Options 1-3 as appropriate. What are its advantages and disadvantages, and how would it work?

Some HIEs are discussing taking a "blended" approach—including all available information in the exchange, but providing different levels of consumer control based on the use of the information. For example, an HIE may permit access by providers to information for treatment purposes without advance consumer consent, but implement an opt-in or opt-out process for other uses of information, such as for research.

Once the technology is available, an HIE could also implement a varied approach to different types of health information and for particular individuals. For example, the HIE could implement a policy of requiring affirmative opt-in for a particular provider to see substance abuse treatment information (which now would be excluded from the HIE). As consent management tools and HIE technology advance, more granularity will be possible.

Conclusion
HIEs across the country are struggling with the issue how to implement consumer consent for e-health information exchange,

because it is a complicated and many-faceted issue.

The federal government is also considering what type of consent is appropriate for the National Health Information Network (NHIN)—the effort to connect HIEs across the country. The National Committee on Vital and Health Statistics (NCVHS), a federal advisory body that advises the Department of Health and Human Services (HHS) on health data, statistics and national health information policy, issued a report on February 20, 2008, in which the NCVHS recommended that the Secretary of HHS implement a policy for the NHIN to allow individuals to "have limited control, in a uniform manner, over the disclosure of certain sensitive health information for purposes of treatment."[8] NCVHS expressed concern about "protecting patients' legitimate concerns about privacy and confidentiality, fostering trust and encouraging participation in the NHIN in order to promote opportunities to improve patient care, and protecting the integrity of the health care system." NCVHS thus recommended the development—through an open public process—to uniformly decide across the country which categories of health information (such as information related to domestic violence, genetic information, mental health information, reproductive health, and substance abuse) an individual would be permitted to sequester from access in the NHIN without express consent for a particular provider or in an emergency.

At the same time, the NCVHS recognized "that the technologies and human factors needed to implement the recommendations in this letter are not necessary readily available for the EHR systems, HIEs, and other components of the emerging NHIN." This is a situation where HIE architecture and available technology may have to catch up with desired policy outcomes.

Moreover, Arizona has the challenge of coordinating the policy decisions on consent across the state as multiple HIE networks develop throughout the state. How will the consent process be coordinated across HIEs? For example, if one HIE implements the opt-in consent option, but another implements the notice-only option, how will these HIEs be able to exchange patient information? Arizona must carefully avoid the creation of information silos, because that will not benefit consumers.

Clearly, as we move forward in developing HIEs across Arizona, we need to initiate an open and transparent dialog—involving a wide range of interested stakeholders—about consumer consent for exchange of health information. A good policy outcome will balance the needs of consumers, health care providers and HIEs, taking into account our state laws, consumer concerns about privacy and security of health information, and technological capabilities for HIE architecture. With this open and transparent dialog, we will make electronic health information exchange a reality in Arizona.

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[1] A word about terminology in this White Paper: the term "Health Information Exchange," like "Regional Health Information Organization," refers to the entity that is facilitating or conducting the exchange of health information.
[2] A.R.S. § 12-2291, *et seq.*
[3] 45 C.F.R. Part 160 and Part 164, Subpart E (the HIPAA Privacy Rule).
[4] A.R.S. § 12-2801, *et seq.* and § 20-448.02, *et seq.*
[5] A.R.S. § 36-501, *et seq.*
[6] A.R.S. § 36-661, *et seq.* and § 20.448.01.
[7] http://www.ncvhs.hhs.gov/080220lt.pdf.
[8] Id.

Arizona Health-e Connection
Proposed Legislation to Remove Barriers to Electronic Health Information Exchange

Title 12 (Courts and Civil Proceedings), Chapter 13 (Evidence), Article 7.1 (Medical Records)

12-2291. Definitions

In this article, unless the context otherwise requires:

1. “CLINICAL LABORATORY” HAS THE SAME MEANING AS IN SECTION 36-451.

[Renumber remaining definitions]

12-2294. Release of medical records and payment records to third parties

A. A health care provider shall disclose medical records or payment records, or the information contained in medical records or payment records, without the patient's written authorization as otherwise required by law or when ordered by a court or tribunal of competent jurisdiction.

B. A health care provider may disclose medical records or payment records, or the information contained in medical records or payment records, pursuant to written authorization signed by the patient or the patient's health care decision maker.

C. A health care provider may disclose medical records or payment records or the information contained in medical records or payment records, AND A CLINICAL LABORATORY MAY DISCLOSE CLINCIAL LABORATORY RESULTS, without the written authorization of the patient or the patient's health care decision maker as otherwise authorized by state or federal law, including the health insurance portability and accountability act privacy standards (45 Code of Federal Regulations part 160 and part 164, subpart E), or as follows:

1. To health care providers who are currently providing health care to the patient for the purpose of diagnosis or treatment of the patient.

2. To health care providers who have previously provided treatment to the patient, to the extent that the records pertain to the provided treatment.

3. To ambulance attendants as defined in section 36-2201 for the purpose of providing care to or transferring the patient whose records are requested.

4. To a private agency that accredits health care providers and with whom the health care provider has an agreement requiring the agency to protect the confidentiality of patient information.

5. To a health profession regulatory board as defined in section 32-3201.

6. To health care providers for the purpose of conducting utilization review, peer review and quality assurance pursuant to section 36-441, 36-445, 36-2402 or 36-2917.

7. To a person or entity that provides ~~billing, claims management, medical data processing, utilization review or other administrative~~ services to the patient's health care providers OR CLINICAL LABORATORIES, and with whom the health care provider OR CLINICAL LABORATORY has a~~n~~ BUSINESS ASSOCIATE agreement requiring the person or entity to protect the confidentiality of patient information, AS REQUIRED BY THE HEALTH INSURANCE PORTABILITY AND ACCOUNTABILITY ACT PRIVACY STANDARDS (45 CODE OF FEDERAL REGULATIONS PART 164, SUBPART E).

8. To the legal representative of a health care provider in possession of the medical records or payment records for the purpose of securing legal advice.

9. To the patient's third party payor or the payor's contractor.

10. To the industrial commission of Arizona or parties to an industrial commission claim pursuant to title 23, chapter 6.

D. A health care provider may disclose a deceased patient's medical records or payment records or the information contained in medical records or payment records to the patient's health care decision maker at the time of the patient's death. A health care provider also may disclose a deceased patient's medical records or payment records or the information contained in medical records or payment records to the personal representative or administrator of the estate of a deceased patient, or if a personal representative or administrator has not been appointed, to the following persons in the following order of priority, unless the deceased patient during the deceased patient's lifetime or a person in a higher order of priority has notified the health care provider in writing that the deceased patient opposed the release of the medical records or payment records:

1. The deceased patient's spouse, unless the patient and the patient's spouse were legally separated at the time of the patient's death.

2. The acting trustee of a trust created by the deceased patient either alone or with the deceased patient's spouse if the trust was a revocable inter vivos trust during the deceased patient's lifetime and the deceased patient was a beneficiary of the trust during the deceased patient's lifetime.

3. An adult child of the deceased patient.

4. A parent of the deceased patient.

5. An adult brother or sister of the deceased patient.

6. A guardian or conservator of the deceased patient at the time of the patient's death.

E. A person who receives medical records or payment records pursuant to this section shall not disclose those records without the written authorization of the patient or the patient's health care decision maker, unless otherwise authorized by law.

F. If a health care provider releases a patient's medical records or payment records to a contractor for the purpose of duplicating or disclosing the records on behalf of the health care provider, the contractor shall not disclose any part or all of a patient's medical records or payment records in its custody except as provided in this article. After duplicating or disclosing a patient's medical records or payment records on behalf of a health care provider, a contractor must return the records to the health care provider who released the medical records or payment records to the contractor.

12-2296. Immunity

A health care provider, ~~or~~ contractor, OR CLINICAL LABORATORY that acts in good faith under this article is not liable for damages in any civil action for the disclosure of medical records or payment records or information contained in medical records or payment records, OR CLINICAL LABORATORY RESULTS, that is made pursuant to this article or as otherwise provided by law. The health care provider, ~~or~~ contractor, OR CLINICAL LABORATORY is presumed to have acted in good faith. The presumption may be rebutted by clear and convincing evidence.

Title 13 (Criminal Code), Chapter 23 (Organized Crime, Fraud and Terrorism)

13-2316. Computer tampering; venue; forfeiture; classification

A. A person who acts without authority or who exceeds authorization of use commits computer tampering by:

1. Accessing, altering, damaging or destroying any computer, computer system or network, or any part of a computer, computer system or network, with the intent to devise or execute any scheme or artifice to defraud or deceive, or to control property or services by means of false or fraudulent pretenses, representations or promises.

2. Knowingly altering, damaging, deleting or destroying computer programs or data.

3. Knowingly introducing a computer contaminant into any computer, computer system or network.

4. Recklessly disrupting or causing the disruption of computer, computer system or network services or denying or causing the denial of computer or network services to any authorized user of a computer, computer system or network.

5. Recklessly using a computer, computer system or network to engage in a scheme or course of conduct that is directed at another person and that seriously alarms, torments, threatens or terrorizes the person. For the purposes of this paragraph, the conduct must both:

(a) Cause a reasonable person to suffer substantial emotional distress.

(b) Serve no legitimate purpose.

6. Preventing a computer user from exiting a site, computer system or network-connected location in order to compel the user's computer to continue communicating with, connecting to or displaying the content of the service, site or system.

7. Knowingly obtaining any information that is required by law to be kept confidential or any records that are not public records by accessing any computer, computer system or network that is operated by this state, a political subdivision of this state, ~~or a medical institution,~~ A HEALTH CARE PROVIDER AS DEFINED IN SECTION 12-2291, A CLINICAL LABORATORY AS DEFINED IN SECTION 36-451, OR A PERSON OR ENTITY THAT PROVIDES SERVICES ON BEHALF OF A HEALTH CARE PROVIDER OR CLINICAL LABORATORY.

8. Knowingly accessing any computer, computer system or network or any computer software, program or data that is contained in a computer, computer system or network.

B. In addition to section 13-109, a prosecution for a violation of this section may be tried in any of the following counties:

1. The county in which the victimized computer, computer system or network is located.

2. The county in which the computer, computer system or network that was used in the commission of the offense is located or in which any books, records, documents, property, financial instruments, computer software, data, access devices or instruments of the offense were used.

3. The county in which any authorized user was denied service or in which an authorized user's service was interrupted.

4. The county in which critical infrastructure resources were tampered with or affected.

C. On conviction of a violation of this section, the court shall order that any computer system or instrument of communication that was owned or used exclusively by the defendant and that was used in the commission of the offense be forfeited and sold, destroyed or otherwise properly disposed.

D. A violation of subsection A, paragraph 6 OR PARAGRAPH 7 of this section constitutes an unlawful practice under section 44-1522 and is in addition to all other causes of action, remedies and penalties that are available to this state. The attorney general may investigate and take appropriate action pursuant to title 44, chapter 10, article 7.

E. Computer tampering pursuant to subsection A, paragraph 1 of this section is a class 3 felony. Computer tampering pursuant to subsection A, paragraph 2, 3 or 4 of this section is a class 4 felony, unless the computer, computer system or network tampered with is a critical infrastructure resource, in which case it is a class 2 felony. Computer tampering pursuant to subsection A, paragraph 5 of this section is a class 5 felony. Computer tampering pursuant to subsection A, paragraph 7 or 8 of this section is a class 6 felony.

Title 36 (Public Health and Safety); Chapter 1 (State and Local Boards and Departments of Health Services); Article 2 (Department of Health Services, Additional Functions)

36-135. Child immunization reporting system; requirements; access; confidentiality; immunity; violation; classification

A. The child immunization reporting system is established in the department to collect, store, analyze, release and report immunization data.

B. Beginning on January 1, 1998, a health care professional who is licensed under title 32 to provide immunizations, except as provided in subsection I, shall report the following information:

1. The health care professional's name, business address and business telephone number.

2. The child's name, address, social security number if known and not confidential, gender, date of birth and mother's maiden name.

3. The type of vaccine administered and the date it is administered.

C. The health care professional may submit this information to the department on a weekly or monthly basis by telephone, facsimile, mail, computer or any other method prescribed by the department.

D. Except as provided in subsection I, the department shall release identifying information only to the PERSON, THE person's ~~health care professional,~~ HEALTH CARE DECISION MAKER AS DEFINED IN SECTION 12-2291, parent or guardian, A HEALTH CARE PROVIDER AS DEFINED IN SECTION 12-2291, ~~health care services organization~~ AN ENTITY REGULATED UNDER TITLE 20, the Arizona health care cost containment system and its providers as defined in chapter 29 of this title, ~~or~~ a school official who is authorized by law to receive and record immunization records, OR TO A PERSON OR ENTITY THAT PROVIDES SERVICES TO A HEALTH CARE PROVIDER, AND WITH WHOM THE HEALTH CARE PROVIDER HAS A BUSINESS ASSOCIATE AGREEMENT REQUIRING THE PERSON OR ENTITY TO PROTECT THE CONFIDENTIALITY OF THE INFORMATION, AS REQUIRED BY THE HEALTH INSURANCE PORTABILITY AND ACCOUNTABILITY ACT PRIVACY STANDARDS (45 CODE OF FEDERAL REGULATIONS PART 164, SUBPART E). THE DEPARTMENT MAY ALSO RELEASE IDENTIFYING INFORMATION TO AN ENTITY DESIGNATED BY THE PERSON OR THE PERSON'S HEALTH CARE DECISION MAKER, PARENT OR GUARDIAN. The department, by rule, may release immunization information to persons for a specified purpose. The department may release nonidentifying summary statistics.

E. Identifying information in the system is confidential. A person who is authorized to receive confidential information under subsection D OR DEPARTMENT RULE shall ~~not~~ disclose this information ~~to any other person~~ ONLY AS PERMITTED BY THIS SECTION OR DEPARTMENT RULE.

F. ~~A health care professional~~ A HEALTH CARE PROVIDER AS DEFINED IN SECTION 12-2291 ~~who~~ THAT provides information in good faith pursuant to this section is not subject to civil or criminal liability.

G. ~~A health care professional~~ A HEALTH CARE PROVIDER AS DEFINED IN SECTION 12-2291 36 ~~who~~ THAT does not comply with the requirements of this section violates a law applicable to the practice of medicine and commits an act of unprofessional conduct OR A VIOLATION OF TITLE 36, CHAPTER 4.

H. Any agency or person receiving confidential information from the system who subsequently discloses that information to any other person OTHER THAN AS PERMITTED BY THIS SECTION is guilty of a class 3 misdemeanor.

I. At the request of the person, or if the person is a child the child's parent or guardian, the department of health services shall provide a form to be signed that allows confidential immunization information to be withheld from all persons including persons authorized to receive confidential information pursuant to subsection D. If the request is delivered to the health care professional prior to the immunization, the health care professional shall not forward the information required under subsection B to the department.

Title 36 (Public Health and Safety); Chapter 4.1 (Clinical Laboratories)

36-470. Examination of specimens; written requests; reports of results; retention of test records

A. Except as otherwise provided, a clinical laboratory shall examine specimens at the authorization of any person licensed pursuant to title 32, chapter 7, 8, 13, 14, 17 or 29 or title 32, chapter 11, article 2, a person licensed to practice medicine or surgery in another state, or a person authorized by law or department rules.

B. The result of a test shall be reported to the person who authorized it. A report of results issued from a clinical laboratory shall provide information required by the department by rule. No clinical interpretation, diagnosis or prognosis or suggested treatment other than normal values shall appear on the laboratory report form, except that a report made by a physician licensed to practice medicine and surgery in this state or another state may include this information.

C. THE RESULT OF A TEST MAY BE REPORTED TO A HEALTH CARE PROVIDER, AS DEFINED IN SECTION 12-2291, THAT HAS A TREATMENT RELATIONSHIP WITH A PATIENT, OR TO A PERSON OR ENTITY THAT PROVIDES SERVICES TO THE HEALTH CARE PROVIDER, AND WITH WHOM THE HEALTH CARE PROVIDER HAS A BUSINESS ASSOCIATE AGREEMENT REQUIRING THE PERSON OR ENTITY TO PROTECT THE CONFIDENTIALITY OF PATIENT INFORMATION, AS REQUIRED BY THE HEALTH INSURANCE PORTABILITY AND ACCOUNTABILITY ACT PRIVACY STANDARDS (45 CODE OF FEDERAL REGULATIONS PART 164, SUBPART E).

~~C.~~D. All specimens accepted by a laboratory for specified tests shall be tested on its premises, except that specimens, other than those for proficiency testing purposes, may be forwarded for examination to another laboratory licensed under this article or exempted by section 36-461, paragraph 1.

~~D.~~E. When the laboratory performing the examination is other than the laboratory accepting the specimen, the report submitted shall include information required by the department by rule.

~~E.~~F. Records involving laboratory services and copies of reports of laboratory tests shall be kept in a manner as prescribed by the department by rule.

~~F.~~G. A person authorized to request clinical laboratory examinations pursuant to this section may direct that a clinical laboratory examine a person's specimens at that person's request if the authorization is given pursuant to department rules and specifies:

1. The name of the person authorized to request an examination and to receive the results of that examination.

2. The type of examinations to be performed by the laboratory.

3. The total number of examinations the authorized person may request.

4. The beginning and expiration dates of the authorization.

5. The identification of the person giving the authorization.

~~G.~~H. The laboratory shall report test results ordered pursuant to subsection F to the person who authorized the test and to the person who requested it.

Title 36 (Public Health and Safety); Chapter 5 (Mental Health Services), Article 2 (Patient Civil and Legal Rights)

36-509. Confidential records

A. A health care entity must keep records and information contained in records confidential and not as public records, except as provided in this section. Records and information contained in records may only be disclosed to:

1. Physicians and providers of health, mental health or social and welfare services involved in caring for, treating or rehabilitating the patient.

2. Individuals to whom the patient or the patient's health care decision maker has given authorization to have information disclosed.

3. Persons authorized by a court order.

4. Persons doing research only if the activity is conducted pursuant to applicable federal or state laws and regulations governing research.

5. The state department of corrections in cases in which prisoners confined to the state prison are patients in the state hospital on authorized transfers either by voluntary admission or by order of the court.

6. Governmental or law enforcement agencies if necessary to:

(a) Secure the return of a patient who is on unauthorized absence from any agency where the patient was undergoing evaluation and treatment.

(b) Report a crime on the premises.

(c) Avert a serious and imminent threat to an individual or the public.

7. Persons, including family members, actively participating in the patient's care, treatment or supervision. A health care provider may only release information relating to the patient's diagnosis, prognosis, need for hospitalization, anticipated length of stay, discharge plan, medication, medication side effects and short-term and long-term treatment goals. A health care provider may make this release only after the treating professional or that person's designee interviews the patient or the patient's health care decision maker and the patient or the patient's health care decision maker does not object, unless federal or state law permits the disclosure. If the patient does not have the opportunity to object to the disclosure because of incapacity or an emergency circumstance and the patient's health care decision maker is not available to object to the release, the health care provider in the exercise of professional judgment may determine if the disclosure is in the best interests of the patient and, if so, may release the information authorized pursuant to this paragraph. A decision to release or withhold information is subject to review pursuant to section 36-517.01. The health care provider must record the name of any person to whom any information is given under this paragraph.

8. A state agency that licenses health professionals pursuant to title 32, chapter 13, 15, 17, 19.1 or 33 and that requires these records in the course of investigating complaints of professional negligence, incompetence or lack of clinical judgment.

9. A state or federal agency that licenses health care providers.

10. A governmental agency or a competent professional, as defined in section 36-3701, in order to comply with chapter 37 of this title.

11. Human rights committees established pursuant to title 41, chapter 35. Any information released pursuant to this paragraph shall comply with the requirements of section 41-3804 and applicable federal law and shall be released without personally identifiable information unless the personally identifiable information is required for the official purposes of the human rights committee. Case information received by a human rights committee shall be maintained as confidential. For the purposes of this paragraph, "personally identifiable information" includes a person's name, address, date of birth, social security number, tribal enrollment number,

telephone or telefacsimile number, driver license number, places of employment, school identification number and military identification number or any other distinguishing characteristic that tends to identify a particular person.

12. A patient or the patient's health care decision maker pursuant to section 36-507.

13. The department of public safety by the court to comply with the requirements of section 36-540, subsection N.

14. A third party payor or the payor's contractor to obtain reimbursement for health care, mental health care or behavioral health care provided to the patient.

15. A private entity that accredits the health care provider and with whom the health care provider has an agreement requiring the agency to protect the confidentiality of patient information.

16. The legal representative of a health care entity in possession of the record for the purpose of securing legal advice.

17. A person or entity as otherwise required by state or federal law.

18. A person or entity as permitted by the federal regulations on alcohol and drug abuse treatment (42 Code of Federal Regulations part 2).

19. A person or entity to conduct utilization review, peer review and quality assurance pursuant to section 36-441, 36-445, 36-2402 or 36-2917.

20. A person maintaining health statistics for public health purposes as authorized by law.

21. A grand jury as directed by subpoena.

22. A PERSON OR ENTITY THAT PROVIDES SERVICES TO THE PATIENT'S HEALTH CARE PROVIDER, AS DEFINED IN SECTION 12-2291, AND WITH WHOM THE HEALTH CARE PROVIDER HAS A BUSINESS ASSOCIATE AGREEMENT REQUIRING THE PERSON OR ENTITY TO PROTECT THE CONFIDENTIALITY OF PATIENT INFORMATION, AS REQUIRED BY THE HEALTH INSURANCE PORTABILITY AND ACCOUNTABILITY ACT PRIVACY STANDARDS (45 CODE OF FEDERAL REGULATIONS PART 164, SUBPART E).

B. Information and records obtained in the course of evaluation, examination or treatment and submitted in any court proceeding pursuant to this chapter or title 14, chapter 5 are confidential and are not public records unless the hearing requirements of this chapter or title 14, chapter 5 require a different procedure. Information and records that are obtained pursuant to this section and submitted in a court proceeding pursuant to title 14, chapter 5 and that are not clearly identified by the parties as confidential and segregated from nonconfidential information and records are considered public records.

C. Notwithstanding subsections A and B of this section, the legal representative of a patient who is the subject of a proceeding conducted pursuant to this chapter and title 14, chapter 5 has access to the patient's information and records in the possession of a health care entity or filed with the court.

D. A HEALTH CARE ENTITY THAT ACTS IN GOOD FAITH UNDER THIS ARTICLE IS NOT LIABLE FOR DAMAGES IN ANY CIVIL ACTION FOR THE DISCLOSURE OF RECORDS OR PAYMENT RECORDS THAT IS MADE PURSUANT TO THIS ARTICLE OR AS OTHERWISE PROVIDED BY LAW. THE HEALTH CARE ENTITY IS PRESUMED TO HAVE ACTED IN GOOD FAITH. THE PRESUMPTION MAY BE REBUTTED BY CLEAR AND CONVINCING EVIDENCE.

Title 36 (Public Health and Safety); Chapter 6 (Public Health Control); Article 4 (Communicable Diseases)

36-664. Confidentiality; exceptions

A. A person who obtains communicable disease related information in the course of providing a health service or obtains that information from a health care provider pursuant to an authorization shall not disclose or be compelled to disclose that information except to the following:

1. The protected person or, if the protected person lacks capacity to consent, the protected person's health care decision maker.

2. The department or a local health department for purposes of notifying a good Samaritan pursuant to subsection E of this section.

3. An agent or employee of a health facility or health care provider to provide health services to the protected person or the protected person's child or for billing or reimbursement for health services.

4. A health facility or health care provider, in relation to the procurement, processing, distributing or use of a human body or a human body part, including organs, tissues, eyes, bones, arteries, blood, semen, milk or other body fluids, for use in medical education, research or therapy or for transplantation to another person.

5. A health facility or health care provider, or an organization, committee or individual designated by the health facility or health care provider, that is engaged in the review of professional practices, including the review of the quality, utilization or necessity of medical care, or an accreditation or oversight review organization responsible for the review of professional practices at a health facility or by a health care provider.

6. A private entity that accredits the health facility or health care provider and with whom the health facility or health care provider has an agreement requiring the agency to protect the confidentiality of patient information.

7. A federal, state, county or local health officer if disclosure is mandated by federal or state law.

8. A federal, state or local government agency authorized by law to receive the information. The agency is authorized to redisclose the information only pursuant to this article or as otherwise permitted by law.

9. An authorized employee or agent of a federal, state or local government agency that supervises or monitors the health care provider or health facility or administers the program under which the health service is provided. An authorized employee or agent includes only an employee or agent who, in the ordinary course of business of the government agency, has access to records relating to the care or treatment of the protected person.

10. A person, health care provider or health facility to which disclosure is ordered by a court or administrative body pursuant to section 36-665.

11. The industrial commission or parties to an industrial commission claim pursuant to section 23-908, subsection D and section 23-1043.02.

12. Insurance entities pursuant to section 20-448.01 and third party payors or the payors' contractors.

13. Any person or entity as authorized by the patient or the patient's health care decision maker.

14. A person or entity as required by federal law.

15. The legal representative of the entity holding the information in order to secure legal advice.

16. A person or entity for research only if the research is conducted pursuant to applicable federal or state laws and regulations governing research.

17. A PERSON OR ENTITY THAT PROVIDES SERVICES TO THE PATIENT'S HEALTH CARE PROVIDER, AND WITH WHOM THE HEALTH CARE PROVIDER HAS A BUSINESS ASSOCIATE AGREEMENT REQUIRING THE PERSON OR ENTITY TO PROTECT THE CONFIDENTIALITY OF PATIENT INFORMATION, AS REQUIRED BY THE HEALTH INSURANCE PORTABILITY AND ACCOUNTABILITY ACT PRIVACY STANDARDS (45 CODE OF FEDERAL REGULATIONS PART 164, SUBPART E).

B. At the request of the department of economic security in conjunction with the placement of children in foster care or for adoption or court-ordered placement, a health care provider shall disclose communicable disease information, including HIV-related information, to the department of economic security.

C. A state, county or local health department or officer may disclose communicable disease related information if the disclosure is any of the following:

1. Specifically authorized or required by federal or state law.

2. Made pursuant to an authorization signed by the protected person or the protected person's health care decision maker.

3. Made to a contact of the protected person. The disclosure shall be made without identifying the protected person.

4. For the purposes of research as authorized by state and federal law.

D. The director may authorize the release of information that identifies the protected person to the national center for health statistics of the United States public health service for the purposes of conducting a search of the national death index.

E. The department or a local health department shall disclose communicable disease related information to a good Samaritan who submits a request to the department or the local health department. The request shall document the occurrence of the accident, fire or other life-threatening emergency and shall include information regarding the nature of the significant exposure risk. The department shall adopt rules that prescribe standards of significant exposure risk based on the best available medical evidence. The department shall adopt rules that establish procedures for processing requests from good Samaritans pursuant to this subsection. The rules shall provide that the disclosure to the good Samaritan shall not reveal the protected person's name and shall be accompanied by a written statement that warns the good Samaritan that the confidentiality of the information is protected by state law.

F. An authorization to release communicable disease related information shall be signed by the protected person or, if the protected person lacks capacity to consent, the protected person's health care decision maker. An authorization shall be dated and shall specify to whom disclosure is authorized, the purpose for disclosure and the time period during which the release is effective. A general authorization for the release of medical or other information, including communicable disease related information, is not an authorization for the release of HIV-related information unless the authorization specifically indicates its purpose as an authorization for the release of confidential HIV-related information and complies with the requirements of this section.

G. A person to whom communicable disease related information is disclosed pursuant to this section shall not disclose the information to another person except as authorized by this section. This subsection does not apply to the protected person or a protected person's health care decision maker.

~~H. If a disclosure of communicable disease related information is made pursuant to an authorization under subsection F of this section, the disclosure shall be accompanied by a statement in writing that warns that the information is from confidential records protected by state law and that prohibits further disclosure of the information without the specific written authorization of the person to whom it pertains or as otherwise permitted by law.~~

~~I~~H. This section does not prohibit the listing of communicable disease related information, including acquired immune deficiency syndrome, HIV-related illness or HIV infection, in a certificate of death, autopsy report or other related document that is prepared pursuant to law

to document the cause of death or that is prepared to release a body to a funeral director. This section does not modify a law or rule relating to access to death certificates, autopsy reports or other related documents.

~~J~~I. If a person in possession of HIV-related information reasonably believes that an identifiable third party is at risk of HIV infection, that person may report that risk to the department. The report shall be in writing and include the name and address of the identifiable third party and the name and address of the person making the report. The department shall contact the person at risk pursuant to rules adopted by the department. The department employee making the initial contact shall have expertise in counseling persons who have been exposed to or tested positive for HIV or acquired immune deficiency syndrome.

~~K~~J. Except as otherwise provided pursuant to this article or subject to an order or search warrant issued pursuant to section 36-665, a person who receives HIV-related information in the course of providing a health service or pursuant to a release of HIV-related information shall not disclose that information to another person or legal entity or be compelled by subpoena, order, search warrant or other judicial process to disclose that information to another person or legal entity.

~~L~~K. This section and sections 36-663, 36-666, 36-667 and 36-668 do not apply to persons or entities subject to regulation under title 20.

Title 36 (Public Health and Safety), Chapter 32 (Living Wills and Health Care Directives), Article 7 (Health Care Directives Registry)

36-3295. Registry information; confidentiality; transfer of information

~~A. The registry established pursuant to this article is accessible only by entering the file number and password on the internet web site.~~

~~B.~~A. Registrations, file numbers, passwords and any other information maintained by the secretary of state pursuant to this article are confidential and shall not be disclosed to any person other than the person who submitted the document or the person's ~~personal representative~~ HEALTH CARE DECISION MAKER AS DEFINED IN SECTION 12-2291, OR AS PERMITTED IN SUBSECTION B.

~~C.~~B. Notwithstanding subsection ~~B~~A, a health care provider, OR A PERSON OR ENTITY THAT PROVIDES SERVICES TO THE PATIENT'S HEALTH CARE PROVIDER, AND WITH WHOM THE HEALTH CARE PROVIDER HAS A BUSINESS ASSOCIATE AGREEMENT REQUIRING THE PERSON OR ENTITY TO PROTECT THE CONFIDENTIALITY OF PATIENT INFORMATION, AS REQUIRED BY THE HEALTH INSURANCE PORTABILITY AND ACCOUNTABILITY ACT PRIVACY STANDARDS (45 CODE OF FEDERAL REGULATIONS PART 164, SUBPART E), may access the registry and receive a patient's health care directive documents for the provision of health care services ~~by submitting the patient's file number and password~~.

~~D.~~C. The secretary of state shall use information contained in the registry only for purposes prescribed in this article.

~~E.~~D. At the request of a person who submitted the document, the secretary of state may transmit the information received regarding the health care directive to the registry system of another jurisdiction as identified by the person.

Coppersmith Schermer & Brockelman PLC

MEMORANDUM

DATE: October 7, 2009

FROM: Kristen Rosati and Beth Schermer
Coppersmith Schermer & Brockelman PLC
Legal Counsel to Arizona Health-e Connection

RE: Arizona Health-e Connection Proposed Legislation to Remove Barriers to Electronic Health Information Exchange

Stakeholders throughout Arizona are working hard to make electronic health information exchange (HIE) a reality in Arizona. HIE promises to improve the quality of health care by making health information available at the point of care and to reduce the costs of health care by avoiding medical errors and reducing duplicative procedures. As part of that effort, the Arizona Health-e Connection Legal Committee examined where statutory amendments are needed in Arizona to remove barriers to HIE, while at the same time protecting consumer privacy and ensuring adequate enforcement authority to protect consumers.

The Arizona Health-e Connection Legal Committee involved many individuals from a wide array of perspectives, including representatives from consumer organizations, hospitals, physician groups, long term care facilities, health plans, various state agencies and the Arizona Attorney General's Office, universities and colleges, large employers, IT vendors, private law firms, and Health Information Organizations (HIOs)—organizations that will handle HIE on behalf of Arizona's health care providers and consumers. This proposed legislation reflects the hard work and input of these stakeholders over a three-year period.

In September 2009, the Arizona Health-e Connection Board of Directors voted to forward proposed legislation to the Arizona Legislature for consideration. Arizona Health-e Connection welcomes the input of others who have not yet been involved in the process.

Introduction

As Arizona moves to exchanging health information electronically, we are encountering a number of medical records laws that were clearly designed for the paper world and that cannot accommodate the migration to electronic health records and health information exchange (HIE). As a result, Arizona Health-e Connection proposes statutory amendments to a variety of statutes to:

- Remove requirements for "written" records or documentation, which are inconsistent with electronic exchange of health information;

- Permit health care providers and other sources of health information to disclose that information to entities like health information organizations (HIOs), if those entities have HIPAA "business associate" agreements in place that require them to protect the confidentiality of the health information they receive; and

- Permit redisclosure of records to authorized individuals or entities in a manner consistent with the statute. This ability to redisclose records to authorized individuals is essential to the HIE process.

In addition to removing barriers to HIE, Arizona Health-e Connection stakeholders are committed to rigorous protection of the privacy and security of health information handled in the HIE process and to ensuring accountability and protection for consumers. Arizona Health-e Connection worked on this accountability and protection for consumers in a number of ways, including:

- Developing a model contract for HIOs in Arizona that establishes the terms and conditions through which health care providers are granted access to information through the HIO: The agreement sets the "rules of the road," such as who can have access to the HIO (e.g. only providers), what information they may access (e.g. only their own patients' records), and for what purpose (e.g. for treatment). The agreement also requires entities signing the agreement on behalf of their employees to train those employees, monitor their use of the HIO and take disciplinary action against employees who don't follow the rules. The HIO has the ability to terminate access both for the entity and individuals who don't follow the rules.

- Developing model HIO policies that create detailed privacy and security requirements for participants: For example, the policies set the rules for authentication (how does the HIO know an individual is who he says he is before providing access?), role-based access (once a person is authenticated, what information can she see based on her role?), audit (what information about access will be tracked and reported?), and termination of access. The policies will also establish the rights of consumers, such as when and how consumers will provide permission to others to access their information, how they will access information about themselves in the HIO, how consumers will ask to have erroneous information amended, how consumers will learn about which individuals have accessed their information in the HIO, and what remedies they have upon violation of those policies.

- Ensuring that existing federal and state statutory and regulatory requirements protect the privacy and security of electronic health information, and filling in the gaps where necessary: In our work, the Legal Committee determined that substantial protection of privacy and security of electronic health information was already in place, in part due to the recent federal Health Information Technology for Economic and Clinical Health Act (the HITECH Act), which applies the HIPAA Privacy and Security Rules to HIOs, substantially increases the penalties available against health care entities and HIOs that violate the HIPAA rules, and gives authority to the state's Attorney General to enforce the HIPAA rules. The Legal Committee identified one area in which more enforcement

authority would be helpful—extending the Arizona computer tampering statute to all health care entities and HIOs, which would protect electronic health information against external hacking and inappropriate access internally.

This proposed legislative package is the result of the hard work of many stakeholders, over a period of more than three years, to create legislation that will encourage HIE in Arizona, yet ensure rigorous privacy and security of health information. The following pages propose amendments to statutes, followed by explanations of the changes sought. Arizona Health-e Connection will continue to seek feedback in the upcoming months, and welcomes your suggestions.

KBR and BJS

Proposed Legislation to Remove Barriers to Electronic Health Information Exchange

Title 12 (Courts and Civil Proceedings), Chapter 13 (Evidence), Article 7.1 (Medical Records)

12-2291. Definitions

In this article, unless the context otherwise requires:

1. "CLINICAL LABORATORY" HAS THE SAME MEANING AS IN SECTION 36-451.

[Renumber remaining definitions]

12-2294. Release of medical records and payment records to third parties

A. A health care provider shall disclose medical records or payment records, or the information contained in medical records or payment records, without the patient's written authorization as otherwise required by law or when ordered by a court or tribunal of competent jurisdiction.

B. A health care provider may disclose medical records or payment records, or the information contained in medical records or payment records, pursuant to written authorization signed by the patient or the patient's health care decision maker.

C. A health care provider may disclose medical records or payment records or the information contained in medical records or payment records, AND A CLINICAL LABORATORY MAY DISCLOSE CLINCIAL LABORATORY RESULTS, without the written authorization of the patient or the patient's health care decision maker as otherwise authorized by state or federal law, including the health insurance portability and accountability act privacy standards (45 Code of Federal Regulations part 160 and part 164, subpart E), or as follows:

1. To health care providers who are currently providing health care to the patient for the purpose of diagnosis or treatment of the patient.

2. To health care providers who have previously provided treatment to the patient, to the extent that the records pertain to the provided treatment.

3. To ambulance attendants as defined in section 36-2201 for the purpose of providing care to or transferring the patient whose records are requested.

4. To a private agency that accredits health care providers and with whom the health care provider has an agreement requiring the agency to protect the confidentiality of patient information.

5. To a health profession regulatory board as defined in section 32-3201.

6. To health care providers for the purpose of conducting utilization review, peer review and quality assurance pursuant to section 36-441, 36-445, 36-2402 or 36-2917.

7. To a person or entity that provides ~~billing, claims management, medical data processing, utilization review or other administrative~~ services to the patient's health care providers OR CLINICAL LABORATORIES, and with whom the health care provider OR CLINICAL LABORATORY has a~~n~~ BUSINESS ASSOCIATE agreement requiring the person or entity to protect the confidentiality of patient information, AS REQUIRED BY THE HEALTH INSURANCE PORTABILITY AND ACCOUNTABILITY ACT PRIVACY STANDARDS (45 CODE OF FEDERAL REGULATIONS PART 164, SUBPART E).

8. To the legal representative of a health care provider in possession of the medical records or payment records for the purpose of securing legal advice.

9. To the patient's third party payor or the payor's contractor.

10. To the industrial commission of Arizona or parties to an industrial commission claim pursuant to title 23, chapter 6.

D. A health care provider may disclose a deceased patient's medical records or payment records or the information contained in medical records or payment records to the patient's health care decision maker at the time of the patient's death. A health care provider also may disclose a deceased patient's medical records or payment records or the information contained in medical records or payment records to the personal representative or administrator of the estate of a deceased patient, or if a personal representative or administrator has not been appointed, to the following persons in the following order of priority, unless the deceased patient during the deceased patient's lifetime or a person in a higher order of priority has notified the health care provider in writing that the deceased patient opposed the release of the medical records or payment records:

1. The deceased patient's spouse, unless the patient and the patient's spouse were legally separated at the time of the patient's death.

2. The acting trustee of a trust created by the deceased patient either alone or with the deceased patient's spouse if the trust was a revocable inter vivos trust during the deceased patient's

lifetime and the deceased patient was a beneficiary of the trust during the deceased patient's lifetime.

3. An adult child of the deceased patient.

4. A parent of the deceased patient.

5. An adult brother or sister of the deceased patient.

6. A guardian or conservator of the deceased patient at the time of the patient's death.

E. A person who receives medical records or payment records pursuant to this section shall not disclose those records without the written authorization of the patient or the patient's health care decision maker, unless otherwise authorized by law.

F. If a health care provider releases a patient's medical records or payment records to a contractor for the purpose of duplicating or disclosing the records on behalf of the health care provider, the contractor shall not disclose any part or all of a patient's medical records or payment records in its custody except as provided in this article. After duplicating or disclosing a patient's medical records or payment records on behalf of a health care provider, a contractor must return the records to the health care provider who released the medical records or payment records to the contractor.

Explanatory Note: Arizona Health-e Connection proposes adding clinical laboratories to section 12-2294(C) to clarify that laboratories may release lab results through the HIE process. Making clinical laboratory results available through an HIO to treating physicians, whether or not those physician ordered the labs, is essential to the state's goal of improving quality of care and reducing the costs of duplicative lab work.

The Clinical Laboratories Improvement Act (CLIA)—the federal law governing clinical laboratories—permits laboratories to release test results "only to authorized persons and, if applicable, the individual responsible for using the test results and the laboratory that initially requested the test."[1] An "authorized person" is defined by the CLIA regulations as "an individual authorized under State law to order tests or receive test results, or both."[2] An "individual responsible for using the test results" is not defined by the CLIA regulations.

Unfortunately, Arizona law currently is silent on whether non-ordering physicians and HIOs are "authorized" under Arizona law to receive lab test results. A.R.S. § 12-2294, which governs disclosures of medical records by "health care providers," does not currently include clinical laboratories. Moreover, the Arizona clinical laboratory law, A.R.S. § 36-470, provides that laboratories are *required* to provide test results to the person who authorized the test (i.e. to the

[1] 42 C.F.R. § 493.1291(f).

[2] 42 C.F.R. § 493.2 (emphasis added).

ordering physician) and to the patient if directed by a physician and authorized by ADHS rules,[3] but does not indicate who is *permitted* (authorized) to receive test results.

Because Arizona law is silent regarding when clinical laboratories are permitted to release lab results to treating physicians and to HIOs (in order to make those lab results available to treating physicians), the Arizona Department of Health Services has deferred to the HIPAA Privacy Rule, at 45 Code of Federal Regulations part 160 and part 164, subpart E. The HIPAA Privacy Rule permits disclosure of lab results to non-ordering physicians in order to treat a patient.[4] The HIPAA Privacy Rule also permits disclosure of lab results to an HIO if the HIO has a business associate contract in place with the participating clinical laboratory.[5] ADHS issued a Substantive Policy Statement that permits disclosures to HIOs in many circumstances. This statutory change will clarify that permission.

Arizona Health-e Connection also seeks to clarify that all health care providers may release health information to an HIO. Current law permits release of health information to an entity providing medical data processing or administrative services on behalf of a health care provider has a confidentiality agreement in place with that entity. An HIO could be interpreted as providing medical data processing or administrative services, but that interpretation may vary. To clarify existing law, Arizona Health-e Connection recommends adding as a permissible disclosure, those to a "a person or entity that provides services to the patient's health care providers or clinical laboratories, and with whom the health care provider or clinical laboratory has a business associate agreement requiring the person or entity to protect the confidentiality of patient information," as required by HIPAA. Importantly, this change also will ensure that a

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[3] *See* A.R.S. § 36-470(B): "The result of a test shall be reported to the person who authorized it. A report of results issued from a clinical laboratory shall provide information required by the department by rule. No clinical interpretation, diagnosis or prognosis or suggested treatment other than normal values shall appear on the laboratory report form, except that a report made by a physician licensed to practice medicine and surgery in this state or another state may include this information." *See also* (F) "A person authorized to request clinical laboratory examinations pursuant to this section may direct that a clinical laboratory examine a person's specimens at that person's request if the authorization is given pursuant to department rules and specifies: 1. The name of the person authorized to request an examination and to receive the results of that examination. …"); (G) "The laboratory shall report test results ordered pursuant to subsection F to the person who authorized the test and to the person who requested it." This law does not apply to CLIA-certified clinical laboratories. *See* A.R.S. § 36-461 ("The provisions of this article apply to all clinical laboratories and directors of clinical laboratories but do not apply to the following: 1. Clinical laboratories operated, licensed or certified by the United States government…").

[4] 45 C.F.R. § 164.506.

[5] The Office for Civil Rights, the agency within the Department of Health and Human Services that enforces the HIPAA Privacy Rule, has explained in its FAQs that a HIPAA covered entity may share protected health information with a business associate acting on behalf of another covered entity, as long as the disclosure to the covered entity would have been permitted under HIPAA. *See* http://www.hhs.gov/hipaafaq/providers/business/241.html ("If the HIPAA Privacy Rule permits a covered entity to share protected health information with another covered entity, the covered entity is permitted to make the disclosure directly to a business associate acting on behalf of that other covered entity.").

person or entity that receives health information to provide services to a health care provider or clinical laboratory is a "business associate" under HIPAA and thus subject to the penalties and enforcement available under HIPAA.

12-2296. Immunity

A health care provider, ~~or~~ contractor, OR CLINICAL LABORATORY that acts in good faith under this article is not liable for damages in any civil action for the disclosure of medical records or payment records or information contained in medical records or payment records, OR CLINICAL LABORATORY RESULTS, that is made pursuant to this article or as otherwise provided by law. The health care provider, ~~or~~ contractor, OR CLINICAL LABORATORY is presumed to have acted in good faith. The presumption may be rebutted by clear and convincing evidence.

Explanatory Note: Arizona Health-e Connection proposes adding clinical laboratories to this section to ensure that clinical laboratories have immunity from lawsuit for disclosures in good faith under this statute. This is important to provide incentives to clinical laboratories to participate in HIE, as clinical laboratories are essential participants in HIE.

Title 13 (Criminal Code), Chapter 23 (Organized Crime, Fraud and Terrorism)

13-2316. Computer tampering; venue; forfeiture; classification

A. A person who acts without authority or who exceeds authorization of use commits computer tampering by:

1. Accessing, altering, damaging or destroying any computer, computer system or network, or any part of a computer, computer system or network, with the intent to devise or execute any scheme or artifice to defraud or deceive, or to control property or services by means of false or fraudulent pretenses, representations or promises.

2. Knowingly altering, damaging, deleting or destroying computer programs or data.

3. Knowingly introducing a computer contaminant into any computer, computer system or network.

4. Recklessly disrupting or causing the disruption of computer, computer system or network services or denying or causing the denial of computer or network services to any authorized user of a computer, computer system or network.

5. Recklessly using a computer, computer system or network to engage in a scheme or course of conduct that is directed at another person and that seriously alarms, torments, threatens or terrorizes the person. For the purposes of this paragraph, the conduct must both:

(a) Cause a reasonable person to suffer substantial emotional distress.

(b) Serve no legitimate purpose.

6. Preventing a computer user from exiting a site, computer system or network-connected location in order to compel the user's computer to continue communicating with, connecting to or displaying the content of the service, site or system.

7. Knowingly obtaining any information that is required by law to be kept confidential or any records that are not public records by accessing any computer, computer system or network that is operated by this state, a political subdivision of this state, ~~or a medical institution,~~ A HEALTH CARE PROVIDER AS DEFINED IN SECTION 12-2291, A CLINICAL LABORATORY AS DEFINED IN SECTION 36-451, OR A PERSON OR ENTITY THAT PROVIDES SERVICES ON BEHALF OF A HEALTH CARE PROVIDER OR CLINICAL LABORATORY.

8. Knowingly accessing any computer, computer system or network or any computer software, program or data that is contained in a computer, computer system or network.

B. In addition to section 13-109, a prosecution for a violation of this section may be tried in any of the following counties:

1. The county in which the victimized computer, computer system or network is located.

2. The county in which the computer, computer system or network that was used in the commission of the offense is located or in which any books, records, documents, property, financial instruments, computer software, data, access devices or instruments of the offense were used.

3. The county in which any authorized user was denied service or in which an authorized user's service was interrupted.

4. The county in which critical infrastructure resources were tampered with or affected.

C. On conviction of a violation of this section, the court shall order that any computer system or instrument of communication that was owned or used exclusively by the defendant and that was used in the commission of the offense be forfeited and sold, destroyed or otherwise properly disposed.

D. A violation of subsection A, paragraph 6 OR PARAGRAPH 7 of this section constitutes an unlawful practice under section 44-1522 and is in addition to all other causes of action, remedies and penalties that are available to this state. The attorney general may investigate and take appropriate action pursuant to title 44, chapter 10, article 7.

E. Computer tampering pursuant to subsection A, paragraph 1 of this section is a class 3 felony. Computer tampering pursuant to subsection A, paragraph 2, 3 or 4 of this section is a class 4 felony, unless the computer, computer system or network tampered with is a critical infrastructure resource, in which case it is a class 2 felony. Computer tampering pursuant to subsection A, paragraph 5 of this section is a class 5 felony. Computer tampering pursuant to subsection A, paragraph 7 or 8 of this section is a class 6 felony.

Explanatory Note: Arizona Health-e Connection proposes adding health care providers, clinical laboratories, and persons or entities that provide services to these providers and labs, to this section. This will ensure that "hacking" into these systems and unauthorized internal access by employees to these systems is covered by this statute, enforceable by the Arizona Attorney General.

Title 36 (Public Health and Safety); Chapter 1 (State and Local Boards and Departments of Health Services); Article 2 (Department of Health Services, Additional Functions)

36-135. Child immunization reporting system; requirements; access; confidentiality; immunity; violation; classification

A. The child immunization reporting system is established in the department to collect, store, analyze, release and report immunization data.

B. Beginning on January 1, 1998, a health care professional who is licensed under title 32 to provide immunizations, except as provided in subsection I, shall report the following information:

1. The health care professional's name, business address and business telephone number.

2. The child's name, address, social security number if known and not confidential, gender, date of birth and mother's maiden name.

3. The type of vaccine administered and the date it is administered.

C. The health care professional may submit this information to the department on a weekly or monthly basis by telephone, facsimile, mail, computer or any other method prescribed by the department.

D. Except as provided in subsection I, the department shall release identifying information only to the PERSON, THE person's ~~health care professional,~~ HEALTH CARE DECISION MAKER AS DEFINED IN SECTION 12-2291, parent or guardian, A HEALTH CARE PROVIDER AS DEFINED IN SECTION 12-2291, ~~health care services organization~~ AN ENTITY REGULATED UNDER TITLE 20, the Arizona health care cost containment system and its providers as defined in chapter 29 of this title, ~~or~~ a school official who is authorized by law to receive and record immunization records, OR TO A PERSON OR ENTITY THAT PROVIDES SERVICES TO A HEALTH CARE PROVIDER, AND WITH WHOM THE HEALTH CARE PROVIDER HAS A BUSINESS ASSOCIATE AGREEMENT REQUIRING THE PERSON OR ENTITY TO PROTECT THE CONFIDENTIALITY OF THE INFORMATION, AS REQUIRED BY THE HEALTH INSURANCE PORTABILITY AND ACCOUNTABILITY ACT PRIVACY STANDARDS (45 CODE OF FEDERAL REGULATIONS PART 164, SUBPART E). THE DEPARTMENT MAY ALSO RELEASE IDENTIFYING INFORMATION TO AN ENTITY DESIGNATED BY THE PERSON OR THE PERSON'S HEALTH CARE DECISION MAKER, PARENT OR GUARDIAN.

The department, by rule, may release immunization information to persons for a specified purpose. The department may release nonidentifying summary statistics.

E. Identifying information in the system is confidential. A person who is authorized to receive confidential information under subsection D OR DEPARTMENT RULE shall ~~not~~ disclose this information ~~to any other person~~ ONLY AS PERMITTED BY THIS SECTION OR DEPARTMENT RULE.

F. ~~A health care professional~~ A HEALTH CARE PROVIDER AS DEFINED IN SECTION 12-2291 ~~who~~ THAT provides information in good faith pursuant to this section is not subject to civil or criminal liability.

G. ~~A health care professional~~ A HEALTH CARE PROVIDER AS DEFINED IN SECTION 12-2291 36 ~~who~~ THAT does not comply with the requirements of this section violates a law applicable to the practice of medicine and commits an act of unprofessional conduct OR A VIOLATION OF TITLE 36, CHAPTER 4.

H. Any agency or person receiving confidential information from the system who subsequently discloses that information to any other person OTHER THAN AS PERMITTED BY THIS SECTION is guilty of a class 3 misdemeanor.

I. At the request of the person, or if the person is a child the child's parent or guardian, the department of health services shall provide a form to be signed that allows confidential immunization information to be withheld from all persons including persons authorized to receive confidential information pursuant to subsection D. If the request is delivered to the health care professional prior to the immunization, the health care professional shall not forward the information required under subsection B to the department.

Explanatory Note: The existing statute does not permit ADHS to release immunization information through the HIE process, for access by a patient's health care providers. Physicians have expressed great interest in using HIE as an efficient way to receive immunization information and improve care for their patients. Also, the HHS "meaningful use" standards—which health care providers must meet to obtain Medicare and Medicaid payment incentives for adopting electronic health records—must demonstrate the ability to receive immunization information from state immunization registries. This will only be practical through HIE, so that ADHS does not have to create separate interfaces with each health care provider's electronic health record.

In addition, the statute currently permits release only to health professionals (physicians), but not to other health care providers that may need the information for treatment purposes, such as hospitals or clinics. Moreover, the statute currently permits release to HMOs (health services organizations) and AHCCCS, but not other health plans. Because immunization information is useful to all types of providers and plans for continuity of care purposes, Arizona Health-e Connection proposes broadening this disclosure.

Next, the current statute does not permit ADHS to release immunization information to the individual, the individual's health care decision maker, or to an entity designated by the

individual (or the individual's parent or guardian). There is great interest in allowing individuals to obtain their own immunization information through the ADHS registry, as well as allowing individuals to designate an entity that may receive that information (such as the individual's personal health record vendor).

Next, the statute contains an absolute prohibition on redisclosure of immunization information received from ADHS, which will prevent health care providers from releasing immunization information obtained from ADHS to an HIO or to another health care provider. Arizona Health-e Connection proposes removing the absolute prohibition against redisclosure of immunization information, and instead providing that immunization information may be redisclosed as permitted by the statute. This will continue to restrict who receives immunization information, but will not interfere with the exchange of immunization information for treatment and other permitted purposes.

Finally, the statute currently provides that a health care professional is immune from civil or criminal liability for providing information pursuant to the statute, but also that violation of the statute is unprofessional conduct. It is important to provide both immunity and penalties to other health care providers (such as hospitals). Arizona Health-e Connection thus proposes an amendment to expand the term "health care professionals" to "health care providers."

Title 36 (Public Health and Safety); Chapter 4.1 (Clinical Laboratories)

36-470. Examination of specimens; written requests; reports of results; retention of test records

A. Except as otherwise provided, a clinical laboratory shall examine specimens at the authorization of any person licensed pursuant to title 32, chapter 7, 8, 13, 14, 17 or 29 or title 32, chapter 11, article 2, a person licensed to practice medicine or surgery in another state, or a person authorized by law or department rules.

B. The result of a test shall be reported to the person who authorized it. A report of results issued from a clinical laboratory shall provide information required by the department by rule. No clinical interpretation, diagnosis or prognosis or suggested treatment other than normal values shall appear on the laboratory report form, except that a report made by a physician licensed to practice medicine and surgery in this state or another state may include this information.

C. THE RESULT OF A TEST MAY BE REPORTED TO A HEALTH CARE PROVIDER, AS DEFINED IN SECTION 12-2291, THAT HAS A TREATMENT RELATIONSHIP WITH A PATIENT, OR TO A PERSON OR ENTITY THAT PROVIDES SERVICES TO THE HEALTH CARE PROVIDER, AND WITH WHOM THE HEALTH CARE PROVIDER HAS A BUSINESS ASSOCIATE AGREEMENT REQUIRING THE PERSON OR ENTITY TO PROTECT THE CONFIDENTIALITY OF PATIENT INFORMATION, AS REQUIRED BY THE HEALTH INSURANCE PORTABILITY AND ACCOUNTABILITY ACT PRIVACY STANDARDS (45 CODE OF FEDERAL REGULATIONS PART 164, SUBPART E).

~~C.~~D. All specimens accepted by a laboratory for specified tests shall be tested on its premises, except that specimens, other than those for proficiency testing purposes, may be forwarded for examination to another laboratory licensed under this article or exempted by section 36-461, paragraph 1.

~~D.~~E. When the laboratory performing the examination is other than the laboratory accepting the specimen, the report submitted shall include information required by the department by rule.

~~E.~~F. Records involving laboratory services and copies of reports of laboratory tests shall be kept in a manner as prescribed by the department by rule.

~~F.~~G. A person authorized to request clinical laboratory examinations pursuant to this section may direct that a clinical laboratory examine a person's specimens at that person's request if the authorization is given pursuant to department rules and specifies:

1. The name of the person authorized to request an examination and to receive the results of that examination.

2. The type of examinations to be performed by the laboratory.

3. The total number of examinations the authorized person may request.

4. The beginning and expiration dates of the authorization.

5. The identification of the person giving the authorization.

~~G.~~H. The laboratory shall report test results ordered pursuant to subsection F to the person who authorized the test and to the person who requested it.

Explanatory Note: As explained above with regard to proposed amendments to A.R.S. § 12-2294, Arizona Health-e Connection proposes clarifying that Arizona law permits clinical laboratories to release lab results to HIOs and to non-ordering physicians.

Title 36 (Public Health and Safety); Chapter 5 (Mental Health Services), Article 2 (Patient Civil and Legal Rights)

36-509. Confidential records

A. A health care entity must keep records and information contained in records confidential and not as public records, except as provided in this section. Records and information contained in records may only be disclosed to:

1. Physicians and providers of health, mental health or social and welfare services involved in caring for, treating or rehabilitating the patient.

2. Individuals to whom the patient or the patient's health care decision maker has given authorization to have information disclosed.

3. Persons authorized by a court order.

4. Persons doing research only if the activity is conducted pursuant to applicable federal or state laws and regulations governing research.

5. The state department of corrections in cases in which prisoners confined to the state prison are patients in the state hospital on authorized transfers either by voluntary admission or by order of the court.

6. Governmental or law enforcement agencies if necessary to:

(a) Secure the return of a patient who is on unauthorized absence from any agency where the patient was undergoing evaluation and treatment.

(b) Report a crime on the premises.

(c) Avert a serious and imminent threat to an individual or the public.

7. Persons, including family members, actively participating in the patient's care, treatment or supervision. A health care provider may only release information relating to the patient's diagnosis, prognosis, need for hospitalization, anticipated length of stay, discharge plan, medication, medication side effects and short-term and long-term treatment goals. A health care provider may make this release only after the treating professional or that person's designee interviews the patient or the patient's health care decision maker and the patient or the patient's health care decision maker does not object, unless federal or state law permits the disclosure. If the patient does not have the opportunity to object to the disclosure because of incapacity or an emergency circumstance and the patient's health care decision maker is not available to object to the release, the health care provider in the exercise of professional judgment may determine if the disclosure is in the best interests of the patient and, if so, may release the information authorized pursuant to this paragraph. A decision to release or withhold information is subject to review pursuant to section 36-517.01. The health care provider must record the name of any person to whom any information is given under this paragraph.

8. A state agency that licenses health professionals pursuant to title 32, chapter 13, 15, 17, 19.1 or 33 and that requires these records in the course of investigating complaints of professional negligence, incompetence or lack of clinical judgment.

9. A state or federal agency that licenses health care providers.

10. A governmental agency or a competent professional, as defined in section 36-3701, in order to comply with chapter 37 of this title.

11. Human rights committees established pursuant to title 41, chapter 35. Any information released pursuant to this paragraph shall comply with the requirements of section 41-3804 and applicable federal law and shall be released without personally identifiable information unless the personally identifiable information is required for the official purposes of the human rights

committee. Case information received by a human rights committee shall be maintained as confidential. For the purposes of this paragraph, "personally identifiable information" includes a person's name, address, date of birth, social security number, tribal enrollment number, telephone or telefacsimile number, driver license number, places of employment, school identification number and military identification number or any other distinguishing characteristic that tends to identify a particular person.

12. A patient or the patient's health care decision maker pursuant to section 36-507.

13. The department of public safety by the court to comply with the requirements of section 36-540, subsection N.

14. A third party payor or the payor's contractor to obtain reimbursement for health care, mental health care or behavioral health care provided to the patient.

15. A private entity that accredits the health care provider and with whom the health care provider has an agreement requiring the agency to protect the confidentiality of patient information.

16. The legal representative of a health care entity in possession of the record for the purpose of securing legal advice.

17. A person or entity as otherwise required by state or federal law.

18. A person or entity as permitted by the federal regulations on alcohol and drug abuse treatment (42 Code of Federal Regulations part 2).

19. A person or entity to conduct utilization review, peer review and quality assurance pursuant to section 36-441, 36-445, 36-2402 or 36-2917.

20. A person maintaining health statistics for public health purposes as authorized by law.

21. A grand jury as directed by subpoena.

22. A PERSON OR ENTITY THAT PROVIDES SERVICES TO THE PATIENT'S HEALTH CARE PROVIDER, AS DEFINED IN SECTION 12-2291, AND WITH WHOM THE HEALTH CARE PROVIDER HAS A BUSINESS ASSOCIATE AGREEMENT REQUIRING THE PERSON OR ENTITY TO PROTECT THE CONFIDENTIALITY OF PATIENT INFORMATION, AS REQUIRED BY THE HEALTH INSURANCE PORTABILITY AND ACCOUNTABILITY ACT PRIVACY STANDARDS (45 CODE OF FEDERAL REGULATIONS PART 164, SUBPART E).

B. Information and records obtained in the course of evaluation, examination or treatment and submitted in any court proceeding pursuant to this chapter or title 14, chapter 5 are confidential and are not public records unless the hearing requirements of this chapter or title 14, chapter 5 require a different procedure. Information and records that are obtained pursuant to this section and submitted in a court proceeding pursuant to title 14, chapter 5 and that are not clearly

identified by the parties as confidential and segregated from nonconfidential information and records are considered public records.

C. Notwithstanding subsections A and B of this section, the legal representative of a patient who is the subject of a proceeding conducted pursuant to this chapter and title 14, chapter 5 has access to the patient's information and records in the possession of a health care entity or filed with the court.

D. A HEALTH CARE ENTITY THAT ACTS IN GOOD FAITH UNDER THIS ARTICLE IS NOT LIABLE FOR DAMAGES IN ANY CIVIL ACTION FOR THE DISCLOSURE OF RECORDS OR PAYMENT RECORDS THAT IS MADE PURSUANT TO THIS ARTICLE OR AS OTHERWISE PROVIDED BY LAW. THE HEALTH CARE ENTITY IS PRESUMED TO HAVE ACTED IN GOOD FAITH. THE PRESUMPTION MAY BE REBUTTED BY CLEAR AND CONVINCING EVIDENCE.

Explanatory Note: The current statute could be interpreted as not permitting disclosure of mental health information to an HIO; many physicians believe mental health information is essential to provide quality of care to their patients. Arizona Health-e Connection recommends adding as a permissible disclosure, those to "a person or entity that provides services to the patient's health care providers, and with whom the health care provider has a business associate agreement requiring the person or entity to protect the confidentiality of patient information," as required by HIPAA. This change will also ensure that a person or entity that receives information to provide services to a health care provider is a "business associate" under HIPAA and thus subject to the penalties and enforcement available under HIPAA.

Unlike other medical records statutes, the mental health information statute currently does not contain immunity for good faith disclosure of information pursuant to the statute. Arizona Health-e Connection proposes to add such an immunity provision, which will increase the willingness to share information through HIE for continuity of care.

These state statutory revisions will not affect information held by alcohol and substance abuse treatment programs, which continues to be protected by the federal substance abuse treatment regulations, found at 42 C.F.R. Part 2.

Title 36 (Public Health and Safety); Chapter 6 (Public Health Control); Article 4 (Communicable Diseases)

36-664. Confidentiality; exceptions

A. A person who obtains communicable disease related information in the course of providing a health service or obtains that information from a health care provider pursuant to an authorization shall not disclose or be compelled to disclose that information except to the following:

1. The protected person or, if the protected person lacks capacity to consent, the protected person's health care decision maker.

2. The department or a local health department for purposes of notifying a good Samaritan pursuant to subsection E of this section.

3. An agent or employee of a health facility or health care provider to provide health services to the protected person or the protected person's child or for billing or reimbursement for health services.

4. A health facility or health care provider, in relation to the procurement, processing, distributing or use of a human body or a human body part, including organs, tissues, eyes, bones, arteries, blood, semen, milk or other body fluids, for use in medical education, research or therapy or for transplantation to another person.

5. A health facility or health care provider, or an organization, committee or individual designated by the health facility or health care provider, that is engaged in the review of professional practices, including the review of the quality, utilization or necessity of medical care, or an accreditation or oversight review organization responsible for the review of professional practices at a health facility or by a health care provider.

6. A private entity that accredits the health facility or health care provider and with whom the health facility or health care provider has an agreement requiring the agency to protect the confidentiality of patient information.

7. A federal, state, county or local health officer if disclosure is mandated by federal or state law.

8. A federal, state or local government agency authorized by law to receive the information. The agency is authorized to redisclose the information only pursuant to this article or as otherwise permitted by law.

9. An authorized employee or agent of a federal, state or local government agency that supervises or monitors the health care provider or health facility or administers the program under which the health service is provided. An authorized employee or agent includes only an employee or agent who, in the ordinary course of business of the government agency, has access to records relating to the care or treatment of the protected person.

10. A person, health care provider or health facility to which disclosure is ordered by a court or administrative body pursuant to section 36-665.

11. The industrial commission or parties to an industrial commission claim pursuant to section 23-908, subsection D and section 23-1043.02.

12. Insurance entities pursuant to section 20-448.01 and third party payors or the payors' contractors.

13. Any person or entity as authorized by the patient or the patient's health care decision maker.

14. A person or entity as required by federal law.

15. The legal representative of the entity holding the information in order to secure legal advice.

16. A person or entity for research only if the research is conducted pursuant to applicable federal or state laws and regulations governing research.

17. A PERSON OR ENTITY THAT PROVIDES SERVICES TO THE PATIENT'S HEALTH CARE PROVIDER, AND WITH WHOM THE HEALTH CARE PROVIDER HAS A BUSINESS ASSOCIATE AGREEMENT REQUIRING THE PERSON OR ENTITY TO PROTECT THE CONFIDENTIALITY OF PATIENT INFORMATION, AS REQUIRED BY THE HEALTH INSURANCE PORTABILITY AND ACCOUNTABILITY ACT PRIVACY STANDARDS (45 CODE OF FEDERAL REGULATIONS PART 164, SUBPART E).

B. At the request of the department of economic security in conjunction with the placement of children in foster care or for adoption or court-ordered placement, a health care provider shall disclose communicable disease information, including HIV-related information, to the department of economic security.

C. A state, county or local health department or officer may disclose communicable disease related information if the disclosure is any of the following:

1. Specifically authorized or required by federal or state law.

2. Made pursuant to an authorization signed by the protected person or the protected person's health care decision maker.

3. Made to a contact of the protected person. The disclosure shall be made without identifying the protected person.

4. For the purposes of research as authorized by state and federal law.

D. The director may authorize the release of information that identifies the protected person to the national center for health statistics of the United States public health service for the purposes of conducting a search of the national death index.

E. The department or a local health department shall disclose communicable disease related information to a good Samaritan who submits a request to the department or the local health department. The request shall document the occurrence of the accident, fire or other life-threatening emergency and shall include information regarding the nature of the significant exposure risk. The department shall adopt rules that prescribe standards of significant exposure risk based on the best available medical evidence. The department shall adopt rules that establish procedures for processing requests from good Samaritans pursuant to this subsection. The rules shall provide that the disclosure to the good Samaritan shall not reveal the protected person's name and shall be accompanied by a written statement that warns the good Samaritan that the confidentiality of the information is protected by state law.

F. An authorization to release communicable disease related information shall be signed by the protected person or, if the protected person lacks capacity to consent, the protected person's health care decision maker. An authorization shall be dated and shall specify to whom disclosure is authorized, the purpose for disclosure and the time period during which the release is effective. A general authorization for the release of medical or other information, including communicable disease related information, is not an authorization for the release of HIV-related information unless the authorization specifically indicates its purpose as an authorization for the release of confidential HIV-related information and complies with the requirements of this section.

G. A person to whom communicable disease related information is disclosed pursuant to this section shall not disclose the information to another person except as authorized by this section. This subsection does not apply to the protected person or a protected person's health care decision maker.

~~H. If a disclosure of communicable disease related information is made pursuant to an authorization under subsection F of this section, the disclosure shall be accompanied by a statement in writing that warns that the information is from confidential records protected by state law and that prohibits further disclosure of the information without the specific written authorization of the person to whom it pertains or as otherwise permitted by law.~~

~~I~~H. This section does not prohibit the listing of communicable disease related information, including acquired immune deficiency syndrome, HIV-related illness or HIV infection, in a certificate of death, autopsy report or other related document that is prepared pursuant to law to document the cause of death or that is prepared to release a body to a funeral director. This section does not modify a law or rule relating to access to death certificates, autopsy reports or other related documents.

~~J~~I. If a person in possession of HIV-related information reasonably believes that an identifiable third party is at risk of HIV infection, that person may report that risk to the department. The report shall be in writing and include the name and address of the identifiable third party and the name and address of the person making the report. The department shall contact the person at risk pursuant to rules adopted by the department. The department employee making the initial contact shall have expertise in counseling persons who have been exposed to or tested positive for HIV or acquired immune deficiency syndrome.

~~K~~J. Except as otherwise provided pursuant to this article or subject to an order or search warrant issued pursuant to section 36-665, a person who receives HIV-related information in the course of providing a health service or pursuant to a release of HIV-related information shall not disclose that information to another person or legal entity or be compelled by subpoena, order, search warrant or other judicial process to disclose that information to another person or legal entity.

~~L~~K. This section and sections 36-663, 36-666, 36-667 and 36-668 do not apply to persons or entities subject to regulation under title 20.

Explanatory Note: Healthcare providers must preserve the confidentiality of communicable disease information and may release it only for the purposes listed in the statute.[6] Communicable disease information is broadly defined and goes far beyond HIV/ AIDS information; it includes information about any "contagious, epidemic or infectious disease required to be reported to the local board of health" or ADHS that is in the possession of someone who provides health services or who obtains the information pursuant to a release (same as a "consent" or "authorization") signed by the patient.[7] At present, reportable communicable diseases include a wide variety of ailments, including flu, measles, mumps and other conditions that do not carry a stigmatizing effect.[8] Given the broad scope of "communicable disease information," many medical records include communicable disease information that cannot be segregated from the rest of the information in the medical record.

The current statute could be interpreted as not permitting disclosure of communicable disease information to an HIO. Because the definition of "communicable disease" is so broad and includes many health conditions such as flu, health care providers cannot segregate communicable disease information from the rest of the information in a patient's record. We thus must assume that all health information exchanged in HIE may include some communicable disease information. The inability to release communicable disease information to an HIO would prevent most health care providers from providing any of their medical records to others through HIE.

Arizona Health-e Connection proposes an amendment to the statute to permit disclosure to an entity that provides services to a health care provider (such as an HIO), pursuant to a HIPAA business associate agreement. This change will also ensure that a person or entity that receives communicable disease information to provide services is a "business associate" under HIPAA and subject to the penalties and enforcement available under HIPAA.

Next, the current statute requires that a disclosure of communicable disease information under an individual's authorization "be accompanied by a statement in writing that warns that the information is from confidential records protected by state law and that prohibits further disclosure of the information without the specific written authorization of the person to whom it pertains or as otherwise permitted by law." Again, because the definition of "communicable disease" is so broad, we must assume that all health information exchanged in HIE includes communicable disease information that may trigger this written re-disclosure warning. This requirement poses a barrier to HIE in two ways:

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[6] A.R.S. § 36-664.

[7] A.R.S. § 36-661(4) and (5).

[8] *See* A.A.C. R9-6-202 (Reporting Requirements for a Health Care Provider or an Administrator of a Health Care Institution or Correctional Facility); R9-6-203 (Reporting Requirements for an Administrator of a School, Child Care Establishment, or Shelter); R9-6-204 (Clinical Laboratory Director Reporting Requirements); R9-6-205 (Reporting Requirements for a Pharmacist or Pharmacy Administrator); A.A.C. R9-6-206 (Local Health Agency Responsibilities Regarding Communicable Disease Reports); A.A.C. R9-6-207 (Federal or Tribal Entity Reporting).

First, if an individual provides an authorization to provide his or her health information to an HIO, the health care provider releasing information to the HIO would have to include the required written notice. The requirement that such notice be "written" poses obvious challenges in the electronic health information environment. Moreover, even if an electronic notice meets the "written" notice requirement, existing electronic health information systems cannot accommodate such a requirement.

Second, under the current statutory language, after receipt of the information, the HIO would be required to obtain an individual's written authorization for any re-release of the information to subsequent treating providers. Authorization is not currently required for disclosure of health information for treatment purposes, and this requirement would pose a substantial barrier to utilizing HIE to improve the quality and efficient of care in Arizona. Arizona Health-e Connection thus proposes an amendment to remove this statutory provision. Of course, communicable disease information will continue to receive substantial protection through the statute, which limits the purposes for which the information may be disclosed.

Title 36 (Public Health and Safety), Chapter 32 (Living Wills and Health Care Directives), Article 7 (Health Care Directives Registry)

36-3295. Registry information; confidentiality; transfer of information

~~A. The registry established pursuant to this article is accessible only by entering the file number and password on the internet web site.~~

~~B.~~A. Registrations, file numbers, passwords and any other information maintained by the secretary of state pursuant to this article are confidential and shall not be disclosed to any person other than the person who submitted the document or the person's ~~personal representative~~ HEALTH CARE DECISION MAKER AS DEFINED IN SECTION 12-2291, OR AS PERMITTED IN SUBSECTION B.

~~C.~~B. Notwithstanding subsection ~~B~~A, a health care provider, OR A PERSON OR ENTITY THAT PROVIDES SERVICES TO THE PATIENT'S HEALTH CARE PROVIDER, AND WITH WHOM THE HEALTH CARE PROVIDER HAS A BUSINESS ASSOCIATE AGREEMENT REQUIRING THE PERSON OR ENTITY TO PROTECT THE CONFIDENTIALITY OF PATIENT INFORMATION, AS REQUIRED BY THE HEALTH INSURANCE PORTABILITY AND ACCOUNTABILITY ACT PRIVACY STANDARDS (45 CODE OF FEDERAL REGULATIONS PART 164, SUBPART E), may access the registry and receive a patient's health care directive documents for the provision of health care services ~~by submitting the patient's file number and password~~.

~~D.~~C. The secretary of state shall use information contained in the registry only for purposes prescribed in this article.

~~E.~~D. At the request of a person who submitted the document, the secretary of state may transmit the information received regarding the health care directive to the registry system of another jurisdiction as identified by the person.

Explanatory Note: The present requirement for a health care provider to obtain patients' file numbers and passwords to access health care directives means that patients' directives are not available in most cases where they are needed the most. Most patients do not maintain that file number and password on their persons and, where they are incapacitated or unconscious they are not able to provide that information. Without access to online health care directives, health care providers often ask patients to complete additional health care directives. If a patient is not conscious or is no longer competent to do so, the provider instead must look to a patient's statutory surrogates to make health care decisions, which may not reflect the patient's wishes as expressed in the original health care directive. Arizona Health-e Connection thus proposes a statutory amendment to make health care directives available to health care providers (and to HIOs, to obtain on behalf of health care providers).

Appendix B

Press Release

Southern Arizona Health Information Exchange (SAHIE) Chooses Wellogic for Health Information Exchange and SaaS Solutions

Partnership Will Enable Quality-focused Collaborative to Realize Vision for a Connected Healthcare Community Across Southern Arizona

Cambridge, MA and Tucson, AZ—February 25, 2009— After a thorough evaluation, Southern Arizona Health Information Exchange (SAHIE) has chosen Wellogic as its strategic partner to establish SAHIE's health information exchange (HIE). Wellogic and its partners Apollo Health Street and Initiate Systems will provide SaaS-based clinical solutions and services to SAHIE's forty-plus member organizations. SAHIE's members include providers, health plans, diagnostic service organizations, and the state of Arizona. SAHIE is tightly aligned with the State of Arizona Roadmap for HIE and will be used as a model for many communities across Arizona.

Under SAHIE's blueprint, Wellogic's standards-based exchange, utilizing Initiate's Interoperable Health PlatForm For Patient Identification. will reduce the friction in information flow among providers, patients, payors, laboratories, imaging centers, pharmacies, and other participants in patient care. The HIE will bring together the area's major healthcare stakeholders and systems to establish a semantically interoperable patient health summary across multiple venues of care, with a goal to achieve a rapid and measureable improvement in quality of care, patient safety, and rate of increase of healthcare cost. The system is designed to be technology agnostic, making it easily accessible across multiple vendor systems. Building on this foundation, in subsequent phases SAHIE will leverage Wellogic's patient, provider, and care management solutions to deliver patient specific, evidence-based quality, cost, and performance recommendations to the point of care for maximum impact. Also over time, SAHIE will leverage the exchange for population-wide analytics and improvement of healthcare expenditure and strategy.

SAHIE has chosen to implement Wellogic's solutions using standards and policies established under the federally sponsored and recently delivered National Health Information Network Phase II (NHIN-II) program. Wellogic is set to be the first HIE infrastructure to go live on the NHIN, and also continues to seamlessly interoperate via legacy standards with systems that are not yet NHIN enabled. NHIN-II unambiguously demonstrated the dramatic improvements in time to market and content standardization that have so far been prohibitively expensive to achieve on a large scale via legacy interoperability. NHIN-II also demonstrated Wellogic's flexibility to enable communities to achieve participant autonomy via federation, and at the same time achieve robust decision support via centralization of key observations. SAHIE's finalized contract with Wellogic will license Release X of Wellogic's solutions, which offer these "out of the box" capabilities.

"Wellogic was the clear choice," said Kalyanraman Bharathan, Ph.D, Project Director for SAHIE. "Their solution is very well aligned with our long-range vision and mission for creating a trusted, patient-centric infrastructure that provides semantic interoperability among all stakeholders while allowing us to maintain a desired level of autonomy. The selection of Wellogic also marks a concrete step towards utilizing technology committed to stringent standards in protecting and maintaining the privacy and security of patient information. These key factors will enable us to quickly achieve commercial value for our members, and therefore financial sustainability. Wellogic has also demonstrated strong leadership in the standards community, extensive real-world experience in challenging projects, and a clear dedication to being a true partner. We are enjoying our work together and look forward to the experience that Wellogic will bring from their work at other HIEs in the nation to help realize our vision for Southern Arizona."

"Wellogic is honored to be SAHIE's chosen partner" said Sumit Nagpal, President and CEO of Wellogic. "SAHIE and its member organizations are providing visionary leadership to improve healthcare efficiency, manage healthcare costs, and improve care quality for the people of Southern Arizona. Our vision and approach are tightly aligned, and we are thrilled to be working with SAHIE's devoted team to implement our shared vision together."

About SAHIE

SAHIE is a collaborative of the major healthcare entities in Southern Arizona – including health plans, hospitals, large group practices, business leadership, and local administrations in the three counties of Pima, Cochise and Santa Cruz. SAHIE's objective is to provide – with the patient's permission – the relevant clinical data from all available sources for an appropriate, safe, medical decision to be made about the patient, thereby reducing the possibility of error and also of unnecessary duplication of care. Doing this requires the trust not only of the entities that participate in health care delivery and payment, but also of the community at large. SAHIE is founded on the principle that to succeed, an HIE must be rooted in the community, be self-sufficient, and find its funding from within the entities that have the most substantial economic gain from the HIE. Physicians in the community will not be asked to pay for the capital costs needed for SAHIE, and there will be no charge for patients.

In its first phase of implementation, SAHIE's main functions will be to provide information to Emergency Departments and Urgent Care centers at the time when such information is needed for safe care, and to provide discharge documents from participating hospitals and Emergency Departments/Urgent Care Centers to the next point of care. As the use of EHRs increases among clinicians, and trust in the safety and security of SAHIE increases over time, the goal is to be able – with patient consent – to perform additional functions that further the promotion of safe and high quality care.

About Initiate Systems

Initiate Systems, Inc. enables organizations to strategically leverage and share critical data assets. Its master data management (MDM) software and experience as an information exchange leader provide organizations with complete, accurate and real-time views of data spread across multiple systems or databases, even outside the firewall. This allows companies to unlock the value of their data assets for competitive advantages or operational improvements. Initiate Systems operates globally through its subsidiaries, with corporate headquarters in Chicago and offices across the U.S. and Toronto, London and Sydney. For more information, visit www.Initiate.com.

About Wellogic

Wellogic provides industry-certified interoperability and point-of-care solutions for connecting the healthcare community and enabling safety, efficiency, and convenience in care delivery. With more than fifteen years' experience facilitating meaningful interoperability and enhancing clinical workflow, the company truly understands the complexity of healthcare. It has developed a depth of experience in solving some of the most challenging issues confronting the industry today. Wellogic's award-winning web-based connectivity solutions for physicians and caregivers, patients, health systems and health information exchanges are consistently recognized as the most usable, flexible and scalable solutions available, and are used daily to deliver safer, more cost-effective care for millions of patients. For more information, visit www.wellogic.com.

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FOR IMMEDIATE RELEASE
Tuesday, March 20, 2007

GOVERNOR LEADS HEALTH CARE INNOVATION SUMMIT
Health-e Connection Expands 'Roadmap'

PHOENIX - Governor Janet Napolitano continued her drive toward innovation and efficiency in health care, opening the Health-e Connection Summit in Phoenix today. The Governor addressed more than 350 health care professionals, consumers and health care executives on the next steps necessary to further build Arizona's Health-e Connection Roadmap, the state's comprehensive five-year plan for the electronic exchange of health records.

"By using information technology, Arizona's health care industry can improve the quality of care, while realizing increased efficiency and cost savings," said Governor Napolitano. "The Arizona Health-e Connection is one of the best examples in the nation of the health care industry coming together to drive innovation in health care services."

Governor Napolitano's Executive Order 2005-25 created the Arizona Health-e Connection, and in April 2006, the Steering Committee delivered the Health-e Connection Roadmap to Governor Napolitano. The Roadmap involves a strong partnership between the state, health care providers and major employers, providing for a swift, electronic exchange of health care information in a way that preserves privacy, but at the same time, promotes the welfare of patients. For example, one goal of Health-e Connection is to ensure that an emergency room doctor has immediate access to a patient's medical history. With current paper-records systems, that kind of information is often difficult to get and takes too much time; as a result, patient care can suffer.

Arizona Health-e Connection has generated significant national attention around health care innovation in Arizona. In June 2006, the state received a grant from the National Governors Association to fund the Arizona Health Privacy Project. In January 2007, Arizona received a federal grant of $12 million to develop and implement electronic records to foster the exchange of health records among health care providers.

The Arizona Health-e Connection Steering Committee recently transitioned from public management to a nonprofit 501c3 organization.

"The Arizona Health-e Connection will continue to provide strategic leadership to Arizona's health care sector," said David Landrith of the Arizona Medical Association and chair of the Health-e Connection. "I look forward to continued partnership between public and private health care stakeholders."
For more information about the Health-e Connection, visit www.azhec.org .

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Arizona Health-e Connection

FOR IMMEDIATE RELEASE
Phoenix, AZ, Aug. 28, 2007

Executive director named to guide statewide health information technology effort

In a move that will bring Arizona closer to transforming health care for all residents, the Arizona Health-e Connection today announced the selection of Brad Tritle as the organization's first executive director.

Tritle's appointment is part of the Arizona Health-e Connection's plan to advance the delivery of health care in Arizona by promoting a new health information infrastructure across the state, including electronic medical records. Widespread use of health information technology (HIT) could save lives and the state's health care system approximately $2.6 billion annually.

"The Arizona Health-e Connection has been making great headway in establishing an electronic health records infrastructure for our state," said David Landrith, vice president of the Arizona Medical Association and chair of the Arizona Health-e Connection. "Brad has the right skills and private/public experience to help us achieve our objective and directive of electronic medical records for all Arizonans."

Landrith said widespread and effective use of health information technology could save the U.S. health system as much as $140 billion per year -- $2.6 billion in Arizona – and save lives by greatly improving the way medical care is managed, greatly reducing preventable medical errors, and lowering death rates from chronic disease.

Tritle most recently worked for the state Government Information Technology Agency (GITA), where he launched a grant program targeting the development of information technology capabilities by rural health care providers. Tritle also has extensive experience working for private sector technology companies.

AzHeC is a non-profit, private-public partnership formed in January 2007 to coordinate the establishment of HIT and electronic medical records for every Arizonan by 2010. The organization evolved from a Governor-initiated, state-led program called upon to comprehensively review issues and develop recommendations, to an implementation organization directed by a very diverse, private-public partnership. The organization's board represents a broad statewide public/private collaboration—the largest effort of its kind currently being pursued in the US. AzHeC includes executives from such organizations as the Arizona Medical Association, Arizona Hospital and Healthcare Association, the Arizona Osteopathic Medical Association, Blue Cross Blue Shield of Arizona, Intel, CIGNA Healthcare of Arizona, APS, Banner Health, AHCCCS, and 13 other public or private organizations (a complete list appears at the end of this release).

Up until Tritle's selection as executive director, Elizabeth McNamee, program manager at St. Luke's Health Initiatives, was the interim director of AzHeC, and worked tirelessly to build the public/private coalition that exists today. Tritle's selection is the result of several-months-long competitive process that involved 40 candidates who were interviewed and assessed by the AzHeC board.

AzHeC's purpose is to achieve the goal of interoperable electronic health records, available at the point of care, for every Arizonan by 2010 in order to increase the quality and decrease the costs of health care. Through intense research, public input, and collaborative discussion, the Arizona Health-e Connection Roadmap was established, outlining various steps and suggested direction for reaching the goal.

Last year, Governor Napolitano and the legislature set aside $1.5 million to initiate seven different technology projects involving rural health care providers. In addition to coordination with these activities, AzHeC is also working closely with the Arizona Health Care Cost Containment System (AHCCCS) on an innovative Medicaid electronic health record project, and the Southern Arizona Health Information Exchange (SAHIE) on their efforts as the first Regional Health Information Organization (RHIO) in Arizona.

Members of the AzHec board include: Arizona Hospital and Healthcare Association, Arizona Medical Association, Arizona Osteopathic Medical Association, Arizona Pharmacy Alliance, Blue Cross Blue Shield of Arizona, Health Net of Arizona, Inc., Schaller Anderson, United Health Care, CIGNA Healthcare of Arizona, Arizona Public Service, Intel, Banner Health, Carondelet Health Network, Arizona Department of Health Services, Arizona Health Care Cost Containment System, University of Arizona College of Medicine, Government Information Technology Agency, Arizona Office of the Governor, Sonora Quest Laboratory, Arizona State University, Your Partners in Quality, LLC, Southern Arizona Health Information Exchange.

Background documents can be obtained from AzHeC's website at www.azhec.org.

Contact: *Brad Tritle, executive director, Arizona Health-e Connection,* ***602-288-5130***

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FOR IMMEDIATE RELEASE
Monday, December 11, 2006

$1.5 MILLION GRANTS TO GO TO RURAL HEALTHCARE FACILITIES
Grants Will Promote Implementation of the Health-e Connection Roadmap

PHOENIX—Governor Janet Napolitano today announced the distribution of $1.5 million under the Rural Health Information Technology Adoption (RHITA) Grant Program. The seven awardees demonstrated high levels of partnership, collaboration, strategic planning and implementation of e-health programs. These grants are part of the implementation efforts of the Health-e Connection Roadmap developed in response to Executive Order 2005-25.

"These grants are an important part of the effectiveness of the Health-e Connection Roadmap," said Governor Napolitano. "Communities will be able to update medical systems, which will mean better health care for rural Arizona."

The RHITA Grant Program facilitates the adoption of health information technology by Arizona's rural health care providers. This leads to greater quality and efficiency in their health care delivery, enables health information exchange with other providers, and lowers Arizona's health care costs. The program is managed by the Government Information Technology Agency.

There were 21 applicants from around the state. The following is a summary of the awardees for FY 2007:

- Mariposa Community Health Center, Inc. - Grant amount: $375,000. Primary location: Nogales
- Chiricahua Community Health Centers, Inc. - Grant amount: $250,000. Primary location: Elfrida
- Copper Queen Community Hospital - Grant amount: $150,000. Primary location: Bisbee
- Benson Hospital - Grant amount: $200,000. Primary location: Benson
- Community Behavioral Health Services - Grant amount: $200,000. Primary location: Page
- Northern Cochise Community Hospital - Grant amount: $200,000. Primary location: Willcox
- Marana Health Center - Grant amount: $125,000. Primary location: Marana

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FOR IMMEDIATE RELEASE
Thursday, September 1, 2005

GOVERNOR CREATES ARIZONA HEALTH-E CONNECTION ROADMAP

Committee to Focus on Reducing Health Care Costs, Secure Exchange of Information

PHOENIX – Governor Janet Napolitano today announced she has created a new Health-e Connection Steering Committee. The move is in response to President Bush's April 12, 2004 call for widespread adoption of interoperable electronic health records within 10 years.

"Arizona's health care system already has much of the infrastructure in place to become digital," Governor Napolitano said. "Plus, the early adoption of an interoperable electronic health records system will improve the quality and reduce the cost of health care in Arizona.

"Doctors will have easy access to patients' medical records at all times, thus reducing the possibility of duplication or error."

The steering committee is charged with developing a road map for Arizona to achieve statewide electronic health data exchange between insurance companies, health care providers and consumers of health care.

Chris Cummiskey, director of the Government Information Technology Agency, and Beth Schermer, an attorney at Coppersmith Gordon Schermer Owens & Nelson who specializes in health care, are co-chairs of the steering committee. Starting Sept. 6, Schermer will be temporary vice dean for administration at the University of Arizona's College of Medicine Phoenix campus. She is taking a leave of absence from her law practice.

"CEOs and executive directors of health care associations, major employers, hospitals and other leaders of health care across the state will sit on the steering committee, ensuring the different entities involved in the Arizona health care system are working toward the same goal," said the Governor.

The federal government estimates $140 billion or almost 10 percent of the total yearly health spending in the United States could be eliminated by the expansion of health information technology.

The steering committee was created by executive order. A copy of the executive order and the list of invited steering committee members are attached.

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What is Arizona Health-e Connection?
Established in January 2007, Arizona Health-e Connection (AzHeC) is a statewide non-profit organization whose mission is to lead Arizona's establishment of health information infrastructure (HII), which includes support of health information exchange (HIE) and adoption of health information technology (HIT), such as clinician office electronic health records. Arizona Health-e Connection is neither a regional health information organization (RHIO) nor an information exchange, but instead provides strategic direction for the establishment of successful health information infrastructure in Arizona through:

- Serving as an educator and statewide clearinghouse for information
- Researching and developing statewide policies, and model legal agreements
- Supporting health information exchange and provider adoption of health information technology

History
Arizona Health-e Connection grew out of an August 2005 gubernatorial executive order and the subsequent work of hundreds of Arizona individuals and institutions. Within six months of the executive order, a blue-ribbon steering committee, working with eHealth Initiative (eHI) of Washington D.C., and Arizona volunteers, delivered a five-year plan - known as "The Roadmap" - for establishing the state's e-health infrastructure.

The Roadmap called for development of infrastructure on a regional basis, with provision of shared infrastructure components as necessary by a statewide non-profit organization. This statewide entity would also provide leadership for educating Arizonans on e-health, developing statewide policies and agreements, and promoting clinicians' adoption of electronic medical records, e-prescribing, and other health information technology.

Arizona Health-e Connection was founded in January 2007 to provide this leadership, and chose Brad Tritle as its first executive director in September 2007. It currently maintains offices within the Arizona Medical Association (ArMA) building in Phoenix. Educational efforts include its annual Western States Health-e Connection Summit & Trade Show in the spring of each year, which provides an overview of national, state, and regional e-health activities to health care, government and business leaders, as well as consumers.

National Attention
Arizona Health-e Connection has gained attention nationally for its early leadership, focus on action, and the cooperation of a broad base of stakeholders.

"Arizona gets it," Robert Kolodner, former head of the Department of Health and Human Services (HHS) Office of the National Coordinator for Health Information Technology, told stakeholders at the 2007 Summit. "You have in fact embodied that idea of fostering collaborations and bringing to the table a wide spectrum of stakeholders, all of whom have to be involved."

The Council of State Governments, which supports policy development efforts of the three branches of government in all fifty states, awarded Arizona Health-e Connection its coveted Innovations Award, not only for its unique and effective approach, but for its ability to be duplicated by other states.

First Initiatives—2007-2008
Arizona's early identification of privacy and security concerns as a major concern in the establishment of health information exchange led to the state being an early recipient of a federal grant to participate in the Health Information Security and Privacy Collaborative (HISPC), funded by the Agency for Healthcare Research & Quality (AHRQ) within HHS. Due to Arizona's results-oriented approach, it has received several additional rounds of funding, co-chairing the multi-state collaborative to

address the sharing of electronic health information across state lines, and serving on the steering committee for the national project.

Arizona's stakeholder cooperation has also attracted the attention of the federal Centers for Medicare and Medicaid Services (CMS), the HHS agency which administers both programs, in its efforts to transform Medicaid. In early 2007, CMS awarded Arizona's Medicaid agency, the Arizona Health Care Cost Containment System (AHCCCS) an $11.7 million grant to build a health information exchange and utility, in order for Medicaid to participate in the Roadmap implementation. An additional CMS grant of $4.4 million was awarded in late 2007, to build a clinical decision support toolbox in conjunction with the health information exchange and utility. AHCCCS leadership chairs CMS' multi-state collaborative committees on both health information exchange and electronic health records.

In March 2008, HHS released its report on the role of states in establishing health information infrastructure, entitled *State Level Health Information Exchange.* Arizona, together with other states, participated in the HHS study, presenting at meetings and comparing approaches. The report's findings recommend that other states follow the steps taken by Arizona.

Harvard Business School has recently published a case study on Arizona Health-e Connection, *Modern Healthcare* featured it as a cover story, and additional media coverage ranges from the *New York Times* to *Healthcare IT News*, the *Arizona Republic*, and others. According to Janet Marchibroda, former CEO of eHealth Initiative, other states continue to follow Arizona's model of stakeholder cooperation.

Stakeholder Cooperation and a Ground-Up Approach

The stakeholder cooperation of existing and future Arizona Health-e Connection members is necessary to establish a workable statewide infrastructure. Without individual provider adoption electronic health records, and local and regional stakeholder education and participation, a statewide effort cannot succeed. In 2006, Arizona established the Rural Health Information Technology Adoption (RHITA) program within the Government Information Technology Agency (GITA) to fund rural implementation of the Roadmap recommendations. In 2007, seven grants were provided to rural hospitals, community health centers, and behavioral healthcare providers. The 2008, monies were applied to facilitate further HIE and HIT efforts in rural Arizona. Across the country, as in Arizona, stakeholder discussions have led to the discovery that local providers are more likely to buy in to a project when they have participated early in the project's development.

AzHeC is working closely with regional stakeholders and initiatives, such as the Southern Arizona Health Information Exchange (SAHIE), along with individual meetings with organizations in rural and metro Arizona, to further collaboration, and create continuity. It has also established a Council of Initiatives, which is a forum for initiatives and programs from around Arizona to exchange ideas, and leverage resources.

As eHealth Initiative's former CEO Janet Marchibroda states, "Healthcare is really local. Each state and each community has individual needs and wants to meet."

How can I learn more, or become involved?

Visit www.azhec.org to communicate with and join the organization, attend our annual Summit & Trade Show as well as other exciting educational events, and sign up for email newsletters! Be sure to visit our website often!

Arizona Health-e Connection

Advancing health and wellness through information technology

Understanding the facts about

Health Information Technology

Benefits of Health Information Technology

There are many benefits of using health information technology, including the following:

You get higher quality care

A network of **electronic health records,** run by a **health information organization**, will let your doctor or health care provider access your health history quickly, no matter where you get treated. This could be very important, especially if there is an emergency. **Electronic health records** also reduce paperwork and allow for easier, more secure transfer of your health information.

It will improve your safety

Having your health history available through an **electronic health record** will reduce mistakes made by your doctor.

You will save money on health care

Electronic health records will make it easier for staff at the doctor's office to keep track of your health history and billing information. This will ensure that you don't have the same medical tests twice. The doctor's office will also save money by doing less paperwork. As a result, experts believe health care costs will be lowered.

It will improve the health and wellness of all Arizonans

You will be actively involved in your health care when you keep a **personal health record**. You will have direct access to your record, where you can see test results, refill a prescription, check your medical history and even upload fitness levels from digital devices.

Your health information is easily available

Through an **electronic health record**, your doctor or health care provider will have access to your health history during a regular visit, an emergency or a disease outbreak. For example, if there is a flu outbreak, he or she can see right away if you have been immunized.

Health information exchange will allow critically important information - such as medications, lab results, and hospital discharge summaries - to be viewed by doctors or other health care providers treating you. This allows them to make better-informed decisions, and eliminates the valuable time wasted using couriers, telephone calls and faxes to gather your information. Every minute counts.

It will improve your safety, privacy, and security

Electronic health records provide information, such as alerts, that assist your doctor or other health care provider in making better decisions, thus reducing medical errors. He or she can also control access to your medical records to protect your privacy and secure your records.

Arizona Health-e Connection

Advancing health and wellness through information technology

Understanding the facts about

Health Information Technology

Key Health Information Technology Terms

Electronic Health Record

An electronic health record contains your health information. Only authorized doctors, nurses, and staff can create, view, and update these records. An electronic health record should meet the technical rules that ensure that it can be shared between hospitals, doctors' offices, clinics and other providers involved in your care.

Personal Health Record

A personal health record contains your electronic health information. It is controlled and managed by you. You decide with whom you would like to share your health information. A personal health record should meet the technical rules that ensure you can securely share it with family members, caregivers, and health care providers involved in your care.

Health Information Exchange

Health information exchange is when hospitals, doctors' offices, labs and others share health information electronically. The exchange of health information should be done securely, maintaining your privacy.

Electronic Prescribing (e-Prescribing)

Electronic prescribing is when a doctor or other health care provider sends a prescription electronically to a pharmacy, saving you time and ensuring your safety. e-Prescribing allows your health care provider to view your medication history, which will reduce the potential for drug to drug interactions. Your health care providers are also informed of what medications are covered by your insurance, saving you money.

Privacy and Security

Federal and state privacy laws, such as the Health Insurance Portability and Accountability Act of 1996 (HIPAA) Privacy Rule, are designed to protect both paper and electronic health records.

Health information technology systems must be designed to meet stringent privacy and security requirements, such as:

- Individuals should know how their personally identifiable health information may be used and who has access to it.
- Systems must securely protect the integrity and confidentiality of an individual's information.
- The governance and administration of electronic health information exchange networks should be transparent and publicly accountable.

Be a Part of the Transformation in Healthcare – Become an Arizona Health-e Connection Member!

Arizona Health-e Connection

Advancing health and wellness through information technology

Why Join Arizona Health-e Connection?

Arizona Health-e Connection (AzHeC) is at the forefront of leading health information infrastructure (HII) in Arizona, with several exciting efforts already underway in the state. However, the landscape is quickly changing!

The Health Information Technology for Economic and Clinical Health (HITECH) Act, a component of the American Recovery and Reinvestment Act of 2009 (ARRA) has accelerated the pace of HII with its emphasis on funding and structure for its adoption. AzHeC needs organizations from across Arizona to become engaged in HII to ensure chosen strategies are effective in creating a safer, more integrated and efficient healthcare system.

Every consumer, purchaser, insurer and provider of healthcare has a stake in ensuring that "the right information is available at the right time to the right person for the right purpose." This is your opportunity to learn, weigh-in and collaborate during a transformational time in healthcare!

Why Does Health Information Infrastructure Matter?

The Institute of Medicine estimates between 44,000 and 99,000 Americans die of medical errors each year. Additionally, this figure was an underestimate of total errors as it only included deaths in hospitals, not clinics, nursing homes or home healthcare settings. When scaled to Arizona, this very likely means upwards of 1,500 to 2,000 people die needlessly in Arizona annually.

Deaths are the extreme case and are evidence that many other errors are occurring that decrease Arizonans' quality of life and productivity. Healthcare costs continue to rise; yet quality does not. While many agree we're spending enough money, clearly it's not being spent effectively.

HII has the ability to transform healthcare into a safer, more efficient and patient-centered system. And, in today's world of rapid mobility, where Americans move across the country, change jobs (and health plans) and seek treatment from new healthcare providers, easy access to medical records is more important than ever. Currently, Americans have medical information stored in multiple provider offices, often thousands of miles apart. With the advent of technology and the Internet, you'd think this isn't a problem, but it is.

Consider that:

- Most medical records are still paper-based, and virtually none can be exchanged electronically.
- Paper-based information does not follow patients. Therefore, patients are routinely asked for the same information over and over. In some cases, people cannot recall the details of past treatments or current medications, causing more challenges.
- Even if a lab or test was ordered recently by a primary care provider, it is unlikely to be accessible by an emergency department physician, who must then order the same test again to ensure proper diagnosis and treatment.
- Decisions made without access to existing information are wasteful and cause errors.

About Arizona Health-e Connection

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Be a Part of the Transformation in Healthcare – Become an Arizona Health-e Connection Member!

What Does My Membership Provide?

Being part of AzHeC provides an opportunity to be part of an extremely exciting time in healthcare — a time of strengthening its foundation and movement forward. Members receive the following benefits:

- Voting rights and eligibility to serve on the AzHeC Board of Directors
- A one-on-one welcome with AzHeC staff – includes a briefing on national and state activities, as well as an interview of your company regarding interest in participating in specific activities
- Access to and discounts for AzHeC Member Forums and Webinars
- AzHeC Email updates, news and publications
- Discounted attendance at the Western States Health-e Connection Summit & Trade Show
- AzHeC Member discounts will apply to all employees of the organization as well as all members of not-for-profit associations
- Logo on AzHeC Website, with hyperlink to company Website
- Eligible to serve on AzHeC workgroups and committees
- Other benefits to be developed

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What Are the Benefits of Being an AzHeC Supporter?

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Supporters receive the following benefits:

Vendor Supporters

- A one-on-one welcome with AzHeC staff – includes a briefing on national and state activities, as well as an interview of your company regarding interest in participating in specific activities
- Access to and discounts for AzHeC Member Forums and Webinars
- AzHeC Email updates, news and publications
- Discounted attendance at the Western States Health-e Connection Summit & Trade Show
- AzHeC Member discounts will apply to all employees of the organization
- Logo on AzHeC Website with hyperlink to company Website
- Opportunity to conduct Webinar on products or services, event information to be distributed to entire AzHeC distribution list (1500+)
- Early bird opportunities to sponsor AzHeC events, including Member Forums, Webinars and the Western States Health-e Connection Summit & Trade Show
- Other benefits to be developed

(Vendor membership does not include voting rights or eligibility to serve on the AzHeC Board of Directors; AzHeC membership does not imply AzHeC endorsement of vendor member or its products or services.)

Individual Supporters

- Access to and discounts for AzHeC Member Forums and Webinars
- AzHeC Email updates, news and publications
- Discounted attendance at the Western States Health-e Connection Summit & Trade Show
- Opportunity to participate in AzHeC member-only activities and committees
- Other benefits may include reduced fees on HIT certification programs, based on AzHeC agreements
- Other benefits to be developed

(Individual membership does not include voting rights or eligibility to serve on the AzHeC Board of Directors.)

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Top 25 e-Prescribers in Arizona for Q1 2009

Kenneth Adler, MD

Bradley Barnett, MD

Howard Brown, MD

Barbara Caldwell, MD

Guy Crawford, MD

Shelley Dotson, MD

Netley D'souza, MD

Lionel Duarte, MD

Joseph Gerber, MD

Marilyn Hart, MD

Darren Hee, MD

Allison Kaplan, MD

Mark Maxwell, MD

Debra Mayne, PA

Gerald Muthu, MD

Dung Nguyen, DO

John Post, MD

James Reifschneider, MD

Alan Rogers, MD

Jeffrey Selwyn, MD

Uzma Syeda, MD

Mark Wallace, MD

Dean Wright, MD

Moira Wristen, MD

Alfred Wu, MD

*By transaction number, as tracked by Surescripts, for first quarter 2009

Consumer Consent for Health Information Exchange: An Exploration of Options for Arizona's HIEs

Kristen Rosati
Coppersmith Gordon Schermer & Brockelman PLC

April 2008

Introduction

The rise of Health Information Exchanges (HIEs)[1] across the country is an exciting development that promises to improve the quality of care, increase the efficiency of health care services by making health information available at the point of care for every patient, and empower consumers by making information about their care more available to them. Of course, the development of HIEs also poses real challenges in how to structure HIEs to ensure that consumer information is available to providers and consumers for those purposes, yet ensure rigorous health information confidentiality protections are in place.

This White Paper discusses one other fundamental policy challenge that every HIE must make in establishing its operations: whether and how to seek consumer consent to exchange a consumer's health information through the HIE. As this White Paper explores in detail, this is a difficult issue to resolve because different stakeholders in the health care community—consumers, health care providers, HIE administrators and others—often have different and sometimes strongly held beliefs about this issue. In addition, decisions about consumer consent will have an impact on the way an HIE's technology is structured, and some of those decisions may be too difficult or expensive to implement.

The consumer consent issue is a complicated policy decision that should be made only after a thorough consideration of all the issues involved, and by balancing the needs of the participants in the system. This White Paper presents a discussion on the options available to HIEs.

What issues will affect the decision on consumer consent to exchange health information through an HIE?

The policy decision of whether and when to seek consumers' consent to exchange health information through the HIE is a nuanced decision that depends on many interrelated factors:

- Do state laws or regulations require consumer consent to exchange health information? If so, in what circumstances?
- What type of information will be submitted through the HIE? Does any of the health information exchanged require additional protection, such as substance abuse treatment information?
- Who will access the exchange? For example, is access limited to health care providers or will health plans and others also have access?
- For what purposes is the HIE used? Will it be limited to treatment purposes, or are other uses of the health information contemplated?
- Can consumers trust that the HIE is secure?
- Is there accountability in the event someone inappropriately uses the exchange?

If the answer to any one of these questions changes, it may alter the policy decision about whether and how consumer consent would be sought. For example, if an HIE is used only by health care providers for treatment purposes, the decision on consumer consent may be different than if the HIE is used by health plans for payment purposes. It's three dimensional policy chess!

What do different stakeholders think about the consent issue?

It is important to keep in mind that a person's membership in a certain category of stakeholder does not dictate that person's ideas about consumer consent. So, this discussion will obviously contain generalizations that may not ring true to specific individuals.

Consumers: Not surprisingly, consumers appear to hold varied attitudes about whether they should have the ability to consent before their health information is exchanged via an HIE. Consumers who have chronic care needs, or who have children who have serious illnesses or

disabilities, often express tremendous support for HIE in order to facilitate communication between different parts of the care team and to avoid the need to be the coordinator for the information. These consumers are primarily concerned with the immediate availability of their health information to health care providers and may not support the need to get up-front consent if it will interfere with or slow down the transmission of their health information.

Other consumers are primarily concerned about their privacy, particularly if they have received care for conditions they feel would be stigmatizing or could lead to the denial of insurance coverage. For example, the organization Patient Privacy Rights is a strong advocate of the right to consent in advance of transmission of health information, even to providers for treatment purposes.

Both perspectives are completely legitimate, of course, and there are many individuals and organizations that fall somewhere between these perspectives. Ultimately, an individual's approach to consent depends on an individual's particular life circumstances and experiences.

Health care providers: Health care providers also have varied opinions on this subject. Many are, not surprisingly, primarily concerned with ensuring that they have complete information available about a patient at the time they provide care. In New Hampshire, for example, the legislature is considering a bill (HB 1587) that would allow patients to block provider access to information in electronic health records and in HIEs; hospitals, physicians, nursing homes and other providers have opposed the legislation because they believe it would compromise their ability to get complete information.

Other health care providers, particularly physicians who are involved in providing mental health care or treatment for other sensitive conditions, are extremely concerned that the lack of consumer consent to exchange health information will discourage some individuals from obtaining care at all.

HIE administrators: Individuals involved in creating and running HIEs are concerned with ensuring that the HIE is valuable to their communities. They want to provide a robust service to participating health care providers, and so must respond to the needs of those providers. They also are concerned about the cost of building and maintaining the HIE so that the HIE can be an ongoing service to the community.

Of course, health care providers and HIE administrators are also consumers of health care. Anyone involved in making a policy decision on the consent issue should keep that health care consumer "hat" firmly in place.

What does Arizona law require?

Arizona law does not require consumer consent to exchange health information for treatment purposes. Arizona law also generally does not require consumer consent for providers to exchange health information for a variety of other purposes, such as getting paid for the treatment they provide, for various business functions called "health care operations" (such as quality assurance activities), for public health purposes, and for research where an Institutional Review Board has reviewed the research and approved doing the research without consent (if there is sufficient privacy protection in place).

This analysis starts with the general medical records law for providers in Arizona,[2] which states that providers may follow the Health Insurance Portability and Accountability Act (HIPAA) regulations[3] in their disclosures of health information. HIPAA permits disclosures for treatment, payment, "health care operations" (general business activities, such as quality assurance), public health purposes, and research, without consumer consent or authorization.

We then look to determine whether any of the health information being exchanged is "special" health information that is subject to any greater restrictions. Arizona law has special statutes for genetic testing information,[4] mental health information held by licensed behavioral health providers,[5] and HIV and communicable disease information.[6] All of this information may be disclosed for treatment purposes without consumer consent. This information may also be disclosed for some public health purposes and research where an Institutional Review Board has reviewed the research and approved a waiver of consent. And except for genetic testing information, health care providers may also exchange this health information for payment and "health care operations" without advance consent.

For health care providers that are federally-assisted substance abuse treatment programs, however, the federal regulations on substance abuse treatment information set additional restrictions on the exchange of health information without consumer consent, even for treatment purposes. These restrictions are substantial, so any HIE should exclude information that comes from these providers.

In summary, Arizona law does not require advance consumer consent to exchange information through an HIE for most purposes. It is therefore a *policy* decision on whether consumer consent will be required to exchange health information through an HIE, and for what purpose. A complete explanation of these Arizona and federal laws is included in the Arizona Health-e Connection Briefing Paper at pages 25-29 and 44-53, which can be found on the Arizona Health-e Connection website (www.azhec.org) in the "About AzHeC" section.

What are the options for Arizona HIEs?
Generally, there are four options for HIEs to consider in making the decision about whether and how consumers consent to the electronic exchange of health information:

- **Option 1- Opt In**
  Seek advance consent from consumers to include their health information in an HIE;
- **Option 2- Opt Out**
  Provide consumers the right to "opt out" of having their health information in an HIE;
- **Option 3- Notice Only**
  Include all consumers' health information in an HIE, with notice to or education of consumers about the process; or
- **Option 4- Combination**
  Take a blended approach, employing Options 1-3 as appropriate, depending on the particular uses of information and who has access to the HIE.

HIEs are coming to very different decisions on this issue and are fairly evenly split across the country. Whichever approach is chosen, it should be transparent to consumers through extensive public education!

Option 1: Opt In
Seek advance consent from consumers to include their health information in an HIE. What are the advantages and disadvantages, and how would it work?

Advantages:
Consumer control: Consumers have a very legitimate interest in controlling their health information. Ideally, each consumer would have the right to determine who could see his or her health information and determine the purpose for which that health information is used.

Risk management for the HIE: From the HIE perspective, seeking advance consent could serve a risk management function. The consent form would educate individuals about how health information is exchanged, who will have access to it, and what consumer rights are vis-à-vis the HIE and the participants in the HIE. This proactive education through the consent process could

reduce liability to an HIE in the event a participant misuses the exchange.

Enabling better patient record matching: If the process of seeking advance consent is done through an in-person process, that consent process could eventually support the collection of biometric identifiers, such as fingerprints. These biometric identifiers would permit accurate patient record matching by the HIE—two individuals may have the same names (and sometimes even same birthdates), but they don't have the same fingerprints. At this time, biometric identifiers are not commonly used. Patient access to their own information in an HIE could also assist in increasing the accuracy of records in the system.

Disadvantages:

Delay in getting information to providers for treatment: The primary disadvantage of the opt-in process is that the need to obtain advance consent from a consumer to exchange health information could delay the transmission of that information to providers. Consumers may not have the opportunity to consent before their information is needed, particularly in an emergency.

Less support from physicians: Another substantial disadvantage of the opt-in process is that seeking advance consent to include health information in the exchange may not garner support by physicians and other health care providers for two reasons. First, physicians consistently report that if an exchange does not have complete information on their patients, physicians will not view the exchange as reliable. For liability purposes, physicians want as complete information as possible and may not rely on a source of information from which their patients could withhold information. Second, physicians may not be willing to work an HIE into their office workflow if the information is not complete. In Massachusetts, for example, the Massachusetts Health Data Consortium reportedly discontinued its MedsInfo-ED project because the project could not collect certain medication information without advance patient consent. When physicians consistently found the project did not contain medication information about the patient presenting for care, the physicians stopped using the MedsInfo-ED database.

Granularity of consent: Next, the "granularity" of consent is problematic. Will the HIE seek all-or-nothing consent? In other words, will consumers be forced to make a decision between including all of their information in the exchange or none of it? Or will they be able to consent to the sharing of specific pieces of information? How will this process work?

Expense and administrative burden. The final disadvantage is that an opt-in process would be expensive to support, and may create unwelcome bureaucracy for consumers. In administering a consent process, the following operational issues may be challenging to implement:

- Who will seek the consent? Health care providers may be tasked with seeking consent from their patients, as providers' face-to-face interactions with patients will facilitate the consent process and give them the chance to explain how the HIE works. However, some providers may object to the time that would be required to explain HIE participation to their patients, to fill out the necessary paperwork, and to transmit that paperwork to the appropriate entities.

- Will one consent be sufficient for a consumer to participate in the system as a whole, or will it be necessary for each provider to seek consent from that provider's patients? If the latter, how will this work?

- How will a consumer's consent to participate be communicated to the HIE? To other providers?

- What will the process be for revoking consent? How will revocation affect

information already in the HIE? How will revocation be communicated to others?

Option 2: Opt Out

Provide consumers the right to "opt out" of having their health information in an HIE. What are its advantages and disadvantages, and how would it work?

Advantages:

Consumer control. As discussed above, consumers have a very legitimate interest in controlling who sees their health information and to determine the purpose for which that health information is used. Under an opt-out system, consumers would be required to contact an HIE (or their health care providers) to be removed from the system, but that still would provide a level of control to consumers.

As the National Committee on Vital and Health Statistics noted in a February 2008 report, "where individuals have the right to put restrictions on disclosure of sensitive health information, people rarely elect to do so, but they strongly value having the right and ability to do so."[7] The Indiana Network for Patient Care (INPC), administered by the Regenstrief Institute and one of the longest operating HIEs in the country, had an opt-out system for many years; a representative of the INPC reported that very few individuals opted out of its system.

Disadvantages:

Granularity of opt-out: As with the "opt-in" option, the "granularity" of the opt-out is problematic. Will the HIE require an all-or-nothing opt-out? Will it be specific to the type of use? To the type of information? To who will access the information? The HIE architecture will have a substantial affect on the consent management options.

Expense and administrative burden: The final disadvantage is that an opt-out process may be administratively difficult to support. In administering the opt-out process, the following operational issues may be challenging:

- Who will collect consumer opt-outs? If health care providers are tasked with collecting opt-outs for their patients, they may object to the time that may be required to explain participation to their patients, to fill out the necessary paperwork, and to transmit that paperwork to the appropriate entities.

- If opt-outs are collected at the provider level, will the opt-out be effective only for that provider? Or will the opt-out apply to the entire system and be effective with regard to all providers' information?

- How will a consumer's opt-out be communicated to the HIE? To other providers?

- What will the process be for a consumer to change his or her decision and later participate in the system?

- How will subsequent opt-outs be handled? Will a later opt-out affect information already in the HIE? How will the opt-out be communicated to others?

Option 3: Notice Only

Include all consumers' health information in an HIE, with notice to or education of consumers. What are its advantages and disadvantages, and how would it work?

Advantage:

More flexibility for coordination with other HIEs and response to developing technology. Because multiple HIEs are developing in Arizona, it is important to ensure consistency among HIE policies to permit them to exchange health information with each other. The "early on the scene" HIEs may decide to adopt option 3 to facilitate coordination with other HIE policies. (If an early HIE chooses to implement an opt-in or opt-out process, it may be more difficult them to roll out an alternative policy later.) Moreover, HIE consent management technology is evolving, which hopefully will allow in the

future more granular control by consumers to sequester certain types of sensitive health information.

Results in most useful HIE: An HIE that includes all available patient information—subject to stringent privacy and security protections—is the most valuable for health care providers. When health care providers know they can rely on an HIE to provide complete information on their patients, health care providers will trust the HIE as a source of valuable information and will integrate access to the HIE into their workflows. An exchange that contains complete patient information also will be extremely valuable for public health purposes (such as bioterrorism surveillance across multiple records) and research, if those uses are approved by HIE policy decision makers.

Easy to administer: Because option 3 does not have an opt-in or opt-out process to implement, the HIE will be easier to administer. Particularly while HIEs are struggling with methods to finance the delivery of this important service, that is a significant consideration.

Of course, providing notice to consumers does entail some costs and implementation questions such as:

- How will notice be provided to consumers? Will it be provided by the HIE to the public at large? Will providers participating in the HIE be required to provide notice to their patients?

- If notice is provided by health care providers, will the HIE develop common content for all providers to use?

- How will notice be coordinated with other HIEs, particularly to support exchange between HIEs?

These costs are substantially less than in Options 1 or 2.

***Disadvantages*:**
Less consumer control: As discussed above, consumers have a legitimate concern with deciding who may see their health information and for what purpose. While e-health exchange will essentially function as an electronic version of the types of exchanges that happen in health care in paper form today, it is possible that some consumers will be more concerned now that the exchanges will occur electronically. Consumers with sensitive conditions may decide not to provide complete information when receiving care in order to keep that sensitive information out of the HIE.

Option 4: Combination
Take a blended approach, employing Options 1-3 as appropriate. What are its advantages and disadvantages, and how would it work?

Some HIEs are discussing taking a "blended" approach—including all available information in the exchange, but providing different levels of consumer control based on the use of the information. For example, an HIE may permit access by providers to information for treatment purposes without advance consumer consent, but implement an opt-in or opt-out process for other uses of information, such as for research.

Once the technology is available, an HIE could also implement a varied approach to different types of health information and for particular individuals. For example, the HIE could implement a policy of requiring affirmative opt-in for a particular provider to see substance abuse treatment information (which now would be excluded from the HIE). As consent management tools and HIE technology advance, more granularity will be possible.

Conclusion
HIEs across the country are struggling with the issue how to implement consumer consent for e-health information exchange,

because it is a complicated and many-faceted issue.

The federal government is also considering what type of consent is appropriate for the National Health Information Network (NHIN)—the effort to connect HIEs across the country. The National Committee on Vital and Health Statistics (NCVHS), a federal advisory body that advises the Department of Health and Human Services (HHS) on health data, statistics and national health information policy, issued a report on February 20, 2008, in which the NCVHS recommended that the Secretary of HHS implement a policy for the NHIN to allow individuals to "have limited control, in a uniform manner, over the disclosure of certain sensitive health information for purposes of treatment."[8] NCVHS expressed concern about "protecting patients' legitimate concerns about privacy and confidentiality, fostering trust and encouraging participation in the NHIN in order to promote opportunities to improve patient care, and protecting the integrity of the health care system." NCVHS thus recommended the development—through an open public process—to uniformly decide across the country which categories of health information (such as information related to domestic violence, genetic information, mental health information, reproductive health, and substance abuse) an individual would be permitted to sequester from access in the NHIN without express consent for a particular provider or in an emergency.

At the same time, the NCVHS recognized "that the technologies and human factors needed to implement the recommendations in this letter are not necessary readily available for the EHR systems, HIEs, and other components of the emerging NHIN." This is a situation where HIE architecture and available technology may have to catch up with desired policy outcomes.

Moreover, Arizona has the challenge of coordinating the policy decisions on consent across the state as multiple HIE networks develop throughout the state. How will the consent process be coordinated across HIEs? For example, if one HIE implements the opt-in consent option, but another implements the notice-only option, how will these HIEs be able to exchange patient information? Arizona must carefully avoid the creation of information silos, because that will not benefit consumers.

Clearly, as we move forward in developing HIEs across Arizona, we need to initiate an open and transparent dialog—involving a wide range of interested stakeholders—about consumer consent for exchange of health information. A good policy outcome will balance the needs of consumers, health care providers and HIEs, taking into account our state laws, consumer concerns about privacy and security of health information, and technological capabilities for HIE architecture. With this open and transparent dialog, we will make electronic health information exchange a reality in Arizona.

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[1] A word about terminology in this White Paper: the term "Health Information Exchange," like "Regional Health Information Organization," refers to the entity that is facilitating or conducting the exchange of health information.
[2] A.R.S. § 12-2291, *et seq.*
[3] 45 C.F.R. Part 160 and Part 164, Subpart E (the HIPAA Privacy Rule).
[4] A.R.S. § 12-2801, *et seq.* and § 20-448.02, *et seq.*
[5] A.R.S. § 36-501, *et seq.*
[6] A.R.S. § 36-661, *et seq.* and § 20.448.01.
[7] http://www.ncvhs.hhs.gov/080220lt.pdf.
[8] Id.

Arizona Health-e Connection

MODEL HEALTH INFORMATION EXCHANGE PARTICIPATION AGREEMENT

PARTICIPANT	**HEALTH INFORMATION EXCHANGE**
_____	_____
[Address]_____	[Address]_____
[City/State/Zip]_____	[City/State/Zip] _____
[Email]_____	[Email] _____
[Phone]_____	[Phone]_____
[Fax]_____	[Fax]_____

Background:

1. _____("HIE") is a [non-profit organization/governmental organization] that owns and operates an Internet-based system that provides for secure electronic health information exchange (the "Exchange").

2. Participants in the Exchange include Health Care Providers that will receive Data through the Exchange and Data Suppliers that will provide Data. A Participant may be both a Health Care Provider and a Data Supplier. Participant is [check the applicable type]:

__ **BOTH.** Participant is both a Health Care Provider and a Data Supplier.

__ **HEALTH CARE PROVIDER.** Participant is a Health Care Provider that will participate in the Exchange to obtain health care information for a Permitted Use.

__ **DATA SUPPLIER**. Participant is a Data Supplier that makes or will make clinical Data available for access by Health Care Providers and Authorized Users for a Permitted Use.

Agreement:

1. HIE Activity. HIE will manage and administer the Exchange subject to the Terms and Conditions of this Agreement. HIE agrees to fulfill the obligations of Exchange as set forth in this Agreement, its Exhibits and Addenda.

2. Participant Activity. Participant, in its capacity as a Health Care Provider and/or its capacity as a Data Supplier, as applicable, will participate in the transmission of Data through the Exchange ("Data Exchange") and the submission or use of such Data, as applicable, subject to this Agreement, its Exhibits and Addenda.

3. Complete Agreement. This Agreement includes, and incorporates by reference:

3.1 Exhibit A (Terms and Conditions);
3.2 Exhibit B (Security Requirements);
3.3 Exhibit C (Health Care Provider System Requirements);
3.4 Exhibit D (Data Supplier—Data Submission and System Requirements);
3.5 Exhibit E (HIPAA Business Associate Agreement);
3.6 Any Project Addendum attached to this Agreement and signed by the HIE and Participant; and
3.7 The HIE Policies and Standards found at www.xxxx.xxxx.

4. Effective Date. The Effective Date for this Agreement is _____. The Agreement will continue until terminated as set forth in Exhibit A, Section 10.

PARTICIPANT

By: _____
Its: _____

National Provider Identifier (if Participant is a Health Care Provider): _____

Date: _____

HEALTH INFORMATION EXCHANGE

By: _____
Its:_____

Date: _____

EXHIBIT A
TERMS AND CONDITIONS OF PARTICIPATION

1.0 DEFINITIONS

Authorized User means an individual authorized by HIE or a Health Care Provider under this Agreement to use the Exchange to access Data for a Permitted Use.

Data means patient health information provided to HIE by Data Suppliers. For the purposes of this Agreement, Data means protected health information as defined by the Health Insurance Portability and Accountability Act (HIPAA) Standards for Privacy of Individually Identifiable Health Information, 45 C.F.R. Part 160 and Part 164, Subpart E, and the HIPAA Security Standards, 45 C.F.R. Part 160 and Part 164, Subpart C, both as amended from time to time.

Data Exchange means electronically providing or accessing Data through the Exchange.

Data Supplier means an organization, such as a hospital, physician clinical laboratory, pharmacy claims aggregation company, governmental agency or otherwise that makes Data available for access through the Exchange and has entered into a HIE Participation Agreement. A Data Supplier also may be a Health Care Provider.

Health Care Provider means a physician, group practice, hospital or health system, or other health care organization or professional that provides treatment to Patients and has entered into a HIE Participation Agreement. A Health Care Provider also may be a Data Supplier and an Authorized User.

Patient means an individual receiving treatment or health care services from a Health Care Provider.

Participant means a Health Care Provider and/or Data Supplier that has entered into a HIE Participation Agreement, including the Participant named as a party to this Agreement.

Permitted Use is the reason or reasons for which Participants and Authorized Users may access Data in the Exchange. For the purpose of this Agreement, Permitted Use is defined in the Project Addenda.

Project Addendum means an exhibit to this Agreement, signed by the HIE and Participant, that describes a specific project for use of the Exchange, the Permitted Use, applicable standards and safeguards, and related terms. Future projects, phases or expanded use of the Exchange also will be set forth in Project Addendum signed by HIE and Participant.

2.0 HIE OBLIGATIONS

2.1 Services Provided by HIE.

(a) Exchange Operation. HIE will maintain and operate the Exchange. HIE may contract with subcontractors to maintain and operate the Exchange or to provide support services. HIE will require that its subcontractors comply with the applicable terms and conditions of this Agreement.

(b) Access to Exchange for Permitted Use. HIE will make the Exchange available to Participants, including: (i) Health Care Providers that may access Data through the Exchange only for a Permitted Use; and (ii) Data Suppliers that provide Data for access by Health Care Providers through the Exchange. HIE may establish arrangements with other health information exchanges to allow Health Care Providers access to additional Data for a Permitted Use. Any change to a Permitted Use must be documented in an Addendum and signed by the parties.

(c) Exchange Availability. HIE will make all reasonable efforts to make the Exchange available to Participants 24 hours a day, 7 days a week; however, the Exchange availability may be temporarily suspended for maintenance or unscheduled interruptions. HIE will use its best efforts to provide reasonable advance notice of any such suspension or interruptions of Exchange availability and to restore Exchange availability. Health Care Providers are responsible for securing patient health information through other means during any periods when the Exchange is not available.

(d) Support Services. During the term of this Agreement, HIE will provide support services to assist Participant in the installation, implementation, and maintenance of the software and use of the Exchange and may establish a fee schedule for these services which will be posted at www.xxx.xxx. The Exchange help desk will be available at the number and for the hours set forth at www.xxx.xxx. All support services will be subject to the HIE budget for such services.

2.2 HIE Records; Use of Data.

(a) HIE Records. HIE will maintain records of the date, time and records accessed by a Health Care Provider in each Data Exchange as set forth in its Policies and Standards described in Section 2.3. HIE will not maintain, and will not be responsible for maintaining, records of the content of any Data Exchange or inspecting the content of Data.

(b) HIE Use and Disclosure of Information. HIE will not disclose Data or information relating to Data Exchanges to third parties except: (i) as provided by this Agreement; (ii) as required by law or subpoena; or (iii) as directed in writing by the originating party or intended recipient. HIE may access Data and information relating to Data Exchanges only for the operation of the Exchange, testing, performance verification, and investigations and actions relating to compliance with this Agreement, HIE Policies and Standards and applicable laws and regulations.

2.3 Policies and Standards. HIE will establish policies and standards (respectively, "Policies and Standards") that will govern HIE's and Participant's activity on the Exchange, and these Policies and Standards will be available at www.xxx.xxx. HIE encourages Participant to provide input in the development of Policies and Standards through HIE working groups and committees. These Policies and Standards govern HIE and Participant use of the Exchange and the use, submission, transfer, access, privacy and security of Data.

(a) Changes to Policies and Standards. HIE may change or amend the Policies and Standards from time to time at its discretion and will post notice of proposed and final changes at www.xxx.xxx. HIE will provide Participants notice of such changes to Policies and Standards by electronic mail. Any changes will be effective 60 days following adoption by HIE, unless HIE determines that an earlier effective date is required to address a legal requirement, a concern relating to the privacy or security of Data or an emergency situation. HIE also may postpone the effective date of a change if the HIE determines, in its sole discretion, that additional implementation time is required. Participant will have no ownership or other property rights in the Policies and Standards or other materials or services provided by HIE.

(b) Security. HIE will implement Policies and Standards that are reasonable and appropriate to provide that all Data Exchanges are authorized, and to protect Data from improper access, tampering or unauthorized disclosure. Such Policies and Standards will include administrative procedures, physical security measures, and technical security services that are reasonably necessary to secure the Data. HIE and Participant will comply with the security Policies and Standards established by HIE, including the requirements set forth on Exhibit B.

(c) Investigations and Corrections. HIE will adopt Policies and Standards for the investigation and resolution of Patient complaints, security incidents or other concerns relating to compliance with this Agreement, HIE Policies and Standards and applicable laws and regulations ("Compliance Concerns"). HIE promptly will notify Participant in writing of any Compliance Concern related to Participant's use of the Exchange, and Participant will cooperate with HIE in its investigation of any Compliance Concern and corrective action.

3.0 HEALTH CARE PROVIDER OBLIGATIONS. The obligations of this Section 3.0 apply to Participant if either the "Both" or the "Health Care Provider" line is checked on page 1 of the Agreement. These obligations do not apply to Participants who have only checked the "Data Supplier" line on page 1.

3.1 Data Exchange. By engaging in Data Exchange, Health Care Provider agrees that its participation in any Data Exchange, and use of the Exchange by Health Care Provider and its Authorized Users, will comply with the terms of this Agreement and applicable laws and regulations. Health Care Provider also agrees that Health Care Provider has secured any required Patient authorizations to access the Data Exchange as set forth in Section 3.4.

3.2 Permitted Use. Health Care Provider and its Authorized Users will use the Exchange only for a Permitted Use. Health Care Provider and its Authorized Users will comply with this Agreement and all applicable laws and regulations governing the privacy and security of Data received through the Exchange. Data obtained by Health Care Provider through the Exchange may become part of Health Care Provider's medical record. If Health Care Provider includes Data in its medical record, Health Care Provider and Authorized Users may use Data only for those purposes permitted by law. Health Care Provider will decide in its discretion whether to use the Exchange, and to what extent.

3.3 Authorized Users. Health Care Provider will identify and authenticate its Authorized Users, in accord with HIE's Policies and Standards, who may use the Exchange for the Permitted Use on behalf of Health Care Provider. Authorized Users will include only those individuals who require access to the Exchange to facilitate Health Care Provider's use of the Data for a Permitted Use. Participant is

responsible for Authorized Users complying with the terms and conditions of this Agreement and applicable laws and regulations.

3.4 Patient Consent for Data Exchange and Treatment; Notice. The parties acknowledge that certain uses of Data, including without limitation Treatment, Payment and certain Health Care Operations (as defined by the HIPAA Standards for Privacy of Individually Identifiable Health Information, 45 C.F.R. Part 164, Subpart E) do not require specific consent by a Patient under HIPAA or Arizona Law. However, Health Care Provider is responsible for securing any Patient consent to access to Patient's Data through the Exchange as required by HIE Policies and Standards, as identified in a Project Addendum, or as otherwise required by law.

3.5 System Operations.

(a) Systems Necessary to Participate in Exchange. Health Care Provider, at its own expense, will provide and maintain the equipment, software, services and testing necessary to effectively and reliably participate in the Exchange as set forth in Exhibit C, except for such software expressly provided by HIE pursuant to Section 8.

(b) Documentation of Information for Patient Treatment; Record Retention, Storage and Backup. Health Care Provider, at its own expense, will maintain records of Data accessed through the Exchange and used by Health Care Provider for Patient Treatment. Health Care Provider will maintain these records for all periods required by law. Health Care Provider will determine the form for such records, which may include incorporation of Data into Health Care Provider's medical record electronically, by hard copy or by other form of summary, notation or documentation.

(c) Privacy, Security and Accuracy. Health Care Provider will maintain sufficient safeguards and procedures, in compliance with Exhibit B, HIE Policies and Standards, and applicable laws, to maintain the security and privacy of Data.

4.0 DATA PROVIDER OBLIGATIONS. The obligations of this Section 4.0 apply to Participant if either the "Both" or the "Data Supplier" line is checked on page 1 of the Agreement. These obligations do not apply to Participants who have only checked the "Health Care Provider" line on page 1.

4.1 Data Exchange and Data Submission. By engaging in Data Exchange, Data Supplier agrees that: (a) its participation in any Data Exchange will comply with the terms of this Agreement and applicable laws and regulations; (b) the Data provided or transferred by Data Supplier can be related to and identified with source records maintained by Data Supplier; and (c) Data Supplier has secured all authorizations for the submission of Data as set forth in Section 4.3. Data Supplier will make Data available for the Exchange in accordance with the scope, format and specifications set forth in Exhibit D.

4.2 Permitted Use. Data Supplier and its employees and agents will use the Exchange only to provide Data for a Permitted Use. Data Supplier, its employees and agents will comply with this Agreement and all applicable laws and regulations governing the privacy and security of Data made available to the Exchange.

4.3 Patient Consent for Data Submission and Data Exchange. Data Supplier and HIE acknowledge that Data Supplier will make Data available for access through the Exchange only for a Permitted Use. The parties acknowledge that certain uses of Data, including without limitation Treatment, Payment and certain Health Care Operations (as defined by the HIPAA Standards for Privacy of Individually Identifiable Health Information, 45 C.F.R. Part 164, Subpart E) do not require specific consent by a Patient under HIPAA or Arizona Law for these purposes. However, Data Supplier is responsible for securing any consent to supply Patient's Data to the Exchange as required by HIE Policies and Standards, as identified in a Project Addendum, or as otherwise required by law. Exchange

4.4 Data Return. HIE is not required to return to Data Supplier any Data transferred or accessed pursuant to the terms of this Agreement.

4.5 Data Provided; System Operations.

(a) Systems Necessary to Participate in Exchange. Data Supplier will provide and maintain the equipment, software, services and testing necessary to effectively and reliably submit Data for access through the Exchange as set forth in Exhibit D, except for such software expressly provided by HIE pursuant to Section 8. The financial responsibility of Data Supplier and HIE in making such Data available and for providing and maintaining the equipment, software, services and testing are set forth in Exhibit D.

(b) Record Retention, Storage and Backup. Data Supplier, at its own expense, will maintain Data backup and retention to maintain adequate records of Data submitted to the Exchange for access by Health Care Providers.

(c) Privacy, Security and Accuracy. Data Supplier will maintain sufficient safeguards and procedures, in compliance with the terms of this Agreement, HIE Policies and Standards, and applicable laws, to maintain the security, privacy and accuracy of Data. Data Supplier will promptly correct any errors discovered in Data it transmits to Exchange and notify HIE of any such corrections pursuant to HIE Policies and Standards.

5.0 COMPLIANCE WITH LAWS; CONFIDENTIALITY

Both HIE and Participant, and their agents and employees, will comply with the federal and state laws and regulations applicable to this Agreement, including without limitation laws on the security and privacy of Data, Patient consent for the use and transfer of Data and requirements for Data Exchanges. HIE and Participant, and their agents and employees, will maintain the confidentiality of Data as required by state and federal law. HIE's use of Data will be subject to this Agreement and the Business Associate Agreement set forth in Exhibit E.

6.0 FEES AND PAYMENT

6.1 Fees. Participant will pay a program fee ("Fee") to HIE in the amount of _____ ($_____) per ***calendar quarter/ per month***. If this Agreement is in effect for part of a quarter/month, the Fee will be prorated on a daily basis. HIE may modify the Fee from time to time, but

such modification will not become effective until Participant has received at least 60 days advance written notice of such modification. Such notice will specify the effective date of the modified Fee.

6.2 Payment. The Fee shall be payable in advance on or before the fifth day of each quarter/month. After 15 days, such payments shall accrue interest at the lesser of 1% per month or the highest rate allowed by applicable law.

7.0 PROPRIETARY INFORMATION

During the term of this Agreement, each party may have access to information about the other party that: (a) relates to past, present or future business activities, practices, protocols, products, services, information, content, and technical knowledge; and (b) has been identified as confidential ('Proprietary Information") by such party. For the purposes of this provision, Proprietary Information will not include Data.

7.1 Non-disclosure. The parties will: (a) hold Proprietary Information in strict confidence; (b) not make the Proprietary Information available for any purpose other than as specified in the Agreement or as required by law or subpoena; and (c) take reasonable steps to ensure that the Proprietary Information is not disclosed or distributed by employees, agents or consultants (who will have access to the same only on a "need-to-know basis) to third parties in violation of this Agreement.

7.2 Exclusions. Proprietary Information shall not include information that: (a) at the time of disclosure, is known or becomes known or available to general public through no act or omission of the receiving party; (b) was in the receiving party's lawful possession before it was provided to the receiving party by the disclosing party; (c) is disclosed to the receiving party by a third party having the right to make such disclosure; or (d) is independently developed by the receiving party without reference to the disclosing party's Proprietary Information.

7.3 Equitable Remedies. The parties agree that a breach of this Section will cause the disclosing party substantial and continuing damage, the value of which will be difficult or impossible to ascertain, and other irreparable harm for which the payment of damages alone shall be inadequate. Therefore, in addition to any other remedy that the disclosing party may have under this Agreement, at law or in equity, in the event of such a breach or threatened breach by the receiving part of the terms of this Section, the disclosing party shall be entitled, after notifying the receiving party in writing of the breach or threatened breach, to seek both temporary and permanent injunctive without the need to prove damage or post bond.

8.0 SOFTWARE LICENSE

HIE grants to Participant for the term of this Agreement a royalty-free, non-exclusive, nontransferable, non-assignable, non-sub-licensable, and limited right to use the software identified by HIE in its technical operation Standards for the sole purpose of participating in the Exchange under the terms and conditions of this Agreement ("**Software**"). THE SOFTWARE SHALL NOT BE USED FOR ANY OTHER PURPOSE WHATSOEVER, AND SHALL NOT OTHERWISE BE COPIED OR INCORPORATED INTO ANY OTHER COMPUTER PROGRAM, HARDWARE, FIRMWARE OR PRODUCT. THE SOFTWARE IS LICENSED"AS

IS" AND HIE DISCLAIMS ALL REPRESENTATIONS AND WARRANTIES OF ANY KIND, INCLUDING, WITHOUT LIMITATION, ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR TITLE. Participant acknowledges that the Software may have been licensed to HIE by third parties, and that the license granted under this Agreement is subject in every respect to HIE's grant of license from such third parties. As additional software is developed by or for HIE for the Exchange, it shall become subject to this Agreement upon written notice to Participant, and such notice shall constitute an amendment to this Agreement and any the applicable Project Addendum. This Section 8.0 applies only to Software that is installed on hardware owned or leased by Participant and not to any other software that Participant may use in providing treatment to Patients or for Participant's business operations.

9.0 ELECTRONIC SIGNATURES

9.1 Signatures and Signed Documents. Participant, at HIE's request, will adopt as its signature an electronic identification consisting of symbols or codes that are to be affixed to or contained in a Data Exchange made by the Participant ("Signatures"). Participant agrees that any Signature of such party affixed to or contained in any Data Exchange will be sufficient to verify that the party originated such Data Exchange. Any properly transmitted Data Exchange made pursuant to this Agreement shall be considered a "writing" or "in writing" and any such Data Exchange when containing, or to which there is affixed, a Signature ("Signed Documents") shall be deemed for all purposes: (a) to have been "signed;" and (b) to constitute an original when printed from electronic files or records established and maintained in the normal course of business.

9.2 Validity of Signed Documents. Participant will not contest the validity or enforceability of Signed Documents under the provisions of any applicable law relating to whether certain agreements are to be in writing or signed by the party to be bound thereby. Signed Documents, if introduced as evidence on paper in any judicial, arbitration, mediation, or administrative proceedings will be admissible as between the parties to the same extent and under the same condition as other business records originated and maintained in paper form.

10.0 TERM AND TERMINATION

10.1 Term and Termination. The term of this Agreement will begin on the Effective Date and will continue until terminated as set forth in this Section 10. This Agreement will terminate under any of the following circumstances:

(a) Violation of Law or Regulation. If either HIE or Participant determines that its continued participation in this Agreement would cause it to violate any law or regulation applicable to it, or would place it at material risk of suffering any sanction, penalty, or liability, then that party may terminate its participation in this Agreement immediately upon written notice to the other party.

(b) For Cause. If HIE or Participant determines that the other party or any of its employees, agents or contractors have breached this Agreement, then that party may terminate its participation in this Agreement on 30 days' advance written notice to the other party, provided that such notice identifies such area of non-compliance, and such non-compliance is not cured within 15 days of receipt of the notice of non-compliance. HIE may immediately terminate this Agreement upon

written notice to Participant if HIE determines that Participant, an Authorized User, employee or agent has used Data or the Exchange for any purpose other than the Permitted Use or in violation of security or privacy provisions under this Agreement or applicable laws and regulations.

(c) Without Cause. HIE or Participant may terminate this Agreement without cause upon 30 days' advance written notice of termination to the other party.

10.2 Termination Process and Access to Exchange and Data. Upon the effective date of termination of this Agreement, HIE will cease providing access to the Exchange for the Participant and its Authorized Users, and Participant and its Authorized Users will stop using the Exchange.

10.3 Effect of Termination.

(a) Rights and Duties. Any termination will not alter the rights or duties of the parties with respect to Signed Documents transmitted before the effective date of the termination or with respect to fees outstanding and payable under this Agreement. Upon termination of this Agreement, Exhibit A, Sections 7.0, 8.0, 10.2, 10.3(b), 11, 12, Exhibit E and any other obligations that by their nature extend beyond termination, cancellation or expiration of this Agreement, will survive such termination, cancellation or expiration and remain in effect.

(b) Return of Proprietary Information; Software; Fees. Within 30 days of the effective date of termination, each party will return to the other all Proprietary Information belonging to the other or certify the destruction of such Proprietary Information if agreed to by the party who originated the Proprietary Information. Within 30 days of the effective date of termination, Participant will de-install and return to HIE all software provided by HIE to Participant under this Agreement. If Participant has prepaid any Fees or Expenses as of the effective date of termination, Participant will be entitled to a pro rata refund of such advance payment. No Data will be returned to a Data Supplier upon termination of this Agreement.

11.0 LIMITED WARRANTIES AND DISCLAIMERS

11.1 Limited Warranty and Disclaimer of Other Warranties. HIE will use its best efforts to correctly transmit Data Exchanges between Participants on a timely basis. HIE MAKES NO REPRESENTATION OR WARRANTY THAT THE DATA DELIVERED TO THE PARTICIPANT WILL BE CORRECT OR COMPLETE. HIE MAKES NO WARRANTY OR REPRESENTATION REGARDING THE ACCURACY OR RELIABILITY OF ANY INFORMATION TECHNOLOGY SYSTEM USED FOR THE EXCHANGE. **HIE DISCLAIMS ALL WARRANTIES REGARDING ANY PRODUCT, SERVICES, OR RESOURCES PROVIDED BY IT, OR DATA EXCHANGES TRANSMITTED, PURSUANT TO THIS AGREEMENT INCLUDING WITHOUT LIMITATION ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.**

12.0 LIMITATION OF LIABILITY; INDEMNIFICATION

12.1 Limitation of Liability. Neither HIE nor Participant will be liable to the other for lost profits or Data, or any special, incidental, exemplary, indirect, consequential or punitive damages (including loss of use or lost profits) arising from any delay, omission or error in a Data Exchange or receipt of Data, or arising out of or in connection with this Agreement, whether such liability arises from

any claim based upon contract, warranty, tort (including negligence), product liability or otherwise, and whether or not either party has been advised of the possibility of such loss or damage.

12.2 Release of Liability. Participant releases HIE from any claim arising out of any inaccuracy or incompleteness of Data or any delay in the delivery of Data or failure to deliver a Data Exchange when requested except for those arising out of HIE's gross negligence.

12.3 Indemnification.

(a) HIE Indemnification for Infringement. HIE will indemnify and hold harmless Participant, its employees and agents from any damages, expenses and costs, including reasonable attorneys fees, arising out of claims by third parties that the use of the Exchange and any Software provided by HIE infringes any patents, copyrights or trademarks or is a misappropriation of trade secrets, provided that Participant notifies HIE in writing promptly upon discovery of any such claim and gives HIE complete authority and control of, and full cooperation with, the defense and settlement of such claim.

(b) Indemnification for Breach of Agreement. Participant will indemnify and hold harmless HIE, its employees and agents from any damages, expenses and costs, including reasonable attorneys fees, from claims by third parties arising from claims arising from Participant's or its Authorized Users' breach of this Agreement, including the unauthorized or improper use of the Exchange or Participant's or its Authorized Users' use or disclosure of Data for any purpose other than a Permitted Use. HIE will indemnify and hold harmless Participant, its employees and agents from any damages, expenses and costs, including reasonable attorneys fees, from claims by third parties arising from claims arising from HIE's breach of this Agreement, including the unauthorized or improper use of the Exchange or HIE's use or disclosure of Data for any purpose other than a Permitted Use or as otherwise allowed under this Agreement.

12.4 Not a Medical Service. The Exchange does not make clinical, medical or other decisions and is not a substitute for professional medical judgment applied by Participant or its Authorized Users. Participant and its Authorized Users are solely responsible for confirming the accuracy of all Data and making all medical and diagnostic decisions.

13.0 GENERAL PROVISIONS

13.1 No Exclusion. HIE represents and warrants to Participant, and Participant represents and warrants to HIE, that neither party nor their respective employees or agents have been placed on the sanctions list issued by the office of the Inspector General of the Department of Health and Human Services pursuant to the provisions of 42 U.S.C. 1320a(7), have been excluded from government contracts by the General Services Administration or have been convicted of a felony or any crime relating to health care. HIE and Participant will provide one another immediate written notice of any such placement on the sanctions list, exclusion or conviction.

13.2 Severability. Any provision of this Agreement that is determined to be invalid or unenforceable will be ineffective to the extent of such determination without invalidating the remaining provisions of this Agreement or affecting the validity or enforceability of such remaining provisions.

13.3 Entire Agreement. This Agreement constitutes the complete agreement of the parties relating to the matters specified in this Agreement and supersedes all earlier representations or agreements, whether oral or written with respect to such matters. No oral modification or waiver of any of the provisions of this Agreement is binding on either party.

13.4 No Assignment. Neither HIE nor Participant may assign its rights or obligations under this Agreement without the advance written consent of the other party, except for a transfer or assignment to a parent, subsidiary or affiliate wholly owned by the party.

13.5 Governing Laws. This Agreement is governed by and interpreted in accordance with Arizona laws, without regard to its conflict of law provisions. The parties agree that jurisdiction over any action arising out of or relating to this Agreement shall be brought or filed in the State of Arizona.

13.6 Force Majeure. No party is liable for any failure to perform its obligations under this Agreement, where such failure results from any act of God or other cause beyond such party's reasonable control (including, without limitation, any mechanical, electronic, or communications failure).

13.7 Notices. All notices, requests, demands, and other communications required or permitted under this Agreement will be in writing. A notice, request, demand, or other communication will be deemed to have been duly given, made and received: (a) when personally delivered; (b) on the day specified for delivery when deposited with a courier service such as Federal Express for delivery to the intended addressee; or (c) three business days following the day when deposited in the United States mail, registered or certified mail, postage prepaid, return receipt requested, addressed as set forth below on the first page of the Agreement. Nothing in this section will prevent the parties from communicating via electronic mail, telephone, facsimile, or other forms of communication for the routine administration of the Exchange.

13.8 No Agency. HIE provides the Exchange services to Participant but does not act as Participant's agent. Participant will not be deemed an agent of another Participant as a result of participation in this Agreement.

13.9 No Relationship between Participating Health Care Providers; No Third Party Rights. Nothing in this Agreement confers any rights or remedies under this Agreement on any persons other than HIE and Participant, and nothing in this Agreement is intended to create a contractual relationship or otherwise affect the rights and obligations among Participants. Nothing in this Agreement will give any third party, including other Participants, any right of subrogation or action against any party to this Agreement.

END OF EXHIBIT A

EXHIBIT B

PARTICIPANT SECURITY REQUIREMENTS

In addition to any obligations set forth in the Agreement and HIE Policies and Standards, Participant will observe the following requirements. HIE may amend or supplement these requirements on written notice to Participant.

1. Each of Participant's servers connecting to the HIE gateway will comply with HIE's authentication requirements, implementing Secure Sockets Layer (SSL) encryption and authentication, using certificates approved by HIE.

2. Participant will implement authentication of each Authorized User at the point of access and will implement password policies based on prevailing industry standards and HIE Policies and Standards. Participant may elect to implement stronger authentication mechanisms at its discretion.

3. Participant will authorize each Authorized User based on a Permitted Use of the Exchange and according to Role Based Access principles. Participant will impose appropriate sanctions for members of its workforce that violate applicable security Policies and Standards or make improper use of the Exchange, including revocation of an Authorized User's authorization to access the Exchange as may be appropriate under the circumstances.

4. Participant will maintain access logs that capture end user identification information.

5. Participant will review and update its list of Authorized Users as required under HIE Policies and Standards.

6. Participant will implement message-level security using WS-Security or other security technology acceptable to HIE.

7. Participant will implement firewalls and intrusion detection per industry standards and Exchange Policies and Standards.

8. Participant will implement other safeguards to protect servers based on information security best practices, such as the SANS Institute (www.sans.org) recommendations. .

9. Participant will perform periodic automated and random manual review and verification of audit logs for both operational monitoring and system security as required by HIE Policies and Standards.

END OF EXHIBIT B

EXHIBIT C

HEALTH CARE PROVIDER—SYSTEM REQUIREMENTS

1. System Requirements.

HIE will provide a secure viewer application to Health Care Providers to retrieve and view Data for their Patients. The secure viewer application is web-based and requires a secure system with an Internet connection and an Internet browser. HIE requires the following minimum system configuration options for running the HIE viewer on a browser.

[*Insert specific system requirements*]

2. Additional Financial Requirements.

[*Insert Additional Financial Requirements supplementing Exhibit A, Section 3*]

3. Maintenance and Support Requirements.

[*Insert Maintenance and Support Requirements*]

END OF EXHIBIT C

EXHIBIT D

DATA SUPPLIER—DATA SUBMISSION, SYSTEM REQUIREMENTS AND FINANCIAL RESPONSIBILITIES

1. Data Provided.

Data Supplier will submit Data as set forth in the Addenda.

Data submitted shall be mapped to HIE standard terminologies and code systems according to the message specifications. HIE may provide message specifications and terminology standards as a reference when creating data maps. HIE and Data Supplier will cooperate with each other to mutually validate the data maps created.

2. System Requirements.

[*Insert System Requirements*]

3. Financial Responsibilities.

[*Insert Financial Responsibilities*]

4. Maintenance and Support Requirements.

[*Insert Maintenance and Support Requirements*]

END OF EXHIBIT D

EXHIBIT E

BUSINESS ASSOCIATE AGREEMENT

HIE and Participant agree to the terms and conditions of this Business Associate Agreement in order to comply with the use and handling of Protected Health Information ("PHI") under the HIPAA Standards for Privacy of Individually Identifiable Health Information, 45 C.F.R. Part 160 and Part 164, Subpart E ("Privacy Rule") and the HIPAA Security Standards, 45 C.F.R. Part 160 and Part 164, Subpart C ("Security Rule"), both as amended from time to time. Unless otherwise provided, all capitalized terms in this Business Associate Agreement will have the same meaning as provided under the Privacy Rule and Security Rule.

For purposes of this Business Associate Agreement, Protected Health Information ("PHI") or Electronic Protected Health Information ("ePHI") includes only individually identifiable health information handled by HIE that is provided to the Exchange by Participant.

1. USES AND DISCLOSURES OF PHI: HIE will use or disclose PHI only for those purposes necessary to perform Services under the Agreement, or as otherwise expressly permitted in the Agreement, its Exhibits including this Business Associate Agreement, or its Addenda, or as required by law, and will not further use or disclose PHI. HIE agrees that anytime it provides PHI to a subcontractor or agent to perform Services, HIE first will ensure that each such subcontractor or agent agrees to the same terms, conditions, and restrictions on the use and disclosure of PHI as contained in this Business Associate Agreement.

2. HIE USE OR DISCLOSURE OF PHI FOR ITS OWN PURPOSES: HIE may use or disclose PHI for HIE's management and administration, or to carry out its legal responsibilities. HIE may disclose PHI to a third party for such purposes if: (1) The disclosure is required by law; or (2) HIE secures written assurance from the receiving party that the receiving party will: (i) hold the PHI confidentially; (ii) use or disclose the PHI only as required by law or for the purposes for which it was disclosed to the recipient; and (iii) notify the HIE of any breaches in the confidentiality of the PHI. HIE also may aggregate the PHI with other PHI in its possession or otherwise de-identify PHI according to the requirements of 45 C.F.R. §164.514(b).

3. SAFEGUARDS: HIE will implement and maintain appropriate safeguards to prevent any use or disclosure of PHI for purposes other than those permitted by this Business Associate Agreement. HIE also will implement administrative, physical and technical safeguards to protect the confidentiality, integrity, and availability of any ePHI that HIE creates, receives, maintains, and transmits on behalf of Participant.

4. UNAUTHORIZED USES OR DISCLOSURES: HIE will report to Participant any successful unauthorized access, use, disclosure, modification, or destruction of ePHI or interference with system operations in an information system containing ePHI of which HIE

becomes aware within 15 business days of HIE's learning of such event. HIE will report the aggregate number of unsuccessful attempts to access, use, disclose, modify, or destroy ePHI or interfere with system operations in an information system containing ePHI of which HIE becomes aware, provided that such reports will be provided only as frequently as the parties mutually agree, but no more than once per month. If the definition of "Security Incident" under the Security Rule is amended to remove the requirement for reporting "unsuccessful" attempts to use, disclose, modify or destroy ePHI, HIE will cease reporting unauthorized attempts as of the effective date of such amendment.

5. INDIVIDUAL ACCESS TO PHI: If an individual makes a request to HIE for access to PHI, HIE will within 10 business days forward such request in writing to Participant. Participant will be responsible for making all determinations regarding the grant or denial of an individual's request for PHI and HIE will make no such determinations.

6. AMENDMENT OF PHI: If an individual makes a request to HIE for amendment of PHI, HIE will within 10 business days forward such request in writing to Participant. Participant will be responsible for making all determinations regarding amendments to PHI and HIE will make no such determinations.

7. ACCOUNTING OF DISCLOSURES OF PHI: If an individual makes a request to HIE for an accounting of disclosures of PHI, HIE will within 10 business days forward such request in writing to Participant. Participant will be responsible for preparing and delivering the accounting to the individual. Upon request, HIE will make available to Participant information about HIE's disclosures of PHI, if any, that must be included to respond to individual requests for accounting of disclosures of PHI under applicable law.

8. ACCESS TO BOOKS AND RECORDS: HIE will make its internal practices, books and records on the use and disclosure of PHI available to the Secretary of the Department of Health and Human Services to the extent required for determining Participant's compliance with the Privacy Rule. Notwithstanding this provision, no attorney-client, accountant-client or other legal privilege will be deemed waived by HIE or Participant as a result of this Section.

9. TERMINATION: Participant may terminate the Agreement upon written notice to HIE if HIE breaches a material term of this Business Associate Agreement and HIE fails to cure the breach within 30 days of the date of notice of the breach.

10. RETURN OR DESTRUCTION OF PHI: Participant understands that PHI provided to the Exchange may be integrated into the medical record of Health Care Providers that access the Exchange. As such, it is not feasible for HIE to return or destroy PHI upon termination of the Agreement. HIE agrees to follow the provisions of this Business Associate Agreement for as long as it retains PHI, and will limit any further use or disclosure of PHI to those purposes allowed under this Business Associate Agreement, until such time as HIE either returns or destroys the PHI.

END OF EXHIBIT E

PROJECT ADENDUM NO. 1

Project Name	Health Information Exchange for Treatment Purposes
Data Submitted for Exchange	
Permitted Uses	Health Care Provider and Authorized Users may access the Exchange to obtain Data for the Treatment (as defined in this Addendum) of Health Care Provider's Patients. If Health Care Provider includes Data in its Medical Record, Health Care Provider and Authorized Users may use Data only for those purposes permitted by law.
Permitted Users	Authorized Users are employees, independent contractors or agents of a Health Care Provider who have been authenticated and given access in compliance with HIE Policies & Standards by the Participant.
Specific Safeguards and Privacy Requirements	All Participants shall adhere to the HIE Policies and Standards available at www.xxx.xxx.
Licensed Software	
Certification Requirements	
Definitions for Project Addendum No. 1	**1.** "**Treatment**" means the provision, coordination or management of health care services by one or more Health Care Providers, as defined by HIPAA Standards for Privacy of Individually Identifiable Health Information, 45 C.F.R. Part 164, Subpart E. **2.** "**Medical Record"** means all communications related to a Patient's physical or mental health or condition that are recorded in any form or medium and that are maintained by the Health Care Provider for purposes of Patient diagnosis or Treatment, including medical records that are prepared by the Health Care Provider or other providers, as defined by A.R.S. § 12-2291.

END OF ADDENDUM NO. 1

Arizona Health-e Connection

EAzRx

An e-prescription for Arizona

Arizona Health-e Connection

EAzRx Mission

- AzHeC EAzRx Mission:
  - Arizona Health-e Connection and its EAzRx Steering Committee are committed to enhancing patient safety through increased e-prescribing adoption by clinicians in Arizona. We will use the combined expertise of the EAzRx Steering Committee, Arizona Partnership for Implementing Patient Safety, providers, pharmacists, and other stakeholders to further the initiative.

Arizona Health-e Connection

EAzRx Goals

- Goal: To achieve nearly 100% of possible e-prescriptions being e-prescribed by April 2013 (5 years). Yearly goals include:
  - April 2009 (6%)
  - April 2010 (12%)
  - April 2011 (24%)
  - April 2012 (48%)
  - April 2013 (96%, close to 100%)
  - Currently, AZ providers e-prescribe 3% of all possible e-prescriptions.
  - Additional metrics will be identified and measured to further monitor the Initiative.

Arizona Health-e Connection

Strategies

1) Provide **umbrella** coordination organization (EAzRx Steering Committee)
2) **Provide information** and statistics in easy-to-access format (time saving for providers)
3) **Recognize top e-prescribers** in Arizona
4) Coordinate and publish Arizona **case studies** to **educate** the provider community
5) Work to identify real **incentives** and apply for grants to provide "flow-through" **funding**
6) Improve **patient safety** and encourage **patient involvement** in the e-prescribing process

Arizona Health-e Connection

Strategy1 : Umbrella

- EAzRx e-Prescribing Steering Committee
  - Physician / Pharmacy Co-Chairs
  - Pulls together major stakeholder/constituency representatives
  - Coordinates with other organizations with an e-Rx initiative (e.g., payers)
  - Government organizations involved
  - Coordinates with APIPS eRx Committee
  - Consider potential legislative changes

Arizona Health-e Connection

Strategy 2: Provide Information

- Publish statistics (for eRx and EMR products), as well as related metrics
- Troubleshooting for eRx and EMR
- ROI for e-Prescribing (and EMRs)
- What are the Feds doing/requiring
- What are BCBS, UHC, and Cigna doing?
- Consumer Reports-type document or instead point to existing information

Arizona Health-e Connection

Strategy 3: Recognize Top e-Prescribers

- Recognize AZ e-Prescribers at May Summit
- Post top (or all) AZ e-Prescribers on AzHeC/EAzRx website
- Create peer-to-peer interaction (funded via a grant?)

Arizona Health-e Connection

Strategy 4: Case Studies & Education

- Use top e-Prescribers as champions and subjects of case studies
- Panel of physicians using eRx and EMR at May Summit
- Quarterly ongoing educational credits for providers and pharmacists
- Post case studies online

Arizona Health-e Connection

Strategy 5: Incentives and Funding

- Potential incentives (commercial payers, Feds, AHCCCS)
- Free (NEPSI) and discounted product use
- Identify and apply for grants that may be used as “pass through” funding for physicians and possibly independent pharmacies
- Investigate possibilities of malpractice insurance premium credits for providers who e-prescribe

Arizona Health-e Connection

Strategy 6: Patient Safety & Involvement

- Encourage patient involvement in recording an accurate medication history
- Track patient safety indicators within e-prescribing
- Publish results to confirm benefits of e-prescribing

Executive Order 2008-21
Patient Safety and e-Prescribing Initiative

WHEREAS, patients experience more than 1.5 million adverse drug events in the United States each year due to preventable errors in prescribing or administering medication; and

WHEREAS, the financial costs associated with these avoidable errors in the United States exceeds $4 billion per year; and

WHEREAS, the Institute of Medicine, a Congressionally-chartered, but privately funded branch of the National Academy of Sciences, concludes that at least one out of four adverse drug events can be prevented by measures such as electronic prescribing (e-prescribing), clinical decision support tools, and patient documentation of their medications, nutritional supplements, and drug and food allergies; and

WHEREAS, the Institute of Medicine recommends that all prescribers and pharmacies utilize e-prescribing by the year 2010; and

WHEREAS, health care providers in Arizona utilize e-prescriptions at a rate of just 2.8% of possible prescriptions that could be transmitted by e-prescribing; and

WHEREAS, utilization of e-prescribing avoids mistakes that accompany hand-written prescriptions, creates opportunities for automated systems to warn of drug appropriateness and harmful drug interactions, can provide access to a patient's full medication history for both routine health care and emergency situations, and produces greater convenience for patients and providers by reducing the number of visits and calls to pharmacies; and

WHEREAS, to further patient safety, the federal Agency for Healthcare Research and Quality encourages Americans to maintain personal health records that include their medication lists, allergies, and health history;

NOW, THEREFORE, I, Janet Napolitano, Governor of the State of Arizona, by virtue of the authority vested in me by the Arizona Constitution and the laws of this State, hereby order and direct as follows:

1. The Arizona Health Care Cost Containment System, Government Information Technology Agency, Arizona Department of Administration, and other agencies, as appropriate, shall work with Arizona Health-e Connection and its EAzRx initiative to significantly increase the utilization of e-prescribing in Arizona. Specifically, Arizona's collaborative effort shall strive to improve patient safety and control costs by making Arizona a national leader in e-prescribing practices.

2. The Executive branch agencies shall work with Arizona Health-e Connection and the health professional licensing boards to educate prescribing clinicians, pharmacists, pharmacy technicians, hospital and long-term care facility professionals, other health care

professionals and employers about the benefits of preventing adverse drug events through e-prescribing, and adopting information technology software that facilitates e-prescribing.

3. The Arizona Health Care Cost Containment System, the Arizona Department of Health Services, and the Arizona Department of Administration shall implement measures to reduce medication errors for individuals enrolled in their health systems and to control costs related to such errors through increased e-prescribing use by contracted health plans and providers.

4. The Government Information Technology Agency shall identify special challenges that may hinder adoption of e-prescribing in rural Arizona communities, and shall develop recommendations to address such challenges.

5. The Executive branch agencies shall work with Arizona Health-e Connection to develop strategies to promote patient awareness and use of consumer tools related to medication safety including the Med Form available at www.themedform.com or another personal health record, and shall encourage Arizona consumers to routinely maintain a list of all drugs and medications being consumed, including prescription drugs, over-the-counter drugs, and other products, such as vitamins and minerals, and to review this list with their health care providers.

IN WITNESS WHEREOF, I have hereunto set my hand and caused to be affixed the Great Seal of the State of Arizona.

Jan Brewer
GOVERNOR

DONE at the Capitol in Phoenix on this 1 day of May in the Year Two Thousand and Eight and of the Independence of the United States of America the Two Hundred and Thirty-Second.

ATTEST:

Janice K. Brewer
SECRETARY OF STATE

ARIZONA

Progress Report on Electronic Prescribing

This sheet provides an at-a-glance summary of key statistics detailing the status of e-prescribing adoption and utilization in your state. Information has been compiled through transaction and adoption data provided by SureScripts®, operator of the Pharmacy Health Information Exchange™, the largest network to link electronic communications between pharmacies and physicians, allowing the electronic exchange of prescription information.

Background on State E-Prescribing Regulations: Favorable E-Prescribing Regulatory Environment For This State Established — November 2003 This date represents when new legislation and/or regulations allowing e-prescribing went into effect or when SureScripts received confirmation from the State Board of Pharmacy that existing rules allow e-prescribing.

THIRD ANNUAL SAFE-RX AWARDS — MARCH 4, 2008

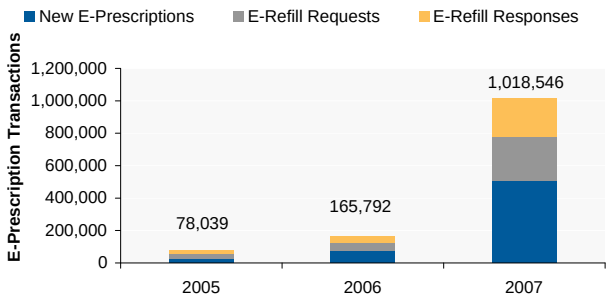
WWW.SURESCRIPTS.COM/SAFE-RX

Safe-Rx Information	2005	2006	2007
Safe-Rx State Ranking	11	14	8
Percent of Total Prescriptions Transmitted Electronically	0.21%	0.48%	2.89%

Note: These calculations are based on the total number of new E-Prescriptions and E-Refill responses electronically transmitted and the total number of new prescriptions and prescription renewals eligible for electronic routing in the state, according to Wolters Kluwer Health Source® Pharmaceutical Audit Suite. Note: The total number of eligible prescriptions does not include controlled substances as they are not eligible for e-prescribing under current DEA regulations. The total number of eligible prescriptions also excludes preauthorized refills on existing prescriptions because they do not require communication between a physician and a pharmacist.

E-Prescriptions	2005	2006	2007
New E-Prescriptions	28,957	78,156	508,215
E-Refill Requests	25,464	46,254	270,246
E-Refill Responses	23,618	41,382	240,085
Total E-Prescription Transactions	78,039	165,792	1,018,546
Annual Growth in E-Prescription Transactions	-	112%	514%

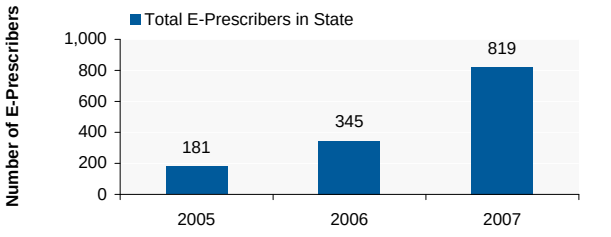
Arizona E-Prescription Transactions — Annual Growth



E-Prescribers	2005	2006	2007
Total E-Prescribers in State	181	345	819
E-Prescribers as % of Total Prescribers in State	n/a	4%	9%
Annual Growth of E-Prescribers	-	91%	137%

Note: E-Prescriber Percentage figures compiled through comparison of total e-prescribers in your state and AMA supplied data showing total office-based physicians practicing in your state. AMA 2005 data was not available at time of report issue.

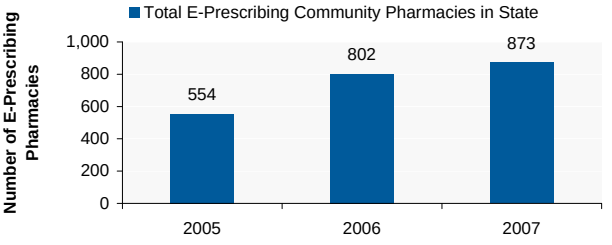
Arizona E-Prescribers — Annual Growth



E-Prescribing Community Pharmacies	2005	2006	2007
Total E-Prescribing Community Pharmacies in State	554	802	873
E-Prescribing Community Pharmacies as % of Total Community Pharmacies in State	59%	75%	78%
Annual Growth in E-Prescribing Community Pharmacies	-	45%	9%

Note: Community pharmacies represent a mix of chain and independently-owned retail pharmacy locations. For a list of activated e-prescribing pharmacies in your state visit www.surescripts.com/pharmacies.

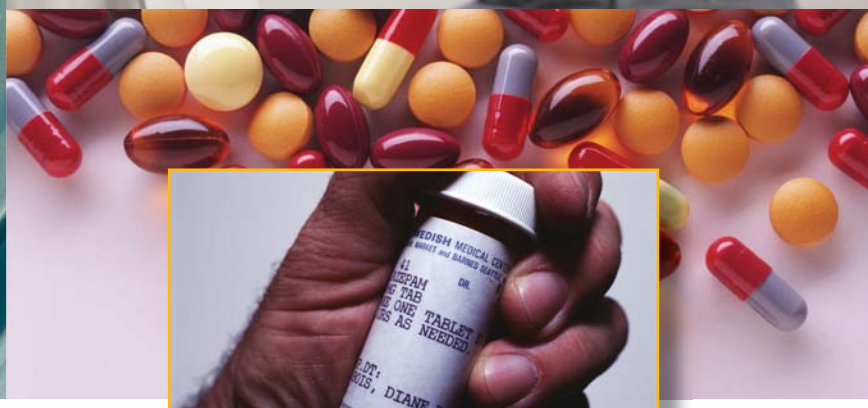
Arizona E-Prescribing Pharmacies — Annual Growth



SureScripts
The prescription for better healthcare®

Medicare's Practical Guide to the E-prescribing Incentive Program

November 2008



CONNECTING TO BETTER HEALTH CARE

DEPARTMENT OF HEALTH & HUMAN SERVICES, USA

Welcome to the E-prescribing Incentive Program

Electronic prescribing (e-prescribing) is the transmission of prescription or prescription-related information through electronic media. E-prescribing takes place between a prescriber, dispenser, pharmacy benefit manager (PBM), or health plan. It can take place directly or through an intermediary (like an e-prescribing network). The Medicare Improvements for Patients and Providers Act of 2008 (MIPPA) authorized the Medicare E-prescribing Incentive Program beginning in 2009 to promote adoption and use of e-prescribing systems.

With e-prescribing, health care professionals can electronically transmit both new prescriptions and responses to renewal requests to a pharmacy without having to write or fax the prescription. E-prescribing can save time, enhance office and pharmacy productivity, and improve patient safety and quality of care.

If you're an eligible professional and you're interested in earning incentives from Medicare for using e-prescribing technology, take the time to read this guide. It explains the e-prescribing incentive and provides other resources for more comprehensive guidance. CMS (the Centers for Medicare & Medicaid Services) encourages you to adopt e-prescribing, and we look forward to embarking on the e-prescribing initiative with you.

Medicare's Practical Guide to the E-prescribing Incentive Program

"Medicare's Practical Guide to the E-prescribing Incentive Program" isn't a legal document. Official Medicare Program provisions are contained in the relevant statutes, regulations, and rulings. The information in this booklet was correct as of November 2008. For more information about the e-prescribing incentive or to get updated versions of this document, visit www.cms.hhs.gov/eprescribing.

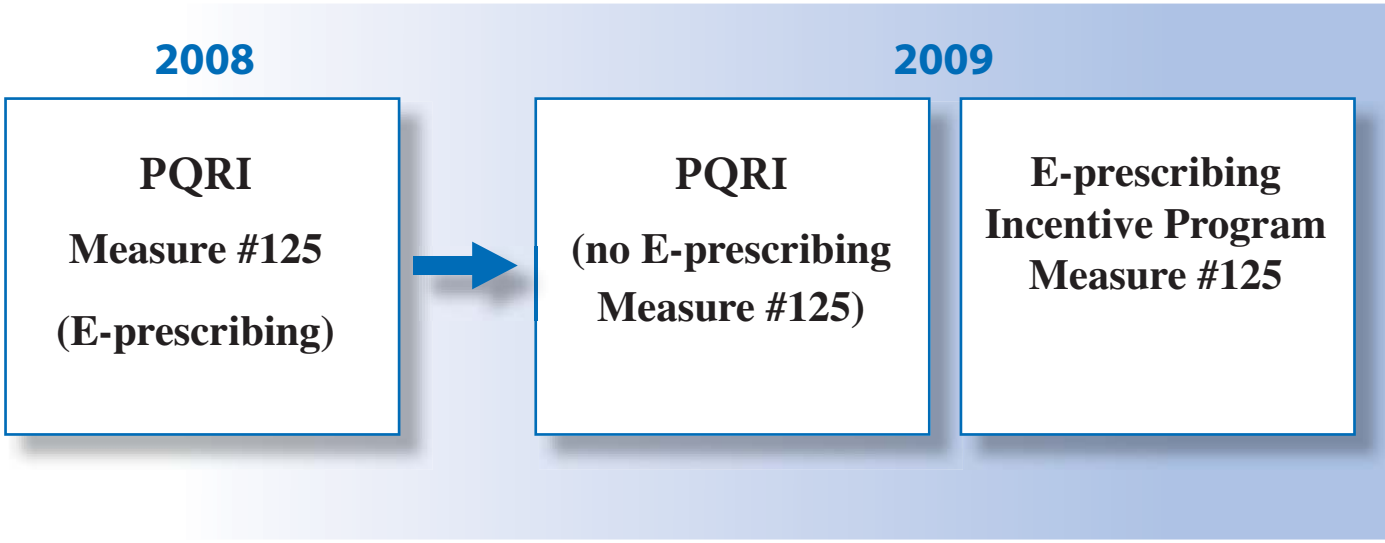
November 2008

What Is the Medicare E-prescribing Incentive Program?

The Medicare e-prescribing incentive is a new program authorized under the Medicare Improvements for Patients and Providers Act of 2008 (MIPPA).

The program begins January 1, 2009 and provides incentives for eligible professionals who are "successful e-prescribers" (see page 4). The E-prescribing Incentive Program is currently based on one e-prescribing quality measure that is currently included in the Physician Quality Reporting Initiative (PQRI). The PQRI is a reporting program that provides an incentive payment to eligible professionals who satisfactorily report data on a designated set of quality measures for covered professional services furnished during the applicable reporting period.

Beginning in 2009, the e-prescribing quality measure will be removed from the PQRI, and it will become the quality measure used in the E-prescribing Incentive Program. This means that a physician or other eligible professional could potentially get two incentive payments: one for being a "successful e-prescriber" for reporting the e-prescribing quality measure under the E-prescribing Incentive Program, and one for satisfactorily submitting data on other quality measures under the PQRI. Specifications for the 2009 e-prescribing incentive measures are different from the 2008 PQRI program measures.



What Is the Medicare E-prescribing Incentive Program? (continued)

For 2009, e-prescribing incentive amounts will be 2% of the total estimated allowed charges for professional services covered by Medicare Part B and furnished by an eligible professional during the reporting period (one calendar year).

A Quick Look at the Medicare E-prescribing Incentive Payment

If you are a "successful e-prescriber" during calendar year	Your incentive payment is
2009	2.0%
2010	2.0%
2011	1.0%
2012	1.0%
2013	0.5%

You must submit claims no later than 2 months after the reporting period ends.

Note: To be **eligible** for the incentive in 2009, you must be an eligible professional whose estimated allowed Medicare Part B charges for the e-prescribing measure codes are at least 10% of their total Medicare Part B allowed charges. These Healthcare Common Procedure Coding System (HCPCS) codes are in the denominator of the E-prescribing Incentive Program measure during the reporting period.

For example, in 2009 if an eligible professional has $100,000 in estimated allowed Medicare Part B charges, at least $10,000 of these charges must be based on the HCPCS codes that are in the denominator of the E-prescribing Incentive Program measure. See pages 8–9 for more information.

For more information about the e-prescribing quality measure, the associated codes, and the procedures for reporting data on the quality measure, visit www.cms.hhs.gov/PQRI. Select "E-prescribing Incentive Program."

How to Participate in Medicare's E-prescribing Incentive Program

The program provides incentives to eligible professionals who are "successful e-prescribers" and who are authorized under their respective state practice laws to prescribe.

Who is an eligible professional?

In general, an eligible professional is one of the following:

- Physician
- Physical or occupational therapist
- Qualified speech-language pathologist
- Nurse practitioner
- Physician assistant
- Clinical nurse specialist
- Certified registered nurse anesthetist
- Certified nurse midwife
- Clinical social worker
- Clinical psychologist
- Registered dietitian
- Nutrition professional
- Qualified audiologist (as of 2009)

What is a "successful e-prescriber"?

For 2009, to be a "**successful** e-prescriber," you must report the e-prescribing quality measure through your Medicare Part B claims on at least 50% of applicable cases during the reporting year.

MIPPA allows for future use of Part D data instead of claims-based reporting of e-prescribing quality measures. CMS is considering allowing this for future years.

Choosing a Qualified E-prescribing System

To participate in the E-prescribing Incentive Program, you must use a "qualified" e-prescribing system. There are two types of systems: a system for e-prescribing only (a "stand-alone" system), or an electronic health record (EHR) system with e-prescribing functionality. Either of these systems may be used for the incentive program, as long as they are "qualified." A qualified system must be able to do the following:

1. Generate a complete medication list that incorporates data from pharmacies and benefit managers (if available)
2. Select medications, transmit prescriptions electronically* using the applicable standards, and warn the prescriber of possible undesirable or unsafe situations
3. Provide information on lower-cost, therapeutically-appropriate alternatives (for 2009, tiered formulary information, if available, meets this requirement)
4. Provide information on formulary or tiered formulary medications, patient eligibility, and authorization requirements received electronically from the patient's drug plan

**The prescription must be sent electronically. If the network converts the electronic prescription into a fax because the pharmacy can't get electronic faxes, this counts as e-prescribing. If the e-prescribing system is only capable of sending a fax directly from the e-prescribing system to the pharmacy, the system isn't a qualified e-prescribing system. Detailed system requirements are in Measure #125 at www.cms.hhs.gov/pqri. Select "E-prescribing Incentive Program."*

There are Part D standards for additional functions not required in the e-prescribing measure. If your system has these additional functions, these functions must use the Part D standards in effect at the time. Read the next page for more information on the Medicare Part D e-prescribing standards.

Choosing a Qualified E-prescribing System (continued)

Medicare Part D standards (continued)

On April 7, 2008, the latest additions to the Medicare Part D e-prescribing standards were announced. Effective April 1, 2009, these standards will apply to the E-prescribing Incentive Program. For a list of all Medicare Part D standards, visit www.regulations.gov. Search for "Part D prescribing." The latest standards are used to electronically convey medication history, formulary and benefit information, and prescription fill status information. They also require the use of the National Provider Identifier (NPI) to identify providers in Part D e-prescribing transactions. The system you choose must be compliant with the Part D e-prescribing standards for the specific function (like transmitting prescriptions) that are in effect when the transaction is conducted.

Consider these important questions when choosing a system:

Do you want a stand-alone system or one that is part of an EHR?

Stand-alone systems are the cheapest and fastest to implement, but EHRs have additional features that are helpful in managing a medical practice over the long run.

Does the system use Medicare Part D standards? Will it be updated as needed?

It's important to understand the system's features and how they work. Remember, to qualify for the e-prescribing incentive, you must use a system that has the features listed on the previous page.

To understand if the system is "qualified" and uses Medicare Part D standards, review "A Clinician's Guide to Electronic Prescribing."
This publication contains a buyer's guide to help you compare e-prescribing systems. To access it, visit www.ehealthinitiative.org.

If you live in a rural area, make sure that the system you choose has service in your area.

Choosing a Qualified E-prescribing System (continued)

You May Be Able to Get Help Paying for Your E-prescribing System

If you invest in and use an e-prescribing system, the incentive you get may offset your initial setup and operating costs. However, as part of an effort to encourage e-prescribing, Federal, state, and private sources are also offering financial aid for physicians. For more information, review "A Clinician's Guide to Electronic Prescribing" at www.ehealthinitiative.org.

There are also parameters for technology donations so that under certain conditions, providers can accept donations without violating the Stark law or the Anti-Kickback Statute. For more information about the Stark law and Anti-Kickback Statute, visit either of the two websites below:

- www.cms.hhs.gov/PhysicianSelfReferral/01_overview.asp
- www.oig.hhs.gov/fraud/safeharborregulations.asp

Many states have developed web-based e-prescribing systems that don't require providers to have additional software. While these systems are designed to operate with the State Medicaid program, some may also be able to handle Medicare prescriptions and claims. Providers can adopt these systems at little or no cost. Because state systems vary, you should check with your State Medical Assistance (Medicaid) office about their e-prescribing activities.

How to Report the E-prescribing Incentive Program Measure

To get the incentive in 2009, you have to **report** on the e-prescribing quality measure. When you have an applicable case, you can report on the e-prescribing measure with **two steps**:

STEP 1. Bill on one of the following denominator codes:

90801	90808	96150	99204	99215	G0101
90802	90809	96151	99205	99241	G0108
90804	92002	96152	99211	99242	G0109
90805	92004	99201	99212	99243	
90806	92012	99202	99213	99244	
90807	92014	99203	99214	99245	

Even if you're not sure if the Medicare service you bill for with these denominator codes will exceed 10% of your Medicare revenues, you should report the e-prescribing codes.

How to Report the E-prescribing Incentive Program Measure (continued)

STEP 2. Report **one** of the three G-codes listed below on more than 50% of applicable cases for the numerator. Each of the three codes (even the code for not generating prescriptions) count toward the e-prescribing incentive. One of the G codes must be reported on the same claim as the denominator billing code.

E-prescribing Incentive Program Quick Reference: G-Codes

If You…	Report
✓ Used a qualified e-prescribing system for **all** of the prescriptions	G8443
✓ Had a qualified e-prescribing system, **but** didn't generate any prescriptions during this encounter	G8445
✓ Had a qualified e-prescribing system, **but** prescribed narcotics or other controlled substances*	G8446
✓ Had a qualified e-prescribing system, **and** state or Federal law required you to phone in or print the prescriptions	G8446
✓ Had a qualified e-prescribing system, **and** the patient asked that you phone in or print the prescriptions	G8446
✓ Had a qualified e-prescribing system, **and** the pharmacy system can't receive electronic transmission	G8446

** The Drug Enforcement Agency (DEA) currently prohibits e-prescribing for controlled substances. The DEA has issued a proposed rule to allow e-prescribing for controlled substances under certain conditions. Even if the DEA allows e-prescribing for controlled substances, G-code G8446 allows you to report on the e-prescribing measure for controlled substances **without** using an e-prescribing system to do so.*

Note: Under the PQRI, data on quality measures may be submitted through claims in 2008. Registry reporting will be available in 2009 in the E-prescribing Incentive Program.

What's Next

Here's a glimpse of what's on the horizon for e-prescribing:

Latest Additions and Revisions to Part D E-prescribing Standards Effective April 1, 2009

On April 1, 2009, additional and revised standards for e-prescribing under the Medicare Part D program will go into effect (see page 5). These additional standards complement the existing foundation standards, which cover eligibility transactions and transmitting prescriptions and prescription-related information between prescribers and dispensers.

Understanding the Requirements in Your State

All states allow e-prescribing, but some have certain regulatory requirements. Check with your state officials to make sure you are complying with any applicable e-prescribing requirements specific to your state.

DEA Rules on Controlled Substances

The Drug Enforcement Agency (DEA) currently prohibits e-prescribing for controlled substances. The DEA has issued a proposed rule to allow e-prescribing for controlled substances under certain conditions. Even if the DEA allows e-prescribing for controlled substances, G-code G8446 allows you to report on the e-prescribing measure for controlled substances **without** using an e-prescribing system to do so.

Differential Payment for Not E-prescribing Goes into Effect 2012

Eligible professionals who are not "successful e-prescribers" by 2012 will be subject to a differential payment (penalty) beginning in 2012. The differential payment would result in the physician getting 99% of the total allowed charges of the eligible professional's physician fee schedule payments in 2012, 98.5% in 2013, and 98% in 2014.

Summary

Keep these key points in mind as you move toward making e-prescribing part of your practice:

- Beginning January 1, 2009, CMS will provide an incentive to "successful e-prescribers."
- The sooner you participate in the program, the greater your incentive payment. Beginning in 2012, if you're not a "successful e-prescriber," you will be subject to a differential payment (penalty).
- You need a "qualified" e-prescribing system to participate. There's help available to choose a system.
- Become familiar with the codes for the E-prescribing Incentive Program quality measure.
- Check with your state officials to make sure you are complying with any e-prescribing requirements specific to your state.
- You can prescribe controlled substances and still report on the e-prescribing quality measure by reporting G-code G8446.

For more information about the e-prescribing incentive or to get updated versions of this document, visit www.cms.hhs.gov/PQRI. Select "E-prescribing Incentive Program."

U.S. DEPARTMENT OF
HEALTH AND HUMAN SERVICES

Centers for Medicare & Medicaid Services
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Baltimore, Maryland 21244-1850

CMS Publication No. 11399
November 2008

A CLINICIAN'S GUIDE TO ELECTRONIC PRESCRIBING

eHEALTH INITIATIVE
Real Solutions, Better Health

THE CENTER for Improving Medication Management
A collaborative of providers, payors, employers and pharmacies

AMA AMERICAN MEDICAL ASSOCIATION

AMERICAN ACADEMY OF FAMILY PHYSICIANS
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ACP American College of Physicians
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MGMA Medical Group Management Association

OCTOBER • 2008

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Foreword

Dear Colleagues:

The eHealth Initiative Foundation, in collaboration with the American Medical Association, the American Academy of Family Physicians, the American College of Physicians, the Medical Group Management Association, and the Center for Improving Medication Management are pleased to present "A Clinician's Guide to Electronic Prescribing," the third in a series of practical guides. These guides are designed to educate key stakeholders about e-prescribing and the steps involved in its adoption. These guides, written for consumers and health care payers, complement our June 2008 report "Electronic Prescribing: Becoming Mainstream Practice". The report provides an update on progress made in e-prescribing over the last four years and a description of barriers that must be overcome to make e-prescribing the standard of care throughout the U.S. health care system.

"A Clinician's Guide to Electronic Prescribing" is designed for two target audiences:

(1) Practices new to e-prescribing and who want an overview of what it is.

> Section I of the guide provides basic information on what electronic prescribing is, how it works, its benefits and challenges, and the current status of adoption.

(2) Practices that are ready to move forward with implementing e-prescribing, and already have a good grasp of the fundamentals provided in Section I of the guide.

> Section II is geared toward office-based clinicians who are ready to bring e-prescribing into their practices. This section provides guidance on the steps to take and pitfalls to avoid. It presents essential questions and considerations for planning, selecting, and implementing an e-prescribing system.

The guide also provides a list of key references and resources readers can consult to help make the transition to e-prescribing as smooth as possible.

To ensure the guide fully addressed the perspective and needs of prescribers, four medical associations played a central role in its development: the American Medical Association, the American Academy of Family Physicians, the American College of Physicians, and the Medical Group Management Association. In addition, a multi-stakeholder Steering Committee comprised of clinicians, consumers, employers, health plans, health information technology companies, and pharmacies, ensured the guide offers a balanced picture of e-prescribing, and the role that different organizations play in assuring its effective adoption.

We believe this guide will be an invaluable resource for clinicians. It is our hope that this guide will help encourage growth in the use of e-prescribing technology—technology that can make it safer for patients to take their prescribed medicines, lowers the overall cost of care, and streamlines the handling of prescriptions for both prescribers and pharmacies.

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SECTION I: OVERVIEW OF E-PRESCRIBING

What Is E-Prescribing?

Electronic prescribing, or "e-prescribing" is the computer-based electronic generation, transmission and filling of a prescription, taking the place of paper and faxed prescriptions. E-prescribing allows a physician, nurse practitioner, or physician assistant to electronically transmit a new prescription or renewal authorization to a community or mail-order pharmacy.

A more formal definition of e-prescribing is provided in the Medicare Part D prescription drug program:

> *E-prescribing means the transmission, using electronic media, of prescription or prescription-related information between a prescriber, dispenser, pharmacy benefit manager, or health plan, either directly or through an intermediary, including an e-prescribing network. E-prescribing includes, but is not limited to, two-way transmissions between the point of care and the dispenser.*

In 2009 Medicare will begin a program for clinicians, offering a financial incentive for those prescribers using a "qualified" e-prescribing system. A "qualified" e-prescribing system must be capable of performing all of the following functions:

- Generating a complete active medication list incorporating electronic data received from applicable pharmacy drug plan(s) if available
- Selecting medications, printing prescriptions, electronically transmitting prescriptions, and conducting all safety checks (safety checks include: automated prompts that offer information on the drug being prescribed, potential inappropriate dose or route of administration, drug-drug interactions, allergy concerns, or warnings or cautions)
- Providing information related to the availability of lower cost, therapeutically appropriate alternatives (if any)
- Providing information on formulary or tiered formulary medications, patient eligibility, and authorization requirements received electronically from the patient's drug plan

Most e-prescribing systems and many electronic health record systems (EHR systems) on the market today offer the above capabilities. Specific standards required to e-prescribe under Medicare Part D are further discussed below, and are also referenced in Appendix I. As used in this guide, e-prescribing encompasses clinical decision support to aid in safer, more informed prescribing such as access to information on drug-drug interactions, drug-allergy interactions, patient medication history, pharmacy eligibility, formulary (which specifies a patient's drug coverage), and benefits information. Electronic prescribing should be seen as an important step in improving patient care, with an eye toward moving to implementation of a complete EHR system.

More information and resources to help you select an e-prescribing system that fits your practice's needs are provided in Section II of this guide.

What Are My Choices for An E-Prescribing System?

There are two choices available when you consider an e-prescribing system: either a stand-alone system, or e-prescribing within an EHR system. There are pros and cons of each option in terms of cost, level of effort and time to select and deploy, impact on practice workflow and productivity initially and over time, and interoperability with other electronic health information systems. Section II of this guide provides detailed guidance on the advantages and disadvantages of each option, both from a short term and longer range perspective, to help you select the option that best fits your practice's needs.

1) A stand-alone system is less costly and less complex to implement, and thus can be implemented more quickly than an EHR system. This may be an important consideration for practices that wish to be eligible for Medicare's e-prescribing bonus that begins on January 1, 2009. E-prescribing systems store and manage patient data specific to the prescribing process (e.g., medication history, medication allergies, etc.). E-prescribing software is offered in two forms: (a) a software package you acquire and download to your office computer system, or more commonly; (b) through the Internet, connecting with an e-prescribing software application service provider (ASP), to whom you pay usage fees.

In terms of e-prescribing hardware, physician practices have many choices including: hand-held devices, tablet personal computers, desktop personal computers, and other hardware made available by technology vendors.

Many believe that a stand-alone e-prescribing system can serve as a pathway to an EHR system, allowing prescribers to become more technologically proficient and comfortable with using electronic systems to support and improve patient care. When implementing a stand-alone system, it is important to plan how you will eventually transition to an EHR system.

2) An EHR system with an integrated e-prescribing module offers the advantage of having immediate electronic access to all patient data stored in the EHR system, including diagnoses, problem lists, clinical notes, laboratory and radiology results and orders, adding to a clinician's ability to make the most informed medication choices for their patients. EHR systems may also often offer a broader range of clinical decision support, including notification of needed screening tests, immunizations, etc.

Physician practices are increasingly using e-prescribing within an EHR system, due to the EHR system's more comprehensive functionality, which enables greater gains in quality and safety. Currently, more than 50 EHR systems offer integrated e-prescribing. For practices that are committed to full automation and interoperability with other providers and sources of patient information, an EHR system with e-prescribing would be the better choice.

EHR systems are significantly more costly and complex to implement than stand-alone e-prescribing applications.

Important Note: To comply with Medicare's e-prescribing regulations and be eligible for the e-prescribing bonus, be sure the e-prescribing system you select meets ALL Medicare Part D e-prescribing standards which will be in effect as of April 1, 2009. These standards can be found at: http://www.cms.hhs.gov/EPrescribing.

Why Should I E-Prescribe? What Are the Benefits?

E-prescribing offers clinicians a powerful tool for safely and efficiently managing their patients' medications. Compared to paper-based prescribing, e-prescribing can enhance patient safety and medication compliance, improve prescribing accuracy and efficiency, and reduce health care costs through averted adverse drug events and substitution of less expensive drug alternatives. Taken together, these impacts translate to a higher quality, more efficient health care system that benefits all.

More specifically, e-prescribing can benefit your patients and practice by:

1) Improving patient safety and quality of care. There are a number of ways e-prescribing can reduce medication errors and resultant adverse drug events:

- **Illegibility** from hand-written prescriptions is eliminated, decreasing the risk of medication errors and decreasing liability risks.
- **Oral miscommunications** regarding prescriptions can be reduced, as e-prescribing should decrease the need for phone calls between prescribers and dispensers.
- **Warning and alert systems** are provided at the point of prescribing. E-prescribing systems can enhance an overall medication management process through clinical decision support systems that can perform checks against the patient's current medications for drug-drug interactions, drug-allergy interactions, diagnoses, body weight, age, drug appropriateness, and correct dosing; and alert prescribers to contraindications, adverse reactions, and duplicate therapy. E-prescribing software may also include drug reference software programs, such as ePocrates Rx, Pro, and the Physicians' Desk Reference.
- **Access to patient's medical and medication history.** Having the patient's medical and medication history from all providers at the time of prescribing can support alerts related to drug inappropriateness in combination with other medications or with specific medical problems.

2) Reducing time spent on phone calls and call-backs to pharmacies. Physician offices receive over 150 million call-backs from pharmacies with questions, clarifications and renewal requests. Medco® Health Solutions, Inc. conducted a survey of Boston area physicians and 88% of those surveyed said they, or their staff, spend almost one-third of their time responding to phone calls from pharmacies regarding prescriptions. E-prescribing can significantly reduce the volume of pharmacy call-backs related to handwriting legibility, mistaken manual prescription choices, formulary and pharmacy benefits, positively impacting office workflow efficiency and overall productivity.

3) Reducing time spent faxing prescriptions to pharmacies. Both prescribers and pharmacies can save time and resources spent on faxing prescriptions, reducing labor, handling, unreliability, and paper expense with e-prescriptions.

4) Automating the prescription renewal request and authorization process. Using e-prescribing, renewal authorization can be an automated process that provides efficiencies for both prescribers and pharmacies. The staff in the pharmacy generates a renewal request/authorization that is delivered through the network to the prescriber's system; the prescriber then reviews and approves/denies the request, and responds electronically to update the pharmacy system. With only a few clicks, prescribers can complete renewal authorization tasks, document that activity and create related staff orders.

5) Increasing patient convenience and medication compliance. It is estimated that 20% of paper-based prescription orders go unfilled by the patient—at least in part due to the hassle of dropping off a paper prescription and waiting for it to be filled. By eliminating or reducing this wait, e-prescribing may help reduce the number of unfilled prescriptions. Allowing electronic renewal requests can also improve the efficiency of this process, reducing obstacles that may result in less patient compliance. Availability of information on when patients' prescriptions are filled can help clinicians evaluate and address issues of patient compliance as well.

Recent research by the American Medical Association found that, due to these benefits, physicians who use an e-prescribing system are significantly more satisfied with their prescribing process than physicians who continue to handwrite prescriptions. For a summary of this research, go to www.ama-assn.org/go/hit.

6) Improving formulary adherence permits lower cost drug substitutions. By checking with health plan/insurer formularies at the point of care, generic substitutions or lower cost therapeutic equivalent medications can be encouraged and help reduce patient costs. Lower cost for patients can also help improve medication compliance.

7) Allowing greater prescriber mobility. Improved prescriber convenience can be attained when using a mobile device (laptop, PDA, etc.) and wireless network to write or authorize prescriptions. This allows prescribers to write prescriptions anywhere, even when not in the office.

8) Improving drug surveillance/recall ability. E-prescribing systems enable automated analytical queries and reports, which would be impossible with a paper prescription system. Common examples of such reporting would be: finding all patients with a particular prescription during a drug recall, or the frequency and types of medication prescribed by certain providers.

What Are the Challenges to E-Prescribing Adoption?

E-prescribing can streamline work processes and make the system run efficiently if the right tools are available in the right setting. Change can be difficult; however, e-prescribing may enable your practice to more effectively manage medications for your patients.

Challenges that have hindered more widespread adoption are described below. For those who decide to go forward with e-prescribing, Section II of this guide addresses these challenges and obstacles in greater detail, and offers guidance and strategies for making your transition to e-prescribing as smooth and trouble free as possible.

1) Financial Cost and Return on Investment (ROI): Prescribers, especially those in small practices and in inner city or rural settings, may believe they bear more than their fair share of the cost of e-prescribing, since other stakeholders also benefit from the savings and quality improvements that are achieved, or receive fees from the use of e-prescribing. Physician practices need to invest in hardware and software, and cost estimates vary depending on whether an EHR system is adopted or a stand-alone e-prescribing system is used. Even physicians receiving free e-prescribing systems may face financial costs in the areas of practice management interfaces, customization, training, maintenance, and upgrades as well as time and efficiency loss during the transition period. Large urban practices have been the sites of most successful implementations and can achieve a positive ROI in as little as 1-2 years for e-prescribing and EHR systems, but it may take longer for small practices in rural and inner city settings to achieve a ROI.

2) Change Management: It is important not to underestimate the change management challenges associated with transitioning from paper prescribing to e-prescribing. In a busy practice setting where providers and their staff are accustomed to their current management of patient prescriptions, change management is important. Furthermore, if some of the providers and staff are particularly technology averse, it can be difficult to get everyone onboard with such a dramatic change. It is difficult and time consuming for practices to figure out how to change workflow around the management of prescriptions when e-prescribing or EHR systems are introduced. The change requires adequate planning, training, support, and continuous quality improvement for effective management.

3) Workflow: New systems, particularly in the beginning, are likely to add time to tasks like creating new prescriptions or capturing preferred pharmacy information at patient intake, and this can be a barrier. Workflow changes are greater with a full EHR system as compared to stand-alone e-prescribing systems, but either way, practices often experience lost productivity during the transition while they modify the practice workflow and become adept at using the system. In addition, roles and responsibilities in the practice may change, such that activities that staff handled in the past (such as preparing a paper prescription for signature) may need to be taken on by physicians. Despite the fact that efficiencies and time savings can be gained within the practice by automating renewal authorizations, workflow change remains difficult. Practices (especially small practices) would benefit from additional resources to support them during this transition and to help them know where to turn when they encounter issues.

4) Controlled Substances: Because the DEA currently prohibits electronic transmission of prescriptions for controlled substances, both physician practices and pharmacies are forced to use different workflows to manage these prescriptions. This adds complexity to the prescribing process and is a barrier to adoption and use of e-prescribing, given that, according to AMA estimates, about 20% of all prescriptions are for controlled substances. Typically, the vendor system forces prescriptions for controlled substances to be printed. A specific type of registered paper may be required and some systems can be set up to print the prescription on printer friendly versions of this registered paper that the clinician then must manually sign. This requires either a separate dedicated printer or a specialized printer that can switch to the specialized paper on demand. The printer must also be kept in a secure area. The provider can still use his e-prescribing or EHR system to generate and document all prescriptions; however, prescriptions for controlled substances cannot be transmitted electronically. In the summer of 2008, the DEA issued a proposed rule to allow controlledsubstances to be e-prescribed, and public comments on the proposed rule were due September 25, 2008.

5) State Regulatory Restrictions: Although all states allow electronic prescribing, there remain some regulatory restrictions to be resolved. An example is the requirement by Medicaid in New York State to have "dispense as written (DAW)" in a handwritten form. There are many ongoing efforts in place to resolve these issues.

6) Hardware and Software Selection: Choosing the right software and hardware and supporting it after installation can be a daunting task for some physician practices, especially small practices that are extremely busy, experiencing declining reimbursements, and lack expert information technology staff. Some struggle with how to get started, vendor selection, negotiation, implementation and long term support. Section II of this guide will help you decide what kind of system will best fit your practice, and how to go about selecting and deploying the system you choose.

7) Limitations on E-Prescribing System Remote Access: There is often no easy remote access options. In rural areas there may not be many options for consistent remote access services due to cell phone gaps for digital service and limitations of broadband Internet service.

8) Pharmacy, Payer/PBM and Mail Order Connectivity: Not all pharmacies are connected to SureScripts-RxHub—about 3% of chain pharmacies have yet to be connected and approximately 73% of independent pharmacies are not connected even though the vast majority of them are using certified software. Some pharmacies who already have e-prescribing capabilities may be unwilling to "switch on" e-prescribing capability until there is a sufficient number of e-prescribers in their area, because they do not want to pay a fee for each prescription received electronically. Not all payers/PBMs are connected to deliver formulary, eligibility, or medication history information, and not all mail-order pharmacies are electronically connected. Few Medicaid systems participate. While the majority of payers and PBMs are connected (representing about 200 million lives), if the formulary, eligibility, or medication history information is not comprehensive enough, prescribers may choose not to look at the data because they do not have confidence in its accuracy or completeness. Lastly, e-prescribing in rural areas can be more difficult if there is a lack of broadband Internet access.

9) Medication History and Medication Reconciliation: E-prescribing can help provide information to prescribers at the point of care on what medications their patients are taking, and have taken in the past. However, it is difficult to place absolute confidence in the completeness and currency of this information, since medication histories must be reconciled from multiple sources. Prescribers should always consult with their patients about what medications they are taking to validate the medication history information that is available through e-prescribing and update the records accordingly.

10) Medical History Information: Not all stand-alone e-prescribing systems include other patient medical history information (such as a problems list), which could impact a prescriber's medication decisions. This type of information would be included in an EHR system with e-prescribing.

11) Prescribing from Multiple Office Sites: It is important for an e-prescribing system to be able to accommodate the handling of prescriptions when the prescriber uses multiple office sites, since there are often different prescriber registration numbers, passwords, etc. that are site specific. In addition, it is important to be able to view and manage patient records from one site while working elsewhere. This functionality is not always available in all systems.

12) Small/Rural Practice Challenges: The above challenges generally apply to most practice types, but some challenges are magnified for small or rural practices. Rural practices face a particular set of challenges in e-prescribing, including lack of access to broadband connectivity and to skilled information technology professionals who can help them with hardware selection and maintenance. As a result of these many challenges, the ROI for these practices takes much longer.

13) Patient Acceptance/Usage Issues: Some patients may not feel comfortable with electronic prescriptions and demand their clinician provide a paper prescription. Also, patients who travel frequently, or are otherwise away from home for extended periods may feel more comfortable having a written prescription to take with them.

The Electronic Prescribing Landscape Today

Of the 1.47 billion new and renewal prescriptions eligible for electronic routing, only about 2% or 35 million were transmitted electronically in 2007, with 35,000 clinicians using this technology. These figures are projected to nearly triple in 2008, with e-prescriptions rising to 100 million, and the number of e-prescribers increasing to 85,000, or about 14% of office-based prescribers.

E-prescribing systems are securely linked to the major health plans, pharmacy benefit managers, and pharmacies via the SureScripts-RxHub network. The SureScripts-RxHub network allows prescribers to retrieve patient information like medication history, eligibility, and formulary information and transmit prescriptions in a secure, real-time manner to the pharmacy of the patient's choice. The availability of this information at the point of care accounts for 70% of the safety and value associated with e-prescribing, according to a 2007 Gorman Group study (this report can be found at http://pcmanet.org/assets/pdf/GHG-PCMA%20Options%20to%20Increase%20E-prescribing%20in%20Medicare%20July%2007%20FINAL.pdf). As noted above, pharmacy connectivity for e-prescribing is approaching 100% for chain pharmacies, but lags for independent pharmacies, where only 23% are connected for e-prescribing capability.

Financial and Other Support for Adopting and Using E-Prescribing

Beginning January 1, 2009, Medicare will offer physician payment incentives of up to 2% for using e-prescribing in 2009 and 2010, with this amount declining slightly over the next three years. Payments for 2009 will be received by practices in 2010. This bonus is in addition to the separate 2% bonus which can be earned under Medicare's Physician Quality Reporting Initiative (http://www.cms.hhs.gov/pqri). Those physicians who do not adopt e-prescribing for Medicare by 2012, will start seeing their Medicare payments incrementally reduced, up to 2% annually beginning in 2014.

At the federal level, regulations released in 2006 now allow free donation of e-prescribing hardware, software, and related services to prescribers by hospitals (to members of their medical staff), by a group practice (to their physician members), and by Medicare Advantage and Medicare Part D Prescription Drug Plans. To learn more about Stark and Anti-Kickback statute compliant donations of software and hardware, read the AMA's physician guide for HIT donations, which you can download at: http://www.ama-assn.org/ama1/pub/upload/mm/472/hitdonate_physicians.pdf.

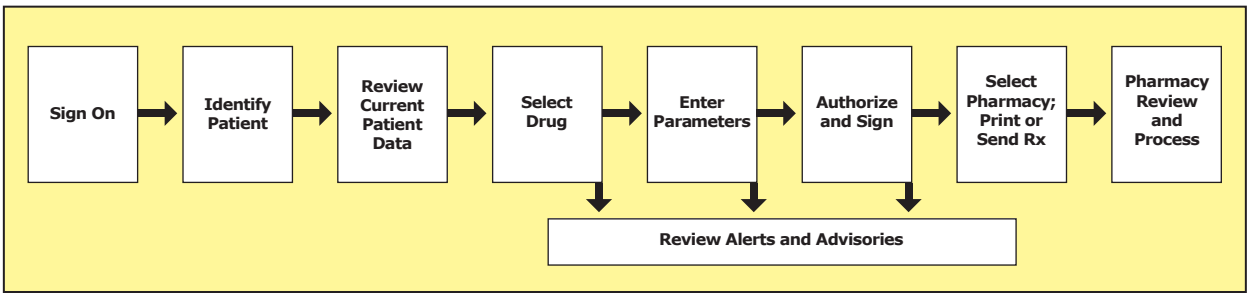
All 50 states and Washington, D.C., have cleared the path for e-prescribing—all have laws in place allowing their physicians and pharmacists to electronically exchange prescriptions and prescription information (with the exception of controlled substances). In addition, the Centers for Medicare and Medicaid Services (CMS) has provided over $100 million in Medicaid Transformation grants which are helping Medicaid programs connect to deliver formulary and pharmacy benefits information through e-prescribing and helping to encourage prescribers to adopt e-prescribing.

There are a number of national and state initiatives which are offering clinicians support for implementing e-prescribing and EHR systems. See Appendix II for more information on these programs, many of which include incentives for e-prescribing and/or EHR system adoption.

How E-Prescribing Works

Creating and managing prescriptions electronically in your practice involves several steps, as illustrated in the process map below.

Process for Creating and Managing a Prescription Electronically



Signing On

A user of the system—clinician or staff—signs in by performing some sort of authentication to prove his or her identity. Typical authentication is by username and password, although other technologies such as random-number cards (SecureID™), digital certificates, or fingerprint readers are used as well. Once authenticated, the system should know the user's role and authorization level to use the prescribing system. Different types of clinicians and office staff may have different legal permissions to enter, review, or modify prescriptions.

Identifying the Patient

First, the clinician or staff identifies the patient record within the e-prescribing system. Patient records can be identified by typing in identifying information (first name, last name, date of birth, zip code) to the e-prescribing system. If the e-prescribing system is connected to the registration system, the e-prescribing system can recognize all patient records matching the day's schedule, providing a quick, simple way of accessing relevant patient records.

Selecting the Drug, Entering Parameters, Signing, Sending or Printing the Prescription

The next steps in the process correspond to reviewing the medical history, entering, and editing a prescription. E-prescribing systems should allow clinicians to perform the following functions:

1) Review patients' current medication list and medication history information:

- Update medication history
- Correct medication history
- Reconcile with multiple history sources

2) Work with an existing medication:

- View details of a medication
- Discontinue or remove a medication
- Change dose, etc., for a medication
- Renew one or more medications

3) Prescribe or add new medication:

- Search for a medication
  - From quick choices/favorites
  - By name (generic or trade)
  - By indication
  - By formulary
- Display medications with prefilled, known, favorite, or standard dosing
- Select medication
- Review warnings
- Enter SIG and other parameters
- Automatically populate and update favorites list of drugs with prefilled known dosing based on frequency of utilization by clinician

4) Complete the prescription and authorize (electronically sign)

- One item
- Multiple items
- Items created by ancillary staff, residents, or others

5) Transmit prescriptions

- Choose print, fax, transmit options in real-time or batch mode
- Print formats and prescription information, conforming to state regulations
- Handle restrictions on certain medications (e.g., class II controlled substances cannot presently be e-prescribed)
- Ensure prescription is sent to preferred patient pharmacy (identified by practice staff prior to interaction with prescriber)

SECTION II: MOVING TOWARD E-PRESCRIBING ADOPTION: WHAT YOU NEED TO KNOW AND DO TO BECOME A SUCCESSFUL E-PRESCRIBING PRACTICE

Step 1 - Assessing Your Practice Readiness

The first step when considering any technology implementation is to determine whether your practice is ready for the changes ahead. In order to be successful, your practice must agree that improvements can be made and be willing to make the necessary changes to achieve those improvements. Remember, technology is not a panacea. Information technology is simply a tool that can enable your practice to manage and access information. However, without changes in the way you work, the benefits of technology will be limited. Below are a number of considerations that will help you determine if your practice is ready for change.

Key Considerations:

Planning

- Are your practice staff and leadership open to change? Have they been willing in the past to make or accept changes to they way they work? Do they actively seek opportunities for process improvements, or have they consistently resisted change?

- Has your practice endured unsuccessful technology implementations or workflow changes in the past? If so, you should determine why those projects did not succeed. Was the practice staff engaged in the project? Was there poor communication about the project or a lack of buy-in? If your practice has a history of unsuccessful projects, particularly technology-related projects, you must first take a critical look at why those projects failed in order to avoid repeating the same mistakes.

- Are there other major projects on which your practice is currently focused? For a successful e-prescribing implementation to occur, your practice staff and leadership will need to focus on necessary decisions and changes. This means allocating extra time for planning, system selection, training, workflow integration, and implementation. If there are other major projects currently underway that will minimize the amount of time and attention your practice can spend on e-prescribing, you should consider delaying it until other initiatives have been completed.

- Do your practice leadership and staff agree that e-prescribing can lead to clinical or operational improvements? Do they have a positive or negative view of e-prescribing, or do they have any opinion at all? If the most influential members of your practice have a negative view of e-prescribing, the likelihood of success will be very low.

- Have you discussed and planned for known e-prescribing challenges such as cost; change management considerations; workflow changes; handling prescriptions for controlled substances until they are eligible for electronic submission; connectivity issues with the Internet, pharmacies, payers, PBMs, mail-order pharmacies; appropriate hardware and software selection and support services; and availability of medication history information? These challenges generally apply to most practice types, and some challenges are magnified for small or rural practices.

Communication

- Does your practice have a culture of open, honest communication? Does your practice staff feel comfortable expressing their opinions and views to leadership? When views are expressed, are they received in a constructive and respected manner? Implementing e-prescribing will impact a number of people within the practice, and it will be critical throughout the project to get their ideas and feedback.

- In the past, have decisions been effectively communicated to the practice? Are those decisions carried out by the entire practice or disregarded by some? E-prescribing implementation will require process change and standardization. If your practice has not carried out decisions made in the past, there is a risk that you will not realize the benefits of e-prescribing.

Frequently Asked Questions:

1. **Are there other tools that will help me determine my practice readiness?** There are a number of tools available that allow you to assess your practice readiness. The American Medical Association provides a readiness assessment tool (http://www.ama-assn.org/ama1/pub/upload/mm/472/hitdonate_physicians.pdf). Texas Medical Association also offers an assessment tool (http://www.texmed.org/uploaded Files/Practice_Management/Computers_And_Software/Are%20you%20ready%20for%20an%20EMR.doc).

2. **I am not sure if I can determine my practice readiness unless I know more about e-prescribing. Where can I find more information about what e-prescribing is and what changes it might require?** Earlier this summer the eHealth Initiative and the Center for Improving Medication Management released a comprehensive report on e-prescribing. The report describes what e-prescribing is, why it is important and the major e-prescribing initiatives. To access the report go to: http://www.ehealthinitiative.org/assets Documents/eHI_CIMM_ePrescribing_Report_6-10-08_FINAL.pdf.

3. **What should I do next if my practice is not ready?** If after reading this guide you determine your practice is not ready to successfully implement e-prescribing you should focus first on fixing those areas of concern. These issues are not insurmountable, but they will take time and effort to correct.

Additional Resources:

- **Readiness Assessment** – www.getRxconnected.com
- **Readiness Assessment, American Medical Association** - http://www. ama-assn.org/ama1/pub/upload/mm/472/hitdonate_physicians.pdf. (p. 13-15)
- **Readiness Assessment, Texas Medical Association** - http://www.texmed.org/uploadedFiles/Practice_Management/Computers_And_Software/Are%20you%20ready%20for%20an%20EMR.doc.
- **E-prescribing book** - *Electronic Prescribing for the Medical Practice: Everything You Wanted to Know But Were Afraid to Ask.* To find this book, go to http://marketplace.himss.org/acct618b/Default.aspx?tabid=57.

Step 2 - Defining Your Practice Needs

The second step when considering e-prescribing is to determine what improvements your practice hopes to gain with the use of e-prescribing technology. The benefits of e-prescribing were described in Section I of this guide, but in order to realize those benefits your practice must clearly define what your specific needs are and how e-prescribing will address those needs. If you are unclear about either of those points – what your practice needs or how e-prescribing can help – it will be very difficult to choose an appropriate project team, evaluate systems or measure whether the implementation has been successful.

Key Considerations:

Planning

- Set a clear vision for what you hope to accomplish through e-prescribing. Once you have established a vision, identify specific objectives your practice is trying to achieve with the use of e-prescribing. Your vision and related objectives should be grounded in realistic expectations with achievable, measurable results.
- Identify a project team. The project team will play an important role in adapting practice workflow to ensure that the benefits of e-prescribing are fully achieved. Therefore, the project team must be very knowledgeable about your practice's prescribing workflows and have experience in different aspects of the prescribing process. Each member of the project team should have specific roles and responsibilities so they are invested in the project.

In a small practice the project team may be the entire practice staff. While your processes and structures may not be formalized, the activities are the same.

- Choose a project leader. The project leader should be extremely knowledgeable about the practice, well respected by team members, able to facilitate decision making and skilled at conflict resolution. The project leader will also assist prescribers and practice staff as they learn the new technology and workflow and help overcome barriers to adoption as they are encountered. It is not necessary that a physician serve as project leader, but if the project leader is a non-physician, it is recommended that a physician champion be identified. The physician champion would work closely with the project manager to address any unresolved conflicts and maintain the commitment of his or her peers to the success of the project.

- Plan for known e-prescribing challenges. There are general challenges that apply to most practices. Early planning for issues related to cost, change management, workflow, controlled substances, pharmacy/payer/PBM/mail-order pharmacy connectivity, hardware and software selection, and medication history and reconciliation will likely help your practice make a better decision and save time and money.

Workflow and Change Management

- Make a list of your practice's specific medication management needs. For example, do your prescribers want easy access to more complete medication lists for your patients or more robust safety checks? Do you want to reduce faxes from pharmacies for renewal requests? Do you want to understand prescription patterns or easily find patients taking a specific medication? Brainstorm with prescribers and other practice staff to determine the most significant inefficiencies and safety concerns.

- Prioritize your practice needs. When choosing an e-prescribing system your practice will have to make certain trade-offs. By prioritizing your needs before you evaluate e-prescribing systems, you will have a good idea of what features are most important to you. Needs may be prioritized by the number of staff effected, severity of risk, financial impact or effect on clinical care. When you are ready to evaluate e-prescribing systems, start with your prioritized list of needs. By comparing your needs to the features and functionalities offered by the e-prescribing system you will be able to identify the best match for your practice.

See Appendix I for a list of common features and functions practices look for in an e-prescribing system. Use the priority column to indicate those features that are most important to your practice.

- Think through how your processes and workflow will change with e-prescribing. Map out your current prescribing workflows and then define how those workflows may change with e-prescribing. Be as detailed as possible as this will help you better understand where breakdowns occur and how you expect e-prescribing will eliminate those breakdowns.

Technology

- In addition to your clinical and operational needs, you will also have technical needs. Again, rather than thinking in terms of what a system can do, think first about what you need. Do your prescribers need to be able to carry a device with them for easy access to clinical information, or do you simply need computers in the exam rooms? Do prescribers need to be able to access the system from outside the office (e.g., at home, while at another clinic, etc.)? Do you want data from your practice management system to populate the e-prescribing system?

- You should also consider your hardware and network needs. Is your network connection fast enough for prescribers to regularly use? Will you need a high-speed Internet connection in your office? Will you need additional computer stations, printers or a wireless network?

- Is there someone in your office currently responsible for the maintenance of information technology systems? If not, do you need someone, or will you relyon the e-prescribing vendor for ongoing support.

Communication

- Clearly describe the vision and objectives to the entire practice. Describe how they will be involved in the project, especially how their input will be collected. Be willing and ready to answer their questions in a direct, open manner.

- Involve all parts of the practice when defining needs. Each area of the practice will likely be impacted by a change to the prescribing process. Be sure you have communicated with each area to understand their particular needs, and highlight any dependencies (e.g., a change in one area's workflow impacts another area).

Frequently Asked Questions:

1. **What are the attributes of a successful practice leader?** Instilling and creating prescriber and staff behavioral change in a medical practice is difficult. It is extremely helpful when a respected physician, other clinician or practice administrator steps up as a champion and educates his or her fellow colleagues. An e-prescribing practice leader should possess the following qualities: 1) be a willing innovator, 2) somewhat technology savvy, 3) active, high volume e-prescriber, 4) strong e-prescribing advocate, 5) comfortable serving as leader and facilitator amongst his or her peers and 6) dedicated to committing time on a weekly basis for physician and staff training.

2. **What are the key considerations when redesigning my prescribing process for e-prescribing?** The following issues should be discussed at this stage. Although you might not have a final strategy for each issue at this time, you should consider strategies for each:
   - How to define the role of the front desk, medical assistants, and prescribers in a redesigned prescribing process
   - How to effectively implement prescriber preferences in the system
   - How to provide appropriate hardware based on the prescribing roles and responsibilities of the practice
   - How to communicate with patients about electronic prescribing
   - How to maintain and monitor error logs
   - How to monitor electronic renewal requests from the pharmacy
   - How to best engage with local pharmacies in mutual problem solving

3. **What is the basic technology I need to begin e-prescribing?** Office configurations will vary depending on the e-prescribing system chosen. However, regardless of the e-prescribing system, practices must have a good Internet connection (preferably high speed) and desktop, laptop or tablets computers, hand-held PDAs, or a combination. If PDAs or tablets will be the primary technology used by prescribers, setting up a wireless network is recommended.

4. **What if my practice's needs go beyond improving the prescribing process?** Some practices decide that the prescribing process is too dependent on other clinical information to isolate. If that is the case, you should consider implementing an EHR system with e-prescribing capability. Most EHR systems have e-prescribing capability and provide more functionality than stand-alone e-prescribing systems. But EHR systems are more expensive and disruptive to the practice. Again, you have to decide what your practice is ready for and what operational and clinical needs you want to address.

Additional Resources:

- **E-prescribing case studies -** www.surescripts.com/physician/peer.aspx
- **E-prescribing information for consumers** - www.learnabouteprescriptions.com

Step 3 - Understanding Costs and Financing Options

The next step is to understand what the upfront and post-implementation costs are for e-prescribing systems and alternative financing options that might be available to your practice. There are an increasing number of federal, state, and private sources of financial aid for physicians to help encourage e-prescribing adoption.

As mentioned in Section I, federal level regulations released in 2006 now allow e-prescribing hardware and software to be donated free of charge by health insurers, hospitals, group practices and other eligible donors. Congress has also signaled its strong support of e-prescribing by providing incentives for physicians using e-prescribing. The legislation was passed in July 2008, and incentives will be available from Medicare beginning in 2009 and ending in 2013. The incentive payment will be a 2% bonus of your normal Medicare fee schedule payments. Those practices not e-prescribing by 2012 will see a reduction in Medicare payments.

For more information on the relaxation of Stark and Anti-Kickback, go to www.ama-assn.org/go/hit.

For more information on the Medicare e-prescribing program, go to www.cms.hhs.gov/eprescribing.

Key Considerations:

Planning

- Identify a member(s) of the project team to research the costs and potential subsidies or reimbursement programs available to your practice. Contact the health plans in your area to inquire about initiatives they may sponsor or pay-for-performance programs that help practices acquire e-prescribing systems.

- Identify any existing national and state initiatives for which the practice may qualify. Many organizations – including state governments, payer organizations, medical associations and e-prescribing vendors – have developed special programs to encourage prescribers to adopt e-prescribing technology. A list of some of those programs can be found in Appendix II.

- Calculate your practice's projected reimbursement under the new Medicare incentive legislation and research pay-for-performance programs for which your practice is eligible to participate.

Technology

- If you are considering both stand-alone e-prescribing systems and EHR systems, document price differences between a stand-alone e-prescribing system and an EHR system with e-prescribing functionality. Include all hardware (desktop, laptop, PDA, servers, printers), software, interfaces and networking costs (i.e., Internet connectivity, wireless network, integrating practice management system with e-prescribing or EHR). Also include in the costs for a stand-alone system, the projected costs and implementation challenges of later moving to an EHR system (i.e., data transfer, technical infrastructure changes).

Frequently Asked Questions:

1. **How much does e-prescribing cost?** Costs vary depending on which kind of hardware and software (EHR system versus a stand-alone e-prescribing system) a practice chooses. Stand-alone e-prescribing applications range from free to approximately $2,500 per year per prescriber. Be sure to look for local or state initiatives that subsidize the cost of e-prescribing systems. There may be additional fees to integrate patient demographic information from your practice management system into the e-prescribing application; however, the alternative means you will need to enter each patient into the system as you prescribe for them, which can be time consuming and may be a barrier to using the system.

   As mentioned in Section I, EHR systems offer more comprehensive functionalities, but are more costly, complex and time consuming to implement. According to the Congressional Budget Office, office-based EHR systems are about $25,000 to $45,000 per physician. Estimated annual costs to operate and maintain an EHR system (e.g., software licensing fees, technical support, and updating and replacing used equipment), range from $3,000 to $9,000 per physician per year. Be sure to ask vendors specific questions about any incremental fees related to e-prescribing functionality as well as training.

   These figures do not include initial costs for the hardware required to support either an e-prescribing or EHR system, temporary decreases in productivity resulting from training or workflow redesign, practice management interfaces, customization, maintenance, upgrades, or data conversation. Whether you choose a stand-alone e-prescribing application or an EHR system with integrated e-prescribing, cost is only one part of the equation. You should compare the cost – both direct and indirect, start-up and ongoing – with the expected benefits – such as improved efficiency and productivity, decreased administrative expenses and staff utilization – to fully understand the value of e-prescribing to your practice.

2. **Are there transaction fees for e-prescribing?** Pharmacies pay transaction fees based on the number of electronic prescriptions and electronic prescription renewals received, and payers/PBMs pay transaction fees to deliver formulary and pharmacy benefits information. The only time your practice would incur transaction fees for e-prescribing is if the vendor you select charges your practice a transaction fee. Most vendors do not charge practices a transaction fee, but be sure to ask your potential vendors about this during system selection.

3. **Are there subsidy programs available to help with e-prescribing costs?** Yes. There are a number of e-prescribing and EHR initiatives available at the national and state level. Information about some of these programs is provided in Appendix II.

4. **Does e-prescribing cost patients more money?** Patients pay the same amount in the same way for electronic prescriptions as they do for traditional paper ones. With e-prescribing, however, prescribers will likely have information about the patient's formulary at the time of prescribing, which may allow prescribers to prescribe a medication with a lower co-pay or cost to the patient if paying out of pocket.

Additional Resources:

- **Certification Commission on Health Information Technology Incentive Index -** http://ehrdecisions.com/incentive-programs/

Step 4 - Selecting a System

There are many e-prescribing systems to choose from and evaluating them may seem daunting. However, by this point you have identified your practice needs and understand associated costs. By comparing your practice needs with key e-prescribing system capabilities and integration features, your practice is more likely to choose an e-prescribing system that will be a success. Use the Buyer's Guide checklist in Appendix I when comparing different vendor offerings.

Key Considerations:

Planning

- Involve the entire project team in system selection. Define specific evaluation criteria so that multiple products can be easily compared. Facilitate open discussion among team members about the pros and cons of each product and their rationale for scoring. If you are concerned that some members of the evaluation team will not feel comfortable openly sharing their perspectives, the scorecards can be confidential and known only to the project leader.

- Develop your own test scripts or scenarios reflecting your practice's common workflows, and ask each vendor to demonstrate how their product would work in those scenarios. This will show how the systems would be used in your practice environment and focus the vendor on what features and functions are most important to you. It will also allow you to compare features and usability across systems.

- Contact other practices in your area that currently use the products you are evaluating. Ask what unexpected challenges they have faced, how responsive the vendor has been, and why they chose that product.

Workflow and Change Management

- Evaluate usability features of each software vendor such as:
  - Minimal keystrokes to write, renew, and send prescriptions
  - Easy patient lookup process
  - Connection with current patient management systems to integrate patient demographics into the e-prescribing application quickly and easily
  - Access to medication history information—with multiple history sources reconciled to a single view
  - Ability to renew multiple prescriptions for a patient at once
  - Favorite medication list feature
  - Easy medication search (including trade names)
  - Pre-filled default fields
  - Ability to do complex SIGs through templates (like sliding scales, tapers, etc.)
  - Ability to order supplies like syringes
  - Incorporation of alternative and non-prescribed medications in the medication list
  - Clinical decision support warnings such as drug-drug and drug-allergy alerts that are advised but not forced. Drug-lab, drug-problem checking are also desirable functions.
  - Inclusion of reasons for prescribing (match to problem list or diagnosis)
  - Easy signing and cosigning
  - Easy pharmacy selection
  - Easy and most efficient output
  - Ability to receive delivery confirmation or failure notice once prescription reaches pharmacy
  - Ability to handle callbacks/renewal requests (from patient or pharmacy)

- Make sure you clearly understand what training is offered by the vendor. Will the training be on-site? How many days will it be? Will the training be hands on and will you be able to ask the trainer questions? Will there be follow up training sessions or will your practice have access to the trainer over the first few months of implementation? Will you be able to schedule training during non-business hours? Your staff will not be able to learn all the features of the system in one session, so be sure that the training plan is sufficient. Be sure to ask specifically about training costs.

Technology

- Ensure that the hardware (desktop, laptop, PDA) required by the system supports your practice's desired workflow. Determine that devices are both efficient and secure. They must allow rapid synchronization to other electronic systems in the office, as well as communication with printers and other devices or networks.

- Select Internet connectivity with a redundant Internet connection backup in place. Be sure access is available wherever you hope to use the system, including other office sites, at home, at the hospital, etc.

Frequently Asked Questions:

1. **Is there a certification system for e-prescribing systems?** Yes. E-prescribing applications and EHR systems with e-prescribing are certified by SureScripts-Rx Hub – the infrastructure that technology vendors, pharmacies, and payers/PBMs connect to in order to exchange medication information electronically according to industry standards. The current certification is based on compliance with industry standards, specifically the NCPDP Script Standard. A complete list of SureScripts-RxHub certified products can be found at http://www.surescripts.com/certified. This list shows the functionality and connectivity of e-prescribing systems. If your practice is looking for an EHR system with integrated e-prescribing functionality, the Certification Commission for Heath Information Technology (CCHIT) certifies EHR systems based on a large number of functional criteria, including e-prescribing capability. CCHIT has plans underway to certify e-prescribing systems. For more information on CCHIT, go to www.cchit.org.

2. **Are there specific questions I should ask a potential e-prescribing system vendor?** Yes, ask questions such as: 1) What is the cost? 2) What do I need to purchase? 3) What are the monthly maintenance fees? 4) What type of training is provided? 5) Will your system be able to access demographic information from my practice management system? 6) Does your system allow you to manage both new prescriptions and renewal authorizations electronically? 7) What is the support process, and how long does it typically take for issues to be addressed? For a complete Buyer's Guide, see Appendix I.

Additional Resources:

- **Vendor features list –** www.surescripts.com/certified
- **E-prescribing selection assessment tool –** www.himss.org/content/files/App_C.pdf
- **E-prescribing book -** *Electronic Prescribing for the Medical Practice: Everything You Wanted to Know But Were Afraid to Ask.* To find this book, go to http://marketplace.himss.org/acct618b/Default.aspx?tabid=57.

Step 5 - Deployment

The final step is deployment. Implementing e-prescribing and ensuring the system's proper use will require commitment and effort. It will take time to adapt to new workflows and to use the system effectively. The following questions and checklist are intended to help your practice through the early stages of deployment and minimize productivity loss.

Key Considerations:

Planning

- Commit staff time during implementation for training and workflow integration. You may want to decrease the patient load for the first few days of implementation to ensure that staff has time to work with the new system.

- Ensure that all affected members of the practice receive appropriate training. On-site training is most effective as it allows users to learn the system in their working environment. In preparation for training, think about specific questions that may not be covered. Sample questions may include:
  - How do I search for certain medications within my database?
  - What do I do when I do not find a particular medication in the database?
  - Can I create customized SIGs?
  - How do I handle pediatric dosing and SIGs?
  - How do I write prescriptions for medical supplies?
  - How do I write for tapering dose SIGs or write prescriptions that have SIGs that don't fit in the designated SIG section?
  - What do I do when I want to write a prescription for a compound medication?
  - Why can't I find this particular pharmacy in my system?
  - Why do I get this error when I write this particular prescription?
  - How can I write a prescription from the patient prescription history screen?

- Pace yourself. Do not attempt to learn everything at once. It is difficult to learn the all the details of the system in one training session. An incremental approach to training over several days works better. It is also a good idea to schedule a few additional training sessions with your trainer over the next few months. You will have many more questions after you have gained practical experience with the system.

- Ask your vendor if they provide access to such learning material as webinars, online tutorials or implementation guides, and make full use of all available resources to maximize your e-prescribing experience.

Full EHR system implementation requires significant practice buy-in, funding and technological readiness, in addition to more workflow change than is necessary for a stand-alone e-prescribing system installation. Smaller practices may find the latter an easier first step in automating their practice.

Technology

- Keep your software vendor informed about any problems. The project leader, or a designee, should be in contact with your vendor on a regular basis to fix any technical problems or usability issues. By keeping your vendor aware of issues that arise, you ensure that problems can be fixed quickly and help eliminate future issues before they occur. Be sure that everyone who uses the e-prescribing system in the practice is aware of and follows the support process provided by the vendor.

- Log support cases with the technology provider. If the issue is related to a pharmacy or network issue rather than an application issue, the technology provider should notify SureScripts-RxHub for resolution. Common issues that should be reported include when a practice is informed by a pharmacist or patient that their prescription or prescription renewal is not there (commonly referred to as a mishandled prescription); and faxed renewals from pharmacies that are electronically enabled. It is important to report adequate detail on these issues and contact your vendor immediately.

- Set default routing to electronically send prescriptions to the pharmacy rather than faxing them. Systems that provide the option for prescribers to decide whether to fax, print, or electronically send prescriptions tend to result in under use of electronic transmission. However, clinicians should always have the ability to print the prescription or a receipt of the prescription order for the patient.

- Utilize electronic prescription renewal functionality as this increases efficiency and improves patient service when they are able to get their prescriptions renewed more quickly. Electronic renewals can also encourage more staff involvement in the prescribing process and lead to stronger commitment to e-prescribing. Automating the process to authorize prescription renewals as part of e-prescribing is a key benefit for the practice and a key driver of utilization. Instructing patients to request refills through their pharmacy instead of calling the physician office can decrease phone calls to the office and increase the efficiency of handling the requests when they come electronically directly from the pharmacy.

- Integrate patient demographic information from the practice management system in advance of e-prescribing implementation. Not having the practice patient demo graphic information loaded in the e-prescribing application system during a patient visit can be a major source of dissatisfaction for both prescribers and practice staff. Also be sure that the system you plan to implement can update new patients and changes in demographic information from your practice management system regularly.

- Designate a prescriber or staff person to retrieve and manage responses for renewal authorization requests that are sent electronically from pharmacies. This person can help to successfully implement the electronic renewal process by checking your prescribing system each day, or several times a day, for electronic requests. Consider distributing patient educational materials on e-prescribing that instruct them to contact their pharmacy first for refill requests or displaying signage in the office to remind patients of the best process.

- Make sure you know how to select your patient's pharmacy of choice using your e-prescribing application. You should be familiar with how to select both the name and location of your patient's pharmacy of choice and how pharmacy information is displayed and updated in your prescribing application. Once you start using your application, make it a practice to ask your patients to select or confirm their pharmacy of choice when they check in for their visit. You or your staff can then add the pharmacies' names to the patients' electronic records and speed the process of preparing their prescriptions using your e-prescribing application. As an added step, you may wish to build a "favorites" list of pharmacies within your application, using your patients' favorite locations, for quick selection during the check-in process.

- Respond to electronic renewal requests as soon as possible, and always within 24 hours on business days. If pharmacies do not see a response within that time frame, they may send duplicate renewal authorization requests. This may also happen if the patient is waiting in the pharmacy to pick up a renewed prescription that has not yet been authorized. It helps to designate someone to manage the electronic refill response process.

- Avoid queuing or "batching" prescriptions before sending them to pharmacies electronically. Sending prescriptions to pharmacies as soon as possible after they are prepared ensures that the pharmacy has adequate time to receive the prescription before a patient arrives to pick it up. Otherwise, the practice may receive unnecessary calls from pharmacies asking where the prescription is, further delaying the patient's receipt of the medication.

- Follow DEA regulations by refraining from electronic transmission of prescriptions for controlled substances until these regulations are changed to allow electronic transmission. Prescriptions for Schedule II drugs can never be sent electronically. Hand-signed hard copies of prescriptions for Schedule III through V drugs can be sent using manual fax. Neither computer-generated faxes containing electronic signatures nor totally electronic prescriptions for controlled substances can be sent to pharmacies at this time.

Communications

- Inform local pharmacies that you are getting ready to exchange prescription information electronically. When your e-prescribing application is set up at your practice, your vendor should inform pharmacies in your area that you will be prescribing electronically. Your ongoing use of your prescribing application will then reinforce this notice and will allow pharmacies to start sending refill requests to your prescribing application—if you are set up to manage these requests electronically.

  Independent pharmacies, especially, do appreciate hearing directly from practices and clinics that are planning to e-prescribe. This can also help encourage those who are not yet able to manage e-prescriptions to get connected. A letter template has been developed to help you make this announcement, which can be downloaded at: http://www.rxsuccess.com/files/pdf/MD%20to%20Pharmacy%20Outreach%200508.pdf.

- Communicate with patients about electronic prescribing and its benefits and remind them to call the pharmacy rather than the practice when they need their prescriptions renewed.

Frequently Asked Questions:

1. **How do I know which local pharmacies accept electronic prescriptions?** A quick resource to find this information is www.rxsuccess.com. Simply click on the "Find your connected pharmacy" tab to find the list of pharmacies in your state or zip code that are enabled to receive electronic prescriptions and send electronic renewal requests to your practice. You still should contact the pharmacies in your area directly to notify them when your practice will be e-prescribing and confirm that they have actually started using e-prescribing and are prepared to accept the prescriptions.

2. **How will I know if pharmacies are properly loaded in my system?** It is best to provide your vendor with a comprehensive list of pharmacies that your patients frequently use. The vendor can then match this list with the pharmacy records from the Pharmacy Health Information Exchange while loading pharmacy information in your application. This will help ensure that your frequently used pharmacies are appropriately matched to the master pharmacy file from the beginning and thus enabled for electronic prescriptions. If your practice application allows you to create customized pharmacy records (customized name, address or phone and fax number) then it is also important to ensure that the application system matches such records with the master pharmacy list provided by the Pharmacy Health Information Exchange.

3. **How can I prepare for training?** Personalized one-on-one training using a variety of common scenarios seems to work best for most prescribers. It is important to ask detailed questions during your training sessions, including:

   – What happens if the patient is not matched in the system when a pharmacy sends a renewal requests?

   – Can I cover for my colleagues when they are on leave and under whose name will the prescriptions be sent to the pharmacy?

   – How does the system handle controlled substance prescriptions and pharmacy renewal requests for controlled substances?

   – How do I write prescriptions to the pharmacy when a patient calls in a request via phone?

   – How do I know whether the prescription was successfully sent to the pharmacy?

   – How do I handle mail order prescription writing?

   – How do I create my favorite medication list?

   – How do I search pharmacies within the practice database?

4. **May I work offline using my e-prescribing system?** Some e-prescribing programs allow access offline, which would enable prescribers to prepare multiple scripts and then transmit then when they have Internet access again. However, queuing or "batching" prescriptions before sending them to pharmacies electronically is not recommended. Sending prescriptions to pharmacies as soon as possible after they are prepared ensures that the pharmacy has adequate time to receive the prescription before a patient arrives to pick it up.

5. **Will the pharmacy send me electronic renewal requests?** Pharmacies will start sending e-refills once individual prescribers send five new prescriptions electronically via the Pharmacy Health Information Exchange. This is to help ensure that your practice has been trained on your e-prescribing or EHR system and is ready to receive and respond to refill requests electronically.

6. **Can I e-prescribe controlled substances?** Prescriptions for Schedule II drugs can never be sent electronically or by fax. Hand-signed hard copies of prescriptions for Schedule III through V drugs can be sent using manual fax technologies. Neither computer-generated faxes containing electronic signatures nor totally electronic prescriptions for controlled substances can be sent to pharmacies at this time. Some pharmacies will continue to send refill requests for controlled substances by fax.

7. **How do I communicate e-prescribing to my patients?** Communicating with patients regarding e-prescribing and its benefits and implications is important. Some patients may express initial reluctance in response to a new system; prescribers can make patients more comfortable by explaining how e-prescribing works and what its benefits to patients, providers, and pharmacies.

   In the initial phases it is important for you and your practice staff to educate and reinforce the benefits of e-prescribing with your patients. Talking points include:

   - **Fast** - E-prescribing allows you to electronically send prescriptions directly to the patient's choice of pharmacy. The prescription travels from your computer to the pharmacy's computer before the patient leaves the exam room, giving their prescription a "head start."
   - **Convenient** – The patient no longer has to make an additional trip to the pharmacy to drop off their prescriptions.
   - **Safe and Secure** - Prescription information is not sent over the open Internet and is not sent via an e-mail. E-prescriptions are sent electronically through a private, secure, and closed network – the Pharmacy Health Information Exchange®.
   - **Legible** – The staff in the pharmacy no longer has to spend time interpreting your handwriting.
   - **Informed** – Availability of formulary information from health plans allows choice of medications that are more affordable and e-prescribing allows drug-drug interaction checking and allergy-drug interaction checking for safer choices.

Additional Resources:

- http://www.rxsuccess.com/
- http://www.surescripts.com/SureScripts/myth-reality.aspx

APPENDIX I: BUYER'S GUIDE

Once you have decided on the type of system for your practice, you will want to start contacting system providers to find out more about their specific products. The following Buyer's Guide will help you compare the features of different systems. In order to qualify for Medicare's e-prescribing bonus that begins in 2009, be sure the system you select meets all Medicare Part D e-prescribing standards which go into effect on April 1, 2009—these standards are listed on the Centers for Medicare and Medicaid Services website at: http://www.cms.hhs.gov/eprescribing.

Electronic Prescribing System Buyer's Guide						
Category	**Feature or Function**	**Question to Ask Vendor**	**System A**	**System B**	**System C**	**Priority (High, Med., Low)**
Functionality	Refill Authorization	Will the system enable me or my staff to receive refill requests from pharmacies directly on my computer instead of by fax or phone and send back approvals or denials electronically with a few key strokes?				
	New Prescriptions	Can I send a new prescription directly to the pharmacist's computer through my PDA, Desktop, Laptop or Tablet PC instead of to their fax machine?				
	Two-way Communication	Is the system enabled for two-way electronic communications with pharmacies or just one-way fax transmission of new prescription information?				
	Reporting	Does the system include reporting capability about prescription history for the patient and practice?				
	User Tools	Does the system provide aids such as favorites-lists or chart-labels to aid system and practice workflow?				
	Drug Interaction Checking	Does the system provide alerts for drug to drug, drug to allergy and other checks for patient safety?				
	Drug Benefits Displays	Does the system display drug benefits information related to patient's drug coverage to help manage patient cost?				
	Prescription History	Does the system display prescription history from retail pharmacy and/or PBM data sources (across providers)?				
Related Functions (EHR Systems)	Modules	Does the system provide one or more related modules, such as lab results or charge capture?				
	Modular EHR	Does the vendor provide a comprehensive EHR that can be implemented in stages beginning with electronic prescribing?				

Electronic Prescribing System Buyer's Guide						
Category	**Feature or Function**	**Question to Ask Vendor**	**System A**	**System B**	**System C**	**Priority (High, Med., Low)**
Hardware Architecture	Mobile	Can the system run on a device such as a PDA, and does it provide a method of synchronization, either wirelessly or through a cradle?				
	Desktop	Does the system provide applications that run on a desktop, requiring just an internet connection, or additional software?				
	Remote Computing	Does the system provide access when prescribers are away from the office?				
Services	Initial Training	Does the vendor provide training for the physicians and staff in the use of the application? Is the training on-site or remote?				
	Ongoing Support	Does the vendor provide ongoing support and customer service to assist after implementation?				
	System Interfaces	Does the vendor provide the ability to retrieve demographic information from the billing system?				
	Updates	Does the vendor send periodic updates to the system for ongoing improvements and enhancements?				
Standards	Regulatory Compliance	Does the system satisfy all CMS Part D e-prescribing standards required as of April 1, 2009? Visit http://www.cms.hhs.gov/eprescribing/ to download the standards.				
Costs	Hardware	What are the costs of all recommended hardware including networking equipment?				
	Software and Services	What are the one-time and ongoing costs for the software and any training and interfacing services?				
	Special Offers	Are there any special offers such as free trials, rebates or discounts?				

APPENDIX II: NATIONAL AND STATE E-PRESCRIBING INITIATIVES

The below table is intended to summarize current e-prescribing initiatives. This information may change. For an updated reference of national and state incentive programs related to the adoption of EHR systems—which incorporate e-prescribing functionality—see the Certification Commission for Health Information Technology's (CCHIT) Incentive Index, available at http://ehrdecisions.com/incentive-programs/. This website also contains guidance for physicians on the adoption of EHRs for their practice.

National Initiatives

Company	Contact Info	Description
American e-Prescribing Initiative	www.rxnt.com/AMEI/enroll.asp 800-943-7968	Eligible participants include new RxNT e-prescriber groups enrolling more than 100 licensed prescribers at the same time.
AthenaHealth	www.athenahealth.com 888-652-8200	Eligible participants include existing purchasers of Athena Clinicals products.
National ePrescribing Patient Safety Initiative (NEPSI)	www.nationalerx.com	NEPSI makes secure, easy-to-use e-prescribing software available to all physicians and medication prescribers in America for free.
WellPoint	www.wellpoint.com	Provides a free Web-enabled smart phone with e-prescribing access and WellPoint corporate discounts for service fee extended to individual physicians and groups in select markets.

State Initiatives

State	Sponsor	Contact Info	Description
Arizona *Health-e Connection*	Multi-stakeholder collaborative	www.azhec.org	Providing education for providers, payers, and consumers on e-prescribing, health information technology, and health information exchange.
Alabama *InfoSolutions e-prescribing Program*	Blue Cross and Blue Shield of Alabama	www.Infosolutions.net 205-220-5900	Physicians who agree to utilize InfoSolutions as part of their participation in the Alabama Medicaid Patient 1st Program are eligible to receive $300 reimbursement toward the cost of the PDA if 1,000 patients are accessed in the first six months of use.

State	Sponsor	Contact Info	Description
California *L.A. Care Program*	Anthem Blue Cross, Blue Shield of California and Medco Health, WellPoint		The L.A. Care Program reimburses eligible physicians up to $3,000 for e-prescribing. Physicians must write a minimum of 80 electronic prescriptions per month for three consecutive months to qualify for reimbursement.
Colorado *QHN Prescription Management*	Quality of Health Network	www.Infosolutions.net 970-248-0033	Eligible participants include any Colorado prescriber.
Connecticut *Connecticut Health Information Exchange and E-Prescribing Initiative*	Aetna and Zix	Edmund Pezalla, MD www.aetna.com 860-273-0123	Aetna and Zix have expanded the e-prescribing Initiative to New York, offering hand-held devices to participating physicians.
Delaware	Blue Cross Blue Shield/DrFirst	Blue Cross Blue Shield of Delaware 302-421-3000	BCBSD's pilot program provides physicians with personal digital assistants and DrFirst's Rcopia™ software to allow them to access up to 10 years of their patients' medication histories, including active medications, allergy information and diagnosis information.
Florida *ePrescribe Florida*	Florida Medicaid, Gold Standard	www.empowerx.com/florida 1-800-375-0943 empowerx@id-health.com www.eprescribeflorida.com	Provides e-prescribing to providers through a secure Web portal and personal digital assistants. Includes claims-based prescription histories for fee-for-service beneficiaries, information about the State's Medicaid drug formulary, and a tool to alert providers about potential drug interactions. Fosters education and implementation efforts to accelerate physician adoption and cooperation among prescribing constituents.

State	Sponsor	Contact Info	Description
Idaho *The Idaho Physicians Network* *Idaho e-Prescribing Initiative*	Primary Health Inc., a Boise insurance company, DrFirst RxNT	Charles Petrock, Idaho Physicians Network cpetrock@ipnmd 208-333-1525 www.rxnt.com 800-943-7968	This pilot program is the first sponsored e-prescribing project in the state. This program offers incentives to new RxNT e-prescribers licensed in Idaho.
Illinois *Illinois e-Prescribing Collaborative* *Illinois e-Prescribing Initiative*	Blue Cross and Blue Shield of Illinois. RxNT	Blue Cross and Blue Shield of Illinois (312) 653-6000 www.rxnt.com 800-943-7968	Initial costs for e-prescribing implementation for 500 physicians will be funded. This program offers incentives to new RxNT e-prescribers licensed in Illinois.
Indiana *Indianapolis Medical Society - Preferred Physician Program*	Indianapolis Medical Society, iSALUS	www.imsonline.org or simonlee@isalushealthcare.com	Provides IMS member physicians with one year of free access to an online electronic medical records system which includes e-prescribing.
Louisiana *Louisiana e-Prescribing Initiative*	Blue Cross Blue Shield RxNT	EDI – Electronic Services Clearinghouse Support 225-291-4334 www.rxnt.com (800) 943-7968	A group of 500 Louisiana physicians will be chosen to test a new e-prescribing service designed to reduce errors and increase patient safety.
Maine *HealthInfoNet*	Anthem Blue Cross and Blue Shield of Maine	Operations Center 207-822-7000	Will equip about 500 Augusta-area physicians with e-prescribing technology that will link to the electronic medical records of their Anthem-enrolled patients.

State	Sponsor	Contact Info	Description
Massachusetts *Massachusetts eRx Collaborative*	Blue Cross Blue Shield of Mass. and Tufts Health Plan, DrFirst, ZixCorp	Contact the eRx Collaborative technology partners: DrFirst: 888-271-9898 ext 3 ZixCorp: 800-822-0675 Blue Shield of Massachusetts HMO Blue, Inc. 800-262-BLUE (2583)	Blue Cross Blue Shield of Massachusetts (BCBSMA) has developed a pay-for-performance program for participating primary care providers. Through the program, eligible e-prescribers can receive sponsorship which includes: hand-held device loaded with e-prescribing software, one year license fee and support, 6 months of Internet connectivity where applicable, deployment (including training & one time patient data download where feasible), and access to a browser version of the software from any PC with Internet connectivity.
Michigan *Southeast Michigan e-Prescribing Initiative (SEMI)*	GM, Ford Daimler-Chrysler UAW, BCBS of Mich., Henry Ford Med. Group, Medco Health Solutions, CVS/Caremark, Surescripts-RxHub	800-722-8979	Launched in 2005, the initiative encourages physicians to write prescriptions on a personal computer or wireless device and send them directly to the pharmacy for filling.
Minnesota *Government Health IT*	Minnesota eHealth Collaborative	Anne A. Armstrong, President and Group Publisher 703-876-5041 aarmstrong@1105govinfo.com	By 2009, the state employee health plan will require all in-network pharmacies to accept e-prescribing. By 2011, all network providers must e-prescribe. Failure to meet these deadlines could mean removal from the network. Physicians who do not comply with the 2011 e-prescribing deadline will not be reimbursed for treating state employees.
Mississippi	Mississippi Medicaid, Gold Standard	www.empowerx.com/mississippi.html 800-375-0943 empowerx@id-health.com	Provides e-prescribing to providers through a secure Web portal and free personal digital assistants.

State	Sponsor	Contact Info	Description
Nevada *Sierra Health Services and Southwest Medical Associates*	Sierra Health Services and Allscripts	w3_hpnsd_shl@ sierrahealth.com Allscripts: 800-654-0889	Under the program, physicians who are members of the Nevada State Medical Association can receive Allscripts' e-prescribing software at no cost for two years, while nonmember physicians can receive the software at no cost but must pay a $20 monthly fee to use it. All physicians must pay for their own hardware, including computers and monitors.
New Jersey *Aetna, Horizon BCBSNJ's E-Prescribe Program*	Horizon Blue Cross Blue Shield of New Jersey (Horizon BCBSNJ)	Please contact your Aetna Account Executive www. HorizonBlue. com/eprescribe 800-355-BLUE (2583)	Sponsors e-prescribing for select network physicians.
New Mexico *New Mexico Prescription Improvement Coalition*	Blue Cross Blue Shield, Molina, United, Lovelace, Presbyterian, New Mexico HSD, Medicare AD	www.nmmra.org 505-998-9765	A statewide, physician-centric, multi-payor, self-sustaining, electronic prescribing model is currently in the pilot phase. To assure adoption, all major health plans are participating in the program. Health plans' formularies will be loaded into the e-prescribing applications for ease of physician access. Implementation costs of this pilot are being funded by participating health plans, based on New Mexico member enrollment for each plan. More than 120 physicians are participating in this pilot to date.
New York *NYC Dept of Health and Mental Hygiene, Electronic Health Records Initiative* *New York State, Greater Rochester Area – Elysium Prescription Management*	New York City GRRHIO	www.nyc. gov/pcip or 866-888-MY-CW. www.grrhio.org 877-865-7446	Eligible participants include primary care providers practicing in medically underserved areas of New York City. Provides incentives for prescribing members of the Rochester Regional Health Information Organization (RHIO).

State	Sponsor	Contact Info	Description
North Carolina *North Carolina e-Prescribing Initiative*	BlueCross BlueShield of North Carolina	www.rxnt.com 800-943-7968	BCBSNC is offering a one-time $1,000 incentive to network providers who want to participate in the e-prescribing initiative. To qualify for the incentive, providers must be registered with a certified e-prescribing vendor and must access medication history for a minimum of 20 patients in the fourth quarter of 2008.
Ohio *Cincinnati Ohio e-Prescribing Initatives*	Anthem Blue Cross and Blue Shield RxNT	800-442-1832 www.rxnt.com 800-943-7968	This e-prescribing pilot will equip 100 physicians in Dayton and Warren/Youngstown with computer equipment and free use of an online tool that provides instant access to current patient formulary information and medication history. Financial incentives for participating physicians are provided during the pilot. Incentives are also available to all physicians who e-prescribe and are eligible for Anthem's pay-for-performance programs in the above areas. Available to RxNT e-prescribers that are licensed to prescribe medications in Cincinnati, Ohio only.
Pennsylvania *Highmark e-Prescribing and eHealth Initiative*		412-544-7000	Highmark's e-Prescribing/eHealth Initiative, is contributing $29 million to help physicians acquire e-prescribing technology for their practices. Highmark will pay up to 75 percent of the cost for a physician's office to acquire, install and implement eligible e-prescribing systems, up to a maximum $7,000 per physician.
Rhode Island *Quality Counts*	BlueCross BlueShield of Rhode Island	800-204-0028	The BlueCross BlueShield of Rhode Island "Quality Counts" incentive program encourages physicians to prescribe electronically.
Tennessee *Shared Health ePrescribe*	BlueCross BlueShield of Tennessee	Fred Flint 423-535-8258	E-prescribing is currently available to all prescribing providers participating in the State's EHR initiative. Physicians receive the equipment, training and support for free.

APPENDIX III: ELECTRONIC PRESCRIBING ISSUES

Early adopters of e-prescribing have encountered technical and workflow issues. This table delineates those issues, explains why they may be happening and what you can do about it.

Issue	Why it happens and what to do about it
Multiple requests for renewal	Practices may receive phone calls from patients and pharmacies about the same renewal requests in addition to receiving electronic renewal requests and fax renewal requests. Part of this can be improved by educating patients to call the pharmacies rather than the practice for prescription renewals. It also helps to respond timely to electronic requests so the pharmacy does not call or fax in order to get a response when the patient is waiting for the prescription. Duplicate fax renewal requests may occur if the prescriber is not properly matched in the pharmacy system. If you receive fax renewals from pharmacies that are connected, log support cases with your vendor so they can work through SureScripts-RxHub and they in turn with the pharmacies to ensure the prescribers are fully matched in the pharmacy systems. This should lead to a reduction in fax renewals.
Pharmacies not checking their e-prescribing system	In some cases, pharmacies think that they have not received a prescription, thus requiring the patient to call the physician's office. When this occurs physicians became concerned that the e-prescribing system is not functioning correctly. Some practices became so concerned that they send duplicate prescriptions, one via e-prescribing and one via fax or hard copy, creating extra work on their part and confusion at the pharmacy. The confusion at the pharmacy can cause patients to prefer a paper prescription over an electronic one. This may occur if the pharmacy staff has to look in a different part of their computer system for an electronic prescription or go outside of their regular workflow to find and process an electronic prescription. To help with the situation, practices can educate their patients to remind the pharmacies to check their e-prescribing system. In recent years, many pharmacies have made improvements in their software so that e-prescribing is more integrated with the entire workflow. It is more obvious that an e-prescription has been received and no longer requires going to a different queue to check and requires minimal re-keying of information. Given the low volume of e-prescriptions at this time compared with the overall prescription volume, there still may be training issues in the pharmacy. If you experience instances where a patient shows up in their pharmacy and is told the prescription is not there, you should log a support case with your vendor, and they should pass the information to SureScripts-RxHub who will in turn provide the information to the pharmacies who will retrain the staff in the pharmacy. There is also a possibility that this occurs if there is confusion about which pharmacy the patient wanted to go to and which pharmacy the prescription was actually sent to, so pharmacy selection in the e-prescribing or EHR system is critical.

Issue	Why it happens and what to do about it
Pharmacies sending renewal requests in multiple manners, i.e., fax and e-Rx, causing confusion in the practice about which request to act on and lack of confidence that the system works	If the pharmacy is connected for e-prescribing, they should be sending renewal requests electronically. Automating renewal authorizations is a critical benefit of e-prescribing. Fax renewal requests may occur if the prescriber is not properly matched in the pharmacy system. If you receive fax renewals from pharmacies that are connected, log support cases with your vendor so they can work through SureScripts-RxHub and they in turn with pharmacies to ensure the prescribers are fully matched in the pharmacy systems. This should lead to a reduction in fax renewals and an improved e-prescribing experience. This is an easy problem to solve when the vendor, SureScripts-RxHub infrastructure, and pharmacies are made aware of the problem.
Patients refusing e-prescribing as a result of a bad experience or because they do not know which pharmacy they will use	You should always have the option to print prescriptions for patients who prefer paper over electronic. It is difficult to get trust and confidence back after there is a bad experience. Patient education is important, and the practice should help patients understand that e-prescribing is safer, more efficient, convenient, and reliable. They should also be encouraged to remember which pharmacy they typically use when they come in for an office visit and are likely to need a prescription.
Physicians questioning the advantage of e-prescribing over computer-generated faxing and feel it creates more work and potentially additional costs	The disadvantage of EHRs that generate fax prescriptions to the pharmacies is that typically you cannot automate the renewal authorization process, which is a time saver in the practice. Effective January 1, 2009, those computer generated fax prescriptions will no longer be in compliance with Medicare Part D. Depending on the size of the practice and the practice workflow and roles and responsibilities for medication management, some tasks such as documentation fall increasingly on the physician. Hopefully the practice has a strong enough belief that the EHR or e-prescribing technology will result in higher quality care, better and more accessible documentation, and an improved medication management process.

APPENDIX IV: ELECTRONIC PRESCRIBING STATEMENT OF PRINCIPLES

The Steering Group for the June 2008 report, "Electronic Prescribing: Becoming Mainstream Practice", suggests the following principles that represent consensus among diverse stakeholders. These principles should help guide ethical, technical, policy, and financial developments in this field, and stakeholders are encouraged to utilize them as they develop their strategic and tactical initiatives on electronic prescribing.

Principle 1:
We believe widespread adoption of e-prescribing can provide many benefits, including:

- Improved medication safety
- Enhanced practice efficiency
- Cost savings
- More effective medication management
- Increased patient adherence
- Improved integrity of the prescribing process

Principle 2:
All health care stakeholders should collaborate to encourage widespread adoption and optimal use of standards-based e-prescribing through:

- Appropriately aligned incentives to support effective use of the technology in diverse practice settings
- Collaborative development and delivery of innovative programs, education resources, training, and support
- Efficiencies in workflow for the physician and pharmacist in diverse practice settings;
- Connectivity and tools to facilitate medication reconciliation, formulary and medication history information, and transmission

Principle 3:
E-prescribing system design and/or the implementation of e-prescribing should:

- Enhance the patient-clinician relationship by providing more comprehensive clinical information at the point of care
- Preserve the patient's choice of pharmacy
- Facilitate the clinician's informed choice of medication
- Be part of an integrated plan toward full implementation of an electronic health record

Principle 4:
Both electronic health records (EHRs) and stand-alone e-prescribing may be utilized to realize the functionality and benefits of e-prescribing. Overall quality of care can be enhanced by implementation of e-prescribing that is integrated within an EHR.

Principle 5:
Consumer organizations, providers, pharmacists, payers, and educators should help patients understand and experience the benefits of e-prescribing. Informed patients will play an important role in the encouragement for providers and pharmacists to use e-prescribing.

ACKNOWLEDGEMENTS

A Clinician's Guide to Electronic Prescribing is a collaborative effort of the eHealth Initiative, the Center for Improving Medication Management, the American Medical Association, the American College of Physicians, the American Academy of Family Practice, and the Medical Group Management Association.

A multi-stakeholder Steering Group also provided strategic guidance and participated in the creation of the Guide, offering their time, expertise and insights to the development of the report, and we are extremely grateful for their invaluable input and extraordinary contributions. The following individuals participated on the Steering Group:

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Enormous thanks also go to Mark Gorden, Director of Policy for the eHealth Initiative, Amanda Ervin, Director, HIT Initiatives for the American Medical Association, and Kate Berry, Executive Director, the Center for Improving Medication Management, who played a considerable role in writing, editing and coordinating the development of the report.

About the eHealth Initiative
The eHealth Initiative and its Foundation are independent, nonprofit affiliated organizations whose missions are the same: to drive improvements in the quality, safety, and efficiency of health care through information and information technology.

eHI engages multiple stakeholders, including clinicians, consumer and patient groups, employers, health plans, health care IT suppliers, hospitals and other providers, laboratories, pharmaceutical and medical device manufacturers, pharmacies, public health, and public sector agencies, as well as its growing coalition of more than 250 state, regional, and community-based collaboratives, to develop and drive the adoption of common principles, policies, and best practices for improving the quality, safety, and effectiveness of America's health care through information and information technology. For more information on the eHealth Initiative, go to http://www.ehealthinitiative.org

About the Center for Improving Medication Management
The Center for Improving Medication Management serves as an industry resource by gathering and disseminating best and worst practices related to technology deployment for electronic medication management and for leveraging that technology and connectivity to test innovative approaches to improve patient adherence with prescribed medications. The Center was founded by American Academy of Family Physicians (AAFP), Blue Cross Blue Shield Association, Humana Inc., Intel Corporation, the Medical Group Management Association (MGMA), and SureScripts-RxHub. More information about The Center is available at http://www.theCIMM.org.

About the American Medical Association
The American Medical Association (AMA) helps doctors help patients by uniting physicians nationwide to work on the most important professional, public health and advocacy issues in medicine. Working together, the AMA's quarter of a million physician and medical student members are playing an active role in shaping the future of medicine. For more information on the AMA, please visit www.ama-assn.org.

About the American Academy of Family Physicians
The American Academy of Family Physicians is one of the largest national medical organizations, representing more than 94,000 family physicians, family medicine residents, and medical students nationwide. Founded in 1947, AAFP's mission has been to preserve and promote the science and art of family medicine and to ensure high-quality, cost-effective health care for patients of all ages.

About the American College of Physicians
The American College of Physicians (ACP) is a national organization of internists — physicians who specialize in the prevention, detection and treatment of illnesses in adults. ACP is the largest medical-specialty organization and second-largest physician group in the United States. Its membership of 126,000 includes internists, internal medicine subspecialists, and medical students, residents, and fellows. ACP's mission is to enhance the quality and effectiveness of health care by fostering excellence and professionalism in the practice of medicine.

About the Medical Group Management Association
MGMA is the nation's principal voice for the medical group practice profession, with 21,500 members who lead and manage more than 13,500 organizations in which almost 270,000 practice. MGMA's mission is to continually improve the performance of medical group practice professionals and the organizations they represent.

Best Practices and Lessons Learned Related to Electronic Prescribing

A Guide for Health Plans, Employers and Statewide Initiatives

eHealth Initiative

December 2008

818 Connecticut Ave. N.W. • Washington, D.C. 20006 • www.ehealthinitiative.org

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BACKGROUND

The eHealth Initiative (eHI) has significant expertise and experience not only with health information technology in general, but also with e-prescribing. Following the release of its seminal report on e-prescribing in 2004, in 2008 it launched a series of activities designed to assess progress, identify obstacles and challenges to adoption, and develop practical recommendations for the effective adoption of e-prescribing to improve the quality, safety and effectiveness of care. The results of these activities are outlined below.

This report updates and supplements the wide array of reports and guidance provided by the eHealth Initiative detailed below, with a specific focus on the best practices and lessons learned of e-prescribing initiatives of health plans, employers, and statewide organizations.

AN OVERVIEW OF EHEALTH INITIATIVE'S WORK RELATED TO E-PRESCRIBING

On June 11, 2008, the eHealth Initiative (eHI) released the report Electronic Prescribing: Becoming Mainstream Practice which was developed collaboratively by eHI and the Center for Improving Medication Management (Center), offering a detailed examination of the progress made, obstacles that remain, and recommendations for helping the nation's prescribers migrate from paper-based prescriptions to an electronic system.

The report, which was a follow-up to eHI's 2004 benchmark report on the state of e-prescribing, was developed and written by the eHI and Center staff, with the guidance of a multi-stakeholder Steering Group--which includes clinicians, consumers, employers, health plans, health IT vendors, and pharmacies. While several guides are available today, they are often developed by vendors, or by one constituency (such as health plans or pharmacies or physicians) and therefore do not offer a comprehensive view of the actions that are needed by different stakeholders in the system (given that e-prescribing touches many "actors" in the system--all of which need to engage to support effective adoption). eHI and the Center, as well as the collaborating organizations representing many stakeholders in the system who are offering their strategic guidance, developed this series of reports, with the goal of providing neutral, consensus-based guidance that could be relied upon by multiple stakeholders in the system.

Key topics covered by the report include:

- A definition of e-prescribing
- A set of consensus-based principles for e-prescribing adoption
- Current state of adoption
- Overview of related public policy
- The value proposition of e-prescribing for different stakeholders, including patients and caregivers, prescribers and practice staff, pharmacies and pharmacists, PBMs, health systems and hospitals, employers and purchasers, federal and state government, health IT vendors, pharmaceutical manufacturers, public health organizations, and research and academic institutions.
- Challenges and costs related to e-prescribing
- Overview of the e-prescribing process as well as an overview of best practices and lessons learned in the following areas: leadership, planning and selection, product capabilities and integration, workflow and change management, communications, deployment and effective use, and training and support
- Case studies of market, payer, and state initiatives designed to accelerate e-prescribing through financial and other incentives
- Recommendations for supporting the adoption of e-prescribing.

Also released in June 2008 in conjunction with the main report, were two practical guides and an accompanying pamphlet, aimed at increasing the understanding of and accelerating usage of e-prescribing for two specific target audiences: consumers and health care payers.

A Consumer's Guide to e-Prescribing: Understanding the Benefits of e-Prescribing, How it Works and What You Can Do is a short guide tailored to a consumer audience, providing an overview of the benefits of e-prescribing and answers to a series of frequently asked questions including the following:

- What is e-prescribing and who participates in e-prescribing?
- How does e-prescribing differ from traditional prescription methods?
- How does it work? What are the benefits and costs? What are the potential drawbacks?
- How widespread is its use?
- Where can I learn more about e-prescribing?
- What is being done to assure privacy and security of prescriptions and my personal health information?

A shorter consumer-targeted pamphlet was also developed entitled Understanding the Benefits of e-Prescribing: How Does it Work, What Can You Do, which can be shared with patients by physician practices, or directly with patients through other mechanisms.

A Guide for Health Care Payers to Improve the Medication Management Process, also released on June 11, 2008, focuses on how e-prescribing can create value for payers through the medication management process, and how such technological innovations can be brought to market in a manner that best fits with a payer organization's own internal dynamics. The guide also provides a set of best practices and lessons learned to help payers in implementing e-prescribing innovations which might be of value to their individual organizations.

On October 7, 2008, eHI released "A Clinician's Guide to Electronic Prescribing", developed in collaboration with the American Academy of Family Physicians, the American College of Physicians, the American Medical Association, the Medical Group Management Association, and the Center. Developed with the strategic guidance of a multi-stakeholder Steering Group comprised of clinicians, consumers, employers, health plans, and pharmacies, and in partnership with four major medical associations outlined above, the Guide is designed to meet the needs of two target audiences: The first section of the guide targets office-based clinicians who are new to the concept of e-prescribing, and who seek a basic understanding of what e-prescribing is, how it works, what its benefits and challenges are, and the current environment impacting its widespread adoption. The second section of the guide targets office-based clinicians who are ready to move forward and bring e-prescribing into their practices. It presents fundamental questions and steps to follow in planning for, selecting and implementing an e-prescribing system. The guide also provides a list of key references and resources readers may consult to help make the transition to e-prescribing as smooth as possible.

Finally, eHI is providing considerable support for the transition from a paper-based system to electronic prescribing, through newsletters, webinars, and workgroup activities.

PART I

Health Plans and E-Prescribing—Accomplishments, Best Practices/Lessons Learned, Barriers and Solutions—Including Case Examples

A. ACCOMPLISHMENTS

- ***Substantial Medication Savings Through E-Prescribing With Formulary Decision Support***

-The eRX Collaborative in Massachusetts was formed in 2003, and its founding health plans—Blue Cross Blue Shield (BCBS) of Massachusetts and Tufts Health Plan, began giving away free e-prescribing hardware and software to outpatient providers in the State. The program has grown significantly, with more than 2000 high prescribers and a number of new health plans on board.

According to a just released 12/08 *Annals of Internal Medicine* study[i], researchers found unassailable evidence that **when e-prescribers have guidance on the availability and cost of generic substitutes, more of these Tier 1 drugs are prescriber compared to a control group.** Tier 1 medications were prescribed 3.3% more for e-prescribers with formulary decision support. According to a BCBS of America report[ii], this figure is important because on average, every one percent increase in the generic fill rate leads to a 1.5 percentage point savings in drug spending.

The *Annals* study's statistical analysis showed medication savings of $3.9 million per 100,000 insured are obtainable when e-prescribing with formulary decision support is fully deployed amongst all prescribers, based on increased substitution of generics by e-prescribers.

-Savings in the range of nearly $5 million per year was reported by Southwest Medical Associates (SMA), [iii] a large multi-specialty medical group which is part of Nevada's largest managed care organization, Sierra Health Services.

Over a three year period, 180 SMA physicians utilized an e-prescribing solution from Allscripts, which helped physicians better identify opportunities to prescribe generic drugs as alternatives to more costly brand name medications. The impact on prescribing patterns and cost was substantial: Documented savings of $4.75 million per year from higher generic fill rates, (4.8% higher than the non e-prescribing physician control group) and another $208,640 in indirect savings from reductions in staff time devoted to prescription refills.

- ***Significant Reduction in Dangerous Drug Reactions and Resultant Costs Due to Drug-Drug and Drug-Allergy Alerts***

The Institute of Medicine[iv] states that there are 1.5 million preventable medication caused injuries every year in the United States, costing an estimated $3.5 billion in extra medical costs in 2006—much of which could be averted with effective e-prescribing systems in place. According to a study by the Gorman Health Group,[v] the estimate of avoidable annual medication mistakes is closer to 2 million annually in the United States. The study also concluded that the federal government could save up to $26 billion over the next decade just in the Medicare program—even after providing funds for equipment, training and support—as long as physicians are first incentivized and then required to use the technology as a condition for participating in the Medicare program. The study concluded that this

approach of combining a requirement with financial incentives would result in approximately 80 percent of physicians adopting e-prescribing technology.

-BCBS of Massachusetts and BCBS of North Carolina[vi] are documenting a palpable positive patient safety impact of e-prescribing on prescribing behavior, at each site prescribers canceled or changed more than 50,000 prescriptions thanks to drug safety warnings. This represented nearly 3% of the 3.6 million prescriptions written during the study periods.

-CareFirst BlueCross BlueShield of Maryland found a savings of $624,000 in a one year pilot of giving free e-prescribing equipped PDAs to 500 physicians—attributed to interception of 540 prescriptions that might have led to adverse drug events.[vii]

The bottom line is keeping patients safe and healthy—a natural by-product of e-prescribing's many built-in safeguards.

- ***Using Incentives to Increase the Number of E-Prescribers***

Almost all health plans offer free e-prescribing hardware and software and technical support as an enticement for prescribers to participate in their e-prescribing initiatives, increasing by thousands the number of e-prescribers nationally. According to statistics recently released by SureScripts-RxHub, the number of e-prescribers in the United States has doubled in the last year to over 70,000, thanks in part to the contribution of health plans promoting e-prescribing to their provider network. Growth in the e-prescriber pool translates to growth in e-prescriptions written. Anthem Blue Cross Blue Shield of Ohio saw a 2% growth in the number of e-prescriptions written by its pool of physicians who received e-prescribing donations in 2006[viii]

Other health plans having a major impact on expanding the number of e-prescribers and e-prescriptions include:[ix]

-Wellpoint of New Hampshire, parent of Anthem Blue Cross and Blue Shield, is attempting to enroll 300 of the states primary care physicians in its e-prescribing program, representing about 10% of the state's total provider population.

-Blue Cross Blue Shield of North Carolina, now with more than 1,000 physicians enrolled and more than 4 million prescriptions electronically transmitted.

-CareFirst Blue Cross Blue Shield, which subsidized the cost of servicing 500 physicians with handheld PDAs equipped with e-prescribing software. Over 345,000 electronic prescriptions were transmitted in the program's first year, 2006, and 525,000 in 2007.

-Horizon Blue Cross Blue Shield of New Jersey, with over 1500 prescribers using its e-prescribing technology, producing over 3 million electronic prescriptions. Horizon also is a regional supporter of the National ePrescribing Patient Safety Initiative, which provides e-prescribing free of charge to all prescribers.

-Sierra Health Services, in the e-prescribing program utilized by Southwest Medical Associates referenced in A. above,[x] noted that physician payment incentives had a substantial impact on physician e-prescribing utilization. Only SMA physicians who were 100% compliant in using the e-prescribing system would be eligible to receive bonuses. This policy had a large and swift impact, resulting in 90% of all prescriptions written at SMA were e-prescriptions.

-Blue Cross Blue Shield of Louisiana launched an e-prescribing pilot for 500 physicians in the summer of 2006. Tulane University is conducting a study on the pilot, and will publish its results with the goal of encouraging statewide e-prescribing adoption.

-The Highmark eHealth Collaborative Initiative offers funding to physicians the help reduce the costs of acquiring ePrescribing/eHealth Record technology for their practices. According to its website,[xi] the collaborative will pay up to 75 percent of the cost for a physician's office to acquire, install, and implement the electronic technology system, up to a maximum of $7,000 per physician, with the physician's practice to pay the remaining balance. Depending on the amount of funding received by each physician, it is expected that funding will be available for 4,000 to 6,000 physicians.

-Blue Cross Blue Shield of Delaware launched a pilot e-prescribing program for 150 physicians in 2006, giving them free PDAs with DrFirst's Rcopia ™ e-prescribing software.[xii]

-ePrescribe Florida[xiii] is a multi-stakeholder initiative in Florida aimed at accelerating e-prescribing adoption by offering free educational and e-prescribing implementation programs. The Steering Committee includes Blue Cross Blue Shield of Florida and Humana.

-Blue Cross Blue Shield of Illinois launched its statewide "e-Prescribing Collaborative Program" in February 2007, offering funding and technology support to every physician in the state, with an initial group of 500 having all software and hardware costs covered. UnitedHealthcare is also supporting the collaborative.

-UnitedHealthcare, in December 2008, announced it will provide electronic prescribing technology for 200 primary care physicians throughout Texas. Based on the success of similar pilot programs in Ohio and Florida, the Minneapolis-based health insurer will use e-prescribing software created by Zix Corporation. The system will allow physicians to order prescriptions for patients through a secure, wireless handheld PDA or secure Web site. Once ordered, the prescriptions will be sent electronically to the patient's preferred pharmacy. The wireless application also includes real-time access to a drug reference guide and can issue drug-to-drug and drug-to-allergy interaction alerts based on the patient's specific medication history. Under the partnership, UnitedHealthcare will pay for the technology and services for an undisclosed time period.[xiv]

Taken in aggregate, health plans, through their widespread e-prescribing initiatives, are having a significant impact on expanding the pool of e-prescribers. An expanded listing of health plans offering prescribers support for e-prescribing adoption has been assembled in the October 2008 "A Clinician's Guide to Electronic Prescribing," authored collaboratively by the eHealth Initiative, the Center for Improving Medication Management, the American Academy of Family, the American College of Physicians, the American Medical Association, and the Medical Group Management Association. The guide may be downloaded at: http://www.ehealthinitiative.org/eRx/default.mspx.

B. BEST PRACTICES—WHAT WORKS IN ENCOURAGING E-PRESCRIBING ADOPTION (Note: Sections B. and C. are adapted from *A Guide for Health Care Payors to Improve the Medication Management Process*, co-authored by the eHealth Initiative and the Center for Improving Medication Management, June 2008[xv])

There are several common elements that have contributed to the success of health plan e-prescribing initiatives:

1. Incentives: Provide e-prescribing software, hardware, training, and technical support for free, or with a strong subsidy.

Health plan initiatives to incentivize provider adoption should keep in mind several things. The cost, quality, and efficiency benefits of e-prescribing are very dependent on how well the technology is implemented in practice. Successful implementation requires substantial workflow and change management. Many practices do not have access to sufficient support and resources to manage that change, especially smaller physician practices. Different practice types—based on size, specialty mix, patient mix, location (rural, urban)—also have different needs as they relate to technology implementation.

Thus, in addition to financial incentives for e-prescribing, physician practices need assistance with workflow change, care process redesign, and optimal use. These are not trivial tasks since the prescribing process is complex, and automating the process is equally complex. Payer initiatives to encourage e-prescribing should include implementation assistance for physicians that takes into account the different needs of different types of practices. Health plans can also engage pharmacies, technology solution providers, and other stakeholders in the process to help ensure that the entire end-to-end prescribing process works as smoothly as possible.

Following is a list of incentive models which have been used successfully by health plans to encourage e-prescribing adoption.

- **Free e-prescribing**

  o Several years ago, Wellpoint invested approximately $20 million to offer free personal computers or free e-prescribing software to thousands of physicians. Most physicians opted for the free personal computers. This may have been one of the initiatives that led to the common statement that "free isn't cheap enough" when talking about e-prescribing incentive programs.

  o In early 2007, the National Electronic Prescribing Patient Safety Initiative (NEPSI) was launched by Allscripts, Dell, Microsoft, Cisco and a number of other companies, to make free e-prescribing available to every physician in America.

- **Health plans contract with e-prescribing vendors to provide upfront assistance**

  o Several health plans have selected one or more e-prescribing technology providers and purchased a number of licenses to cover or subsidize e-prescribing hardware and software. The health plans give the technology providers a list of high prescribers to recruit to accept the technology. In this model, the health plan pays the vendor and the vendor recruits the practices and installs the software.

- **Utilization incentives**

  o Health plans and employers have provided financial incentives for prescribers to use e-prescribing. Approaches include a bonus after six months of using the technology at a certain threshold, or continuing to subsidize the cost of e-prescribing if prescribers continue to use it at a certain threshold. The case studies included in this guide offer more details.

- **Pay-for-performance programs**

  o By using e-prescribing, physicians may be eligible for pay-for-performance programs offered by a health plan or other payer. These programs recognize and reward eligible providers for meeting or exceeding certain quality, safety, and prescription management technology goals. The use of e-prescribing may help a physician earn points toward a pay-for-performance bonus.

2. Make using the e-prescribing technology as simple as possible. A good example of this is the software used for the ePrescribing Collaborative of Massachusetts, which color codes drug choices according to show status: preferred, on formulary, requires prior authorization, or not covered or non formulary. This makes selecting the preferred, lower cost generic easy.

3. Support e-prescribing initiatives with positive targeted audience messages and marketing for providers and patients, focusing on the many benefits including:

a. enhanced medication, patient safety, translates to higher quality care
b. greater practice efficiency, particularly in reducing patient and pharmacy calls related to prescriptions
c. patient convenience picking up prescriptions
d. enhanced patient medication compliance through provider tracking of electronic prescription pick-ups
e. savings for patients, health plans, and the health system at large
f. adopting e-prescribing is a major gateway for wider health IT adoption, including full electronic medical records

4. Maximize cooperation between health plan competitors minimizes confusion and sends a powerful message about the importance of the e-prescribing initiative. Competing for providers can be confusing and counter productive—not just for prescribers, but also patients, and pharmacies as well. Keeping the choices simple translates to teamwork and unity on the importance of e-prescribing—sending a clear and unequivocal message to potential e-prescribers, letting them focus on adoption and implementation, rather than being overwhelmed with selection choices. Specific areas for health plan collaboration include:

- Using common incentive models
- Selecting or evaluating technology solution providers/limiting vendor choices
- Maximizing availability of medication history, formulary, and eligibility information through e-prescribing
- Creating or supporting the creation of an implementation support resource center to aid physician practices with change management and other assistance
- Engaging individuals in the process through education and incentives

5. Other Health Plan Strategies to Help Optimize E-Prescribing Adoption

Health plans should also consider the following e-prescribing adoption boosting strategies:

- ***Initiatives to work directly with the individuals whose health care they purchase***

Health plans can provide patients with information about medication adherence and how to work with their personal physicians and pharmacists to understand how medication therapy supports their health.

In support of medication management and adherence, health plans can provide medication data from claims to help consumers establish a personal medication record that is confidential, secure, portable, and interoperable. Some health plans already provide a PHR to their members, and now such initiatives as Dossia, Microsoft HealthVault, and Google Health are offering additional ways to connect patients to their providers and their health data.

Health plans already consider how to incentivize healthy behavior, and personal health records and PHR platforms offer an innovative tool that can be used in incentivizing medication management.

- ***Initiatives to bring together certain community stakeholders who can take action to support adoption and effective use of e-prescribing by providers***

Adopting e-prescribing in physician practices is challenging, and health plans can play a key role in smoothing the way in a given community. Health plans can use their community knowledge and relationships to gather the right stakeholders and bring economies of scale to bear on the process. For example, in a community that has many physicians in the process of adopting e-prescribing, health plans can bring together pharmacies to help prepare and coordinate the process, relieving each individual practice of having to do outreach to pharmacies.

Health plans can also work with others to ensure prescribers have access to formulary and pharmacy benefits information from multiple health plans in order to bring more value to physicians and their patients. As issues arise, be they technical, workflow, pharmacy, or PBM connectivity, health plans can provide leadership and work collaboratively with all key stakeholders to overcome issues.

C. LESSONS LEARNED—RECOMMENDED APPROACHES FOR ELIMINATING OR REDUCING BARRIERS TO E-PRESCRIBING ADOPTION

A lot can be learned from e-prescribing initiatives that launched their programs in the last five years or so. There is a universality for the wisdom and guidance they impart, which can help health plans avoid the same pitfalls.

The eRX Collaborative of Massachusetts offers six invaluable insights on problems you are likely to encounter, and how to overcome them:[xvi]

- **If you build it, they may not come** – Initially the eRx Collaborative created forums in centralized locations for providers to learn about the technology and sign up for the free offer, but they were not successful due to low attendance. To increase effectiveness, technology vendors should go to the physician office directly in order to engage physicians and their staff.

- **Free is not cheap enough** – Initiatives should subsidize initial startup costs and provide additional incentives to promote utilization. Initiatives should also highlight savings opportunities, specifically with prescription renewal requests.

- **Importance of training** – It is critical to ensure that the technology is intuitive and that provider training is focused. Providing targeted office staff training, on-site support during rollout, and identifying site champions where applicable, can all support success.

• **Perceived lack of value** -- Cooperation between health plan competitors can send a powerful message. The eRx Collaborative promotes discussing e-prescribing benefits for all stakeholders within health care delivery to improve quality, delivery, and affordability.

• **Technology Infrastructure** – It is important to evaluate and confirm appropriate technological infrastructure to support e-prescribing prior to implementation. Initiatives should engage the practice's IT team early on in the deployment process, ensuring that technology is consistent with the organization's security standards and requirements, and that interoperability with existing or future technologies (e.g., EHRs) is attainable.

• **Utilization** -- Office staff support is fundamental to effective utilization. Initiatives should ensure utilization monitoring and reach out proactively when issues are detected. Rewarding and recognizing prescribers for successful utilization is critical, as is incentivizing vendors to focus on utilization.

The State of Rhode Island's E-Prescribing Initiative, led by the Rhode Island Quality Institute (RIQI), had growing pains that generated the following key factors that impact the rate of e-prescribing adoption and expansion.:[xvii]

- Stakeholders influence each other—it is critical to include all that table to provide input in designing and implementing an e-prescribing program.
- Providers influence each other: knowing an e-prescriber reduces many barriers to adoption.
- Persistence pays off for providers, pharmacies, consumers, and other stakeholders.
- EHRs may be the ultimate end state, but stand-alone solutions are a great way to introduce health information technology and can serve as a stepping-stone to EHR adoption.
- Prescriber workflow redesign and change management are crucial to long-term e-prescribing utilization and success.
- Education to manage consumer expectations is key.

PART II

Employers' Leadership in E-Prescribing: Case Examples with Best Practices and Lessons Learned

I. Southeast Michigan E-Prescribing Initiative

A. Background and History[xviii]

The Southeast Michigan E-Prescribing Initiative (SEMI) is an example of an employer-driven initiative that has evolved into an even larger scale multi-stakeholder collaborative. SEMI is a coalition that includes General Motors, Ford Motor Company, Chrysler LLC, the United Auto Workers, Blue Cross Blue Shield of Michigan, Health Alliance Plan, Henry Ford Medical Group, Medco Health Solutions, Inc., CVS Caremark Corporation, RxHub, LLC and SureScripts(R).

General Motors (GM) was the initial driver behind SEMI. GM, Chrysler, and Ford have championed the initiative to improve the health and safety of their employees, retirees, and their families. The positive response from the area's leading health plans has enabled more than 3,000 physicians to implement e-prescribing solutions.

Two leading pharmacy benefits managers (PBMs) are providing support and consulting services for the initiative. Medco is the PBM for GM and Ford, and processes mail-order prescriptions for Health Alliance Plan (HAP) and BlueCross BlueShield of Michigan. CVS/Caremark is the PBM for Chrysler. RxHub built the infrastructure required to support the secure, bidirectional exchange of patient-specific prescribing information between physicians and PBMs. SureScripts provides the infrastructure to support the secure, bidirectional exchange of prescription information between physician practices and community pharmacies. Henry Ford Medical Group and HAP were the leading early sites where e-prescribing was deployed fully. SEMI counties include Wayne, Oakland, Macomb, Washtenaw, St. Clair, Monroe, and Livingston.

Since its inception, SEMI coalition partners have invested more than $1 million in the program.

B. SEMI E-Prescribing Goal, Objectives, Vendor Selection, and Incentives[xix]

According to SEMI Project Manager Tony Schueth, the goal of SEMI is:

***To Accelerate the Adoption of ePrescribing* by:**

1. **Providing incentives to physicians, especially high prescribers, to acquire and utilize ePrescribing software applications;**
2. **Measure the impact of ePrescribing to inform prescribers when drug interactions, allergies, or other alerts occur when a prescribed drug was counter indicated;**
3. **Measure the impact of ePrescribing to inform prescribers about appropriate generic or preferred brand alternatives at the point of care;**
4. **Delivery of an electronic prescription to the retail or mail order pharmacy of the patient's choice.**

Phase 1 of the program built the infrastructure, chose vendors, identified physician champions, and educated the community. Phase 2 encouraged adoption, conducted community outreach, and began training and implementation. Phase 3 involves supporting utilization, including understanding why some prescribers are using e-prescribing at a low rate, and working to overcome barriers to use.

SEMI used a different approach to vendor selection and incentives than most other market-based initiatives. The philosophy from the beginning was that the physician practice should have some "skin in the game," so the program did not cover the entire cost of implementing e-prescribing.

Vendor Selection and Prescriber Incentives
SEMI also conducted evaluations of e-prescribing vendors and initially provided a list of 12-15 solutions that were approved for physician practices to select from. The incentive payments were made directly to physicians with a $500 upfront payment and another $500 payment after six months of using the technology. This contrasts with most other programs where the sponsor contracts with the vendors for a certain number of licenses and pays the vendor rather than the physician. Over time, SEMI reduced the number of technology vendors that were covered under the program because the long list offered physician practices too many options and seemed to slow initial adoption.

C. Benefits[xx]

SEMI cites the following benefits for the following stakeholder groups:

- ***Employers/PBM/Plan:***

1. Improved Quality of Care—due to decreased potential medication errors and improved care management (e.g., identification and intervention on patient medication compliance issues)
2. Reduced Cost—due to reduced phone calls, better utilization of cost-effective alternatives, increased generic prescribing, and reduced medication errors
3. Improved Customer Satisfaction—for employers through lower premium growth due to reduced drug spending; for prescribers, through fewer hassles over coverage and prior authorization; and consumers, through reduced wait time at pharmacies.

- ***Prescribers:***

1. Reduced Cost—through reduced phone calls, reduced chart pulls, streamlined prior authorization process, more time for patient care, and low impact to existing workflow
2. Improved Quality of Care—through enabling easy access to computerized medication history, decreased potential medication errors due to illegible prescriptions, and avoided potential adverse drug events
3. Improved Patient Satisfaction—through reduced waiting time at pharmacy and the aura of high tech

- ***Patients:***

1. Improved Quality of Care—through decreased potential medication errors due to illegible prescriptions, through facilitation of improved medication compliance, and improved patient self-management performance
2. Reduced Cost—through reduced out of pocket costs and better utilization of cost-effective alternatives

3. Improved Customer Satisfaction—through reduce pharmacy wait times and more predictable co-payments

D. Documentation of Impact

The impact of SEMI has been significant. Nearly 9.5 million e-prescriptions have been generated since the launch of the program in February 2005. More than 3,000 prescribers are writing about 300,000 e-prescriptions per month.[xxi] The major positive impacts of SEMI's e-prescribing initiative include:

- ***Dramatic E-Prescribing Growth in Michigan***

In 2007, Michigan became the number five e-prescribing state in the nation, according to SureScripts, with 90% of the 2.5 million prescriptions written coming from prescribers in the seven counties which are part of SEMI. "The SEMI program has played an integral role in advancing the adoption of electronic prescribing technology in the state of Michigan," said Karl Dalal, Director of Healthcare, Insurance and HR Programs, Ford Motor Company. "Electronic prescribing clearly leads to safer pharmacy care and lower costs for physician practices, employers, and consumers; advancing the adoption of this technology will continue to play a key role in treating the ills of the antiquated paper-based healthcare system in America." [xxii]

- ***Enhanced Medication Safety and Avoidance of Adverse Drug Events***

The SEMI results show that among a sample of 4.2 million e-prescriptions reviewed for analysis, a severe or moderate drug-drug interaction safety warning was sent to prescribers for 1.3 million prescriptions or 31%, resulting in more than 508,000 prescriptions being changed or canceled. Nearly 120,000 medication-allergy alerts were presented, with 49,000 or 40% being acted upon. When a formulary alert was presented, 38% of the time the physician changed the prescription to comply with formulary requirements.[xxiii]

- ***Positive Effects on Physician Attitudes and Prescribing Behavior***

In January 2008, SEMI commissioned a survey of 500 physician practices[xxiv]. Physicians and other practice staff responsible for writing prescriptions and managing patient medications provided their insights on using e-prescribing. Issues addressed included frequency of use, functionality, perceived benefits, satisfaction, implementation challenges, and system enhancements.

Overall, respondents' experiences with e-prescribing were very positive:
- Nine out of 10 respondents said e-prescribing met or exceeded expectations.
- More than 70% were very satisfied with e-prescribing and nearly 70% strongly agreed that e-prescribing improved quality of care.
- About 75% strongly agreed that e-prescribing improved patient safety. Nearly 65% reported at least one change in a prescription due to a safety alert.
- Approximately 70% were very satisfied with the ease of identifying drug-drug or drug-allergy interactions.
- More than 80% of prescriptions were transmitted electronically and more than 40% of prescribers say they only wrote e-prescriptions.
- More than 50% strongly agreed that e-prescribing saved the clinician's time and increased productivity, yet 16% strongly disagreed.
- More than 70% experienced a reduction in communications from a pharmacy; for 40% the reduction was substantial.
- More than 70% strongly agreed the patient's transaction at the pharmacy was faster and easier.
- About 25% strongly agreed e-prescribing will save patients money and reduce a

practice's costs; however, 20% strongly disagreed.
• Two out of three respondents said they were more likely to prescribe a generic or plan-preferred drug with e-prescribing, which translates to significant savings for the patient and the health plan.

E. Lessons Learned[xxv]

After three years of successful collaboration, SEMI sites the following valuable lessons learned:

- **Key large employers can be advocates and catalysts**

- **ePrescribing can be implemented fairly quickly & easily**
  But it is more complex than automating the Rx process

- **ePrescribing shows measurable value in the areas of:**
  -Improved generic use rate
  -Streamlined administrative processes
  -Reduced adverse drug events

- **Practice support is key**

- **Working with aggregators can accelerate adoption**

- **Having a "short list" of qualified vendors is critical**
  -Physicians practice medicine differently and need options
  -Don't forget about EMRs; at a minimum have a path to one

- **There's a hierarchy to executive project management**
  -Good project managers get you so far
  -Good, local project managers get you further
  -ePrescribing experts can take you to another level

II. National ePrescribing Patient Safety Initiative (NEPSI)

- ***A Lofty Goal: To increase patient safety by making ePrescribing accessible—and desirable—to all physicians and medication prescribers by providing it free of charge[xxvi].***

In 2007, NEPSI[xxvii] was established, representing a national coalition of 17 large technology companies, **employers** and health plans. The coalition has raised more than $100 million to give a free Web-based electronic prescribing system to every prescriber in the country, the most prominent effort yet to get prescribers to adopt the technology.

NEPSI's sponsors[xxviii] believe "the successful implementation of electronic prescribing (ePrescribing) nationwide will result from a variety of sponsors working together, sharing resources to offer ePrescribing as a vehicle for change." The sponsors of the National ePrescribing Patient Safety Initiative (NEPSI) support the delivery of an ePrescribing offering with broad-scale appeal. As vital members of the NEPSI coalition, these sponsors are dedicated to engaging resources to make ePrescribing possible with maximum benefit to prescribers and patients.

- ***Best Practice: A national program of corporate advocacy creates the framework to address a serious issue with a serious contribution.***[xxix]

According to NEPSI:

The National ePrescribing Patient Safety Initiative (NEPSI) was developed in response to the staggering number of medical errors that plague the US healthcare system. This coalition-based program is comprised of healthcare, technology and provider companies dedicated to positively impacting the national prescribing process through electronic prescribing (ePrescribing) delivery. NEPSI delivers on this commitment by offering free ePrescribing to every physician and medication prescriber in America.

Allscripts LLC, Dell Inc., Cisco Systems Inc., Microsoft Corp. and Sprint Nextel Corp. are among seventeen companies that have joined the coalition and agreed to contribute money or in-kind contributions or both. Participants also include WellPoint Inc., Aetna Inc. and Horizon Blue Cross and Blue Shield of New Jersey. NEPSI also has 16 regional supporters, including Anthem Blue Cross Blue Shield, helping to maximize the diffusion of free e-prescribing throughout the nation.[xxx]

The Benefits of ePrescribing:

More than an electronic medium, ePrescribing improves the management of patient drug histories and provides immediate access to decision-support information at the point of care delivery.

- Eliminates handwriting issues
- Creates electronic records to ensure prescription information is not lost
- Checks for allergies, drug-drug interactions, dosing errors, therapeutic duplication, pregnancy-related issues and other patient-specific factors
- Maintains an accurate, comprehensive drug database
- Provides up-to-date formulary and insurance information
- Improves data exchange between prescribers and pharmacists
- Expedites prescription refill requests
- Reduces healthcare costs by improving work efficiency and identifying less expensive drug options

NEPSI Commitment:

NEPSI aims to accelerate the adoption of ePrescribing systems by reducing traditional barriers to implementation such as cost, ease of use, and privacy and security issues.

To do this, NEPSI makes secure, easy-to-use ePrescribing software available to all physicians and medication prescribers in America for free. Based on Allscripts ePrescribe from Allscripts™, the program is straightforward, intuitive and well-supported.

- NEPSI provides prescribers with technology that puts accurate, easy-to-use drug reference and formulary information at their fingertips to support medication choices. The result is not only increased patient safety but a secure, electronic repository of prescription and patient history.

- NEPSI enables increased patient safety by allowing providers to quickly and easily issue electronic prescriptions supported by reviews for allergies, drug-drug interactions, overly high doses, pregnancy-related issues and other patient-specific factors.

- Allscripts ePrescribe is a stand-alone, web-based ePrescribing solution that is easy to implement and fast to use. Through encryption and virus, spyware and malware protection, Allscripts ePrescribe offers prescribers and patients the highest levels of security available.

According to Mark McClellan, MD, former Administrator of the FDA and CMS and currently Director of the Engelberg Center for Health Care Reform at the Brookings Institution:

> *"NEPSI is the kind of collaboration led by innovators in the private sector that can make such a difference in our healthcare system. We all know where we need to go. We know we're going to get to a healthcare system that relies on electronic information and that is much more effective in providing timely and appropriate care. But getting from here to there, getting over that hump is a big challenge. So initiatives like NEPSI ... are an important step in getting us over the hump."*[xxxi]

- ***Success Stories***

-Mark R. Wallace, MD, an internist who heads Partners in Medicine, PC medical practice in Phoenix, Arizona, using free NEPSI e-prescribing software and hardware, has become the number one e-prescriber in Arizona for the first three quarters of 2008.[xxxii]

-Case History for Dr. Jan Cornell Keweenaw Memorial Medical Center, Laurium, Michigan[xxxiii]

Background

Dr. Jan Cornell works at Keweenaw Memorial Medical Center, a family practice of 15 physicians in Laurium, Michigan. On a typical day, he sees 30 patients and fills approximately 20 prescriptions.

Dr. Cornell had been aware of e-prescribing technology and its benefits for a few years, but two factors pushed him to considering implementing it in his practice. First was a significant rise in the number of calls he was receiving from pharmacists needing an interpretation of his handwriting. Second was the number of medical errors caused by paper prescriptions each year.

Dr. Cornell heard about NEPSI and the eRx NOW software through a health IT publication. It was such a huge initiative with so many impressive corporate sponsors that it was all over the news when it was first announced. In his view, it was as though there suddenly

appeared to be an effective solution to the problems he and his colleagues were facing with paper-based prescribing.

Barriers to adoption

From Dr. Cornell's perspective the single largest barrier was cost. Cost is an issue whether you're in a small or large practice. Given what other e-Prescribing providers were charging for their technology it was difficult for him to justify the investment. Dr. Cornell was also concerned about the time investment it would take to get the software up and running in his office, and get his staff members comfortable with it. The concern was that technological and operator errors would replace the handwriting errors.

Benefits to the practice

The NEPSI coalition is a powerhouse of key healthcare stakeholders and corporations. Just seeing that companies like Allscripts, Dell and Microsoft are sponsoring the initiative is enough to make anyone take notice of NEPSI's eRx NOW program. But for Dr. Cornell it's "the simplicity of implementing and using eRx NOW that really makes the program stand out". He didn't have to download anything or purchase any new hardware, so there wasn't a major disruption in his workflow. The software was literally up and running in Dr. Cornell's office in no time.

Before using eRx NOW, Dr. Cornell had noticed an increasing amount of frustration within the practice. His staff was getting bogged down with calls from pharmacists requesting clarification on a prescription, and his patients were getting irritated when a prescription wasn't ready on time. Now, Dr. Cornell's nurses have more time to assist him in providing patient care and his office manager is free to meet patient's scheduling and billing needs.

eRx NOW adds a layer of safety for Dr. Cornell and his patients by performing drug-to-drug interaction checks. The amount of prescription information and patient history eRx NOW contains enhances the quality of care that he provides to his patients, and being able to access information about a certain type of medication before he prescribes it helps him to make the best decision about what type of medication to prescribe.

Final thoughts

"I encourage all of my colleagues to use eRx NOW in their practice," said Dr. Cornell. His view is that there really is no reason why every physician shouldn't take advantage of the free eRx NOW software. He continued, "Electronic prescribing is the best way to ensure that you are providing your patients with quality healthcare, and NEPSI has provided a simple, safe and secure way to do so."

PART III

State Level Leadership in E-Prescribing: Case Examples with Best Practices and Lessons Learned

I. The Big Picture: What Works and Lessons Learned from 19 Large Scale E-Prescribing Initiatives[xxxiv] (Note: All of Section I. is excerpted from "What Does It Take? Lessons Learned from ePrescribing Successful and Unsucessful Initiatives," presentation given by Tony Schueth at CMS E-Prescribing Conference, October 6-7, 2008)

A detailed survey was conducted by Point-of-Care Partners in 2008 of representatives of 19 large scale e-prescribing initiatives taking place in 15 states: California, Colorado, Delaware, Florida, Illinois, Massachusetts, Michigan, New Hampshire, New Jersey, New Mexico, New York, North Carolina, Ohio, Rhode Island, and Washington. Six of these states ranked in the top in e-prescribing, receiving SafeRx Awards from SureScripts in 2007 (Delaware, Massachusetts, Michigan, North Carolina, Rhode Island, and Washington). A closer look at several of these individual initiatives is provided in the sections that follow.

The survey revealed key commonalities amongst the initiatives' experiences that have been critical to their success:

1. What were the goals for the initiatives?

-Quality and Safety
-Overall efficiencies and cost savings
-Overall efficiencies and cost savings
-First step in getting physicians moving towards an EHR
-Response to need within the community/spearhead process
-Response to need within the community/spearhead process
-Get formulary and drug lists to the physicians at point of care
-Manage diversion issues
-Profit
-Understand the ROI

Improvement in quality and safety and increasing efficiencies and decreasing overall costs drive the majority of eRx initiatives surveyed.

2. Which stakeholders are participating?

Health Plans-2/19 (63.2%) Pharmacy Benefit Managers-8/19 (42.1%)

Physician Groups-8/19 (42.1%) Employers-2/19 (10.5%)

RxHub-11/19 (57.9%) SureScripts-8/19 (42.1%) Other-11/19 (57.9%)

3. Most of the initiatives had several sources of funding, but the top two were: a. Health plans, and; b. Grants—state, federal, or both. Not surprisingly, if the health plan is a stakeholder in the initiative, it is usually a key source of funding. Additional sources of funding included local organizations and/or sponsors within a community, and employers.

4. Regardless of the governance structure, what appears most important to the

Initiatives is commitment from all stakeholders and regular working group meetings to oversee administration, vendor, implementation and utilization issues.

-7 initiatives were governed by an executive committee of the primary stakeholder
-6 were governed by an executive or steering committee of stakeholders
-5 reported no formal governance structure but regular meetings with involved stakeholders

5. Most respondents view financial incentives tied to utilization as the necessary next step to drive long term utilization.

10 initiatives provide financial incentives to physicians; most require minimum utilization thresholds. In markets where there are existing pay-for-performance programs, providers may be eligible because of their participation in the e-prescribing initiative. Of the initiatives that do not provided financial incentives at this time, several are considering adding it in the near future. Almost all initiatives provide hardware/software licenses and/or other start-up fee, which they see as a form of financial incentives. In one initiative, some malpractice insurers are giving discounts to participating physicians.

6. There was a wide distribution in the number of e-prescribing vendors used, with five initiatives having one vendor, nine open to any certified e-prescribing or EMR vendors, and five initiatives having a limited set of vendors. Most require a minimum set of e-prescribing system functionalities. T

Top Three Lessons Learned Relative to Vendors:

a. Support-Vendors must provide dedicated on-site office support. They need a robust service model.
b. Delivery-Vendors should deliver what is promised and make sure that what is promised has actually been implemented in diverse environments and it works.
c. Workflow-Vendors need to understand the physician's workflow and stay innovative.

7. Has physician participation, usage, and adoption met your expectations?
Yes-6 No-10 Somewhat-3

8. What is your greatest unmet challenge? Removing the DEA barrier to e-prescribing controlled substances, which requires physicians to use two systems—paper and electronic.

9. What are the top results/values you expect and have these been met? 14 respondents whose goals included patient safety, increased generics/formulary compliance and the associated cost savings, reported their expectations have been met or somewhat met. Many report clear cut, measurable savings. Four participants, primarily in rural areas, could not overcome technical and other barriers to yet see results. Three participants felt it was too early to say.

Several respondents pointed out that metrics are needed to measure the ROI on improved patient safety. " We see the alerts and physician responses to them so we know we are saving lives. We know that translates to cost-savings, but we can't quantify it."

10. If you do it all over again, what would you have done differently?

-A dedicated field source to go to each physician office

-Pinning stakeholders to stronger commitments to their time lines
-More emphasis on out-reach and promotion to the physicians. If you build it, they won't come!!
-Get volume based incentives into the program
-Speed development of transaction and data standards
-Partnered with more vendors.
-Chose more than one vendor, increase the stakeholders, get more employers involved
-Ongoing service model beyond deployment
-Make sure you gave good connectivity before getting physicians in the rural areas involved
-Physician incentives up front and on-going service model
-Manage physicians better since they wait too long to report a problem and there are very few chances to recover when they do
-Better reporting database to evaluate value more easily.
-Better defined criteria for vendors
-Set more short-term, attainable goals
-Created a 501c to deal with the funding
-Better emphasize value for the physicians.

11. Conclusions/Recommendations

A successful Initiative should consider the following:

a. Professional, dedicated project management a must
1. **Experience in ePrescribing & neutral orientation preferred**
2. **Must manage vendors, data, physician organizations & project**

b. Incentives are crucial
1. **Compliment existing health plan programs**
2. **Enable physicians to capture MIPPA incentives**
3. **Provide for 'most important' physicians**

c. Physician utilization data base is critical
1. **Allows ROI analysis**
2. **Track incentive payments**
3. **Managed by project manager**

d. Vendors & Physician Organizations
1. **Must have some acceptable minimum functionality & reporting**
2. **Must be managed so that they are appropriately focused**
3. **Need to meet regularly (monthly) to address implementation issues, best practices and utilization**

e. Physician Advocate
1. **Vendors, consultants, or others need to act as process improvement agents**
2. **With vendors, buyer beware –some vendors' business models, incentives are not aligned with utilization**
3. **Model varies by market & initiative**

f. Communication to community stakeholders
1. **Must keep in the loop with well conceived PR & marketing plan**
2. **Not decision making (Steering Committee)**

II. Top Two States in E-Prescribing: Providing a Roadmap for Successful Statewide E-Prescribing Initiatives

Since 2005, when SureScripts initiated its Annual Safe-Rx Awards, which recognizes outstanding efforts to improve patient safety and practice efficiency through the use of electronic prescribing technology, Rhode Island and Massachusetts have been at the top of class in e-prescribing adoption and growth. Rhode Island was ranked number 1 in the nation in 2005, and second behind Massachusetts, which received the first place award for 2006 and 2007.[xxxv]

Detailed below are these two cutting edge states' experiences, lessons learned, and best practices--offering a clear roadmap other states can follow to catalyze e-prescribing adoption and use in their own statewide initiatives.

A. RHODE ISLAND

1. BACKGROUND AND ACCOMPLISHMENTS

• RI is the first state to electronically link physicians to the most pharmacies within its borders.[xxxvi]

The State of Rhode Island has been one of the nation's leaders in promoting and implementing widespread adoption of e-prescribing throughout the state. In 2003, behind the leadership of the Rhode Island Quality Institute (RIQI), it served as SureScripts national beta test site for electronic prescribing, which allowed physician offices to link directly with established pharmacy software. The state received the "SafeRX" award for 2005, 2006, and 2007, finishing first (2005) and second (2006 and 2007) nationally for percentage of eligible prescriptions routed electronically. The "SafeRX" award is given to the top 10 e-prescribing states in the nation by the National Association of Chain Drug Store, the National Community Pharmacists Association, and SureScripts-RxHub.

In 2007, Rhode Island reached its highest percentage of new e-prescriptions and e-refill responses electronically transmitted, 9.05%[xxxvii]. By comparison, a 2007 national progress report by SureScripts[xxxviii] showed only 2% of eligible new and renewal prescriptions were filled electronically. The number of e-prescribers in the state more than doubled between 2005 and 2007, from 388 to 729, the latter figure representing 29% of all prescribers in the state (compared to only 6% of all prescribers who were using e-prescribing at the end of 2007 in SureScripts national progress report).

Pharmacies' e-prescribing capabilities were already high in 2005, with 157 or 87% of all pharmacies in Rhode Island having this capability. By the end of 2007, these numbers grew to 179, or 89% of all pharmacies in the state.

2. BEST PRACTICES contributing to Rhode Island's E-Prescribing Success[xxxix]

a. Widespread Multi-Stakeholder Support and Involvement

Underlying Rhode Island's e-prescribing success is a multistakeholder driven desire to transform health care in the state, which led to the formation of the Rhode Island Quality Institute (RIQI) which has a "vision of electronically connecting all retail pharmacies and all prescribers across the state." RIQI's governing principles have been a major factor in its success:

• *EMBRACE VARIED INTERESTS*
RIQI was launched in 2001, when Sheldon Whitehouse, then-Attorney General of Rhode Island, now U.S. Senator, invited a group of high-level executives from every constituency of health care to come to the table and help transform the state's health care system. Since then consumers have joined the cause to develop a health care system that strengthens the patient-physician relationship.

"Considering the diversity of interests and complexity of issues that surround health care delivery reform, the level of collaboration that now exists among members of the RIQI Board is quite remarkable. This is especially true when you consider the commitment it has taken for these leaders to meet regularly over the years." George Vecchione, President and C.E.O., Lifespan

• *GET TO YES*
When challenges are this complex, solutions have to be developed in a more collaborative way. That can be difficult when you do not work together naturally. It takes healthy debate and plenty of give and take to reach consensus, and that is what we are committed to do.

"When we get up from the table it feels as if we've come away with a fair decision, something I can get really behind, something I can champion in my organization." Marti Rosenberg, Executive Director, Ocean State Action

• *BE AN INCUBATOR FOR INNOVATION*
The essence of health care is nurturing human life. Safety is paramount, so is caution and conservatism. To paraphrase Einstein, you can never solve a problem in the framework in which it was created. By getting a roomful of people from diverse backgrounds to look at a problem from different angles we are able to come up with more innovative solutions.

• *LEARN FROM THE BEST*
While RIQI's focus is regional, our alliances extend across the country. We partner with organizations from business, education, research, government, and health care quality to maximize learning. Instead of reinventing the wheel we apply what already has been proven effective so we can accelerate the process for adopting strategies that will benefit everyone with better health care.

• *GAPS*
RIQI and its members all want safer, more effective health care. That's why hospitals, insurers, and government have initiated their own quality programs. This however can produce duplication of effort and fragmented communication. It is possible to achieve so much more by uniting behind a common cause. This is why one of RIQI's chief objectives is to help bring everyone together so we can help coordinate and leverage these individual efforts.

• *PROVIDE THE RIGHT TOOLS*
After literally drowning in administrative paperwork, the health care system is finally poised to enter the 21st century. Technology isn't a cure-all but it can help cut the overhead costs of managing patient care, reduce or eliminate mistakes, and potentially allow health care providers to spend more time with patients.

"Look what happens when physicians recognize common interests; we improve the quality and efficiency of care. The state's largest physician groups are partnering with a selected

software vendor to help medical practices acquire electronic health records and connect with a Statewide Health Care Information Exchange." Mark D. Jacobs, MD, President and CEO Coastal Medical

• *A HIGH SET OF VALUES*

Getting things done requires a strong commitment to the following values:

- Action-oriented innovation
- Consensus decision-making
- Top-level commitment
- Inclusiveness
- Ethical leadership
- Accountability
- Accessibility
- Transparency
- Improved value
- Less waste

b. Strong Backing by the State's Political and Governmental Leaders

In addition to Senator Whitehouse's leadership in forming the RIQI, the institute and its cutting edge activities have strong bipartisan support. Governor Donald Carcieri (R) is a strong promoter of RIQI, as is Rhode Island Congressman Patrick Kennedy (D):

"Being a non-partisan organization allows representatives from both parties to lend support to these vital initiatives. The transformation of the health care system is a national priority whatever side you stand on." Hon. Donald Carcieri, Governor Rhode Island

"By focusing on improving safety in every Rhode Island Intensive Care Unit (ICU), we stand to save hundreds of lives each year, not to mention the millions of dollars we'll be saving by reducing complications." Congressman Patrick. Kennedy

The Rhode Island Department of Health also provides strong backing for the RIQI:

"The Rhode Island Quality Institute is one of the few places in the nation where, in one meeting, an innovative idea can be put before every major stakeholder needed to make it happen. That's why SureScripts launched its electronic prescribing system here." David R.Gifford, MD, Director, Rhode Island Department of Health

The state department of health actively promotes e-prescribing for the citizens of Rhode Island, with e-prescribing information on its website, include a link to "learnaboutprescriptions.com," explaining the benefits of e-prescribing to consumers and helping them find which physicians and pharmacies are offering e-prescribing in their area.

Directly serving on the RIQI Board are the state's Health Insurance Commissioner Christopher Koller, the state's Lieutenant Governor Elizabeth Roberts, the state's Deputy Secretary of the Executive Office of Health and Human Service, Adelita Orefice.

Public statements of support for e-prescribing have also been issued by two state agencies: the Rhode Island Board of Medical Licensure and Discipline and the Rhode Island Board of Pharmacy.

c. Committed Leadership and Support for the Work of RIQI

The Board of RIQI includes the top leaders of Blue Cross and Blue Shield of Rhode Island, Lifespan (a major New England health care system), Brown University Medical School, CVS Caremark, the Rhode Island Medical Society, United Healthcare of New England, Inc., Care New England, Neighborhood Health Plan of Rhode Island, Rhode Island Disability Law Center, Providence Community Health Centers, Coastal Medical, Inc. (one of the SureScripts beta sites mentioned above), Quality Partners of Rhode Island, the Greater Providence Chamber of Commerce, the Hospital Association of Rhode Island, Gateway Healthcare, Inc., the Westerly Hospital, an internist, and a consumer representative.

Also very important to the RIQI's work are its Alliance Partners, SureScripts and the Johns Hopkins University Quality and Safety Research Group.

d. Strong and Diverse Funding and In-Kind Support Base

As of 11/30/08, RIQI was receiving total funding of $2,221,500, with major contributions from Blue Cross Blue Shield of Rhode Island, Lifespan Corporation, CVS/Caremark Foundation, United Healthcare of New England, and the Rhode Island Foundation. In total, 35 organizations are providing financial support to RIQI.

In-kind support is also very strong, coming from 31 organizations, including the state Department of Health, Governor Carcieri, the Rhode Island Medical Society, Senator Whitehouse and Congressman Kennedy, Blue Cross Blue Shield of Rhode Island, the Hospital Association of Rhode Island, Quality Partners of Rhode Island, the Rhode Island Office of Health and Human Services, and many others.

B. MASSACHUSETTS

1. BACKGROUND AND ACCOMPLISHMENTS

• ***Massachusetts, through its eRX Collaborative, has experienced 6 fold growth in the number of prescriptions transmitted electronically in the state, reaching a nation leading 8.9% in 2006, and 13.43% in 2007[xl]. One of the Collaborative's members, Blue Cross Blue Shield of Massachusetts, was awarded the 2006 Innovation and Excellence Award for Health Information Technology by America's Health Insurance Plans; the success of the eRX Collaborative was a critical component in this recognition.***[xli]

The eRx Collaborative[xlii] was established in October 2003 as an outgrowth of individual ePrescribing pilots at Blue Cross Blue Shield of Massachusetts and Tufts Health Plan. Neighborhood Health Plan joined in August 2004. Initially the eRx Collaborative partnered with ZixCorp® as the technology provider and added DrFirst™ to the program in 2005. The members collaborate to promote and enable the use of electronic prescribing in Massachusetts.

The mission of the eRX Collaborative is[xliii]:

To collaboratively promote and enable the usage of electronic prescribing in Massachusetts in order to improve patient safety, healthcare affordability, quality and delivery. The eRx Collaborative strongly believes that point-of-care ePrescribing technology has the power to improve patient safety by allowing prescribers to:

* Access patient-specific drug histories to determine the patient's current and past prescriptions

* Check for drug-drug and drug-allergy interactions

* Write new and renewal prescriptions electronically minimizing possible errors from illegible handwriting

* Check for formulary compliance

* Access drug reference guide

Since its 2003 inception, eRX Collaborative prescribers have sent 15.6 million electronic prescriptions. In the first six months of 2008, 2.1 million electronic prescriptions were sent by eRX Collaborative prescribers. During this period, 50,000 prescriptions were changed as a result of drug-drug or drug-allergy e-prescribing alerts—averting potentially serious adverse drug events.[xliv]

Through the Program[xlv], eligible prescribers can receive sponsorship which includes:

* Hand-held device loaded with ePrescribing software

* One year license fee and support

* 6 months of Internet connectivity where applicable

* Deployment (including training & one time patient data download where feasible)

* Access to a browser version of the software from any PC with Internet connectivity

The eRx Collaborative continues to sponsor new prescribers, and evaluate the best way to expand awareness and adoption of e-prescribing in Massachusetts for the current year and beyond. The Collaborative views e-prescribing as a first step to an electronic practice. A fully electronic practice is one of the pathways to reach the ultimate goal for health care: to improve patient safety, quality and delivery.

2. BEST PRACTICES contributing to Massachusetts's E-Prescribing Success

As one of the largest e-prescribing programs in the nation, the eRX Collaborative attributes its success to "unprecedented collaboration among health plans, a comprehensive funding structure, and exceptional support for e-prescribing vendors[xlvi]."

a. <u>Widespread Multi-Stakeholder Support and Involvement</u>

Founded in 2005 by the eRx Collaborative, the MA eRx Steering Committee includes health plans, technology vendors, pharmacies, and organizations involved in the prescription process who are working together to promote and expand the adoption of e-prescribing in Massachusetts. We believe that widespread adoption of e-prescribing is critical to improving health care quality and maintaining affordability for Massachusetts's citizens[xlvii].

According to the January 2005 issue of *Managed Care Report*:

"A key part of the Massachusetts project's success is that the two market leading Plans worked together, and were even joined by a third Plan. ***That kind of collaboration sends a powerful message to physicians that ePrescribing is a change worth making****."*

b. Education: Spreading the Word on E-Prescribing's Benefits With Targeted Messages to Providers, Office Staff, Patients, Pharmacies, and Payers/Employers

The eRX Collaborative has dedicated sections of its website for consumers, health plans, and prescribers.

The eRX Collaborative has prepared and widely disseminated a Fact Sheet on the Benefits of e-Prescribing[xlviii]:

- **Providers benefit from ePrescribing by:**

-Obtaining real-time information about potential drug-drug and drug-allergy interactions. This minimizes calls from pharmacies and reduces potential adverse drug events.
-Reducing handwriting interpretation errors, estimated to cause 9% of all medication errors.
-Seeing plan formulary requirements (prior authorization, quantity restrictions, non-covered drug, and drug tier) at the point of care, giving the patient faster access to cost-effective care.
-Seeing a patient's dispensed drug history, thereby enabling the prescriber to make clinically appropriate decisions at the point of care.
-Knowing when an FDA Safety Alert has been issued, and allowing them to generate a report of all patients on the drug without needing to pull patient charts.
-Having access to clinical decision support tools.
-Increasing the convenience and efficiency of the prescription-writing process.

- **Office staff benefit from ePrescribing by:**

-Reducing calls from pharmacies regarding non-covered medications and handwriting questions.
-Speeding the prescription renewal process by reducing the need to pull patient charts. Case studies suggest a savings of 1-2 hours/day for office staff.
-Eliminating calls from patients who are requesting an alternative medication or need the prescriber to request prior authorization.

- **Patients benefit by:**

-Having lower out-of-pocket costs when prescribers respond to e-prescribing formulary messages.
-Saving time at the pharmacy by having prescriptions sent prior to patient arrival, and reducing the potential for two trips because prescribers more frequently adhere to health plan requirements.
-Reducing potential for adverse drug events caused by drug-drug or drug-allergy

interactions, mistaken handwriting, or incorrect dosage.
-Increasing compliance with prescribed treatment because care is cost-effective and convenient.

• **Pharmacies benefit by:**
-Reducing phone calls to physicians regarding handwriting interpretation, non-covered drugs, and prior authorizations requirements.
-Improving customer relationships by speeding the time it takes patients to obtain prescriptions.
- Reducing data entry when prescriptions are received electronically.
- Reducing potential errors caused by handwriting misinterpretation and keystroke errors.

• **Payers/Employers benefit by:**
-Maintaining affordability by increasing utilization of generic and preferred brand drugs.
-Reducing costs associated with adverse drug events.
-Increasing patient compliance with prescribed treatment plan.
-Increasing provider efficiency by allowing providers to spend more time on patient care.

c. Guidance to Health Plans to Start or Enhance an E-Prescribing Program

The eRX Collaborative, through its own growth and lessons learned, has identified four key factors to help ensure e-prescribing program success[xlix]:

1. Cooperation between Health Plan competitors

2. Confirming technological infrastructure to support ePrescribing prior to implementation

3. Obtaining support from on-site champions and senior management

4. Planning for interoperability with existing and/or future technologies (e.g. EMRs)

d. Financial and Education Incentives to Encourage Prescriber Participation[l]

1. Software/Hardware/Connectivity Sponsorship

Prescribers who are eligible for eRx Collaborative sponsorship may choose from one of several hand-held devices loaded with an ePrescribing software application. Sponsorship also includes 6 months of Internet connectivity where applicable, one year of ePrescribing service, access to the web-based version of the software, deployment and training, plus support services for one year. After the first year, prescribers are responsible for any program fees.

2. Technology Ease of Use/Benefits of Usage

Ease of use is another vital factor in e-prescribing adoption. According to one user: *"The system is very easy to use; it's very intuitive. My staff and I had no problem learning, even though we represent a wide range of computer abilities…It's amazing how easy it is to do prescriptions this way."*

Other testimonials on the technology's high value included:

-"The rewards are exponential. Aside from making prescriptions readable and fewer errors, refills can be done at warp speed. Once a patient is in the system, we can order a refill in a quarter of the time it used to take."

-"PocketScript has made our lives easier..the biggest advantages of PocketScript is that when medication is entered into the PDA, the database immediately flags possible drug interactions and searches the patient's records for medications that he/she may be taking and forgotten to tell the doctor about."

3. Continuing Medical Education Credits for Course on E-Prescribing

In addition, to further encourage physician participation, in partnership with the Massachusetts Medical Society, the eRX Collaborative has developed an online Continuing Medical Education course: "How to Improve Medication Safety and Reduce Drug Costs Through e-Prescribing," which is approved 2.5 hours of AMA PRA Category 1 credits.

III. Highlights of Other States' E-Prescribing Initiatives

A. National E-Prescribing Leaders

SureScripts compiles annual statistics[li] on rates of e-prescribing adoption—in terms of number/percent of e-prescribers and e-prescriptions, for all 50 states. For 2007, the top 10 e-prescribing states, with % of total eligible prescriptions transmitted electronically in parentheses:

1 Massachusetts (13.43%)

2 Rhode Island (9.05%)

3 Nevada (7.06%)

4 Delaware (4.21%)

5 Michigan (4.20%)

6 Maryland (3.17%)

7 North Carolina (3.07%)

8 Arizona (2.89%)

9 Connecticut (2.57%)

10 Washington (2.57%)

All these states were above the 2% national average of e-prescriptions transmitted in 2007, and each had substantial growth in the percentage of e-prescriptions transmitted from the year before (2006).

B. Profiles of Other State E-Prescribing Initiatives[lii]

Arizona

Arizona Governor Napolitano created the Arizona Health-e Connection (AzHeC) in 2005 with the goal of promoting widespread EHR adoption by 2010. Part of this effort includes accelerating the use of e-prescribing across the state through the *EAzRx* initiative.

To build on existing leadership and efforts, move Arizona even further ahead in e-Prescribing, and to use e-Prescribing as a "beachhead" for other Health Information Infrastructure activities, Arizona Health-e Connection (AzHeC), together with health care stakeholders, consumers, and government agencies, is launching an e-Prescribing initiative, EAzRx[liii].

AzHeC's Board established an e-Prescribing Steering Committee to establish and oversee the EAzRx initiative. The Committee is experiencing great leadership under its pharmacy and physician co-chairs: Mindy Rasmussen, Executive Director of the Arizona Pharmacy Alliance; and Dr. Brad Croft, a family practice physician from Flagstaff. After viewing a variety of data on initiatives in other states, gathered by Dr. Terri Warholak of the University of Arizona College of Pharmacy, the Committee established a mission, goals, and strategies, which were also reviewed and approved by the AzHeC Board. A presentation providing greater detail is available for download from this page.

Mission—Arizona Health-e Connection and its EAzRx Steering Committee are committed to enhancing patient safety through increased e-prescribing adoption by clinicians in Arizona. We will use the combined expertise of the EAzRx Steering Committee, Arizona Partnership for Implementing Patient Safety, providers, pharmacists, and other stakeholders to further the initiative.

Goal—To achieve nearly 100% of possible e-prescriptions being e-prescribed by April 2013 (5 years).

Major Strategies

-Provide umbrella coordination organization (EAzRx Steering Committee)

-Provide information and statistics in easy-to-access format (time saving for provider
-Recognize top e-prescribers in Arizona

-Coordinate and publish Arizona case studies to educate the provider community

-Work to identify real incentives and apply for grants to provide "flow-through" funding

-Improve patient safety and encourage patient involvement in the e-prescribing process

Florida

ePrescribe[liv] Florida was established to increase patient safety and meet the needs of the Florida public by establishing and promoting an understanding of electronic prescribing through educational and outreach programs and promoting a collaborative framework for health plans as well as incentives for adopting e-prescribing technology.

ePrescribe Florida offers free educational and implementation programs, with the goal of accelerating physician adoption and cooperation among prescribing constituents.

ePrescribe Florida is continuing its work to accelerate the adoption of e-prescribing through many private and public partnerships. Activities include listing certified e-prescribing vendors as a way to help physicians find a technology solution to meet their needs; education and outreach training; and a three-day seminar that brought together providers, pharmacists, vendors and others. These efforts are supported by the state's Agency for Health Care Administration (AHCA), which is the chief health policy and planning entity for the state and continues to support growth in both the private and public sectors. The Legislature has directed AHCA to promote the implementation of electronic prescribing.

Currently ePrescribe Florida has two workgroups dedicated to increasing understanding of ePrescribing, what the options are and how to be successful in this important use of technology to enhance patient safety, reduce staff time while continuing to provide quality care. The two workgroups are:

Provider Outreach Workgroup – Dedicated to prescriber education.
Vendor Solutions Workgroup – Dedicated to successful ePrescribing.

The extensive, multi-stakeholder collaborative nature of ePrescribe Florida is reflected by its Steering Committee and Advisory Council, with 27 major organizations represented including health plans, state government, provider and pharmacy organizations, and employers.

Minnesota

Under a recently passed state law, **Minnesota is the first state in the nation to mandate electronic prescribing,** effective January 1,2011.

Minnesota has long been known as a leader in healthcare delivery and financing. Governor Tim Pawlenty joined with leaders from Minnesota's largest healthcare organizations to announce the Minnesota Health Information Exchange that will connect doctors, hospitals and clinics across healthcare systems so they can quickly access medical records needed for patient treatment during a medical emergency or for delivering routine care. Governor Pawlenty was instrumental in moving the legislation which mandates statewide e-prescribing by 2011.

According to an October 2008 Fact Sheet from the Minnesota Department of Health[lv], the reasons for mandating e-prescribing in Minnesota are:

• To improve the quality, safety and cost-effectiveness of the entire prescribing and medication management process.
• To reduce Adverse Drug Events (ADE) costs which are too high in human and financial terms.
• To reduce burden of callbacks and rework to discuss possible errors and clarify prescriptions.
• To facilitate access to comprehensive drug information between outpatient and hospital settings which will reduce ADEs.

Mississippi

Handheld Wireless Medication Management Program: Personal Digital Assistant (PDA) Device (eMPOWERx) - The State of Mississippi now has a platform for delivering clinical information and decision support through a wireless personal digital assistant. Gold Standard Multimedia has developed a wireless handheld medication management program that empowers the state's high volume Medicaid prescribers with real time access to patient specific medication histories integrated around comprehensive prescription drug information. This program provides Medicaid physicians with access to a comprehensive, unbiased drug information database integrated around timely, patient-specific medication histories (including prescriptions written by other providers) - all at the point of care. Providers will have the capability to review their patient's medication history during the evaluation of their current medical condition, including screening this information for such things as duplicate therapy, alternative therapies from the PDL, and unnecessary or redundant prescribing. This will increase prescribing and fulfillment efficiencies as well as provide expeditious communication of PDL and benefit coverage changes. The system includes a variety of innovative tools that allow providers to better manage their Medicaid patients and combat fraud and abuse in the prescription drug benefit program. The program has consistently achieved a high return on investment to the state, and has been recognized nationally as an innovative, successful approach to medication management and cost containment in Medicaid. As to health information technology, our agency use the Pharmacy Point-of-Sale (POS) system, electronic billing, card swipe to determine eligibility and automate voice response (AVRS).

Missouri

Missouri's Medicaid providers have utilized an electronic health record since 2006. The electronic health record is a web-based tool that physicians and other health care providers use to access electronic health records for Medicaid patients. Treating providers can view a patient's medical history including diagnoses, procedures, and prescribed drugs. Physicians can electronically submit prescriptions and request pre-certification for imaging procedures and durable medical equipment. All of this is done in a secure environment, and the entire system is Health Insurance Portability and Accountability Act (HIPAA) compliant. Recent enhancements to the tool include importing laboratory data and integrating a medication possession ratio for medications used to control chronic conditions.

New Mexico

The New Mexico Prescription Improvement Coalition (NMPIC) has launched a pilot project to promote the adoption of e-prescribing. During the first year, the pilot sponsored 128 physicians in New Mexico to enable them to implement e-prescribing by paying their implementation and annual subscription expenses. In all, the pilot will support participant administrative and subscription fees for two years, for up to 300 physicians, until January 2010.

NMPIC is requiring selected e-prescribing vendors to track physician-generated credits and invoice participating health plans accordingly. Vendors are also responsible for establishing the credit fund and accounting, determining physician annual subscription fee reimbursement and quarterly y reporting to NMPIC. Allscripts, DrFirst, Relay Health, RxNT and ZixCorp have been selected as vendors supporting the pilot.

Four health plans serving New Mexicans and the state's Medicaid division are on board

as sponsoring organizations, based on prorated market shares. Sponsoring organizations are responsible for funding pilot implementation costs. The New Mexico Medical Review Association (NMMRA), the Medicare Quality Improvement Organization for New Mexico and the organization that facilitates NMPIC, is signing agreements with sponsors and with vendors on behalf of the coalition. In addition, NMMRA is collecting funds from sponsors and acting as financial intermediary for the vendors. All contracts with health plans are in place, and all participating health plans and Medicaid are in the process of reviewing their vendor contracts.23 The state's Medicaid program was also recently was awarded a Medicaid transformation grant to help spur electronic prescribing.

Oklahoma

The Oklahoma Health Care Authority contracted with Epocrates, Inc. in November 2004 to provide pharmacy benefit information to prescribers and pharmacists using their desktop computers or Personal Digital Assistants (PDAs). The free formulary listing of drugs currently covered and check preferred alternatives, prior authorization requirements, quantity limits and other drug-specific messages programmed by OHCA.

Oklahoma is currently expanding its e-prescribing options for providers. OHCA has contracted with a vendor that will supply hardware (if needed), e-prescribing software and training to selected OHCA-contracted providers to allow them to exchange data and submit electronic prescriptions utilizing standardized transactions. Participating providers will have access to information about recent prescription claims, member eligibility, formulary and visits to other providers. The e-prescribing software also will screen new prescriptions, compare them with the member's medication history and alert the prescriber of any possible drug interactions. Prescribers also will be able to see whether members are refilling their medications on a timely basis. The software and hardware provided by OHCA will allow the prescriber to directly submit the prescription to the pharmacy of the member's choice, increasing efficiency in both the prescriber's office and the pharmacy. The pharmacy will be able to electronically request refills from prescribers who use the e-prescribing software.

Texas

The Texas Medical Association, working with SureScripts, sponsored an educational series on medication documentation, monitoring and communicating aimed at helping to identify and reduce medication errors. The series focused on benefits of e-prescribing and ways to avoid common medication errors, documentation strategies, better patient - physician communication, risk management strategies, controlled substances and tips for improving patient compliance with treatment recommendations. Physicians who were insured with Texas Medical Liability Trust (TMLT) earned a three percent professional liability insurance discount which was applied to their next eligible policy period.

UnitedHealthcare, in December 2008, announced it will provide electronic prescribing technology for 200 primary care physicians throughout Texas. Based on the success of similar pilot programs in Ohio and Florida, the Minneapolis-based health insurer will use e-prescribing software created by Zix Corporation. The system will allow physicians to order prescriptions for patients through a secure, wireless handheld PDA or secure Web site. Once ordered, the prescriptions will be sent electronically to the patient's preferred pharmacy. The wireless application also includes real-time access to a drug reference guide and can issue drug-to-drug and drug-to-allergy interaction alerts based on the patient's specific

medication history. Under the partnership, UnitedHealthcare will pay for the technology and services for an undisclosed time period.[lvi]

Tennessee

The Tennessee Information Infrastructure eHealth Exchange Zone is being developed to transform how health information is accessed and delivered by the Tennessee care-giving community. Plans call for eHealth applications to be phased in as participation by healthcare providers grows. The solution features an online collaboration center—a Virtual Private Network (VPN)-based portal—designed to safely and securely enable such applications as e-prescribing; clinical messaging; sharing high-density images, including X-rays, MRIs and CT scans; exchanging patient information via portable health records; delivering telemedicine applications; and accessing Tennessee Department of Health applications, including the immunization registry, disease registries, death certificate applications and processing and medical license renewal.

The network has an added security component for protecting health information provided by the Covisint OnDemand Platform. The platform is a hosted solution that provides dual-factor authentication of healthcare providers using the VPN-based portal, which supports all HIPAA privacy requirements. It also centralizes, automates and streamlines access to information across healthcare communities statewide by giving physicians the ability to use many health-information applications such as e-prescribing with a single sign-on.

Tennessee is also moving toward disbursing funds in support of e-prescribing in key regions of the state. Through its relationships with physicians, payers and technology vendors, Shared Health, the nation's largest public-private health information exchange, offers ePrescribe. This Web-based electronic prescribing solution facilitates the creation and electronic transmission of new prescriptions and prescription refills. With ePrescribe clinicians can minimize medication errors, improve formulary compliance, reduce pharmacy callbacks, increase efficiency and streamline workflow. Access to ePrescribe is free to all physicians and incorporated in Shared Health's Clinical Health Record application.

C. State Medicaid Transformation Grants Related to E-Prescribing

In 2007, the Centers for Medicare and Medicaid Services (CMS), under Section 6081 of the Deficit Reduction Act, awarded $150 million in grants to State Medicaid agencies for "the adoption of innovative methods to improve the effectiveness and efficiency in providing medical assistance under Medicaid."[lvii]

Eight states were awarded Medicaid Transformation grants for e-prescribing related initiatives: Arizona, Connecticut, Delaware, Florida, New Mexico, Tennessee, Utah, and West Virginia. Most of these programs are in the early stages of implementation; summaries of each are provided below. The full application/program description for each of the eight states awarded the Medicaid Transformation Grants for e-prescribing can be found on the CMS website at: www.cms.hhs.gov/MedicaidTransGrants. These grants supplement e-prescribing activities already underway, cited above, in the states of Arizona, Florida, New Mexico, and Tennessee.

1. Title: Arizona Medicaid Health Information and Exchange Utility Project

Abstract:

The Arizona Health Care Cost Containment System (AHCCCS) is Arizona's Single State Medicaid Agency, providing health care coverage for over one million Medicaid and SCHIP beneficiaries. The agency initiated a planning process during the past year in anticipation of this grant. AHCCCS is proposing to develop and implement a web-based health information exchange (HIE) utility to achieve the **goal** of giving all Medicaid providers instant access to beneficiaries' health records via electronic connection at the point of service. The electronic health record (EHR) available through this HIE utility will include patient demographics and eligibility information, patient problem lists, medications, lab tests orders/results, radiological results and images, inpatient discharge summaries, and clinical notes. **Federal funds in the amount of $11,752,500 over the next two years** are requested to support its planning, design, development, testing, implementation and evaluation. This project proposes a sustainable model organized around AHCCCS as one of Arizona's major payers of health care services.

Implementing this HIE utility will transform the AHCCCS Medicaid program and the patient care process. Providing timely patient health information at the point of service will **improve the quality, efficiency and effectiveness** of Arizona's Medicaid program. Real time health information access will result in reduction of medical errors, reduction of redundant testing and procedures, better coordination of care for chronic diseases, increased preventive interventions, reduction in the inappropriate use of the emergency room, and lower administrative costs. When aggregated, these benefits will save significant state and federal taxpayer dollars (in Medicaid, SCHIP, and IHS) as well as beneficiary and provider frustration.

The proposed HIE utility will also provide the infrastructure to support the goals of the Quality and Cost Transparency Initiatives of President Bush and Secretary Leavitt by making relevant information available to Medicaid beneficiaries and providers in a user friendly format.

Developing and implementing a web-based HIE utility and application service provider (ASP) capability within two years will achieve the following **outcomes**:
• Reduction in overall annual acute and long term care Medicaid program medical costs of 3% on average;
• Connection of 35% of AHCCCS providers who will be actively sharing electronic health information through the HIE utility by the end of 2009, 60% by the end of 2010 and over 90% by the end of 2011;
• Reduction in overall Medicaid health system administrative costs of 2% annually through fewer manual medical record reviews, record copying, denial of claims, claims errors, and avoidance of fraud and abuse through effective beneficiary identification;
• Improved quality of care oversight and quality transparency through the provision of timely performance information;
• Improved care coordination for chronic diseases and better coordination between behavioral health and physical health services; and
• Enhanced opportunities for better self-management of chronic illnesses by beneficiaries and their families through access to their health information and online wellness materials.

AHCCCS will be an ASP for Medicaid providers providing basic EHR applications including e-prescribing and lab order entry and results reporting. (p.6)

Statement of Project/Need:

The Arizona Health Care Cost Containment System (AHCCCS) is Arizona's Single State Medicaid Agency, providing health care coverage for over one million Medicaid and SCHIP beneficiaries. AHCCCS is proposing to develop and implement a web-based health information exchange (HIE) utility that will provide authorized Medicaid clinicians, hospitals, long term care providers, ancillary service providers, community based care programs, and managed care health plans instant access to Medicaid beneficiaries' electronic health records (EHR) at the point of service. The health records available through this HIE utility will include patient demographics and eligibility information, patient problem lists, medications, lab tests orders/results, radiological results and images, inpatient discharge summaries, and clinical notes. Federal funds are requested to support the planning, design, development, testing, implementation and evaluation of results of the AHCCCS HIE utility and application service provider (ASP) functions.

AHCCCS' nationally recognized Medicaid managed care approach has consistently provided quality care while producing significant cost savings. However, the program experiences the following challenges and system improvement needs similar to those of other state Medicaid and private sector health care systems.

- Costs are increasing significantly faster than state revenues, with AHCCCS experiencing annual average medical cost per member per year (PMPY) increases of 6% to 10%.

- Critical health care information is not available where and when it is needed.

- Lack of point of service information leads to duplicate services and increased chances of errors, delays in care, and polypharmacy problems.

- Inability to exchange information leads to delays in provider payments.

- High capital and maintenance costs lead to slow adoption of health information technology (HIT). Only 15% of Arizona's physicians have electronic health records (EHR) in their practices, and most rural hospitals have only rudimentary hospital information systems.

The HIE utility proposed by AHCCCS represents a quantum leap in improving system effectiveness and affords the greatest opportunity for rapid adoption and real-time exchange of electronic health information. AHCCCS will provide basic EHR functionality as a web based ASP for Medicaid providers who cannot afford the capital outlay to install their own electronic medical record systems. This project will reduce the cost of adoption of EHR/HIE to less than $1,000 per client terminal for Medicaid providers. It is consistent with the vision for EHR expressed by both President Bush and Secretary Leavitt.

AHCCCS will leverage HIE/HIT efforts that have already been initiated by the Indian Health Service (IHS), Federally Qualified Health Centers, the Veteran's Administration, Arizona Health-E Connection, Southern Arizona Health Information Exchange and several hospital systems in the state. Furthermore, this project will include nursing homes and community based long term care providers.

Two e-prescribing related goals of this grant are:

• Reduction in overall medical costs of an average of 3% per year associated with prescription errors, diagnostic lab/radiology test redundancy, unnecessary emergency

room utilization, claims coding errors and medical errors;

• Improved coordination between behavioral health and physical health services which will reduce medication errors/abuse and increase case management effectiveness

2. Title: State of Connecticut Medicaid Program Health Information Exchange and E-Prescribing Initiative

Abstract:

The overall goal of the Connecticut Health Information Exchange and E-Prescribing Initiative (HIE/EPI) is to design, implement, and evaluate a statewide comprehensive health information exchange system for Connecticut's Medicaid beneficiaries. Anchored by a unique collaboration between Connecticut's Department of Social Services (DSS), and Connecticut's Health Information Exchange Organization, *eHealth Connecticut*, the proposed HIE project has great potential to promote broad health care delivery system change in Connecticut. We propose the creation of an e-prescribing system which also links physicians and other healthcare providers of accurate patient diagnoses, current medication lists, drug allergies, and adverse drug events. E-prescribing can circumvent medication errors and control costs through the appropriate use of generic drugs and adherence to preferred drug lists. Connecticut's HIE/ EPI project aims to improve the safety, efficiency and quality of healthcare for Medicaid beneficiaries through targeted collaborative technology implementations. The Connecticut HIE/EPI is expected to improve clinical decisions by aggregating medical information from a variety of sources and making this information available at the point of care. Furthermore, the project aims to implement e-prescribing to a limited number of licensed health care providers in order to reduce medication expenses incurred by Medicaid through greater use of generic drugs and adherence to the preferred drug lists. The Connecticut HIE/EPI will begin by focusing on Connecticut's non-dual eligible Medicaid population, but will be eventually expanded to all Medicaid beneficiaries, and will be able to support additional capabilities such as disease management, quality improvement, evaluation, surveillance, and research. The expected outcomes of the Connecticut HIE/EPI project are a long-term reduction in overall Medicaid spending, an increase in preferred drug list usage by licensed health care professionals serving Medicaid beneficiaries, reduced therapeutic duplication of prescriptions, and decreased administrative costs associated with prior authorization (PA). The projected budget for Connecticut's HIE/EPI is $5.5 million dollars over two years. It should be noted that $500,000 in state matching funds have been committed to this effort in addition to the $5 million requested in this application.

Statement of Project/Need:

Health information technology has been identified as a key component to address rising costs, inefficiency, preventable errors, and poor quality of care in the health care environment.

Achieving the full benefit of health information technology, including provider order entry, e-prescribing, disease management, and clinical decision support, requires clinical data, and much of this clinical data comes from outside the practitioner's organization.4-5 The best way to connect these localized sources of medical information is through a health information exchange network. A fully interoperable health information exchange system—one that would exchange information between health care providers, hospitals, medical practices, laboratories, radiology centers, pharmacies, and public health departments—has

the potential to reduce the frequency and consequences of errors in medicine, and generate millions of dollars of savings at the state-level each year. Furthermore, both clinicians and policymakers expect health information exchange systems to dramatically improve quality of care.

Health information exchange systems play an invaluable role in the national effort to improve patient safety. Each year, adverse drug events (ADEs) are estimated to injure or kill more than 770,000 people in hospitals, and errors in prescribing are the most frequent source of these deaths and injuries.8 Furthermore, ADEs account for up to 41% of all hospital admissions and more than $2 billion annually in inpatient costs. Recent studies have indicated that almost half of all medication errors were intimately linked with insufficient information about the patient and the drug. As an integral part of health information exchange systems, e-prescribing is widely regarded as a crucial technology for improving patient safety, and has been associated with decreased medication errors, improved formulary adherence, and shorter lengths-of-stay.

Health information exchange systems can also be used as a tool to address rapidly rising health care costs. Medicaid costs for prescription drugs grew at a rate of 18% in recent years, in comparison to growth rates of 7% for total Medicaid expenditures. As one of the largest category of services within the Medicaid budget, medication costs now consume approximately ten percent of total Medicaid expenditures. In Connecticut, Medicaid spending on prescription drugs accounts for over twenty percent of total spending on acute care services. To address burgeoning costs, containment strategies have been put in place by state sponsored programs and insurers, including the requirement of prior approval, preferred drug lists, and formularies.

However, for health care professionals dealing with multiple formularies and prior approval rules, the complexity can be overwhelming, and these administrative hassles often result in increased practice costs to health care professionals overseeing the use of certain medications. A better solution is to create an integrated health information exchange system. Licensed health care professionals (LHCPs), pharmacies, hospitals and payers would use this system to share current patient diagnoses and medications, gain access to preferred drug lists, and promote safety through sharing of documented previous allergies and adverse effects. This integrated system would provide a platform to inform LHCPs of current diagnoses and medication lists, safety alerts and other necessary capabilities.

<u>One e-prescribing related goal of the Connecticut grant is to</u>:

- Implement e-prescribing with a limited number of licensed health care professionals providing care to Medicaid patients.

3. Title: Delaware e-Prescribing Pilot

Abstract:

The Delaware Department of Health and Social Services, Division of Medicaid and Medical Assistance (DMMA) seeks to transform the technology Medicaid uses for improved administration, effectiveness, and efficiency in providing health care to Medicaid enrollees. DMMA aims to accomplish this by transforming electronic capabilities of the Delaware Medicaid Management Information System (MMIS) by establishing a universal transaction for HIPAA-compliant electronic prescribing. The project will leverage the MMIS, focus on cost savings, and increase functionality.

The e-prescribing pilot will target 50 of the highest-volume prescribers in the Medicaid program and leverage those providers already using e-prescribing in other health plans throughout the state. These initial 50 providers may represent only two percent (2%) of the total Medicaid provider enrollment, yet they account for twenty percent (20%) of the total annual paid pharmacy claims volume. In Delaware, there are currently over 200 physicians, who actively use e-prescribing, including the State Employees Health Plan and Blue Cross Blue Shield of Delaware. Many of these 200 practitioners are also Medicaid providers and could benefit from a DMMA application. The intent of DMMA's project is to provide a universal solution for Medicaid providers to access the health record data they need when prescribing medications to Delaware's Medicaid population.

These e-prescribing providers will be enabled to fully utilize the MMIS' e-prescribing solution to increase client safety and reduce Delaware pharmacy assistance costs by providing the connectivity to exchange health care data between provider, pharmacy, and pharmacy benefit administration. The funding will provide handheld devices and software, enabling providers to have immediate access to client records, reference libraries, and formularies. On-site training, technical assistance, and utilization reports will be included for participating and currently active providers. This pilot will introduce the technology to DMMA providers, provide feedback to help providers embrace the technology and its benefits, and directly impact DMMA clients. It will leverage and build on last year's State Employees Health Plan and Blue Cross Blue Shield of Delaware e-prescribing implementations. In addition, this project will expand the functionality of the 200 physicians who already have e-prescribing solutions in place, providing them access to medical histories and benefit information—as stored in the MMIS—for all Medicaid clients.

The goal of this project is to build sustainable solutions that will improve client care and help ensure the following:

- Fewer errors/adverse events from misunderstood handwritten prescriptions
- Reduced ability to commit prescription fraud/divert medications
- Increased compliance with appropriate, preferred medication regimens
- Increased accessibility to data for users (medication profiles for providers)
- Reduced manual effort with current technological solutions,

Statement of Project/Need:

The Institute of Medicine (IOM) recently estimated that there are at least 1.5 million preventable adverse drug events each year in the United States. These medication errors result in poor patient outcomes as well as increased healthcare costs. In collaboration with the pharmacy benefits manager and Drug Utilization Review Board, drug utilization review activities and benefit guidelines are continuously reviewed. Within the past three years, the state has greatly expanded the pharmacy benefit program with enhanced clinical reviews and
established a Preferred Drug List. These clinical reviews create an administrative burden on the clinicians. With the availability of e-prescribing to the Delaware Medicaid program and its enrollees, practitioners, and pharmacies, critical information would be available at the time of prescribing. Issues related to compliance, duplicate therapies, drug interaction, and all other prospective drug utilization review currently done at the pharmacy could be dealt with prior to the client leaving the office.

Delaware is proposing the development and implementation of an electronic prescribing

solution integrated within the MMIS. E-prescribing offers a tool to transform prescription drug coverage programs administered by the Delaware Division of Medicaid and Medical Assistance (DMMA), including Title XIX, the Delaware Prescription Assistance Program, the Delaware Healthy Children Program (Title XXI), and the Chronic Renal Disease Program.

Using connectivity to the Medicaid Management Information System (MMIS), e-prescribing can help ensure medication safety for clients, improve client outcomes, contain pharmacy costs, and make provider administrative activities more efficient.

Project Goals and Outcomes:

• **Improve overall healthcare quality by reducing medication errors from illegible handwritten prescriptions and/or incomplete medication history available to prescribing practitioners.** Numerous studies have identified the benefits of e-prescribing in the prevention of adverse drug events. Common mistakes associated with handwritten prescriptions can be avoided by ensuring a complete and legible transmission. Further, access to a patient's medication history enables potential problems, such as drug-drug interactions and duplicate therapies, to be identified before the prescription is ordered.

• **Improve adherence to Delaware Medicaid PDL guidelines and reduce requests for exception prior authorizations.** Adherence to preferred drugs is greatly improved if the physician is informed of the PDL prior to making a decision. E-prescribing enables physicians to modify a prescription for guideline compliance prior to generating the prescription. This, in turn, will reduce requests for exception prior authorizations and simplify workflow for providers.

• **Reduce overall program costs by reducing adverse drug events, increasing client compliance with drug therapy, and reducing fraud.** Medication errors are costly to patients, health care providers, and payers. The IOM reports one study finding that each preventable adverse drug event that took place in a hospital added approximately $8,750 to the cost of the hospital stay. Electronic prescriptions have been shown to reduce errors by as much as eighty percent (80%). E-prescribing also enables the State to track whether clients are shopping for different prescribers and eliminate compliance issues that cause prescribers to issues stronger prescriptions to alleviate medical conditions. With e-prescribing, pro-DUR alerts would no longer go from the MMIS to the pharmacist and then be communicated to providers. Rather, the provider can determine any alert issues before the client leaves the provider's office, which will make a huge difference to the cost per prescription. Providers will be aware of the aggressive benefit coverage policies their clients have and compliance with the PDL will increase, thereby increasing the use of lower-cost medications and reducing the number of prior authorization requests. Additionally, improved client compliance leads to improved health outcomes and reduced need for more expensive treatment due to deteriorating health status. Finally, e-prescribing offers safeguards against fraudulent activity and diversion of medications.

4. Title: State of Florida Demonstration of GenRx (Expanding use of e-prescribing and generic medications)

Abstract:

Since July 2003 Florida Medicaid has operated a program to support electronic prescribing. Prescribers receive hand-held computers linking them to the Medicaid preferred drug list and patient prescription history. The prescriber can see all drugs the

patient has received, check for interactions and compliance, and transmit prescriptions electronically. The proposed GenRx project builds on the success of that program as follows:

• Takes advantage of the upcoming availability of generic products to treat patients using six specific drug classes, particularly those with diabetes or hyperlipidemia;
• Provides the patient with a 10 day starter pack of generic medications during the office visit;
• Electronically transmits the prescription for the generic product to the patient's pharmacy;
• Provides a base for tracking whether compliance with treatment guidelines improves through closer communication between prescribers and Medicaid pharmacists;
• Increases the use of e-prescribing capability by participating prescribers.

The budget for this project totals $1,737,861, which is $1,202,769 in the first year and $535,092 in the second year. Projected savings through increase of generic use is based on analysis of six drug categories: SSRIs, diabetic medications, cholesterol-lowering agents, third-generation cephalosporins, calcium channel blockers, and alpha-beta blockers. Multiple brand-name drugs in these categories either have been marketed recently or soon will be marketed as generics.

Florida already employs a professional pharmacist in each of its 11 Medicaid service areas. In the first year each Area pharmacist will establish generic medication dispensing in 12 practice sites. Each practice site will have two or more prescribers enrolled in the program who have served at least 200 Medicaid recipients in the past three months. Each participating prescriber will use either a hand-held or office-based computer to do e-prescribing. Each will be enrolled as a dispensing practitioner, and each office will be equipped to print the required drug labeling to accompany the 10-day supply of generic drugs the patient will receive during the office visit.

While the prescriber will have to purchase the supply of generic drugs, the e-prescribing software will automatically process the cost of the prescription through Medicaid and issue payment to the prescriber on a routine basis without further claim submission.

Following the initial year, each Area pharmacist will spend one day each week in two of the practice sites in addition to our current academic detailing program. The purpose is to track the improvement in patient outcomes comparing a focused presence with the current brief visit combined with chart reminders and other leave behind materials. The expected outcomes are broader acceptance of generic drugs by patients, streamlined prescribing, reduction in drug costs to Medicaid, and improved achievement of treatment goals.

Statement of Need:

Doctors traditionally start patients on a new therapy by giving them sample medications. Currently these samples are always brand-name medications provided by pharmaceutical representatives. When the subsequent prescriptions are presented at the pharmacy many of these brand-names require prior authorization or another prescription changing therapy to a generic medication as requested by Medicaid and most commercial plans. This process is costly to both Medicaid prescribers and pharmacy providers and disruptive to patients.

A national study by the HHS Inspector General released on July 2006 notes that Florida Medicaid ranks at 92% in use of generic drugs. While this percentage reflects those categories where multiple generics are available, a recent examination of Florida claims data indicates there is still room for improvement in select therapeutic categories. In the last quarter of 2005-2006 fiscal year, brand name medications represented 45% of all prescription claims and 85% of all prescription costs. Florida proposes to encourage use of generics by making generic drugs available in the doctor's office for use as "starter" medications. The focus will be on drugs used to treat hyperlipidemia and diabetes.

These "starter" medications would be available only when the physician uses the e-prescribing functions of an in-office computer or the PDAs that Florida Medicaid already has in the hands of approximately 2,800 prescribers who write 33-35% of all Florida Medicaid prescriptions. Only 2% of these prescriptions are currently e-prescriptions, that is, transmitted directly by computer to the pharmacy. This proposal will provide several additional incentives for the physician to use e-prescribing.

The focus on specific drug classes will help increase the number of patients reaching the treatment goals of nationally recognized guidelines for hyperlipidemia and diabetes. Florida will use clinically trained pharmacists working with primary care physicians and specialists to help more patients reach and maintain treatment goals. Florida Medicaid already has a successful academic detailing program that has demonstrated reductions in drug costs. Its impact on patient care outcomes has not been evaluated. This proposal will compare two methods of academic detailing to measure their impact on increasing positive health outcomes in the areas of hyperlipidemia and diabetes.

The project will involve Medicaid physician providers and Medicaid clinical pharmacists with additional training in these diseases. Using the already developed tools of e-prescribing and point-of-service billing, these "dispensing practitioners" will be able to provide a ready alternative to the current system of brand-name samples. Initially, the program will include 300 to 600 prescribers who could serve as a model for Medicaid Reform and involve both Managed Care Organizations, (HMOs and Provider Service Networks or PSNs) and Medicaid fee-for-service.

Florida Medicaid is divided into 11 service areas. Each Area has a pharmacist employed by Medicaid. In the first year the 11 Medicaid Area Pharmacists will establish generic medication dispensing in 12 practice sites in each area. Each practice site will have two or more prescribers enrolled in the program who have served at least 200 Florida Medicaid recipients in the past three months. In the second year the Area Pharmacists will spend one day each week in two of the practice sites and the remaining days of the month continuing their current academic detailing activities.

Some private sector organizations have launched similar projects in New Jersey, Oregon and Minnesota with Blue Cross and Blue Shield and other commercial health plans. No comparable program exists in Medicaid programs.

Participating physicians will purchase supplies of the target generic medication to dispense to patients in the office. They can purchase the drugs through their own supplier or use a Medicaid-contracted supplier. As the physician provides generic "samples" to the patient he will bill the medication electronically to Medicaid as a point of sale transaction and the physician will receive a dispensing fee. At the same encounter, the physician will electronically prescribe a "refill" of the same generic medication to the

patient's selected pharmacy. The result is a win-win-win-win scenario. The patients win because they sought medical help for a problem and leave the physician's office with a remedy to their concerns. The physician wins by receiving a few extra dollars for seeing a Medicaid patient. Medicaid wins by paying less for the medication and expending fewer resources because no prior authorization is required. The retail pharmacy provider who fills subsequent prescriptions wins because generic drugs provide a higher gross margin in most cases than brand-name drugs. The paradigm has been shifted in favor of using generic medications and no longer favors the brand manufacturer because of the convenience and availability of sample medications.

Prescribers are more likely to adopt e-prescribing and adapt it into their office practice if they can say to the patient, "You can pick up your medication on your way out." The clinical scripts performed by the academic detailers point out opportunities to use more generic medications using chart reminders and verbal presentations. The ready availability of generic medications is a much more powerful incentive for change. The sustained presence of a clinically trained pharmacist available to prescribers and patients in their practice setting will improve provider adherence to national guidelines to help more patients meet treatment goals. These practices have been described numerous times in medical literature. The Medicaid pharmacist will be available for oversight of the dispensing process and for medication counseling and teaching.

Improvement will be measurable through pharmacy claims data for increased generic prescribing and reduction in drug costs. The pharmacy claims data will also be used to monitor compliance with maintenance medications. Measurement tools are already in place to monitor the increase in e-prescribing. The measurement of patients meeting treatment goals will require the clinical pharmacist to collect laboratory reports of patients both before and after the start of the project.

Pharmacy claims data will provide the historical record before and after implementation of **GenRx**. Average cost per patient per month would be expected to decline. The data also contain the percentage of generics versus brand-name prescriptions for each prescriber. The number of e-prescriptions is currently being monitored through the Informed Decision's server transactions. The encounter data of the academic detailing pharmacist is currently captured and recorded through the vendor's software. There are processes in place to compare the financial outcomes comparing the physical daily presence with the traditional academic detailing. The comparison of the healthcare outcomes using laboratory values would be done manually as they are collected and collated.

Goals and Outcomes:

The goal is to promote e-prescribing, increase the use of generic medication and ensure a greater percentage of patients are meeting nationally recognized treatment goals. E-prescribing will be enabled because all the processes needed to place medications into the patient's hands are under one roof. The prescriber will be given an economic incentive to integrate e-prescribing into the daily routine. Generic medication use will be expanded as now a "sample" of a generic medication will be as easily available to the prescriber as the brand-name medications. The clinical pharmacists will be collaborating with these same prescribers to help ensure that more patients meet their treatment goals through direct patient contact, extended personal contact with these healthcare workers or traditional academic detailing.

Within each office practice the goals will be that two in three prescriptions written would be via e-prescribing or 66% of prescriptions within the six therapeutic categories. The goal for adherence to treatment objective would be an increase of 25% or more. In other words, if 40% of patients have met their treatment goals for LDL as a baseline in this practice, the goal would be to increase this compliance to 50% or a 25 % increase over baseline.

The goal for the enhancement of e-prescribing will be to raise the level from 2% of overall prescriptions within the six categories to 10% of all prescriptions written for these categories. If the 50% conversion of brand-name to generic medications is met, then this goal of a five fold increase in e-prescriptions is achievable.

The current overall percentage of generic prescriptions in the six target categories is 27%. With the expiration of the patents on several major brand names contained in these categories, the goal of two out of three prescriptions is not out of reach. The 25% increase in patients meeting treatment goals is consistent with university-based studies where clinical pharmacists are working daily in collaboration with prescribers.

The technology to be used will be the handheld PDA device already distributed and available to over 2,800 prescribers. In a practice site where the prescriber does not have a PDA or wish to use a PDA device, a web-based application with the same capabilities will be employed.

In the last fiscal quarter of 2005-06, statewide there were 22,500 patients receiving diabetic medications and 33,100 receiving cholesterol-lowering agents. Some of these patients are receiving both medications, so there is some overlap. If this proposal reaches the goal of affecting 25% of prescriptions in these categories, then over the course of one year 5,000 to 7,000 patients would have been touched by the e-prescribing component. The academic detailing component touches between 1.000 and 1,200 patients per month. This includes the chart reminders and other "leave behind" materials. The claims, paid amount and other drug related information was taken from Query Path using the paid dates of April 1, 2006, to June 30, 2006. This same source was used to determine the number of prescribers using these six categories of medication. The estimation of the number of current brand-name prescriptions that could be switched to generic medication is a goal.

Florida Medicaid's current e-prescribing contractor has a track record of being able to measure the impact of the changes that will be generated from this proposal. The percentage of generic prescriptions before and after **GenRx** was available at each practice site. The baseline laboratory values and pharmacist interventions are a component of the electronic medical record and available for analysis. With one vendor handling the physician encounter data of academic detailing, the pharmacist intervention data, the medical and pharmacy claims and the patient encounter data, the analysis will be under one umbrella.

The fiscal goals will be measured comparing the percentage of brand-name medications to percentage of generic medications prescribed within the six therapeutic categories. The cost savings goal will be met by achieving a 50% switch from brand to generic medications. In addition, any cost savings will be beneficial, and the breakpoint would be cost savings greater than the increased cost of paying a dispensing fee for **GenRx** that is not part of the current cost structure. The clinical outcome will be considered as meeting its goals if a greater percentage of patients are treated to goal or a significant improvement is found in the clinical markers that define additional health

risks for the patient.

The technology for e-prescribing meets or exceeds the current safety standards for transcription of medication orders from the prescriber to the dispensing pharmacist. The transmission of the payment for **GenRx** will follow current practices for Medicaid pharmacy providers and meet industry standards.

5. Title: New Mexico Transformation Grant - E-Prescribing

ABSTRACT:

Historically in New Mexico, health care practitioners have made drug-prescribing decisions using minimal eligibility, medical, and treatment data, a concern due primarily to a lack of accessibility to effective and functional information-sharing systems. The current prescribing process in New Mexico is largely affected by the separateness of prescribers, patients and pharmacists; and is characterized not only by the state's mostly rural and frontier landscape, but also by a need for improved technology designed to enhance prescribing efficiency, communicate prescribing decisions, and reduce prescribing error rates.

Nationally, medical problems related to errors in prescribing are estimated to kill as many as 20,000 Americans annually, and affect many more because of adverse drug reactions.

The New Mexico Human Services Department, Medical Assistance Division, requests a budget of **$ 855,220** in Medicaid Transformation Grant funds to develop the qualitative, technological and collaborative infrastructure needed to modernize the prescribing process in New Mexico. Grant funds will allow New Mexico to utilize new technology to develop electronic prescribing (or e-prescribing) networks. In summary, grant funds will be used to accomplish the following goals:

• Make technical modifications to New Mexico's Medicaid Management Information System, Medicaid Prescription Drug Claims System to enable e-prescribing capabilities;
• Work in collaboration with key stakeholders to ensure that the needs of Medicaid providers, recipients and systems are represented in statewide e-prescribing initiatives; and
• Educate and incentivize the involvement of Medicaid providers, including rural, non-profits, Federal Qualified Health Centers, and Native American tribal providers, in e-prescribing.

The proposed project will improve the efficiency and effectiveness of the Medicaid Program in the
following ways: streamline operations and reduce Medicaid costs; promote generic drug dispensing, parallel the enhancements being made in Medicare; reduce adverse drug events and medication errors by improving practitioner access to information; and promote practitioner and pharmacy participation and collaboration. The anticipated outcomes of the project are to achieve Medicaid cost-savings and efficiencies, and to improve patient safety by transforming New Mexico's prescribing process through technology that will encourage and facilitate e-prescribing capabilities for Medicaid practitioners and pharmacists.

It is anticipated that the entire prescribing process available to New Mexico Medicaid recipients, providers and pharmacists would be transformed with grant funds. The proposed project will demonstrate to providers that e-prescribing is consistent with cost-effective

office management, and will eventually change the manner in which practitioners and pharmacies carry out the prescribing and delivery of pharmacy benefits to Medicaid recipients statewide. The continuing costs of this project after the grant funding period will be mainly for transaction and subscription fees that will be borne by providers. Once the initial technical changes have been made, ongoing costs to the Medicaid program will be minimal and can be sustained by the Human Services Department, Medical Assistance Division.

The New Mexico Medicaid program will follow the provisions of the statutory reporting requirements of Section 1903(z)(3)(C)(ii) and (iii) of the Social Security Act, which are specified in Section 6081 of Public Law 109-171 regarding reports on Medicaid Transformational Grants.

Statement of Project/Need:

Historically in New Mexico, health care practitioners have made drug-prescribing decisions using minimal eligibility, medical, and treatment data, a concern due primarily to a lack of accessibility to effective and functional information-sharing systems. The current prescribing process in New Mexico is largely affected by the separateness of prescribers, patients and pharmacists; and is characterized not only by the state's mostly rural and frontier landscape, but also by a need for improved technology designed to enhance prescribing efficiency, communicate prescribing decisions, and reduce prescribing error rates. Nationally, medical problems related to errors in prescribing are estimated to kill as many as 20,000 Americans annually, and affect many more because of adverse drug reactions, further indicating a need for an e-prescribing system.

The proposed project is devised to provide the qualitative, technological and collaborative infrastructure needed to modernize the prescribing process in New Mexico. Utilizing new technology, health care practitioners will be able to transmit prescription information over electronic prescribing (or e-prescribing) networks. While many New Mexico pharmacies have already achieved the technological capacity to accept e-prescriptions, technical enhancement of the state's Medicaid system and greater involvement of health care practitioners are needed to effectively improve patient safety, enhance quality of care, and reduce pharmacy program costs.

As an innovative approach to resolving the state's current prescribing challenges, the New Mexico Human Services Department, Medical Assistance Division (HSD/MAD) proposes to use Transformation Grant funding to:

• Make technical preparations and modifications to the state's Medicaid Management Information System (MMIS) and Medicaid Prescription Drug Claims System (PDCS) to facilitate e-prescribing processes, support requisite electronic data transactions, and respond to National Council for Prescription Drug Programs (NCPDP)-compliant e-prescription queries for recipient Medicaid eligibility, managed care enrollment, and Medicare Part D enrollment. These technical changes will ensure that prescribers will be able to access information concerning benefit limitations (e.g., pregnancy only or family planning only pharmacy benefits), pharmacy co-payment amounts, application of preferred drug lists (PDLs) or formulary restrictions, generic drug alternatives, prior authorization requirements for drug items, potential drug interactions, recipient drug allergies, therapeutic duplication, and drug over- or under-utilization.
• Make the systematic and programmatic changes needed to ensure that New Mexico's Medicaid program keeps pace with the development of e-prescribing technologies within the state's private sector; therefore ensuring parity for Medicaid recipients and individuals

enrolled in commercial insurance plans.
• Identify and cultivate the optimal partnering structure involving health care provider groups, pharmacies, health plans, pharmacy plans, professional organizations, institutions of higher education, government agencies, and other stakeholder groups to facilitate Medicaid implementation of e-prescribing through a collaborative and coordinated effort. The proposed project will work directly with the New Mexico Prescription Coalition (NMPIC), a statewide e-prescribing workgroup brought together by the New Mexico Medical Review Association (NMMRA). NMMRA has contracted with the Centers for Medicare and Medicaid Services (CMS) as New Mexico's Medicare Quality Improvement Organization (QIO) and to assist with the development of e-prescribing for Medicare Part D.
• Facilitate the involvement and education of Medicaid providers and pharmacies to encourage e-prescribing participation and support; and
• Assist rural non-profit medical providers (specifically, rural health clinics, federally qualified health centers in rural areas, small Indian Health Service (IHS) facilities, and tribal 638 compact clinics) whose patients are mostly Medicaid-eligible to develop full technological readiness to transmit prescriptions electronically. Some Transformation Grant funds would be used to assist these facilities with acquiring technology, completing the beta testing phase, and paying for first-year subscription or transaction fees. Because the private sector offers few incentives to encourage e-prescribing by rural non-profit providers, grant funds would ensure that these providers are included in the development of a statewide e-prescribing initiative.

One major e-prescribing goal of this grant is:

• Participation and leadership of the New Mexico Medicaid program in the development of statewide e-prescribing efforts, to ensure that the unique needs and concerns of Medicaid providers, recipients and systems are represented.

6. Title: Tennessee Electronic Prescription Pilot Project
Award Amount: $674,204

Abstract :

Governor Phil Bredesen of Tennessee created the eHealth Advisory Council to advise and support the state as it develops and implements an overall strategy for the adoption of electronic medical technology. Comprised of stakeholder representatives in the health care community across Tennessee the council will guide development of advanced systems.

This pilot project will target primary care providers in small rural counties to allow them to utilize an electronic prescribing system to increase efficiency, patient safety and reduce TennCare pharmacy costs. The program will provide computer technology for selected providers along with training and technical assistance to assure a smooth transition to eprescription technology.

The technology will utilize personal data assistants and/or laptop computers to allow immediate provider access to patient records and provider formularies. The technology will allow direct routing of prescriptions to local pharmacies without the need of handwritten orders. We will target approximately fifty providers in rural counties with above average caseloads.

We believe that the lessons learned from this pilot project can be used to exhibit the advantages of technology in medical care and allow for greater acceptance among the provider community. The project will provide a laboratory for all the involved actors to

experience state of the art technology and consider progressive changes in provider – insurer relations, PBM - pharmacy communications and state regulation of medical practice.

Total budget for the project is $674,204 over the two year period. We anticipate a need for one project manager position to coordinate the program operation and outreach to the provider community. Successful implementation of the pilot project could lead to a statewide effort by the eHealth Advisory Council.

Status: Initial Pilot Completed

Tennessee's Medicaid program and one of its Medicaid managed care providers launched the e-prescribing pilot program in 13 of the state's rural counties in March 2008. The Bureau of TennCare plans worked with SharedHealth, a subsidiary of Blue Cross and Blue Shield of Tennessee on this initiative. Fifty physicians were recruited to join the program; each received free software, training, support and Internet access. The pilot ran through June 30.

Statement of Need :

Prescription medications continue to be a major cost driver for TennCare. Developing greater access for providers to an electronic prescription system will reduce the need for prior authorizations by providing real time access to preferred drug lists and patient records. Eprescribing can prevent medical errors, promote appropriate drug use and speed prescription renewals and increase the interconnectivity of physicians with other health care providers. TennCare currently pays our pharmacy benefit manager eight dollars for each prior authorization. Increasing eprescription utilization rates in provider practices will lower TennCare expenditures by reducing the need for prior authorizations.
Providers in rural counties face the most significant roadblocks to the implementation of technology at the practice level. Barriers include:

- Initial expense and time investment to implement a system
- Access to technology and broadband connectivity
- A lack of sufficient staff to utilize the system
- A lack of reimbursement and knowledge about benefits

These problems make it difficult for rural providers, who often have large Medicaid caseloads, to utilize state of the art electronic systems. Seventy-seven of ninety-five Tennessee counties have fewer than 100 licensed medical practitioners. The goal of this project is to target providers in a select group of small and medium size rural counties to increase electronic prescription utilization. We will target 50 physicians in these counties to receive the technology, training and support to implement an e-prescription system. All of these counties have a high ratio of TennCare enrollees per physician.

Goals and Outcomes:

This project will allow practices to become more efficient in health care delivery and enhance patient safety and satisfaction. Individual providers will have greater ability to access the multiple PDLs currently maintained by private insurers, Medicaid and Medicare Part D. Developing access to eligibility, prescription and medical information

for TennCare providers will integrate healthcare data for frontline providers and improve patient outcomes.

The immediate measurable target outcome of the pilot project will be to reduce the TennCare prior authorization rate by 25% among the volunteer adaptor group. We hope to have fewer unfilled prescriptions and reduce pharmacy cost to TennCare. Eprescription technology will lead to fewer overrides by TennCare managed care organizations and greater efficiency in provider practices.

7. Title: Developing a Utah Pharmacotherapy Risk Management System with an Electronic Surveillance Tool (Utah *e*PRM)

Abstract:

We propose to develop a Utah Medicaid Pharmacotherapy Risk Management System with an electronic tool (*e*PRM) to improve the quality and safety of medication use while simultaneously controlling costs and detecting fraud and abuse. The project has two objectives:

(1) Refine and implement a computerized surveillance and trigger tool to support medication therapy and risk management services. The *e*PRM tool will be used to (1) identify potential drug-therapy problems, which include quality, safety and cost-related problems; (2) select patients and providers for in-depth clinical reviews and possibly direct intervention (i.e., letter, phone call, Medication Therapy Management Services (MTMS), or Academic Detailing); (3) identify potential fraud and diversion of controlled substances; and (4) track patterns of medication use and evaluate *e*PRM performance, identify improvements, and direct policy change.

(2) Conduct innovative multi-pronged interventions that are guided by the *e*PRM trigger tool.

Clinical areas chosen for review include diabetes therapy, hypertension, asthma, antipsychotic therapy, pain management (opioid narcotics and anticonvulsants) and anticoagulation/antiplatelet drugs. Interventions in these areas will address potential under and overuse, or patient safety concerns. Clinical pharmacists and physicians will implement five types of inter-related interventions: a) provider level reviews, which includes prescribers' profiling and feedback for outlier prescribers; b) patient level reviews and letters to prescribers for high-risk patients; c) phone consultation and Academic Detailing with outlier prescribers; d) MTMS; and e) detecting and pursuing suspected fraud and abuse cases.

The estimated budget total for developing and implementing the *e*PRM is approximately $2,882,162 with $1,435,539 for Year 1 and $1,446,123 for Year 2.

The *e*PRM system will benefit about 174,000 non-institutionalized Medicaid members by improving medication therapy and, subsequently improving health status. Targeted clinical reviews will impact nearly 4,800 patients with high-risk medication therapies. As many as 600 of the high risk patients will receive the MTMS consultation. About 2,500 prescribers will receive feedback and recommendation for appropriately prescribing medications, with approximately 100 also receiving Academic Detailing visits. The *e*PRM team will conduct statewide surveillance and mailing/telephone interventions. Face-to-face interventions will be limited to the Wasatch Front area.

We intend to achieve the following outcomes for patients: a) increased diuretic prescriptions among hypertensive patients; b) increased appropriate use of diabetic and asthma medications; c) improved compliance with antipsychotics; d) reduced adverse events among patients using narcotics, anticonvulsants, anticoagulation and antiplatelet drugs.; and e) improved quality of care and health outcomes in patients referred to the MTMS. We expect substantial overall cost savings as a result of these modifications to the drug delivery and management system.

The Utah *e*PRM will make contributions to transform Medicaid pharmacy programs in the nation by piloting an electronically enhanced pharmacotherapy risk management system and making the *e*PRM tool to be available for free adoption by other Medicaid, Medicare part D, Veterans Administration, and other large pharmacy programs.

Statement of Project Need: Reducing Phamacotherapy Risk and Controlling Costs

Medication cost, quality, and safety are primary concerns for the Medicaid program in Utah. In this state, Medicaid spending for medications increased by 16% from July 2004 to June 2005. Excess costs and patient harm are associated with poor prescription practices. While inappropriate prescriptions have long been a concern, new evidence suggests that patient noncompliance is associated with up to 3.8 times the risk
for death and 1.5 times the risk for hospital admission.1 Investigations by the Utah Department of Health have revealed that adverse drug events are associated with at least 13.3% of all hospital admissions.

Strategies exist to mitigate the cost and morbidity of medications. Systems that integrate computerized surveillance tools with drug utilization review improve prescribing patterns and quality of care3. Furthermore, pharmacist-provided Medication Therapy Management Services (MTMS) have been found to reduce unscheduled physician visits, emergency department visits and overall costs.

We propose to develop an electronically enhanced Pharmacotherapy Risk Management (*ePRM*) system to improve the quality and safety of medication use while simultaneously controlling costs. The proposed system will transform Utah Medicaid into a provider that more actively measures and promotes quality. First, we will refine and extend an electronic surveillance/trigger tool that will allow us to conduct weekly surveillance of Medicaid claims data. This tool will identify patients and providers whose use or
prescription of medications is likely to engender excess cost or morbidity. Second, we will conduct multiple interventions, including feedback to providers, academic detailing, and pharmacy led Medication Therapy Management Services (MTMS).

Goals:

Objective 1: Electronic Surveillance and Trigger Tool for Targeted Interventions

Objective 2: Targeted Interventions Supported by Electronic Surveillance Tool

Expected Outcomes:

After one year of implementing each trigger-intervention, we expect to achieve the following quality and safety outcomes for patients: 1) increased diuretic prescriptions among hypertensive patients; 2) increased appropriate use of diabetic and asthma medication; 3) improved compliance of antipsychotics; 4) reduced adverse events among patients using

narcotics, anticonvulsants, anticoagulation and antiplatelet
drugs.; and 5) improved quality of care and health outcomes in patients referred to the MTMS. We expect substantial overall cost savings as a result of these modifications to the drug delivery and management system.

8. Title: West Virginia's Medicaid Transformation Initiative- Healthier Medicaid Members through Enhanced Medication Management

Abstract:

Healthier Medicaid Members through Enhanced Medication Management will establish an automated prior authorization system which allows the pharmacist to submit claims through a Point of Sale System and significantly reduce cost. This system will encourage more appropriate prescribing; enhance provider relations, and free pharmacists in the Rational Drug Therapy Program to have time for meaningful discussions and skilled clinical review. A web portal will be added to allow prescribers and pharmacists to view medical and pharmacy claims as they are submitted. A clinical rules engine will alert prescribers of clinical expectations and pharmacy management issues.

The West Virginia Bureau for Medical Services is requesting $4,287,110 from the Centers for Medicare & Medicaid Services (CMS) to support *Healthier Medicaid Members through Enhanced Medication Management.* This initiative will enable pharmacist to complete patient profiles, allow for the identification of chronic disease that is not being treated according to evidenced-based guidelines, as well as preventing the progression of chronic disease. The pharmacist will be integrated into the care team of the Medicaid member and will provide point of sale assistance to the member in preventing and managing the care of chronic disease.

Statement of Project/Need:

The State of West Virginia is one of the first in the nation to redesign its Medicaid program under the authority granted by the Deficit Reduction Act of 2005 (DRA 2005) to improve the health of enrolled members through enhanced access to preventive and disease management services, defined personal health management goals and responsibilities and rewards for healthy behavior. The State Medicaid program has established an innovative approach to encourage Medicaid members to take a greater role in managing their health in collaboration with a team of community health providers to create a new model for health maintenance and chronic disease self-management. Part of this initiative involves enhanced medication management capabilities for the system.

Project Goals and Outcomes:

The West Virginia Medicaid program is currently utilizing the only Windows-based commercial off-the-shelf unified relational database, software application, and claims processing system in the nation. This system offers a web portal for providers to view the status of claims that have been submitted for payment.

With this proposal, we will add an additional portal which to allow prescribers and pharmacists to view medical and pharmacy claims as they are submitted, enabling Medicaid providers to view their patient's medical and pharmacy profiles. Prescribers will have the capability of viewing and downloading claims data submitted for their patients (drug claims,

diagnosis codes, CPT codes, etc.) over a period of 24 months.

With a clinical rules engine added, prescribers can be alerted regarding clinical exceptions and management issues for the patients. They will also be able to examine specific formulary issues, along with prior authorization criteria. Suggested prescribing alternatives and best practice information will be included in this clinical rules module.

The same web portal access will be provided to pharmacists who will be able to review claims and clinical history. This real-time access will prevent fraud and abuse that occurs when patients are drug seekers and visit many providers, as well as emergency rooms, in order to obtain controlled substances. This tool will protect Medicaid members from receiving drugs that are inappropriate for their conditions, from adverse drug-drug interactions, from duplicate therapies and support prescribers by furnishing real time information regarding patient drug and medical history. In addition to web portal access for pharmacists and prescribers, care for members can also be delivered at the pharmacy point of service.

Medicaid members make an average of 9-10 visits per year to a pharmacy, making the pharmacist the healthcare professional they see most consistently. An enhancement will be made at the Point of Service that will fit into the pharmacists' workflow process, utilizing widely accepted transmission protocols for real-time transactions. This enhancement will identify any patient with a chronic condition, highlight any deviation from the standard of care for that condition, and attach an intervention notification to the pharmacy via the NCPDP 5.1 transaction. A follow-up fax with detailed intervention information, documentation and reference will be sent to the pharmacy in time for the pharmacist to consult with the patient regarding the information generated. Surveillance algorithms can be developed to ensure that recommended interventions are performed, including data records for evidence of recommended provider visits, lab tests, and drug refills Since pharmacists, prescribers, and patients each hold information essential to coordinating care and bringing patients care in line with established treatment standards, this tool is the key that brings all of the elements together that are necessary for truly coordinated care management. This tool will also aid in profiling prescribers who employ evidence-based treatment protocols and are eligible for enhanced reimbursement, based on their standard of care. Prescribers who do not engage in current standards will be identified and targeted for educational interventions.

Most prescribers lack time with patients to discuss and reinforce standards of care, With this tool the pharmacist will be able to review the complete patient profile, integrate both medical and pharmacy information into the review, and capitalize upon the relationship that patients have established with them. An incentive will be provided to pharmacists for their cognitive services. Many chronic conditions, such as asthma, hypertension, heart failure, coronary artery disease, depression, migraines, chronic obstructive pulmonary disease, osteoporosis, gastrointestinal disease, and substance abuse, will be addressed with this tool. Recent studies have shown that many of the psychotropic agents cause weight gain and contribute to the development of diabetes and other associated chronic conditions. The addition of a clinical rules engine and the capability of alerting the pharmacist of a need for care coordination at the Point-of-Sale will enhance care management for Medicaid members and their providers. Credentialed pharmacists will be engaged to deliver interventions at the point of service with members, which will aid in identifying patients with chronic diseases.

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[ii] *Blue Perspective*, BCBSA, 11/29/07.
[iii] "The Role of eRX in Lowering Physician Drug Expenses," Southwest Medical Associates, 2006.
[iv] Institute of Medicine, *Preventing Medication Errors,* July 2006.
[v] Gorman Health Group on behalf of the Pharmaceutical Care Management Association, *Options to Increase E-Prescribing in Medicare*, July 2007.
[vi] *Blue Perspective*, BCBSA, 11/29/07.
[vii] Blair, R. "Putting Meat on the e-Prescribing Bone," Health Management Technology, Feb 2006
[viii] "Electronic Prescribing: Building, Deploying, and Using E-Prescribing to Save Lives and Money," Center for Health Transformation, June 16, 2008
[ix] Ibid.
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[xi] www.highmarkehealth.org
[xii] "Blue Cross Blue Shield of Delaware's Pilot Program Gives Physicans DrFirst Rcopia E-Prescribing Tool," Business Wire, September 21, 2006
[xiii] www.eprescribeflorida.com
[xiv] Health Data Management Breaking News, December 5, 2008, http://www.healthdatamanagement.com/news/e-prescribing27405-1.html

[xv] "A Guide for Health Care Payers to Improve the Medication Management Process," eHealth Initiative and the Center for Improving Medication Management, June 2008
[xvi] Ibid.
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[xviii] Ibid.
[xix] "Role of Employers in Promoting ePrescribing, Case Study of Southeastern Michigan ePrescribing Initiative," Presentation by Tony Schueth, Project Manager, SEMI, November 13, 2007.
[xx] Ibid.
[xxi] "ePrescribing Today," Federal Telelmedicine News, November 23, 2008.
[xxii] "Southeast Michigan ePrescribing Initiative Drives Michigan Into Top Five ePrescribing," Reuters, March 7, 2008.
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[xxiv] Ibid.
[xxv] Role of Employers in Promoting ePrescribing, Case Study of Southeastern Michigan ePrescribing Initiative," Presentation by Tony Schueth, Project Manager, SEMI, November 13, 2007.
[xxvi] National ePrescribing Patient Safety Initiative website, www.nationalerx.com.
[xxvii] "Companies to fund new push for e-prescribing," amednews.com, February 5, 2007.
[xxviii] National ePrescribing Patient Safety Initiative website, www.nationalerx.com.
[xxix] Ibid.
[xxx] Ibid.
[xxxi] Ibid.
[xxxii] "The Basics of e-Prescribing," eHealth Initiative E-Prescribing Webinar, December 22, 2008. Available at: http://www.ehealthinitiative.org/eRx/webinarsArchive.mspx
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[xxxiv] Schueth, T., "What Does It Take? Lessons Learned from ePrescribing Successful (and Unsuccessful) Initiatives," presentation at CMS National ePrescribing Conference, Boston, MA, October 6-7, 2008.
[xxxv] Safe-Rx Awards, SureSripts.com website: www.SureScripts.com/Safe-Rx

[xxxvi] Rhode Island Quality Institute website, www.riqi.org
[xxxvii] Rhode Island E-Prescribing Progress Report, SureScripts, December 2007
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[xl] Safe-Rx Awards, SureSripts.com website: www.SureScripts.com/Safe-Rx
[xli] eRX Collaborative website: www.erxcollaborative.org
[xlii] Ibid.
[xliii] Ibid.
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[l] Ibid.
[li] "Third Annual Safe-Rx Awards, SureScripts website: www.SureScripts.com/Safe-Rx
[lii] "Electronic Prescribing: Building, Deploying and Using E-prescribing to Save Lives and Save Money," Center for Health Transformation, June 2008.
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[lv] "Minnesota's e-Prescribing Mandate," Minnesota Department of Health Fact Sheet, October 2008, available at: www.health.state.mn.us/e-health/eprescribing/erxfactsheet08.pdf
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[lvii] "Medicaid Transformation Grants," CMS website, www.cms.hhs.gov/MedicaidTransGrants

ePrescribing: Why Now?

Anthony J. (Tony) Schueth, MS
Founder, CEO and Managing Partner
Point-of-Care Partners, LLC
www.pocp.com

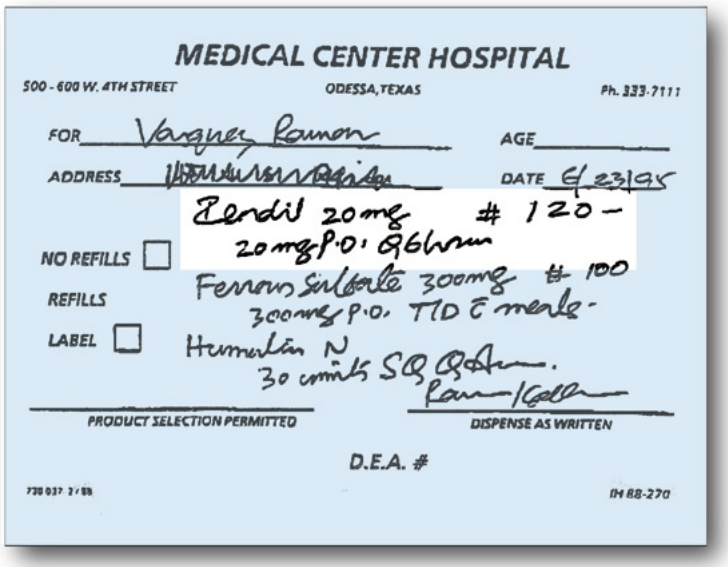
Outline

- ePrescribing Overview
- Benefits to Physicians & Patients
- ePrescribing Trends & Drivers
- Resources Available to You

The Challenge …

Physicians write 3.4 billion prescriptions each year …

… On Paper!


MEDICAL CENTER HOSPITAL
500 - 600 W. 4TH STREET ODESSA, TEXAS Ph. 333-7111
FOR Vargney Ramon AGE
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Zerdil 20mg # 120 -
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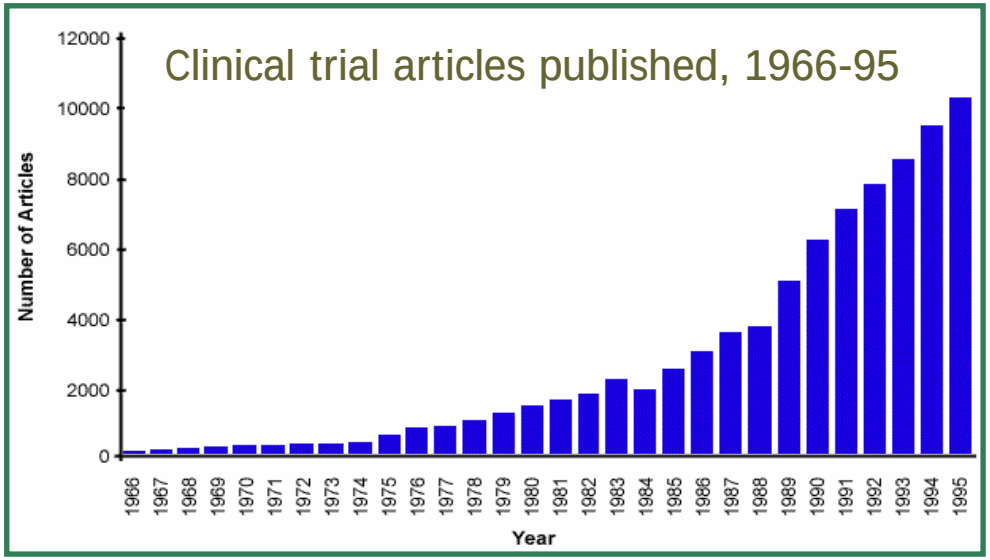
D.E.A. #
IH 88-270

- More than 1.5 million Americans are injured annually by medication errors. More than 25% of these injuries are preventable
- According to the Institute for Safe Medication Practices, many errors result from:
  - Miscommunication due to illegible handwriting
  - Unclear abbreviations and dose designations
  - Unclear telephone or verbal orders
  - Ambiguous orders and fax-related problems
- In July of 2006, the Institute of Medicine recommended that all prescriptions be written electronically by 2010
- IOM: Must provide physicians a single view of a patient's medication history across all prescribers

While …

- Increased need for access to constantly changing information:
  - 40,000 Medline citations added *monthly*
  - 1-2 new drugs approved on average each *week*
  - Rapidly increasing number of diagnostic tests

"If physicians would read 2 articles per day out of the 6 million medical articles published annually, in one year they would fall **82 centuries behind** in their reading."*

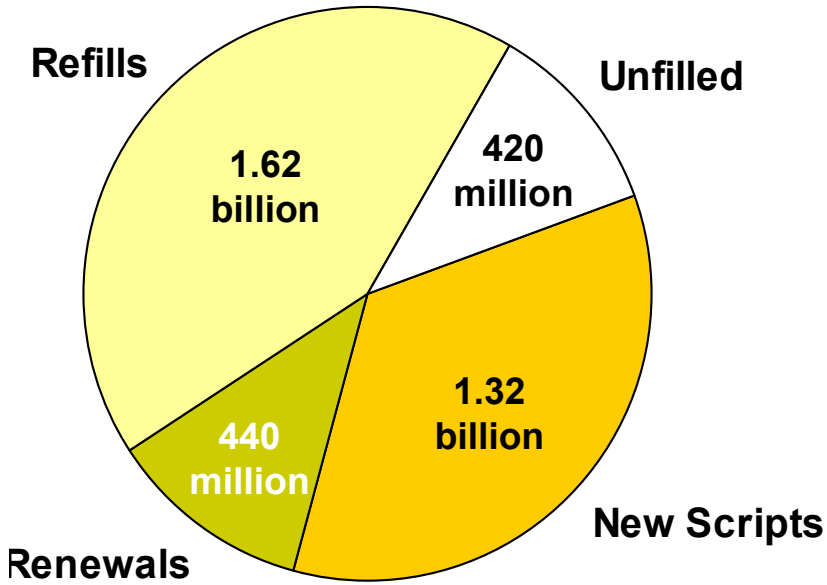


Source: Miser, WF, "Critical Appraisal of the Literature," J Am Board Fam Pract, 12(4):315-333, 1999.

And …

Prescription growth in U.S. continues to rise

- 823 million visits to physician offices in 2000[1]
- 4 out of 5 patients who visit a physician leave with at least one prescription[2]
- 65% of the US population use a prescription medication each year[3]
- Over 3 billion prescriptions are dispensed each year[4]
- **Number is expected to rise to over 4.1 billion by 2010[4]**



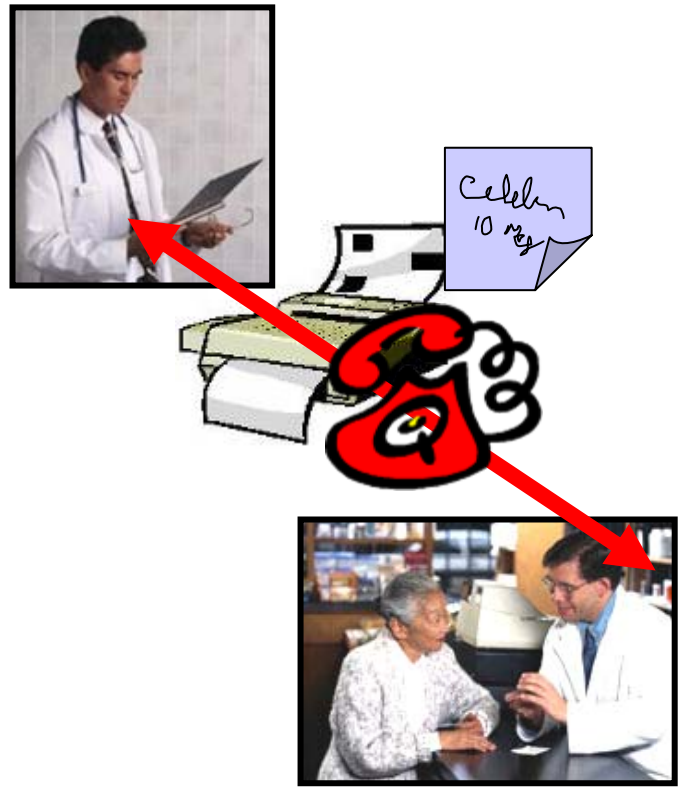
3.38 Billion Total Filled Prescription Transactions in 2005

(1) Pastor PN et. al. Chartbook on trends in the health of Americans. Health, United States, 2002. National Center for Health Statistics. 2002.
(2) The chain pharmacy industry profile. National Association of Chain Drug Stores. 2001.
(3) Agency for Healthcare Research and Quality. MEPS Highlights #11: distribution of health care expenses, 1999.
(4) NACDS estimates.

And …

The efficiency of the total prescription system is challenged by hundreds of millions of phone calls and faxes:

- One study estimates that indecipherable or unclear prescriptions result in more than **150 million calls** from pharmacists to physicians asking for clarification[1]
- Others estimate the number of **prescription-related telephone calls annually at 900 million**, citing practices reporting almost 30% of prescriptions required pharmacy callbacks[2,3]
- Requesting and receiving approval for **refills** alone, estimated at **nearly 500 million per year**, adds to the telephone and fax burdons[4]



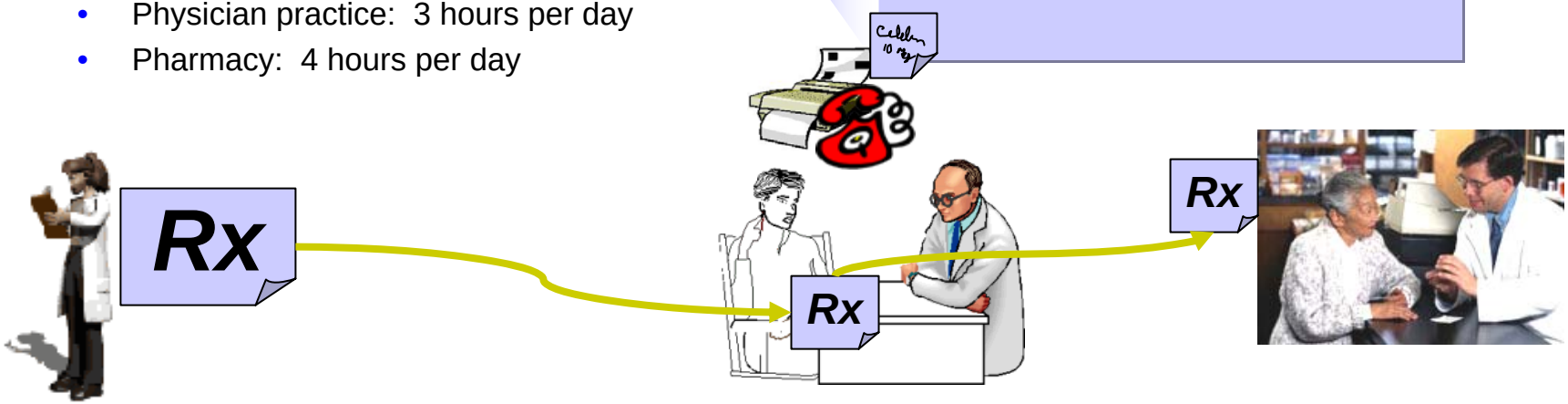
(1) Institute for Safe Medicine Practices. A Call to Action: Eliminate Handwritten Prescriptions Within Three Years, 2000.
(2) Forrester Research, 2002.
(3) Medco Health, 1/29/03, via ePharmaceuticals
(4) NACDS and SureScripts estimates

So …

- The current system causes a number of serious problems, in the areas of:

- **Patient safety**
  - 7,000 deaths each year due to the manual process
  - Between 1.5%-4.0% prescriptions are in error with serious patient risk
- **Quality of care**
  - 400 million scripts / yr. are never filled
  - Patient satisfaction issues
- **Impact on productivity***
  - Physician practice: 3 hours per day
  - Pharmacy: 4 hours per day

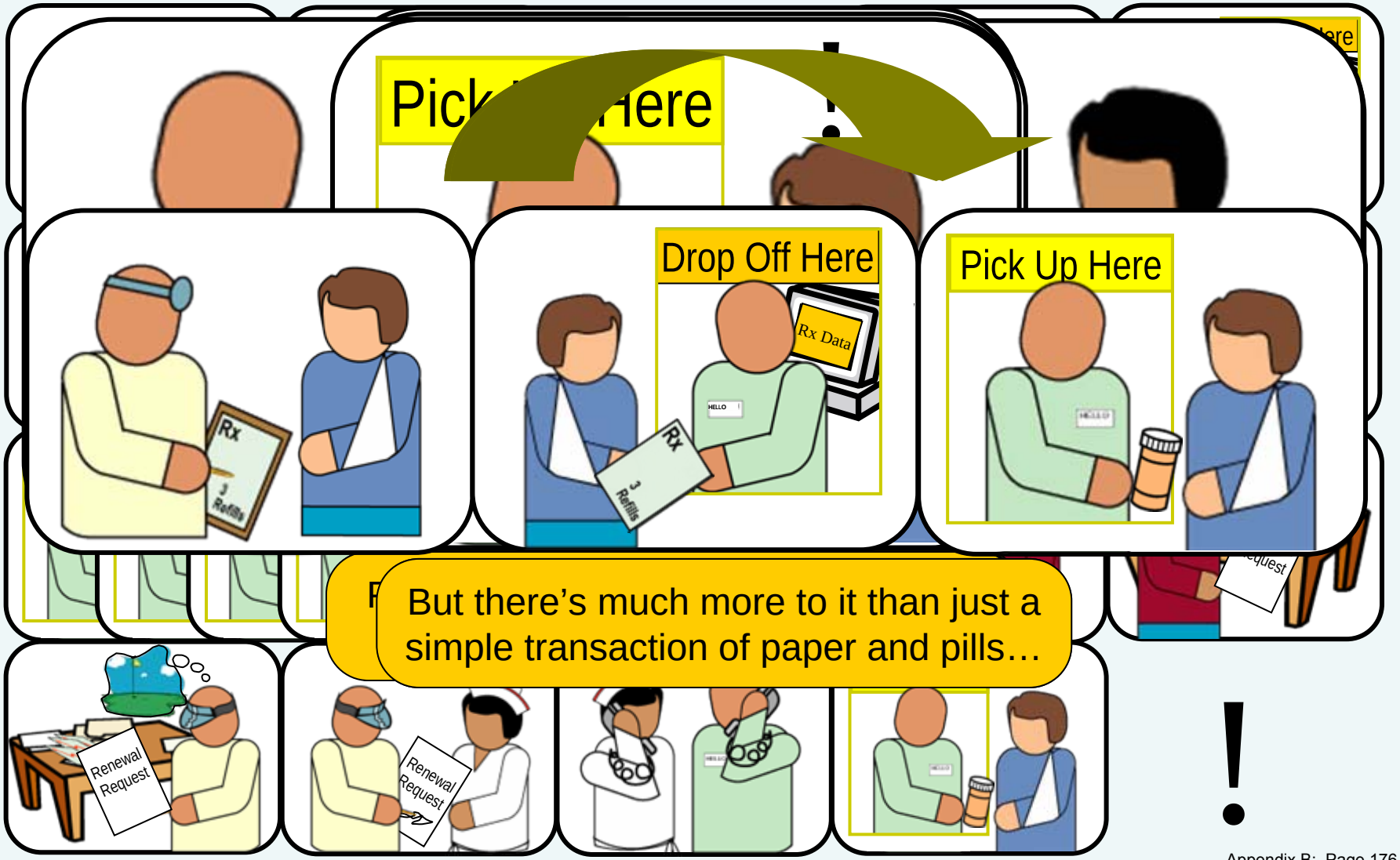
- Illegible handwriting
- Phone tag and fax tag
- Patient waiting in the pharmacy



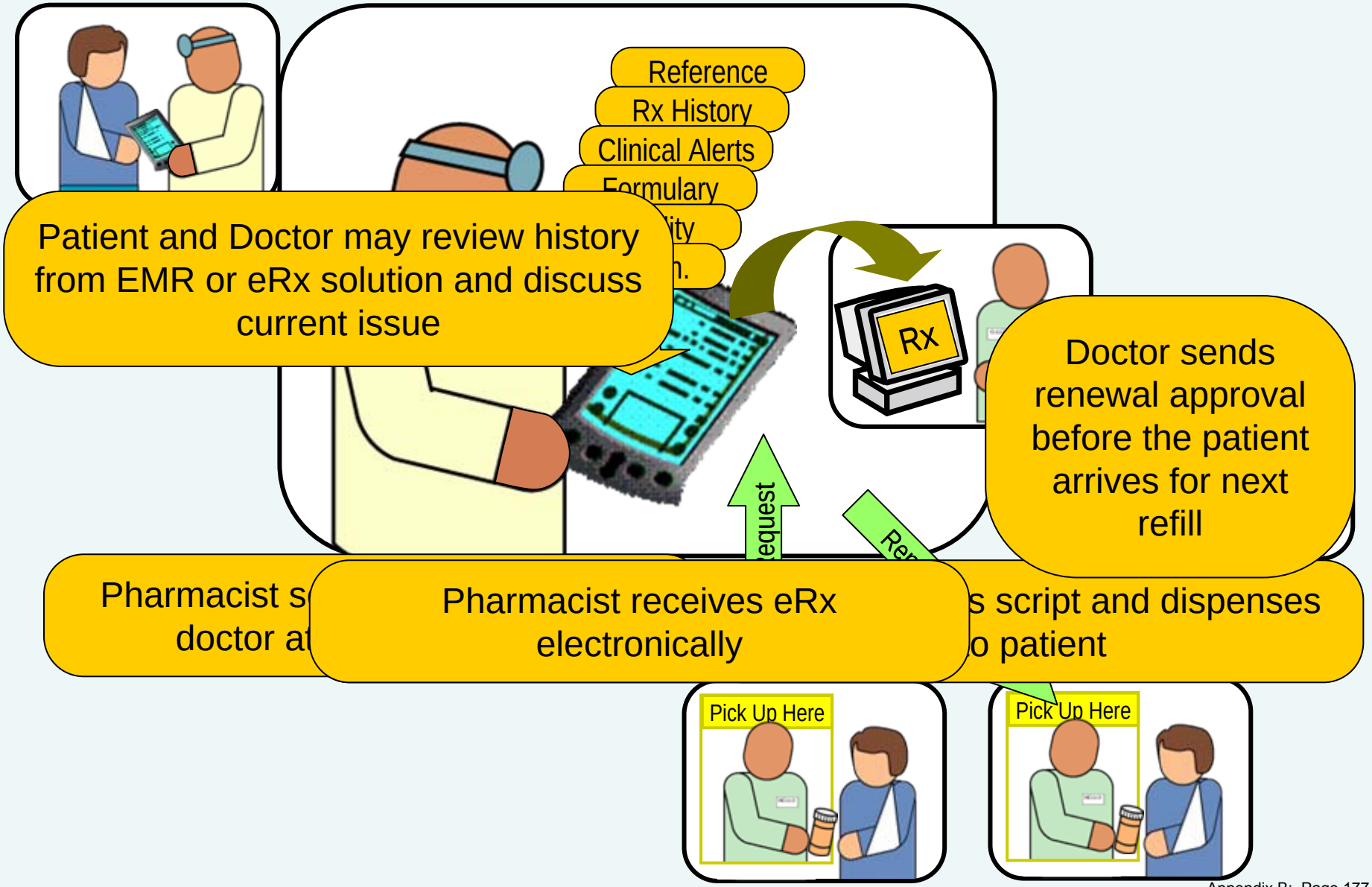
ePrescribing Overview

ePrescribe Florida – Fall Summit

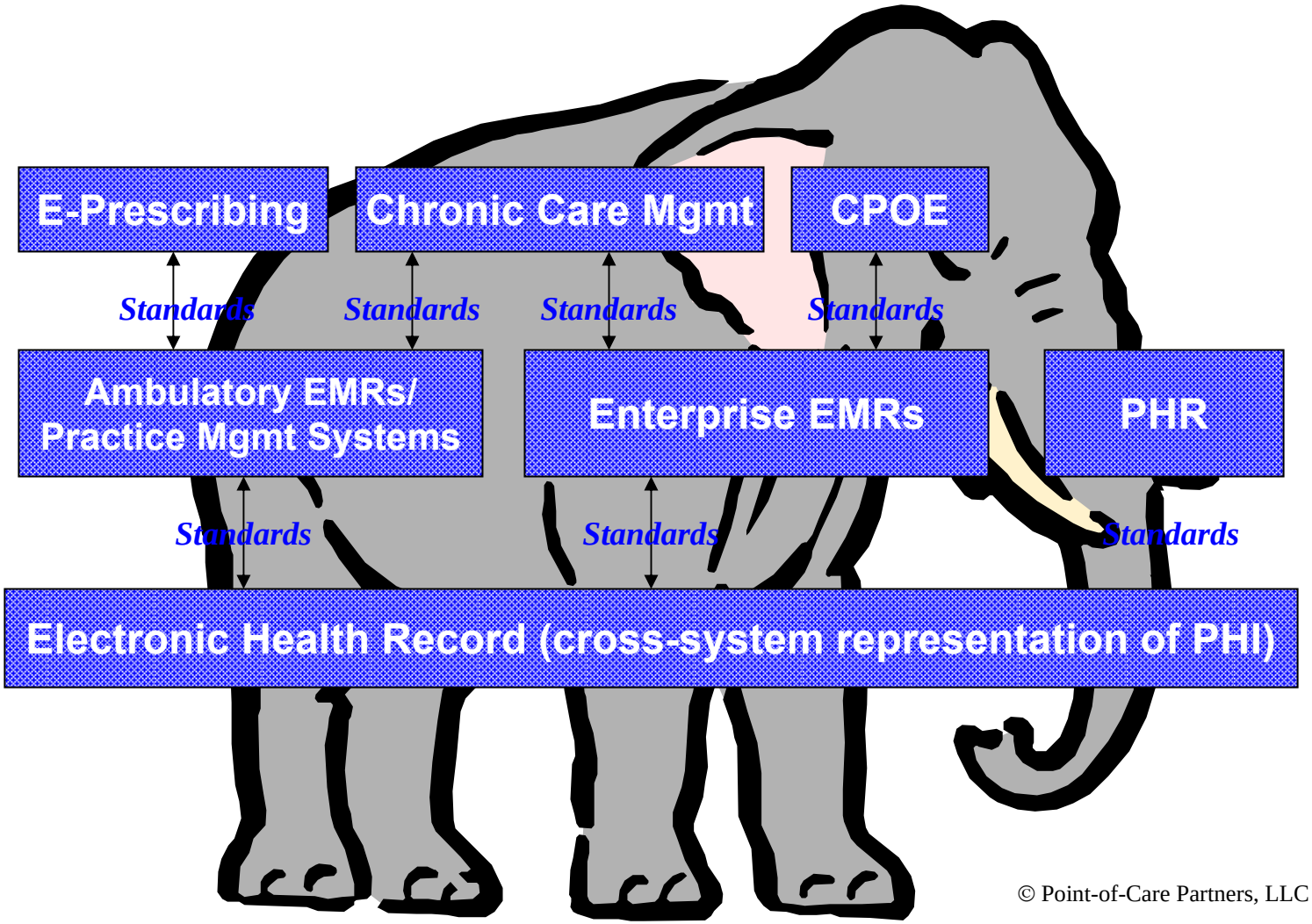
Generalized Current Rx Process



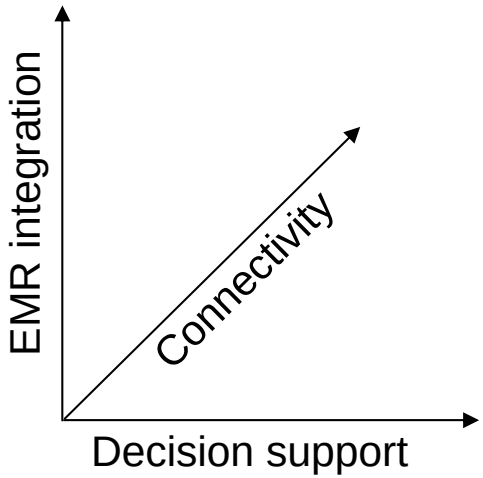
Electronic Prescribing



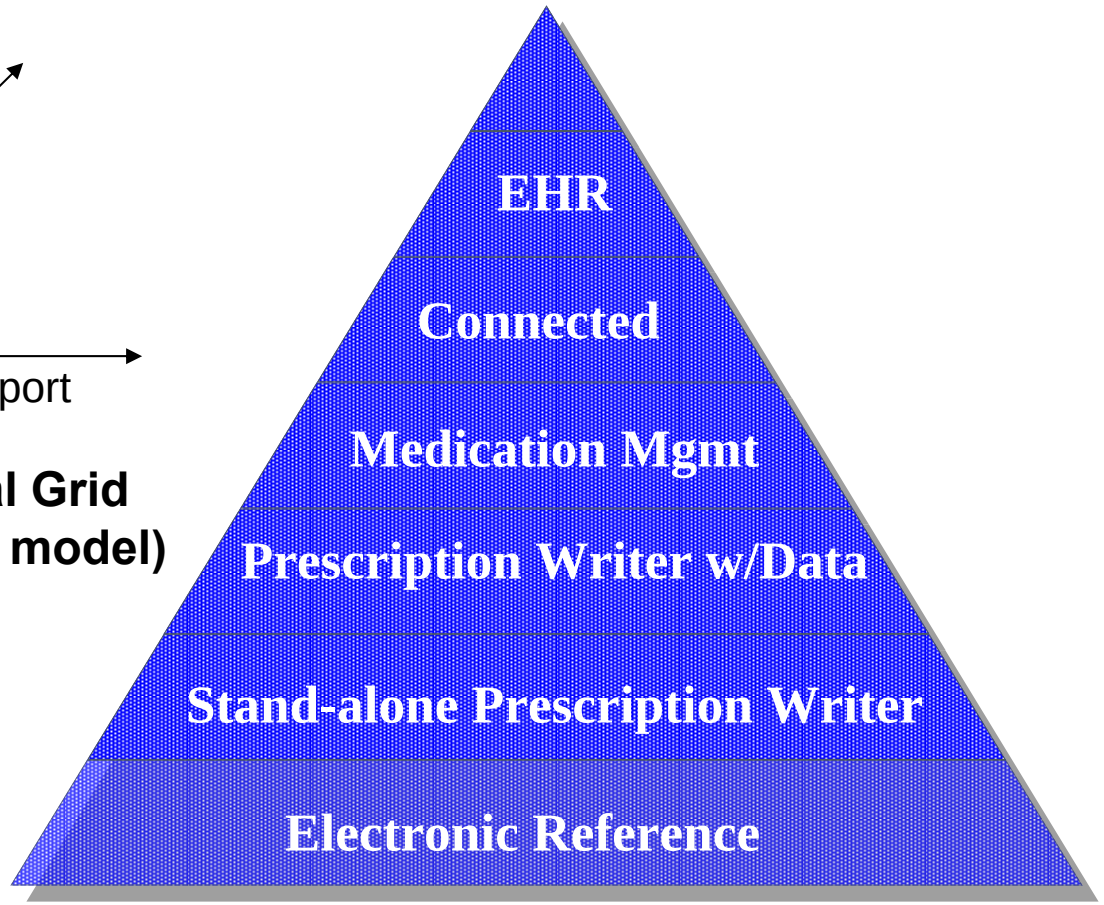
Health Information Technology



What *is* ePrescribing?



3 Dimensional Grid
(more r ealistic model)



Source: eHealth Initiative

ePrescribing by the numbers…

17% MDs prescribing electronically
(Gorman Group, 2007)

85% pharmacies enabled for ePrescribing
(SureScripts, RelayHealth, eRx Networks, RxHub)

7.5% US hospitals using CPOE for Rx orders
(KLAS, 2007)

24% Outpatient EMR use
(American Health Information Community, 2006)

210 million Lives for whom formulary & benefits are available through RxHub

$29 billion potential annual ePrescribing savings
(Center for Information Technology Leadership, 2004)

Benefits: Prescribers

Reduce Cost

- Reduce phone calls
- Reduce chart pulls
- Streamline prior authorization process
- More time for patient care
- Low impact to existing workflow

Improve quality of care

- Increased quality of care by enabling easy access to computerized medication history
- Decreases potential medication errors due to illegible prescriptions
- Avoid potential adverse drug events

Improve patient satisfaction

- Reduced waiting time at pharmacy
- Aura of high tech

Published Research: Practice Efficiency

Study	Results
Health Alliance Plan (Henry Ford Medical Group) 2006	57% physicians believe there is a reduction in time spent by support staff.
Rand (NJEPAC) 2006	80% reduction in callbacks related to coverage issues.
Surescripts (Brown Univ; Midwestern Univ) 2006	90% physicians noted improvement in care efficiency. 50%+ reduction in time consumed to manage refill requests and pharmacy callbacks.
Health Management Technology 2003	$48,000 saved per year by a practice that automated refills.
Medco 2003	42% reduction in pharmacy calls to practice.
Tufts Healthplan 2002	2 hours per day saved per physician, 30% reduction in phone calls.
BCBS Hawaii 2000	50% reduction in pharmacy phone calls.
Kokomo Family Care 2000	42% reduction in pharmacy-related calls; 84% reduction in calls related to formulary.

Published Research: Practice Quality & Safety

Study	Results
Surescripts (Brown University; Midwestern University) 2006	75% of physicians believed patient safety & quality of care improved. 50% of physicians perceived communication with patients improved.
Rand (NJEPAC) 2006	Medication history perceived as very useful & worth the effort.
Health Alliance Plan (Henry Ford Medical Group) 2006	85% of physicians believe e-Rx has improved the practice of medicine at their clinic. 77% of physicians believe e-Rx improves the safety of patient care. 70% of physicians believe e-Rx improves patient satisfaction.
Surescripts & Walgreens 2006	11% improvement in new prescriptions filled by patients 3 months after e-Rx implemented (variable influences patient adherence)

Benefits: Patients

Improve quality of care

- Decreases potential medication errors due to illegible prescriptions
- Facilitates improved medication compliance
- Contributes to improved self-management performance

Reduce cost

- Reduced out of pocket costs
- Better utilization of cost-effective alternatives

Improve customer satisfaction

- Reduces pharmacy wait times
- More predictable co-payment

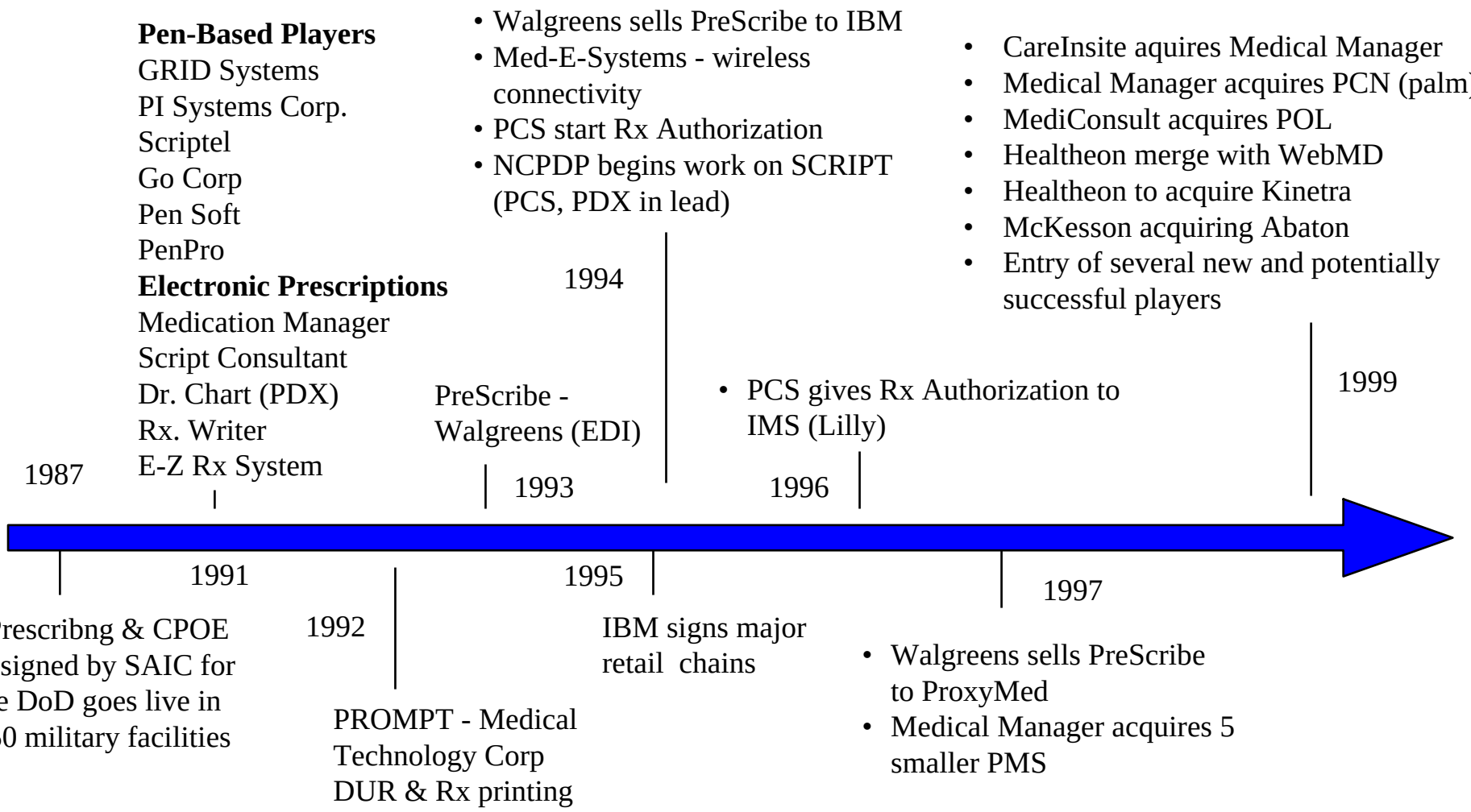
Published Research: Patient Satisfaction

Study	Results
Journal of the American Geriatric Society (August 2007)	▪ Patients who had been e-prescribed a drug said they preferred e-prescriptions over paper prescriptions ▪ Patients who had been e-prescribed drugs were also more likely to say they talked to their doctors about medication use most of the time or often
Brigham & Women's MMA eRx Pilot (2006)	▪ Physicians reported that ePrescribing is generally well-perceived by patients
Kokomo Family Care (2000)	▪ Awareness of ePrescribing was high (86%) ▪ Majority of the patients agreed that the ePrescribing system was helpful in: • Facilitating MD and pharmacist working together • Assisting their physician in id'ing drug interactions • Allowing the pharmacist to read the prescription • Alerting their physician as to what's on formulary

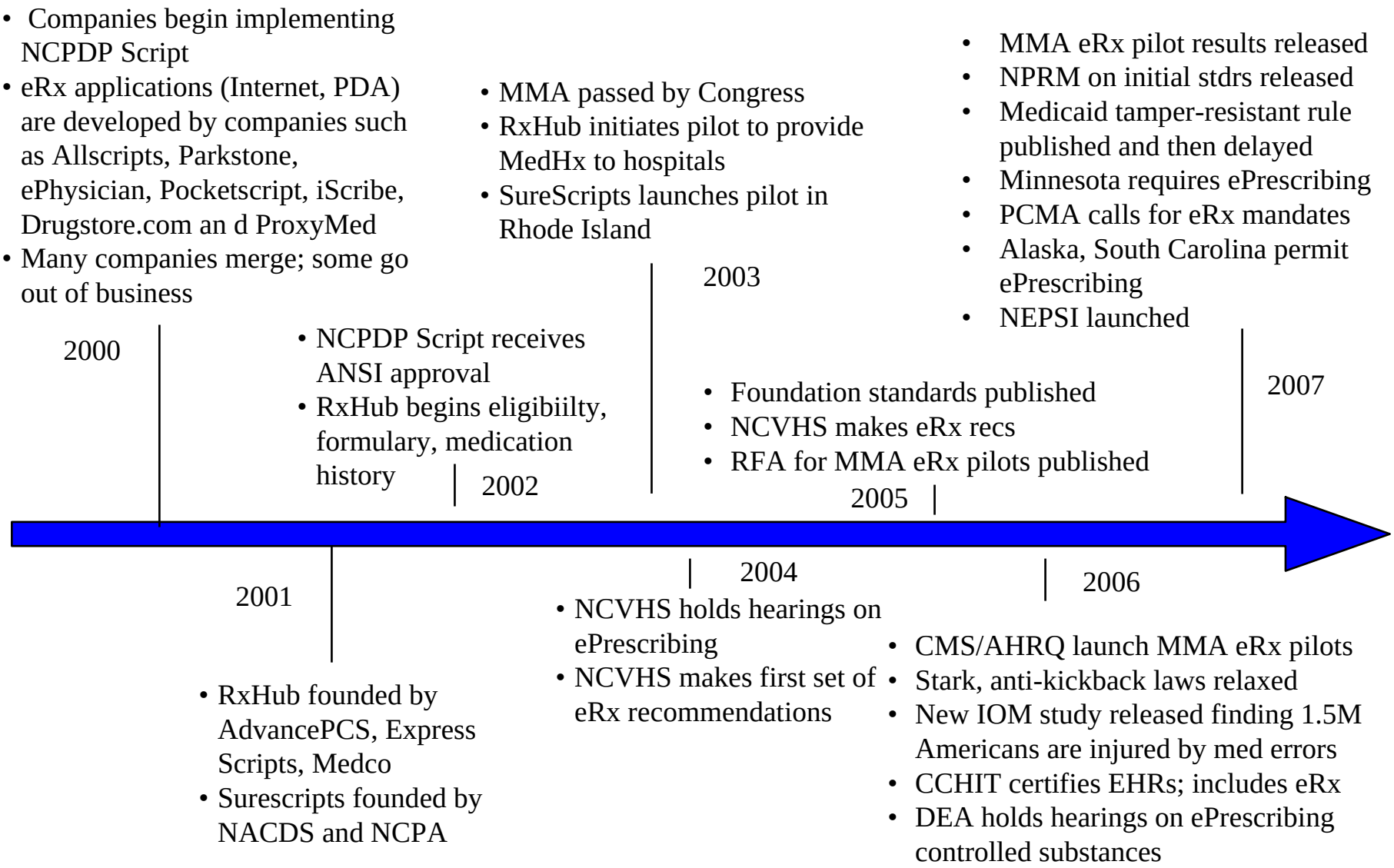
ePrescribing Trends & Drivers

ePrescribe Florida – Fall Summit

Industry Evolution - Many Early Players Consolidated



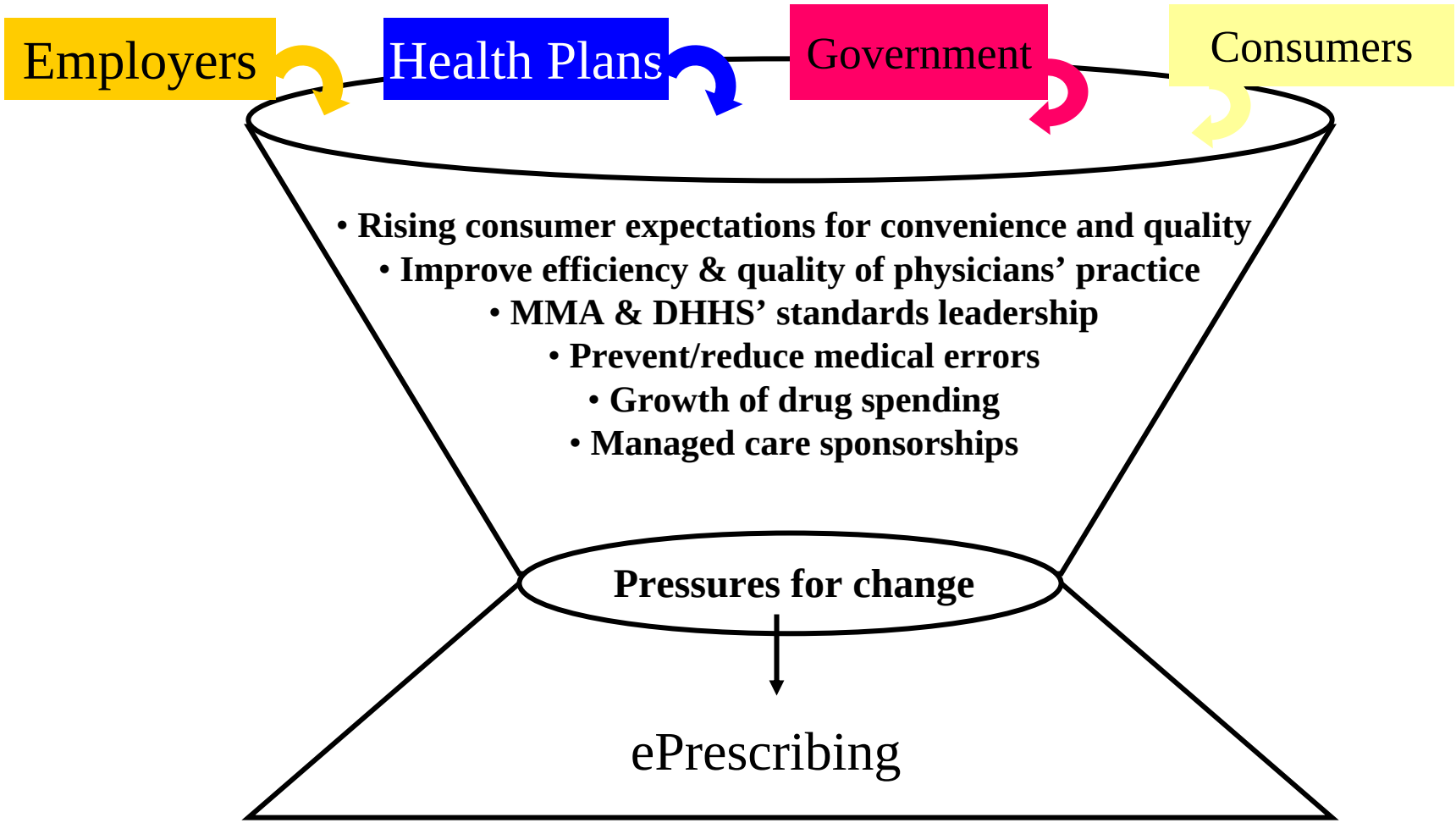
Picking Up Steam in the New Millennium



The problems of the past have been addressed…

In the past…	But now…
Software didn't support the workflows in the practice	Software integrates with existing practice systems and smoothes office workflow
There were few real benefits for most practices	Most practices will save physician and staff time as well as improve patient safety
There wasn't a future path to additional benefits	Collaborate with pharmacies on patient compliance and other future functions
Automation was being driven by a few small software vendors	State-wide initiatives involving all major stakeholders seek to improve the Rx process
Very few pharmacies were directly connected to physician practices	85% of US pharmacies are connected into a single network and growing
Electronic communications meant faxes	Computer applications can communicate directly with each other
There were no standards and lack of infrastructure	There are now standards for the key components of ePrescribing, and infrastructure provided by intermediaries and Internet technology

ePrescribing Market Drivers



The "M-Word"

U.S. Department of Health & Human Services
HHS.gov

Secretary Mike Leavitt's Blog

Health IT

I'm returning from Chicago where we had a meeting of the American Health Information Community. This is the Federal Advisory Committee HHS initiated to advise the Secretary on health information technology standards. I won't report on the meeting. We Web cast it and it's available on the HHS Web site if you're interested (http://www.hhs.gov/healthit/community/meetings/m200711

I do want to reflect on a subject begin thinking more about.

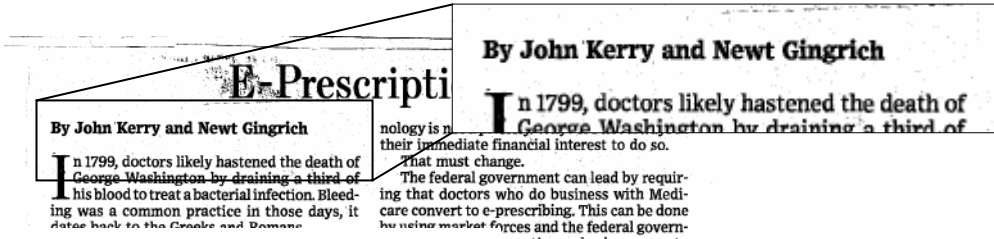
We had a discussion about elect The technology necessary to ele prescriptions exists in most pha However, only a small percentag benefits are unchallengeable. E- efficient and convenient for cor would eliminate thousands of m the AHIC meeting, we announce get us there. We are starting wi medication history and for formularies so that pro the information they need to write correct prescri These two standards alone could go a long way to errors.

Most doctors haven't invested in the necessary te do e-prescribing. The reasons are complex and rar perceived lack of financial incentives to a reluctan up the familiar prescription pad. It is not expensiv change needs to happen a rather than later.

The last several years we family toward this. This fa providers who have an e-p paid for by Medicare to ph to use electronic systems. think, including using our change.

When I was Governor of U

Wall Street Journal Opinion – Nov 16, 2007



E-Prescripti

By John Kerry and Newt Gingrich

In 1799, doctors likely hastened the death of George Washington by draining a third of his blood to treat a bacterial infection. Bleeding was a common practice in those days, it dates back to the Greeks and Romans

nology is n their immediate financial interest to do so. That must change.

The federal government can lead by requiring that doctors who do business with Medicare convert to e-prescribing. This can be done by using market forces and the federal government's purchasing power to align financial incentives.

First, offer bonus payments to Medicare doctors who already prescribe electronically or who adopt the technology. Such payments will help doctors, especially practices without many pa- artup costs. Private insurers, already using this strategy of e-prescribing.

doctors don't e-prescribe a the road, the government doctors to adopt e-prescrib- ial penalties, E-prescribing condition of doing business This is no different than the re- r suppliers expect to see when vith customers.

by the Department of Health vices estimates that if 18% of care adopt e-prescribing, the ll save $4 billion and nearly verse drug events can be pre- years.

thing Republicans and Demo- n. While we continue to debate e uninsured, improve quality,

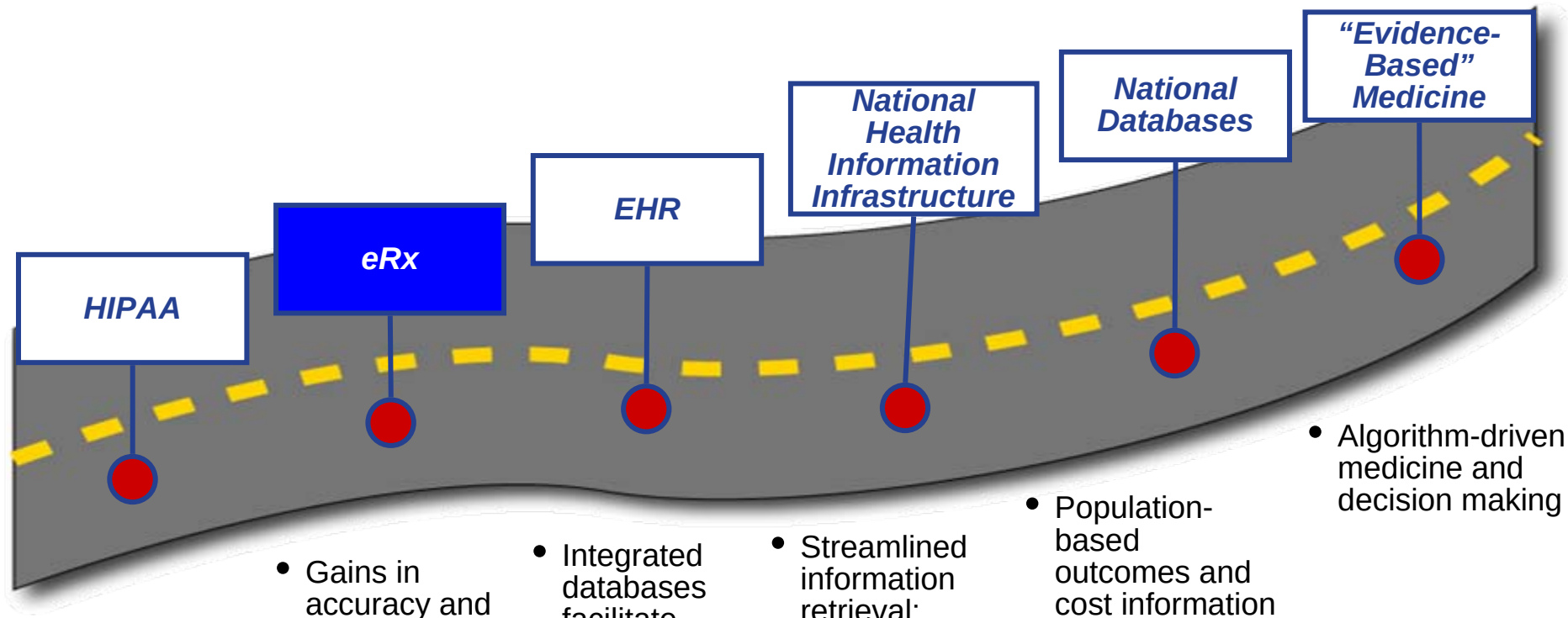
By John Kerry and Newt Gingrich

In 1799, doctors likely hastened the death of George Washington by draining a third of

Most doctors haven't invested in the necessary technology to do e-prescribing. The reasons are complex and range from a perceived lack of financial incentives to a reluctance to give up the familiar prescription pad. It is not expensive. This learning. Ultimately, I had to say, "Look, we are at a point where we can't afford to have people on the highway patrol who can't type. If you want to work here, you need to develop the skill to fill your reports out efficiently using a computer.

E-prescribing needs faster implementation. We have been through all the public processes necessary to develop standards. The technology is readily available and widely distributed. Electronic prescribing will enhance the safety and convenience for patients. Large health care providers, including Medicare and Medicaid, need to move toward making it a mandatory part of medical practice soon.

The Roadmap for Improving Healthcare



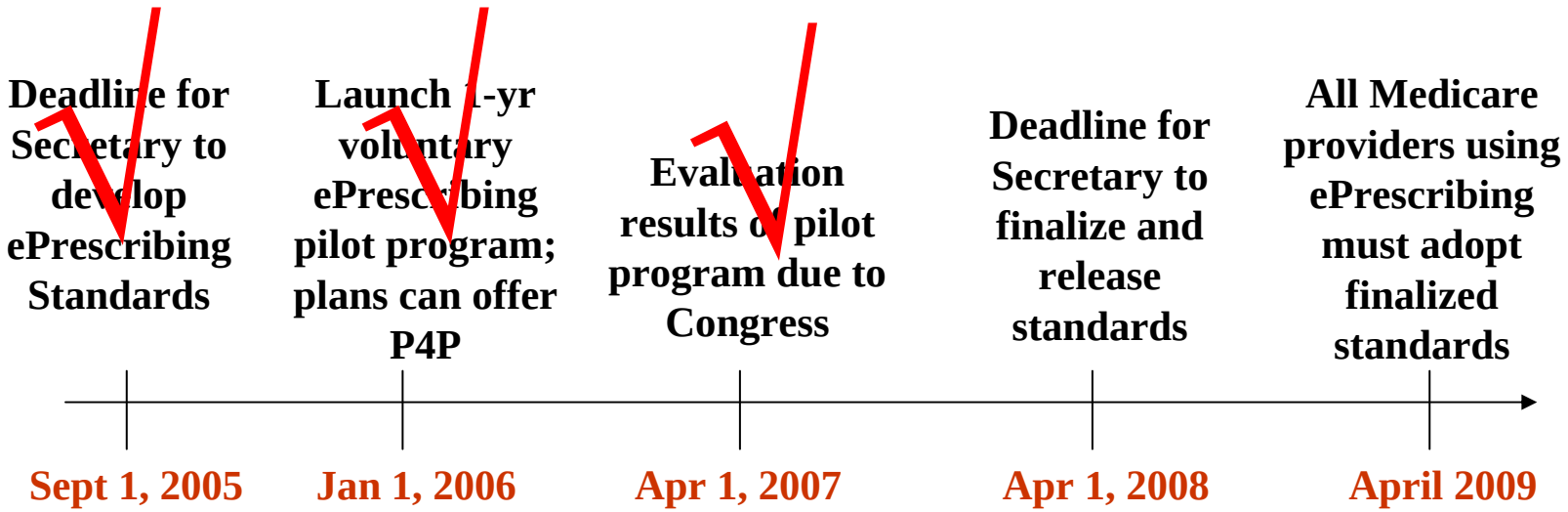
- Electronic transactions for the business of healthcare
- Gains in accuracy and connectivity enhance safety and efficiency
- Integrated databases facilitate decision support
- Streamlined information retrieval: valuable for epidemiology
- Population-based outcomes and cost information readily available to consumers, physicians, payors
- Algorithm-driven medicine and decision making

MMA (Medicare Part D) & ePrescribing

- MMA established a real-time ePrescribing program to be used by prescribers, plans, pharmacies and pharmacists who serve Medicare patients
  - No mandate for physicians
  - Plans participating in the new Medicare prescription drug plan (Part D) must support an electronic prescription program
- NCVHS tasked with identifying foundation standards
- Other components:
  - Discretionary grants to be made available to prescribers
  - Plans, hospitals, groups may purchase hardware for MDs
  - Plans may pay additional fees for reduced medication errors, improved formulary compliance & fewer adverse drug events
- Directs HHS to conduct an eRx pilot project in 2006, for areas where industry experience is insufficient

Impact of MMA (Medicare Part D)

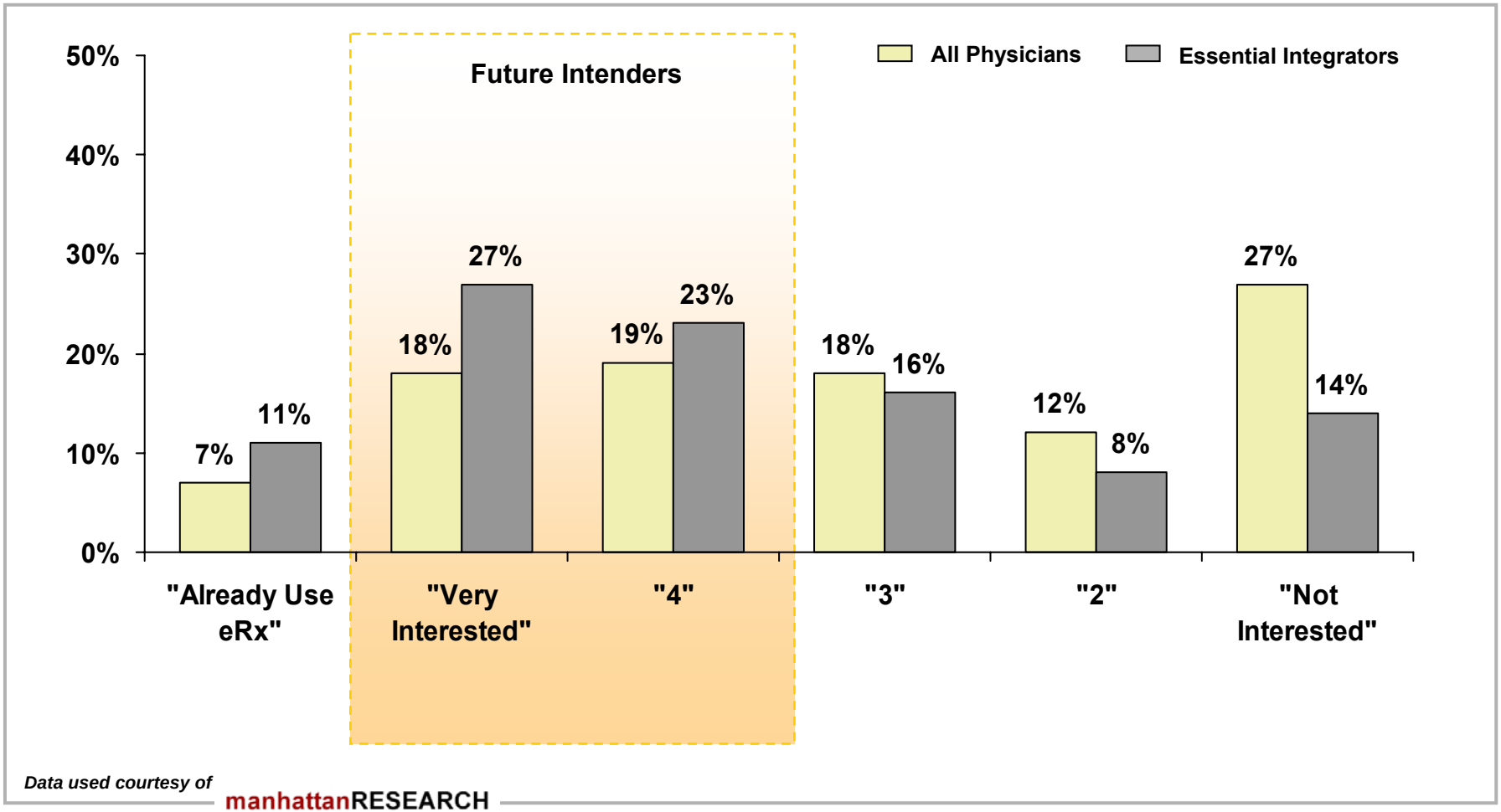
- Progress-to-date
  - Issued final rule naming foundation standards (11/05)
  - Awarded 5 grants for ePrescribing pilots (12/05)
  - New regulations excepting interoperable EHRs from safe harbor and Stark laws issued by HHS (08/06)
    - Clarification from IRS on not-for-profit entity subsidies (03/07)
  - Published results from pilots (04/07)
  - Announced a 5-year financial incentive program/demonstration project for 1,200 small- to medium-size Physician groups (10/07)
  - Published NPRM on final standards (11/07)



Remaining MMA “To Dos”

- Pay-for-performance for ePrescribing
  - Lots of P4P demonstration projects
  - Bill is being floated among experts
- Additional rules
  - New NPRM in November
- Additional pilots
  - Minimally on ePrior Auth, Sig and RxNorm

Physicians Indicate a Strong Interest in ePrescribing System in the Next 12 Months



Data used courtesy of manhattanRESEARCH

Next Steps

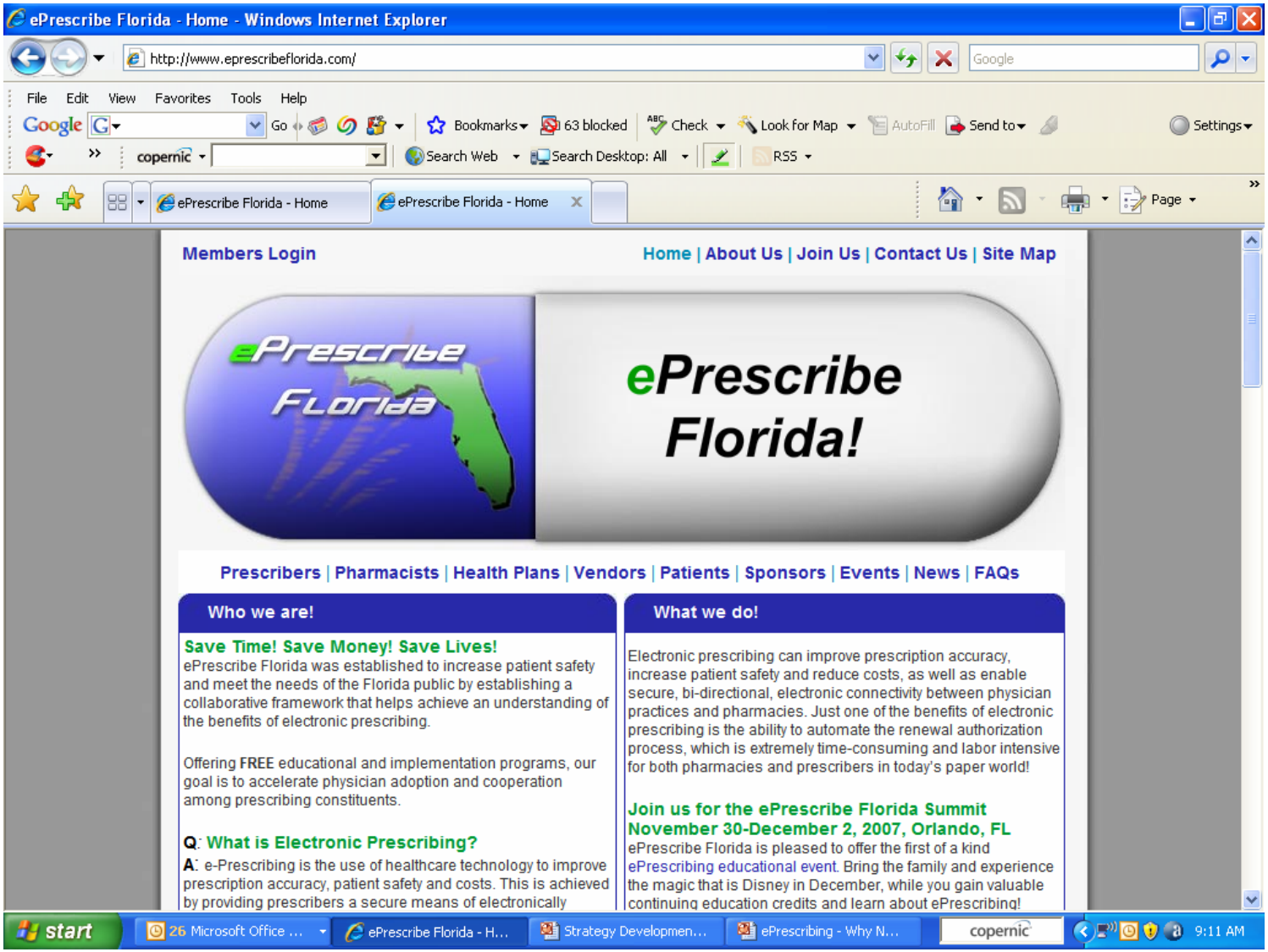
ePrescribe Florida – Fall Summit

High-Level "To Do List"*

1. Evaluate Need
2. Evaluate Product Options
3. Choose Product
4. Negotiate and Purchase
5. Develop Implementation Plan and Execute
6. Plan Next Phase of HIT (EMR, EHR?)
7. Share Successes and Failures With Others

* Source: *Electronic Prescribing for the Medical Practice: Everything You Wanted to Know but Were Afraid to Ask*, Hale, HIMSS, 2006

Resources


ePrescribe Florida - Home - Windows Internet Explorer
http://www.eprescribeflorida.com/
Members Login
Home | About Us | Join Us | Contact Us | Site Map
ePrescribe Florida
ePrescribe Florida!
Prescribers | Pharmacists | Health Plans | Vendors | Patients | Sponsors | Events | News | FAQs
Who we are!
Save Time! Save Money! Save Lives!
ePrescribe Florida was established to increase patient safety and meet the needs of the Florida public by establishing a collaborative framework that helps achieve an understanding of the benefits of electronic prescribing.
Offering FREE educational and implementation programs, our goal is to accelerate physician adoption and cooperation among prescribing constituents.
Q: What is Electronic Prescribing?
A: e-Prescribing is the use of healthcare technology to improve prescription accuracy, patient safety and costs. This is achieved by providing prescribers a secure means of electronically
What we do!
Electronic prescribing can improve prescription accuracy, increase patient safety and reduce costs, as well as enable secure, bi-directional, electronic connectivity between physician practices and pharmacies. Just one of the benefits of electronic prescribing is the ability to automate the renewal authorization process, which is extremely time-consuming and labor intensive for both pharmacies and prescribers in today's paper world!
Join us for the ePrescribe Florida Summit November 30-December 2, 2007, Orlando, FL
ePrescribe Florida is pleased to offer the first of a kind ePrescribing educational event. Bring the family and experience the magic that is Disney in December, while you gain valuable continuing education credits and learn about ePrescribing!

Resources (cont.)

The End

Anthony J. (Tony) Schueth, MS
Point-of-Care Partners, LLC
954-346-1999 • tonys@pocp.com
www.pocp.com

“The Blind Men and the Elephant”

It was six men of Indostan
To learning much inclined,
Who went to see the Elephant~(Though all of them were blind),
That each by observation~Might satisfy his mind.

The First approached the Elephant,
And happening to fall
Against his broad and sturdy side, ~ At once began to bawl:
"God bless me! but the Elephant ~ Is very like a wall!"

The Second, feeling of the tusk,
Cried, "Ho! what have we here?
So very round and smooth and sharp? ~ To me 'tis mighty clear
This wonder of an Elephant ~ Is very like a spear!"

The Third approached the animal,
And happening to take
The squirming trunk within his hands, ~ Thus boldly up and spake:
"I see," quoth he, "the Elephant ~ Is very like a snake!"

The Fourth reached out an eager hand,
And felt about the knee.
"What most this wondrous beast is like ~ Is mighty plain," quoth her;
"'Tis clear enough the Elephant ~ Is very like a tree!"

The Fifth who chanced to touch the ear,
Said: "E'en the blindest man
Can tell what this resembles most; ~ Deny the fact who can,
This marvel of an Elephant ~ Is very like a fan!"

The Sixth no sooner had begun
About the beast to grope,
Than, seizing on the swinging tail ~ That fell within his scope,
"I see," quoth he, "the Elephant ~ Is very like a rope!

And so these men of Indostan
Disputed loud and long,
Each in his own opinion ~ Exceeding stiff and strong,
Though each was partly in the right ~ And all were in the wrong!

- John Godfrey Saxe

Connecting Physicians and Pharmacies to Improve the Prescribing Process

American Health Quality Association
November 17, 2005

SureScripts
The prescription for better healthcare™

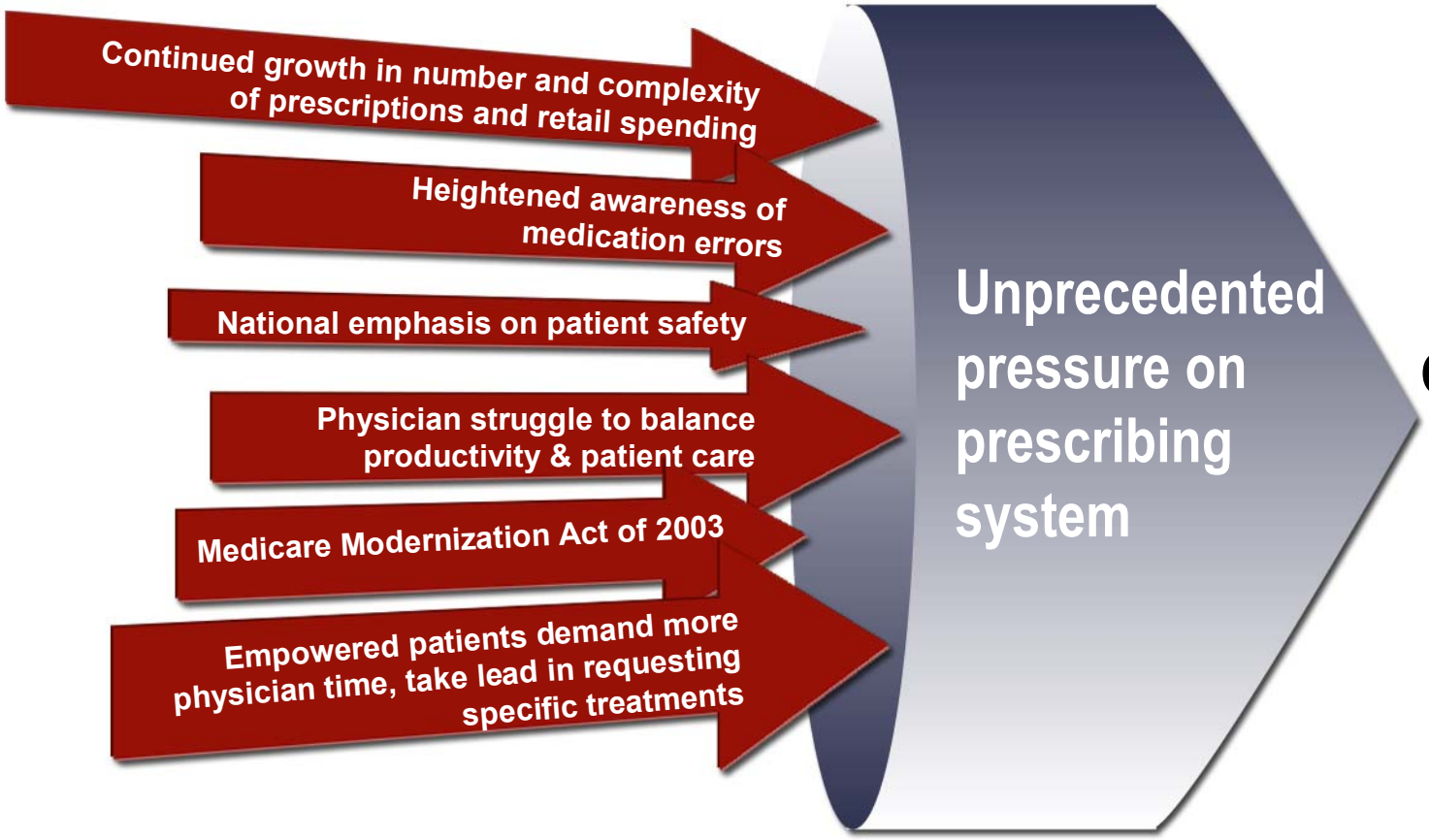
Discussion Topics

- What is electronic prescribing and what is SureScripts role?
- Walgreens perspective – what are the benefits of e-prescribing and how does it work?
- Physician technology solution – DrFirst's Rcopia
- The physician's experience with e-prescribing – what is the impact in the practice?
- Q&A

Today's Prescribing Process… *Needs Improvement*

- The prescription is written based on physician-patient decision
  - *but without sufficient information*
- The prescription is delivered to a pharmacy
  - *in a non-standardized delivery method… many prescriptions never get to the pharmacy*
- The prescription is processed at the pharmacy
  - *where much re-work often required*
- When the patient takes the prescription—are they compliant
  - *is more information needed*

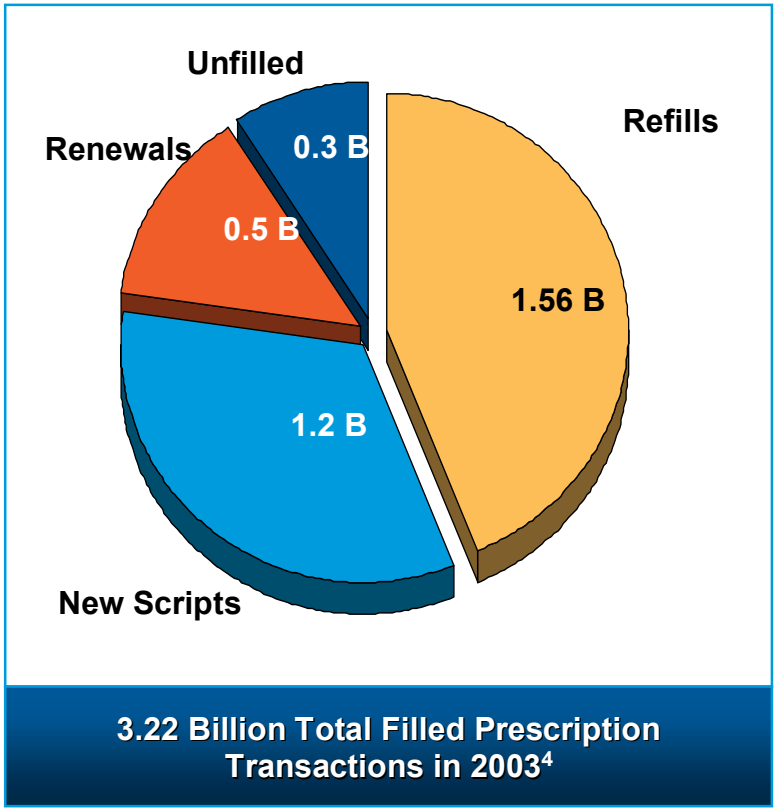
Many Forces are Driving Change in the Current Prescribing System



Multiple Agendas are Driving the Need for a Solution

The number of prescriptions in the US is rapidly increasing

- 823 million visits to physician offices in 2000[1]
- 4 out of 5 patients who visit a physician leave with at least one prescription[2]
- 65% of the US population use a prescription medication each year[3]
- Over 3 billion prescriptions are dispensed each year[4]
- The number is expected to rise to 4 billion by 2007[4]



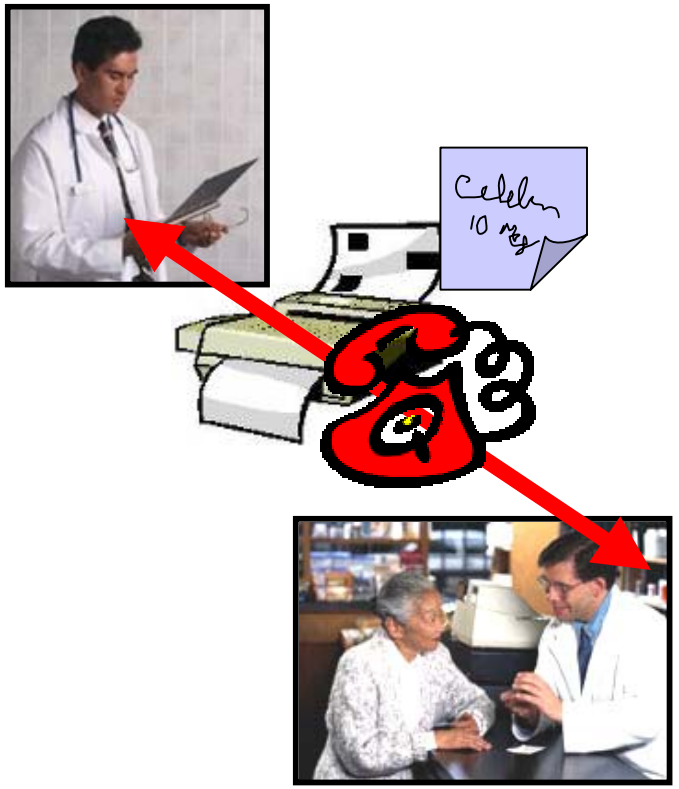
3.22 Billion Total Filled Prescription Transactions in 2003[4]

1) Pastor PN et. al. Chartbook on trends in the health of Americans. Health, United States, 2002. National Center for Health Statistics. 2002.
2) The Chain Pharmacy Industry Profile. National Association of Chain Drug Stores. 2001.
3) Agency for Healthcare Research and Quality. MEPS Highlights #11: distribution of health care expenses, 1999.
4) Estimates - NACDS Economics Department

SureScripts
The prescription for better healthcare™

The efficiency of the total prescription system is challenged by hundreds of millions of phone calls and faxes

- Studies estimate that indecipherable or unclear prescriptions result in more than 150 million calls from pharmacists to physicians for clarification[1]
- Others estimate the number of prescription-related telephone calls annually at 900 million, practices report almost 30% of prescriptions required pharmacy callbacks[2,3]
- Requesting and receiving approval for refills alone, estimated at nearly 500 million per year, adds to the telephone and fax burdens[4]



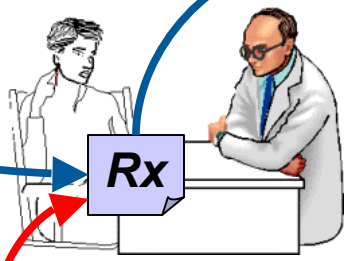
(1) Institute for Safe Medicine Practices. A Call to Action: Eliminate Handwritten Prescriptions Within Three Years, 2000.
(2) Forrester Research, 2002.
(3) Medco Health, 1/29/03, via ePharmaceuticals
(4) NACDS and SureScripts estimates

Today, prescriptions still generally follow traditional routes

Rx

A

Provider writes a prescription on a pad…



Rx

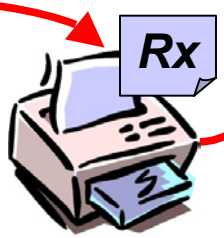
…and hands it to the patient…

…who brings it to the pharmacy.

Rx

B

…Or on a computer…

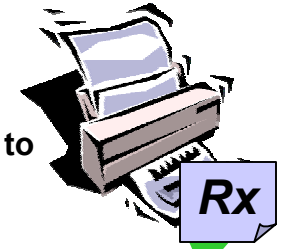


Rx

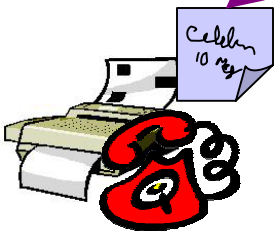
…that is printed in the office…

C

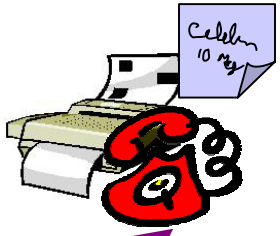
…or that is faxed to the pharmacy.



Rx

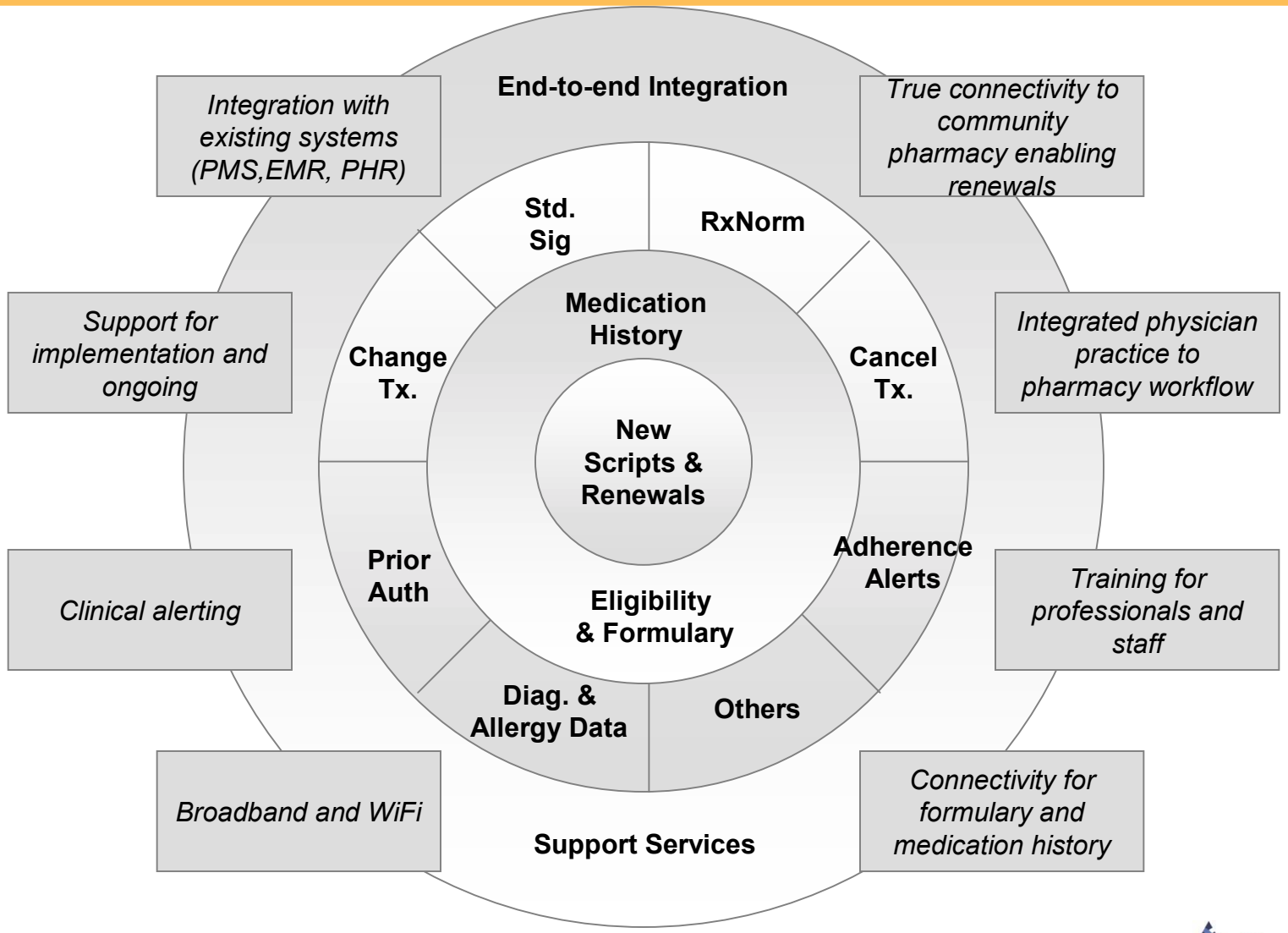


…and for renewals, it's a nightmare of fax and phone tag consuming hours of time for pharmacists and physician practices



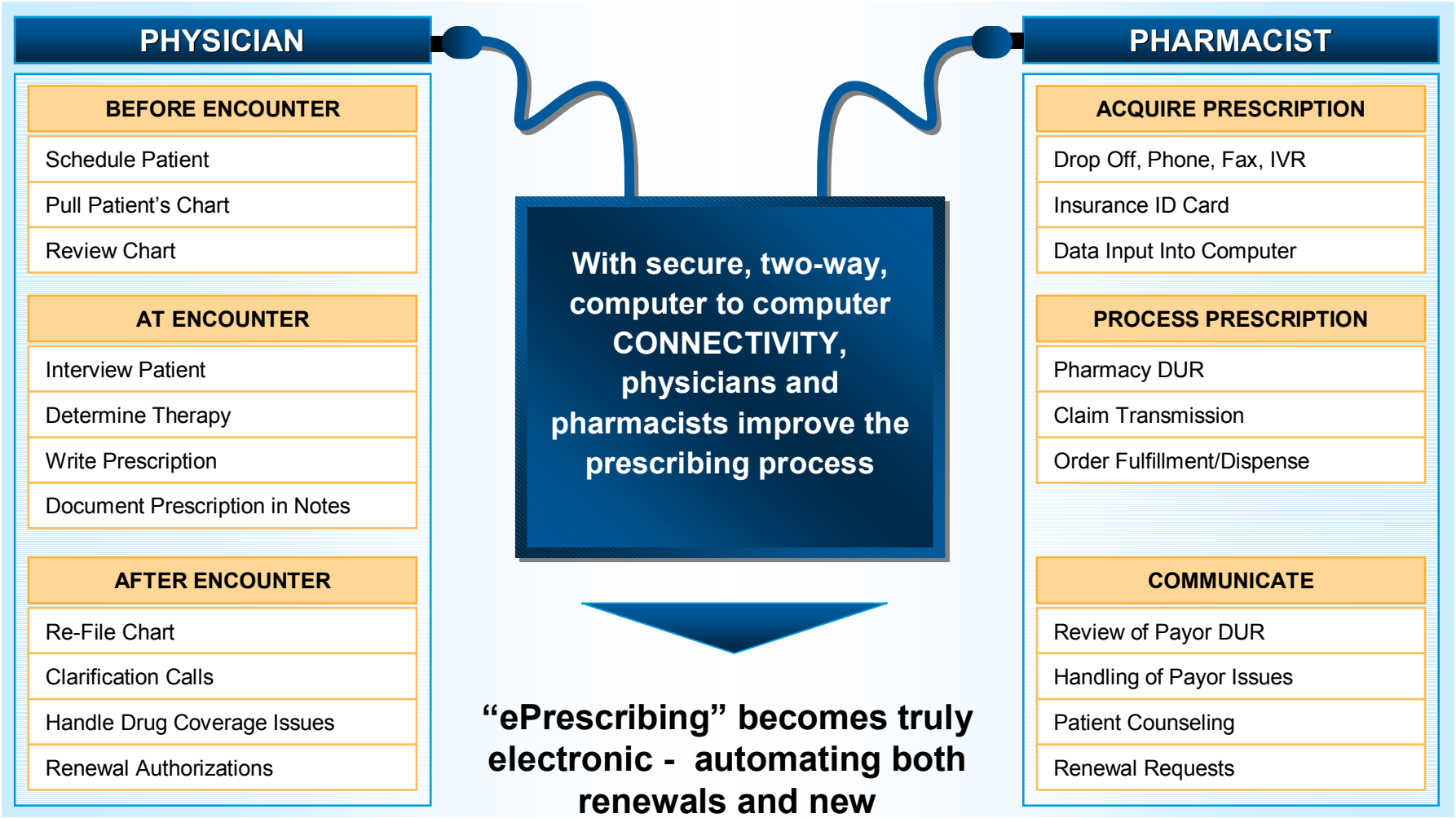
SureScripts
The prescription for better healthcare™

The "whole product" concept for ePrescribing -- those elements attractive to the mainstream buyer, grow more comprehensive over time



SureScripts
The prescription for better healthcare™

Physician Practices and Pharmacists can Establish "True" Electronic Prescribing Connectivity & Improve the Prescribing Process



SureScripts
The prescription for better healthcare™

SureScripts was Formed by the Pharmacy Industry to Improve the Prescribing Process in Ways that Serve the Collective Interest of Patients, Physicians and Pharmacists

- **Incorporated in August 2001**
- **Formed by the two associations that represent the 55,000 pharmacies in the US:**
  - NCPA (independents)
  - NACDS (large chains)
- **Organized to support a strategic industry alliance to:**
  - Improve the overall prescribing process:
    - Safety
    - Efficiency
    - Quality of Care
  - Enable true electronic connectivity between physicians and pharmacies
- **Pharmacy Membership Organization**
  - Pharmacies join as members
  - Represents Pharmacy Interest in the Industry for the electronic prescribing process

NACDS NATIONAL ASSOCIATION OF CHAIN DRUG STORES

National COMMUNITY PHARMACISTS Association

Over 85% of the nation's pharmacies have completed the certification process required to connect SureScripts Messenger™ Services

Fundamentals of a HIT Infrastructure… - Choice and Neutrality…

Choice

- Promote patient choice of pharmacy
- Ensure physician choice of therapy
- Allow application systems of choice

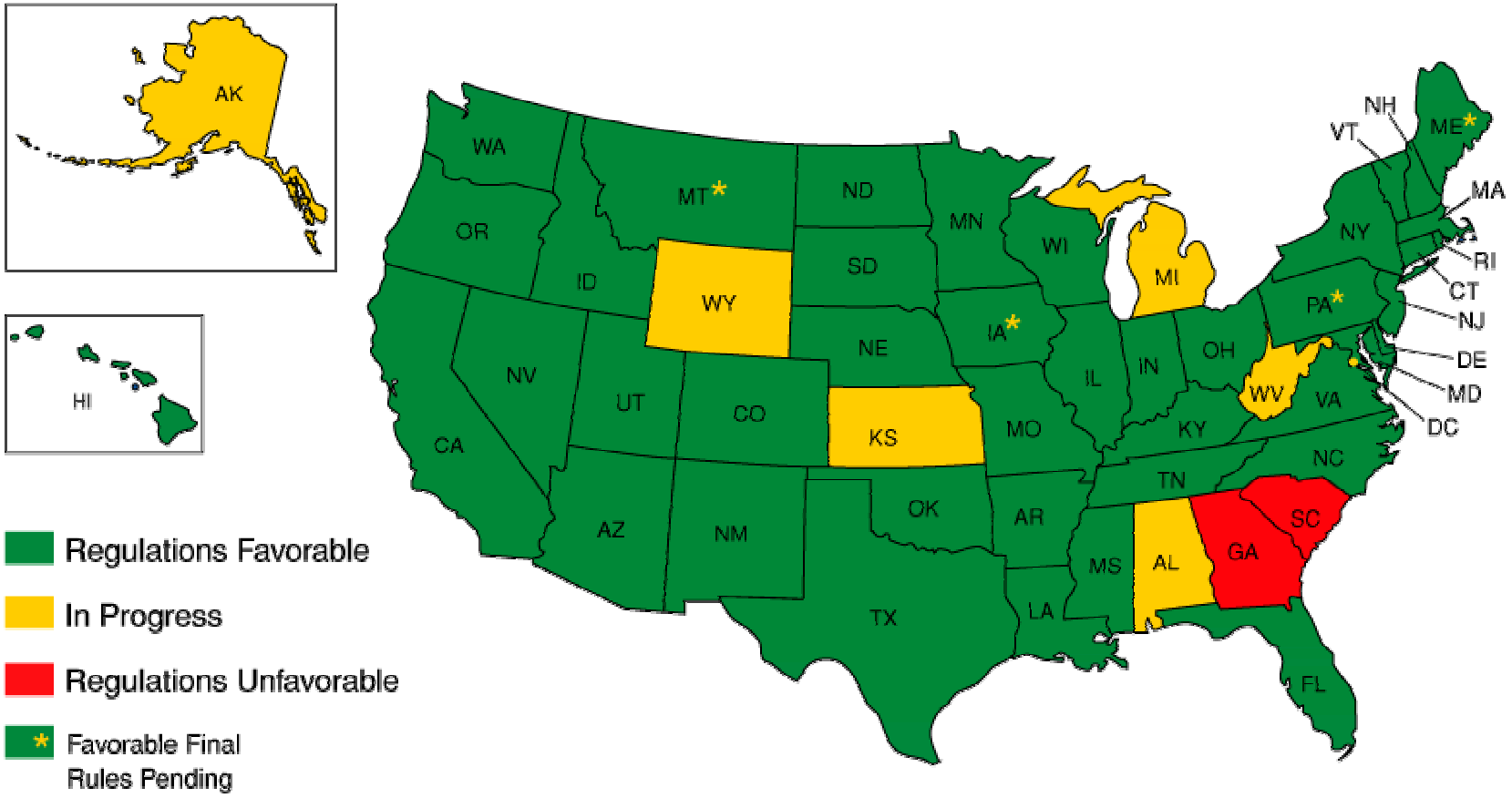
Neutrality

- Collaborate with industry stakeholders
- Not endorsing any particular approach or application
- Support and in no way compete with end user applications

Open Access

- Adhere to industry standards as recommended by HHS
- Create an infrastructure that enables broad interoperability
- Support all solutions that meet certification requirements

The SureScripts Regulatory Assessment & Intervention Process has cleared the way for SureScripts and its partners in 42 states*



* As of Sept. 29, 2005

SureScripts
The prescription for better healthcare™

Over 85% of the Nation's Retail Pharmacies Have Systems Certified to Connect to the SureScripts Network

Just some of the pharmacies connected to the SureScripts Electronic Prescribing Network.

SureScripts Certified Physician Technology Solutions (as of 11/4/05)

- **Electronic Health Records**
  - A4 Health Systems
  - Allscripts
  - ASP.MD
  - Axolotl
  - Bond Medical
  - ChartConnect
  - DOCS (SOAPware)
  - Epic
  - eClinicalWorks
  - Health Systems Research
  - Medical Communication Systems
  - MedNet System
  - McKesson
  - MedPlexus
  - NewCrop
  - Synamed

- **Electronic Prescribing**

  llscripts

  rFirst

  old Standard Multimedia

  ealthRamp

  nstantDx

  ighthouseMD

  ewCrop

  edPlus

  xNT

  ix Corporation

- **Other Services**

SureScripts Contracted Physician Technology Solutions (as of 11/4/05) – In Certification Process

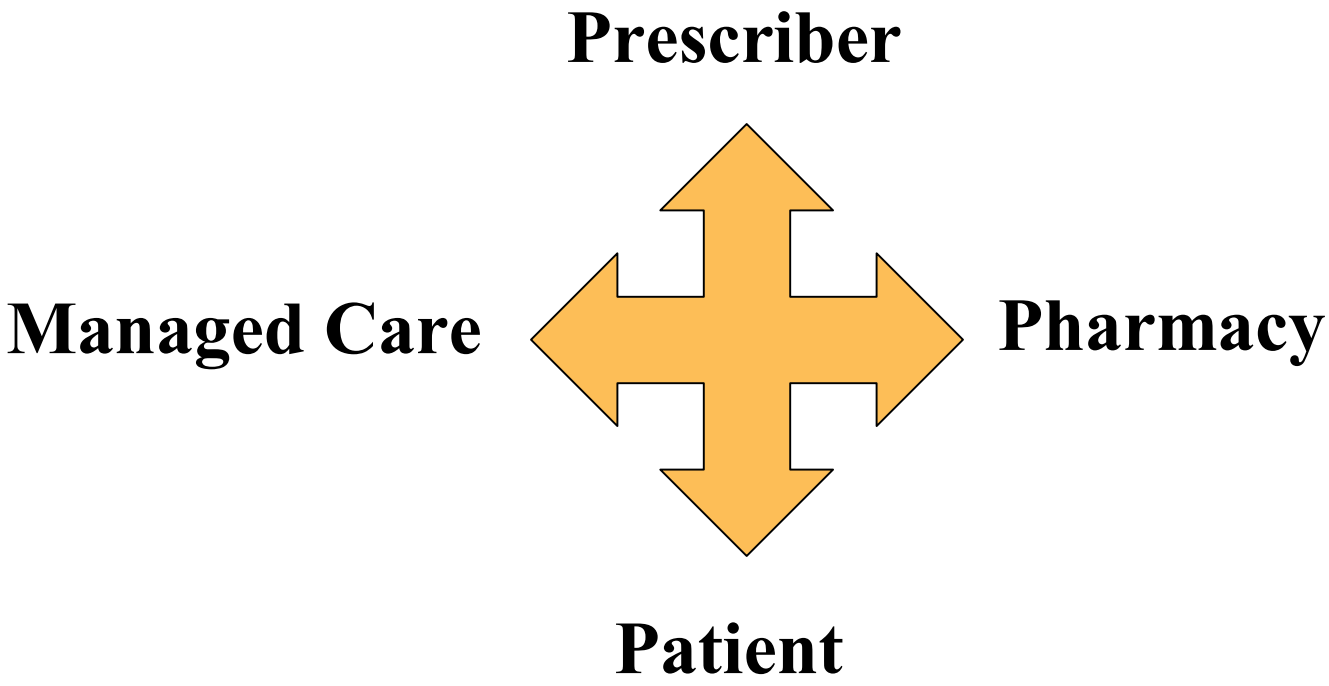
- **Electronic Health Records**
  - iMedica
  - InteGreat
  - MediNotes
  - MedicWare
  - MOST LLC
  - NextGen Healthcare Information Systems
  - Physician Micro Systems
  - Polaris Management, Inc.
  - Smart EMR/VIPA Health
  - Spring Medical
  - Wellogic
- **Electronic Prescribing**
  - Athena Health
  - Creative Socio-Medics Corp.
  - DAW Systems
  - MDanywhere Technologies
  - OA Systems
- **Other Services**
  - Cerner
  - HEALTHvision
  - Kryptiq
  - ScriptRx


DRIVE-THRU PHARMACY

Why e-Prescribing?

- Continuum of technology
  - Advanced techniques in healthcare used to diagnose a patient - leads to a piece of paper to hopefully treat a patient.
  - Up to 30% - never make it to the pharmacy.
    - 100% of eprescriptions do
  - Another 10% never pick up the medication.
    - Less if sent electronically
  - Physicians don't know - yet continue to treat as if they did.
  - Fill notice supplies compliance information

E-prescribing – Who Benefits?



Benefits to Prescribers – Improved Patient Ca

- Time savings - phone/fax of new Rxs & phone time saved for renewal requests
- Patient medical record at point of care - include lab results
- DUR checks at point of prescribing
- Update medical records
- Compliance checks
- Prompt for complete information
- Eligibility information
- Preferred drug edits for formulary management
- Prior authorizations
- Comments to the pharmacy -special instructions for the pharmacist
- Safe & secure delivery to the pharmacy

Benefits to Pharmacies

- **Reduction of errors due to misinterpretation**
  - Handwriting interpretation
  - Sound alike drugs if prescription is given verbally by phone
  - Fax - poor quality - difficult to read
- **Delay of treatment if missing information**
  - Strength - quantity - directions omitted
  - Refill information - patients inadvertently stop treatment
  - Payer information - prior authorization
- **Reduces chance of wrong information**
  - Dosage - strength - directions - refills
  - Clinician actually chooses wrong medication
    - E-prescribing applications can check for inaccuracies

Benefits to Pharmacies (continued)

- **Pharmacy integrates eprescribing within their operating system**
  - **Elimination of keystrokes - error reduction**
  - **Automates renewal requests**
  - **Updates patient profile**
  - **Patient information sent - ensures correct patient record is chosen**
  - **Security & confidentiality**
  - **Time Savings**

Benefits to Patients

- Complete prescription history available
- Improved efficiencies
  - Pharmacy of choice
  - Secure
  - Prescription available for pick up upon arrival
- Higher levels of patient confidence and satisfaction
  - Potential to reduce medication errors by 55%

Institute for Safe Medicine Practices. A Call to Action: Eliminate Handwritten Prescriptions Within Three Years, 2000.

Added Benefits

- **E-communication leads to additional messaging**
  - **Transmit diagnosis - lab results**
    - **Improves consultation at the pharmacy**
    - **Medication Therapy Management at the Pharmacy**
- **Therapeutic Change Requests**
- **Renewal requests - critical information sent from the pharmacy - integrate with electronic medical records.**
    - **Patient medical record ID**
    - **Drug codes**
    - **Patient date of birth**
- **Medication History**
  - **Hurricane lessons learned**
  - **Pharmacy information includes OTC medications**

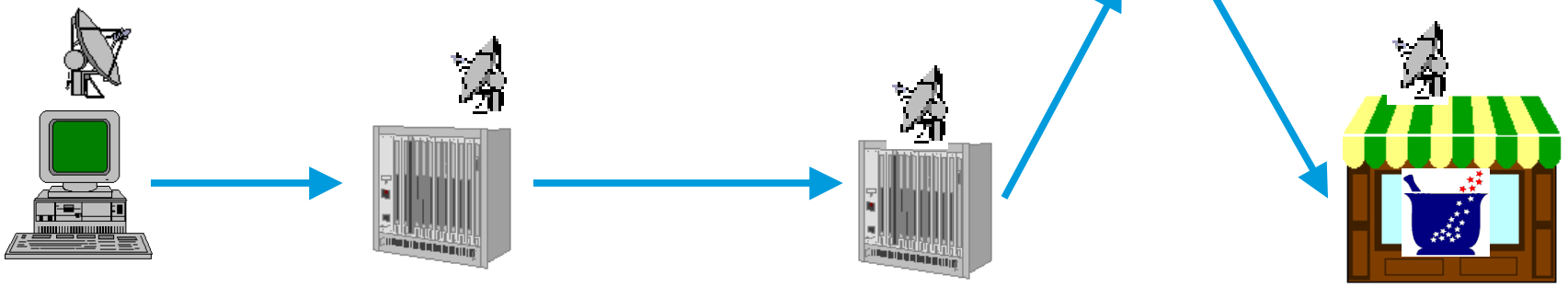
Added Benefits (continued)

- Prescriptions ready when patient arrives
  - Compliance improved if patient knows they do not have to wait for medication
- More efficient renewal authorization process
- Time savings for prescriber - pharmacy - patient
- Formulary applications - reduced medication costs
- Allergies - health conditions transmitted
- Integrate with other applications
  - Patient - personal electronic medical record

How Walgreens Receives a New E-prescription From a Physician

As soon as a Physician submits a New Electronic Prescription to us, it is sent to their Secure Network

The Secure Network then sends it to our Computer Center



Physician Office

eRx Vendors

Intercom Plus Computer Center

Walgreens Pharmacy

Walgreens Computer Center then sends the message to our Satellite, where it is then routed to the correct Pharmacy location of the Patient's choice

The Walgreens store that receives the New Electronic Prescription will then process & fill it for the patient

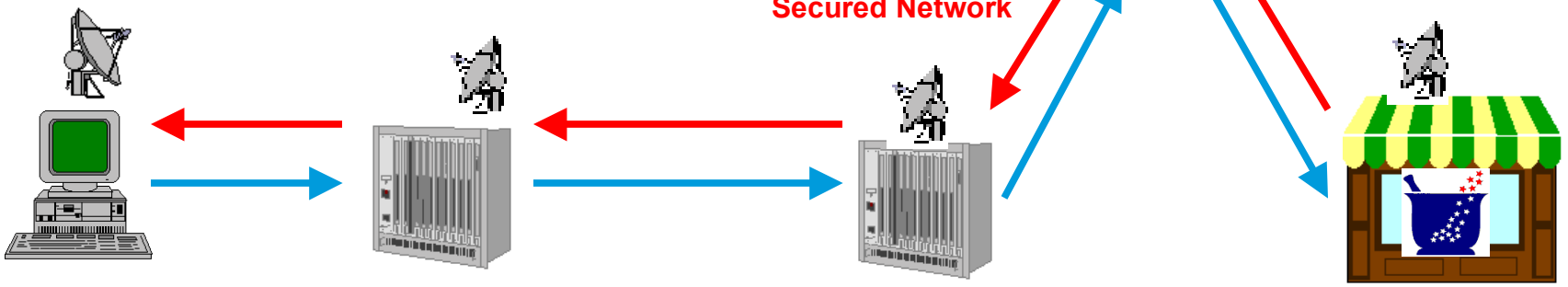
How Walgreens Sends a Refill Request and Receives the Refill Response from the Physician

The Refill Request will then be received at the Physician Office

eRx Vendors will then send that Refill Request to the Physician Office

Walgreens Satellite will send that message to our Computer Center, who willl send it to eRx vendors via a Secured Network

When the patient requests a refill that is out of 'fills,' we will send a Refill Request to the Physician



Physician Office

As soon as a Physician submits the Refill Response to us, it is sent to their Secure Network

eRx Vendors

eRx Vendors then send it to our Computer Center via that Secure Network

Intercom Plus Computer Center

Walgreens Computer Center then sends the message to our Satellite, where it is then routed to the same Pharmacy it originally came from

Walgreens Pharmacy

That Walgreens store receives the Refill Response, and then will process & fill it for the patient

DrFirst SM

The American Health Quality Association

Connecting Physicians and Pharmacies to Improve the Prescribing Process

Nov. 17, 2005

DrFirst Corporate Background

- **Location:** Rockville, MD
- **Founded:** 2000
- **Employees:** 40
- **Strategic focus:** Electronic prescribing
  Endorsed by the Massachusetts Medical Society since 2003
  "Top Honors", Medical Records Institute, TEPR Conf 2004 & 2005
  "Healthcare Technology of the Year" 2005, Frost & Sullivan
  3G A-List Award 2005, Qualcomm

- **Representative Clients**
  - CareFirst (BCBS)
  - Henry Ford Health System (Integrated Delivery System)
  - MedStar Health (community-based healthcare organization)
  - Physicians of Cape Cod (IPA)
  - Massachusetts Medical Society (state medical society)
  - National Health Resources (IPA)
  - SUNY-Stoney Brook (hospital)
  - Greater Milford Health Alliance (IPA)

Strong partner network promotes implementation

DrFirst is actively leveraging deep partner relationships which:

- Provide key connectivity and content including formulary, eligibility and plan specific information
- Interface with existing office/clinical IT systems to fully integrate with the practice's workflow
- Provide an end-to-end solution that provides *economic* benefits to the provider.

Networks

RXHUB "Where the Prescribing Industry Connects"

SureScripts "The prescription for better healthcare™"

NDCHEALTH

medcohealth

EXPRESS SCRIPTS "Charting the Future of Pharmacy"

CAREMARK "It all starts with care®"

Software

epocrates

patientkeeper

NextGen

MediNotes

Hardware/Communications

Sprint

verizon wireless "We never stop working for you®"

palm

SureScripts "The prescription for better healthcare™"

Product Demonstration

Rcopia

For more information on electronic prescribing or DrFirst Rcopia contact:

Peter N. Kaufman, MD
Chief Medical Officer
(301) 231-9510 x146
pkaufman@drfirst.com

3206 Tower Oaks Blvd., Suite 310
Rockville, MD 20852

DrFirst℠

SureScripts
The prescription for better healthcare™

Dr. Mark Fracasso:
"Improving legibility and accuracy of prescriptions was critical to my choice of selecting e-prescribing."

- My Practice:
  - OB/Gyn
  - 2 Prescribers/Physicians
  - 6 non-physician full time staff, including 3 nurses
  - See approximately 25 patients per day per prescriber
  - Each prescriber writes about 15 new scripts per day; practices writes about 150 per week
  - Approximately 85% are sent electronically to the pharmacy
  - Processes new prescriptions and renewals electronically
- Practice Problems
  - Reimbursements were down
  - Costs (malpractice insurance, rent, staff, etc.) increased
- Solution
  - e-Prescribing tool: RCopia from DrFirst
  - Medex billing system (does not integrate with e-prescribing solution)
  - High speed Internet

Dr. Mark Fracasso:

"I'm an early adopter, in part because I like the benefits automation offers my practice."

Desired Outcomes: Opportunity = Importance + (Importance – Satisfaction)

	Outcome	Importance	Satisfaction	Opportunity
1	Improving legibility and accuracy of prescriptions	9	2	17
2	Improving patient access to drug instructions	2	2	2
3	Decreasing the time and effort of renewal authorizations	6	3	9
4	Decreasing the calls and faxes from pharmacy	9	2	11
5	Decreasing the waiting time for prescriptions at pharmacies for your patients	7	4	10
6	Improving access to prescription dosing, indication and precaution information	7	3	11
7	Improving your ability to track and monitor patient medication adherence	2	2	2
8	Improving your ability to identify potential drug interactions	7	2	12
9	Improving patient safety and therapeutic outcomes	6	2	10
10	Improving access to formulary information	7	3	11
11	Improving access to a complete patient prescription history across providers	8	2	14
12	Decreasing the time associated with prior authorization process	7	2	12

Dr. Mark Fracasso: "Lots of time saved automating renewals."

Activity	Before EP	After EP
Perform a renewal authorization	4-5 min	1-2 seconds
Staff time, renewal request and authorization	5-10 min	3-4 seconds
Doc: Writing new Rx and renewals	2-3 min/each	< 1min/each
OB/G practice new and renewals similar		
Writes and submits with patient in the room		
Staff: pharmacy calls renewal requests	10-15 min/scrip	<1 min ideally
Turnaround time: Renewal requests	Timing about same, but now, with streamlined processing, batch, renew, send once at end of day	
Turnaround time: patient/pharmacy calls (70% of phone calls in two 2hr periods)	200 calls/day	Moved to web

Dr. Mark Fracasso:
"eRx is good for our professional image – it puts us on the leading edge."

- Current Results of added automation
  - Increased efficiency
  - Improved patient safety
  - Improved care quality
- Future Goals of added automation
  - Increased physician satisfaction
  - Increased staff satisfaction
  - Increased patient satisfaction

Dr. Mark Fracasso:
"I just want to write prescriptions, fast and right."

- **Activity and time required**
  - Daily Callbacks from Pharmacy related to new scripts 5-10
  - % of Callbacks for drug and dose clarifications < 10%
  - % of Callbacks for drug coverage issues < 10%
  - % of Callbacks for drug and dose clarifications 50%
  - Number of refill authorizations processed daily 9
  - Hours per day you and staff spend processing refill authorizations 2

- **Satisfaction ratings (scale of 1 to 5)**
  - Least satisfied dealing with 3rd party formulary issues
  - Least satisfied dealing with 3rd party prior authorizations
  - Most satisfied with product and company behind RCopia system

Dr. Mark Fracasso: Future Considerations
"I'm eliminating calls from pharmacies, and moving toward more automation, which includes e-prescribing."

- Very interested in:
  - Physician access to payer level formularies at the point of prescribing
  - Physician access to payer level prior authorization rules at the point of prescribing
  - Formulary guide that is not cumbersome
  - Improved pharmacy connectivity

Dr. Mark Fracasso:
"I would recommend e-Prescribing to my colleagues."

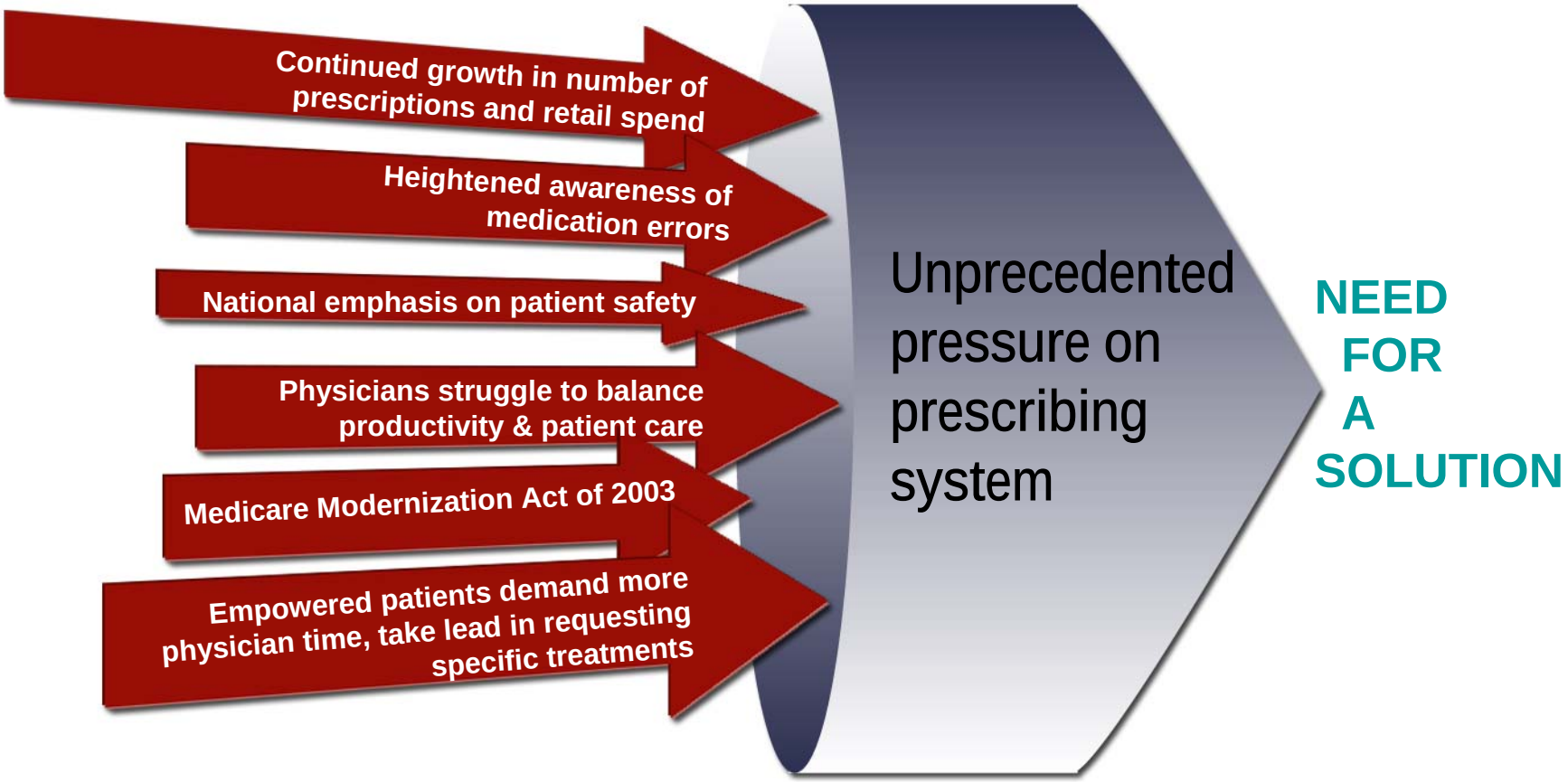
- Total Physician Time Saved: 20-30% savings
  - Qualitative improvements in work load
    - More pleasant
    - Legible
    - Doesn't get call backs
    - Doesn't make mistakes, wrong dosing, error in script
    - Doesn't have to call pharmacy when on call.
- Total Staff Time Saved: 20-30% less time with pharmacy on phone
    - Learning curve for staff
    - Savings increase as process becomes more integrated into practice
- Tool Installation Time: About 2 hours of online training
  - Can training repeat as needed
  - Assumes high speed internet connection and computers already in place

ePrescribing Primer

Kevin Hutchinson
President & CEO, SureScripts

Dave McLean
Chief Executive Officer, RxHub

There are a confluence of forces mandating change in the current prescribing system



Multiple agendas are driving the need for a solution

E-Prescribing

The Overall Prescription Process

Definition: Electronic Prescribing (ePrescribing)

As defined in Medicare Modernization Act 2003

- ePrescribing is more than the mere electronic transmission of a prescription; it also encompasses the secure real-time electronic delivery to providers and pharmacists of patient-specific information on eligibility, benefits, drug interactions, warnings, dosage adjustments, medication history, and the availability of generics.

ePrescribing is a process

A process that goes beyond today's current "writing" of a prescription. It incorporates a more comprehensive approach that involves:

- Access to information of clinical decision support
- Building (incrementally) of a patient database that is transportable and accessible to all parties deemed by the patient to require information in their care
- Long-term intention of realizing safety gains realized by the more integrated systems
- Reducing cost and increasing practice efficiency

It's all about the information and how it's utilized…

Today's Prescribing Process… -*Needs Improvement*

- The prescription is written based on physician-patient decision
  - *but without sufficient information.*
- The prescription is delivered to a pharmacy
  - *in a non-standardized delivery method… many Rx never get to the pharmacy*
- The prescription is processed at the pharmacy
  - *where much re-work often required.*
- When the patient takes the prescription—are they compliant
  - *is more information needed*

The Safety Challenge

- According to a recent study more than 8.8 million Adverse Drug Events (ADEs) occur annually in ambulatory care of which over ***3 million*** are preventable *(CITL)*
- Even with the explosion of knowledge and treatment options in health care, Americans get recommended care only 55% of the time *(Rand Corporation)*
- More than 57,000 Americans die needlessly each year because they do not receive appropriate care *(NCQA).*
- Over 7,000 deaths each year due to manual-process prescribing errors

The Cost Challenge

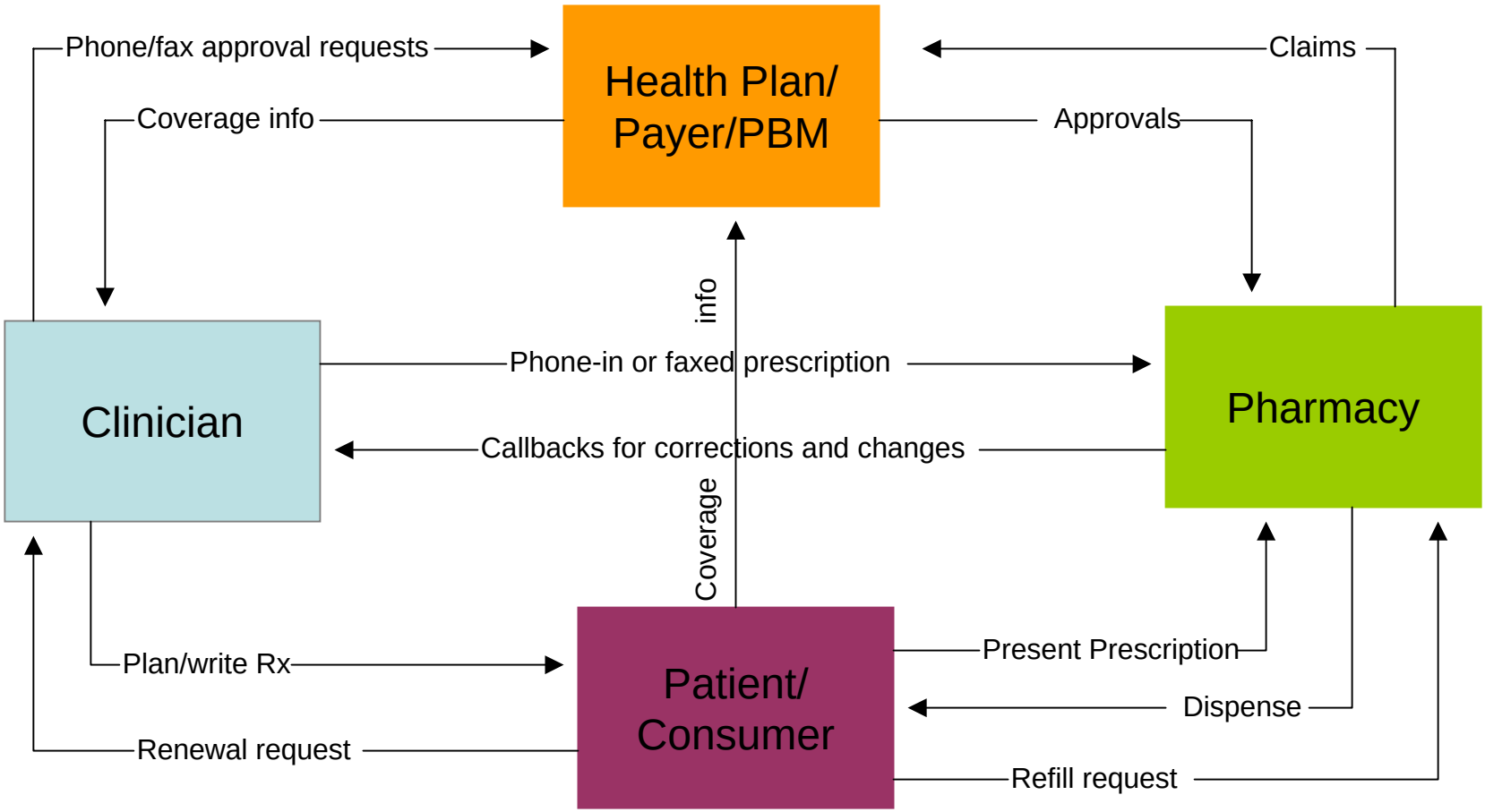
- U.S. healthcare spending higher, but quality lower, compared with other industrialized countries.
- One-third of the $1.6 trillion spent on healthcare each year is wasted on duplicative or ineffective care *(CECS at Dartmouth).*
- Studies suggest national savings as high as $27 billion with widespread adoption of eprescribing
- Nationwide adoption of computer systems for clinicians could prevent more than 2 million ADEs and 190,000 hospitalizations per year saving up to $44 billion annually

The Efficiency Challenge

The total prescription system is challenged by hundreds of millions of phone calls and faxes

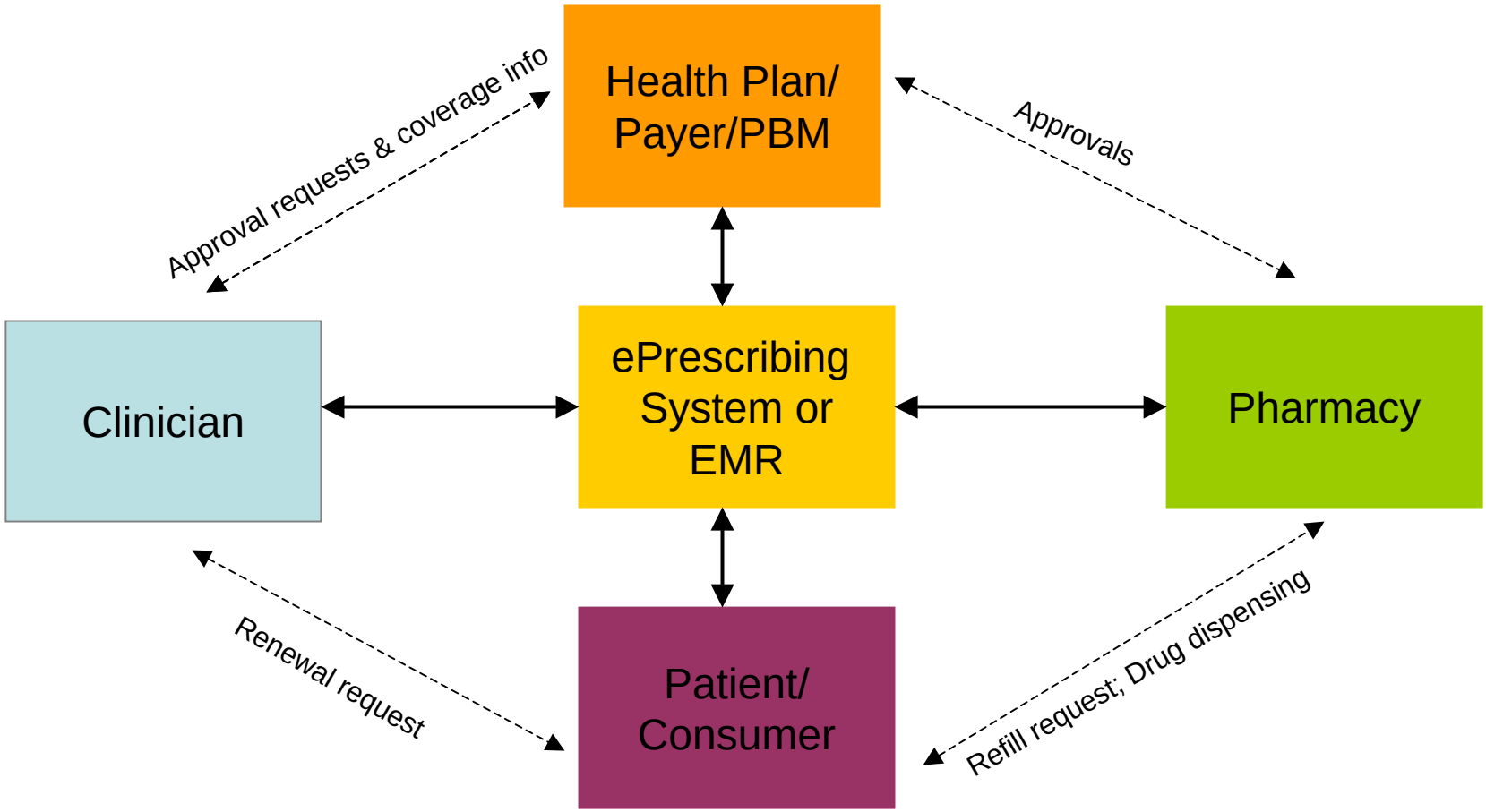
- Indecipherable or unclear prescriptions result in more than 150 million clarification calls from pharmacists to physicians
  - Up to 3 hours physician staff time/day
  - Up to 4 hours pharmacist staff time/day
- 900 million prescription-related telephone calls are placed annually, with practices reporting almost 30% of prescriptions required pharmacy callbacks
- Requesting and receiving approval for refills alone, estimated at nearly 500 million per year, adds to the telephone and fax burdens

The Overall Prescribing Process: More Complex Than Writing and Dispensing



Source: Electronic Prescribing: Toward maximum Value and Rapid Adoption. A Report of the *Electronic Prescribing Initiative*, eHealth Initiative April 14, 2004

Communication Among Stakeholders; Simplified through Automation



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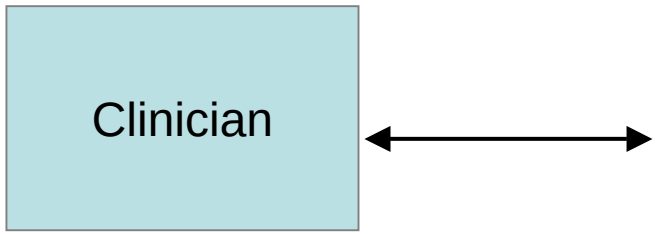
ePrescribing Benefits to Clinicians



Improved Quality of Care

- *Safer prescriptions and safer treatment regimens*
- *Dispensed medications detection of non-compliance*

Improved Office Efficiency and Throughput

- *Reduced pharmacy call-backs*
- *Fewer phone calls for refill/renew requests*

Improved Patient Satisfaction

- *Fewer surprises at the pharmacy*
- *Easier refill requests*

ePrescribing Benefits to Pharmacists

Improved Quality of Care

- *Medication errors due to illegibility or sound-alike medications are eliminated*
- *Errors due to duplicate re-entry of information eliminated*

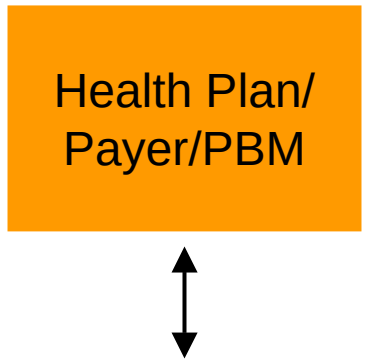
Improved Office Efficiency and Throughput

- *Reduced call-backs for clarification*
- *A work environment that promotes professional role of the pharmacist*

Improved Patient Satisfaction

- *Pharmacy professionals spending more time with customers ensuring safer outcomes and less time on administrative third-party issues*
- *Patients benefit from the added convenience from reduced wait times at the pharmacy*

ePrescribing Benefits to Payers/PBMs



Improved Quality of Care

- *Reduced claims for admissions and visits to treat ADEs*
- *Patients receive the right drug for the right condition at the right time*

Improved Efficiency and Reduced Costs

- *Reduced call-backs for clarification of administrative issues*
- *Better utilization of cost-effective drugs (generic, therapeutic alternatives, step-therapy)*

Improved Patient Satisfaction

- *Slower premium growth due to reduced drug spend*
- *Fewer hassles over formulary coverage and prior-authorization rules*

ePrescribing Benefits Patients/Consumers

Improved Safety and Quality of Care

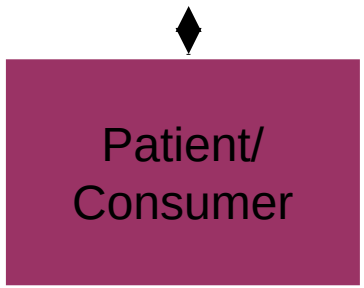
- *Safest possible drug choice based on information provided to the physician at the point of care*
- *Medication errors reduced due to illegibility*
- *Drug interactions or ADEs reduced based on knowledge of medication history*

Improved Efficiency and Reduced Costs

- *Physicians will know coverage and benefits upfront, eliminate non-formulary and non-approved administrative issues*
- *Better utilization of cost-effective drugs (generic, therapeutic alternatives, step-therapy)*

Improved Patient Satisfaction

- *Patients prescriptions will be ready at the pharmacy*
- *Patients will not have to carry a paper prescription which they may lose.*
- *Patients have more time with their Pharmacist to discuss care issues*



Current Status

- 36% of physicians said eprescribing improved efficiency
- 45% physicians said it improved compliance with formularies
- 33% physicians said it had a major impact on quality of care

Source: Harris Interactive and Boston Consulting Group Poll, 2003

Barriers to Adoption

- Cost of buying and installing systems
- Time/workflow impact, Initially >time compared to paper prescribing
- Lack of connectivity among stakeholders
- Lack of reimbursement for costs and resources
- Safety improvements not fully publicized

Source: Electronic Prescribing: Toward maximum Value and Rapid Adoption. A Report of the *Electronic Prescribing Initiative*, eHealth Initiative April 14, 2004

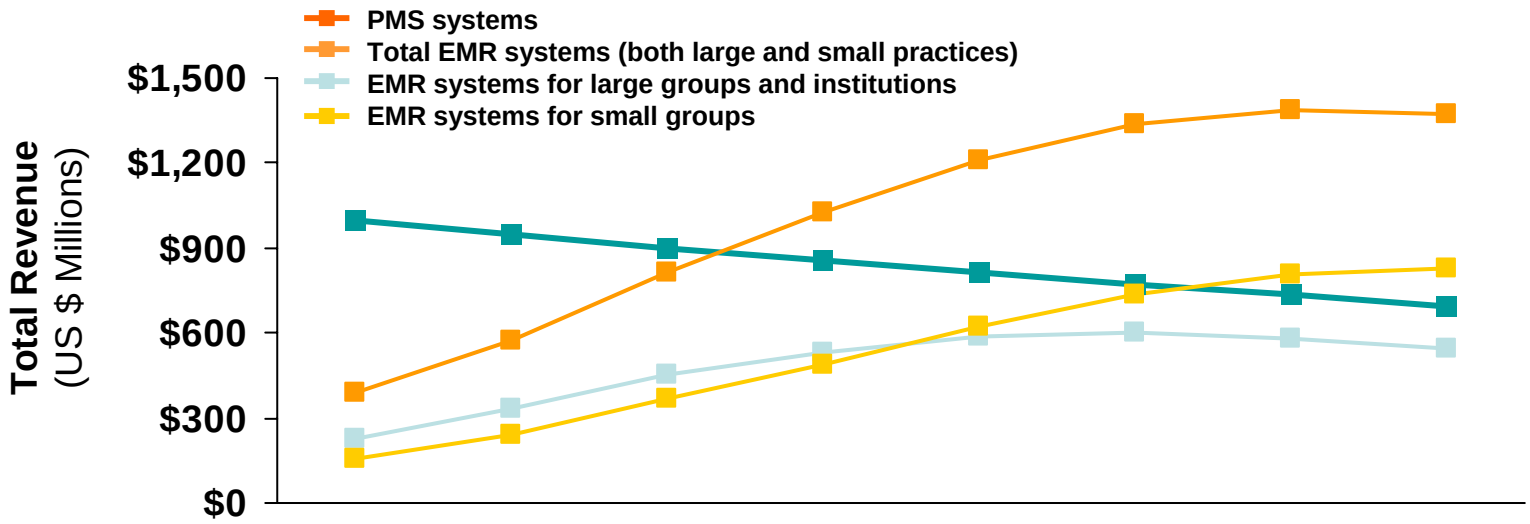
Physician Acceptance Widely Based on…

- Proven value in practice efficiency gains and safety/quality improvement
- Systems that are quick to install, easy to learn, and fast in use
- Financial or other incentives to overcome cost

Source: Electronic Prescribing: Toward maximum Value and Rapid Adoption. A Report of the *Electronic Prescribing Initiative*, eHealth Initiative April 14, 2004

EMR adoption is increasing rapidly

- Figure 3 Forecast: US PMS and EMR Adoption, 2003 to 2008



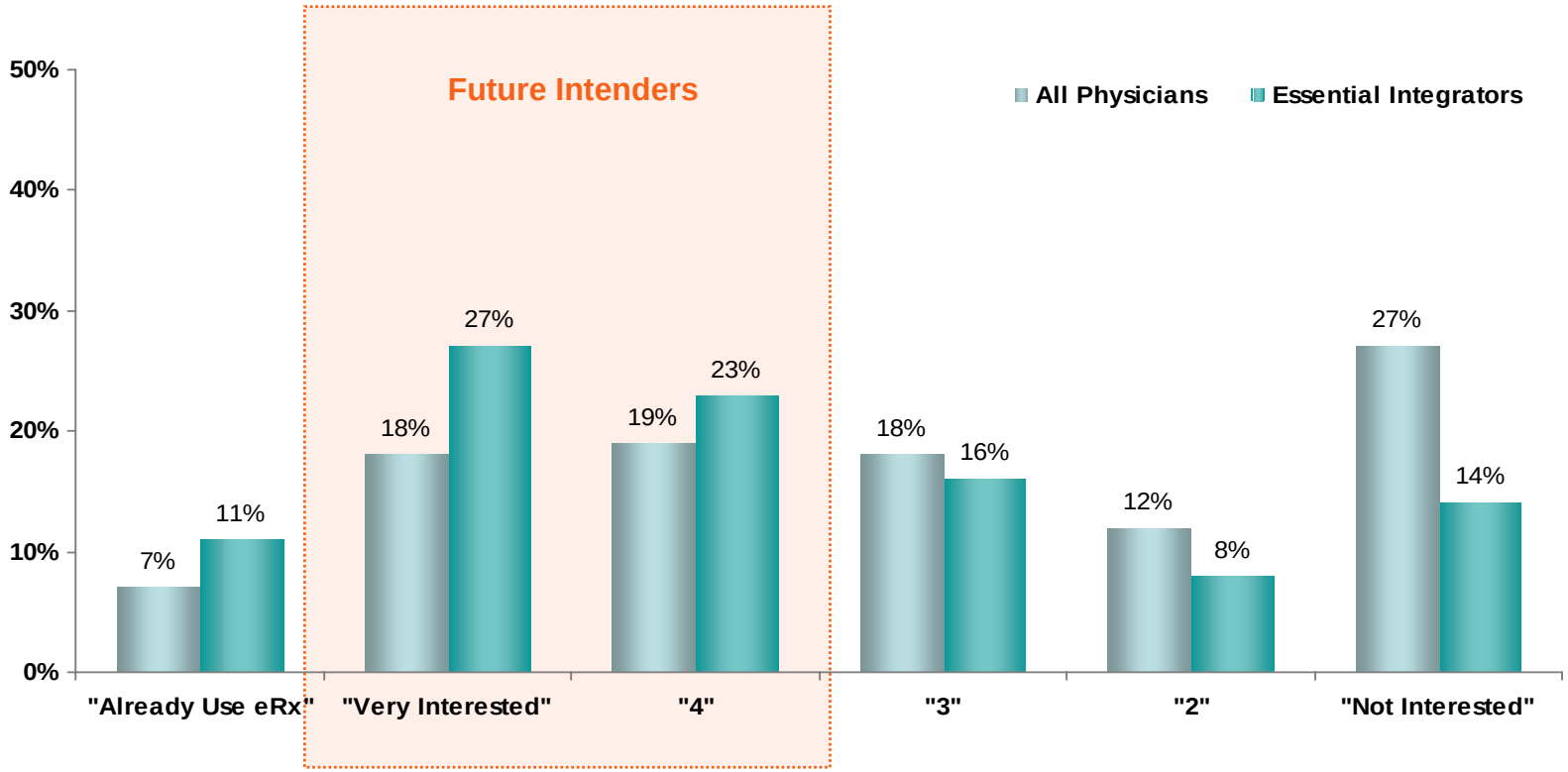
	2001	2002	2003	2004	2005	2006	2007	2008
PMS systems	$998	$948	$901	$856	$813	$772	$733	$696
EMR systems for large groups	$229	$330	$450	$532	$585	$599	$581	$544
EMR systems for small groups	$158	$244	$366	$491	$622	$736	$809	$829
Total EMR systems	$387	$574	$816	$1,023	$1,207	$1,335	$1,390	$1,373
Grand total (US $ Millions)	$1,385	$1,522	$1,717	$1,879	$2,020	$2,107	$2,123	$2,069

Source: Forrester Research, Inc.

Today Writing a Prescription is Paper Based

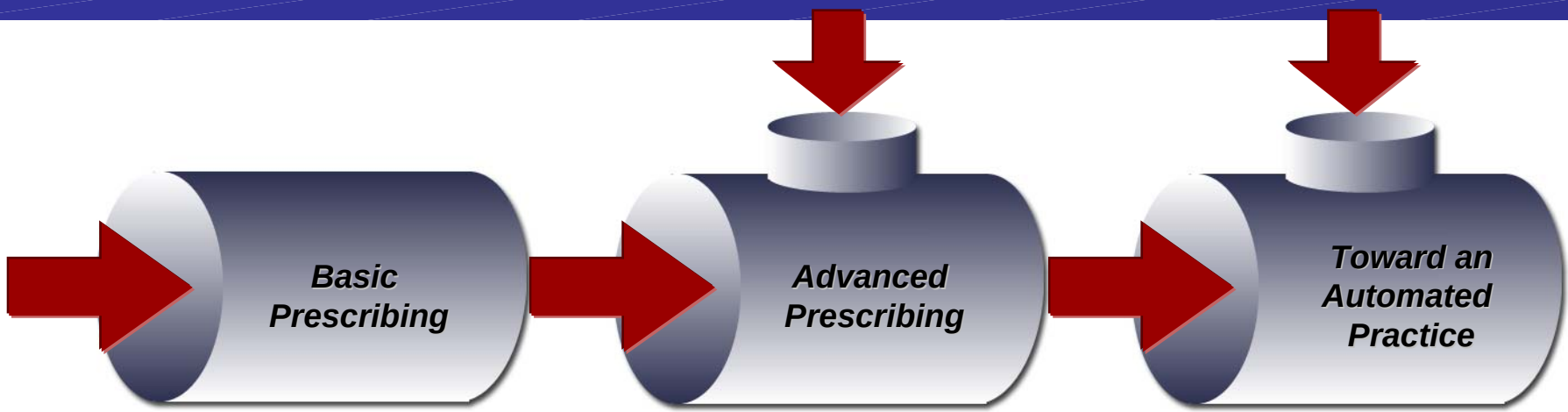
- According to eHI, current studies show between 5% – 18% of physicians and other clinicians are using electronic prescribing
- Automation of prescription writing is estimated by Forrester
  Research at:
  - 11% in 1-2 physician practices
  - 17% in 3-10 physician practices
  - 38% in 11+ physician practices
- According to Manhattan Research, 7% of all physicians currently use an electronic prescribing system

Physicians Indicate a Strong Interest in Using an ePrescribing System over Next 12 Months



Note: Data used courtesy of manhattanRESEARCH

Roadmap of prescribing services for physician and pharmacy collaboration



- ***Services Providing True Connectivity***
  - Renewals
  - New scripts
  - Foundation for future collaboration
  - Fair and open network

- ***Services Impacting Patient Cost***
  - Payer formularies
  - Prior authorizations
  - Rx change message
  - Switch in class
- ***Services Impacting Patient Safety***
  - Drug interaction checks + safety net
  - Medication history
  - Patient compliance
  - Patient-focused care management

- ***Services Providing Complete automation***
  - Billing and scheduling
  - Lab results
  - Payer communications
  - Referrals
  - Diagnostic reports
  - Charge capture and coding
  - Clinical notes

SureScripts & RxHub
National Networks

SureScripts and *RxHub*: A common mission

Working to accelerate the adoption of electronic prescribing

SureScripts

–focus on physician and pharmacy connectivity

- Refills, renewal authorization, new Rx, change requests

RXHUB

– focus on delivery of real-time information at the point of care

- Eligibility, formulary, medication claims history

Working to achieve advancement toward clinical automation

Fundamentals of a HIT Infrastructure

Neutrality

- Collaborate with industry stakeholders
- Not endorsing any particular approach or application
- Support and in no way compete with end user applications

Open Access

- Adhere to industry standards as recommended by HHS
- Create an infrastructure that enables broad interoperability
- Support all solutions that meet certification requirements

Choice

- Promote patient choice of pharmacy
- Ensure physician choice of therapy
- Allow application systems of choice

•

Pharmacies are ready to communicate with physicians electronically

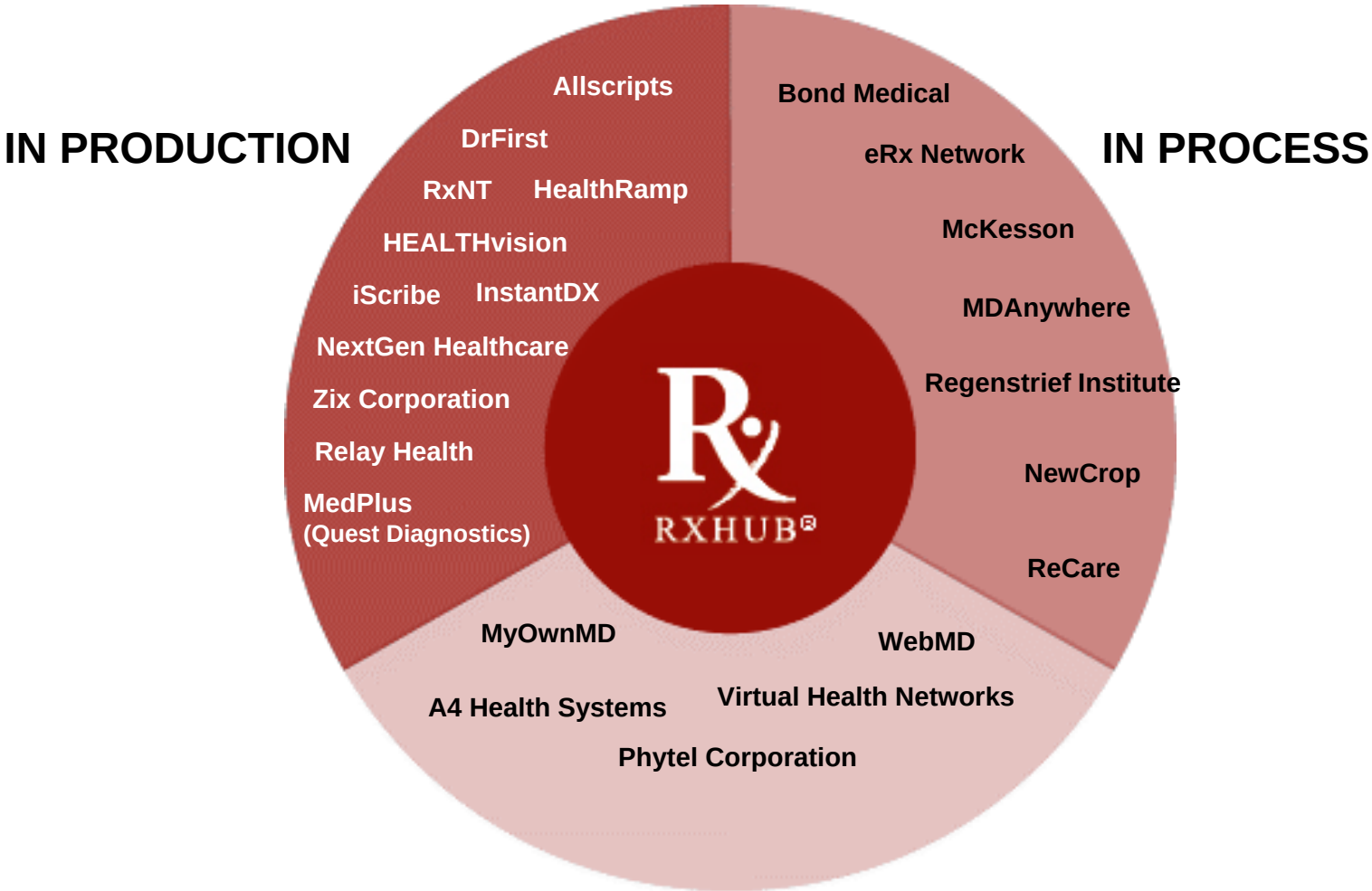
Over 75% of the nation's pharmacies are certified and connected to the network, and are at various stages of pharmacy activation

Just some of the pharmacies that are part of the SureScripts network

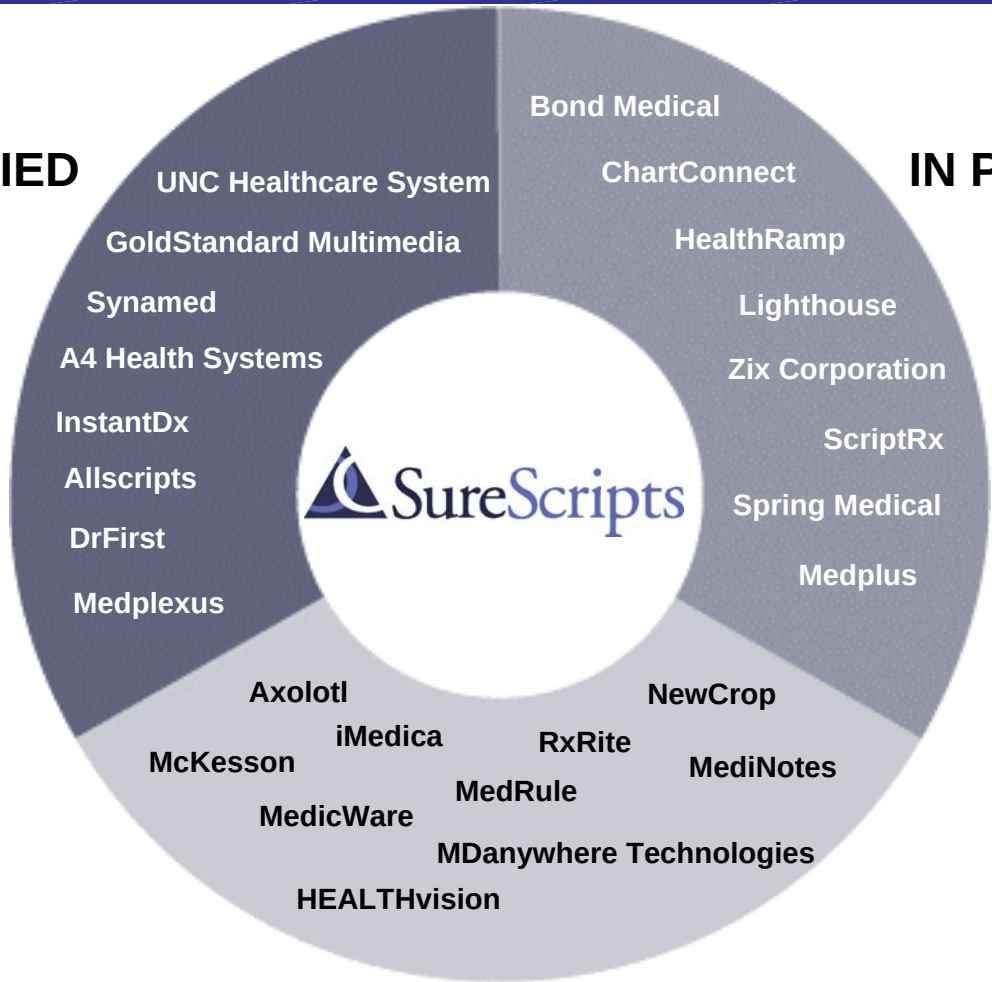
Payors and PBMs are ready to share plan data electronically

- A unique patient identification directory service containing more than 150 million names and growing
- Partnership with CAQH for health plan formulary distribution
- Dynamically links and manages millions of customer records from constantly changing databases
- RxHub's MPI algorithms for record linkage create a solid and predictable foundation for patient identification *(first & last name, DOB, gender, zip code)*
- Routes the request to the appropriate data source in "real-time" providing clinician access to patient specific drug benefit and medication history information
- Received over 5 million eligibility transactions to-date which represent a patient visit which could result in prescription(s)

RxHub Physician Partners

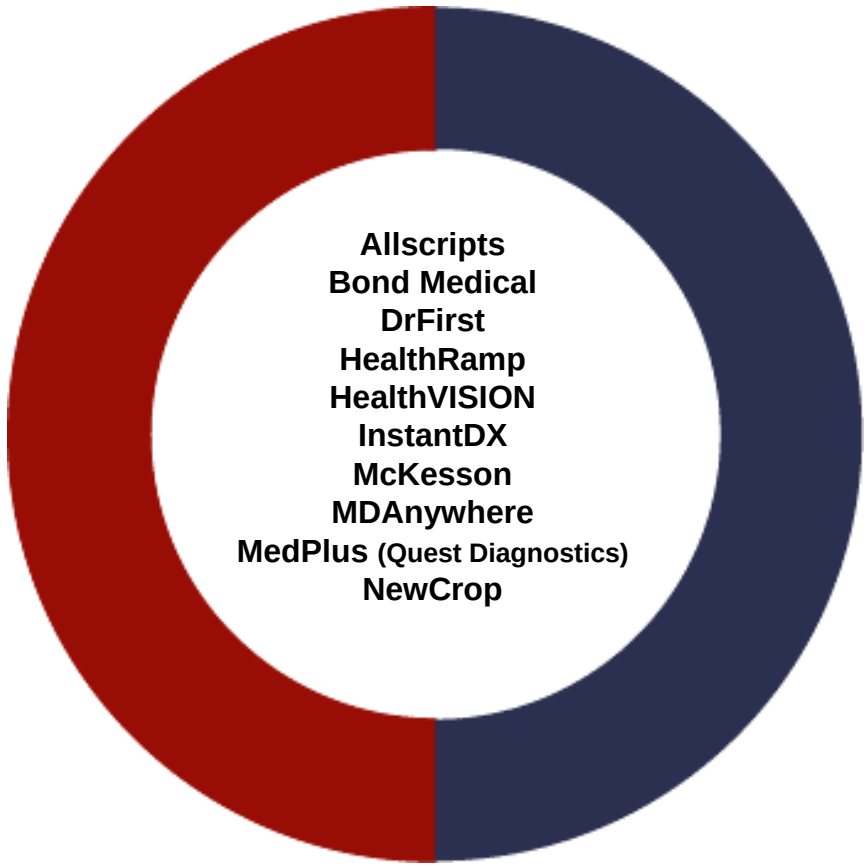


SureScripts Physician Partners



Many physician partners are already working with both organizations

RXHUB℠



SureScripts

ePrescribing Costs & Incentives

Barriers to Adoption- Perceived vs. Real

WORKFLOW

- Several studies report this as the 2nd biggest barrier to adoption.

VIABILITY & SUSTAINABILITY

- Product development is still early stage. As functionality improves, new versions of software require additional training (learning curve) time for physicians.

LIMITED DATA EXCHANGE & COMMON STANDARDS

- The limited ability to exchange data across systems (interoperability) is somewhat related to the lack of common standards. Early adopters find themselves supporting two systems (automated and paper-based).

COST

- The cost of adopting HIT involves more than just purchasing and implementing. Requires modifications in clinical practice. There are capital costs and operational costs that need to be addressed in concert with perceived benefits.

A Sampling of Incentives Projects

- Public and Private Sector Grants (HRSA, AHRQ, CCH)
- 3rd Party Payers—Pay for Performance *"Bridges to Excellence"* (GE, Verizon, Ford, UPS)
- Private Initiatives (Horizon BCBS-NJ, Mass Medical Society, GHI, Wellpoint)
- Legislative and Regulatory *"Medicare Modernization Act of 2003"* (Safe Harbor, Grants, Pre-emption, Payment/beneficiary for performance)

Federal Efforts to Encourage Adoption

- Medicare Modernization Act (MMA)
- Recommended Foundation Standards (NCVHS)
- Federal Legislation
  - Patient Safety Act (HR663)
  - Patient Safety and Quality Improvement Act (S720)
  - NHII Act (HR2915)
  - Health Information for Quality Improvement Act (S2003)
  - Medication Error Reduction Act of 2003 (S1729, HR3035)
- Grant funded demonstration projects

Questions Industry Must Solve Together

- **Physician / Pharmacist Collaboration**: What opportunities exist for collaboration between physicians and pharmacists to improve the prescription process?
  - Explore new areas for communications and services
  - Identify how technology can help move pharmacy closer to the clinical process

- **Beyond the Basics:** How should advanced electronic prescribing functions be implemented to improve the prescription process?
  - Consider patient compliance, medication history, formulary management, others
  - Work with physicians, community pharmacy, technology vendors and other stakeholders

Prescription Process Validation

- **Total System Impact:** How does electronic prescribing impact efficiency, safety and care quality?
  - Quantify ROI and quality impacts for basic and advanced functions
  - Focus on pharmacies and physician practice (health plans and health systems opportunistically)

- **Enabling and Integrating the EHR:** How can automating the prescription process best be integrated with the electronic health record and other clinical technologies?
  - Identify the implementation roadmap and customer migration strategies from basic prescribing to EHR
  - Identify EHR features that can improve the prescription process

Relevant Reports

- Electronic Prescribing:
  Toward Maximum Value and Rapid Adoption
  http://www.ehealthinitiative.org/initiatives/erx/

- The Decade of Health Information Technology: *Delivering Consumer-centric and Information-rich Health Care.* A Framework for Strategic Action, July 21, 2004
  www.hhs.gov/onchit/framework/

- Achieving Electronic Connectivity in Healthcare: *A Preliminary Roadmap from the Nation's Public and Private-Sector Healthcare Leaders,* July 2004
  http://www.connectingforhealth.org

RXHUB℠

Where the Prescribing Industry Connects





The ROI Behind ePrescribing:
Cost Savings, Patient Safety and Physician Adoption
RxHub Symposium Summary
May 9 & 10, 2006

An Introductory Note

On May 10th, RxHub hosted, by invitation only, an educational and interactive symposium for key senior level health plan and employer group decision makers. This symposium included information on the current eprescribing landscape and industry trends, research evidence of eprescribing impact and value, industry leader's views on current adoption strategies, and discussion of existing barriers to eprescribing. The symposium also focused on strategic issues related to the impact on patient safety, the influence of eprescribing on practice efficiency, the results of an independent study conducted by Milliman on the value of eprescribing decision support information at the point of care, and key strategies to drive further adoption of eprescribing technologies.

In support of continued adoption of eprescribing by all stakeholders, RxHub is releasing this summary document of the Symposium; the ROI Behind ePrescribing: Cost Savings, Patient Safety and Physician Adoption. We would like to thank all the presenters and participants for making the symposium productive, educational and exciting.

– JP Little
Chief Operating Officer
RxHub

Our Topics and Speakers

- Keynote - Barrett Toan, Express Scripts
- Targeted Drug Cost Management and the Potential Impact of Electronic Prescribing - Keith Kieffer, Milliman
- Success Beyond Expectation at Health Alliance Plan (HAP) and the Henry Ford Health System - Matt Walsh, Health Alliance Plan
- Electronic Prescribing: Improved Quality & Safety - Jonathan White, M.D., AHRQ
- E-Prescribing: From Paper to Powerful - Without the Pitfalls - Peter Kaufman, M.D., DrFirst
- E-Prescribing: The Consumer Perspective... (??) - David Lansky, Ph.D., Markle Foundation
- Call to Action: Employers and Patients Are Counting on You - Rob Moroni, RAK & Co

Executive Summary

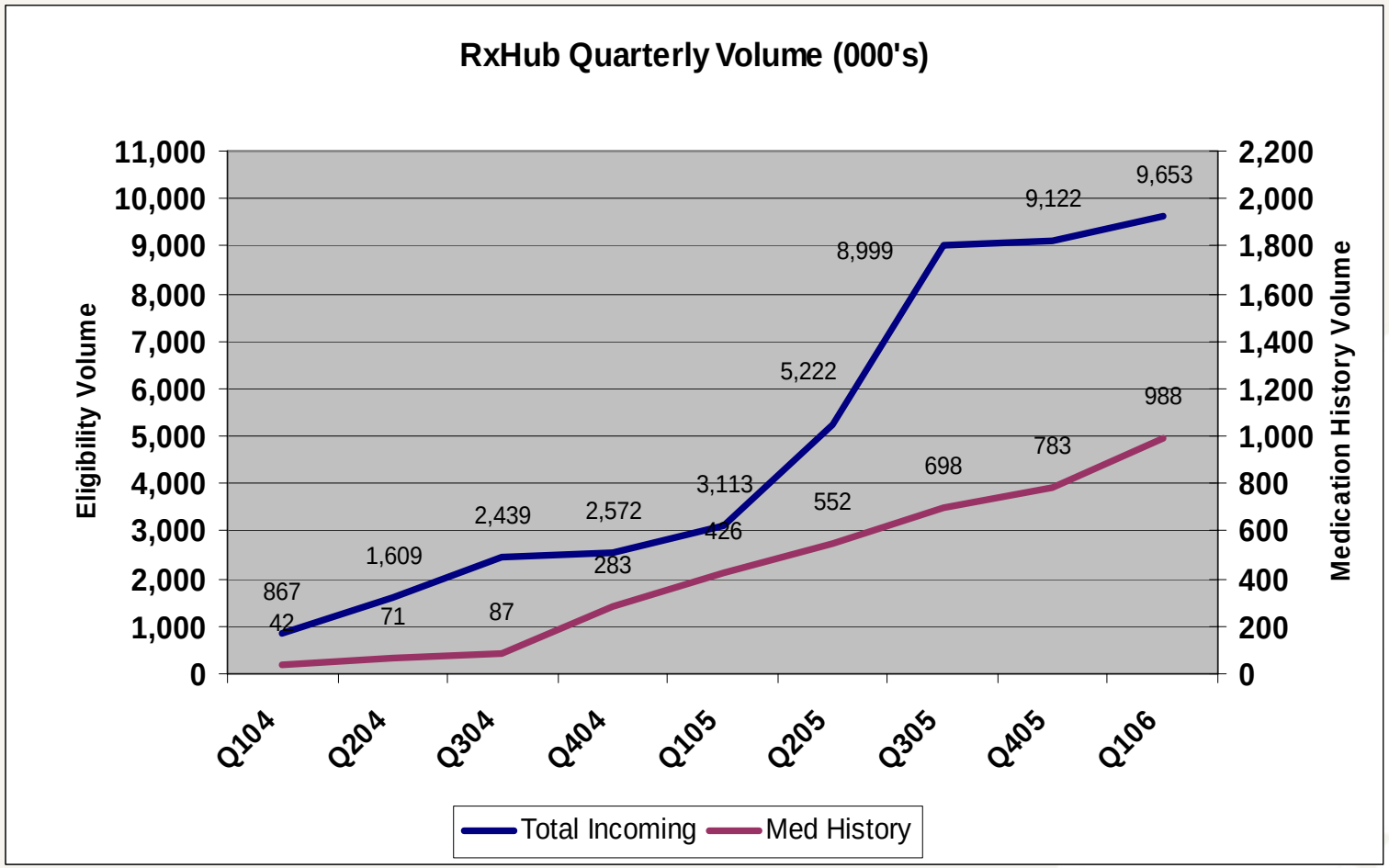
- ePrescribing adoption is growing rapidly, spurred by the fact that it is a favorable solution for doctors, patients, and payers, and the infrastructure is now in place.
- ePrescribing is being supported by a wide range of legislative and regulatory changes at the federal and state levels. The Medicare Modernization Act has sponsored a number of pilots, established standards, and requires it for plans that participate in Medicare Part D.
- An actuarial analysis by Milliman shows substantial savings potential when decision support information (i.e. formulary) is presented to a physician at the point of prescribing. A payer's drug spend could be reduced by 8-15% and drug spend inflation could be reduced by 1% a year.
- The experience of Henry Ford Health System with eprescribing exceeded their expectations. Of 500,000 prescriptions, 58,000 were changed due to formulary messages, 97,000 were changed due to interaction warnings, and 6000 changed due to drug allergy warning. The generic usage rate was increased 1.25%.
- Physician acceptance is key to driving adoption. ePrescribing is now at the point where physician work flow is improved over conventional processes and the methodology is very easy to use. Time savings for physicians and staff outweigh the implementation costs.
- ePrescribing improves patient safety by reducing adverse drug events due to allergies, drug interactions, improper patient identification and poor handwriting. It also improves patient convenience by reducing formulary errors, call backs, pharmacy wait time, and prescription refill time.
- Messages to consumers about patient safety and managing medications will strike a chord as 34% of the public have experienced a preventable medical error. ePrescribing should be put in the context of connectivity and personal health information, which consumers expect. Communications to consumers should also reassure consumers that eprescribing does nothing to endanger privacy.
- For employers, eprescribing is a way to reduce costs and improve enrollee welfare, with no cost shifting. Consequently, it is the type of initiative that employers are looking for and will meet with strong employer/payer approval. It is a good example of how health care plans can meet employer's needs.
- ePrescribing is a "win/win" for patients, physicians, health plans and payers. It reduces costs, improves patient safety and convenience, and eases physician work flow.

Why RxHub?

- **Critical mass** of patient-specific information
- Transaction/connection **standards** in place
- **Infrastructure** (pipes to carry transactions)
- **Single point of contact** (one-to-many connection)
- **Master Patient Index**
- **Patient Eligibility**
- **Patient Formulary & Benefits**
- **Patient Medication History**
- **Prescription Routing to retail and/or mail order**

160 million covered lives

ePrescribing Adoption is Happening!



Proving ePrescribing Interoperability through RxHub

RxHub Services Provided YTD 2006 *(January – April 06)*

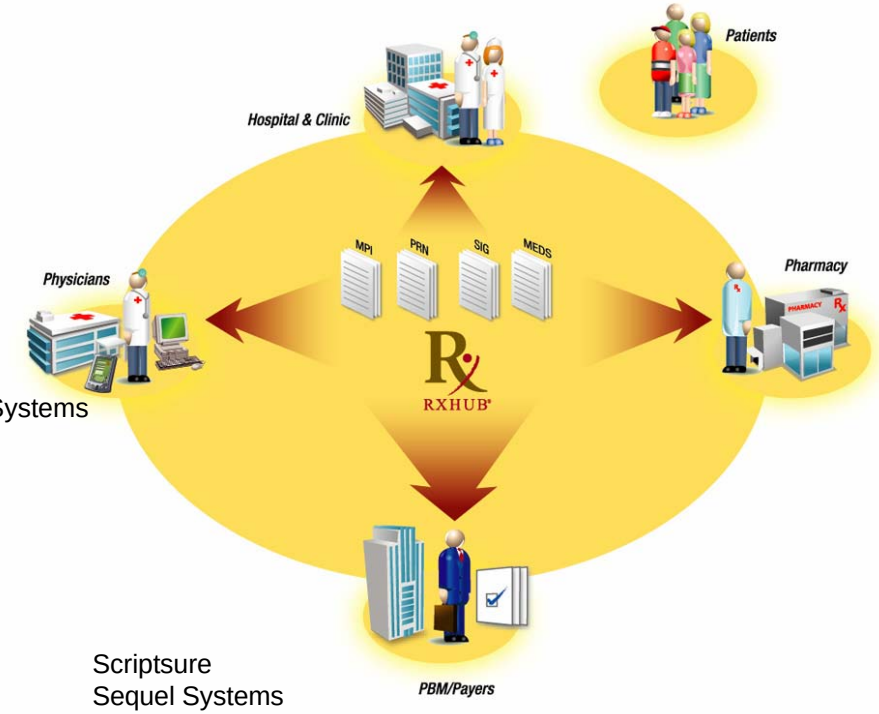
MPI	PRN	SIG	MEDS
Access to 160M covered lives via the RxHub Master Patient Index	*Ambulatory* 13.8M Eligibility Requests YTD 06 22K Formulary Downloads 1.1M Medication History Requests YTD 06	*Ambulatory* 62K New/Refill Prescriptions sent to Retail/Mail YTD 06	*Acute Care* 220K Medication History Requests YTD 06

Hospitals & Distributors

Barnes Jewish Hospital
Healthcare Systems
Regenstrief Institute
Siemens Healthcare

Technology Partners

A4 Health
AchieveHealthcare
Allscripts
Athena Health
Bond Medical
Catalis Health
Cerner
Community Computer
DrFirst
eClinical Works
eHealth Solutions
EmDeon/WebMD
EPIC
Gold Standard
H2H Solutions
Healthcare Systems
Health Vision
InstantDx
iScribe
MA Share
McKesson
MdAnywhere
MdOffices
Medical Info Systems
MedicWare
Medkeeper
MedPlus
Medport
NewCrop
NextGen
OA Systems
Phytel
Purkinje
Relay Health
RxNT
SafeMed
Script IQ
ScriptRx
Scriptsure
Sequel Systems
Siemens
SSIMED
STI Computer
Synamed
Zix Corporation



Patients

Serving patients in 369 Metropolitan Statistical Area's within 50 States

Pharmacies

Caremark Mail Order
eRx Network
Express Scripts Mail Services
Medco Mail Order

PBMs/Payors

Argus
Caremark
Express Scripts
Medco Health Solutions
PharmaCare
NMHC
SXC
•CAQH (Aetna, Aultcare, Cigna) formulary only

Legislative and Regulatory Changes Promote Awareness and Adoption

- Medicare Drug Improvement and Modernization Act of 2003 (MMA)
  - ePrescribing recognized as key to managing program expense
  - ePrescribing further accelerated by creation of uniform standards and funding of pilot projects
- Plans that participate in Part D **must support** physician and pharmacy electronic prescribing (MMA)
- Proposed Stark and anti-kickback exemptions
- Joint Council on Accreditation of Healthcare Organizations (JCAHO) Medication Reconciliation Requirement and IHI 100,000 Live Program
- Federal drivers of e-Health
  - CMS — MMA ePrescribing Pilots
  - Office of the National Coordinator for Health Information (ONC) — National Health Information Network (NHIN) Prototype Demonstrations
  - American Health Information Community (AHIC) — Breakthroughs and Use Case Development
  - Agency for Healthcare Research and Quality (AHRQ)— Patient Safety and Quality Programs
- 10 bills introduced this year
  - Unprecedented bipartisan collaboration
  - H.R. 4157 & S1418 introduced to make ONC and AHIC legal entities.
- Governors also focusing on Health Information Technology (HIT) in wake of Katrina

Not a question of "if" but "when" and "what"

Potential Savings: An Actuarial Analysis by Milliman

- Over 70% of potential drug spend savings is controlled by Primary Care Physicians (PCPs)
- ePrescribing has the potential to:
  - Reduce a payer's drug spend inflation by 1% per year.
  - Mitigate patient customer service issues on up to 32% of prescriptions under a highly restrictive formulary (i.e., greater than 60% generic use).
- ePrescribing offers the potential to significantly lower prescription drug spend on Medicare beneficiaries
  - Up to 15% of total drug spend under a minimally restrictive drug formulary (i.e., 45% or less generic use).
  - Up to 8% of total drug spend under a moderately restrictive formulary (i.e., 55% generic use).

Source: Milliman

Estimated Savings Per Member Per Year & By Members Insured

Estimated 2006 Medicare Drug Spend Savings Per Member Per Year* Primary Care Physicians Only				
Baseline Generic Use %	Percentage of Potential Prescriptions Shifted**			
	25%	50%	75%	100%
45%	$65	$130	$194	$259
50%	$54	$109	$163	$218
55%	$44	$88	$133	$177

The estimated potential per member per year savings in drug spend attributable to shifting prescriptions from higher cost products to the average cost of products in the lowest tier alternatives under various Baseline Generic Use Percentage scenarios. The Percentage of Potential Prescriptions Shifted represents various scenarios for shifting drugs to the lowest cost tier alternatives.

****The percentages reflect the ability to move generic usage to a maximum 70%from the baseline Generic use.***

Source: Milliman

Illustrative Annual Drug Spend Savings Related to Primary Care Physicians

Number of Medicare Members Insured	Estimated 2006 Annual Drug Spend Savings Related to PCPs
5,000	$ 650,000
10,000	$1,300,000
20,000	$2,600,000

Assumptions:

- Baseline generic use = 45%
- Percentage of potential prescriptions shifted to lowest cost tier = 50%

Experience at Henry Ford Health System (HFHS) and Health Alliance Plan (HAP)

- Over 400 physicians and 800 staff trained and using eprescribing
- Will have over 800 physicians participating by end of 2006
- Generating over 20,000 prescriptions per week
- To date, over 650,000 electronic prescriptions have been processed by over 400 Henry Ford Medical Group physicians
- Specialties completed:
  - Adult primary care (FP, IM)
  - Pediatrics
  - Women's Health
  - Neurology

Source:

Impacting Physician Behavior at HFHS

Results for electronic prescriptions by Henry Ford Medical Group (HFMG) physicians during the months of August 2005 – March 2006 for all patients

- Total number of prescriptions: 499,000
- Over 58,000 prescriptions changed or cancelled due to formulary messages
- Over 97,000 prescriptions changed or cancelled due to drug to drug interaction warnings
- Over 6,000 prescriptions changed or cancelled due to Drug/Allergy warnings

Source:

Impacting Financials at HFHS

% of prescriptions designated "Generics Allowed": Vendor Highest **99.3%**

Primary Care Generic Use Rate	Q4 04	Q3 05	Change
❑ ePrescribing sites	60.92%	63.25%	+2.33
❑ Non-ePrescribing sites	59.53%	60.61%	+1.08
Difference	**1.39**	**2.64**	**1.25**

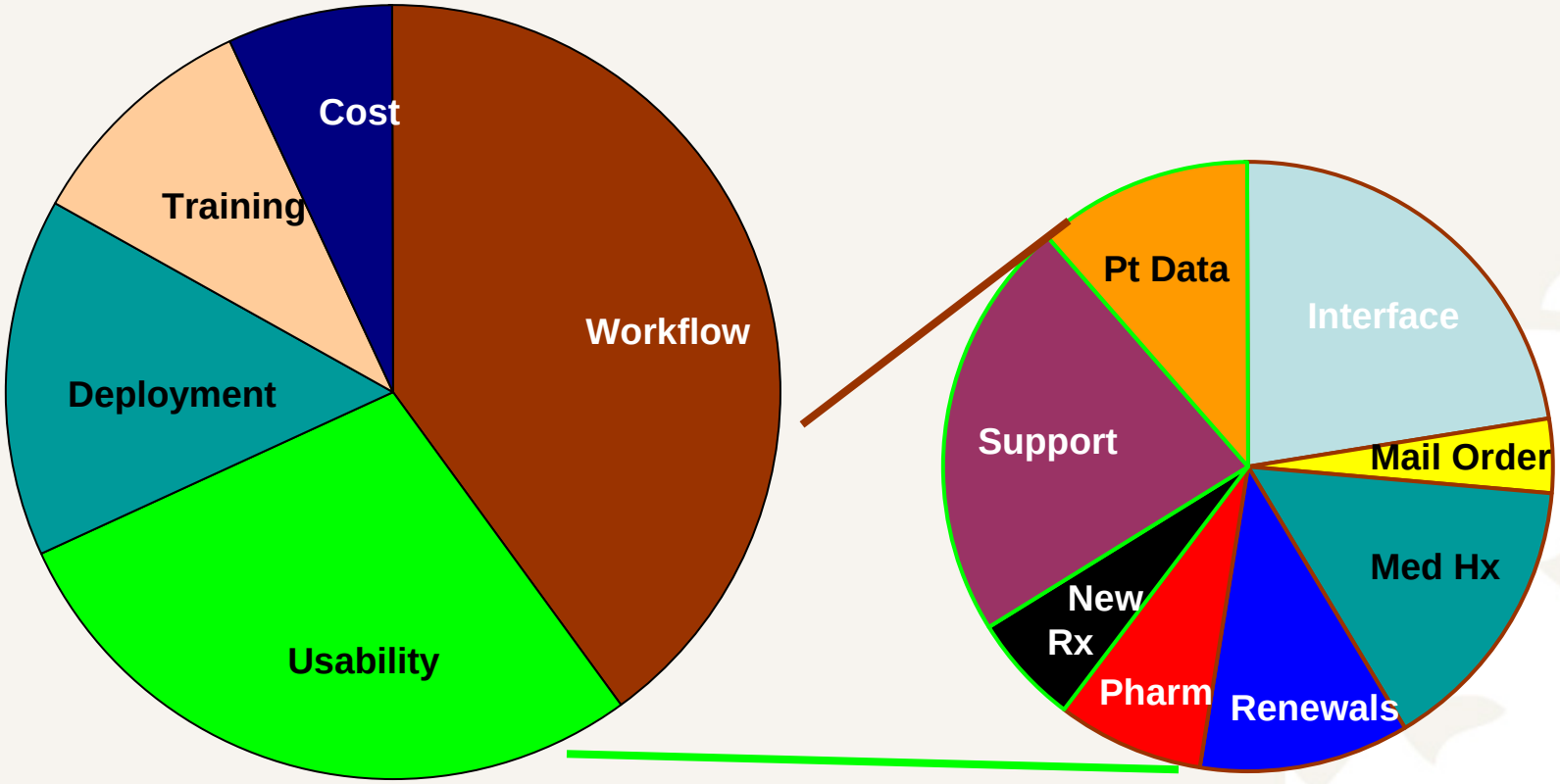
The generic use rate among physicians using eprescribing improved 1.25 percentage points more than those not yet using eprescribing

A key issue driving success was physician acceptance…

Source: Henry Ford Health System, hap

Main Barriers to Physician Acceptance are Workflow & Usability

Where are the Problems?



Source: DrFirst

Eliminating Pitfalls: Workflow & Usability

	Barrier	ePrescribing Solution
Workflow	Interface	Simple, functional, tested
	Renewals	Fast, prompted, automatic
	Medication History	Rapidly accessible
	Pharmacy List	Loaded
	Allergy Lists	History entered by practice
	Mail Order Pharmacy Access	Complete for Caremark, Medco, Express Scripts
Usablility	New Prescriptions	Faster than manual
	Patient Data	Loaded
	Support	Critical and available 24/7

Source: DrFirst

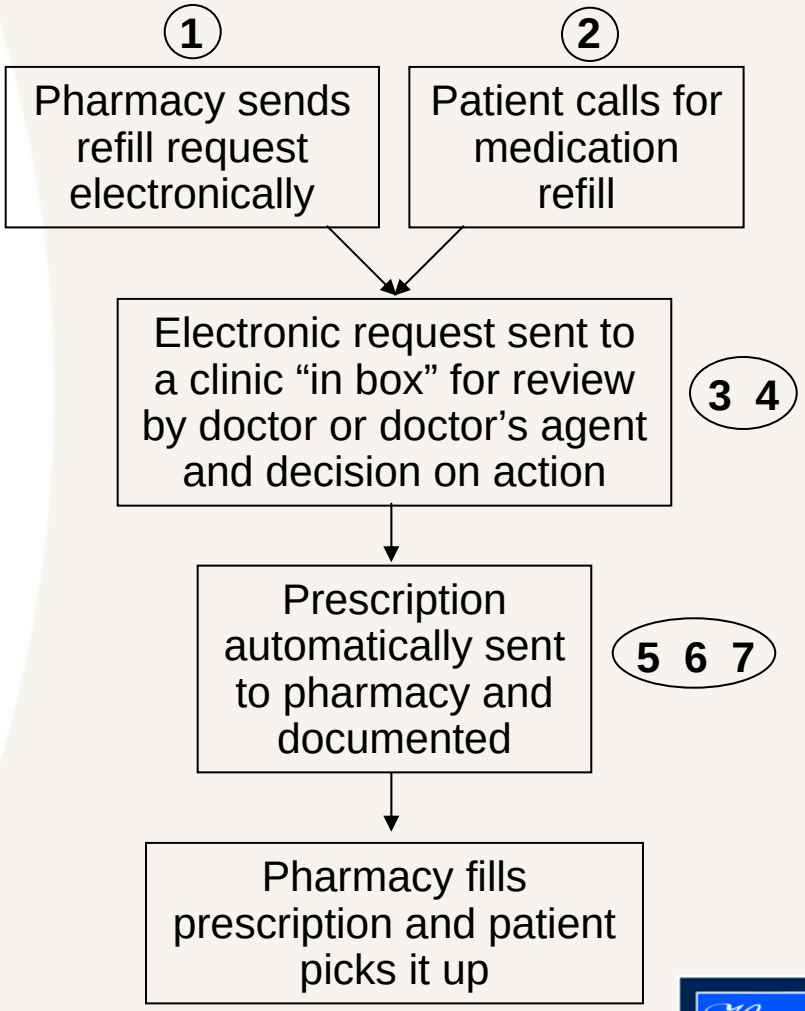
Cost vs. Time Savings of ePrescribing

- Cost:
  - License fee
  - Hardware (desktop computers, handhelds, wireless access point, etc.)
  - Connectivity (broadband internet strongly encouraged)
  - Time for training (approx. 1-2 hrs./person)
  - Interface to Practice Management System and/or EMR
- Time Savings:
  - Physician
    - On-call
    - New prescriptions
  - Staff
    - Phone calls with pharmacies
    - Chart pulls
    - Renewals
    - Overtime
    - Fax costs

Source: DrFirst

ePrescribing from Physician Perspective at HFHS: Improved work flow, fewer errors, and lower costs

Sources of improved efficiency and decreased error



1. Greatly reduced time and no transcription errors
2. Patient information available as prescription is created
3. Requests not lost
4. Information available at point of care as decision is made
5. Enormous time savings
6. No transcription errors
7. Reliable documentation

Source:

Impact on the Patient's Safety

- The Five Rights - (Right medication, Right dose, Right time, Right patient and Right route)
- Legible Handwriting
- Available Medication History
- Drug Allergies
- Drug interactions
- Limitations based on other information
- Weight-based dosing
- Clear patient identification
- Improved monitoring of drug safety

Source: AHRQ

Impact on the Patient's Quality of Care

- Efficient
  - Reduce time and effort to prescribe
  - Improved formulary utilization
- Effective
  - Decision support with better information
- Timely
  - Reduce cycle time for authorization and transmission of prescription
- Patient-Centered
  - Silo Buster
- Equitable

Source: AHRQ

Consumers and ePrescribing: What do we know?

- Messages about patient safety and managing medications strike a chord
  - 34% of public has experienced a preventable medical error
- People expect connectivity and personal health information services
  - Little direct exposure or public awareness of eprescribing to patients
- Key is to leverage eprescribing functionality as part of larger service model to benefit patients and families
  - With sensitivity to privacy and patient control
- Health Plans, PBM's and providers who implement these systems are fulfilling consumers' intent

Source: CONNECTING FOR HEALTH℠ MARKLE FOUNDATION A Public-Private Collaborative

Consumers Care About Safety and Convenience ePrescribing Improves Both

- Prescription ready when you get to pharmacy
- Fewer formulary issues
- No waiting
- No physician call-backs for clarification
- Fewer medication errors
- Fewer communications errors

Convenience and safety specific to ePrescribing is a challenge to communicate

Source: CONNECTING FOR HEALTH℠ MARKLE FOUNDATION A Public-Private Collaborative

Consumers Recognize the "Upside" and "Downside" of Health Information Technology

- Upside
  - Errors are frequent
  - Medication errors can be prevented
  - Doctors and pharmacists should be taking steps to reduce errors
  - Computer systems can help
  - Individuals can be key partners in managing their information
  - Health plans, PBMs, and providers who implement these systems are fulfilling consumers' intent
- Downside
  - Significant concern about privacy and security
    - 85% say protecting confidentiality absolutely essential
    - FACCT survey: 91% "very concerned" (barrier for 1/4)
    - Strong desire to "control" who sees health information
  - Fear of secondary uses & misuses
    - 24% believe employer uses medical info to affect personnel or insurance benefits
    - 85% believe if genetic test results known to insurers, would refuse policies or charge more

Consumers will place significant responsibility with data suppliers, vendors to address privacy and public trust

Source: CONNECTING FOR HEALTH℠ MARKLE FOUNDATION A Public-Private Collaborative

Employers and eprescribing: Win/Win Cost control, not cost shifting

- Employers don't know how they have gotten themselves into this cost predicament
- Must engage in high value actions that lower costs without hurting enrollees
  - Not much more room to cost shift
- Understanding what payers perceive as value
  - ☑ – Exactly what the patient needs - nothing more - nothing less
  - ☑ – The best providers committed to quality and safety
  - ☑ – Aligning with integrated delivery systems with strong leadership and commitment to quality and low cost
  - ☑ – Strong Formularies and Prescription Management

ePrescribing is exactly the type of initiatives employers value

Source: RAK & Co. Integrated Health Care Solutions

Employers Need and Welcome Health Plan Leadership

- The health care industry has taken increased responsibility for improvements in cost and safety
  - Employers want Health Plans to be even more aggressive
- Employers make widgets and want to keep that focus
  - They trust the health care industry to care about the cost and quality of health care
- Employers believe health care suppliers need to make the tough decisions to get costs under control
- ePrescribing is an easy example of how health plans can meet employer's expectations

Failing to meet employer – and enrollee – expectations could lead to increased political and economic pressure on health plans

Source: RAK & Co. Integrated Health Care Solutions

Savings Opportunity is Real for the Health Plans, Payers, and Enrollees

- Employers will give Health Plans kudos and praise for foresight
  - Reduction in trend hits employers' FAS 106 liability immediately which positively impacts their Earnings Per Share and stock price
- Plan drug spend will be optimized
  - More generic usage
  - More formulary compliance
  - More real-time prescription management capability
- Reduced medication errors
- Better data and information
- Health plans can influence their preferred distribution channel
- Marketing and public relations opportunity is real

Source: RAK & Co. Integrated Health Care Solutions

ePrescribing: a Win/Win for all stakeholders

Physicians

- Improves work flow
- Lowers costs
- Lowers adverse drug events

Patients

- Increases safety
- Increases convenience
- Lowers costs

Payers

- Lowers costs
- Enrollees benefit
- Physicians benefit

For Additional Information

Please contact RxHub at 651-855-3000
or visit us at www.rxhub.net

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E-PRESCRIBING

CURRENT ISSUES AND THE ROAD AHEAD

E-Prescribing – Current Issues and the Road Ahead

Learning Objectives

- Impact of e-prescribing on patient safety and reduction of medication errors
- What's new
- Explore the training requirements for physicians
- Explore the implementation differences between a small medical practice and an RHIN

A Public Health Crisis

7,000 Americans Die Annually
From Preventable Medication Errors

1.5 Million Americans Injured Annually
by Preventable Medication Errors

Source: The Institute of Medicine of the National Academies of Science (IOM).2006
Slide used by permission from SureScripts

The Challenge

Physicians write

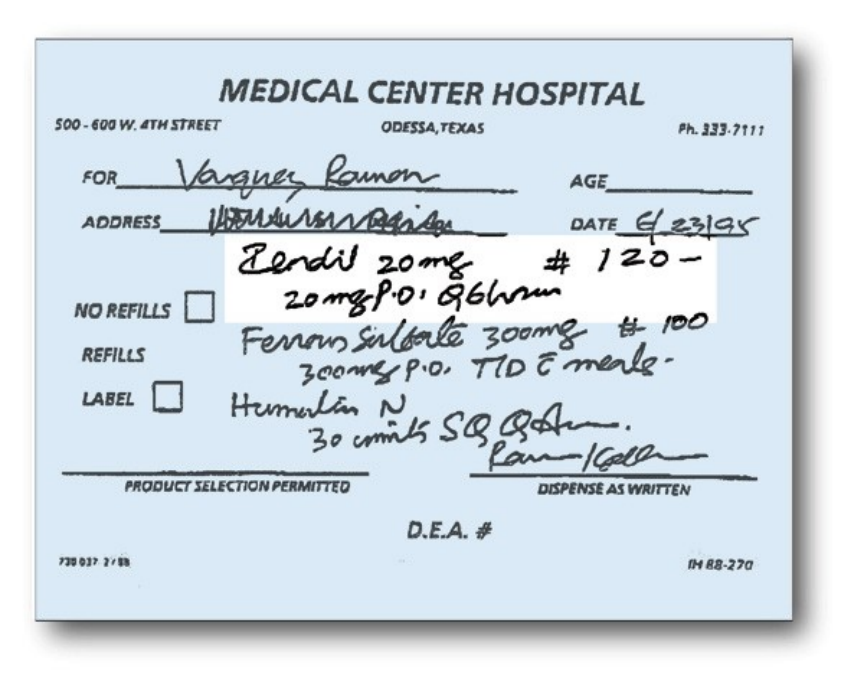
4.5 billion prescriptions

each year. . . .

On Paper!

The Challenge of "Prescription Hand-offs"

- Illegible Handwriting
- Unclear Abbreviations and Doses
- Verbal Communication Among Physicians, Patients and Pharmacists


MEDICAL CENTER HOSPITAL

500 - 600 W. 4TH STREET ODESSA, TEXAS Ph. 333-7111

FOR Vasquez, Ramon AGE

ADDRESS DATE 4/23/95

Zerdil 20mg # 120 –
20mg P.O. Q6h prn

NO REFILLS ☐

REFILLS Ferrous Sulfate 300mg # 100
300mg P.O. TID c meals.

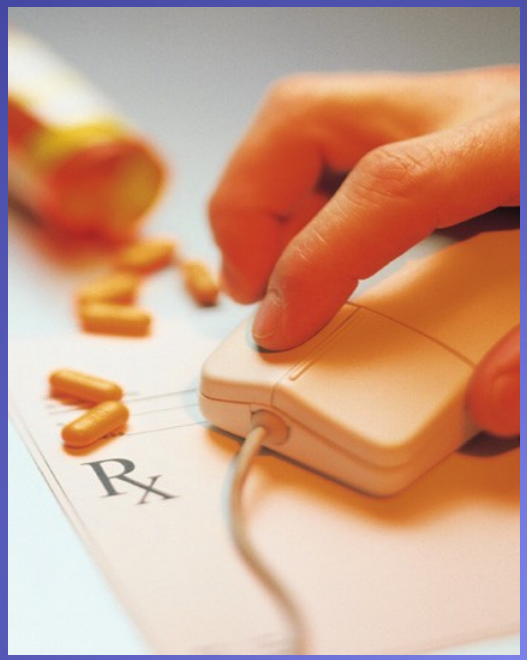
LABEL ☐ Humulin N
30 units SQ Q AM.
Ramon/Gallen

PRODUCT SELECTION PERMITTED

DISPENSE AS WRITTEN

D.E.A. #

730 037 2/88 IH 88-270



The Technology is Available Today…But Not Used

- Over 4.5 Billion Prescriptions Written Annually…
- Less than 1 in 5 of Physicians Use e-Prescribing
- Only 20% of prescriptions are prescribed electronically with 80% still handwritten
- Most electronic prescriptions are still sent by FAX

National savings from universal adoption of electronic prescribing systems could be as high as $27 billion

Sources: eHealth Initiative, 2004 *and: Center for Information Technology Leadership, "The Value of Computerized Provider Order Entry in Ambulatory Settings," 2003.*

The Current System Causes a Number of Serious Problems !

Patient safety

- Between 1.5%-4.0% prescriptions are in error with serious patient risk
- Adverse drug events occur in 5%-18% of ambulatory patients

Quality of care - Compliance

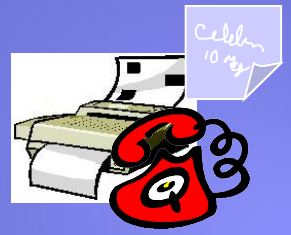
- 20% of scripts are never filled
- Patient satisfaction is declining

Cost of errors: $2 billion / year

Impact on productivity*

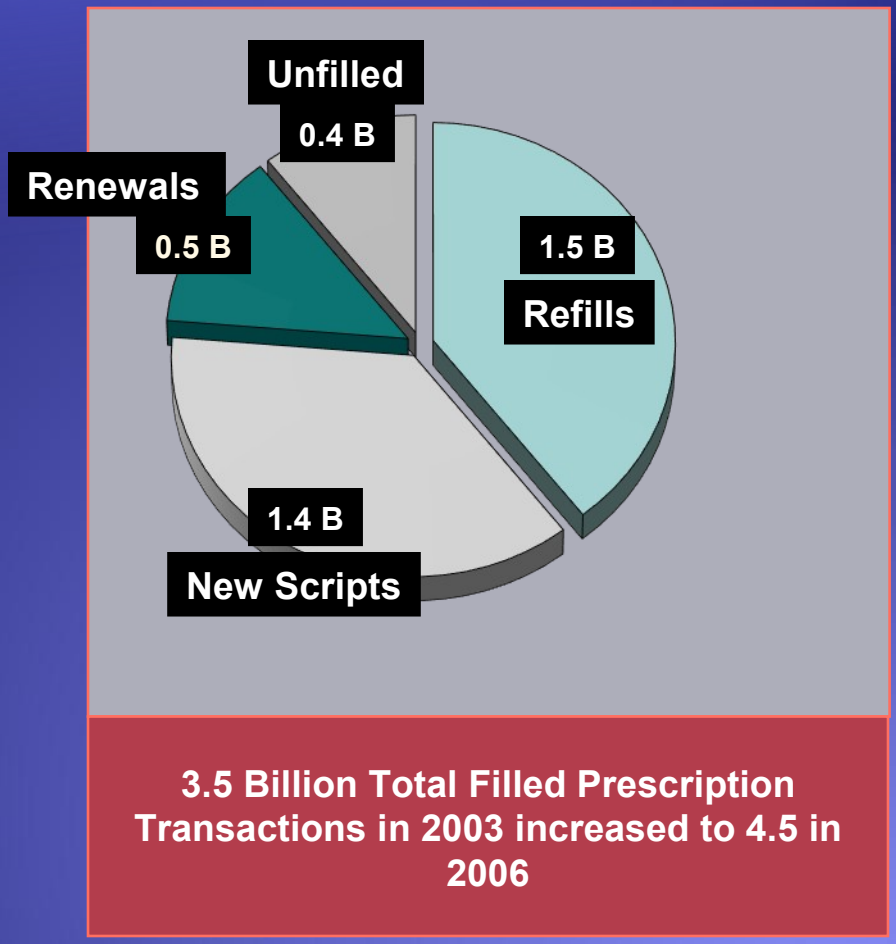
- Physician practice: 3 hours per day
- Pharmacy: 4 hours per day (up to 1 call per Rx)
- Inefficient delivery

- Illegible handwriting
- Phone tag and fax tag
- Patient waiting in the pharmacy



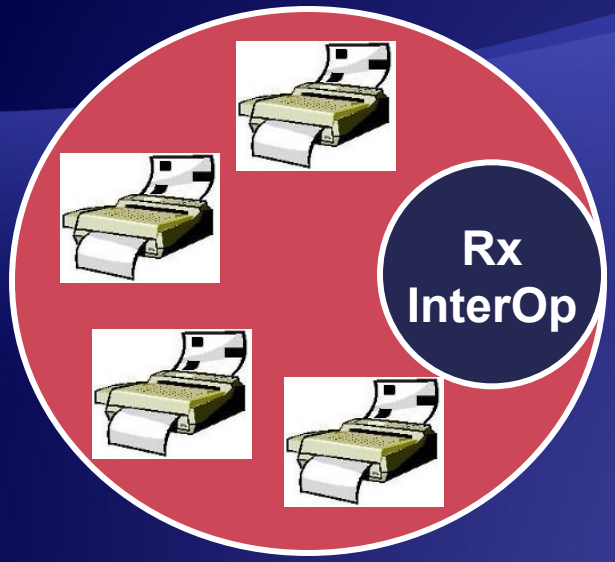
The number of prescriptions in the US is rapidly increasing

- 823 million visits to physician offices in 2000[1]
- 4 out of 5 patients who visit a physician leave with at least one prescription[2]
- 65% of the US population (91% of Medicare) use a prescription medication each year[3]



1) Pastor PN et. al. Chartbook on trends in the health of Americans. Health, United States, 2002. National Center for Health Statistics. 2002.
2) The chain pharmacy industry profile. National Association of Chain Drug Stores. 2001.
3) Agency for Healthcare Research and Quality. MEPS Highlights #11: distribution of health care expenses, 1999.

Electronic prescribing is under-utilized: Purchasing software does not equal adoption or effective use



150,000 Certified EMR Users

- Certified version typically a simple upgrade away
- Extremely low awareness among install base

Practice Size	*Best estimates for EMR adoption based on high quality surveys (%)*
All	24
Solo	16
Large*	39

*"Large" is defined as > 20 physician FTEs in one study with 39% adoption and >50 in two another studies with 47% and 57% adoption respectively.

Sources: Jha et al, Health Affairs, 10/11/06; MGMA, 2005; CDC/NCHS Nat'l Ambulatory Medical Care Survey, 2005; HSC Community Tracking Study, 2006; Forrester, 2003; SureScripts estimates, 2006. Slide used by permission from SureScripts

Full e-Prescribing includes:

- Ability to create a prescription electronically
- Ability to receive automated decision support during script creation
  - Medication lists and information
  - Eligibility determination
  - Formulary coverage from insurer including co-pay information
  - Prior authorization
  - clinical decision support including Drug interactions, drug-allergy, etc.
- Ability to send script electronically to pharmacy using standard transmission messaging (NCPDP SCRIPT, ASC12)
- Ability to receive/authorize pharmacy initiated-renewals electronically
- Ability to determine "fill status" as a measure of compliance (medication history)
- Ability for pharmacy to process electronic script in their system

Intermediaries for Data Transfer

Prescriber eRx Software

Pharmacy and PBM eRx Software

SureScripts® The prescription for better healthcare®

ProxyMed and others

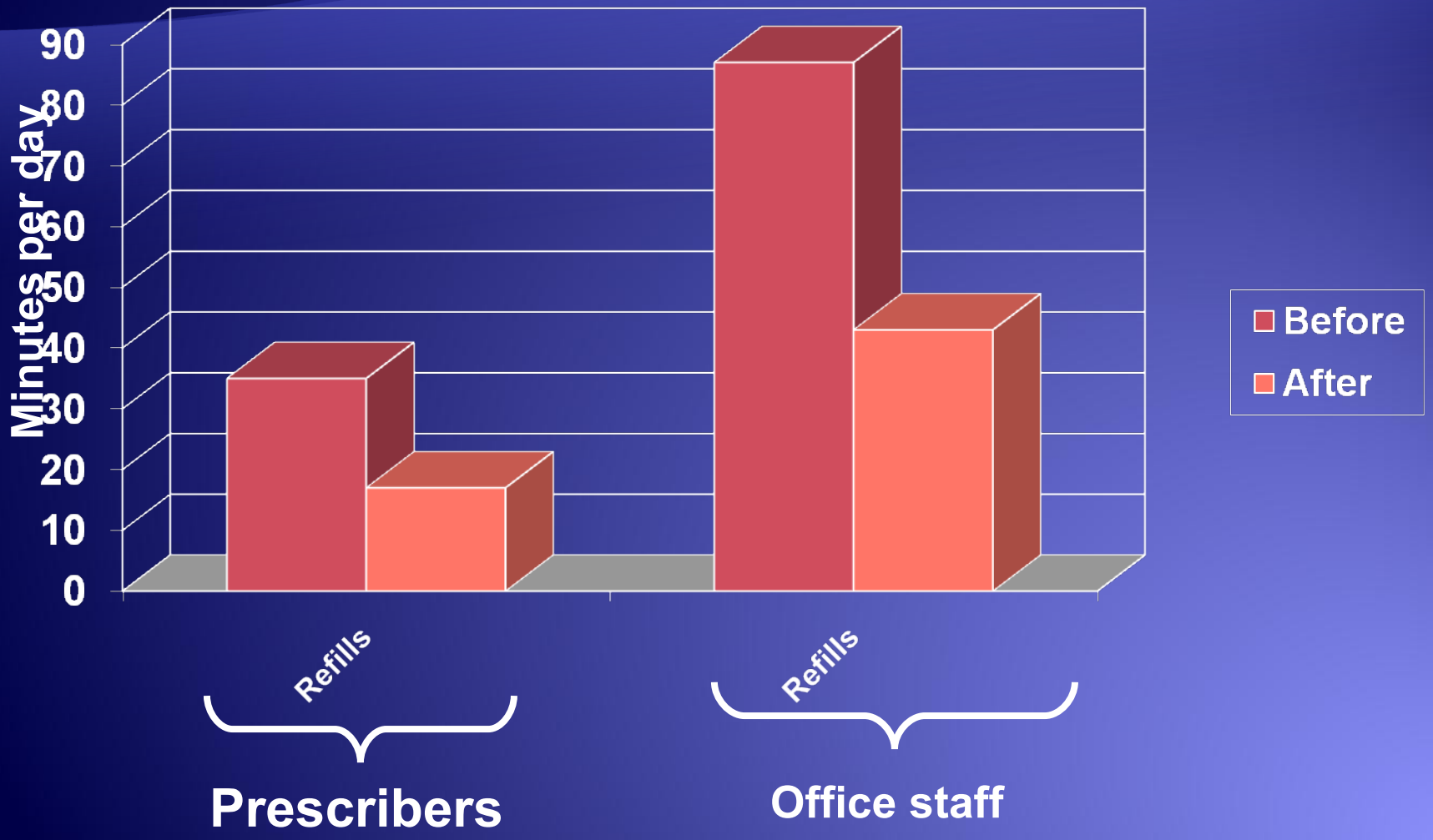
SureScripts Provides:
New Rx, refills, renewals, authorizations, change Rx, Prescription history from pharmacies

RXHUB™ Where the Prescribing Industry Connects

Medimedia and others

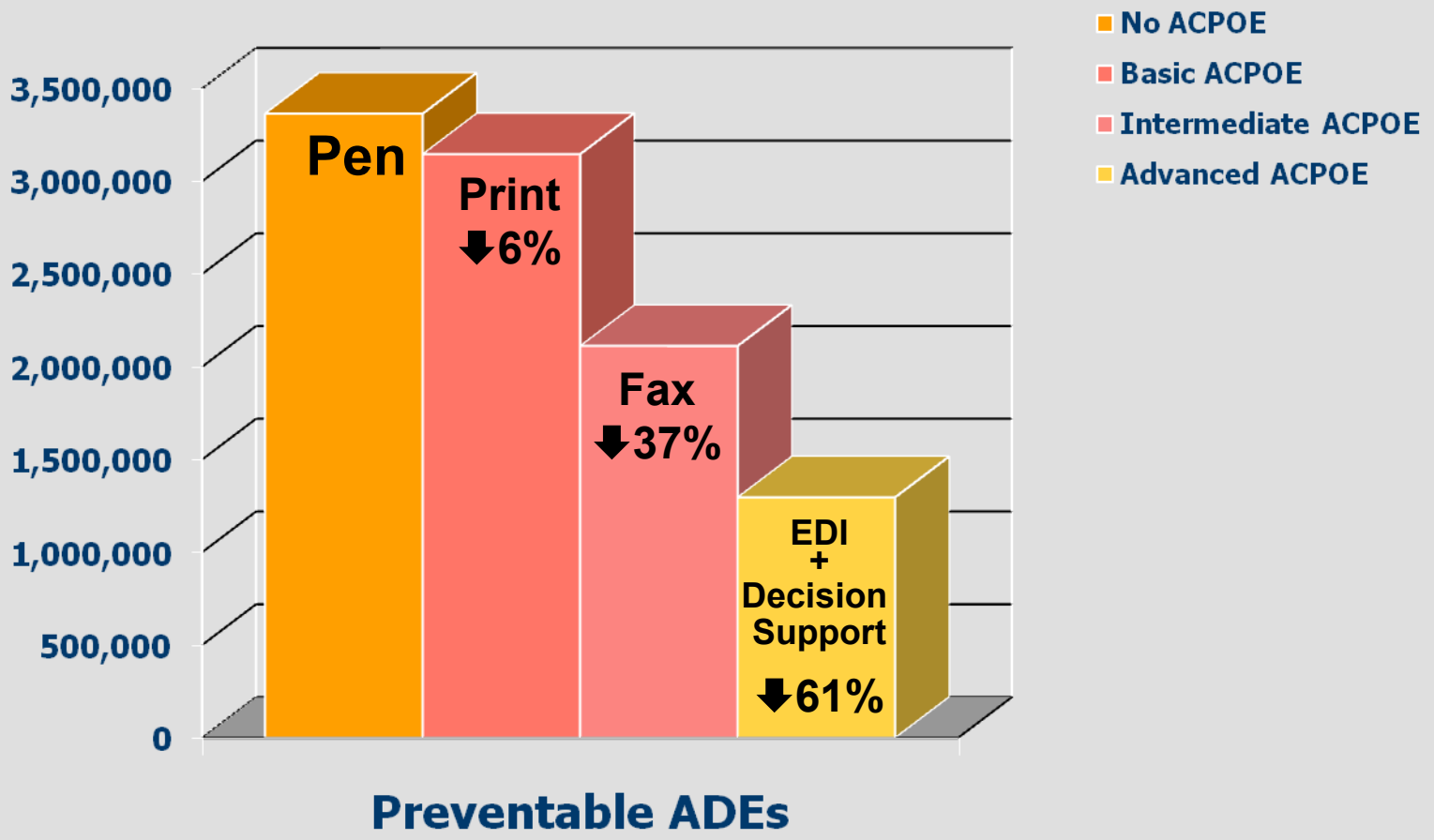
RxHub Provides: Eligibility, Formularies, medication claims histories

Impact of e-prescribing on time spent (minutes/day) on refills/renewals



(2006 Study: Brown University)

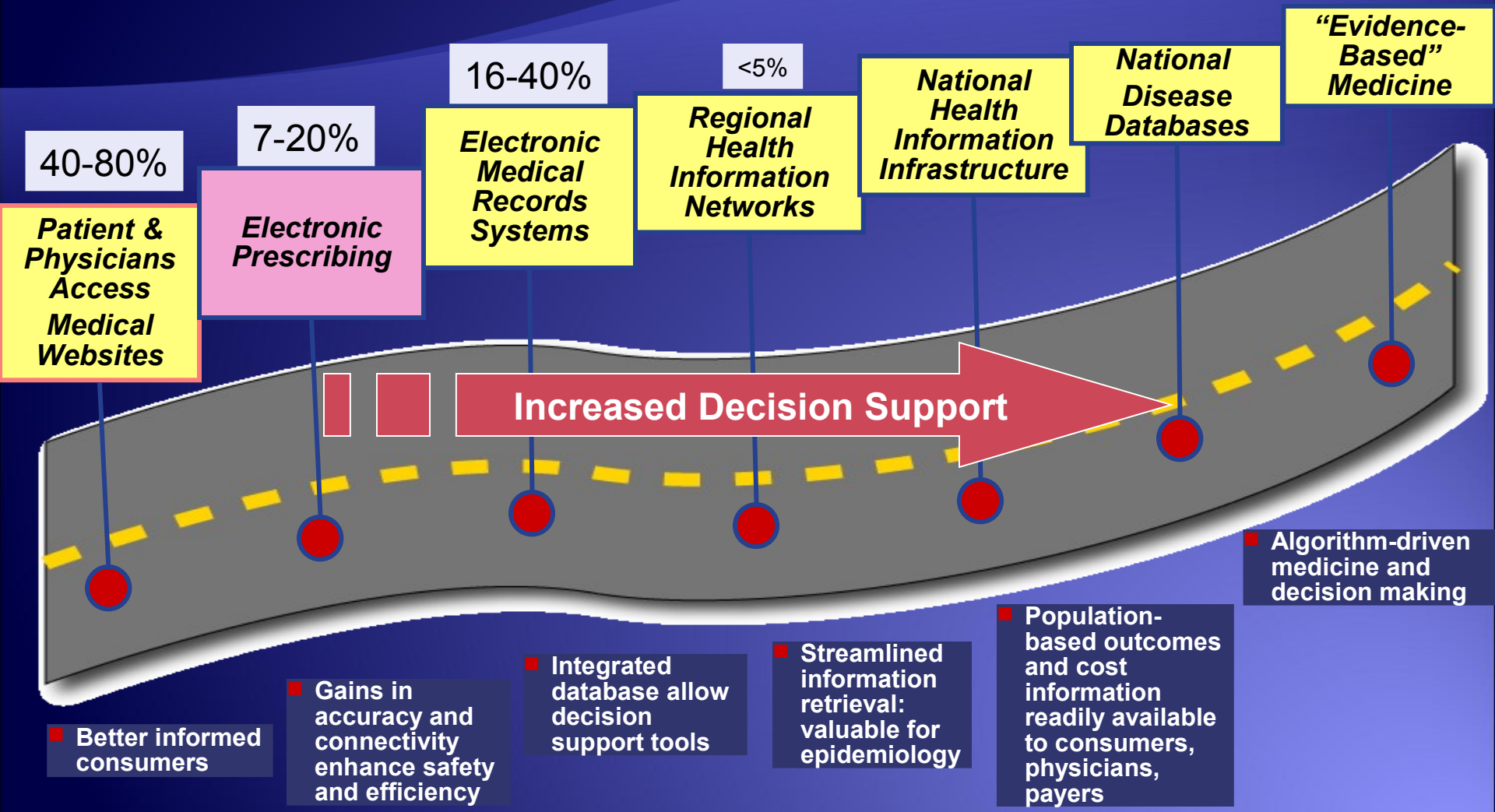
Impact of E-Prescribing on Preventable Adverse Drug Events (ADEs)



Source: CITL

Connectivity Roadmap –

Using computer technology to improve patient care



WHO BENEFITS FROM ERX?

Potential Benefits of eRx

- **Patients:**
  - Increased safety, efficiency and compliance
  - Lower co-pays
- **Pharmacies:**
  - Increased efficiency, improved care, improved patient satisfaction
- **Payors/PBMs:**
  - Increased generic/formulary usage, efficiency, Rx compliance and prevention of ADEs (reduced costs)
- **Providers:**
  - Increased efficiency, improved care, patient satisfaction and potential incentives (pay-for-performance)

But… Providers are concerned about…

- Cost of buying, installing, implementing and supporting a system
- Lack of reimbursement for costs, time and resources
- Increased time to use the system = reduced productivity (initially)
- Increased time required to review warnings, alerts and recommendations (long term)
- Still not considered a routine standard of practice

Why now? The problems of past efforts have been successfully addressed…

In the past…	But now…
Very few pharmacies were directly connected to physician practices	Over 95% of US pharmacies are connected into a single network and growing
Electronic communications meant faxes	Computer applications can communicate directly with each other
Only half the problem was being addressed… writing new scripts	Renewals can be automated in addition to new scripts
Software didn't support the workflows in the practice	Software integrates with existing practice systems and smoothes office workflow
There were few real benefits for most practices	Most practices will save physician and staff time as well as improve patient safety
There wasn't a future path to additional benefits	Collaboration now available with payors on patient compliance and other future functions
Automation was being driven by a few Health Plans and small software vendors	State and nation-wide initiatives now occur involving all major stakeholders

WHAT INITIATIVES AND INCENTIVES WILL DRIVE FUTURE ADOPTION OF ERX?

An Overview of Potential Incentives

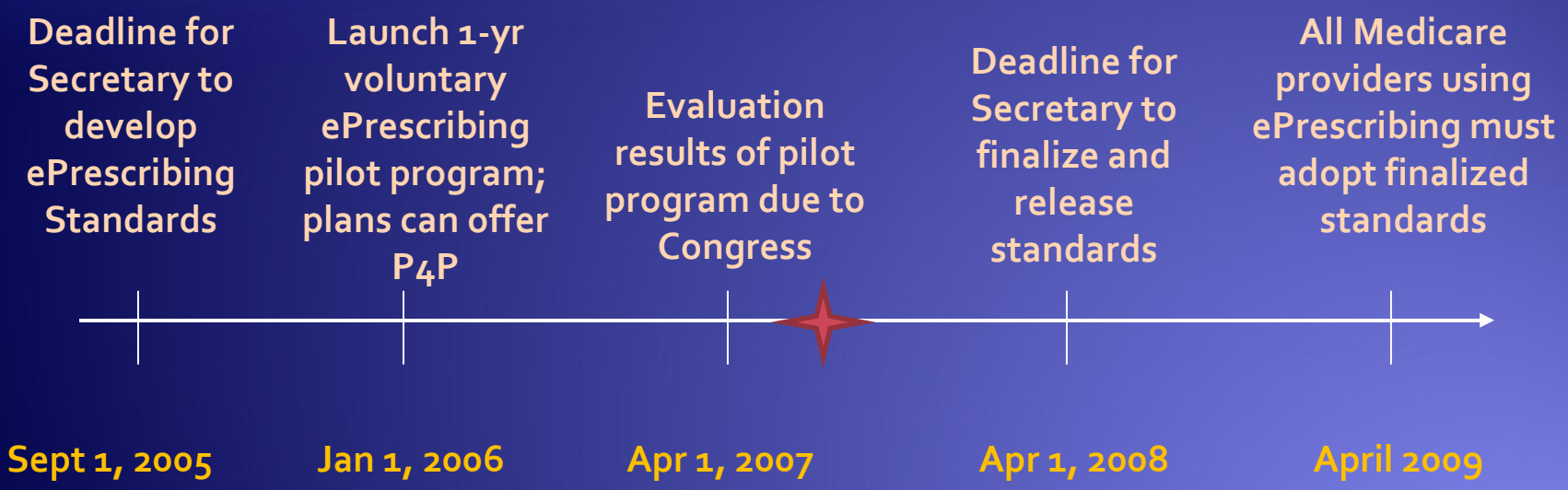
- **Economic Incentives**
  - Grant and Loan Programs
  - Reimbursement for Utilization
  - Pay for Performance
  - Malpractice Insurance Premium Reductions
  - Healthcare IT Suppliers group discounts, etc
  - Pharmacies or Transaction Brokers Defray Costs
- **Policy Incentives** and Programs
  - Accreditation (JCAHO 2005 Hospitals' National Patient Safety Goals, others in development)
  - Employer Programs (Leapfrog and others)
  - Medicare support for economic incentives
  - DOQ-IT
  - CCHIT certification of inpatient and ambulatory EMRs
  - Mandates ???

2003 Medicare Bill - eRx Provisions

- **Voluntary program**
- **Mandatory National eRx Standards for Medicare**
  - Initial standards 2005; Pilot program 2006, Final Standards 2009
  - Recommendations delivered by NCVHS
- **Information Requirements include**
  - Lower cost, therapeutically appropriate alternatives
  - Interactive, real-time to the extent feasible
- **Encourages Physician Adoption:**
  - Permits use of appropriate messaging
  - Modifies anti-kickback regulation for hospital, physician groups and plan administrators to allow them to give out eRx hardware and training
  - Allows plans to pay-for-technology and pay-for-cost effective performance in Medicare Advantage Plans
  - $50MM of federal grant money in 2007 (but must be budgeted)
- **Preempts State Laws contrary to the national standards or those that restrict the ability to carry out the new law.**

Regulations (CMS/MMA) & ePrescribing

- Progress-to-date
  - Issued Notice of Proposed Rule-Making (10/05)
  - Issued final rule naming foundation standards (11/05)
  - Pilot programs competed and reports submitted (2/06)



WHAT'S NEW?

INTERIM RESULTS FROM CMS E-PRESCRIBING PILOTS

e-Prescribing Pilot Participants

- **RAND** – New Jersey BCBS NJ, Caremark mail order, Walgreen retail pharmacy
- **Brigham & Women's Hospital** - CareGroup Health system in Boston use in EMR and e-prescribing "Gateway" utility
- **Achieve** – tech vendor for long term care industry in Midwest with it's own pharmacies
- **Ohio University Hospital Health System and Ohio KePRO QIO -** 300 hospital physician practices
- **Surescripts** - with practices in Florida, Mass, Nevada, New Jersey and Tennessee with a variety of software vendor systems and assortment of chain and independent pharmacies

Interim Results

- **Med History** – recommended to be included as ready for adoption. Main challenge is ensuring the data is collected and reconciled from a large number of sources to be sure history is complete.
- **Formulary and Benefits** – recommended to be included as ready for adoption. Issues:
  - Systems must adequately match patient to health plan
  - Payers vary in the level of information provided making data difficult to interpret
  - Should support real-time changes in patient status as patient moves between benefit plans

Interim Results

- **Prescription Fill Status Notification** – recommended to be included as ready for adoption. However many pharmacies do not currently have the ability to track patient pick-up status accurately and questionable prescriber demand for this if the info is already available in the med history.
- **Prior Authorization** – NOT recommended for implementation – Limited experience at pilot sites to evaluate this function and there are work flow and other issues which suggest a need to have more work done to improve the standard.
- **Structured and Codified Sig** - NOT recommended for implementation – needs additional work with reference to field definitions and examples as well as naming conventions and clarification of field use.

Interim Results

- **RxNorm –** (standard for name, dose and form of drugs) – Not recommended for implementation – Dictionary standard requires further evaluation and refinement.
- **Recommended updates to SCRIPT v8.1 –** Need to further refine the standard to be able to:
  - update prescriptions without having to create a new order,
  - send a refill from the facility to the pharmacy without physician intervention,
  - update patient information outside the context of prescriptions

Interim Results

- Prescriber staff ("surrogate prescribers") played a much more important role in the process than anticipated.
- Never fully replaces need for paper-based prescribing
- Causes a shift in pharmacy work flow
- Poor adoption and use of medication history
- Long term care site reported a reduction in new prescription rate which may indicate reduction in accumulation of multiple medication
- Not enough data yet on effects on safety or change in use of generic medications.

NEW AND EXPANDED PROGRAMS TO PROMOTE ELECTRONIC PRESCRIBING

New Efforts to Increase eRx Adoption

The National ePrescribing Patient Safety Initiative (NEPSI)

A Coalition of the Nation's Most Prominent Technology Companies, Healthcare Benefit And Medical Provider Organizations

"Dedicated to improving patient safety by providing free electronic prescribing for every physician in America"

NEPSI Coalition Sponsors

National Sponsors

ALLSCRIPTS™
Inform. Connect. Transform.

DELL™

Technology Sponsors

cisco

FUJITSU

Microsoft

Sprint
Together with NEXTEL

Wolters Kluwer
Health

Health Benefit Sponsors

Aetna

Horizon
Horizon Blue Cross Blue Shield of New Jersey

WELLPOINT

Search Sponsor

Google™

Connectivity Sponsors

SureScripts
The prescription for better healthcare®

Slide used by permission from NEPSI

eRx NOW™ -Advertised as "Simple, Safe, Secure and Free ePrescribing"

The "ATM of Healthcare??"

- eRx NOW™ from Allscripts described as:
  - Simple: Web-based E-prescribing Software
    - Easy To Install and update
    - Easy Interoperability
    - Custom search engine from Google
    - Formulary information available
  - Safe
    - Comprehensive Allergy and Drug Interaction Checking
  - Secure
    - Secure anytime, anywhere access
    - Rigorous credentialing and authentication

www.nationaleRx.com

SURESCRIPTS NETWORK

Over 95% of the nation's community pharmacies have systems certified to connect to the Pharmacy Health Information Exchange™

Slide used by permission from SureScripts

All major physician technology vendors in the United States are certified on the Pharmacy Health Information Exchange™

Slide used by permission from SureScripts

SureScripts Network Services

Pharmacy Health Information Exchange™, operated by SureScripts®

E-Prescribing

E-Refills

Rx History

Eligibility

Formulary

SureScripts Certification is Not Universal – Vendors are Certified by Service/Message Type

SureScripts Services

- E-Prescribing
- E-Refills
- Rx History
- Eligibility
- Formulary

Certification Status

- Certified
- Not Certified
- Certified, but not yet available to customers

Company	Product	System Type	E-Prescrib.	E-Refills	Rx History*	Formulary*	Eligibility
A4 Health Systems	Healthmatics® EMR	EMR					
Allscripts	TouchWorks/ TouchScript	EP/EMR					
Allscripts/NEPSI	eRx NOW™	EP/EMR					
ASP.MD	ASP.MD	EMR					
athenahealth	athenahealth	EMR					
Axolotl	Axolotl	EP/EMR					
BCBS/AL	InfoSolutions	EP					
BMA Enterprises	Chart Management System	EMR					
Bond Medical	BondMedical, Inc	EMR					
Cerner	Community Health Record	EP					
ChartConnect	MedManager	EP/EMR					
DAW Systems	ScriptSure	EP					
DrFirst	DrFirst Rcopia	EP					
eClinicalWorks, Inc.	eClinicalWorks	EMR					

"Granting physician software and service providers a uniform certification for pharmacy interoperability is no longer adequate"

- **GoldRx certification status**
  - No longer based on just compliance to standards
  - Identifies which vendors are not just testing and marketing interoperability but are truly delivering and committed to:
    - Customer Education
    - Proven Pharmacy Interoperability
    - Advanced Medication Management
    - Workflow Enhancements & Demonstrable Expert Experience with Electronic Prescribing Process

Slide used by permission from SureScripts

"Granting physician software and service providers a uniform certification for pharmacy interoperability is no longer adequate"

- The first products to achieve GoldRx certification announced in Feb 2007:
  - TouchWorks EHR(Allscripts)
  - ChartConnect EMR
  - Rcopia (DrFirst)
  - NextGen EMR
  - eScript (RelayHealth)
  - Pocketscript (Zix)

Slide used by permission from SureScripts

Nation's Community Pharmacies Announce Key Indicator For Patient Safety In The U.S.: The Top 10 States For Electronic Prescribing

Created by the National Association of Chain Drug Stores, the National Community Pharmacists Association and SureScripts

Last Year: RI was #1, MA was #3, MI was #10, WA and NJ not on last years list and FL and VA were in last year's Top 10

Top States for Electronic Prescribing

1. Massachusetts
2. Rhode Island
3. Nevada
4. Delaware
5. Maryland
6. Michigan
7. North Carolina
8. New Jersey
9. Ohio
10. Washington

Certification Commission for Health Information Technology (CCHIT)

CERTIFICATION BY CCHIT

Ambulatory EMR CCHIT ePrescibing Criteria

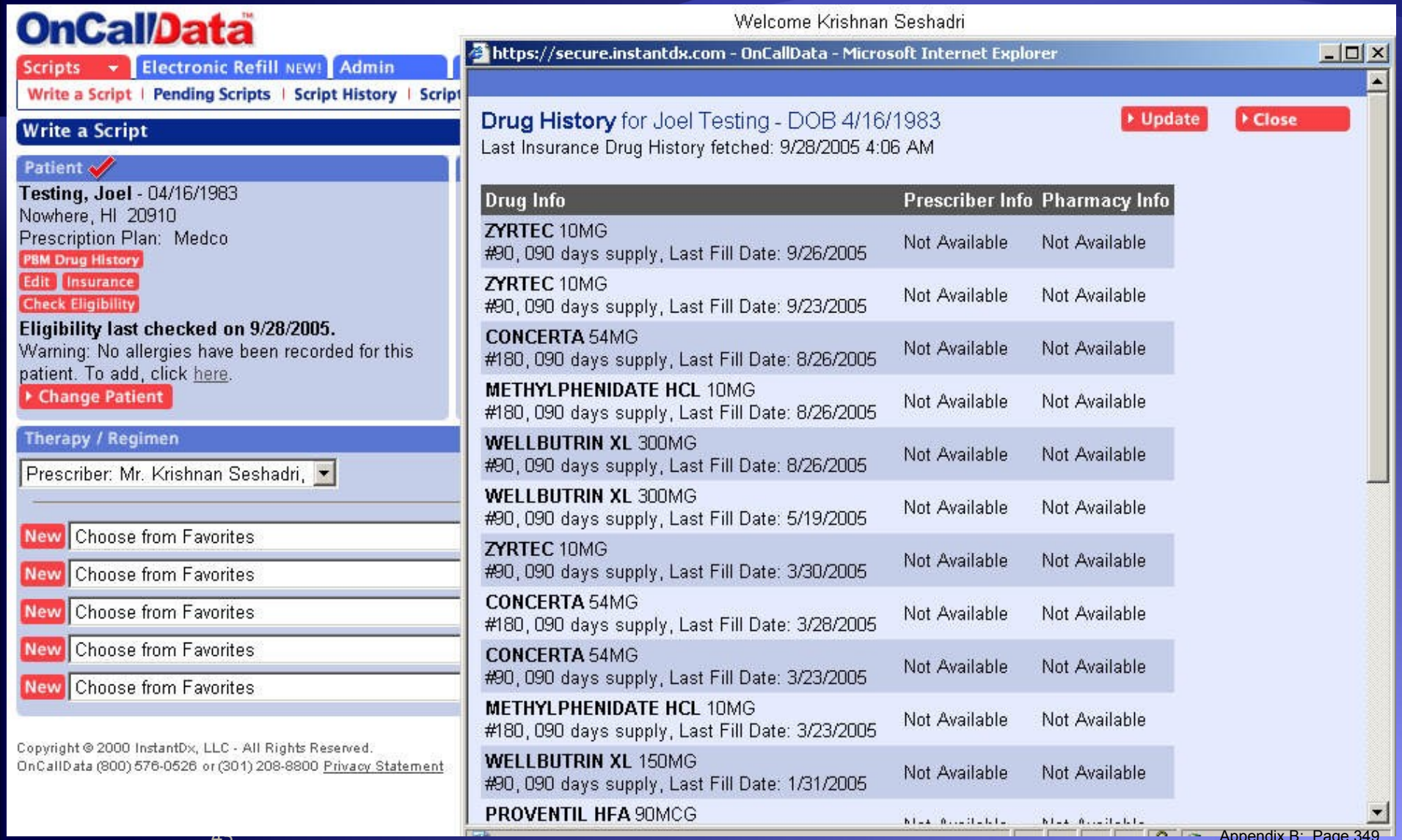
CCHIT Certification EMR ePrescribing Criteria	2007	2008	2009
Send an electronic prescription to pharmacy	I		
Send a query for formulary information		I	
Send a query for medication history to PBM or pharmacy and import medication list into EHR		I	
Respond to a request for a refill sent from a pharmacy	I		
Receive medication fulfillment history		I	
Respond to a request for a prescription change from a pharmacy		I	
Send a cancel prescription message to a pharmacy		I	
Send electronic prescription to pharmacy including structured and coded SIG instructions			I

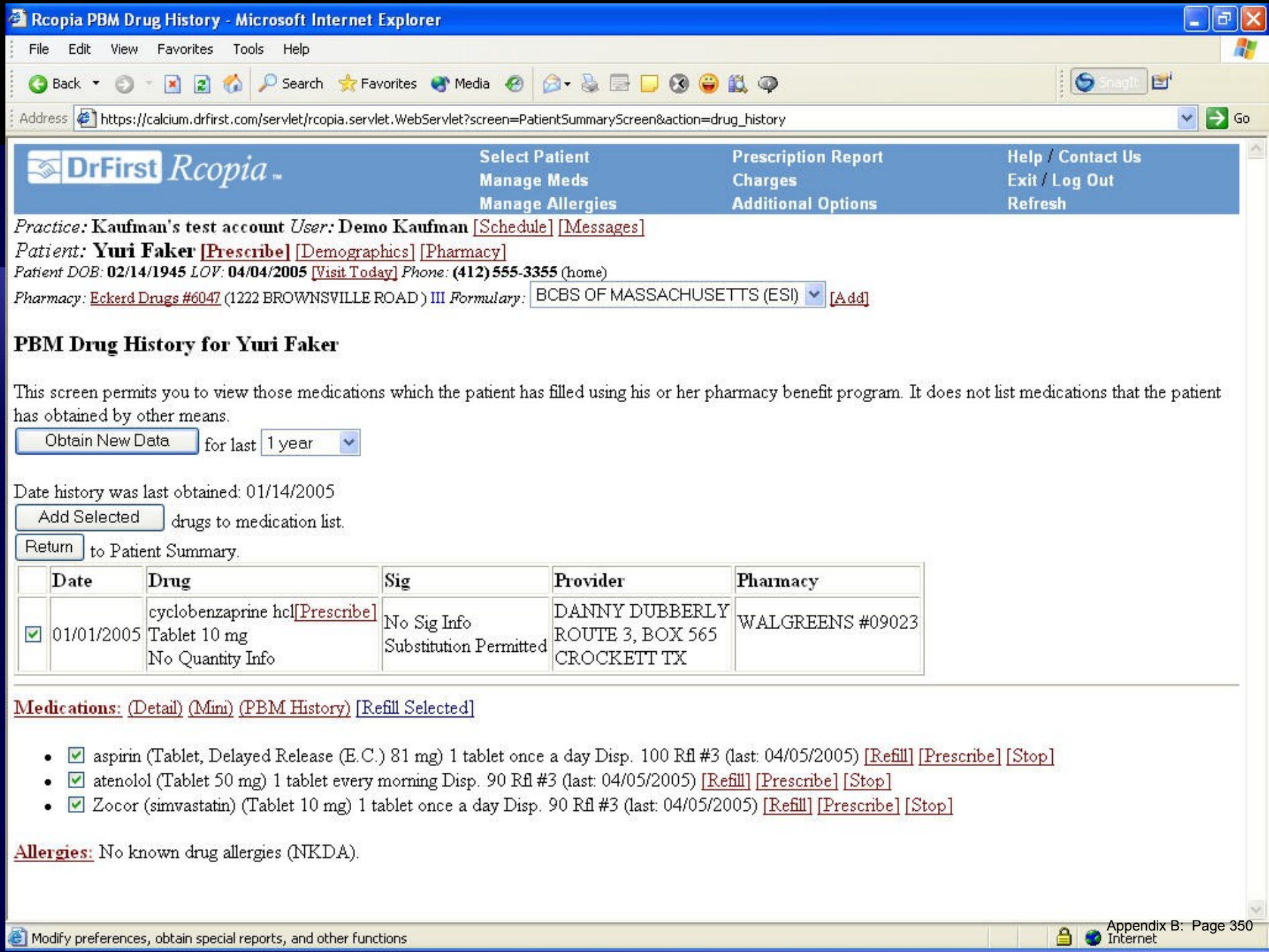
MEDICATION HISTORY

Medication History – Current Options

	RxHub	SureScripts
Source of Data	Claims data from PBMs	Dispensed Drug Data from Pharmacies
Interoperability Model	Pass-through	Repository
Details Included	No sig	Sig (unstructured)
Regional Coverage	Plan dependent	Pharmacy dependent
Pricing	$$$	$

Example of Rx Claims History via RxHub




Rcopia PBM Drug History - Microsoft Internet Explorer
File Edit View Favorites Tools Help
Back Search Favorites Media
Address https://calcium.drfirst.com/servlet/rcopia.servlet.WebServlet?screen=PatientSummaryScreen&action=drug_history
Go
DrFirst Rcopia
Select Patient
Manage Meds
Manage Allergies
Prescription Report
Charges
Additional Options
Help / Contact Us
Exit / Log Out
Refresh
Practice: Kaufman's test account User: Demo Kaufman [Schedule] [Messages]
Patient: Yuri Faker [Prescribe] [Demographics] [Pharmacy]
Patient DOB: 02/14/1945 LOV: 04/04/2005 [Visit Today] Phone: (412) 555-3355 (home)
Pharmacy: Eckerd Drugs #6047 (1222 BROWNSVILLE ROAD) III Formulary: BCBS OF MASSACHUSETTS (ESI) [Add]
PBM Drug History for Yuri Faker
This screen permits you to view those medications which the patient has filled using his or her pharmacy benefit program. It does not list medications that the patient has obtained by other means.
Obtain New Data for last 1 year
Date history was last obtained: 01/14/2005
Add Selected drugs to medication list.
Return to Patient Summary.
Date
Drug
Sig
Provider
Pharmacy
01/01/2005
cyclobenzaprine hcl[Prescribe] Tablet 10 mg No Quantity Info
No Sig Info Substitution Permitted
DANNY DUBBERLY ROUTE 3, BOX 565 CROCKETT TX
WALGREENS #09023
Medications: (Detail) (Mini) (PBM History) [Refill Selected]
aspirin (Tablet, Delayed Release (E.C.) 81 mg) 1 tablet once a day Disp. 100 Rfl #3 (last: 04/05/2005) [Refill] [Prescribe] [Stop]
atenolol (Tablet 50 mg) 1 tablet every morning Disp. 90 Rfl #3 (last: 04/05/2005) [Refill] [Prescribe] [Stop]
Zocor (simvastatin) (Tablet 10 mg) 1 tablet once a day Disp. 90 Rfl #3 (last: 04/05/2005) [Refill] [Prescribe] [Stop]
Allergies: No known drug allergies (NKDA).
Modify preferences, obtain special reports, and other functions
Internet

RxHub-connected eRx/EMR Vendors

- A4 Health
- **Achieve**
- **Allscripts**
- Athena Health
- Bond Medical
- Catalis Health
- Cerner
- **DrFirst**
- **eClinical Works**
- **eHealth Solutions**
- EmDeon/WebMD
- EPIC
- Gold Standard
- H2H Solutions
- Health Vision

- **InstantDx**
- **iScribe**
- **MA Share**
- **McKesson**
- MDAnywhere
- **MdOffices**
- Medical Info Sys
- MedicWare
- **MedKeeper**
- **MedPlus**
- Medport
- **NewCrop**
- **NextGen**

- OA Systems
- **Phytel**
- Purkinje
- **Relay Health RxNT**
- **SafeMed**
- **Script IQ**
- ScriptRx
- Scriptsure
- Sequel Systems
- **SSIMED**
- STI Con
- **Synamed**
- **Zix Corporation**

Bold = in production

Health care professionals can register for an ICERx.org account at www.ICERx.org or call 1.888.ICERX.50 (888-423-7950).

ICERX.ORG

ICERx.org

- During periods of emergency, licensed health care professionals who have registered on ICERx.org can login to the online prescription database, where they will have access to:
  - Evacuee prescription history information and the name of the provider who wrote the prescription and the pharmacy that filled it
  - Available patient clinical alerts, including drug interaction, therapeutic duplication and elderly alerts
  - Clinical pharmacology drug reference information, including drug monographs, interaction reports and the drug identifier tool

EVIDENCE OF INCREASED ADOPTION

Paving the way for pharmacy connectivity…
…Overcoming legal and regulatory barriers

As of February 2nd, 2004 - 25 States cleared for electronic prescribing

As of February 2nd, 2007 - 48 States and Washington, D.C. cleared for electronic prescribing

Slide used by permission from SureScripts

Pharmacy Activation By State

Not shown: HI: 42%; AL: 24%; As of November 9, 2006

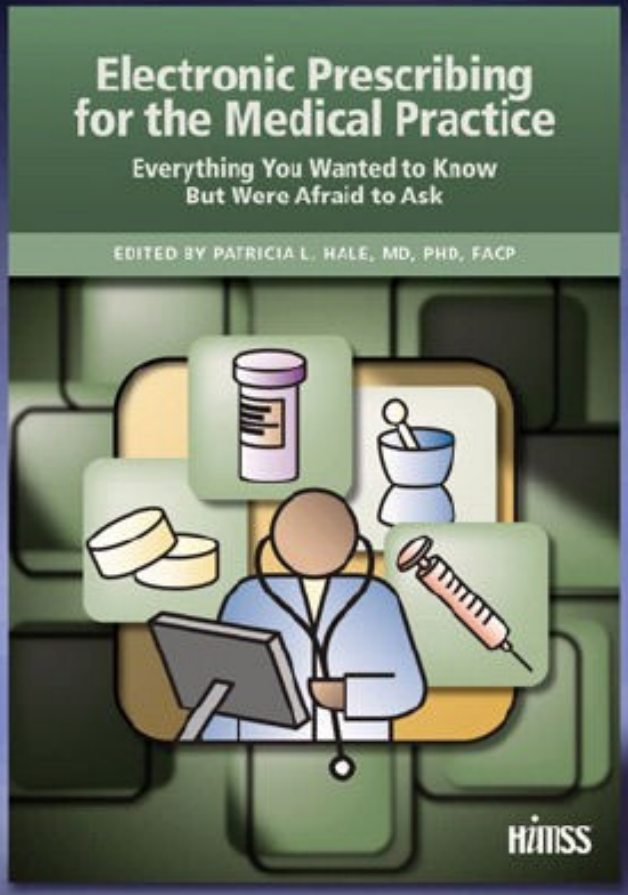
RxHub Adoption Data

- **Access to more than 160 million patient prescription information records** via payers and PBMs, through the growing list of RxHub certified technology partners. Direct contracts with payers and PBMs represent additional access to more than 50 million patients.
- **An increase in transaction volumes of 50%** from 29 million transactions in 2005 to more than 43 million transactions in 2006. These transactions were real-time requests for patient eligibility and benefits, formulary, and medication history information, made at the point-of-care in the ambulatory and acute care settings from clinicians across the United States.
- **A ten-fold increase in true electronic prescriptions,** which includes the transmission of patient-specific clinical decision support information at the point of prescribing, to retail and mail order pharmacy locations of the patient's choice.

TRAINING REQUIREMENTS FOR PHYSICIANS

Coming This Spring!

A STEP-BY-STEP GUIDE ON PLANNING, CHOOSING, AND IMPLEMENTING ELECTRONIC PRESCRIBING!



Training Requirements for Physicians

- No two medical practices are alike – evaluation of current processes is critical in determining best product and implementation plan
- Physicians learn by apprentice model – be sure there is a physician champion
- Evaluate requirements for physician training early and plan schedules to accommodate decreased productivity
- Workflow is a critical factor in success

Training Requirements for Physicians

- Staff roll in the prescribing process is a major influence on potential success and usually underestimated
- Time for training and implementation should be maximized (consider vendor recommendations as a MINIMUM)

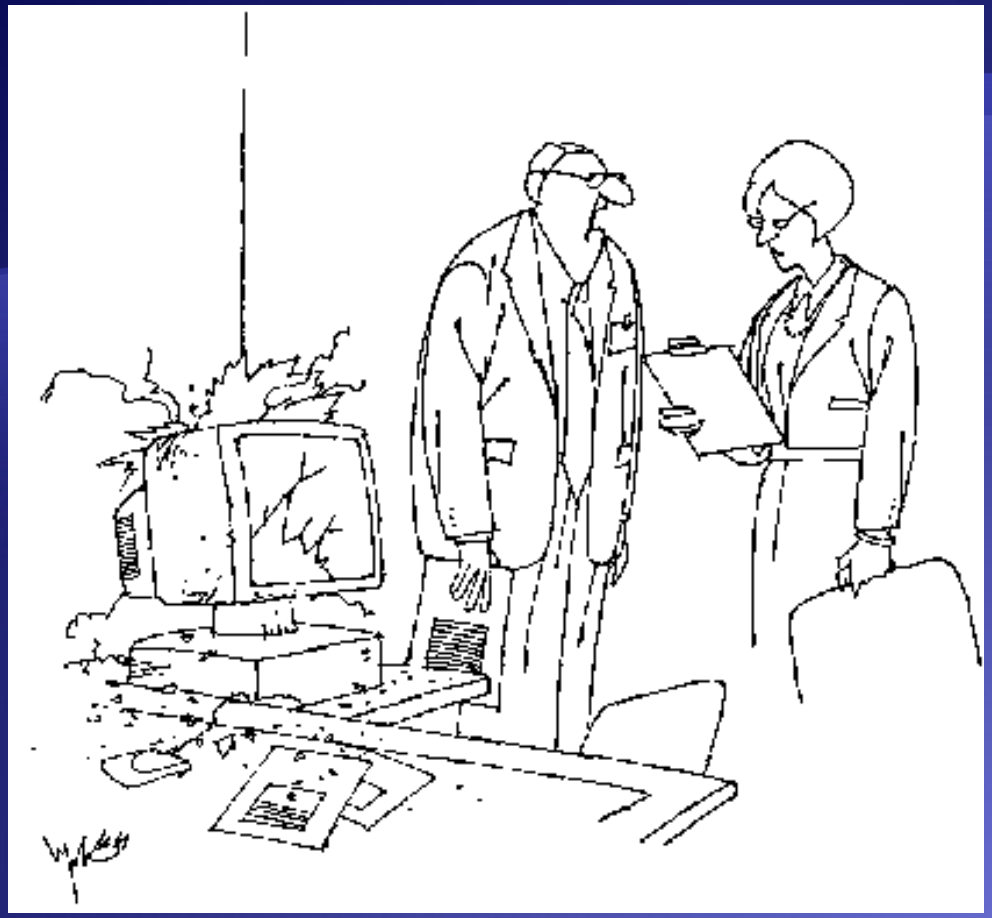
Differences in Implementation in a Small Practice or a RHIN -

When implementation of electronic prescribing is through a regional health information network new issues arise which include:

- Management of shared medication lists
- Management of shared problems lists
- Opportunity for aggregated medication history data
- Increased concerns about secondary use of prescriber data

Why Is Now the Right Time to e-Prescribe?

- More options for stand alone, certified EMR and information network based electronic prescribing products
- Increased connectivity of pharmacies and PBMs
- Increased functionality to improve office efficiency (electronic refills)
- Support for implementation through programs like DOQ-IT and others
- Grant, P4P and other funding opportunities
- New educational material and resources are available



"We tried dedicating this computer to deciphering our doctors' handwriting."

Cartoon by Dave Harbaugh

QUESTIONS?

Contact me at: pathale@pathalemd.com

Web site with further information and links: www.pathalemd.com

FACT SHEET

Electronic Prescribing Update

by

Pat Hale MD, PhD,

Chair, HIMSS e-prescribing Task Force

BACKGROUND

There is a public health crisis. The Institute of Medicine (IOM) reports that 7,000 Americans die and 1.5 million Americans are injured annually from preventable medication errors. Cost of errors is $2 billion/year. Physicians write over 4.5 billion prescriptions each year but almost all are still on paper! Electronic prescribing technology is available, but rarely used. Less than 1 in 5 physicians use e-Prescribing. Small practices and those in rural or inner city settings are far less likely to use electronic prescribing. Only 20% of prescriptions are prescribed electronically, with 80% still handwritten and most of these are still sent by facsimile. The paper process is error prone and inefficient due to illegible handwriting, as well as poor communication by phone and fax tag involving multiple intermediaries and duplication of data entry. Between 1.5-4.0% of prescriptions are in error with serious patient risk and adverse drug events occurring with5-18% of ambulatory patients. Over 20% of scripts are never filled and patient satisfaction is declining. In a typical physician practice, over 3 hours per day per physician is spent handling phone calls and extra work from prescription issues. In pharmacies, over 4 hours per day (up to 1 call per Rx in some markets with multiple health plans) is spent handling prescription issues. And the problem is getting worse. The number of prescriptions in the U.S. is rapidly increasing. 4 out of 5 patients who visit a physician leave with at least one prescription and over 65% of the U.S. population (91% of Medicare) uses a prescription medication each year. Elderly patients with complex health problems are at the greatest risk as they see multiple different physicians and have complex medication lists.

ELECTRONIC prescribing has been shown to dramatically decrease medication errors (>67%) and improve efficiency (>50%) when it includes the ability to create a prescription electronically and to receive automated decision support during script creation. This includes medication history, eligibility determination, formulary coverage from insurer including co-pay information, prior authorization requirements and clinical decision support including drug interactions, drug-allergy, etc. It should also include the ability to send the script electronically to the pharmacy (NOT by FAX) using standard transmission messaging and the ability to receive/authorize pharmacy initiated-renewals electronically including “fill status” as a measure of compliance (medication history) as well as the ability for the pharmacy to process electronic scripts in their system without data re-entry.

The electronic prescribing process also requires intermediaries for Data Transfer to communicate the prescription information between the software system in the physician offices to the system in the pharmacies, and also for transmitting information to and from PBMs and health plans. Currently, Surescripts is the major provider of communication between physician office software and pharmacies and RxHub is the major provider of communication between the pharmacies and physician software with PBMs and health plans.

BENEFITS

Who benefits from eRx? Everyone! Patients benefit from increased safety, efficiency and better compliance due to lower co-pays. Pharmacies benefit from increased efficiency, improved care, improved patient satisfaction. Payors/PBMs benefit from increased generic/formulary usage, efficiency, Rx compliance and prevention of ADEs (significant reduced costs) and Providers benefit from increased efficiency, improved care, patient satisfaction and potential incentives (pay-for-performance). Unfortunately, the economic benefits are not evenly distributed with Payors receiving the major benefit, but with no cost in buying or implementing the systems. As a result, providers are concerned about the cost of buying, installing, implementing and supporting a system and the current lack of reimbursement for costs, time and resources. They are also concerned about the increased time to use the system that results in reduced productivity (initially), and the increased time required to review warnings, alerts and recommendations (long term). In addition, electronic prescribing is still not considered a routine standard of practice.

What initiatives and incentives can drive future adoption of electronic prescribing? Economic incentives can include grants and loan programs, reimbursement for utilization, Pay for Performance programs, reductions in malpractice insurance premiums, group discounts from Healthcare IT Suppliers. Policy incentives and programs can include accreditation programs (JCAHO 2005 Hospitals’ National Patient Safety Goals, others in development), Employer Programs (Leapfrog and others), Medicare support for economic incentives, DOQ-IT, and CCHIT certification of inpatient and ambulatory EMRs.

The Medicare Modernization Act (MMA) includes specific electronic prescribing provisions. These include mandatory national

electronic prescribing standards with initial foundation standards approved in 2005, pilot programs to evaluate further standards in 2006 (results reported in 2007) and finalized standards required for 2009. MMA also encourages physician adoption by requiring modification of anti-kickback regulations for hospital, physician groups and plan administrators to allow them to give out electronic prescribing hardware and training, and allowing plans to pay-for-technology and pay-for-cost effective performance in Medicare Advantage Plans. It also outlines $50M of federal grant money in 2007 to support physician use of electronic prescribing (but this has not been budgeted). The MMA preempts state laws contrary to the national standards or those that restrict the ability to carry out the new law.

Interim Results From five CMS electronic Prescribing Pilots recently became available and showed that several standards are now ready to be included with the previous foundation standards although some further concerns and recommendations were included for each. Med History, Formulary and Benefits and Prescription Fill Status Notification were all recommended to be included as ready for adoption. Standards that were felt to not be ready for adoption included Prior Authorization, Structured and Codified Sig (instructions on how to take the drug) and RxNorm – (standard for name, dose and form of drugs). Recommended updates were also made to SCRIPT v8.1 standard. Other findings from the pilots included the realization that the prescriber staff ("surrogate prescribers") played a much more important role in the process than anticipated and electrionic prescribing never fully replaces the need for paper-based prescribing completely and it causes a shift in pharmacy and clinician work flow. The pilots found that long term care sites reported a reduction in new prescription rates which may indicate reduction in accumulation of multiple medications.

There are several new and expanded programs to promote electronic prescribing adoption. The NEPSI Coalition made up of multiple large corporate sponsors plans to provide free web-based electronic prescribing to physicians within the next year. Their product, called eRx NOW™, is described as simple, web-based electronic prescribing software that can be used securely over any computer.

In addition, the Surescripts network now reports that over 95% of the nation's community pharmacies have systems certified to connect to their Pharmacy Health Information Exchange™ and that all major physician technology vendors in the U.S. are certified. They now categorize electronic prescribing products for their ability to provide several specific levels of functionality (formulary information, electronic refills, medication history, etc) and have also created another level of "Gold" certification for vendors who include further specific support, experience and functionality to improve adoption.

CCHIT (Certification Commission for Health Information Technology) now includes basic functions of electronic prescribing in their requirements for ambulatory EMR certification starting in 2007 with additional functionality planned for each year going forward. They have partnered with Surescripts for the certification process.

During periods of emergency, licensed professionals who have registered on ICERx.org can now log into the online prescription database, where they will have access to evacuee prescription history information, the script provider's name, the pharmacy that filled it as well as clinical alerts, including drug interaction, therapeutic duplication and elderly dosing alerts, and clinical pharmacology drug reference information, including drug monographs, interaction reports and a drug identifier tool.

The Iraq Supplemental Spending Bill signed into law in May 2007 includes a provision on electronic Prescribing that requires physicians prescribing medications under the Medicaid program to use tamper resistant prescription pads or fill prescriptions electronically or they will not be reimbursed. Effective date of this provision is September 30, 2007.

THE SOLUTION

So, what is needed to solve these complex healthcare challenges facing our nation:

1. Increased funding and support for physicians to help them buy and implement systems;

2. Increased reimbursement for physicians to help compensate for the added economic burden of the extra time needed to handle the information provided from electronic prescribing;

3. Further refinement of Stark exemptions to allow other organizations to help defray these costs;

4. Educational campaigns to increase awareness for physicians, pharmacists and the public to increase demand;

5. Funding of physician champions and other leaders to act as examples to their peers and funding of implementation teams to help evaluate and assist medical practices and pharmacies with adoption;

6. Funding of regional health information networks to incorporate electronic prescribing to help promote regional networks of pharmacies and physicians to use electronic prescribing;

7. Non-economic incentives or mandates for payors to push them to fund electronic prescribing efforts with the requirement that they support projects that include all regional payors, physicians and patient populations; and

8. Further efforts to move forward standards and certification of electronic prescribing systems.

eHEALTH INITIATIVE
Real Solutions, Better Health



Electronic Prescribing: Toward Maximum Value and Rapid Adoption

Recommendations for Optimal Design and Implementation
to Improve Care, Increase Efficiency and Reduce Costs
in Ambulatory Care

A Report of the *Electronic Prescribing Initiative*
eHealth Initiative

Washington, D.C.
April 14, 2004

Foreword

April 14, 2004

Dear Colleagues:

We are pleased to present the eHealth Initiative's formal report on ***"Electronic Prescribing: Toward Maximum Value and Rapid Adoption"***, which highlights recommendations for optimal design and implementation to improve care, increase efficiency, and reduce costs in ambulatory care. Given recent significant national attention paid towards electronic prescribing, especially in light of its inclusion in the Medicare Prescription Drug, Improvement, and Modernization Act of 2003, the timing of this report could not be more important.

The culmination of valuable information presented in this final report reflects the consensus of a diverse group of stakeholders and national experts who began their work in 2003. More than 70 of the nation's top experts on electronic prescribing volunteered their time and expertise to this important multi-stakeholder effort. Working Groups were comprised of representatives of each of the many constituencies involved in and impacted by the prescribing chain, including practicing clinicians, hospitals and other healthcare organizations, medical societies and associations, health plans and other third party payers, healthcare IT suppliers, pharmacies, manufacturers, patient and consumer groups, insurance providers, federal agencies, and connectivity providers.

Ever since the founding of our organization three years ago, the eHealth Initiative has focused on bringing together forward-thinking people from all sectors of the U.S. healthcare system to develop practical strategies for driving the adoption of health information technology to improve the quality, safety and efficiency of healthcare for all Americans. The findings of this report are substantial and practical, and will help us move towards that goal.

It is findings such as these that eHealth Initiative works every day to bring to the attention of public and private sector healthcare leaders, policy-makers, and the general public. We tell them there is a strong financial case to be made for prudent public and private sector investment in interoperable, electronic applications such as electronic prescribing and the mobilization of data across systems to support patient care, and an even more compelling case given information technology's role in addressing quality and safety challenges.

This report is also intended for use by the members of the same stakeholder groups that were involved in its creation. For healthcare providers, including clinician and pharmacist groups, it offers independent information regarding what they can and should expect from their system providers, as well as offering guidelines for successful implementation and best ways to gain safety and quality benefits. For payers, insurance providers, and healthcare purchasers, it presents material on value propositions, incentive programs, current demonstrations and early adoption successes, and on high-value

features such as clinical decision support. For system producer/vendors and connectivity providers, it is a compendium of recommended and desired features and system components, best practices and known issues. Thus, it is intended not to homogenize all product offerings, but rather to provide valuable research and development and user-requirements information to help them produce better products more quickly and easily. The information on standards and vocabularies should be of value to all of these groups, as well as to standards developers and policy-makers.

Congratulations to the dozens of members of the Working Groups, named at the beginning of this report, who generously volunteered their time and expertise to this effort. Without their knowledge and dedication, this report would not be possible. We owe special thanks to the outstanding set of leaders who chaired the working groups and, in so doing, put in a great deal of extra effort to pull this report together. Bob Elson, MD, MS, Vice President of Healthcare Services of RxHub and Patricia Hale, MD, PhD, FACP, Chair of Medical Informatics for the American College of Physicians and Chief Medical Information Officer of Glen Falls Hospital, served as co-chairs of the Design and Implementation Working Group. Mark Frisse, MD, Vice President of Health Delivery of First Consulting Group and John Glaser, PhD, Vice President and Chief Information Officer of Partners HealthCare System served as co-chairs of the Incentives Working Group. Congratulations and our deepest appreciation also go to Jennifer Covich Bordenick, our program director, whose tireless energy and enthusiasm helped to make this initiative a success.

In Washington and across the country, there has been increasing momentum for the use of health information technology and electronic prescribing to improve the quality, safety and efficiency of healthcare. But much work is ahead of us; moving this agenda to its ultimate goal will require sustained focus and commitment. Working together, we can foster and support electronic prescribing, other clinical applications and the creation of an interconnected, electronic health information infrastructure to advance our shared agenda–leading to better healthcare for all.

Sincerely,

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The eHealth Initiative created this document through a process that included continuing input, many group discussions, and ongoing feedback from many stakeholders and experts through their active participation in the Steering Group and Working Groups of the eHealth Initiative's Electronic Prescribing Initiative. Consensus was achieved on much of this document through this feedback process. However, the opinions and recommendations offered in this document should be considered those of the eHealth Initiative. The eHealth Initiative is extremely grateful for the many volunteers who demonstrated their commitment to the advancement of ambulatory electronic prescribing by contributing to the creation of this document.

Questions, comments, requests for educational materials, and other inquiries can be directed to the Project Chair or the Project Director. Their contact information is listed below.

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Highlights of the Report

1. **Errors and adverse drug events in ambulatory care errors can be common, serious, and preventable**, according to research.
2. **Electronic prescribing can improve safety, quality, efficiency, and cost.** Studies suggest that the national savings from universal adoption could be as high as $27 billion.
3. **Electronic prescribing systems are available in a variety of graduated levels**, **Systems at the highest levels of sophistication afford much greater opportunities for benefit,** although all of the middle and higher levels convey some significant benefits.
4. **Despite the benefits of electronic prescribing, adoption is still modest.** Current surveys estimate that between 5% and 18% of physicians and other clinicians are using electronic prescribing. Key barriers to clinician adoption include startup cost, lack of specific reimbursement, and fear of reduced efficiency in the practice.
5. **The adoption and use of electronic prescribing should be encouraged through the deployment of appropriate incentives.** These incentives will be critical to widespread adoption. Promising incentives are reviewed in the report.
6. **Continuing progress toward better-designed, more usable systems is likely to help adoption.** A number of techniques and best practices are reviewed.
7. **Clinical decision support interventions should follow certain design principles** for maximum acceptability and impact.
8. **Electronic communication offers numerous advantages:** it is faster, more work-efficient, more secure, more reliable, less error-prone, and less prone to abuse than paper or fax prescriptions. Current barriers include expense, broadband availability, and variant standards.
9. **Software should inform but not mandate a clinician's and patient's choice of medications and pharmacies.** Patient confidentiality must also be protected.
10. **A number of enhancements in standards and vocabularies are needed** to improve quality, efficiency, and to facilitate interoperability between the various electronic systems involved in the electronic prescribing process. Unifying state prescription-form standards, establishing a consistent "doctor-level" drug vocabulary, and standardizing formulary information are among the highest needs.
11. **Careful management of the initial use period in any practice is essential.** Access to registration, schedule, and prior medication information is important.
12. **Integration of electronic prescribing with an overall electronic health record adds value** in a number of ways. Many lessons about adoption of electronic prescribing can be applied to the widespread adoption of robust, connected electronic health records as well.

Executive Summary

Electronic prescribing refers to the use of computing devices to enter, modify, review, and output or communicate drug prescriptions.

Value of Electronic Prescribing

Ambulatory care errors are common and preventable; electronic prescribing can improve safety, quality, efficiency, and cost. In inpatient care, electronic medication ordering has been shown to have a significant impact in reducing Adverse Drug Events (ADE's) and guiding better drug utilization.[1] [2] In the ambulatory environment, recent research shows that adverse events are common and can be serious. According to the Center for Information Technology Leadership (CITL), more than 8.8 million ADE's occur each year in ambulatory care, of which over 3 million are preventable.[3] Medication errors account for 1 out of 131 ambulatory care deaths[4].

Electronic prescribing has presumed value in preventing these errors because it can apply *clinical decision support:* the computer can check each prescription as it is written, either for internal inconsistencies (such as excessive dosage) or for conflicts with the patient's known allergies, interactions with other active medications, duplicate therapy, and many other conditions.

In addition, electronic prescribing can improve quality, efficiency, and reduce cost by several other mechanisms, including but not limited to:

- Actively promoting appropriate drug usage, e.g., following a medication regimen for lowering blood cholesterol.
- Providing information about formulary-based drug coverage, including on-formulary alternatives and co-pay information.
- Speeding up the process of renewing medications.
- Providing instant electronic connectivity between the practice, the pharmacy, health plans/PBM's, and other agencies, thus improving the speed and accuracy of prescription dispensing, pharmacy callbacks, renewal requests, eligibility checks, medication history, and more.

More than 3 billion prescriptions are written annually.[5] Given this volume, even a small improvement in quality attributable to electronic prescribing would translate into significant healthcare cost and safety benefits if electronic prescribing is broadly adopted. Studies suggest that the national savings from universal adoption of electronic prescribing systems could be as high as $27 billion, some from ADE prevention and the majority from better utilization of drugs, guided by these systems.

Levels of Electronic Prescribing

Electronic prescribing systems are available in a variety of graduated levels, expressed in this report as a pyramid (see Figure 1 in the text). The levels of the pyramid are:

1. Electronic drug reference only, no prescribing capability;
2. Stand-alone prescription writer, with no medication history or supporting data;
3. Addition of basic supporting data, such as allergies, demographics, and formulary information, which can be used by the system to generate alerts;
4. Medication management – long-term tracking and monitoring of each patient's active medications;
5. Connectivity among practices, pharmacies, payers, PBM's, intermediaries, and patients;
6. Integration with a more complete electronic health record.

Benefit can be seen at all levels. However, systems at the higher levels of sophistication (which may be associated with higher start-up cost and complexity) afford much greater opportunities for quality improvement, reduction in errors, and improved workflow efficiency. This is done primarily by including more relevant information about the patient, and better communication among the stakeholders and data sources in the prescribing chain. Depending on the local situation and resources, a practice could start out at a medium level, and then upgrade to higher functionality later; the eventual goal is always to approach the highest levels, thereby to reap their higher benefits.

Current Physician Adoption and Barriers

Current surveys vary in definitions and results, but somewhere between 5% and 18% of physicians are estimated to be using electronic prescribing. While this probably represents a significant increase over the past 3-5 years, it certainly does not qualify electronic prescribing as a standard practice.

A number of barriers stand in the way of universal adoption in the practice:

- Cost of buying and installing a system.
- Time/workflow impact: Initially, increased time compared to paper prescribing.
- Time/RVU to review a warning.
- Lack of reimbursement for costs and resources.
- Safety improvements not fully publicized.
- Not an expected standard of care.

Correspondingly, driving physician acceptance is likely to require:

- Proven value in safety/quality improvement.
- Systems that are quick to install, easy to learn, and fast in use.
- Financial or other incentives to overcome cost.

Public and private sector initiatives have emerged that are addressing some of these issues. In the public sector, related policy includes the Medicare Modernization Act of 2003, recently published draft safe-harbor rules allowing technology to be excepted from anti-kickback laws in some cases, and state legislation in Florida and California. On the private side, employer and payer-sponsored pay-for-performance programs and electronic prescribing demonstration projects are addressing some of the cost issues, although often only on a temporary basis.

Although some barriers to adoption were noted in the pharmacy and other stakeholder workplaces, substantial organized effort has already been directed to solving a number of these problems; in addition, automated systems are virtually essential for the functioning of many modern pharmacies. The organizational and cultural challenges required for clinicians in practice to make the transition, the fact that these systems are not considered "essential", and the up-front cost without a significant financial return focus on clinical practices as the largest opportunity to drive universal adoption at this time.

The eHealth Initiative's Electronic Prescribing Project

Early in 2003, the eHealth Initiative launched the *Electronic Prescribing Initiative*, the effort was led by a Steering Group comprised of representatives of the many constituencies involved in and impacted by the prescribing chain, including practicing clinicians, hospitals and other healthcare organizations, medical societies and associations, payers, healthcare IT suppliers, pharmacies, manufacturers, patient and consumer groups, insurance providers, federal agencies, and connectivity providers. The initiative involved over 70 of the nation's top experts on electronic prescribing. The majority of participants were executives or senior-level managers representing various stakeholders.

The overall goal of the Electronic Prescribing Project is to rapidly expand the adoption of electronic prescribing; in particular, to understand the relationships among different stakeholders, identify barriers, and create recommendations that would foster widespread adoption of high-quality, high-value electronic prescribing throughout the U.S.

Statement of Principles

The Steering Group met several times and developed two primary outputs. The first is a unified Statement of Principles that states the core benefits, and sets broad goals for the near-term and long-term state of electronic prescribing. The full Statement of Principles can be found on page 40. Key principles include:

- All healthcare stakeholders must collaborate to encourage the rapid adoption of electronic prescribing, for the quality, cost, and efficiency benefits that it can bring.
- Rapid development and adoption of implementable, usable, standards-based electronic prescribing systems must be encouraged.
- The patient-clinician relationship, and the patient's and clinician's informed choice of medications and pharmacies, should be preserved.
- The adoption and use of electronic prescribing should be encouraged through the deployment of appropriate incentives. These incentives will be critical to widespread adoption.

Working Groups

The Steering Group established two Working Groups:

- *The Incentive Working Group's* charter was to explore and review various incentive possibilities, to assess those with the highest impact and likelihood of success, and to help frame policy and education in order to advance those incentives.

- *The Design and Implementation Working Group's* charter was to develop and widely disseminate design and implementation techniques and best practices, as a reference to system producers and purchasers, so that all commercially available systems could be advanced to a more acceptable, usable, valuable level.

Incentive Working Group Key Findings

Alignment of incentives, in particular alignment of costs and benefits, was a core issue of the Incentives Working Group conclusions. They analyzed the relative costs and benefits of electronic prescribing to each of the stakeholder groups, and concluded that the greatest cost relative to benefit – in time and money – is borne by the clinicians. Even an extremely effective means of prescribing new drugs or authorizing refills will have at least a short-term adverse impact on office workflow and expense. Although there may be a large national financial savings from the adoption of electronic prescribing, relatively little of that financial benefit is passed to the clinician in the current environment. Incentives therefore should be directed toward resolving the relative misalignment of costs and benefits.

The Working Group reviewed a variety of public and private economic incentives, malpractice insurance reduction programs, pay-for-performance programs, legislative and regulatory possibilities, and more. Their work is summarized in Table 4.

Combining both high impact and high feasibility as desirable properties, the Workgroup concluded that four incentive areas held the highest promise:

- Reimbursement for utilization of electronic prescribing or for the information processed (RVU's).
- Pay for Performance programs.
- Third Party incentives: Payers, Pharmacies (defrayed costs, per-Rx fees), Transaction Brokers.
- Legislation, in particular, incentive rules provided as a result of the Medicare Modernization Act, Stark safe-harbor relief, and other related legislation.

The Incentive Workgroup also concluded that the following were important components in the national effort to promote adoption of electronic prescribing:

- Means to support innovation, research, and training – usually provided through research grants, contracts and funding for pilot programs either by the private- or public-sector.
- Legislation that promotes and stimulates change, while at the same time recognizing and partially compensating for the time and effort required to realize desired change.
- Alignment of the incentives of all parties. To succeed, every party with a moral or financial interest in the use of prescription drugs must have the incentive to change. This requires sober reflection on the extent to which current technologies disrupt traditional office practice workflow, the need to provide fiscal rewards for those who must make necessary capital investments, the extent to which various care intermediaries compete in a for-profit health care environment, and the importance of endorsement by local and national licensure and accreditation groups.
- Recognition of the magnitude of benefit that can be realized if an imperfect health care system is improved. Enormous benefits to the public health are possible if our Nation takes a more comprehensive approach to the National health infrastructure.

The ongoing work of the Incentives Workgroup has been subsumed into a larger incentives project at the eHealth Initiative, which includes not only electronic prescribing but also other aspects of the electronic health record.

Design and Implementation Working Group Key Findings

At the initial meetings of the Design and Implementation Working Group, the prescribing process was separated into five key elements. These identified areas became the focus of five subgroups:

- Usability, particularly in the clinician's practice.
- Clinical Decision Support, including formulary management.
- Communication.
- Standards and Vocabulary.
- Implementation.

Key findings in each area are summarized here.

Usability for the Prescriber

- Successful adoption depends heavily upon the ease and speed with which the clinician can learn and use the system in their medical practice.
- For the clinician, it's all about speed of operation, support of real workflow, and ease of learning. System design needs to focus on making common operations very *fast*, while making every needed operation *possible*.
- To this end, the text discusses essential functions, variations, and shortcuts that can provide the right information in the shortest time. For example, renewing multiple medications in one step saves considerable time compared to the paper prescribing process.
- Complex or new functions include: complex dosages such as sliding scales; ability to order supplies and durable medical equipment; support for alternative and non-prescribed medications; specifying a justifying diagnosis for each drug; cosigning prescriptions from mid-level professionals; selecting a pharmacy; and handling callbacks and renewal requests which may come electronically from the pharmacy.
- Usability is a concern for everyone in the practice, not just the clinician. Staff members other than the clinician are likely to handle tasks such as printing/transmitting prescriptions, handling renewals, capturing the patient's medication history, and in some cases writing prescriptions themselves. The system needs to provide for all prescription-related tasks that occur in the practice.
- A variety of user-interface devices are available (desktop computers, PDA's, tablets, etc.) and different device types may be best for different situations. The technology is

changing rapidly and devices should be chosen for maximum convenience. Devices need to be efficient and secure, particularly if they can be removed. Wireless devices are efficient but must communicate with printers and with other office systems.

- Outside of the practice, a number of new operations are now possible that can improve efficiency and safety for the practice. These include capturing medication history from payers, pharmacies, and other sources; transportable records that allow sharing of patient prescription information when the patient sees multiple clinicians and multiple pharmacies; and patient portals that let patients review their own medications, get drug information, and request refills and renewals.

- Although much of the adoption effort is targeted at physicians, it is important to recognize that a great deal of the overall electronic prescribing process happens in the pharmacy. Attention to efficient pharmacy information systems, and to optimal handling of important transactions such as prescription communication and refill/renewal authorization, will pay large dividends.

Clinical Decision Support

- *Value:* Recent studies confirm high rates of preventable adverse drug events in ambulatory care, suggesting that electronic prescribing may provide the same degree of benefit that has been shown in inpatient computerized provider order entry. However, studies documenting this effect have not come out yet in significant numbers. More research is needed both to confirm this promise, and also to help electronic prescribing application designers target clinical decision support where it is most likely to have an impact.

- *Design:* Clinical decision support interventions should follow certain design guidelines (listed in the text) for maximum acceptability and impact. It is particularly important to make interventions understandable, maintain a high specificity (i.e., avoid alerts for conditions that are, in fact, acceptable), and not overwhelm or fatigue the clinician with too many alerts overall. In the case of very common alerts like drug-drug interactions, where some interactions are very severe and others are milder, different levels of alerting can be provided.

- *Prioritization:* A clinical decision support feature ranking is provided as part of this report as a step in this direction. System vendors should consult this table when prioritizing their work; purchasers of systems should consider it when deciding what to put in their requests-for-proposals (RFP's) and what to expect of their vendors.

- *Sequencing of Implementation:* Clinical decision support implementation could be sequenced in a practice; usually, simpler and less controversial interventions such as allergy checks should be produced first, with more complex protocols and treatment guidance added once users have become comfortable with the system.

- *Formulary:* Health plan drug formulary support should be considered an important component of decision support, alongside more traditional forms of clinical decision support.

Communication

- Communication takes place frequently between the clinical practice, the pharmacy, health plans and PBM's, and patients. Besides the obvious transaction in which a clinician sends a prescription to be filled at a pharmacy, there are pharmacy callbacks for questions and eligibility issues, patient requests for refills, eligibility inquiries, claims and approvals, and many others. Nearly all of these communications can be handled by electronic data interchange over secure networks or the secured Internet.

- The paper-based prescribing process is inefficient, expensive, resource-intensive, and prone to errors. The benefits of electronic communication are well-known, both for the creation of a prescription and for a variety of other services important to quality, safety, and benefit processing. For example, if a clinician prescribes a drug that is off-formulary or out of stock at the desired pharmacy, an alert or notification to that effect could come back instantly from the pharmacy, so that the clinician can immediately modify the prescription, saving considerable time for the patient, pharmacist and practice.

- Electronic communication is faster, more work-efficient, more secure, more reliable, and less prone to abuse than paper or fax prescriptions.

- A new and potentially valuable function is the ability to create an accurate global view of a patient's medication history, by combining dispensing and claims histories from one or more several pharmacies and/or payers. Although there are patient confidentiality issues that must be cleared for this to work, the benefits in safety, quality, and abuse prevention can be substantial.

- We want to foster universal adoption so that all can realize the advantages, and also because of critical-mass factor: adoption is likely to move even faster when a significant number of clinicians and pharmacies in a region have already moved to electronic communication-capable systems. Before critical mass is reached, communication brokers that can accept an electronic transaction at one end and convert it into a paper or fax message at the other will preserve the investment of the more advanced system until the other side catches up.

- Current barriers include: additional expense of some software and connectivity arrangements; variant standards in communicating medication information; lack of critical mass of systems in some regions; difficulty in getting up-to-date health plan benefit information; and some state regulations that inhibit the rollout of electronic communication.

- Correspondingly, important steps in removing barriers include adoption of uniform, effective standards and vocabularies (see below); removal of legal and regulatory roadblocks; increasing the availability and lowering the cost of communication-capable systems and broadband connectivity;

    - The clinician's and patient's choice of medications and pharmacies should be protected in communications software, although all relevant financial and availability information should be displayed so that the choice can be well-informed.
    - There are a number of very active programs currently that may increase adoption rapidly, particularly from the pharmacy and PBM groups and related commercial operations.
    - It is imperative that clinician prescribing applications have the necessary tools for universal communication, either through embedded software or ASP sites.
    - Patient portals that let the patient review their active medications, request refills or renewals, read drug information, and communicate questions are growing in number and are likely to provide another benefit to patients' health.

Standards and Vocabularies

Currently, standards exist today that support the sharing of prescription information to some extent, as well as vocabularies that describe the drug prescribed. However, standards need to be enhanced where necessary, and support vocabularies that clearly define the *intent* of the prescription. Improved vocabularies and standards could provide valuable information to be used for clinical and research purposes, outside of the prescribing event.

A wide range of recommendations is covered in this section. The ones deemed to have the most pressing needs are indicated with an asterisk, although all of the recommendations are of high importance.

Unification of standards

- Strongly encourage unification of varying state regulations concerning the proper format of a prescription. Currently, the wide variety of state regulations – most of which are directed toward the same objectives, but differ because of separate development – increase the complexity and expense of electronic prescribing systems, as vendors must undertake extra development and maintenance to keep up with the varying regulations.

- Unify different standards, terms, and structures used by formulary information providers. Again, different formulary information providers use different structures, vocabularies, and classifications, which must be reconciled and interpreted by the prescribing systems.

- Unify and universally adopt a single set of messaging standards through reconciliation of SCRIPT and HL7 conventions, and continue to grow and develop the unified set to meet changing business needs. This work is already in progress.

Vocabulary

- Support the widespread adoption and further enhancement of RxNorm and NDF-RT for Clinical Informatics, to provide a consistent "clinician-level" drug vocabulary. Although NDC codes work well for pharmacy purposes, they are too granular for clinicians; as a result, currently many prescriptions are transmitted in free text, resulting in re-entry and potential errors at the pharmacy, as well as in lost opportunities for clinical decision support.

- Support standardization of the required data elements ("sig") necessary to create an electronic prescription, again for the benefit of consistent data exchange and greater quality and safety.

- Seek agreement among the large producers of prescribing system drug dictionaries, so that specification of allergy groups, drug interaction groups, etc., are consistent as one changes to different applications that use different commercial dictionaries. Currently, these are fairly close, but differences exist which can sometimes be significant.

- Once agreement has been reached on a vocabulary, incorporate it into the definitions and requirements of the NCPDP SCRIPT Standard.

Identifiers

- Establish a unique identifier for health plans and pharmacy benefit plans, so that prescribing systems and formulary information services can easily work together to determine the proper formulary and benefit for a given patient.

- Establish unique identifiers for the various persons and entities involved in a prescribing transaction.

Process

- Support creation of a Resource guide for system vendors.

Implementation

Good implementation is critical to the success of any electronic prescribing project. The most intuitive software and cutting edge hardware will not stand on its own without a solid implementation plan. Winners of the HIMSS Nicholas E. Davies award, given annually to healthcare organizations that provide the most effective clinical information systems, universally state that proper implementation management is at least as important as, and perhaps more important than, good software design. A sample electronic prescribing implementation guide is included in Appendix D. The actual 'how-to' details

and likely problems and solutions are outlined in the text. Important issues to consider include:

- Identify and address major implementation issues *before* selecting a system. These include understanding the implications of the size and type of practice; gaining executive and clinician support; being aware of regulatory and local pharmacy conventions and considerations; and determining the appropriate infrastructure and devices to support the workflow of the practice.

- Important implementation resources will be the electronic prescribing vendor selected and their implementation and account management staff, as well as similar organizations that have already deployed the application.

- Ensuring adequate infrastructure is a necessary pre-condition for success. Of particular importance is stability and reliability of the electronic prescribing application itself, the device or devices that the application runs on, and the network.

- Startup issues and interface issues include: integrating with a practice management system to gain access to registration and schedule information; loading patients' initial medication lists from the previous system or from paper records; and selecting and loading the appropriate payer and formulary information.

- Paying attention to organizational culture and behavior change management is a critical success factor. Organizations should also be aware that few implementations go smoothly on the first day; support staff should be able to respond quickly, in a friendly and supportive manner, to perplexed users, and should be able to determine which problems require software changes and which are a natural consequence of change management.

- Before selecting and implementing an electronic prescribing application, consideration should be given to a plan for migration towards a complete EMR.

Moving Forward

More intuitive systems, improved and more universal communications, effective standards and significant incentives to reconcile financial costs and benefits are all critical to the adoption of electronic prescribing systems throughout the United States. In turn, appropriate data sharing, well-executed clinical decision support, and advanced communications functions are vital for those systems to provide maximum value, both clinical and financial. Steady progress has been made in some of these areas, particularly over the last few years. However, we have not yet reached the goal, the point where electronic prescribing is seen as a "must-have" part of healthcare, and as a result, the very large benefits in quality and cost that could be achieved are still some distance away.

The concluding section, “Moving Forward”, identifies ongoing work of the eHealth Initiative as well as recommendations for actions that all stakeholders can undertake to help realize this goal. Active work is continuing to stimulate policy and legislative action, to advance the design and capabilities of available systems, to advance and unify standards, and to continue to educate each other.

A variety of incentive demonstration programs have been put into place. There are pay for performance programs that directly reward electronic prescribing, and others that reward outcomes that are made much more reachable by electronic prescribing. Other projects include payer- and pharmacy-based efforts to supply clinicians with prescribing technology and connectivity, at least on a trial basis. These programs and other creative efforts to provide appropriate incentive should be encouraged, and the results shared, so that the most effective strategies can be established.

Above all, we all realize that electronic prescribing is a matter of healthcare quality and safety, a matter of work efficiency, and a matter of business. Better, safer healthcare is the prize, the unshakable goal shared by all in this field; it is what we think of when we prepare long-term, multi-year strategies and plans. Workflow and financial sense are the practical requirements on the way to turning that goal into reality, and they demand our attention every day. We encourage everyone, as they deal with their necessary business operations, to remember the prize, and to exhibit flexibility and cooperation in an effort to reach that prize, just as the diverse stakeholders involved in this initiative have worked together for the common good.

SECTION I: INTRODUCTION TO ELECTRONIC PRESCRIBING

Introduction

Six years ago, in a landmark article in *The Journal of the American Medical Association*, Schiff and Rucker argued that "physicians should never again write a prescription" by hand.[6] Two years later, the Institute for Safe Medication Practices declared that "The need is urgent. As such, a serious public health problem calls for a bold goal: Let's eliminate handwritten prescriptions by 2003."[7]

Of course, 2003 has come and gone, handwritten prescriptions remain the norm rather than the exception, and calls for universal electronic prescribing are louder than ever. Nonetheless, considerable progress has been made. Precise numbers are hard to come by, but at least 10,000 clinicians (and possibly several times that number) are creating prescriptions today on a computer – either within the prescribing component of an electronic medical record (EMR) system or within a standalone electronic prescribing application.

This report is an attempt to characterize lessons learned from this early adoption phase of electronic prescribing, and identify issues and strategies that will help accelerate continued adoption. In this report we explore best practices and concepts, current barriers and points of frustration, and possible ways to remove those barriers in order to achieve the safety, quality, cost, and efficiency benefits that can come from universal, well-designed, well-implemented electronic prescribing systems.

The report is intended for several audiences:

- Clinicians, practices, and healthcare organizations, who wish to know what is possible, what their next steps should be if they are interested in implementing such systems, and what they should be able to expect from the vendors.

- System vendors and developers and communications service providers, as a reference for information about pros and cons of current systems and about primary needs from the healthcare community perspective, so they can be better informed as they continue to advance the usability and effectiveness of their products.

- Those involved in standards and regulatory efforts, as a guide to practical issues that are fostering or hindering the widespread adoption of electronic prescribing.

- Patients and patient advocacy groups, who want to understand the benefits, possibilities, current state, and next steps in electronic prescribing.

Definition of Electronic Prescribing: Levels of Sophistication

Electronic prescribing refers to the use of computing devices to enter, modify, review, and output or communicate drug prescriptions.

In a basic electronic prescribing system, clinicians review, enter, manage, and sign prescriptions using a computer, instead of writing them on paper. In addition to basic prescription entry capability, the definition of electronic prescribing includes a number of important capabilities, including:

- Clinical decision support, including alerts and reminders to promote guideline compliance, prevent prescribing errors, and advise about formulary compliance.

- Integration of other patient data from an electronic medical record, such as medical conditions, current and prior medications, allergies, laboratory results, and personal preferences, to enhance efficiency, improve documentation, and increase the potential impact of clinical decision support.

- Fax or electronic communication between clinicians, pharmacies, and health plans, in order to transmit prescriptions, conduct eligibility and benefit transactions, exchange messages, and process renewal requests.

- Provision of educational materials for patients and clinicians.

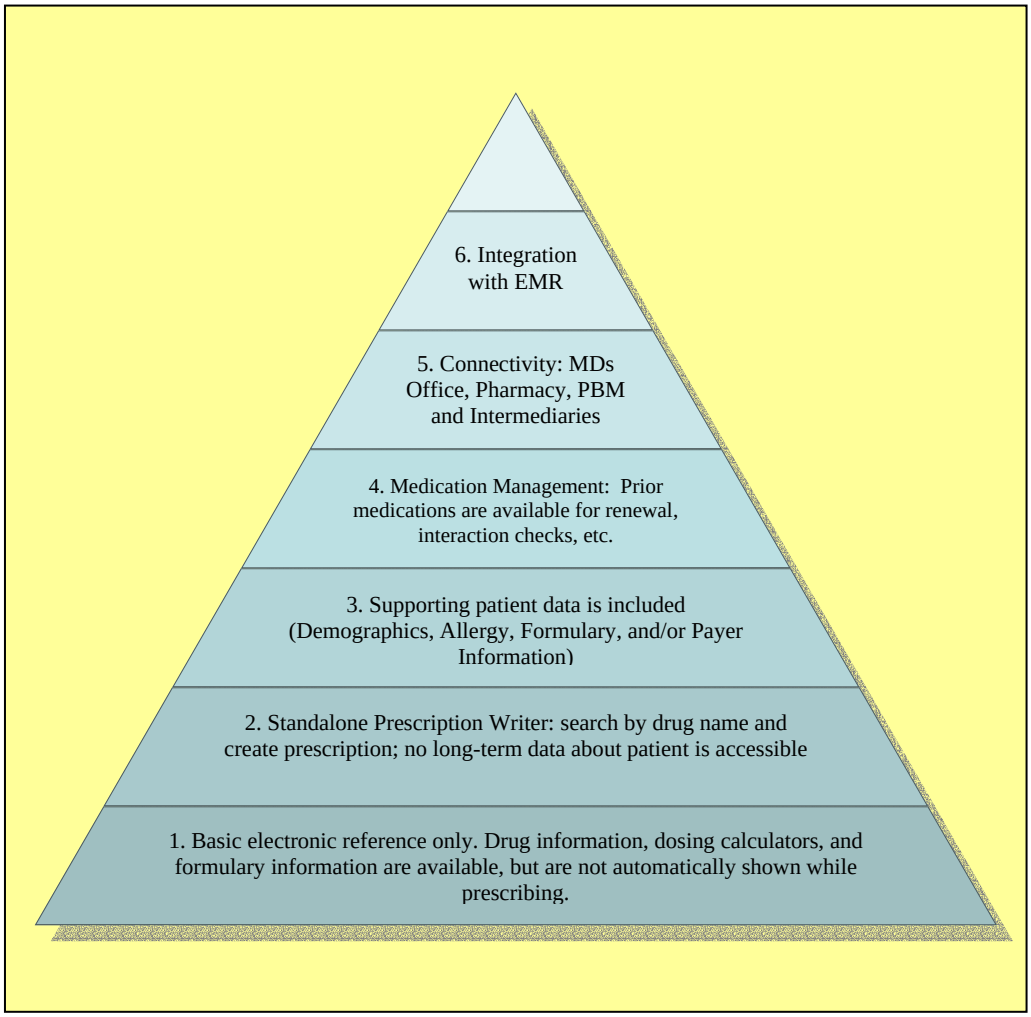

Figure 1: Graduated Levels of Electronic Prescribing

Electronic prescribing systems are available in a variety of graduated levels (see Figure 1). Different commercially available systems may provide different combinations of these feature levels, although most current commercial systems at least provide significant features at levels 2, 3, and 4. Benefit can be seen at all levels; however, systems at the higher levels of sophistication afford much greater opportunities for quality improvement, reduction in errors, and improved workflow efficiency, primarily by including more relevant information about the patient and better communication among the stakeholders and data sources in the prescribing chain. A summary of the features and benefits of each level is contained in Figure 2.

Level	Description	Additional Benefits
1. Electronic Prescription Reference	"Reference handbook" information is available in one system and links drug information, general formulary information, and interactions checkers.	Information is available in one place and integrated to facilitate handwriting of prescriptions. May prevent errors passively if user opens it at the relevant moment. Improves convenience.
2. Standalone Prescription Writer	Allows one to search for a particular drug and create a prescription. Generally-used dosages are included.	No patient-specific information on allergies, drug history, health plan, or medication history is included. Safety enhanced through legibility and standard dosages.
3. Patient-specific Prescription Creation or Refilling	Includes some combination of demographics, formulary, allergies, and plan information.	Allows tailoring of prescription to patient unique needs and desires. Provides safety benefits from clinical decision support for allergies. Enables consideration for elderly or pediatric patients. Also reduces callbacks. Formulary checking improves cost and compliance.
4. Medication Management	Access to prior medication history and current regimen is available, either though prior entries or through linkage to an external database, or both.	Significantly enhanced safety levels from warnings for drug-drug interactions, therapeutic duplications. Allows efficient refills and renewals, possibly including reminders.
5. Connectivity	Transmission of a "clinically certified" prescription to the dispensing site requested by the patient. Enhanced linkages between all parties involved in patient medication management.	Additional assurances that the medication order is consistent with the clinical intent, dosing guidelines, and health plan design. Reduces transcription errors, speeds dispensing. Allows for additional interaction checks and lowers administrative costs.
6. Integration with EHR	Medication ordering automatically linked to the comprehensive health record used to provide clinical care. Includes access to lab and test results, problem lists, diagnoses.	Many enhancements to quality: problem-based ordering, disease management reminders, drug-lab result conflicts, renal dosing, drug monitoring needs. Integrates medication ordering into the overall process of medical care delivery.

Figure 2. Features and benefits at each level.

Still other capabilities on the spectrum of electronic prescribing add to this core set and may provide additional advantages in safety, quality, and cost. These include but are not limited to:

- Direct patient access to review personal medication regimen, suggest corrections and changes, and submit refill and renewal transactions.

- Aggregate databases to support the greater understanding of the impact of prescription drugs on public health.

- Additional communications regarding benefits changes, formulary updates, drug utilization reviews, and other important information.

Stakeholders in Electronic Prescribing

There are a variety of stakeholders involved in the electronic prescribing process. Each constituency plays a critical role in the complex process of prescription creation and management.

- Practicing clinicians.*

- Practicing pharmacists and associated staff, in store-based and mail-order pharmacies.

- Healthcare information technology producers/suppliers ("vendors").

- Health systems, practice organizations, and hospitals.

- Patients and family caregivers.

- Employers, health plans, government and other purchasers.

- Pharmacy Benefit Management (PBM) organizations.

- Pharmaceutical and medical device manufacturers.

- Public health organizations.

- Research and academic institutions.

- Professional and lay societies representing each of the above.

Why Electronic Prescribing Is Important

Americans made more then 823 million visits to physicians' offices in 2000[8] and, according to the National Association of Chain Drug Stores (NACDS), four out of five patients who visit a doctor leave with at least one prescription.[9] More than 3 billion prescriptions are written, and prescription medications are used by 65 percent of the U.S.

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* For purposes of this document, the term *clinicians* includes physicians, osteopathic physicians, dentists, nurse practitioners, nurse midwives, physician assistants, and others who may prescribe or help prescribe medications in a clinical setting.

public in a given year.[10] Given this volume, even a small improvement in quality attributable to electronic prescribing would translate into significant healthcare cost and safety benefits if electronic prescribing were broadly adopted. Patients, clinicians, hospitals, pharmacies, health plans, and purchasers all stand to gain from the speedy adoption of this technology.

Prescribing Error Rates, Quality Issues

Decision-making errors – including those related to prescribing – usually result from not having the right information at the right time.[11] [12] In most care settings today, preventing prescribing errors is dependent on a system of downstream inspection, usually by the dispensing pharmacist. While pharmacists are remarkably good at catching prescribing errors – they make more than 150 million calls to physicians each year to discuss possible errors or otherwise clarify prescriptions[13] – many errors still slip through this safety net. In one recent study, 25 percent of patients who received at least one prescription reported an ADE, and 39 percent of these events were deemed either ameliorable or preventable.[14] According to the Center for Information Technology Leadership (CITL), more than 8.8 million ADE's occur each year in ambulatory care, of which more than 3 million are preventable. Medication errors account for 1 out of 131 ambulatory care deaths.

Electronic prescribing helps to deliver relevant patient information and clinical knowledge to the prescriber, thus reducing the likelihood of a faulty prescription. Moreover, built-in error checking ensures that the primary prescription inspection point is moved earlier in the process – specifically, to the prescriber at the point of prescribing – and lessens dependence on later review in the pharmacy. This change in approach represents a fundamental overhaul to our national prescription error prevention system, and the safety implications are staggering: CITL estimates that nationwide adoption of electronic prescribing will eliminate nearly 2.1 millions ADE's per year in the U.S. This would prevent nearly 1.3 million provider visits, more then 190,000 hospitalizations, and more then 136,000 life-threatening ADE's, or about 14 preventable ADE's per ambulatory care provider per year.

Prescribing Efficiency: The Burden of Callbacks and Rework

Presenting all relevant information to the clinician at the time of prescribing may help streamline the entire prescribing process. Relying solely on downstream inspection to manage quality and safety is inefficient because of the extra work required. Consider that 3 billion prescriptions a year generate – as noted above – 150 million clarification phone calls every year. This means that roughly 5 percent of prescriptions are somehow incompletely specified or unclear, and need to be reworked.* It is costly both for pharmacies and clinician offices to manage calls related to this prescription rework.

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* This 5 percent prescription callback rate is a conservative estimate that only considers the percent of problem prescriptions that get detected downstream and result in a phone call back to the prescriber. Some

By comparison, most manufacturers in other industries would be unable to stay in business if their product defect (and rework) rate exceeded a fraction of a percent, much less 5 percent. According to Deming, the father of modern industrial quality management, quality should be managed by process improvement, not by inspection,[15] a view supported by medical error prevention experts.[16, 17]

Early experience supports the view that electronic prescribing – by moving the error-inspection process to the point of prescribing – reduces callback volume and improves efficiency. In fact, most clinics that successfully deploy electronic prescribing applications note a dramatic decrease in prescription clarification calls. Moreover, those callbacks that still occur can usually be processed more efficiently because of the streamlined message-handling capabilities that often come with electronic prescribing, coupled with elimination of the need to pull (and re-file) paper charts every time a pharmacist or patient calls with a question or concern about a prescription.

This reduction in chart pulls is one of the unheralded beneficial side effects of electronic prescribing, and has major cost-savings implications for clinics: standard industry estimates from more than a decade ago put the cost of chart pulls at $5-$7 each,[18] and the cost is likely even higher today. A cautionary note is in order here: These benefits may be more difficult for small practices to realize. The typical small practice has a chart rack behind the front desk, and a chart pull and refill generally takes less than a minute (assuming the chart is in the rack), thus yielding a much lower cost per chart pull. However, even in small practices, there is still significant time lost looking for charts that have not been filed and are in multiple locations around the office, waiting for various processes to be completed.

Some examples of efficiency benefits associated with electronic prescribing projects are cited here:

- In one recent study, electronic prescribing was associated with a 53 percent reduction in calls from and a 62 percent reduction in calls to the pharmacy.[19]

- Another study credited electronic prescribing with streamlining medication management processes and generating time savings of one hour per nurse and 30 minutes per file clerk per day.[20]

- A large practice in Lexington, KY estimates that electronic prescribing saves the group $48,000 a year in decreased time spent handling prescription renewal requests.[21]

- A large primary care practice in Kokomo, IN with 20 providers and 134,000 annual patient visits was receiving 370 phone calls daily, 206 of which were related to

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estimates of the true callback rate for prescriptions are as high as 40 percent. For instance, a 22-physician specialty practice reported that nearly 30 percent of its prescriptions generated a callback to the practice, incurring staff costs and lost revenue of over $175,000 (Medco Health Solutions press release via ePharmaceuticals, January 29, 2003).

prescriptions. Of the 206 prescription-related calls, 97 (or close to half) were renewal requests. The remainder were roughly evenly divided between clarification calls from pharmacists (50) or requests for new prescriptions (59). Staff time to process these calls included 28 hours per day of nurse time and 4 hours per day of physician time. Chart pulls were required in order to process half of the renewal requests. Implementation of an electronic prescribing system produced dramatic time savings that permitted actual reallocation of nursing and chart room staff.[22]

Compliance and Renewals

Failure to refill (at a pharmacy) or renew (at the clinician's office) medications in a timely fashion can and does lead to adverse events due to exacerbations of the condition being treated with the medication. This is a significant problem, particularly for persons who have difficulty affording their prescriptions; renewing in a timely fashion may not be a high priority, especially for drugs that treat relatively asymptomatic chronic conditions. Lack of patient compliance with prescribed medications leads to similar adverse events.

Because electronic prescribing systems lead to better tracking of a patient's drug regimen, it is possible to know when renewals of regularly scheduled medications are likely to come due, assuming proper compliance. Systems can send out reminders to patients and clinicians, advising of an upcoming renewal or refill time, and even offering one-click renewal transactions; these reminders may have a positive impact on actual compliance.

Prescription claims history, when made available at the time of an ambulatory care encounter, can also help prescribers become aware of non-compliance issues that otherwise would have gone unnoticed. At Henry Ford Health System, when a six month claims history report was attached to a patient's chart at the time of a clinic visit, a non-compliance problem was detected 30 percent of the time, compared to no detection whatsoever when the report was not available.[23]

In a similar but opposite fashion, aggregation of data from prescribing systems in a region may make it easier to prevent abuse of the system by patients who get multiple prescriptions for the same drug from different clinicians, and attempt to fill them at different pharmacies. This sort of data reporting occurs at times in the current environment, but usually long after the abuse has occurred.

Other Cost Savings: Adverse Drug Event Prevention and Drug Spending

Electronic prescribing maximizes cost-effective drug selection by making clinical and formulary considerations more readily available at the point of prescribing, and by encouraging generic substitution when appropriate. Health plans could save between $.75 and $3.20 in generic usage and formulary compliance per prescription written using an electronic prescribing product.[24] Tufts Health Plan reported that 50 percent of survey respondents switched to preferred drug therapies when prompted by electronic

prescribing systems.[25] A more recent study found conflicting results, with little impact of electronic prescribing on formulary compliance or generic substitution rates.[26] However, methodological issues limit the generalizability of the findings from this latter study.

In addition to reducing costs to clinics and pharmacies as a result of fewer callbacks and streamlined efficiency, electronic prescribing will likely reduce costs in two other broad areas: ADE prevention and overuse of prescription drugs. In 2002, $154 billion was spent on prescription drugs in the U.S. The Center for Information Technology Leadership (CITL) projects that nationwide adoption of electronic prescribing would save $27 billion a year, primarily as a result of decreased spending on prescription drugs. In addition, $2 billion of savings would be attributable to reduced ADE-related hospitalizations and visits.

Another examination of projected cost savings from electronic prescribing in ambulatory care, based on analysis of claims data in an employer-sponsored population, appears in Figure 3.

Employer Cost Savings

Savings from Preventable ADEs

906.8 Million Ambulatory Visits per Year (includes emergency, urgent care, etc.)
823.5 Million Visits to Physicians Offices
2 Million ADEs could be prevented using IT

= 2.5 per 1,000 office visits is the rate of preventable ADEs

3.2 visits per U.S. resident per year[1]
1.5 visits per member per year for average commercial population
4 preventable ADEs per 1,000 members/year (1.5 visits per member per year * 2.5 ADEs/1,000 visits, rounded up)
$1,000 cost per ADE

= $4 per member per year savings generated from preventable ADEs

Savings from Reduced Overuse of Medications (Decrease in Drug Spending)

10% average rate of prescribed medications that are medically unnecessary
5% average potential rate for underused medications (mitigates savings)
$1.50 average value of each script
$700 average amount spent on medications per member per year

= $35-$70 per member per year savings from net reduced overuse of medications

Net Total Estimated Savings from Electronic Prescribing

$4 per member per year savings from preventable ADEs
$35-$70 per member per year savings from reduced over/use of Medications

=$39-$74 per member per year

Figure 3. Data related to employer cost savings. (Source: RationalMed)

The Current State of Adoption of Electronic Prescribing

Despite the current benefits, current usage rates of electronic prescribing in ambulatory care are low among clinicians. Although usage is slowly increasing, adoption has been slow.

- According to one survey, 35 percent of physicians had PDA's in 2002, and 55 percent of them used PDA's to access drug information. [27]

- A January 2003 survey by Boston Consulting Group found that only 16 percent of physicians use electronic prescribing, though another 21 percent said they plan to start using it within 18 months.[28]

Usage rates vary from study to study. It should also be noted that it is difficult to discern from current surveys and studies the level of sophistication (referred to in Figure 1) of the electronic prescription systems that are currently in use.

There have been national surveys administered annually over the past several years that measure electronic medical record (EMR) adoption, but not electronic prescribing specifically. While it is common for EMR packages to include an electronic prescribing component, one cannot assume that all respondents to these surveys were using electronic prescribing. Nonetheless, recent survey data regarding EMR adoption rates are quite encouraging. A variety of surveys and reviews have shown an increase in the number of practices interested in and/or actually using EMR's, both in large or hospital-connected practices and also in small, independent practices.[29] [30] [31] While the survey methodologies may overestimate current EMR adoption levels, and can't be generalized to electronic prescribing adoption, they suggest that adoption of clinical technology in ambulatory care is increasing, and provides reason for cautious optimism.

Momentum in the Public Sector for Electronic Prescribing

Momentum continues to build within both Congress and the Administration around the need for electronic prescribing. Like the private sector, government agencies and legislators recognize that many quality, safety and efficiency gains can only be achieved through the use of electronic prescribing and related technologies. The Medicare Prescription Drug Improvement and Modernization Act of 2003 (also referred to as the "Medicare Modernization Act") contains some of the most significant legislation to date supporting electronic prescribing. A brief outline of the legislation surrounding the electronic prescription program is listed below. A more detailed summary of the legislation is provided in Appendix B.

Medicare Legislation

The Medicare Modernization Act (Public Law No: 108-173) lays the ground-work for the use of electronic prescribing in healthcare through several provisions related to standards,

the electronic transmission of information, safe harbors, and grants. The following provides a high-level summary of the relevant components of the legislation. A more detailed summary is provided in Appendix B.

- Establishes a real-time electronic prescribing program to be used by all physicians, pharmacies and pharmacists who serve Medicare beneficiaries with Part D benefits. The information to be provided electronically includes the following: information on the drug being prescribed or dispensed and other drugs listed on the patient's medication history, including drug interactions, warnings or cautions, and dosage adjustments when needed; and information on therapeutic alternatives for the prescribed drugs.

- Provides that, after the basic electronic prescribing standards are established and at a time determined by the Secretary, the program shall provide for electronic transmittal of information that relates to the medical history of an individual beneficiary and related to a covered prescription drug upon request from a treating healthcare professional or pharmacist.

- Requires the HHS Secretary develop, adopt, recognize, or modify -- not later than September 1, 2005 -- initial uniform standards for electronic prescribing.

- Requires the National Committee on Vital and Health Statistics to develop recommendations for electronic prescribing standards with standards setting organizations, practicing clinicians, hospitals, pharmacies, practicing pharmacists, pharmacy benefits managers (PBM's), state boards of pharmacy, state boards of medicine, experts on electronic prescribing; and other Federal agencies.

- States that standards for the electronic prescribing program are not mandatory for all prescriptions. However, if a healthcare provider or pharmacy uses electronic means to prescribe Medicare Part D covered drugs, the transmissions must meet the standards.

- Allows that if a clinician does not use electronic means to prescribe, he or she will not be required to begin using electronic means.

- Requires that information transmitted only be disclosed if it is permitted under the HIPAA rules concerning the privacy of individually identifiable health information.

- Sets the objectives of the electronic prescribing standards: to improve patient safety and quality of care provided to patients and efficiencies, including cost savings, in the delivery of care.

- States that electronic prescribing standards should not impose an undue administrative burden on clinicians, pharmacies or pharmacists.

- Directs the HHS Secretary to conduct a voluntary electronic prescribing pilot project in 2006. The Secretary will make recommendations to Congress on the pilot project.

- Requires the HHS Secretary to create standards for electronic prescribing based on the evaluation by the Secretary. These standards must be promulgated no later than April 1, 2008.

- Establishes a safe harbor from penalties under the Medicare anti-kickback statute.

- Establishes a safe harbor from the financial relationship rules under Medicare for certain clinicians, hospitals, and plans.

- Provides that these standards will pre-empt state law or regulation that are contrary to or restrict the ability to carry out the electronic prescribing program.

State Activities

States are also making efforts to enable electronic prescribing. In addition to passing legislation that removes regulatory roadblocks for electronic prescribing, state governments are also encouraging and at times directly funding various initiatives.

- The Rhode Island Quality Institute, with strong support from the state's Attorney General, began a state-wide initiative in 2003 to have every physician adopt electronic prescribing over a several-year period. Many of Rhode Island's chain and independent pharmacies have completed the necessary software upgrades to receive prescription transactions from physicians electronically through a common connectivity provider-based network.

- Florida's Agency for Health Care Administration has developed a public-private initiative to deploy handheld devices containing drug safety information and up-to-date patient drug histories to high-volume prescribing physicians, in an effort to reduce medication errors, improve patient compliance, and reduce fraudulent prescription activities (such as "doctor shopping" for controlled substances). In its early stages, the program has already shown an ROI of more than $700 per physician per month and documented error prevention. As a result, Governor Bush has decided to expand the program to include full electronic prescribing capabilities for 3,000 physicians, who together account for 80 percent of Florida's Medicaid prescribing activity.

Momentum in the Private Sector

Healthcare payers and purchasers in several states, recognizing the benefits of electronic prescribing and understanding the need to actively promote it, have become engaged in projects to promote electronic prescribing to their clinicians. To give just a few examples:

- Blue Cross Blue Shield of Massachusetts and Tufts Health Plan have announced a $3 million initiative to provide electronic prescribing software to 3,400 clinicians in their networks who write a large number of prescriptions.

- In the near future, Boston-area clinicians will be able to earn additional compensation of up to $55 per patient for investing in information systems and care management tools, including electronic prescribing. The program is being offered by Bridges to Excellence, a not-for-profit coalition of large employers, health plans, the National Committee for Quality Assurance (NCQA) and MEDSTAT, a division of Thomson Healthcare. The Centers for Medicare and Medicaid Services (CMS) also participated in developing the program.

- WellPoint has recently announced plans to provide almost 19,000 contracting network physicians in California, Georgia, Missouri and Wisconsin with a selection of new technologies, including electronic prescriptions.

Summary – Introduction to Electronic Prescribing

- Electronic prescribing refers to the use of computing devices to enter, modify, review, and output or communicate drug prescriptions.

- Systems are available in a variety of graduated levels from basic electronic reference only to full integration into an EMR. Systems at the higher levels afford much greater opportunities for quality improvement, reduction in errors and improved workflow efficiency.

- Electronic prescribing includes a number of important functions, including clinical decision support, integrated patient data, fax or electronic communication and provision of educational materials.

- There are a variety of stakeholders involved in the electronic prescribing process, and each constituency plays a critical role in the complex process of prescription creation and management. These range from the practicing clinician, pharmacist and health plan to public health and research organizations.

- Given the large volume of prescriptions (more than 3 billion per year), even a small improvement in quality can translate into significant healthcare cost and safety benefits.

- Electronic prescribing helps deliver relevant patient information and clinical knowledge to the prescriber, reducing the risk of faulty prescriptions, and can help eliminate nearly 2.1 million ADE's per year in the U.S. It can also decrease prescription clarification calls for the approximately 5 percent of prescriptions that are somehow incompletely specified or unclear.

- Electronic prescribing can help track patient medication use to assist in efforts to improve compliance and also to decrease risk of abuse by prescriptions obtained from multiple providers and pharmacies.

- Electronic prescribing maximizes cost-effective drug selection through easier compliance with formularies and generic substitutions.

- Although considerable progress has been made, handwritten prescriptions remain the norm rather than the exception, but momentum for electronic prescribing is building through support from public and private sectors.

- This report attempts to identify issues and strategies that will help accelerate continued adoption of electronic prescribing.

SECTION II: OVERVIEW OF THE EHI ELECTRONIC PRESCRIBING INITIATIVE

Objectives and Purpose of the Initiative

Early in 2003, the eHealth Initiative launched the *Electronic Prescribing Initiative*. The effort was led by a Steering Group and included two Working Groups. All three groups were comprised of the many constituencies involved in and impacted by the prescribing chain, including practicing clinicians, hospitals and other healthcare organizations, medical societies and associations, health plans, employers and healthcare purchasers, healthcare information technology suppliers, pharmacies, manufacturers, patient and consumer groups, insurance providers, federal agencies, and connectivity providers. The initiative involved more than 70 of the nation's top experts on electronic prescribing. The majority of participants were executives or senior-level managers representing various stakeholders.

The overall goal of the eHealth Initiative was to rapidly expand the adoption of electronic prescribing; in particular, to stimulate adoption of electronic prescribing by clinicians. Key objectives of the initiative:

- Develop and widely disseminate design and implementation guidelines and principles that:
  - Facilitate rapid development of usable, implementable, high-value prescribing tools throughout the industry to address quality, safety and efficiency concerns;
  - Support the workflow of clinicians;
  - Support safety and optimal care.

- Identify and promote the adoption of incentives to accelerate the adoption of electronic prescribing.

- Work with existing and newly-launched implementation and demonstration projects to:

  - Test and evaluate the initiative's recommendations;
  - Confirm and widely promote the value of electronic prescribing;
  - Identify additional barriers that have not been addressed by other initiatives.

Electronic Prescribing Statement of Principles

The Steering Group developed a set of principles to guide the work of the initiative. The principles focus on creating a safer, more effective healthcare system. The eHealth Initiative's electronic prescribing vision includes the following principles:

Encourage rapid adoption of electronic prescribing for improvement in healthcare delivery.

All healthcare stakeholders, including those in both the public and private sectors, must work together to encourage the rapid adoption of electronic prescribing because it improves the quality of care, reduces medical errors, improves efficiency, and can be cost-effective for the healthcare system as a whole.

Among the core benefits of electronic prescribing are:

- Eliminating illegible prescriptions;
- Using clinical decision support to reduce preventable errors such as drug-drug interactions, drug-allergy reactions, dosing errors, therapeutic duplication, and other error types;
- Enhancing communication between clinician and patient;
- Enhancing communication through all parts of the prescribing chain;
- Increasing access to important reference and patient information;
- Providing clinicians with cost information;
- Improving work efficiency.

Encourage rapid development and adoption of implementable, usable, standards-based electronic prescribing systems.

Electronic prescribing systems should be easy and convenient to implement, learn, and use effectively by clinicians in a variety of practice settings. Such systems should support and enhance the typical daily workflow of the clinical practice.

Electronic prescribing should be functional for a variety of inpatient and ambulatory practice settings, and should encourage the appropriate sharing of prescription information across the continuum of care.

Interoperability and open standards are important factors for successful adoption and use of electronic prescribing. Users should not be bound into a single system by closed standards.

Electronic prescribing should maximize appropriate access for prescribing healthcare professionals by embracing appropriate end-user technologies.

Electronic prescribing systems should support current and future information infrastructure and telecommunications capabilities within the healthcare industry.

Electronic prescribing occurs at several levels, with incremental development and incremental benefits, progressing through basic prescribing systems for the clinician's use, systems with increasing clinical decision support, provision of reference material for clinicians' and patients' use, and systems with automatic communication to the pharmacy. Systems at each level may be acceptable for clinicians in different stages of readiness, who may then progress to more advanced levels.

Preserve the patient-clinician relationship in the delivery of healthcare.

Electronic prescribing should enhance the delivery of quality care by preserving and enhancing informed patient choice of treatment options.

Clinicians and patients must have the ability to route prescriptions to a licensed pharmacy of the patient's choice.

Electronic prescribing should include the option for the prescribing clinician to send information to the patient that provides education about proper use of the medication, encourages adherence to the medication plan, and helps the patient recognize errors and potential adverse events before they cause harm.

The adoption and use of electronic prescribing should be encouraged through the deployment of appropriate incentives.

Incentives will be critical to the widespread adoption of electronic prescribing. Incentives include but are not limited to: grants, federal appropriations, enhanced reimbursement systems, malpractice rate reduction, and quality and safety-related incentives that can be employed by purchasers, payers, accrediting agencies and other key stakeholder groups.

Electronic prescribing incentives should:

- Make the accelerated adoption and use of electronic prescribing cost-effective and compelling for clinicians and all members of the prescribing chain;
- Enable clinicians and patients to make the best clinical decisions when prescribing medications;
- Recognize the differing practice environments and adoption readiness of clinicians in both integrated delivery networks and independent practices, and incrementally support several levels of electronic prescribing to encourage both initial use and increasing functionality in each practice;
- Address the need to decrease legal and regulatory barriers to electronic prescribing at the federal and state level.

Proposed incentives should be evaluated according to:

- Ability to support the quality, safety and optimal effectiveness of patient care;
- Ability to facilitate rapid development and implementation of usable, high-value connectivity-ready prescribing tools throughout the healthcare community;
- Support of system interoperability and the use of open data standards;
- Potential economic impact, including cost implications for patients, plans, providers, pharmacies and other key stakeholder groups;
- Ease of implementation and capacity to support the workflow of clinicians;
- Degree to which the electronic prescribing system includes the delivery of decision-support and patient safety information to the patient as part of the basic prescription.
- Demonstration projects will increase awareness and provide a method to test and develop solutions that work for all the stakeholders.

Overview of the Initiative: Process, Participants, Strategies

The Steering Group chartered two new working groups in the summer of 2003 to accomplish the goals set out in the electronic prescribing initiative. The members of both the Design and Implementation Working Group and the Incentive Working Group were widely recognized experts from diverse healthcare sectors. Private organizations were allowed one representative per working group and care was taken to ensure balanced stakeholder representation within each group.

The Steering Group and all working groups were staffed by Jennifer Covich Bordenick, MA, Director of Strategic Programs at the eHealth Initiative.

The names of the members of the Steering Group and the Working Groups are listed at the beginning of this document.

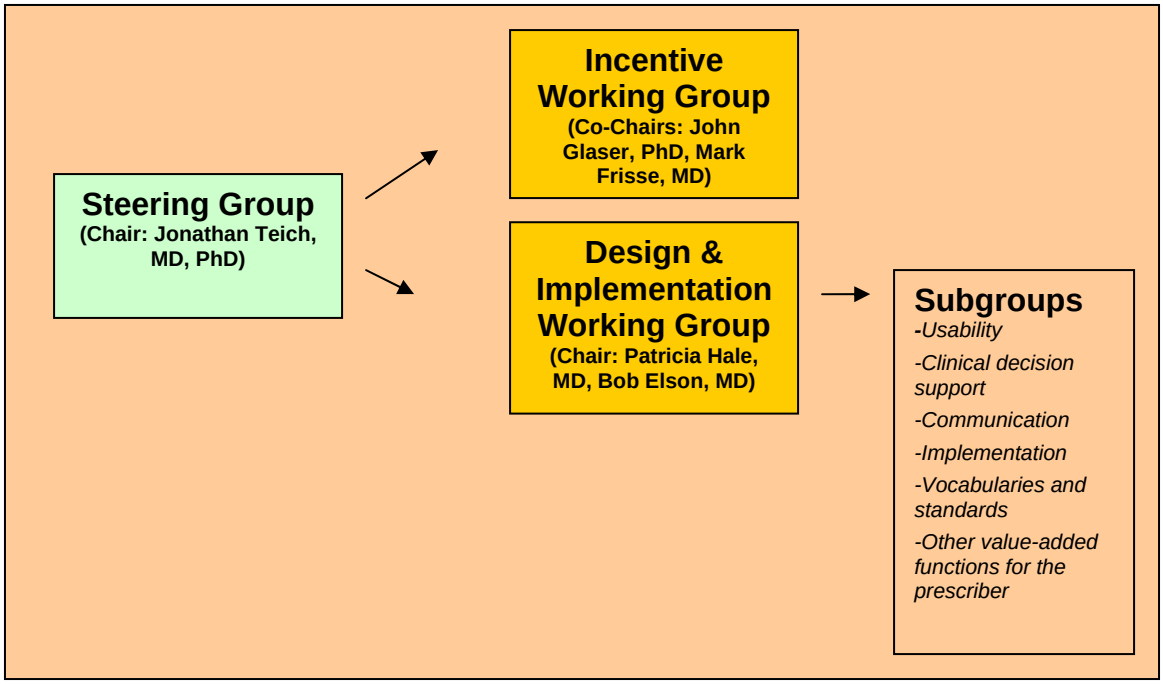

Figure 4: Organization of Electronic Prescribing Initiative Working Groups

Design and Implementation Working Group

The primary objective of the Design and Implementation Working Group was to develop and widely disseminate design and implementation techniques that:

- Facilitate rapid development of usable, connectivity-ready prescribing tools throughout the healthcare community.

- Support the workflow of clinicians.

- Support safety and optimal care.

The reports and recommendations of this group will be shared with organizations and individuals who can effect change to address the issues identified by this group (see the introduction to this report). The group was charged with developing a number of deliverables, including but not limited to:

- Developing general guidelines for features and design concepts that will support the development and implementation of effective, usable, and high-value systems that are readily seen to be desirable by practicing clinicians.

- Developing a final report for clinicians and practice groups to understand the advantages and what they should expect from healthcare IT suppliers.

- Developing recommendations for implementation.

The Design and Implementation Working Group had approximately 30 active members. The group began its work by evaluating a framework for studying implementation and design. After finalizing a framework for study, the group divided into six small subgroups to address the critical components of the electronic prescribing process. The subgroups met throughout the fall of 2003 to develop recommendations. Recommendations were then vetted through the entire Working Group and Steering Group.

Incentives Working Group

Objectives and Deliverables

The primary objective of the Incentives Working Group was to identify and promote the adoption of a set of financial, regulatory, and other incentives that could make the acceleration of the adoption of electronic prescribing cost-effective and compelling for clinicians and all members of the prescribing chain.

The Incentives Working Group had approximately 27 active members. The group began its work by refining a new framework for evaluating incentives. Individual interviews and surveys were conducted with group members in order to gather information about the effectiveness of different incentive models presented in the framework. The group met in the fall of 2003 and began rating and prioritizing different incentive approaches for study. More results from this working group will be released by the eHealth Initiative in 2004.

SECTION III. ANALYSIS AND RECOMMENDATIONS

The Prescribing Process

The Design and Implementation Working Group carefully reviewed the prescribing process in detail, and grouped the various features and concerns into five key aspects of prescribing that needed to be explored in detail, including:

- Usability.
- Clinical Decision Support, including Formulary Management.
- Communication.
- Vocabulary and Standards.
- Implementation.

These identified areas became the focus of five subgroups. This section of the report represents the detailed analysis, discussion, and recommendations of the various working group subgroups. The section is organized according to the work of the different subgroups.

Electronic Prescribing Component List (Table 1)

The process of creating an electronic prescription requires that specific data elements be available and communicated, or referred to within the system, in order to complete the prescription process. The following list of components contains elements which may be contained in electronic prescription systems, but all electronic prescription systems would not be expected to contain every element on the list. We have included recommendations on elements that should be:

- Recommended – elements which should probably be present in all systems to provide basic functionality; and/or
- Desired – elements which may be available in some systems to enhance functionality.

While most of the elements are listed from the point of view of the clinician producing the electronic prescription, there are elements listed for the pharmacy that represent the pharmacist's perspective (see notes column).

This list is intended to represent components available in present electronic prescription systems, recognizing that new types of data elements will arise in the future.

Electronic Prescribing Component List (Table 1)

Data elements		***Notes***
• Demographics		
a. Name	Recommended	
b. Date of birth	Recommended	
c. Patient identifier (or system ID number or mechanisms to accurately link patient data)	Recommended	
d. Gender	Recommended	
e. Address	Desired	
f. Phone number	Recommended	
g. Name of insurance company or pharmacy benefit manager who handles the drug benefit		
• Health Plan ID number	Desired	
• Benefit details	Desired	
• Co-pay	Desired	
h. Date ordered	Recommended	
• Prescriber information		
a. The prescriber's name	Recommended	
b. The prescriber's identification	Recommended	
• DEA number	Desired	required by state law for some prescriptions
• State license number	Recommended	
• National Provider ID or other unique provider identifier	Desired	When becomes available
• Health Plan ID number	Desired	
c. The prescriber's address	Recommended	
d. The prescriber's phone number	Recommended	
e. The prescriber's agent ordering the prescription	Recommended	

Electronic Prescribing Component List (Table 1 Continued)

Data elements		***Notes***
• Pharmacy information (if transmitted electronically)		
a. Pharmacy		
• Name	Recommended	
• Address	Desired	Electronic or mailing address if applicable
• Phone	Recommended	
• Identifier numbers (Pharmacy ID, etc.)	Desired	
b. Pharmacist		These items are identified at dispensing time
• Name	Recommended	
• Identifier numbers (Health Plan, etc.)	Desired	Required for certain claims
• Other info		
a. Allergies/intolerance/sensitivities	Recommended	
b. Reaction (for above)	Desired	
c. Current medications	Desired	
d. Previous medications	Desired	
e. Height/weight	Desired	
• Prescription		
a. Medication name (Generic)	Recommended	
b. Medication name (Trade)	Recommended	if applicable
c. Dose *(frequency/timing, duration, strength, form))*	Recommended	
d. Quantity dispensed	Recommended	
e. Directions ("sig"*)	Recommended	
f. Clinician signature	Recommended	
g. Dispense As Written (DAW) or substitution allowed	Recommended	
h. Number of refills authorized	Recommended	
Instructions to patient	Recommended	
Notes for clinician or pharmacist;	Desired	
PRN field	Desired	

* "Sig" refers to the patient directions, e.g., "one tablet by mouth three times a day."

Electronic Prescribing Component List (Table 1 Continued)

Data elements		***Notes***
Dictionaries and Knowledge Bases		
• Drug dictionary		Supplies information for selection of drugs, forms, dosages, etc. from lists during the prescription process
a. Drug, strengths/forms, dosage, ingredients	Recommended	
b. Typical doses and frequencies	Recommended	
c. Brand-generic cross-reference	Desired	
d. Drug allergy/sensitivity cross-reaction tables	Recommended	
e. Drug-drug interaction tables	Recommended	
f. Drug-condition contraindication tables	Desired	
g. Drug-lab interaction tables	Desired	
h. Lab parameters to monitor	Desired	
i. Over The Counter (OTC) medication information	Desired	
j. Herbal / alternative medication information	Desired	
• Drug reference information		
a. Patient education materials	Desired	
b. Clinician reference	Desired	
• Formulary Information		
a. Health plan (and employer group)	Recommended	
For each drug:		
b. On/off formulary status	Recommended	
c. Cost to patient/co-pay	Desired	
d. Prior authorization requirements by health plan	Desired	
e. Step-therapy requirements and other modifiers by health plan	Desired	
f. Quantity limit and other limitations by health plan	Desired	
g. Preferred alternatives (by class or indication)	Recommended	

Electronic Prescribing Component List (Table 1 Continued)

Data elements		***Notes***
• Clinical decision support rules base	Desired	*(see "Clinical Decision Support" section for discussion)*
• Other functions		
a. Patient compliance history	Desired	
b. Reports	Desired	Ability to query most commonly used medications, etc., for clinician self-reference
c. Favorites list	Desired	Favorite or most common prescriptions per clinician (to increase speed of prescribing)

Usability for the Prescriber

Overview

Successful adoption of an electronic prescribing system depends upon the ease and speed with which the clinician can use it, as much as (or even more than) the value that it provides for quality, safety, and cost. In this part of the process, usability specifically refers to the ease with which the clinician can identify the patient, enter and retrieve medication data and actually write the electronic prescription. It is affected by a number of factors including how well the system supports the specific workflow present within a clinician's office, and the specific features that the system provides to improve speed and efficiency.

Electronic prescribing systems use a variety of devices and methods, among the most popular being handheld devices, PDA's, tablet computers, and desktop computers. System infrastructure may be based entirely on the device, on a server located in the local environment, or remotely through an application service provider (ASP) environment. Each of these technologies brings its own benefits and challenges to the electronic prescribing process.

Creating and managing prescriptions electronically in the clinician's office involves several main steps, as illustrated in Figure 5. By looking at each of these steps, many specific features, concerns, and needs can be analyzed that are important to the optimal design of electronic prescribing systems. For the purposes of this report, we have outlined certain expectations and considerations involving several of the steps.

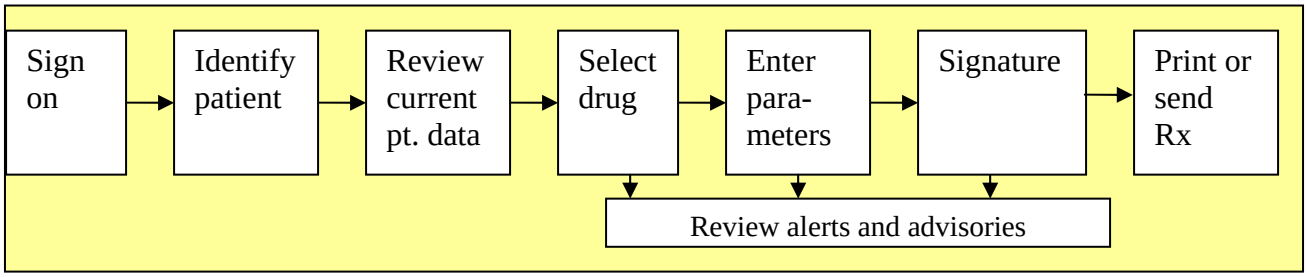

Figure 5: Process for Creating and Managing a Prescription Electronically

Signing On

Issues with signing on to the system are not unique to electronic prescribing compared to other electronic health information technologies. These issues are primarily concerned with security versus convenience. A user of the system (clinician, staff, etc.) signs in by performing some sort of *authentication* to prove his or her identity. Typical authentication is by username and password, although other technologies such as random-number cards (SecureID™), digital certificates, or fingerprint readers are used as well. Once authenticated, the system should know the user's role and type of *authorization* to use the prescribing system. As described below, different types of clinicians may have different legal permissions to enter, review, or modify prescriptions.

Identifying the Patient

In order for the electronic prescribing process to begin, the clinician needs to identify the patient within the electronic prescribing system. Clear and seamless communication between patient registration data, clinical records, and the actual electronic prescribing device are critical to this process. There are a number of elements key to successful identification of the patient:

- Ideally, patient demographic information should only need to be entered once (or not at all if provided by an electronic interface) at the clinician office. Some of the best examples include a master patient index that links administrative and clinical systems in the clinician office.

- Effective methods to update and transmit changes in demographic information, especially insurance and patient contact information, should be present. This may require query capabilities with external organizations, particularly health insurance company databases.

- Patient identification information should include information about the patient's health insurance coverage and drug benefit; for example:
    - Name of insurance company or PBM which handles the drug benefit;
    - Link to correct formulary for the patient;
    - Patient-specific benefit information.

- The electronic prescribing system should offer different ways to list patients. Some effective methods in current practice include locating the patients by:
    - Clinician's daily schedule;
    - Patient's name;
    - Clinician's overall panel of patients.

- Systems should have methods for dealing with potential mismatches or similar names. Effective methods for this currently include:
    - Use of a Soundex system or probabilistic matching which does not require the system to identify an exact match on a full name;
    - Mapping alternative representations of patient names (or aliases) to the same person. This is useful when calls are received from patients or pharmacies, and when a patient commonly goes by something other than his or her full legal name.

- Patient registration information should be smoothly updated and coordinated across multiple information systems (e.g., practice management system, electronic prescribing system, EMR system). Note: While this may be an implementation issue, it is important early on that a practice determine (1) who can update patient information, and (2) whether the changes can be made on any information system with an update to the master patient index or whether the master patient index should be the only updated source.

- To provide for patient privacy and to also satisfy HIPAA privacy regulations, a patient's data should only be viewed by someone with documented need to know that data for clinical or billing purposes. This implies that a documented *relationship* should have been established between the practice and/or clinician and the patient. Relationships can be created in the booking-scheduling-registration process, or they can be automatically created from other information, e.g., the existence of a prior visit, or the patient's selection of the clinician as primary care provider. Where a relationship is not established in advance, the system may need to block access. In practical use, under certain circumstances the policy may allow the user to gain access immediately by documenting the immediate need-to-know right on the screen (known as a *challenge* or a *break-the-glass* access). Where this is allowed, this access should be recorded in an audit trail and analyzed frequently for possible violations.

- Current health plan information should be available at all times, and patient-specific formulary information should be updated and accurate.

Loading and Reviewing Patient Active and Archival Medication Data

To streamline and ensure appropriate prescriptions, the patient's current and past medication data should be readily available to the clinician prior to entering new prescriptions. This information must include medications from all the various pharmacies and clinicians the patient has visited, which has been compared and combined into a single accurate list of active medications. In addition, the system needs to be able to record and share information when a medication is discontinued. Electronic prescribing systems need to capture electronic patient medication history and updates from a variety of sources, including:

- Office clinical systems.

- Prescriptions written by other clinicians, which could be provided by PBM's, pharmacies or health insurance claims databases.

- Pharmacies, to the extent a patient indicates that a specific pharmacy is the primary or exclusive resource for filling certain prescriptions.

- Hospital clinical systems, for inpatient medication histories.

- Self-reported data from patients, which could also include information on over-the-counter drugs, herbal remedies, vitamins, etc. Self-reported data could come through healthcare websites, a computer in the clinician's waiting room and phone-driven interactive voice response (IVR) systems.

Currently, electronic prescribing systems offer a variety of methods to capture patient medication data, other than actual prescription entry. Some examples:

- A web-based portal, as part of the patient's personal health record, that allows a patient to self-verify active medicines.

- A mechanism for a patient to send a message to the clinician containing corrections and changes.

- A mechanism to capture patient medication updates based on aggregated pharmacy and payer transactions:

    - A mechanism for a clinician to easily update and document changes in an active medication list without actually generating new prescriptions;
    - A mechanism for updating allergy and drug intolerance lists whenever a drug is discontinued.

In addition, there are several other factors which can influence the efficient use of medication history, including:

- Flags/codes can be used to identify different sources of data listed above and authentication of sources.

- In some circumstances, HIPAA-compliant consent is needed from patients or acceptable privacy notices for clinicians to send and receive information from other providers/trading partners, in order to view prescriptions written by other clinicians.

- Methods for a clinician to quickly verify active drugs with the patient, update the active medication list, and possibly add notes/flags about why a drug has been discontinued.

- Information about current and historical medication problems which should be available to clinicians, i.e., failed treatments or prior adverse reactions or intolerance to certain drugs separate from allergies.

Initial Bulk Load of Medication Data

For many clinicians, the ability to transfer the active medication list for *all* of their current patients, as a single large transfer, when they first install the electronic prescribing system is a critical factor in adoption. In many cases, this information exists in the front cover of office paper charts, in other systems that are being replaced, or in claims information known to the patient's health plan. There are several possible ways to effect a bulk initial load of medications:

- Manual abstraction of all charts in a single effort.

- Administrative or clinical staff updating the medications each day for the next day's patients, until nearly all the patient records have been touched.

- Initial electronic bulk download from payer information (subject to privacy concerns as noted above).

What Can We Do to Facilitate Data Retrieval?

- *Support providing medication history through payers, pharmacies, and other sources:* Systems which provide this information in a secure, efficient, structured, and confidential manner should be supported.

- *Allow sharing of patient prescription information by multiple clinicians and multiple pharmacies:* Allow, with appropriate patient consent, insurers, pharmacies and PBM's to share medication lists, allergy and medication intolerance information from any particular clinician or pharmacy with all other clinicians actively providing treatment for that patient.

- *Promote communication standards* to provide clear and seamless communication between patient registration data, clinical record, and electronic prescribing devices. Develop networks and standards for communicating medication information and a model for transactions.

- *Promote data standards* for medication history. These standards, discussed further in the "Vocabularies and Standards" section, need to be further developed and supported in the industry.

- *Promote patient-based web portals* or similar methods, using clinical messaging systems to communicate medication information between the patient, practice staff, pharmacy, and other participants.

Selecting the Drug, Entering Parameters, Signing

Many of the steps in Figure 5 correspond to the actual work of reviewing the medical history, entering, and editing a prescription. Many specific tasks fall within this process; electronic prescribing systems should allow clinicians to perform a number of functions:

1) Work with an existing medication

- View details of a medication.

- Discontinue or remove a medication.

- Change dose, etc., for a medication.

- Renew one or more medications.

2) Prescribe or add new medication by:

- Choosing a medication from quick choices/favorites

    - By name (generic or trade);

- By indication;
- By formulary.

- Displaying search results of drugs with prefilled, known, favorite or standard dosing
- Selecting drug from the results
- Reviewing warnings
- Entering the sig and other parameters
- Automatically populating and updating favorites list of drugs with prefilled known dosing based on frequency of utilization by clinician

3) Complete the prescription

- Sign one item
- Sign multiple items
- Cosign items created by ancillary staff, residents or others

4) Output prescriptions

- Choose print, fax, transmit options in real-time or batch mode
- Print formats and prescription information, conforming to state regulations
- Handle restrictions on certain medications (e.g., class II)

5) Other functions

- Enter/view/delete current allergies or intolerances
- Enter pre-existing medications
- Recognize limited prescribing authorization for some clinicians (e.g., mid-level clinicians in some states cannot sign class II prescriptions)
- Cosign prescriptions written by such persons
- Other 'prescriptions,' e.g., durable equipment, syringes

Research and best practice experiences have suggested that electronic prescribing systems can successfully increase the efficiency of the prescription entry and/or editing process when:

- Minimal key strokes or clicks are needed to create a prescription.
- The drug dictionary (from which medications and doses are selected) is tailored for optimal clinician use. Some databases may be too detailed or have too much information for practical use at the point of care (see Standards and Vocabulary

section). Applications that require specifying drugs at the NDC-code level, for example, are likely to be difficult for most clinicians. In general, clinicians using an electronic prescribing system should be able to enter drug names and prescribing information using the same level of specificity and detail that they currently utilize when hand-writing a prescription.

- A Soundex* or similar matching algorithm is used to look up drugs even when spelling is incorrect.

- Common abbreviations and synonyms are mapped to drugs: e.g., HCTZ, to simplify typing.

- The amount of detail that must be entered about the prescription is similar to what is customary in the paper-prescribing world; requests for new types of data and fields that make the prescriber's work harder are avoided.

- Formulary on/off status is displayed during the drug selection or search process.

- Applications pre-populate data fields automatically when answers are obvious (e.g., drug strength/form when only one exists).

- Complex but common dosing, such as prednisone tapers, alternate-day dosing, etc., is supported in an efficient, easy-to-use manner. For the major unusual doses (taper, titrate, alternate-day, variable-dose, sliding scale), special templates or on-screen forms may be needed.

- Clinical decision support warnings advise but do not force the clinician to take a particular course of action.

- Discontinuing, renewing, and modifying a medication is simple and straightforward.

- Renewals of multiple medications can be done in a single, rapid operation.

- It takes less time to create two or more electronic prescriptions than to hand-write two or more paper prescriptions.

- It is easy to acquire the patient's current medication list, even when a patient uses multiple pharmacies or when a patient uses a variety of health plans.

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* The Soundex algorithm is a very popular phonetic matching algorithm, based on consonant sounds, that is designed to help find names that are misspelled in common ways.

Use of Different Devices in Multiple Environments

A variety of user-interface devices are available with current electronic prescribing systems. In the marketplace, these devices provide different modes for data input, display and communication.

Clinicians have a wide range of choice of devices, including:

- Desktop computer.
- PDA (wireless access, cradle synchronization, or hybrid).
- Tablet or notebook computer with wireless access.
- Phone – office and cellular.
- Pen and prescription pad as backup.

Because devices are changing rapidly, it is difficult to identify ideal technology and usability considerations for each type. When selecting a device, practices should consider how their clinicians interact with patients, e.g., at a single desk or exam room, in multiple exam rooms or multiple offices, on the phone, while on call, during a home visit or hospital rounds. The more mobile a clinician is, the more likely that a portable device is going to be more workflow-friendly – in which case, other technical considerations must be taken into account.

Clinicians have different preferences and willingness to use the range of devices available. Devices should enhance the clinician workflow and provide for:

- Portable versus fixed device options, depending on practice setup and available space. The clinician should be able to prescribe wherever it is convenient and efficient. This may call for increased portability, usually through wireless connectivity.
- Simplified, rapid data entry and display, customized to the user's preference and optimized for the device (e.g., auto filling, drop down boxes, Soundex search). These features are especially important for small devices such as PDA's, but are desirable for all devices.
- Ability to easily and rapidly synchronize the device with other electronic systems/programs used in the office. Some devices will retain some data directly on the device and periodically synchronize with the main database, while others rely on a constant wired or wireless network connection. The former option allows more freedom of movement (the clinician can still work outside the wireless network boundaries) but may pose a security risk if the device is lost or damaged.
- Ability to communicate with printers, communication services, common databases and knowledge bases, and remote information services.

- Combined modes of data entry (e.g., allow for combination of voice, typing, clicking on drop down boxes, etc.). Voice recognition continues to be attractive because of its high bandwidth and convenience; however, voice recognition software still has limitations and can cause potential safety problems if the wrong drug prescribing information is entered.

Currently, device options are lacking in some practical settings; clinicians don't have access to devices optimized to their workflow, and the design of many systems, from desktop to PDA and beyond, does not take into account appropriate user interface considerations particular to the device. The result is that, for those settings, electronic prescribing can be unnecessarily awkward or cumbersome.

What Can We Do to Ensure Development And Deployment of Appropriate Devices?

- The industry should continue to compare and evaluate devices by exploring best methods for:
    - Data entry and display using different modes or combination of modes—typing, clicking and tapping, handwriting and voice recognition, character recognizers, etc.
    - Data entry and display using different devices
    - Issues about portability, security, synchronization of data, storage, and size of screen display.
- Optimize devices for viewing and entering information.
- Ensure security by providing and forcing secure networks for wireless communication, secure devices so that sensitive data cannot be explored by unauthorized persons, and strong authentication techniques such as biometric readers and random number (e.g., SecureID™) cards.

Workflow within the Office

An electronic prescribing system that easily adapts to the workflow of *all* appropriate staff in the practice is critical to adoption. Once the prescribing clinician has written or edited a prescription, various other tasks must be performed to complete the work. Workflow that needs to be considered includes:

- Output of a prescription (printing, delivering, communicating the prescription).
- Renewing a prescription (all of the above, plus handling requests from patients and pharmacies).
- Transmitting a prescription to pharmacy by printing, faxing, or direct electronic transmission.

- Entering and editing a new prescription (which must later be cosigned by a physician or other senior clinician).

Some considerations for optimal design include:

- The office workflow should have mechanisms for responding to a patient's or a pharmacy's request for renewals by phone, direct system linkages, secure e-mail, or Web-based secure messaging.
    - When the office staff receives requests from patients for renewals, the system should make it easy to check information against the clinical record, and to route this information electronically to the clinician for review and approval;
    - The system should have efficient workflow for processing and documenting pharmacy callbacks;
    - Secure messaging technologies with standard messaging conventions should be included for bi-directional communication between the pharmacy and the practice.
- Although true end-to-end practice-pharmacy connectivity is an important goal, clinician offices should always have alternative methods available, including fax to pharmacy, local printing of prescriptions, and handwritten prescriptions. Some pharmacies are not yet equipped for electronic communication or may have intermittent downtime; some patients, in the short term, may prefer to have a printed prescription in hand.

- Electronic prescribing programs should include a master list of relevant local and mail order pharmacies, and a means to indicate those pharmacies that are frequently used or preferred by the patient (this patient information could also be captured from medication history information). This information should be updatable based on input from the clinician, the patient or the pharmacy.

Summary – Usability for the Prescriber

- Successful adoption depends upon the ease and speed with which the clinicians can learn and use the system in their medical practice.

- The primary prescribing functions are: identify a patient, capture and review existing medications, do renewals, edit or discontinue existing medications, generate new prescriptions, sign or cosign, and generate prescription output. In each of these areas, systems need to make the most common operations very fast, and still make every needed operation possible.

- Key strategies for usability include: minimal key strokes, quick patient lists, connection with current patient management systems, multi-renew, favorite

prescriptions list, easy medication search (including trade names), pre-filled default fields, ability to do complex sigs through templates (like sliding scales, tapers, etc.), ability to order supplies like syringes, incorporating alternative and non-prescribed medications in the medication list, clinical decision support warnings that are advised but not forced, inclusion of reasons for prescribing (match to problem list or diagnosis), easy signing and cosigning, easy pharmacy selection, easy and most efficient output, and ability to handle callbacks/renewal requests (from patient or pharmacy).

- Usability is affected by a number of factors, including how well the system supports the specific workflow present within a clinician's office. Consider the role of everyone in the practice, and the various tasks they have to do in completing a prescription.

- A variety of user-interface devices are available and different device types may be best for different situations. The technology is changing rapidly and devices should be chosen by considering how clinicians in the practice interact with patients to allow them to work wherever it is most convenient. Devices need to be efficient and secure and also allow rapid synchronization to other electronic systems in the office, as well as communication with printers and other devices or networks.

- Specific recommendations include support for providing medication history through payers, pharmacies, and other sources, and support to allow sharing of patient prescription information by multiple clinicians and multiple pharmacies and through patient-based web portals.

- Promote communication and data standards. (Some persistent vocabulary and standards issues have to be resolved for usability to be improved to the next level. See standards section.)

Clinical Decision Support

Overview

There is broad consensus on the need and potential for electronic prescribing to improve the safety and quality of medication management in ambulatory care. While there remains a long way to go towards achieving this vision, much progress has been quietly made, particularly in large practices using electronic medical records systems that include electronic prescribing modules.

Yet, while thousands of clinicians are already creating prescriptions using electronic prescribing applications, no guidelines or standards exist regarding the specific nature and degree of clinical decision support that such applications should include. Moreover, little is known about the risks of providing clinicians with partial or incomplete clinical decision support.

Developing recommendations for clinical decision support that should be included in electronic prescribing applications is of more than academic interest. These applications are subject to minimal oversight and regulation, and buyers must beware when they are deciding which one is right for their practices.

Clinical decision support feature set recommendations could help provide guidance for application developers as well as buyers. Moreover, as accreditation organizations consider standards for electronic prescribing in the evaluation of provider organizations, and as new reimbursement-based incentives for electronic prescribing work their way into federal policy, a better definition of what constitutes sufficient clinical decision support within an electronic prescribing application is needed.

Types of Clinical Decision Support

Although no formal standards exist, there are several ways of classifying clinical decision support interventions[32] [33]based on when in the process the logic is executed, how it is delivered, and the global impact it has on the process. A conceptual framework for evaluating outpatient electronic prescribing applications based on functional capabilities was recently proposed by Bell, an important step towards understanding variable clinical decision support in this domain. A full discussion of these matters is beyond the scope of the present document; interested readers are referred to more detailed guides for practical classification, planning, and implementation.[34] However, for discussions of adoption and usability and specifically for electronic prescribing, one simple breakdown into the following types may be helpful:

- **Proactive** clinical decision support refers to logic that is executed at the start of the prescribing process, intended to guide the user's initial choices based on clinical criteria. Examples may include order-by-indication displays, particularly if they are automatically based on the patient's problem list, or condition-specific or practice-specific order sets and templates that suggest certain prescriptions based on a general

patient condition. Proactive interventions can have the largest impact on the prescription, since they essentially suggest a plan before the clinician may have fully created his or her own; for this reason, they can be highly valuable but must also be carefully controlled and monitored.

- **Reactive** clinical decision support refers to logic that is executed immediately after a certain user action; these are the interventions that are the most familiar to clinicians. When the clinician first selects a medication, a reactive intervention may point out a drug-allergy conflict; when the clinician enters the rest of the prescription parameters, another reactive intervention may respond with a concern about an excessive dosage.

- **Informational** interventions do not specifically call for a change in the clinician's actions. Rather, they provide information. These information displays could appear in response to a direct request (as in a standalone drug information database on a PDA); or they could be offered as a targeted list in the middle of the prescribing process (offering patient education materials or drug-reference information specific to the drug being prescribed); or they could come up automatically without a user request (as in a drug utilization advisory or an advisory message from an evidence-based guideline). A key value of informational interventions is that they make it convenient for the clinician to ask questions; without this convenience, a clinician may decide not to bother consulting a reference at all, even if unsure of a critical point.

Another key distinction is between **active** and **passive** clinical decision support. Simply put, active interventions are checked silently as the prescribing process proceeds, and presented automatically as soon as the current data indicates that they are needed. Almost all reactive interventions are active; some proactive and informational interventions are active as well. Passive clinical decision support must be requested – essentially, the user requests to order by a specific class (proactive), or the user decides to go to an electronic drug reference to find an answer (informational). Naturally, active clinical decision support is both more powerful because it serves as a forcing function; it is also more intrusive, which could potentially increase clinician resistance to adoption if not done carefully.

Usability and Design Issues Surrounding Clinical Decision Support

Achieving consensus on the best properties and best clinical decision support interventions is no easy undertaking. Clinical decision support is desirable in general, but must be tempered by practicality and usability considerations. Some key issues identified include:

- *Human Factors:* Clinical decision support delivered via an electronic prescribing application represents a highly complex interaction between a user, the application, patient data, and an extensive drug knowledge base. Adequate testing is important to ensure that the application code, drug knowledge base and patient data all work properly together in a broad range of clinical scenarios. Even when these components

work together according to specification, *avoidable* user error can still occur. Thorough pre-production usability testing can uncover unexpected sources of user confusion and error, but this practice remains the exception rather than the rule. As a general rule, the presentation of any reactive (responding to a prescription just entered) clinical decision support intervention or alert must include four features:

- the action (the specific prescription) that generated the alert;
- in brief, the nature of the alert or warning;
- sufficient information for the clinician to fully understand the reason for the alert and the pros and cons of the various alternative actions;
- Buttons or other controls that let the clinician select any of those alternative actions with one or two clicks.

- *Specificity:* Any individual clinical decision support feature – such as drug-drug interaction checking – can overwhelm users if the specificity is too low; that is, if there are many warnings and only a few are of true interest or concern to the clinician. This problem can potentially be compounded as more error-checking features are added. Too many intrusive warnings may produce the undesired result of having a clinician ignore the relevant warnings along with the irrelevant ones. This issue of thoroughness of error checking versus usability often plays itself out in the form of warning filters. For instance, most commercial drug data sets assign at least three severity levels to drug-drug interactions. This makes it possible for vendors to build filtering capabilities into their applications, so that users can designate that they only want to see all warnings, only the most severe warnings, or none at all. While this tends to be a popular feature among users, the safety implications of allowing users to disable warnings are of some concern. An attractive middle ground taken by some products is to show all warnings, but at a different level of intrusiveness to the prescribing process: severe warnings may appear as a full-screen announcement that must be acknowledged before the clinician can continue, while moderate or minor warnings may appear only as single-line notations or icons that the clinician can examine if desired, but which normally do not slow down the entry process.

- *Knowledge base reliability:* Besides the actual features themselves, there are many factors that bear on the quality and reliability of clinical decision support delivered by any specific electronic prescribing application. For instance, how accurate and reliable is the drug knowledge data source? How often is it updated? Is it complete? Will it lull the clinician into a false sense of security and lowered personal vigilance when, in fact, important events that should generate an alert are missed by the knowledge base? While popular drug-allergy and drug-drug interaction knowledge bases are highly reliable, in other areas the knowledge set may not yet be complete. For example, formulary information sources may not cover the specific plan or subgroup that a patient is on; some drug monitoring knowledge bases may be incomplete at the present time; order-by-indication or order-by-drug-class databases may be inconsistent from each other due to a lack of standards for the names and classification of ordering indications. As with all knowledge bases, editorial policies and practices need to ensure that the information presented is independent, clearly sourced, and scientifically based.

- *Availability of Supporting Patient Data*: Practicality is a multidimensional problem. Some error checking features may not be broadly feasible due to the lack of availability of supporting patient data. This is particularly true for laboratory data, which is needed for drug monitoring and dosing guidance, e.g., for warfarin. Another example of patient data that may not be available to drive clinical decision support is a list of active problems and/or diagnoses using a coded vocabulary. This is necessary for drug-condition checking (e.g., beta-blockers can potentially worsen certain conditions, such as asthma, depression, or peripheral vascular disease). Unless these conditions are captured in structured, coded form during the prescribing process (for standalone prescribing applications) or a problem list is otherwise available (in an electronic medical record), it is difficult to do drug-condition checking even though knowledge bases that support this feature are readily available commercially.

- Even if sufficient commercial drug data and patient demographic, medication and problem list data is available, some interventions can still be difficult to implement. Dose calculation – which often depends on age, weight, renal function, and indication – is one example.

- *Vendor Procedures:* When clinical decision support glitches occur in a production setting, vendors should have clear procedures in place for assessing the severity of the issue and helping customers decide whether the particular clinical decision support feature in question should be disabled pending a fix. Strong clinical expertise at the vendor level can be invaluable when making complex judgments in such situations.

Relevant Literature and Contemporary Projects

The literature provides surprisingly little insight regarding the relative incidence of various types of prescribing errors in ambulatory care, and their amenability to prevention by an electronic prescribing application. Nonetheless, studies are beginning to appear that document high rates of drug complications in ambulatory care, and that show that many of these complications – or adverse drug events – would potentially be preventable by clinical decision support. For instance, Gandhi et. al. found that 18 percent of 2,248 patients surveyed at eleven Boston-area clinics had suffered drug complications. Of those patients who sought medical attention for their drug complication, 13 percent had a prior documented reaction to the same drug.[35] An electronic prescribing application with clinical decision support including alerts related to prior adverse reaction history would presumably prevent this type of error. A subsequent study by the Gandhi group at four clinics (two hospital-based and two community-based) found that 25 percent of 662 patients suffered an adverse drug event. Some 11 percent of these events were deemed preventable, and another 28 percent ameliorable. A total of 63 percent of the events in the ameliorable category were attributed to physician failure to respond to medication-related symptoms reported by patients, while the remaining 37 percent were attributable to the patient failing to inform the physician of the symptoms in the first place. While further research is clearly needed, this latter study suggests that

decision support within an electronic prescribing application should be targeted towards medication side effect recognition and alerting.

Schiff and Rucker came close to recommending clinical decision support characteristics of electronic prescribing applications. According to these authors, an electronic prescribing application should be driven by three databases: medication history, drug knowledge, and other patient data (lab, allergies). While many different types of clinical decision support related to electronic prescribing are mentioned, they stop short of ranking these in priority order.

Ranking the Value of Clinical Decision Support Functionality

As a part of this report, a small group of industry experts ranked the value of different clinical decision support functions. These rankings consider not only desirability from a patient safety perspective, but also technical feasibility and application usability constraints. The emphasis, however, is on desirability: the group members did not want to create a vision for electronic prescribing clinical decision that was overly tempered by today's constraints, since many of those constraints could disappear in coming years.

Unless otherwise specified, items listed should be considered to mean active clinical decision, rather than passive.

Specific functions were rated by each member on a scale of 1 to 9. A score of 1 represents a function that is "absolutely necessary," a score of 5 means "possibly necessary," and a score of 9 corresponds to "definitely *not* necessary." Table shows the average rankings assigned to each function.

It is important to note that the group did not evaluate all possible clinical decision support functions. Therefore, the exclusion of any specific clinical decision support function in this ranking process should not be negatively interpreted.

		Clinical Decision Support Functions	Average Ranking
1	General Contraindication Clinical Decision Support		
	a.	**allergy checking**	**1.0**
	b.	**drug-drug interaction checking**	**1.0**
	c.	drug-condition contraindication checking	**3.0**
	d.	duplicate therapy checking	**2.8**
	e.	adverse effects: symptom monitoring	**3.8**
	f.	**user-defined alerts**	**2.5**
2	Dosing Decision Support		
	a.	**maximum dose checking**	**2.2**
	b.	minimum dose checking	**4.3**
	c.	dose calculation: adult	**4.3**
	d.	dose calculation: pediatric	**2.3**
	e.	dose calculation: chemotherapy	**3.7**
	f.	common sigs	**3.0**
	g.	**structured sigs**	**2.0**
3	Laboratory Clinical Decision Support		
	a.	laboratory results lookup: passive (data is available)	**3.0**
	b.	active display of laboratory results pertinent to drug	**3.5**
	c.	placeholders for entry of Rx-related lab values	**4.7**
	d.	drug-lab result interaction checking	**3.5**
	e.	show laboratory parameters to be monitored	**3.8**
4	Indication-based Clinical Decision Support		
	a.	**drug-to-indication linkages (check if indications are present for current prescription)**	**2.3**
	b.	**indication-to-drug linkages (order by indication)**	**2.2**
	c.	supports creation of multi-drug regimens	**3.2**
	d.	indication-to-regimen linkages	**3.5**
	e.	**supports (and/or integrated with) active problem list**	**2.2**
	f.	complex protocol integration	**4.2**
5	Online Reference/ Knowledge Support		
	a.	**indications, contraindications, dosing, drug interactions, etc.**	**1.3**
	b.	linkages to internal or external treatment guidelines	**3.5**
6	Misc. Data, Integration & Communication Issues		
	a.	**monthly (at least) updates of drug dictionary/ knowledge base**	**1.3**
	b.	interface with reference lab(s)	**3.5**
	c.	filled-prescription history	**3.5**
	d.	notify pharmacy of overridden alert	**3.0**

Table 2: Clinical Decision Support Intervention Rankings. More detailed explanations of each feature are given in Appendix C. Items with a score of 2.5 or less are shown in boldface.

		Clinical Decision Support Functions	Average Ranking
7	Formulary and Benefits		
	a.	**formulary status (on versus off)**	**2.2**
	b.	**preferred status**	**2.3**
	c.	**pointers to on-formulary/preferred drugs**	**2.2**
	d.	prior authorization management	**3.2**
	e.	cost to patient (co-pay)	**3.2**
	f.	pharmacies in network	**3.8**

Table 3. Clinical Decision Support Intervention Rankings. More detailed explanations of each feature are given in Appendix C. Items with a score of 2.5 or less are shown in boldface.

Clinical Decision Support Functions	Average Ranking	Function # (see Table 3.2)
allergy checking	**1.0**	**1a**
drug-drug interaction checking	**1.0**	**1b**
reference (indications, contraindications, dosing, etc.)	**1.3**	**5a**
monthly (at least) updates of drug knowledge base	**1.3**	**6a**
structured sigs	**2.0**	**2g**
maximum dose checking	**2.2**	**2a**
indication-to-drug linkages	**2.2**	**4b**
supports (and/or integrated with) active problem list	**2.2**	**4e**
formulary status (on versus off)	**2.2**	**7a**
pointers to on-formulary/preferred drugs	**2.2**	**7c**
dose calculation: pediatric	**2.3**	**2d**
drug-to-indication linkages	**2.3**	**4a**
preferred status	**2.3**	**7b**
user-defined alerts	**2.5**	**1f**

Table 4. Highest Ranked Clinical Decision Support Interventions. Only the functions above with average ranking of 2.5 or better are included (1 represents "absolutely necessary"). Functions sorted in rank order.

Notes and Additional Recommendations

- There was strong consensus among group members that allergy and drug-drug interaction checking should absolutely be required for prescribing applications. Drug-condition contraindication checking was felt to be important as well, but slightly less so than allergy and drug-drug interaction checking. Moreover, while signal-to-noise ratio was a concern for any clinical decision support feature, there were particular concerns that drug-condition contraindication testing could introduce an unacceptable level of irrelevant warnings into clinician workflow.

- Many desirable clinical decision support features – such as drug-lab interaction checking or automated checking of monitoring parameters – require the higher stages of electronic prescribing (see Figure 1) with levels of patient data integration that may

not be practical in many clinical settings for some time to come (this is particularly true for standalone prescribing applications deployed in small practice settings). Efforts to assist in the implementation of systems and networks that can provide these types of information should be promoted on a regional, state and national level.

- Clinical decision support implementation should be sequenced. Short, non-controversial interventions like allergy checks are easy to use, quick to execute, and widely accepted. More complex protocols, indication guidance, required reasons for prescribing, and other more intrusive interventions can be harder to accept on the first day of a new system's implementation. Typically, difficult interventions are those that either suggest a change in the overall plan (as opposed to just "catching a mistake" or suggesting a recognized equivalent), or that require documentation that the clinician did not have to provide in the paper world (such as requiring a reason for ordering). If the simpler interventions are implemented first, the clinicians are likely to be more familiar and comfortable with both the system and the use of clinical decision support by the time the more controversial interventions are rolled out . [36]

- There is a need for a strategy to document the current clinical decision support characteristics of commercial prescribing applications, and monitor this on an ongoing basis. A conceptual framework for electronic prescribing application functionality, proposed recently by Bell, has actually been tested on commercial products, and could be useful in helping to solve this problem.

- More research is needed to: define tolerable sensitivity and specificity levels for potential error warnings in different circumstances; understand the safety impact of allowing users to selectively disable warnings; and to understand any potential harm related to partial, or incomplete, clinical decision support.[37] [38]

- In addition to a checklist of clinical decision support features, evaluators of prescribing applications should consider the source of the drug knowledge base and how frequently it is updated, as well as vendor procedures for quality assurance testing, usability testing, and crisis management.

- Consideration should be given to including within any incentives package a component designed specifically to reward higher levels of clinical decision support. In the emerging world of pay-for-performance initiatives, some attention to this has already been given in the different levels of payment available.

- Efforts need to be made to understand the impact of prescriber-level clinical decision support use on the decision support process that already occurs in the pharmacy. It remains unclear how roles will evolve to ensure safety while still gaining efficiencies in the prescribing decision process, but it will clearly involve a growing collaboration between the clinician and pharmacist.

Formulary Decision Support

Inclusion of formulary alerts in a clinical decision support section might appear arbitrary, since formulary alerts are often not regarded in the same context as pure clinically-driven alerts such as drug-drug interactions or allergies. Nonetheless, formulary considerations exert a strong influence over drug selection, and formulary decision support can be every bit as sophisticated as more traditional clinical decision support.

Formulary Management

Many electronic prescribing applications offer the ability to incorporate health plan formulary data into the application, allowing a user to easily determine the on- versus off-formulary status of a drug as a prescription is being created. The application should, ideally, also display on-formulary or preferred alternatives when an off-formulary or non-preferred drug is selected. There are two major problems that must be addressed in order to implement formulary capabilities: acquiring the formulary data itself and determining what formulary data applies to the particular patient being seen during a specific visit.

- *Acquiring formulary data:* Most clinician offices serve patients from dozens of health plans, each with its own prescription drug formulary. Even if an electronic prescribing application supported direct manual entry of formulary data into the application – and most electronic prescribing applications do not – it would be extremely difficult for a clinic to enter and maintain formulary data for a single health plan, much less dozens (each formulary usually consists of at least 400 drugs). Accordingly, electronic prescribing vendors who offer formulary capabilities usually acquire this data from a third party source, and update it regularly. In an increasing number of instances, an electronic prescribing vendor may acquire data directly from a health plan or a pharmacy benefit manager (PBM) which manages formulary for the health plan, but at present this remains the exception. Far more commonly, an electronic prescribing vendor will acquire data from multiple health plans and/or PBMs via a single consolidated data source. Recent collaborations among PBM's and connectivity providers have provided larger, more unified consolidated sources, strengthening the value of this type of access.

  Before purchasing an electronic prescribing application, a practice should examine its payer mix and determine which formulary data source will best suit its needs, and then determine which data sources its prospective application vendor supports (some electronic prescribing vendors can use more than one data source). While having 100 percent formulary data coverage may not be necessary, higher coverage increases the relevance of the electronic prescribing application to users and helps ensure adoption. A minimum relevance threshold of 70 percent formulary data coverage can be used as a benchmark, although this number is arbitrary.

- *Mapping the correct formulary data to the patient being seen:* Regardless of how consolidated formulary data is acquired, the electronic prescribing application needs some way to determine which subset of the broader formulary data set is applicable to

the particular patient being seen for a specific clinic encounter. The system vendor needs to work with the practice to map patients to both payers and individual prescription plans. Depending on the formulary data source and the prescribing system used, a manual mapping procedure may be necessary during the data setup phase of implementation, or mapping may occur without any manual setup requirement.

There are other formulary issues that should be considered. As with the drug knowledge base, formulary data should be updated regularly, regardless of the data source. Practices and provider groups that have their own formulary, or preferred drug list – independent of specific health plan formularies – should be familiar with the ability of an electronic prescribing application to handle local formularies. Formulary data may include relative cost information, which gives an electronic prescribing application the ability to index or display drug options in different cost categories. However, *actual* cost can usually not be determined until the drug is dispensed by the pharmacy. For patients with a prescription benefit, it may be possible for an electronic prescribing application to display required co-pay for a prescription, although this feature remains rare today. Lastly, there are often good clinical reasons for ignoring or overriding formulary recommendations, and electronic prescribing applications should make it easy for clinicians to exercise their own choices, and those of their patients, and perform formulary overrides (possibly with a field to document their reason). If prior authorization issues are relevant, the application should, at a minimum, provide information to help expedite the prior authorization process.

Summary – Clinical Decision Support

- Value: Clinical decision support has been shown to be of high value in the inpatient world; recent studies confirm high rates of adverse drug events in ambulatory care; many of these events are preventable or at least ameliorable by computerized clinical decision support. More research is needed to help electronic prescribing application designers target clinical decision support where it is most likely to have an impact.

- Design: Clinical decision support can be reactive, proactive, or informational; all clinical decision support interventions should have the four key elements described above. Clinical decision support represents a complex interaction between a user, an application, various sources of patient data, and a vast drug knowledge base. Usability is a critical factor in achieving widespread adoption; it is therefore particularly important to make interventions understandable, maintain a high specificity, and not overwhelm or fatigue the clinician. Vendor procedures related to design specifications, usability (e.g., human factors), testing, quality assurance, and problem resolution can affect the reliability of clinical decision support provided by an electronic prescribing application.

- Prioritization: A decision support feature ranking is provided as part of this report as a step in this direction. System vendors should consult this table when prioritizing their work; buyers of systems should consider it when deciding what to put in their RFP's and what to expect of their vendors.

- Clinical decision support implementation could be sequenced in a practice; usually, simpler and less controversial interventions such as allergy checks should be produced first, followed by more complex protocols and indication guidance interventions once users have become comfortable with the system.

- Workflow: Pharmacies already have clinical decision support processes in their own systems, which may overlap with those in the clinician's office. While this double-checking could actually be a benefit, and while many interventions are appropriately placed in one location or the other, the clinical decision support process should be viewed as a collaborative one.

- Classification and aggregate evaluation: Clinical decision support feature set classification and guidelines are needed to reduce variations in decision support across electronic prescribing applications. Moreover, more research is needed to better understand the risks of providing partial decision support, and to optimize the management of drug alerts, including determining the acceptable range of specificity and sensitivity for an intervention to be valuable.

- Formulary: Health plan drug formulary should be considered an important component of decision support, alongside more traditional forms of clinical decision support.

- A framework for evaluating electronic prescribing application functionality – including clinical decision support capabilities – is needed to facilitate further research and provide measurement and monitoring tools for emerging programs that intend to accredit electronic prescribing applications or manage reimbursement-based or other incentives programs. One such framework has recently been proposed.

Communication

Overview

The traditional, paper-based prescription delivery process includes communication of medication information among a multitude of stakeholders and systems (See Figure 6 below). The system is complex and includes several types of communications within a complex network, including:

- The clinician or office staff communicates prescription information to the pharmacy; in addition, pharmacies need to initiate communications with the clinician's office for callbacks, changes, and renewal requests.
- Clinician offices communicate with the patient's health plan or pharmacy benefit manager.
- Pharmacies communicate with the health plan.
- Patients communicate with the pharmacy, office and/or health plan.
- Clinician's offices may communicate directly with other clinician offices (usually occurs in large multi-specialty clinics or integrated health systems).

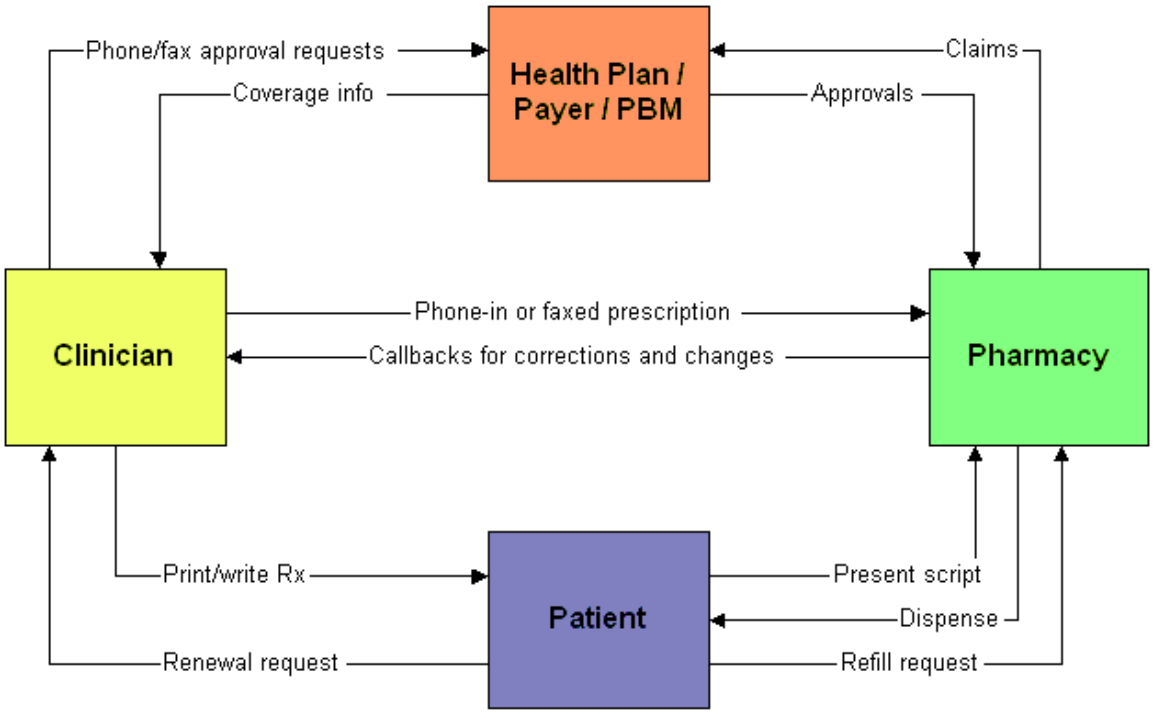

Figure 6: Present Connections for Paper-based Prescribing

The paper based prescribing process is inefficient, expensive and prone to errors. Large amounts of resources are spent just for callbacks from the pharmacy to the clinician

office for corrections or to ask for substitutions due to limitations in health plan medication benefits, etc. In addition, patient information often has errors or is outdated, and consumes resources as each entity must correct and update information independently. Many of these problems can be removed or greatly decreased when the connections are part of an electronic prescribing system. The following section compares various current methods for connecting the various participants in the prescribing chain, and indicates how electronic data interchange (EDI) and computer-to-computer communications processes can result in improved efficiency and decreased errors.

Current Methods of Communicating Medication Information

Currently, there are four primary methods for communicating medication information: through paper prescriptions, via phone, via fax, or electronically through computer-to-computer messages. All four methods are widely used today, and each brings different issues and challenges:

- *Paper* prescriptions are still the most widely used. Many clinicians rely on paper prescriptions because they are seemingly a simple and fast method. Issues with deciphering illegible handwriting continue to plague the medical profession and cause medical errors, giving rise to reactions such as recent legislation in Florida that mandates legible prescriptions. Use of paper prescriptions also brings up security issues, as paper prescriptions are relatively easy to forge and steal. Of course, medication information conveyed via a paper prescription is not automatically stored; it must be re-entered by hand in the pharmacy system, and is not recorded efficiently in the clinician's office. Paper itself is expensive to move and store.

- *Phone and voice mail* are commonly used for prescription renewals either by patients or by the clinician's office. A phone call from a patient requesting a prescription renewal is a major time consuming task in the medical office or pharmacy, and often involves several workers before it is complete. It is commonly used and requires little training, but causes frequent interruptions in the workday as the phone calls are handled in between other tasks. There are concerns surrounding the use of voice mail as well: for instance, there is no fail-safe mechanism to confirm that the message was properly received and interpreted. Security and confidentiality issues may also be of concern.

- *Facsimile (Fax)* is one of the most common methods of communicating prescription information to pharmacies. It is commonly available and familiar to the majority of clinicians. Sending information by fax requires minimal training, and is relatively inexpensive for clinician offices. Receiving paper faxes in the pharmacy, however, can result in surprisingly significant maintenance (paper, toner, labor) and management expenses. Issues with faxes include poor security, lack of guaranteed delivery, problems with illegible faxes that may result in medication errors, and potential for abuse through multiple transmissions.

- *Electronic data interchange* has the potential to be the most efficient and highest quality method, saving time for clinicians, practice staff, and pharmacists. The prescription process in the electronic world is outlined in Figure 7 below. The

number of pharmacies supporting EDI is increasing rapidly at this time. There are a number of advantages inherent in this method:

- Because of secure, guaranteed delivery and high legibility, these systems can reduce the number of phone calls from pharmacies to clinician offices, resulting in further time and cost savings for everyone involved;
- Direct transfer of information from the clinician's computer to the pharmacy's computer can reduce transcription errors as well as saving steps on both sides;
- Feedback from the pharmacy system – for example, concerning out-of-stock conditions, safety hazards known to the pharmacy system, and additional formulary information – can be communicated to the clinician almost instantaneously, greatly increasing convenience if the prescription needs to be changed;
- Health plans can participate in the exchange, sending benefit and eligibility information instantaneously to practices and pharmacies when needed;
- A patient's true medication regimen, possibly coming from several different clinicians, can potentially be kept unified and up-to-date through electronic interchange.

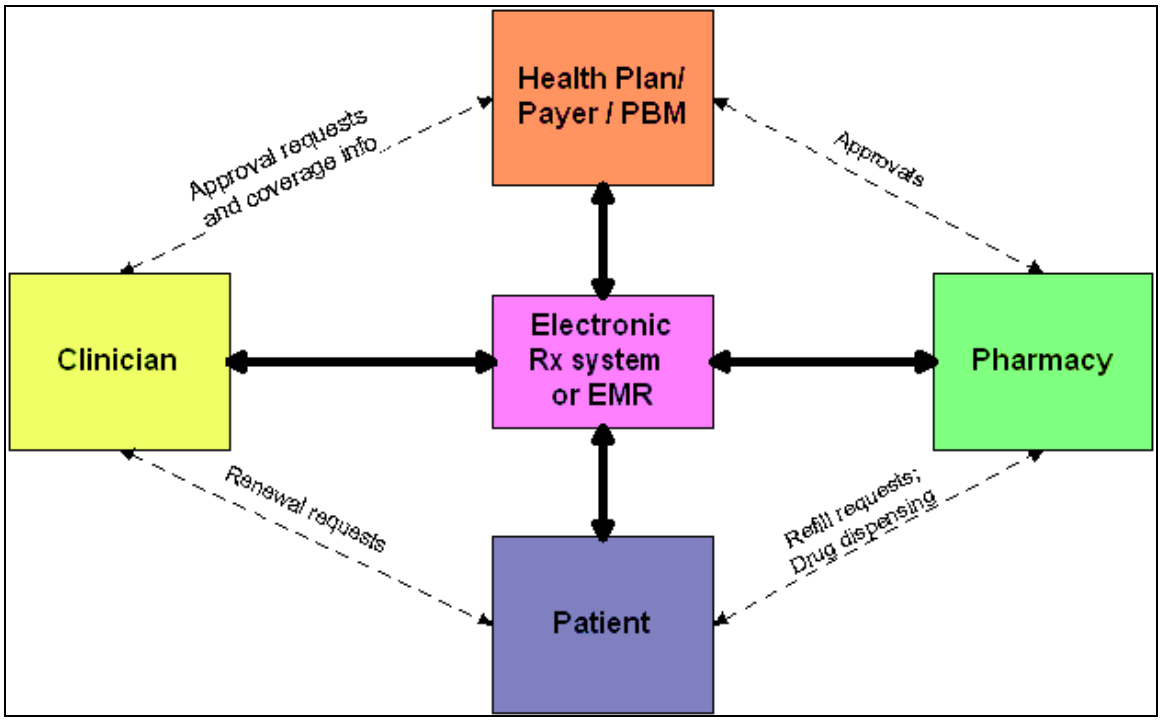

Figure 7 Connections for Electronic Prescribing Systems: Simple electronic prescribing systems include electronic communications between the electronic prescribing system and the clinician and pharmacy (fully electronic or via fax). Alternative communications are still required with the health plan and the patient, and usually occur by phone (dashed lines). In a fully integrated system, all of these communications can be done electronically.

Key Issues and Barriers

While there are significant advantages of electronic communication, there are a number of barriers to the adoption and use of this method. To ensure universal adoption it is important to recognize and work towards removal of barriers to success. Specifically, for clinicians and pharmacies that do have internal electronic prescribing/medication management systems, the following are some of the primary barriers to achieving complete, highly usable and valuable electronic interchange as part of those systems:

- *Clinician Office Connectivity.* Currently, electronic communication is not widespread in smaller practice offices. Some of this is due to the slower rate of adoption of electronic prescribing systems altogether in this type of practice; additionally, some practice offices, particularly those outside of metropolitan areas, do not currently have high-speed, always-on, broadband Internet connections, removing some of the efficiency and convenience benefits. Some offices have dedicated phone line connections to health plans, but these are usually reserved for billing purposes, and they are significantly more expensive than typical Internet connections. Even if dedicated phone connections were practical, a different line connection would be required for each entity that needs a connection to the office, unless central clearinghouse services become widely available.

- *Lack of Connections between Clinician Offices and Pharmacies.* Most offices have no direct electronic connectivity with pharmacies, although there are some efforts underway that may be changing this rapidly. At the time of this writing, a relatively small number of offices can transmit prescriptions fully electronically to pharmacies, either directly or through intermediaries. On the pharmacy side, an increasing number of pharmacies are equipped to receive the information they need to fill prescriptions, but there are still large markets where this is not the case. This is a critical-mass situation: if a significant number of pharmacies cannot handle electronic interchange, the clinician's office may not be willing to bother to use EDI even to those who do; similarly, if a significant number of clinicians in an area do not have these capabilities, pharmacies may not see the incentive to make this a regular part of their own capabilities and their own routine workflow.

  Several contemporary initiatives are trying to address these problems head-on. There are major organized efforts to provide standardized EDI capabilities to a large number of pharmacies. In some cases, there is also outreach from the pharmacies towards the clinicians, offering inexpensive connection services. The industry also features a number of transition brokers, who are trying to break through the critical-mass problem by accepting EDI communications from the clinicians and then sending them on to the pharmacy in whatever form (typically electronic or fax) the pharmacy can currently handle.

- *Lack of Connections between Offices and Health Plans.* Frequent information updates from health plans to office management systems could help ease the burdens of gathering information that now exist in many medical offices. In some cases there are plans underway to send benefit information updates nightly from the health plan through the electronic prescribing network to the practice management system. Seamless integration of all of these systems could significantly decrease the need for

office staff to sign in to multiple different software systems and/or make phone calls to the plan to get needed information. These connections could provide information on eligibility not only for office visits but for prescription coverage as well, along with detailed formulary information that would assist in prescription creation.

At this time, there are usually no direct connections between office information systems and health plans other than those for billing purposes. Because these connections are through direct lines and not through the Internet, these connections can be expensive and are not usually designed to handle any information other than billing functions. Connections occur only with billing software and are not designed to interface with electronic prescription software or electronic medical records systems. In order to allow for electronic prescribing, new software functions would have to be developed on both the office and plan systems. Some connections that bridge these systems have begun to occur via an ASP model.

As well as accounting for various health plans, EDI between clinicians, pharmacies, and health plans must also be able to account for patients who have no health plan or who must pay cash for some drugs.

- *Lack of Communications among Clinician Offices.* Currently, there is no established method for significant electronic communication between clinicians. Furthermore, proprietary considerations and privacy concerns make this exchange as much a sociological-political issue as a technical one. Therefore, clinicians are not aware of other prescriptions or medications that patients may be taking. In addition, there may be no easy way to discern that a patient is frequenting multiple clinician offices in order to receive multiple prescriptions inappropriately. Payers and PBMs have been addressing these issues by providing prescription-fill histories, although some of the same non-technical concerns persist.

- *Communication from Pharmacy to Health Plans Varies Greatly by Region.* Communication from the pharmacy to the health plan is typically channeled through PBMs. In some cases, the pharmacy communicates directly with the health plan, or uses an intermediary service. Present systems provide pharmacies with formulary, status, eligibility and payment information, while the health plans receive claims data. Where this connectivity has not yet been fully established or is not universal, these important data transactions can be delayed, or work may have to be done with incomplete information.

- *Communication by the patient with the pharmacy, office and/or health plan varies significantly by region.* There is significant variation regionally on how information is communicated to patients. Pharmacies sometimes feel they must update information from the patient (patient demographics, etc.) more than they should or want to do. There are significant losses in efficiency and error management when pharmacy, clinician office and health plan systems are all updated with patient information independently.

  In addition, problems occur today when the patient has a prescription filled at a pharmacy that is not part of the health plan's "approved" network. Because a clinician

usually does not have the information necessary to guide patients to "in-network" pharmacies, the prescription may not be covered, or may result in a higher co-pay than expected or even in the inability to fill the prescription. If the clinician directed the prescription specifically to that pharmacy (i.e., by fax or EDI, instead of the more transferable currency represented by the paper prescription), then the clinician may have to re-issue the prescription. Connections with health plans to provide this information to the clinician office could help prevent this problem.

- *Clinician prescribing systems need to have up-to-date information on plan restrictions* regarding choice of pharmacy, so that the clinician and the patient can be properly informed. The Steering Group believes strongly that electronic prescribing systems should do nothing to hinder clinician and patient choice of pharmacy; to the extent that some health plans do impose some conditions on this choice, this information should be fully known when the prescription is created.

- *Standards for specific information exchange are still evolving.* Where there is a lack of standards, multiple divergent standards, or slow adoption of standards, system vendors have to work longer and harder, allowing for more revisions to make a system that works throughout the country. Additionally, clinician and pharmacy adoption can be impeded while waiting for the differences to be ironed out. This is described in more detail in the Standards and Vocabularies section.

Removing Barriers

Corresponding to the various types of barriers noted above, actions for removing them fall into several categories.

- *Standards:* Support uniform standards and funding support for integration of health plan information into office information systems, both through data standardization and through continued growth and availability of clearinghouse services. Promote the use of uniform standards such as NCPDP SCRIPT for low-cost bidirectional information exchange, and support the unification of standards for key data elements.

- *Regulation:* Remove legal and regulatory roadblocks to efficient prescription communication by :

    - Encouraging and supporting the approval of electronic prescribing regulations and legislation by state boards;
    - Reconciling variant state regulations and specifications for prescription information. In most cases, all states have different specific requirements, although they are all directed to very similar objectives; this disparity hinders vendors in the development of communication and prescribing systems;
    - Working with DEA to help gain approval for electronic communication to be used for controlled substances; this is likely to reduce prescription abuse, and makes the case for electronic prescribing more compelling by removing a separate pathway currently required for these drugs;

- Encouraging adoption of electronic communication by judiciously phasing in new regulations. Regulations should not require that the process be completely electronic immediately, as some clinician groups may need time to transition to a fully electronic network. New regulations should provide a transition period which allows for printed and signed prescriptions on paper.

- *Availability:* Construct networks and standards that allow open, secure communication of patient information between office systems. In addition, make it easy and inexpensive for systems to be available in practices and pharmacies. This can be accomplished in a variety of ways, including the use of application service provider (ASP) Web sites that require only an Internet browser in the office or pharmacy, or by developing and offering affordable electronic prescribing systems that include EDI modules.

- *Increased information sharing:* Improve models for communication that allow information to be kept up to date:

- Methods should be considered that allow pharmacies and offices to easily obtain up-to-date insurance information directly from patients.

- *Improve models for communication:* helping the clinician's office to add and/or update information. For example, Web portals could be developed for patients to update their own information. These personal portals should then include a secure communication method (with appropriate privacy controls on both the patient and clinician side) so that this information can be used to update the clinician's system directly.

Ideal Design Considerations

The following is a summary of ideal design considerations that should be taken into account when designing and implementing the communication components of an electronic prescribing system.

- Transparency. The system should be able to output a prescription in any form without undue effort at the end of the prescription-creation process.

- Choice. The patient's choice of pharmacy should be preserved in all of these efforts. It should be easy to find the pharmacy you want, and there should be no impediments.

- Formulary warning, out-of-stock alerts, etc., should flow back instantly to the clinician while the patient is still in the office, with possible alternative actions displayed for easy selection.

- Make it easy to perform common complex dispensing options, e.g., simultaneously producing a short-term prescription for a local pharmacy and also producing a long-term prescription for mail-order.

- Support a single unified medication list, combining information from clinicians, pharmacies, and health plans. Develop standards and actual software to do this, so appropriate persons can work with the patient's accurate medication list. Resolve any privacy and ownership issues necessary for this.

- Support patient portals where patients can see their medication regimens (many patients are very confused by frequent changes, and wind up taking duplicate medications or leaving some out), request refills from pharmacies and renewals from clinicians, and propose additions (for non-prescription drugs) and corrections.

- Provide a transition path and/or intermediaries so that, even while the adoption is not yet universal in a given region, those (clinicians, pharmacies) who wish to get started can support EDI transactions without having to do extra work for their recipients (pharmacies, clinicians) who are not yet participating.

Summary - Communication

- The benefits of electronic communication are well-known, both for the creation of a prescription and for a variety of other services important to quality, safety, and benefit processing. Electronic communication is faster, more work-efficient, more secure, more reliable, and less prone to abuse than paper or fax prescriptions.

- We want to foster universal adoption so that all can realize the advantages, and also because of the critical-mass factor: adoption is likely to move even faster when a significant number of clinicians and pharmacies in a region have already moved to electronic communication-capable systems.

- Physician-patient choice of medications and pharmacies should be preserved in communications software, although all relevant financial and availability information should be displayed so that the choice can be well-informed.

- Current barriers include: lack of critical mass of systems in some regions; additional expense of some software and connectivity arrangements; variant standards in communicating medication information; difficulty in getting up-to-date health plan benefit information; and some state regulations that inhibit the rollout of electronic communication.

- There are a number of very active programs currently that may increase adoption rapidly, particularly from the pharmacy and PBM groups and related commercial operations.

- It is imperative that clinician prescribing applications have the necessary tools for universal communication. This can be accomplished through the use of interoperable systems, interfaces, embedded software or ASP sites.

Standards and Vocabularies

Overview

Standards are vital for any transaction that involves more than one system or module. In the complex, interconnected world of electronic prescribing, there is interchange between different clinician systems, personal health records, pharmacy systems, payer and PBM systems, public health records, clinical decision support modules, aggregate reporting modules, and many more. Currently, standards exist that support the sharing of prescription information to some extent, as do vocabularies that describe the drugs prescribed. However, standards need to be enhanced where necessary, as well as support vocabularies that clearly define the *intent* of the prescription. Improved vocabularies and standards could provide valuable information to be used for clinical and research purposes, outside of the prescribing event.

The problem of incomplete, inadequate, or unadopted standards will likely become even more noticeable as adoption of electronic prescribing increases. As system penetration continues to fill in the landscape, interconnections will increase, and the problems caused by conflicting or absent standards will lead to increased work, increased cost, and increased errors. The earlier that attention can be given to establishing a complete, usable set of standards to frame all prescribing transactions, the better.

This section, "Vocabularies and Standards," explores a few key areas:

- Electronic Prescribing Messaging Standards.
- Standard Identifiers.
- Drug Terminology for Clinical Use.

Electronic Prescribing Messaging Standards

Currently, there are two messaging standards in the U.S. that support electronic prescribing functions. These two standards are:

- National Council for Prescription Drug Programs (NCPDP) SCRIPT Standard.
- Health Level Seven (HL7).

NCPDP SCRIPT

NCPDP SCRIPT Standard was created specifically to facilitate the electronic transfer of prescription data between pharmacies and clinicians. The current standard supports

messages for new prescriptions, prescription changes, refill requests, prescription fill status notifications, and prescription cancellations, as well as housekeeping functionality for retrieving transactions from a mailbox, changing a password, and requesting a return receipt on a transaction.

The NCPDP SCRIPT Standard was first published in 1997. New versions of the Standard have been released as business needs have been brought forward. The SCRIPT Standard is an American National Standard (ANS). The SCRIPT Standard was named as one of the standards in the Patient Medical Records Information (PMRI).

The electronic exchange of prescription information assists in reducing errors and the time consumed in clarifying handwritten prescriptions, as well as building a common data set used by both the clinician and the pharmacy systems. It facilitates an electronic record of prescription modifications. For the clinician, it provides electronic storage of the prescriptions prescribed. It also helps reduce the number of fraudulent and adulterated prescriptions by providing an audit trail of all prescriptions ordered by a clinician. The standard also supports the ability for a clinician to be notified of prescription fill compliance by the patient.

The NCPDP SCRIPT Standard supports the following:

- New Prescription Transaction - A new prescription from a clinician to a pharmacy electronically.

- Prescription Change Request Transaction - From a pharmacy to a clinician asking for a change in the original new prescription.

- Prescription Change Response Transaction - From a clinician to a pharmacy approving/denying a prescription change.

- Cancel Prescription Request Transaction - From a clinician to a pharmacy requesting a previously sent prescription not be filled or the termination of current drug therapy regime.

- Cancel Prescription Response Transaction - From a pharmacy to a clinician on the status of a prescription cancellation.

- Refill Prescription Request Transaction - From a pharmacy to the clinician requesting additional refills on a prescription that has expired (continuation of therapy).

- Refill Prescription Response Transaction - From a clinician to a pharmacy that approves, denies or modifies the Refill Prescription Request.

- Prescription Fill Status Notification Transaction - From a pharmacy to a clinician when the prescription has been filled, partially filled, or not filled and returned to stock.

- Housekeeping transactions - Retrieve transactions from a mailbox, change password at a switch, verify a message has been received, etc.

HL7

HL7 is a messaging standard that is in wide use for a variety of administrative and clinical transactions, including medication therapy but also including domains from patient identification, to provider roles, to clinical notes, to laboratory results and more. The most prevalent version of HL7 is version 2.4, used by most health information technology systems. Although HL7 provides placeholders for many different transactions, allowing the appropriate elements of the transaction to be found, it does not always provide direction on the structure of a given field or the particular vocabulary to be used in that field.

The HL7 Version 3 standard is based upon a Reference Information Model (RIM) that abstractly describes medical events, transactions, and messages. The fully specified standard is created by following a specific methodology that refines and constrains this abstract model to fit specific business needs in a domain area, such as drug ordering. These refined models are referred to as Domain Message Information Models (DMIM). A drug prescription will in fact draw from many DMIM's such as Orders and Observations, Pharmacy, Medications, Patient Administration (for patient and clinician identifiers) and diagnostic indications. A feature of the Version 3 methodology is the specification of vocabularies or "value sets" that convey the payload of a specific message. Thus the format of patient identifiers is consistently defined, as are the vocabularies for message components such as ordered drug, form, dose, route, and patient instructions.

The Version 3 standard is neither fully balloted nor finalized. A detailed discourse on how the various information models resolve to create a final XML-based message format is also beyond the scope of this document. Thus, the pertinent recommendation relative to electronic prescribing is that the HL7 V3 standard be closely evaluated as it is finalized for suitability in many clinical contexts, and as a natural complement to the more specific NCPDP SCRIPT standard.

While most commercial pharmacy transactions are using the SCRIPT standard, HL7 has been used in some installations, such as the Veterans Administration health system. NCPDP and HL7 are now beginning to engage in mapping the relevant portions of HL7 V3 and NCPDP SCRIPT. The completion of this work will enable more streamlined integration of inpatient and ambulatory pharmacy information, addressing a critical vulnerability in the healthcare information infrastructure.

There are a number of other transactions being developed as electronic prescribing evolves, and these may require continual updates to the messaging standards, until the wave of innovation slows down. A partial list of new transactions that may need messaging standards include the following; standards creation bodies such as NCPDP are aware of these, and are considering mechanisms to support them:

- Send complete list of medications.
- Send complete medication history.
- Send list of claims.
- Eligibility / benefits queries.

Messaging Standards Need to Meet Business Needs

The implementation of the prescribing system must fit into the business flow and enhance knowledge, rather than be viewed as “extra work.” However, the system may not solve all problems immediately and may not have all potential functionality. Thus, there is an evolutionary aspect to the hardware, software, and messaging standards. In turn, an e-prescription is truly an "evolution" of a phoned-in, faxed or written prescription. Electronic prescriptions need to be seen, in many ways, as an extension of a written prescription, for adoption to occur. State and federal regulations need to recognize electronic prescriptions but not make the requirements so insurmountable that they are too cumbersome for anyone to implement. The benefits to all parties – pharmacist, clinician and patient – should be the ultimate goal in the adoption of electronic prescribing.

Pharmacies have used software packages and practice management systems for years. Usually the pharmacy staff is comfortable in a computer environment. Transaction processing of claims and credit card billings are common occurrences. Most pharmacy software systems vendors servicing the retail/ambulatory/long term care, etc. sectors are supporting the NCPDP SCRIPT Standard as part of their product offerings.

In contrast, the use of software packages and practice management systems may not be as common for clinicians today. Because of the different functions involved in an office setting, for example, some staff use computers (appointment scheduling, billing), while others in the office do not use computers as part of their normal workflow. Transaction processing may not be part of the workflow, or may only be utilized in credit card billings. Adoption of the NCPDP SCRIPT Standard in the clinician software systems was originally slow and suffered some setbacks in the “dot com” era, but has continued to grow.

Factors for Success

Checking health plan benefits and criteria

The addition of the ability to check pharmacy health plan benefits and criteria should be carefully analyzed. There are many pharmacy benefit programs; patients change

pharmacy plan coverage as they do medical coverage. A given prescription might be covered under a secondary insurance. The constant collection and maintenance of this information are modifications to the current clinician business flow. In order for the patient and all other stakeholders to have consistent, up-to-date information about current co-pays, costs, and formulary status, standards need to be carefully identified and followed.

Benefit information returned might fall into general response information such as Preferred, Approved, Prior Authorization Required, Non Formulary, Not Reimbursed, Differential Co-Pay, Unknown, and Step Therapy Required (values contained in the NCPDP SCRIPT Standard). Drug Use Review (DUR) information is also contained in the NCPDP SCRIPT Standard.

There are now several sources of plan benefit and formulary information: dedicated information aggregators, payers and PBMs, pharmacy-based systems, and independent services. At present, these sources provide information in somewhat different formats, different structures, and may use different vocabularies from the one above. This generates considerable extra work for prescribing system vendors, as they struggle to incorporate this information from various sources; in turn, that becomes an extra cost for the clinician or health system, as well as an increased possibility of errors and miscommunications.

In addition, there is still, at present, no unique identifier for payers and plans. Each practice may have its own master list of payers, which must be carefully mapped to the similar-but-different lists coming from formulary information sources. The adoption of unique identifiers in this area, identified but not yet implemented as part of HIPAA, may also simplify and reduce the cost of development of electronic prescribing systems.

Access rights

While security may or may not be addressed in the messaging standard, or may be addressed as its own standard (as digital signatures, for example), security must still be addressed. As the paper prescription pad and the clinician's signature must be kept secure, access to the electronic prescribing part of the electronic computer must be kept secure. Access is only granted to those who have permission to electronically prescribe. Access controls, such as expiration dates on passwords, and storing passwords securely, should also be in place.

Access rights, as a subset of the general security issue, include several different aspects:

- Access to the electronic prescribing application.
- Access to the patient's record.
- Handling of secondary access roles and privileges. Depending on the state, some clinicians, such as nurse midwives, may have full prescribing privileges, limited

independent prescribing privileges, or prescribe-with-co-sign privileges. Other staff in the office may be allowed to handle refills only, or may only have viewing rights.

Standard roles are required to capture these privileges when assigning rights to the members of a practice who will be using the electronic prescribing application.

Consistent State Regulations for Prescriptions

The regulations on electronic prescriptions should not be any more stringent than a written prescription. There is considerable variance concerning electronic prescribing regulations between states. More uniformity between state requirements will increase the adoption of electronic prescribing.

In addition, each state has its own requirement for the format of printed prescriptions. *The NABP Survey of Pharmacy Law* that describes all of these variations contains nearly 100 pages of dense tables illustrating the various state requirements. In general, all of these varying regulations are more or less aimed at the same concepts; however, one state may require that its prescriptions say "Dispense as Written," whereas another may require "Do Not Substitute" and a third requires the words "No Substitution Allowed." One state may require that the provider's DEA number must be printed on the prescription form, while another requests it to be individually printed or written on each prescription at the bottom.

As with the formulary information variations above, the existence of these different regulations means that system vendors must be able to account for each and every variation in their software; this adds time and cost to the development process, and may generate dissatisfaction if the solution is wrong for a practice in a new state. Although it will take some time for the states to converge on a common standard, the cost reductions and efficiencies that can be achieved merit giving significant attention to resolving these variations.

Standard Identifiers

In electronic communication, identifiers are essential. The sender of the information must be clearly identified. The intended receiver of the information must be clearly identified. In healthcare, another layer is added. Who is the clinician? Who is the patient? What drug or item is being prescribed? Identifiers remove confusion and add clarification.

For electronic prescribing, identifiers must be established for:

- Routing Information.
- Entity Identification.
- Drug Identifiers.
- Other Identifiers.

Routing Information

- *Prescriber system:* To route an electronic transaction, a starting point or endpoint must be designated. At its simplest, this is the computer that generated the transactions or will relay the transactions that must be seen by the clinician. There must be an identifier at this level. To date, this is trading partner assigned.

- *Pharmacy system:* Similarly, there must be an identifier at this level. The standard for identifying the pharmacy is the NCPDP Provider ID (formerly the NABP Number). This number is available through the National Council for Prescription Drug Programs. This number is used in pharmacy billing and other business events, and is used by the industry for electronic prescribing

- *Mailbox:* Again, routing identifiers need to be assigned to the mailbox/switch/ASP or other entity that holds transactions until the endpoint is ready to retrieve them. To date, this is trading partner assigned.

Entity Identification

- *Prescriber:* The prescriber must have an identifier to unambiguously designate the intended receiver. To which clinician should this prescription request be delivered? Which clinician created the new prescription request? To date, there are many numbers to designate a doctor, let alone a clinician. The Health Insurance Portability and Accountability Act of 1996 contains provisions for addressing the National Provider ID (NPI). Final standards for the NPI were issued January 23, 2004 and will be effective May 23, 2005, at which time providers may begin applying for identifiers. Concerns have been expressed among advocates for electronic prescribing that the NPI may not be fully adequate for the purpose of facilitating electronic prescribing as it does not, among other things, seek to verify the credentials of the identifier's recipient. In the meantime, Social Security Numbers, Tax IDs, Medicaid IDs, DEA numbers, health plan IDs and other numbers are being used to identify clinicians, at various levels of granularity. The National Council for Prescription Drug Programs (NCPDP) created HCIdea in response to its membership's need for a cost-effective alternative to utilization of the DEA number. There is also a need in pharmacy and the healthcare industry as a whole for one source of data to identify all clinicians. Trading partners will need to determine which they are going to use until such time as there is general agreement on a mechanism for issuing, validating and maintaining provider identifiers.

- *Nurse Practitioner/Physician Assistant:* It is noted that many may have an ID assigned by DEA that could work until the NPI is more widespread. Some states license through the state Board of Nursing.

- *Pharmacist*: In some states, pharmacists may prescribe, under established protocols. The pharmacist may be assigned an identifier by the hospital. There is no industry-wide standard for the unique identifier for a pharmacist. Communiqués may involve the name of the pharmacist, but typically for electronic prescribing events, the pharmacist on duty handles the requests, rather than a specific pharmacist.

Drug Terminology

An order for a dispensable drug that does not unambiguously, consistently, and comparably indicate which drug should be dispensed, has not achieved the widely shared goals of improving patient safety and quality medical care. Hence, the issue of standard drug identifiers must be considered.

Drug identifiers can invoke many components: active ingredient, preparation, form, route, dose, packaging (e.g., oral contraceptive packs in correct hormonal sequence) and oftentimes brand specifications. However, many of these elements are explicitly represented in data messaging standards, requiring implementers to choose whether to transfer "Amoxicillin|chewable tablet|500 mg|by mouth|three times a day" or "NDC1234567890 po tid," and the many variations in between. This is referred to as the message/vocabulary boundary problem, and poses a substantial challenge to electronic prescribing implementers who seek to transfer highly consistent messages that can be unambiguously understood by people and machines.

In particular, the NDC code system is a highly useful vocabulary at the pharmacy, since it separates out a variety of brands, sub-forms, and packages of the same drug. However, at the physician level, NDC codes are too specific and result in too large a search list. A physician who wants to order the above amoxicillin prescription does not want to look at the fifty or more different NDC codes that could fulfill it.

Recently, many federal government agencies have cooperated to produce a federal drug information standard. Standards developers from the Food and Drug Administration, the National Library of Medicine, and the Department of Veterans Affairs worked to define a common model of drug naming. Two elements of this effort are relevant at the clinical level to electronic prescribing: the RxNorm and National Drug Files (NDF)-RT projects.

RxNorm is a compilation of clinically orderable drugs, described by its project team as capturing "what the doctor ordered." It also contains a level that defines "things one might find in a bottle on a pharmacist's shelf." Thus, Amoxicillin 500mg chewable tablets would have a single RxNorm identifier, and mappings to the many brands and trade names that would correspond to this clinical compound. The RxNorm contents are normalized and maintained by the National Library of Medicine, as a source vocabulary to the Unified Medical Language System (UMLS). RxNorm is publicly available without royalty or usage restrictions. Additional extensions to RxNorm's capabilities, e.g., for patient preferences and packaging issues, will ensure that a pharmacist can accurately fill a prescription for a patient based on the RxNorm vocabulary.

The NDF-RT, or National Drug Files, is a set of reference terminology built by the Department of Veterans Affairs to establish detailed facts about active drug ingredients such as mechanism of action, physiologic effect, therapeutic indications, drug class, and other ingredients. These additional facts are each in turn organized into hierarchies or taxonomies. Thus the drug class information would assert that Amoxicillin is a kind of penicillin, which in turn is a kind of antibiotic. This affords substantial information for people and machines to understand drug effects, group allergies, interactions, and contraindications. The RxNorm listings are built from NDF-RT components, thus providing substantial amounts of clinically relevant indication to electronic prescribing systems.

"Sig" standard

Although the patient directions (the "sig", e.g., "one tablet by mouth three times a day") are a standard part of written prescriptions, there are several ways for this to be described. Most clinicians in the U.S. are familiar with the Latin abbreviations, but mistakes are still frequent. Many clinicians utilize these abbreviations, while some others use abbreviations or full wording in English. This variation can result in errors: one clinician may use "A.D." for "as directed," while another uses it for its Latin meaning of "in the right ear."

Current electronic prescribing software systems transmit prescriptions to the pharmacy using different standards for preparing and transmitting prescriptions, and receiving renewal requests. This disparity may prevent sharing of clinical decision support rules, as the sharing can be thwarted by slightly different meanings in different systems. Also, the standardization of sig information would allow systems to be more intelligent regarding actual doses needed, duration of prescriptions, and automated compliance reminders. Finally, as mentioned at the beginning of this section, there is currently a need for interchange of medication list information between different applications, including but not limited to electronic prescribing applications, electronic medical records applications, and hospital information systems. Without standards for how the prescription information is entered and stored, there is the possibility for translation errors as well as decreased efficiency, especially regarding searching for patient-related data. The need for interchange of medication information will increase significantly as medical informatics is more widely used in practice.

At one level further down in specificity, even specific sig terms can be ambiguous. Certain sigs describe how often a medication is taken without fully describing when the medication is taken with regard to time of day, relation to meals, relation to other medications, etc. For example, does "TID (three times per day)" mean every "morning, noon and night," or "every 8 hours at 6 a.m., 2 p.m., and 10 p.m.," or "every 8 hours at 8 a.m., 4 p.m., and midnight," etc. This is more of an active problem in inpatient care, where medication administration schedules must be carefully arranged, but it can also be important in ambulatory prescribing, if patients liberally interpret a sig for a drug that must be taken in very specific intervals for maximum effect.

In general, medical and pharmacy professional groups need to look at standardizing the instructions' intent, for example, that the electronic prescribing event should relay what the clinician requested.

The pharmacy should receive what the clinician requested. Clinical applications, data repositories, etc that need measurable sigs should have a standard method for use.

Summary – Standards and Vocabularies

Vocabulary

- Support the widespread adoption and further enhancement of RxNorm and NDF-RT for Clinical Informatics, to provide a consistent "doctor-level" drug vocabulary.

- Support standardization of the required data elements ("sig") necessary to create an electronic prescription.

- Seek agreement among the large producers of prescribing system drug dictionaries, so that specification of allergy groups, drug interaction groups, etc., are consistent as one changes to different applications that use different commercial dictionaries.

- Once agreement has been reached, incorporate these into the definitions and requirements of the NCPDP SCRIPT Standard.

Unifying standards

- Strongly encourage unification of varying state regulations concerning the proper format of a prescription.

- Unify different standards, terms, and structures used by formulary information service providers.

- Unify and universally adopt a single set of messaging standards through reconciliation of SCRIPT and HL7 conventions, and continue to grow and develop the unified set to meet changing business needs.

Identifiers

- Establish a unique identifier for health plans and pharmacy benefit plans.

- Establish unique identifiers for the various persons and entities involved in a prescribing transaction.

Process

- Support creation of a Resource guide for system vendors.

Implementation

Overview

Good implementation is critical to the success of any electronic prescribing project. The most intuitive software and cutting edge hardware will not stand on its own without a solid implementation plan. Key issues related to implementation are listed and discussed below. This list is not exhaustive; it is based on the combined experience of the contributors to this report. The primary purpose is to focus attention on implementation-related issues that are often overlooked until implementation is well underway.

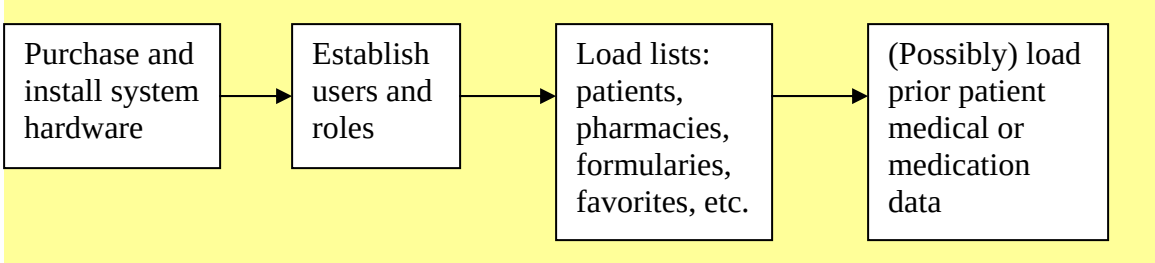

Figure 8. Outline of Implementation Process for Electronic Prescription Process

A sample electronic prescribing implementation guide is included in Appendix D. Keep in mind that for any given electronic prescribing project, the most important implementation resource will be the electronic prescribing vendor selected and its implementation and account management staff. Another invaluable resource for advice regarding how to best implement a specific electronic prescribing application is a similar organization that has already deployed that application.

Key Issues

The key issues related to implementing an electronic prescribing application that are discussed in detail below are:

Understanding implementation issues *before* selecting a system:

- Implications of practice size.
- Executive and clinician support.
- Regulatory and local pharmacy relationship considerations.
- Infrastructure and devices.

Data, dictionary, and system integration:

- Integration with an existing practice management system (PMS).
- Loading patients' initial medication lists (backfile or paper conversion).
- Formulary management.

Implementation management

- Cultural issues/managing behavior change.
- Startup issues and problem resolution.
- Rollout timing and sequencing.

Understanding Implementation Issues before Selecting a System

Before selecting an electronic prescribing system, purchasers should fully explore implementation issues and costs with prospective vendors. This should include asking vendors to provide a typical implementation project plan.

- *Executive and Clinician Support:* Deploying an electronic prescribing application can be difficult and costly, with many bumps in the implementation road. Strong executive and clinician commitment and leadership are imperative in order for the electronic prescribing project to succeed.

- *Implications of Practice Size:* The majority of physicians in the U.S. practice in independent groups of eight physicians or less. Recent survey data provide strong evidence that adoption of EMR's (which often include an electronic prescribing component) is considerably further along in the large practice and integrated delivery network market than in the small, independent practice market. This adoption discrepancy is likely due in part to a combination of higher per-clinician implementation costs and lower ROI opportunity for small practices. Approaches to implementation may vary depending on practice size and independence. Accordingly, wherever applicable, implications of practice size for implementation strategy will be explored further in specific sections below.

- *Regulatory and Local Pharmacy Relationship Considerations:* Regardless of practice size, regulatory and other local factors should be considered and addressed both before and during implementation of an electronic prescribing application. These include, but are not limited to:

    - Faxing and printing: Understand the willingness of local pharmacies to accept computer-generated prescriptions (including printed and faxed prescriptions), the ability of the electronic prescribing vendor to support faxing of prescriptions, and the ability of the electronic prescribing vendor

to support whatever printed or faxed prescription formats are required or desired by receiving pharmacies.

- Electronic prescription routing (EDI): It is important to consider the ability of local pharmacies to receive electronically transmitted prescriptions directly into their pharmacy computer system, and the ability of the electronic prescribing vendor to support such direct electronic transmission. The same issues should be considered for mail order pharmacies. Ascertaining the level of participation of local pharmacies should be a part of the implementation plan; this is less necessary if the practice uses a prescribing information broker that accepts a common transaction format from the practice and in turn delivers prescriptions to pharmacies however they can accept them.
- State and federal regulations: Consideration should also be given to state regulations regarding the use of electronic prescribing applications in general, authentication and signature requirements, faxing and electronic transmission of prescriptions. Clinics that draw patients from multiple adjacent states may face different rules for different states, and the ability of the electronic prescribing application to handle this should be addressed during system selection. DEA rules governing faxing and electronic transmission of prescriptions for some controlled substances should also be considered, as should possible (in several states) special paper printing requirements for controlled substances.

- *Infrastructure and Devices:* Ensuring adequate infrastructure is a necessary pre-condition for a successful electronic prescribing implementation. Of particular importance is stability and reliability; this applies to the electronic prescribing application itself, the device or devices that the application runs on, and the network. It is challenging enough to convince busy clinicians to use a new electronic prescribing application; if an implementation is plagued by application or device crashes, a sluggish or unreliable network, slow application performance for any reason, and/or printing problems, then failure is almost guaranteed.

  At the risk of overstating the obvious, it is also imperative to ensure that the electronic prescribing application is accessible within exam rooms, whether by a fixed exam-room workstation or by a mobile device (e.g., a PDA, a TabletPC, laptop) hand-carried or wheeled into the exam room. Printers may be located outside of the exam room, though they should be no more than a few steps away if possible. Ensuring an adequate number of devices to accommodate all users is also important; making clinicians wait in line to get at a workstation is usually not a good idea.

For implementations that involve mobile devices (particularly PDA's), keep in mind that fixed workstations may be preferable for nurses and other support staff involved with prescription-related message handling (e.g., renewal processing) and medication list maintenance, even if a PDA is the exam-room device of choice for actual prescribing. Even clinicians using a PDA in the exam room might prefer a fixed workstation in their office to review and manage their worklist, link out to the web, etc. Electronic

prescribing applications that can be used on both a traditional desktop device and a PDA may offer the most implementation and workflow flexibility. Lastly, if the electronic prescribing application is part of a full EMR, it may be necessary to have a fixed workstation – with a full-sized screen and a regular-sized keyboard – in each exam room, whether or not a PDA is the preferred device for prescribing. Further details about user devices can be found in the Usability section.

Data, Dictionary, and System Integration

Integration with Existing Practice Management System (PMS)

Most clinics today already use a computerized practice management system (PMS) for patient registration, billing, and scheduling. If the electronic prescribing application is able to automatically receive patient demographics (e.g., name, birth date, health plan, etc.) from the PMS, it can greatly simplify use of the application. This avoids requiring users to redundantly enter existing patient data just to begin creating a prescription for that patient. Deploying an electronic prescribing application without a strategy for integrating demographic data from the incumbent PMS greatly increases the likelihood of a failed implementation. Some key points for consideration related to PMS-to-electronic prescribing application integration are listed below:

- Uni- vs. bi-directional integration: The integration: need only be "one-way," or uni-directional, from the PMS to the electronic prescribing application (in other words, the electronic prescribing application does not have to pass data back to the PMS). True bi-directional integration can be more important for full EMR's, where passing ICD-9 diagnostic codes and CPT visit and procedure codes back to the PMS can help make billing processing more efficient for the practice. Without bi-directional integration, however, users must understand that any changes made to patient demographic information within the electronic prescribing application will not be reflected back into the PMS. The usual approach under such circumstances is to regard the PMS as being the "source of truth" for patient demographics.

- Real-time interface versus other integration approaches: A true, real-time interface is the most desirable approach for PMS-to-electronic prescribing integration. With a real-time interface, any new or updated patient demographic data entered into the PMS will be automatically and immediately available to the electronic prescribing application. However, real-time interfaces are expensive to build and maintain.[*] So-

[*] The expense of building and maintaining real-time PMS-to-prescribing application interfaces is one of the major reasons why electronic prescribing applications and EMRs have proliferated more rapidly in large integrated delivery networks (IDNs) than in small, independent practices. Usually, all of the practices in the IDN use the same PMS: once the PMS-to-prescribing interface is built for the first practice in the IDN to implement electronic prescribing, the same interface is then used to support implementation in all of the other IDN practices. An interface created to support an electronic prescribing implementation in an independent practice, on the other hand, can only be used for that practice. In other words, the IDN is able

called “batch” interfaces – with an initial large data file transfer from the PMS to the electronic prescribing application followed by periodic (e.g., nightly) updates – is less ideal but can be more cost-effective and may be adequate. Intermediate integration approaches involving real-time patient data transfer from the PMS to the electronic prescribing application via screen-scraping techniques have been used successfully by some vendors. This provides much of the same value as a true real-time interface, but requires less effort to set up and maintain.

- Inclusion of patient schedules: Whenever feasible, PMS-to-electronic prescribing integration should include daily patient schedules. The ability of electronic prescribing application users to view their patient schedule within the application provides significant added workflow value. The schedule can be used to select patients within the application, thus avoiding the need to do a patient lookup. While extremely useful, schedule integration is not as critical as integration of basic patient demographic data.

Loading Patients’ Initial Medication Lists (Backfile Conversion)

One way to help ensure clinician satisfaction with an electronic prescribing implementation *early* after go-live is to have a current medication list already built, or pre-loaded, into the electronic prescribing application *before* the clinician needs to use the application to create prescriptions for a patient. Different methods for accomplishing this are discussed below:

- Chart abstraction: One approach is to abstract a medication list from the paper medical record, and enter it into the electronic prescribing application prior to patient appointments. This can be done in batch when the system is first implemented, or on a rolling basis based on the following day’s (or week’s) schedule for the first few months of operation. The main advantage of this approach is that it can reduce the time spent on medication list construction during patient encounters. However, it can be expensive to pay abstractors and the paper charts often do not contain accurate or up-to-date current medication lists, or any medication list at all. Moreover, this approach does not account for patients seen the same day they scheduled their appointment.

- Encounter-based medication list building: Another approach is to have the rooming nurse or medical assistant build the medication lists as part of the visit intake process. This approach works well but can be quite time-consuming, and should be accounted for during patient scheduling during the early weeks (even months) after go-live. (A university-affiliated oncology clinic that deployed an electronic prescribing application in 2003 advised their clinicians that they would “have to wait outside the exam room an extra 10-15 minutes” for each patient while the nurse rooming the patient built the medication list with the patient in the exam room. While this sounds

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to amortize the cost of building and maintaining the interface over a much larger group of physicians, thus achieving a major economy of scale that a small, independent practice is unable to match.

extreme, it is certainly a credible estimate for settings with older, sicker patients who are likely to be on more medications.)

- Building a medication list with prescription claims data: Pharmacy benefit managers (PBMs) store prescription claims history for patients currently eligible for prescription benefits with that PBM. Prescription history (as represented by claims data) can be extremely useful for initially building a medication list within an electronic prescribing application, and has other clinical benefits, too. In some instances, relevant PBM(s) provide prescription claims history directly to an electronic prescribing vendor or a care delivery organization; there are also vendor-neutral industry utilities which make this data available to electronic prescribing vendors. At present, some PBM data sources do not include the "sig" or instructions on how the patient is to take the medication, which may affect the value of this feature. Because of the implications for streamlining efficiency in the area of creating and updating medication lists during electronic prescribing implementation, vendors should be asked – during the selection process – about their ability to acquire prescription claims data. Since prescription data represents sensitive, protected health information, there are patient consent issues that need to be addressed during implementation if this approach is to be used.

- Building a medication list with retail pharmacy data: Another potential source of medication use history is from retail pharmacies. Some advantages of this data are that – unlike claims history from PBMs – it is not dependent on whether or not a patient has a prescription benefit and can include cash prescription and over-the-counter drugs. As with prescription claims history, patient consent issues will need to be addressed during implementation.

Implementation Management

Cultural Issues / Managing Behavior Change

Paying attention to organizational culture and behavior change management is a critical success factor in electronic prescribing implementations. A partial listing of suggestions related to this follows:

- Support staff involvement: As a general rule, engage support staff often and early. The best way to ensure active clinician participation is to win over the nurses, medical assistants and other support staff that work with the clinician in the prescription management process. The biggest opportunities for broad staff involvement are with prescription renewal processing and with medication list management. As support staff become comfortable with these processes, they serve to both motivate and support the clinician's use of the electronic prescribing application. Depending on the practice's typical workflow, these staff members may also be directly involved in using the system in various capacities, and thus need to be involved in training and problem resolution processes.

- Job security and job risk: Part of the value proposition for electronic prescribing (and especially for EMR's) is increased efficiency. Support staff are sophisticated enough to understand (and fear) that "efficiency" gains may be translated into reduced staffing requirements for phone nurses, chart room, and/or transcription services. Actual full time equivalent (FTE) savings are more likely to be realized in large practices than in small ones. In either setting, if appropriate and sincere, staff should be reassured that a successful electronic prescribing implementation will not put their jobs at risk. In many practices, it is more likely that job responsibilities will change (e.g., reallocation of available FTEs) than it is that personnel will lose their jobs altogether. That said, it should be made clear to all staff that proficiency with the electronic prescribing application is an expected core competency and will be used as a benchmark in future performance reviews. They should be reassured that every attempt will be made to assure that they have adequate training to become competent, regardless of where they are starting on the computer skills curve.

Startup Issues and Problem Resolution

- Productivity slack: It is extremely difficult, if not impossible, to deploy electronic prescribing applications without an initial negative impact on productivity. This productivity "hit" can last anywhere from days to months, although in some experiences this run-in period is generally short-lived (a few days), and time savings from reduced phone calls with pharmacies can mitigate the overall practice time load right away. With electronic prescribing, there is a productivity "double-whammy" in the early period after go-live. First, there is the general issue of comfort and skill using the electronic prescribing application. Second, there is the problem of building initial medication lists within the application (see "Initial Construction…" section above). As much productivity "slack" as is feasible should be granted to clinicians and support staff during the initial ramp-up period, and this slack should be extended as long as is necessary (usually, no longer than 3 to 4 weeks). This slack may take the form of either temporarily reduced patient volume (e.g., more time for appointments), or added support or clinician staff (if reducing patient volume isn't an option). If clinicians are not owners of the practice, and their salary is linked to their productivity, then consideration should be given to making sure that compensation doesn't suffer during this period of decreased productivity.

- Patient notification: Signs should be posted in the clinic waiting areas as well as exam rooms notifying patients of the new electronic prescribing project and asking for their patience and understanding during the conversion process. Patients usually feel that such temporary inconvenience is a small price to pay for having their clinician finally using state-of-the-art safety technology. Consideration should also be given to a mailing to patients announcing the project, both to trumpet the project's benefits as well as warn patients about a likely transitional slowdown at the clinic.

- Problem management: The smoothest implementations all have problems and glitches in the first days or weeks. In addition, some user complaints will be based not on an

actual system problem, but on unusual conventions of care that are present in the practice, or simply on the natural fact that change is difficult. An astute, highly-responsive, supportive management team should be ready for the natural start-up problems, should be able to discern which ones represent needed changes, should let the users know what is going on with each concern, and should strive for rapid correction of any system problems. Users respond very well to the attention shown by an honest, concerned implementation team, even if actual problem resolution may take some time.

Rollout Timing and Sequencing

- Incremental deployment: Experience suggests that incremental approaches to application rollout can lessen the negative impact on productivity and ease cultural/ behavior change transitions. An incremental approach can be applied in both a geographic and a functional sense. A "geographic" incremental approach means that only part of a clinic is brought up on the application at a time. This makes the most sense in larger clinics, particularly those that are divided into functional units or teams. This approach is particularly helpful for ironing out wrinkles with the application or with workflow, as well as with training and support techniques, before "unleashing" the application on the entire practice. A "functional" incremental approach means that only part of the application's functionality is deployed initially, with a gradual, staged buildup to full functionality. This is easiest to conceptualize with a multifunctional, modular EMR application, where electronic prescribing, laboratory results retrieval and order entry, documentation, and general workflow modules can be deployed independently, with any of the modules leading the way. However, even with an electronic prescribing-only application, a functional incremental approach can be used, perhaps starting with medication list management or prescription renewal processing, and doing actual prescription entry last. Of course, geographic and functional incremental approaches can be combined.

Beyond Electronic Prescribing: What Comes After a Successful Implementation?

Successful implementation of an electronic prescribing application often leads users to ask the question: "What's next?" Before selecting and implementing an electronic prescribing application, consideration should be given to the migration path towards additional functionality -- moving up the pyramid in Figure 1 -- including advanced prescribing services, lab/radiology results reporting and ordering, visit note documentation and charge capture, and general communication/message handling workflow. Ultimately, the full value of electronic prescribing will be realized when it is integrated both with an electronic health record and a fully interoperable, electronic health information infrastructure. If the electronic prescribing application is part of an integrated EMR package, then this migration path should be more straightforward. If not, it can be helpful to ask difficult migration path questions up front rather than waiting until they come up later, when options may be more limited.

Summary - Implementation

- Identify and address major implementation issues *before* selecting a system.
- Be aware that the most intuitive software and cutting edge hardware will not stand on its own without a well-planned implementation.
- Important implementation resources will be the electronic prescribing vendor selected and their implementation and account management staff, as well as similar organizations that have already deployed the application.
- Paying attention to organizational culture and behavior change management is a critical success factor.
- Ensuring adequate infrastructure is a necessary pre-condition for success. Of particular importance is stability and reliability of the electronic prescribing application itself, the device or devices that the application runs on, and the network
- Before selecting and implementing an electronic prescribing application, consideration should be given to a plan for migration towards a complete EMR.

SECTION IV. INCENTIVES FOR ELECTRONIC PRESCRIBING

As described in Section II, the Steering Group considered the adoption of electronic prescribing to depend on two major advances: optimal design and implementation strategies as described in the preceding sections, and appropriate incentives to ensure that all stakeholder groups realized the benefits of moving to the new technology. The Incentives Working Group was chartered to review, discuss, assess, and recommend effective and feasible incentive programs. After considerable work on prioritization of high-likelihood, high-value incentives, the Incentives group determined that their work could not be limited to electronic prescribing alone, but needed to be applied to the entire spectrum of health information technologies as a united whole. The eHealth Initiative has now organized work on the general nature of incentives across the entire information technology spectrum, which has subsumed the prescribing-specific work of the Incentives Working Group. Nonetheless, the group has developed significant findings and conclusions that are of great importance to the current discussion. These findings are summarized here.

Alignment of Incentives

The current practice of paper-based prescribing is primarily a result of a fragmented and highly complex network of medical care delivery, a wide variety of payment methods, and a lack of standards for communicating medication information in a secure and reliable way. Although the payment for a prescription drug comes primarily from the patient, a health plan or other third party payer, both the costs and benefits of an electronic prescribing system – in time, finances, and health – are distributed across virtually every stakeholder in the prescribing chain.

To effect a change of the magnitude required for comprehensive electronic prescribing will require a new alignment in the costs and benefits provided to patients, prescribing clinicians, health plans and other third party payers, pharmacy benefits managers, pharmacies, and a wide variety of other parties. Initiating change of this magnitude will require substantial amounts of capital and significant degrees of coordinated effort among all involved parties. Sustaining and continually improving the value conferred by electronic prescribing will require long-term compensation mechanisms that promote continued collaboration among interested parties. Sustained collaboration will require that all parties benefit from electronic prescribing, and that no powerful parties' financial or professional interests are threatened to a degree that impedes a collaborative evolution in a common electronic prescribing infrastructure.

Stakeholder Costs and Benefits

The greatest overall benefit conferred by electronic prescribing systems will be to individual patients and to the health of the public, particularly with higher levels of sophistication (see Figure 1) including integration with electronic health records and other clinical and administrative applications. These higher levels promote appropriate,

safe, and sustained use of pharmaceuticals for common conditions such as hypertension, heart disease, diabetes, high cholesterol, and depression that may prevent or forestall complications, lower hospital costs in both the short and long term, enhance workplace productivity, and improve the duration and quality of life. Electronic prescribing is valuable because it provides an infrastructure and set of tools to promote these aims. Even a standalone prescribing application (levels 3-4) adds considerable benefit because of its ability to prevent drug dosing errors, drug-drug interactions, allergies, therapeutic duplication, and other adverse events

The greatest cost – in time and money – is borne by the clinicians prescribing medications using electronic means. Even an extremely effective means of prescribing new drugs or authorizing refills will have at least a short-term adverse impact on office workflow and expense. Although the current methods of prescribing drugs on paper and interacting with health plans and pharmacies may be both cumbersome and costly, practitioners have adapted to these complexities, and any change - even change that confers long-term advantage – comes at an acute near-term cost to those who are already overburdened in delivering medical care and managing the administrative tasks associated with this care.

Pharmacies may benefit from electronic prescribing because of increased efficiency and safety. These new approaches decrease the need for time-consuming and error-prone manual re-entry and clarification of the prescription, and will eventually increase the proportion of prescriptions that have already been screened for adverse drug-drug interactions and formulary compliance in the physician's office, lessening another burden for the pharmacist. Communicating the need for refills may also be expedited and may increase patient compliance.

Those who pay for medications – including patients and their families, employers, health plans, and pharmacy benefits plans – will sustain financial benefit through formulary-advised choice of equivalent but less expensive drugs, and through increased use of recommended generic drugs. Additionally, this group sees a long-term benefit through lower administrative costs, more reliable reporting methods, and better management of chronic illnesses.

One relatively new byproduct of widespread, collaborative adoption of electronic prescribing is the aggregation of very large datasets of HIPAA "Protected Health Information." The appropriate commercial and professional use of both identified and de-identified data will be debated further as this evolves, and some believe that this will represent a new source of incentive redistribution for a number of stakeholders. This data set may prove to be a valuable foundation for those interested in furthering clinical research, understanding the impact of various treatments on outcomes, identifying and responding to public health threats, and measuring quality for purposes of improvement.

To realize these benefits, all of these stakeholders will have to be active participants in the enormous change management effort required to create the infrastructure for electronic prescribing and ultimately an electronic health information infrastructure; all

must work together to support the short-term and long-term increased costs incurred by certain groups, such as prescribing clinicians.

Addressing Stakeholder Tensions

A comprehensive electronic prescribing system infrastructure cannot be created without addressing the historical tensions sometimes witnessed among clinicians, hospitals and other healthcare providers, patients, health plans, pharmaceutical manufacturers, mail order pharmacies, and retail pharmacies. Clinicians, facing increasing administrative burdens due to care plan complexity, will find a cumbersome electronic prescribing system yet another short term incursion into the shrinking amount of time they have to spend with their patients. Pharmaceutical manufacturers may believe such systems may decrease the likelihood that their products are chosen appropriately over less expensive generic alternatives. Plans and pharmacy benefit managers may view an electronic prescribing infrastructure as a means of by-passing, or re-directing, formulary structures designed to balance the cost of prescription drugs with their appropriate use, although in general they also see electronic prescribing as a potential tool for improving formulary compliance. Retail pharmacies may view this infrastructure as a means to divert prescriptions from retail pharmacies to mail-order pharmacies less costly to the patient.

Representative Incentive Methods

Economic Incentives

There are a wide range of mechanisms that can be used to incentivize the use of electronic prescribing and other clinical applications. The following summarizes a range of incentives and the benefits that accrue to those who could provide them.

- *Public and private sector grants* to individuals, institutions, or communities could support the initial funding required to develop a new electronic prescribing infrastructure, understand the change-management requirements of such an infrastructure, and study the impact of this infrastructure on the public health. As primary beneficiaries of a new and greater good, significant investment by public and private-sector groups seems appropriate.

- *Malpractice insurance reduction* is possible if electronic prescribing demonstrably lowers malpractice costs. The likelihood of demonstrating these cost reductions may be higher if physicians adopt more comprehensive electronic health records with electronic prescribing capabilities. Additional investments targeted initially towards study of this impact, and later towards lower malpractice rates, seem indicated.

- Third-party payers' *"pay for performance" plans* focus on better measurable quality outcomes or more consistent use of clinical technologies that may be associated with such outcomes. Direct incentives have been offered for better performance in a number of chronic disease measures, and also, at least over the short term, for use of technology likely to improve this performance. Payers benefit from reduced overall healthcare costs and increased patient safety (as do patients), pharmacy benefit

managers may benefit from reduced administrative costs and increased formulary compliance, and clinicians receive incentive compensation as well as seeing improved patient management. When defined as consistent use of electronic prescribing devices, "performance" may also be associated with lower administrative costs and lower medication costs through informed choices at the time of prescribing. Investments that defray provider costs or reward the provider for financial impact will provide great returns.

- *Employers* will benefit from long-term medical cost reductions produced by better pharmaceutical control of chronic illness, including better drug choice, medication adherence and behavioral change. In addition to "pay for performance" initiatives and endorsement of new medical benefits plans focusing on technology use and self-care, employers can work together at the community level to provide financial support to local information technology and electronic connectivity initiatives. Employer coalitions like the Leapfrog Group influence thought, but their long-term impact will depend on the recognition of the initial investment required to change behavior, and on the provision of appropriate incentives to sustain desired changes. Because employers are faced with both short-term costs due to decreased worker productivity and long-term costs from retiree medical expenses, an emphasis on initial investment now to decrease these costs is warranted.

- *Pharmacies* play a critical role in dispensing safe medications and providing authoritative advice on the use of prescription drugs. As described above, mail order, chain, and local pharmacies all benefit from electronic prescribing. In addition, more consistent patient compliance with drugs for chronic illness will lead to a short-term increase in use of prescription drugs, which is beneficial to the patient, the public health, and financially to the pharmacy as well as to drug manufacturers (ideally, the increased drug expenditures that lead to this particular stakeholder benefit are in turn offset through a reduction in costly hospital and emergency department utilization). Each type of pharmacy faces different costs in capitalizing and implementing the infrastructure needed to participate in an expanded electronic prescribing vision. Later, the cost incurred by each group to dispense a prescription will decrease. Some of these savings may be used to offset the initial costs.

Legislative and Regulatory Incentives

As discussed in this report, the Medicare Prescription Drug Improvement and Modernization Act of 2003 provides some of the most important incentive mechanisms to accelerate collaboration among the many parties involved in electronic prescribing. Just as previous legislative initiatives led to the earlier digital revolutions in pharmaceutical benefits processing and management, the current legislation holds the potential to advance the cause of better patient care by incorporating within its policies an approach to Stark safe harbor provisions and technology standards that are consistent with the evolution of medical practice and technology. Equally important may be additional national patient safety improvement legislation, and policies promulgated by the Center for Medicare and Medicaid Services, concerning technology requirements and compensation.

State regulations concerning both care compensation and professional licensure can provide either incentives or substantive roadblocks to nationwide collaboration. In addition to the acceleration or impeding influence of professional licensure groups, other accreditation bodies play equally important roles. The Joint Commission for Accreditation of Health Care Organizations, the NCQA, and newer voluntary initiatives to promote regional quality standards play a significant role in the evolution of electronic prescribing standards. In addition to proposing elevated standards of care, these bodies must continue to promote the organizational change required for electronic prescribing. They must understand not just the importance of safer and more effective use of medications from electronic prescribing, but also the quantum leap of benefit from the higher levels of electronic prescribing, including a comprehensive electronic health record accessible to the patient and appropriate providers.

Preliminary analysis of incentives

The Incentives Working Group undertook a preliminary group rating of a variety of initiatives, in terms of their potential effectiveness in accelerating adoption, and from there, in terms of the feasibility of implementing powerful incentives of each type. The ratings purely on effectiveness are shown in Table 4.

		Effectiveness in Accelerating Adoption		
GROUP	INCENTIVE METHOD	High	Mod.	Min.
Government and Private Payers	Reimbursement for utilization of information, or information systems specifically	x		
	Pay for performance	x		
Malpractice Insurers	Reductions in premiums for practitioners adopting e-prescribing		x	
Public sector	Grant programs		x	
Accrediting Groups	Compliance with quality criteria			x
Pharmacies	Pharmacies defray costs/subscription fees for providers	x		
	Physicians paid a transaction fee	x		
Transaction Brokers	Incentive payment and/or transaction fees for electronic prescriptions	x		
Information Technology Vendors	Reduced-cost offering to providers during pilot		x	
Policy	Requiring training prior to credentialing		x	
Legislation	Medicare Legislation	x		
	Stark Legislation	x		
Education: Patient Provider	Patient health information Disease management Pharmaceutical education		x	

Table 5. Assessment of different types of incentives, from the standpoint of potential impact on adoption, without regard to feasibility.

From the standpoint of both effectiveness and feasibility, the group identified four key incentives that may represent the most promising candidates for accelerating adoption of electronic prescribing, and more comprehensive electronic health records as well:

- Reimbursement for utilization of electronic prescribing or the information (RVU's).
- Pay for Performance programs.
- Third Party incentives: Payers, Pharmacies (defrayed costs, per-prescription fees), Transaction Brokers.
- Legislation, in particular, incentive rules provided as a result of the Medicare Modernization Act, Stark safe-harbor relief, and other related legislation.

As described at the beginning of this section, these areas have been incorporated into the eHealth Initiative project on incentives for health information technology in general.

Summary – Incentives

This history of medical technology adoption suggests that the following are important components in the national efforts to increase incentives to adopt electronic prescribing:

- Means to support innovation, research, and training – usually provided through research grants, contracts and funding for pilot programs either by the private or public sector.

- Legislation that promotes and stimulates change, at the same time recognizing and partially compensating for the time and effort required to realize desired change.

- Alignment of the incentives of all parties. To succeed, every party with a moral or financial interest in the use of prescription drugs must have the incentive to change. This requires sober reflection on the extent to which current technologies disrupt traditional office practice workflow, the need to provide fiscal rewards for those who must make necessary capital investments, the extent to which various care intermediaries compete in a for-profit healthcare environment, and the importance of endorsement by local and national licensure and accreditation groups.

- Recognition of the magnitude of benefit that can be realized if an imperfect healthcare system is improved. Enormous benefits to the public health are possible if our nation takes a more comprehensive approach to the national health infrastructure.

Facing an increasingly competitive healthcare delivery sector, an aging population, and a fragmentation of care delivery and compensation, one cannot underestimate the importance of a healthcare infrastructure that is based on common technology standards, ubiquitous access, transportability across different systems, security, and respect for patient privacy. We are much more likely to address the impending crisis in healthcare delivery and financing with a unified, cooperative, and shared technology infrastructure that is designed to serve the public to an extent consistent with our nation's collective vision for a healthier populace.

Alignment of incentives and balancing of costs and benefits, as described in this section, is necessary for the rapid and complete adoption of electronic prescribing and other significant health improvement technologies.

SECTION V: MOVING FORWARD

This report represents the results of a year-long, multi-stakeholder effort to define the current state, the value proposition, known and envisioned barriers, potential solutions, and future-looking concepts related to all aspects of the electronic prescribing process, particularly in ambulatory care. By gathering together such a diverse group, and including representatives of each group in every part of the effort, it is our hope that the findings and conclusions of this report truly represent a consensus and a unified position that can help drive us together towards our common goal of safer, higher quality, more efficient, more economically sensible medication management for every patient.

The Steering Group's original findings – that barriers to adoption have their roots in design, implementation, economic incentive alignment, and standards and policy issues – appear to have been borne out by the subsequent work of all the Working Groups and Subgroups. Each of these issue areas has been examined in detail, and recommendations have been devised which not only represent the intellectual input of each stakeholder group, but which, in most cases, are applicable to all of these groups as well. For example, the section on clinical decision support should be of value to system producers/vendors seeking to prioritize their development work and to understand broad and fine aspects of the most required features and the most accepted examples. It should also be useful to clinicians and pharmacists, considering which features they should implement first, and which interventions are likely to be of the highest value; and also to payers and employers, in their continuing efforts to improve the health of their members in the most efficient fashion, and in particular in the design of specific incentives such as pay for performance programs.

The Statement of Principles drafted by the Steering Group represents an important set of agreed-upon principles that should guide ethical, technical, policy, and financial developments in this field. We encourage all readers of this document to keep these principles handy as they go through their strategic and tactical initiatives around electronic prescribing.

Next Steps for the eHealth Initiative

The eHealth Initiative continues to be very active in this vital area. Although the initial charter of the Electronic Prescribing Initiative is completed with the publication of this report, a great deal of knowledge and information has been exchanged and retained in the members and chairs of the Working Groups. We encourage those who seek further details, supporting information and guidance, and answers to questions large and small to consider the eHealth Initiative as an ongoing resource, and to contact the eHealth Initiative for help and information as necessary.

As described in the Incentives section, the eHealth Initiative is extremely active in many areas concerning not only electronic prescribing, but also many other aspects related to information technology, connectivity and an electronic health information infrastructure.

The mission of the eHealth Initiative is to improve the quality, safety, and efficiency of health and healthcare through information technology. Over the last three years, the eHealth Initiative has been tackling the many barriers to our vision of an electronic health information infrastructure that supports patient care and population health, including those related to standards, electronic connectivity, financing, and organizational change. Our work within the Electronic Prescribing Initiative touches on all of these barriers and provides specific details and recommendations regarding how healthcare providers, vendors and other stakeholders can address design and implementation challenges. This work also leverages and builds upon the recent momentum around the use of electronic prescribing tools to drive improvements in safety and efficiency as indicated by several provisions included in the Medicare Prescription Drug, Improvement and Modernization Act of 2003.

The work of the Electronic Prescribing Initiative will provide considerable input into and be disseminated by a wide range of programs within the eHealth Initiative and its Foundation, which are summarized below:

- A newly-formed Financing and Incentives Initiative will build upon the work of the Electronic Prescribing Incentives Working Group, as well as work recently supported by the Foundation for eHealth Initiative related to incentive programs and the value of interoperable healthcare systems, to develop and then communicate recommendations related to upfront funding and ongoing financial incentive programs that will support and assure the sustainability of electronic prescribing and other information technology and connectivity-related initiatives.

- Key findings from the Electronic Prescribing Initiative will be provided to a number of initiatives that have been formed within the public and private sectors to inform the development of strategies and tactics for migration to an interoperable, electronic healthcare system.

- The *Connecting Communities for Better Health* Program conducted by the Foundation for eHealth Initiative in cooperation with HRSA/OAT will widely disseminate the results of the Electronic Prescribing Initiative through its online *Community Learning Network and Resource Center*; through web and audio conferences; and through face-to-face meetings such as the *First Annual Community Learning Network and Resource Exhibition* to be held June 24-25, 2004 and the eHealth Initiative-sponsored Health Information Technology Summit to be held on October 21-23, 2004, both in Washington, D.C.

- The work of the Electronic Prescribing Initiative will be extended as appropriate, and communicated, to inform the implementation of the Medicare Modernization Act and other policy vehicles moving through the Administration related to information technology.

- eHealth Initiative will look to its members and partners, who represent leading hospitals and other healthcare providers, clinician groups, health plans, employers and purchasers, healthcare IT suppliers, manufacturers, public health organizations, and public sector agencies, to widely disseminate this information to promote higher quality, safer and more efficient healthcare.

- eHealth Initiative's *Policy Working Group* will utilize the results of the Electronic Prescribing Initiative's work as its informs and educates policy-makers at the federal and state level.

Next Steps for Stakeholders

There are a number of ways that various stakeholders will benefit from, and can support the work of the Electronic Prescribing Initiative. We encourage all who read this report to consider how its information can best serve their own efforts in this area.

For *healthcare providers* including clinicians, hospitals, pharmacists, and other healthcare groups, the report offers independent information on what they can and should expect from their system vendors, which hopefully will not only give a more informed basis for comparison in purchasing decisions, but which may also advance the state-of-the-art through a more informed customer base with reasonable but progressive expectations. The implementation sections contain not only general guides, but also a sample implementation plan outline, which we hope will be of value to individual practices as they go through their own implementation processes. We encourage provider-based associations and medical societies to consider widely disseminating these resources and tools to help their members.

Information technology producers/vendors have told us that they are constantly in need of reliable information that can help guide their development priorities, their functional design, and their customer expectations. The information contained in this report should be of value in all of those endeavors. We do not intend to promote the homogenization of all product offerings from all vendors, but rather we hope to provide insight into the basic important features and designs that all vendors can use, so that they can concentrate their own research and development resources on innovation related to more advanced, high-efficiency, high-value functions. Connectivity providers and brokers in particular have seen a substantial jump in activity in the last two years – a good example of how direct, focused efforts can make a very significant practical change in common practice. By using the information in this report as a foundation for standards advancement and adoption, increased broadband availability, and continued consortium building, these stakeholders are very likely to drive further acceleration of this trend.

Employers, healthcare purchasers, health plans and other third party payers are increasingly interested in using various pay-for-performance and other incentive programs to drive improvements in healthcare quality, safety and cost-effectiveness. We encourage such groups to take these recommendations into consideration as they develop

and implement such incentive programs, and to utilize this information as they communicate the importance of electronic prescribing to their employees and other beneficiaries.

Federal and State policymakers have already begun intensive work related to pending and recently passed legislation. The passage of the Medicare Modernization Act, recent announcements by CMS concerning new safe harbors from anti-kickback legislation (Stark laws), and several other pieces of legislation pending at both the federal and state levels, have major implications for our ability to develop, install, and effectively use these systems for the benefit of patient safety and quality. The implementation of the Medicare Modernization Act will also have significant impact related to standards, funding, incentive programs, and pilot projects. The details included in this Electronic Prescribing Initiative report can provide significant input into that work. As part of the Medicare Modernization Act, the National Committee on Vital and Health Statistics is currently holding hearings concerning necessary standards that must be perfected and adopted.

Standards development organizations, as they prioritize their activities, should take into account the gaps in standards as they relate to electronic prescribing, and work together to provide practical, flexible, unified standards that can improve the efficiency and quality of the prescribing process.

The discussions regarding communication infrastructure, data sharing benefits and concerns, and advantages of the higher levels of the prescribing pyramid can benefit the work of emerging *community-based health information exchange collaboratives.* They can anticipate and build in the necessary structures to support appropriate, beneficial medication data communication as a core element of their information infrastructure. The recommendations from this report will also offer insight into factors to be taken into account in the evaluation, selection and implementation of electronic prescribing applications and tools.

Consumer and patient groups are now taking action to educate their constituencies about the importance of the use of information technology to improve the quality, safety and efficiency of patient care. We encourage these groups to utilize these recommendations to support their educational and awareness-building initiatives.

Incentives

The Incentives section provides a basic framework and preliminary findings concerning the highest value, most feasible types of incentives. At the current time, provision of incentives for electronic prescribing is the subject of many pilot projects throughout the country, as well as considerable discussion at the government and policy level. Persons and groups that are in a position to supply or request incentives may find that the

information herein helps them get up to speed. In turn, they will need to advance the incentives process considerably farther. Further work, such as the continuing eHealth Initiative incentives projects described above, should provide considerably more detail and supporting information to help guide these efforts.

Advancing the Process

Although this report represents the combined efforts and brainpower of more than 70 of the brightest and most involved minds in the field, it of necessity cannot be complete, nor will it be fully up-to-date the day after it is published. We expect that readers of this document will find new issues, new ideas, unpublished best practice examples, and other valuable material that could make this report even stronger as a compendium of practical knowledge on electronic prescribing. As part of our commitment to maintain an ongoing resource to support this field, we will be considering ways in which this new input can be processed and communicated. As a critical first step, we have launched an "electronic prescribing" section within our *Connecting Communities for Better Health Learning Network and Resource Center*. The contents of this report, along with best practices, case studies and other resources and tools contributed by other organizations, will be placed into this online resource center. Interested parties should again feel free to contact eHealth Initiative's office, or the program chair or director, to provide additional suggestions and comments.

Above all, we all realize that electronic prescribing is a matter of healthcare quality and safety, a matter of work efficiency, and a matter of business. Better, safer healthcare is the prize, the unshakable goal shared by all in this field; it is what we think of when we prepare long-term, multi-year strategies and plans. Workflow and financial sense are the practical requirements on the way to turning that goal into reality, and they demand our attention every day. We encourage everyone, as they deal with their necessary business operations, to remember the prize, and to exhibit flexibility and cooperation in an effort to reach that prize, just as the diverse stakeholders involved in this initiative have worked together for the common good.

SECTION VI: APPENDICES

Appendix A: Overview of the eHealth Initiative

eHealth Initiative and Foundation At a Glance

Our Mission

The eHealth Initiative and its Foundation are independent, non-profit affiliated organizations whose missions are the same: to drive improvement in the quality, safety, and efficiency of healthcare through information and information technology.

Our Vision

Consumers, healthcare providers, and those responsible for population health will have ready access to timely, relevant, reliable and secure information and services through an interconnected, electronic health information infrastructure to support better health and healthcare.

Our Strategic Priorities

1. **Align incentives and promote public and private sector investment** in improving America's healthcare through information technology (IT) and an electronic health information infrastructure
    - Drive investment in research related to the value of IT in addressing quality, safety and efficiency challenges;
    - Fund strategic demonstration projects that evaluate and demonstrate the impact of IT and further the development of strategies and tools for accelerating the adoption of IT and electronic connectivity;
    - Develop policy options to both align incentives and enable public and private sector investment in IT and an electronic health information infrastructure;
    - Dramatically increase national awareness of the role of IT in addressing healthcare challenges.

2. **Develop the field** to enable more widespread and effective implementation of IT and an electronic health information infrastructure
    - Engage national experts to aggregate and develop knowledge, resources, and tools for key challenges areas related to IT and a health information infrastructure;
    - Provide resources and tools to help communities and stakeholders implement IT and a health information infrastructure;
    - Expand information sharing beyond the U.S. by facilitating a global dialogue on the challenges and strategies for implementing an electronic health information infrastructure.

3. Continue to **drive the adoption of standards** to promote an interoperable, interconnected healthcare system through work with key partners.

Our Members

The eHealth Initiative represents many of the stakeholders in the healthcare community who want to improve health and healthcare through information and information technology:

- Consumer and Patient Groups
- Electronic Transactions Services Companies and Group Purchasing Organizations
- Employers and Purchasers
- Health Care Information Technology Suppliers
- Hospitals and Other Healthcare Provider Organizations
- Laboratories and Ancillary Services
- Medical Device Manufacturers
- Payers and Other Risk-Bearing Institutions
- Pharmaceutical Manufacturers
- Practicing Clinicians and Physician Groups
- Public Health Organizations
- Quality Improvement and Standards Organizations
- Research and Academic Institutions

In addition, the Foundation for eHealth Initiative works closely with leaders in the public sector through its various public-private sector partnerships.

How We are Funded

The eHealth Initiative and its Foundation are funded by a combination of federal agency and philanthropy grants, private sector contributions and membership dues. A majority of our funding comes from grants and contributions from independent agencies and foundations.

Our Approach to Driving Change

Our approach for driving change is to engage the multiple, diverse stakeholders within healthcare to develop workable solutions for accelerating the adoption of IT and an electronic health information infrastructure to support our common quality, safety and efficiency goals. To facilitate this approach, we review, evaluate and develop models to advance policy goals; engage those who can effect and who are impacted by change; develop and disseminate resources and tools to support implementation; and educate and advocate for change

Our Programs

The following summarizes our programs and vehicles for the achievement of our goals and strategic priorities.

1. **Align incentives and promote public and private sector investment** in information technology and an electronic health information infrastructure
   - The **Connecting Communities for Better Health Program** is providing seed funding and support to multi-stakeholder collaboratives within communities who are using IT and health information exchange to address quality, safety and efficiency goals. This program will demonstrate value and evaluate impact of IT and further the development of strategies and tools to facilitate an electronic health information infrastructure.
   - The **Financing and Incentives Initiative** is building upon the work of the **Electronic Prescribing Initiative,** by aggregating research and evaluating and developing policy options related to upfront funding for and alignment of economic incentives to facilitate the use of IT and an electronic health information infrastructure.
   - **Investing in America's Health** is a communications campaign designed to raise national awareness of the role of information technology in addressing quality, safety and efficiency challenges in the U.S. healthcare system.
   - **The eHealth Initiative Policy Working Group** is advocating for change though education of policy makers.

2. **Develop the field** to enable more widespread and effective implementation of IT and an electronic health information infrastructure
   - The **Connecting Communities for Better Health Program** is facilitating knowledge exchange among and providing resources and tools to communities and healthcare stakeholders to assist them in implementing information technology and an electronic health information infrastructure. Key dissemination vehicles include an online Community Learning Network and Resource Center; web and audio conferences; and an Annual Community Learning Forum and Exhibition.
   - The **Electronic Prescribing Initiative** is engaging stakeholders from across every sector of the prescribing chain to develop design, implementation and incentives recommendations that will facilitate the effective and rapid adoption of electronic prescribing in the ambulatory environment.
   - The **Leadership in Global Health Technology Initiative** is facilitating an international dialogue among both industrialized and developing countries to develop strategies for the development and implementation of a health information infrastructure to support common quality, safety, efficiency, access, and public health goals.

3. Continue to **drive the adoption of standards** to promote an interoperable, interconnected healthcare system through work with key partners.
   - **Connecting for Health**, a public-private sector collaborative funded by the Markle and Robert Wood Johnson Foundations, in which eHealth Initiative

members are heavily involved, is defining an incremental roadmap for an electronic health information infrastructure and developing specific recommendations related to data standards and exchange; accurately linking patient data; organization and sustainability; and the personal health record.

- The **EHR Collaborative**, a consortium made up of AHIMA, AMIA, CHIME, eHI, HIMSS, and NAHIT, is facilitating collaboration among healthcare information technology-related associations to achieve common goals related to the adoption of standards across the healthcare community.
- The **Public-Private Sector Collaboration for Public Health** engaged multiple stakeholders across every sector of healthcare to develop strategies and methods for leveraging standards-based information systems to support public health surveillance, management and response. These strategies were translated into implementation guides for electronic data transmission which are available from the Centers for Disease Control and Prevention.
- The **Healthcare Collaborative Network** has launched a national demonstration project involving large hospitals, leading healthcare technology leaders, and three federal agencies, which is designed to demonstrate both the feasibility and value of an electronic model of standardized data interchange to support public health, quality and safety goals.

eHealth Initiative 2004 Leadership Council

Herbert Pardes, MD, Chief Executive Officer, New York-Presbyterian Hospital (President, eHealth Initiative)

E. Andrew Balas, MD, PhD, Dean and Professor, School of Public Health, Saint Louis University

Peter Basch, MD, Medical Director eHealth Initiatives, MedStar Health

Mark Boulding, Senior Vice President, PTC Therapeutics, Inc.

James P. Bradley, Chief Executive Officer, RxHub

Nancy Brown, Senior Vice President, Strategic Development, McKesson Corporation

Garry Carneal, Chief Executive Officer, URAC

Marianne Cooper, Vice President of Public Sector Americas, IBM Corporation

Molly J. Coye, MD, MPH, Chief Executive Officer and Founder, Health Technology Center

Francois deBrantes, Program Leader, Healthcare Initiatives, General Electric

Donald W. Fisher, PhD, President and Chief Executive Officer, American Group Medical Association

Seth Foldy, MD, Commissioner, City of Milwaukee Public Health Department

Daniel Garrett, Vice President, Managing Partner, and Global Health Care Leader, Computer Sciences Corporation

John Glaser, PhD, Chief Information Officer, Partners HealthCare System (President, Foundation for eHealth Initiative)

Edward N. Goodman, Vice President, Public Policy, VHA Inc.

Ann M. Gosier, Vice President, Government Affairs, Guidant Corporation

W. Edward Hammond, PhD, Professor, Duke University

C. Martin Harris, MD, Chief Information Officer, Cleveland Clinic (President-Emeritus, Foundation for eHealth Initiative)

Yin Ho, MD, Director eBusiness, Pfizer, Inc.

Al Holloway, Chief Executive Officer, the IPA Association of America

Kevin Hutchinson, Chief Executive Officer, SureScripts

William F. Jessee, MD, Chief Executive Officer, Medical Group Management Association

Brian Keaton, MD, Attending Physician and Emergency Medicine Informatics Director Summa Health System; Board Member, American College of Emergency Physicians

Kenneth W. Kizer, MD, MPH, President, National Quality Forum

Linda Kloss, Executive Vice President and Chief Executive Officer, AHIMA

Robert Marotta, Senior Vice President, WebMD

Peggy O'Kane, President, National Committee for Quality Assurance

J. Marc Overhage, MD, PhD, Associate Professor of Medicine, Indiana University School of Medicine; Senior Investigator, Regenstrief Institute for Health Care

Russell J. Ricci, MD, Chief Medical and Strategy Officer, HealthSTAR Communications, Inc. (President-Emeritus, eHealth Initiative)

Wes Rishel, Board Chair, Health Level Seven; Vice President, Research Director, Gartner Healthcare

Mark J. Roman, President, Healthcare and Life Sciences Industry, EDS Corporation

M. Michael Shabot, M.D. , Chief of Staff; Director, Surgical Intensive Care; Medical Director, Enterprise Information Services, Cedars-Sinai Medical Center

Steve Skerry, Vice President of Interoperability Solutions, IDX Systems Corporation

Robin Thomashauer, Executive Director, Council for Affordable Quality Healthcare

John Tooker, MD, Executive Vice President, American College of Physicians

Andrew Wiesenthal, MD, Associate Executive Director, Permanente Federation

Jon Zimmerman, Vice President eHealth, Siemens Health Services

eHealth Initiative Members

Accenture
Active Health Management
AdvaMed
Alliance of Community Health Plans
Allscripts Healthcare Solutions
American College of Emergency Physicians
American College of Physicians
American Express Tax and Business Services
American Health Information Management Association
American Medical Group Management Association
American Medical Informatics Association
Anceta
Apelon
AstraZeneca
Athena Health
Baxter Corporation
Blue Shield of California Foundation
Booz Allen Hamilton
CareGroup HealthCare System
CareScience
Catholic Healthcare West
Caveo Technology
Cedars Sinai Medical Center
Christus Health
Cisco Systems
Cleveland Clinic
College of American Pathologists
College of Healthcare Information Management Executives
Columbia University Department of Biomedical Informatics
CommerceNet
Community Health Network
Computer Sciences Corporation
Council for Affordable Quality Healthcare
County of Santa Cruz
deNovis, Inc.
Doylestown Hospital
Dr.First
Duke University Health System
Eastman Kodak
EDS
Emergint
ESRI
Estco Medical
Federation of American Hospitals

GE Medical Systems
Geisinger Health System
General Electric
Georgetown University Medical Center
Greenway Medical Technologies, Inc.
Group Health Cooperative
Guidant Corporation
Health Hero Network
Health Level Seven, Inc.
Health Network Services
Health Technology Center
Health e-Technologies Initiative
HealthStar Communications
HEALTHvision
Healthwise, Inc.
Hewlett Packard
Horizon BCBS of New Jersey
Hospital Association of New York State
IBM Corporation
IDX Systems Corporation
InterCare DX, Inc
Internet Healthcare Coalition
Johns Hopkins University Medical Center
Johnson & Johnson
Joseph H. Kanter Foundation
Kaiser Permanente
Keck School of Medicine, University of Southern California
LA Care Health Plan
LAB-Interlink, Inc.
Los Angeles Chamber of Commerce
Lumenos
Lumetra
Massachusetts Health Data Consortium
Mayo Clinic
McKesson Corporation
Medical Group Management Association
Medisys Health Network, Inc.
Medstar Health
Microsoft
Montefiore Medical Center
National Association of Chain Drug Stores
National Business Coalition on Health
National Certification Commission for Acupuncture and Oriental Medicine
National Committee for Quality Assurance
National Quality Forum
NDCHealth

New York Presbyterian Hospital, the University Hospitals of Columbia and Cornell
North Carolina Healthcare Information and Communications Alliance
Oregon Health and Sciences University
Pacific Business Group on Health
Partners HealthCare System
Patient Safety Institute
PeaceHealth
Pfizer, Inc.
Presbyterian Medical Services
PTC Therapeutics
Regenstrief Institute for Health Care
RelayHealth
Rx Hub
Ryan Community Health Network
Sentillion
Siemens Corporation
Sonnenschein Nath and Rosenthal
St. Louis University School of Public Health
Strategic Models LLC
Sun Microsystems
Surescripts
Sutter Health
Taconic IPA
Telemedicine Center of East Carolina University
The IPA Association of America
TriZetto
University of Illinois Medical Center
University of Pittsburgh Medical Center
University of Tennessee / University of Tennessee Medical Group
URAC
Vanderbilt University Medical Center
VHA Inc.
Voxiva
WebMD
Workgroup on Electronic Data Interchange (WEDI)

Appendix B: Overview of Federal Legislation in Information Technology and Health System Improvement

Overview

There is recognition among key federal government stakeholders that information technology can help address our nation's systemic healthcare shortfalls including members of both parties of Congress, the White House, the Department of Health and Human Services (DHHS), the Veterans Administration, the Department of Defense and other federal agencies. Additionally, a considerable amount of momentum has been built recently around the need for federal investment to catalyze the creation of a health information infrastructure and the information technology (IT) that will support it--to realize the quality, safety and efficiency gains that can only be achieved through the use of IT.

The following is a summary of Congressional legislation considered in 2003 and through March 31, 2004 that could boost federal investment and leadership in information technology and support a safer, higher-quality, efficient health care system. This legislation includes the:

- Medicare Prescription Drug, Improvement and Modernization Act of 2003;
- The House and Senate patient safety bills (H.R. 663, S. 720);
- House legislation related to the building the National Health Information Infrastructure (H.R. 2915);
- House and Senate legislation to provide grants to hospitals and skilled nursing facilities to help with the purchasing and implementation of medication error reduction technology (H.R. 3035, S. 1729).

Medicare Prescription Drug, Improvement, and Modernization Act of 2003

Overview

On November 25, 2003, the Senate gave final congressional approval to the Medicare conference report by a vote of 54-44 while the House passed its bill on November 22, 2003 by a vote of 220-215. President Bush signed the combined conference report into law at a formal signing ceremony on December 8, 2003.

Healthcare quality/IT-related provisions in the Medicare Prescription Drug Improvement and Modernization Act of 2003 are summarized below.

Electronic Prescription Program

- Establishes a real-time electronic prescribing program to be used by all physicians, pharmacies and pharmacists who serve Medicare beneficiaries with Part D benefits. The information to be provided electronically includes the following: information on the drug being prescribed or dispensed and other drugs listed on the patient's medication history, including drug interactions, warnings or cautions, and dosage adjustments when needed; information on therapeutic alternatives for the prescribed drugs.

- The legislation also provides that, after the basic electronic prescribing standards are established and at a time determined by the Secretary, the program shall provide for electronic transmittal of information that relates to the medical history of an individual beneficiary and related to a covered prescription drug upon request from a treating health care professional or pharmacist.

- Requires the HHS Secretary to develop, adopt, recognize, or modify -- not later than September 1, 2005 -- initial uniform standards for e-prescribing, taking into account the recommendations of the National Committee on Vital and Health Statistics.

- Provides for the National Committee on Vital and Health Statistics to develop recommendations for these electronic prescribing standards in consultation with standards setting organizations, practicing physicians, hospitals, pharmacies, practicing pharmacists, pharmacy benefits managers (PBMs), state boards of pharmacy, state boards of medicine, experts on electronic prescribing; and other Federal agencies.

- The standards for the electronic prescribing program are not mandatory for all prescriptions. However, the language of the legislation states, in general terms, that if a health care provider or pharmacy uses electronic means to prescribe Medicare Part D covered drugs, that these electronic transmissions must meet the final standards issued by the Secretary (this requirement will be subject to regulatory interpretation as the guidelines for the program are developed.) If a provider does not use electronic means to prescribe, he or she will not be required to begin using electronic means.

- Information transmitted under this program shall only be disclosed if permitted under the HIPAA rules concerning the privacy of individually identifiable health information.

- Objectives of the uniform electronic prescribing standards to be developed are improving patient safety and the quality of care provided to patients and efficiencies, including cost savings, in the delivery of care.

- Uniform electronic prescribing standards should not impose an undue administrative burden on doctors, pharmacies or pharmacists; be in alignment with rules on administrative simplification, as well as other provisions in the bill with respect to beneficiary protections, and with general health information technology standards; be designed in such a way that will permit the electronic exchange of drug labeling and listing information.

- Directs the HHS Secretary to conduct a voluntary electronic prescribing pilot project in 2006. Such a pilot is not required where the Secretary decides there is already adequate experience with comparable programs. The Secretary will evaluate and make recommendations to Congress no later than April 1, 2007 on the pilot project.

- Requires the HHS Secretary to create uniform standards for electronic prescribing based on the evaluation by the Secretary. These uniform standards must be promulgated by the HHS Secretary no later than April 1, 2008.

- Establishes a safe harbor from penalties under the Medicare anti-kickback statute;

- Establishes a safe harbor from the financial relationship rules under Medicare for certain doctors, hospitals, and plans.

- Provides that these standards will pre-empt state law or regulation that are contrary to or restrict the ability to carry out the electronic prescribing program or which pertain to the electronic transmission of medication history and information on eligibility, benefits and prescriptions with respect to Medicare-covered (Part D) prescription drugs.

Grants to Physicians to Implement Electronic Prescription Programs

- Authorizes the HHS Secretary to make grants to physicians to help defray the cost of: purchasing, leasing, and installing computer software and hardware, including handheld computer technology; making upgrades and other improvements to existing computer software and hardware to enable e-prescribing; providing education and training to eligible physician staff on the use of technology to implement the electronic transmission of prescription and patient information.

- HHS Secretary shall give preference in awarding grants to physicians who serve a disproportionately large Medicare patient population, as well as physicians who serve a rural or underserved area.

- Requires grant applicants to provide a 50% matching rate for all costs incurred in implementing their e-prescribing program.

- Authorizes the appropriation of $50 million for grants in Fiscal Year 2007, and such sums as necessary for Fiscal Years 2008 and 2009. Funds will not be available unless Congress appropriates them, beginning with the FY 07 federal budget.

Payment Demonstrations

- Provides for a "Medicare Care Management Performance Demonstration" in Section 649, which is described as follows:

- The HHS Secretary shall establish a pay-for-performance demonstration program with physicians to meet the needs of eligible beneficiaries through the adoption and use of information technologies and evidence based outcome measures for promoting continuity of care, helping stabilize medical conditions, preventing or minimizing acute exacerbation of chronic conditions and reducing adverse health outcomes such as adverse drug interactions related to polypharmacy.

- There shall be no more than four demonstration sites. Two shall be in urban areas, on in a rural area and a fourth in a designated state that is likely to be Arkansas. The demonstration program shall be carried out over a period of three years.

- The HHS Secretary shall consult with private sector and non-profit groups that are undertaking similar efforts to improve quality and reduce avoidable hospitalizations for chronically ill patients.

- A physician who provides care for a minimum number of eligible beneficiaries (as will be specified by the Secretary) may participate in the demonstration. Physicians must agree to phase-in over the three year term of the demonstration the use of health care information technology to manage the clinical care of eligible beneficiaries and electronic reporting of clinical quality and outcomes measures in accordance with requirements established by the Secretary.

- Physicians must also meet certain "practice standards" requirements, including the ability to establish and maintain heath care information technology systems for beneficiaries.

- The HHS Secretary shall pay a per-beneficiary amount to each participating physician who meets or exceeds specific performance standards regarding clinical quality and outcomes measures.

- The HHS Secretary shall contract with Quality Improvement Organizations (QIOs) or such other entities as the Secretary deems appropriate to enroll and evaluate participating physicians.

- Within 12 months of the completion of the demonstration project, the Secretary shall send a report to Congress with appropriate recommendations for legislative and administrative action.

- For purposes of this demonstration project, "healthcare information technology" is defined as "email communication, clinical alerts and reminders and other information technology that meets such functionality, interoperability and other standards as prescribed by the Secretary."

Commission on Systemic Interoperability

- Section 1012 provides for Commission on Systemic Interoperability which will develop a comprehensive strategy, timelines and priorities for the adoption and implementation of health care information technology standards.

- In developing this strategy, the Commission must consider the costs and benefits of standards, their impact on financial issues and quality, the existing demand on industry resources to implement the provisions of the Medicare prescription drug bill and electronic standards (including HIPAA standards) and the most cost-effective and efficient means for industry implementation.

- Commission is prohibited from interfering with any standards development or adoption processes underway in the private or public sector and from replicating activities related to such standards or to the national health information infrastructure that is under way within the Department of Health and Human Services.

- Report from the Commission must be submitted to the HHS Secretary and Congress describing the strategy and analyzing its effect on the areas of consideration described above no later than October 31, 2005.

- Commission is to be composed of 11 members. Three will be appointed by the President, two by the Majority Leader of the Senate, two by the Minority Leader of the Senate, two by the Speaker of the House of Representatives and two by the Minority Leader of the House. Members of the Commission are to be nationally recognized experts in a full range of fields representing various aspects of the health care system as well as a balance between urban and rural representatives.

Chronic Care Improvement

- Provides for phased-in development, testing, implementation and evaluation by randomized control trials of chronic care improvement programs by the HHS Secretary.

- HHS Secretary will enter into an agreement with chronic care improvement organizations not later than 12 months after enactment of the Medicare bill. The initial contractual period of agreement for organizations is three years.

- Medicare beneficiaries eligible for chronic care improvement plans are those that collectively: are entitled to benefits under Medicare Part A, are enrolled under Part B, but not enrolled in a plan under part C; and have one or more "threshold" chronic conditions such as heart failure, diabetes, chronic obstructive pulmonary disease and others that the Secretary selects as appropriate for the establishment of a chronic care program.

- Organizations providing chronic care improvement plans may be a disease management organization, health insurer, integrated delivery system, physician group practice, a consortium of such entities or any other legal entity the HHS Secretary deems appropriate.

- In the initial contract period, chronic care improvement plans can only be undertaken in geographic areas in which at least 10,000 targeted beneficiaries reside among individuals entitled to benefits under Medicare part A, enrolled under Medicare part B, or both.

- Required elements of a chronic care improvement plan includes the use of monitoring technologies that enable patient guidance through the use of decision support tools and the development of a clinical information database to track and monitor each participant across settings and evaluate outcomes.

- Requires independent evaluation of the initial chronic care improvement programs on the following factors: quality improvement measures, beneficiary and provider satisfaction, health outcomes, and financial outcomes (including cost savings).

- Subsequent to evaluation, the HHS Secretary can expand the geographic areas in the chronic care improvement program or choose to implement the program on a national basis. Expansion cannot begin earlier than two years after the initial program is undertaken and not later than six months after the program is implemented.

Other IT Provisions

Establishes a new Council for Technology and Innovation and an Executive Coordinator for Technology and Innovation within the Federal Government to coordinate the coverage, coding and payment processes for new technologies and procedures and to coordinate the exchange of information on new technologies between the Federal Government and other entities that make similar decisions.

Provides for improvements in the recognition of new technologies under the Medicare inpatient hospital prospective payment system and for enhanced input from the public and appropriate experts as to whether a new service or technology represents an advance in medical technology that substantially improves beneficiary diagnosis and treatment.

House and Senate Patient Safety Bills

Overview
The House passed the Patient Safety Improvement Act (H.R. 663) in March 2003. The Senate version of the Patient Safety Improvement Act (S. 720) was approved by the Senate HELP Committee on July 24, 2003. S. 720 now awaits Senate floor action and it is unclear if the bill will proceed to the floor this year. An overview of provisions in H.R. 663 and S. 720 related to IT that improves quality, safety and cost-effectiveness is detailed below.

Patient Safety Improvement Act
(House Bill -- H.R. 663)

- Directs HHS Secretary to develop or adopt voluntary, national standards for the interoperability of health care IT systems within 18 months after enactment.

- Secretary directed to do by considering combination of recommendations from Medical Information Technology Advisory Board, NCVHS, and members of IT and provider community involved with interoperability and shall provide for on-going review and periodic updating of the standards developed.

- Puts in place a grant program in which:
  - Qualified practitioners can receive federal funding for the establishment of an electronic prescription drug program;
  - Hospitals and other health care providers can get federal dollars for acquiring and implementing IT whose purpose is to improve quality and patient safety.

- Special IT grant funding consideration is given to those institutions who are focusing on:
  - Electronic communication of patient data across the spectrum of care;
  - Interoperability across hospital settings using the standards developed as part of the legislation;
  - CPOE and bar-coding;
  - Improved clinical decision-making through acquisition and implementation of decision support technology;
  - Entities receiving these grants must report back to the Secretary about the effectiveness and cost-effectiveness of such technologies 1 year and three years after receiving the grant;

- In terms of funding, the bill authorizes an appropriation of $25 million for these grants in both FY2004 and FY2005.

The Patient Safety and Quality Improvement Act
(Senate Bill -- S. 720)

Lays the groundwork for an interconnected, electronic health information infrastructure by:

- Requires the HHS Secretary within 36 months of enactment to develop standards that promote integration of health care information technology systems.

- Requires the HHS Secretary to contract with a research organization to "assess impact of medical technologies and therapies on patient safety, patient benefit, health care quality, and costs of care, as well as productivity growth."

House NHII Bills

Overview
According to a recent Institute of Medicine report, "to deliver healthcare in the 21st century, the system must have a health information and communications technology infrastructure that is accessible to all patients and providers." House Ways and Means Subcommittee Chairwoman Nancy Johnson (R-CT) has been a leading champion of such an infrastructure and introduced the *National Health Information Infrastructure Act* (H.R. 2915) on July 25, 2003. An overview of H.R. 2915 is below. In addition, Senator Hillary Clinton (D-NY) introduced a bill in December 2003, which amends the Public Health Service Act to promote higher quality health care and better health by strengthening health information, information infrastructure, and the use of health information by providers and patients. We understand this bill is under revision. Finally, the office of Senate Health, Education, Labor and Pensions Committee Chairman Judd Gregg continues to develop a Senate NHII bill, which will likely be introduced early in 2004.

Goals of both bills are the same. They include:

- Maximizing positive outcomes in clinical care;
- Minimizing preventable medical errors, especially in hospitals and in the administration of contraindicated drugs;
- Reducing redundant paperwork, such as the repeated taking of patient histories;
- Decreasing costs from duplicative or otherwise unnecessary testing or procedures; and
- Establishing a compatible information technology architecture that increases health care quality and cost-savings, enhances security of information, and avoids the financing and development of health information technology systems that are not readily compatible.

National Health Information Infrastructure Act
(H.R. 2915)

- An NHII Officer is appointed by the HHS Secretary for a term of five years, unless extended by act of Congress, office shall terminate who is responsible for developing and maintaining ongoing national leadership in the planning, development, and adoption of a national health information infrastructure. The HHS Secretary may assign to the officer other duties that would promote the goals of the Act.

- Six months after enactment, the NHII Officer (in cooperation with key stakeholders named in the Act) will develop an NHII strategic plan including public sector and private sector activities.

- Key stakeholders include:
  - Experts from the fields of medical information, information technology, medical continuous quality improvement, and medical records security and privacy;
  - Appropriate staff experts from Federal agencies (including those within the Department of Health and Human Services) and representatives of;
  - The National Committee on Vital and Health Statistics, the National Institutes of Standards and Technology, the National Library of Medicine, and the Agency for Healthcare Research and Quality;
  - Individual and institutional health care clinical providers, including a teaching hospital and physicians;
  - Clinical and health services researchers;
  - Health care purchasers;
  - Private organizations with expertise in medical informatics;
  - Patient groups;
  - A State or local public health department; and
  - The health care information technology industry and national alliances formed to achieve standards-based health care information systems.

- One year after enactment, NHII strategic plan submitted to Congress (also includes information on progress on interface recommendations, standards recommendations and required assessments).

- One year after enactment, NHII Officer must submit an assessment of the best practices in the development, purchase and maintenance of medical information technology and existing legal requirements for communication standards to the HHS Secretary.

- Two years after enactment, NHII officer must submit recommendations for a uniform health system interface, adoption methods and ensuring compatibility among old and new systems to the HHS Secretary.

- Two years after the initial NHII report is submitted to Congress, annual report submitted by the HHS Secretary to Congress on additional recommendations, best practices, results of information technology improvements, analyses of private sector efforts to implement new data and communication standards and other matters to "help ensure the most rapid dissemination of best practices in health care IT".

- NHII strategic plan should include:
  - National agenda to guide policymaking;
  - Technology investments;
  - Research, and integration with ongoing public health, healthcare, and health information technology activities;
  - Timeline for the specific duties described in subsection (d)(1) – (the best current practices in the development, purchase, and maintenance of medical information technology and currently existing legal requirements for communication standards).

Health Information for Quality Improvement Act
(S. 2003)

A summary of the bill is below. It should be noted that this language is currently under revision.

- By not later than 6 months after the date of the enactment of this Act, the Secretary shall establish within the Office of the Secretary an Office of National Healthcare Information Infrastructure (in this section referred to as the 'Office'). The Office shall be headed by a Director who shall report directly to the Secretary and who shall be responsible for providing ongoing national leadership in the planning, development, and adoption of a national healthcare information infrastructure.

- Not later than 2 years after the date of the enactment of this Act, the Secretary shall as needed adopt (and shall periodically review, update, and expand) a set of voluntary, national data and communications standards that promote the interoperability of health care information technology systems across all public and private health care settings.

- No later than 12 months after the date of the enactment of this Act, the Secretary shall submit to Congress a comprehensive national healthcare information infrastructure strategic plan that includes:

  - A survey of health care information technology standards being developed by private sector and public-private groups;
  - Recommendations for accelerating the development of common health care vocabulary standards;

- Recommendations for completing development of health care information system messaging standards; and
- Progress toward meeting the deadline for adoption of methods relating to a uniform system interface.

- Grants will be given to hospitals and other healthcare providers, with special consideration given to those who use standards and promote communication of patient data across spectrum of health delivery. Conditions include patient safety reporting, evaluating effectiveness of IT, and matched funding

Bicameral Medication Errors Reduction Act

Overview

In response to the Institute of Medicine report *To Err Is Human*, which cited medication errors as the cause of thousands of unnecessary preventable deaths and injuries every year, the House and Senate introduced legislation to help stop the incidence of such mistakes. Sens. Bob Graham (D-FL) and Olympia Snowe (R-ME), along with Reps. Amo Houghton (R-NY) and Earl Pomeroy (D-ND) introduced legislation in 2003 to provide funding for certain health care providers to purchase and implement medication error reduction technology. A detailed description of the legislation follows.

Medication Error Reduction Act of 2003
(S. 1729, H.R. 3035)

- The Secretary shall establish a program to make grants to eligible hospitals and Skilled Nursing Facilities to help offset costs related to the purchasing, leasing, developing, and implementing of clinical informatics systems designed to improve patient safety and reduce medication errors.

- Eligible costs include:
  - Purchasing, leasing, and installing computer software and hardware, including handheld computer technology;
  - Making improvements to existing computer software and hardware;
  - Purchasing or leasing communications capabilities necessary for clinical access, storage, and exchange; and
  - Providing education and training to eligible entity staff on computer patient safety information systems.

- Special considerations for certain entities are to be taken into account when awarding grants. These are entities in which certain groups comprise a high percentage of their patient population, including the following:
  - Those eligible for Medicare benefits under Title XVIII of the SSA;
  - The Medicaid program under Title XIX of the SSA; and
  - The SCHIP program under Title XXI of the SSA.

- A 20 percent reserve of the money appropriated for grants is to be set aside for grants to rural entities. This set-aside will be made available to all eligible entities if it is not used up by rural entities.

- The individual grant awards are not to exceed $750,000 for any individual hospital or $200,000 for any individual SNF.

- The bills authorize Congress to appropriate from the Medicare Part A Trust Fund $93 million per year for the years 2004 through 2013. The bills authorize Congress to appropriate from the Part A Trust Fund an additional $4.5 million per year for SNF's over the same time period.

- The bills also call for a series of reports to be made to the House Committee on Ways & Means and the Senate Finance Committee providing details of the number of grants made, the nature of the projects, the geographic distribution of the grants, and any other details that the Secretary may deem appropriate.

Conclusion

Momentum continues to build within both Congress and the Administration around the need for an electronic health information infrastructure and the information technology (IT) that will support it--to realize the quality, safety and efficiency gains that can only be achieved through the use of IT. This momentum has increased collaboration between the public and private sector and has re-framed the debate over these issues from "whether to catalyze the creation of a health information infrastructure and supporting IT" to "how this will be accomplished".

In Congress, the coming year will yield the introduction and possibly, the passage of legislative proposals that improve the health care system for patients, providers and those responsible for population health by incentivizing the development and adoption of an interoperable, electronic healthcare information infrastructure and supporting information technology.

Appendix C: Clinical Decision Support Feature List: Further Descriptions and Comments:

This appendix contains detailed explanations of the features listed in the table in the section on Clinical Decision Support.

1. General Contraindication Decision Support

1a) Allergy checking: Should include allergy checking across drug classes (e.g., prescribing a penicillin to a patient with an allergy to cephalosporins) and within drug class (e.g., NSAID's).

1b) Drug-drug interaction checking: Should include severity level of the interaction (typical electronic drug dictionaries have three to five levels of severity). The application could potentially allow users to configure the application to filter out warnings based on severity level, although this could potentially be dangerous. Alternatively, lower-severity warnings may be displayed in a fashion that makes them visible but doesn't require a direct response from the prescriber.

1c) Drug-condition contraindication checking: For instance, ordering a beta-blocker for a patient with asthma, depression, peripheral vascular disease, etc. would trigger a warning about possible worsening of the condition. This implies that the application is aware of diagnoses, typically via a coded problem list.

1d) Duplicate therapy checking: For instance, the system could provide a warning when a drug is ordered for a patient who already has another member of the same class on their active medication list (NSAID's, H2 blockers, etc.).

1e) Adverse effects: symptom monitoring: Recent data from Gandhi et. al. suggests that the single most important overlooked item related to ameliorable adverse drug events in ambulatory care is side effects that are already occurring in a patient. This feature requires that the application is aware of and can interpret reported symptoms (presumably recorded with a coded vocabulary such as ICD-9 or SNOMED), or at least can prompt users to ask patients about common side effects.

1f) User-defined alerts: User or user organization defines messages that they want to appear when particular drugs or drug classes are selected. Examples include "Please make sure that drug X has been tried before ordering this drug" (e.g., a form of stepped care), or "Don't forget to get a baseline EKG and check the Q-T interval" or "Please verify that this patient qualifies as being morbidly obese before ordering this drug." Most of these alerts require only the knowledge of the drug itself (level 2), although some may need other supporting data as well. These alerts can be quite simple and effective; they (a) provide user organizations with a lot of flexibility; (b) can cover areas typically not addressed by data from commercial drug knowledge base vendors; and (c) permit rapid

addition of a new warning without waiting for the next scheduled drug knowledge base update.

2. Dosing Decision Support

2a) Maximum dose checking: Maximum safe dose for a drug may vary by age, weight, and/or indication (as well as liver and renal function). In its crudest form, maximum dose warnings may only take broad age categories into account (e.g., <18 yrs, 18-65 yrs, >65 yrs) and ignore other related factors. Sophisticated dose checking depends on the availability of some or all of this information to the electronic prescribing application (e.g., indication, weight, lab data).

2b) Minimum dose checking: Probably not as critical for patient safety as maximum dose warnings, but same comments apply.

2c) Dose calculation: adult: Rather than just alerting a user to an over- or under-dose, the application actually recommends a dose or dose range, ideally taking into account factors such as age, weight, renal (and possibly other lab) function and indication. This feature is often seen in inpatient CPOE applications, particularly for drugs like aminoglycoside antibiotics and chemotherapy agents.

2d) Dose calculation: pediatric: Pediatric dosing tends to vary more than adult dosing and more typically requires weight-based calculations (e.g., antibiotic dosing for ear infections); arguably, pediatric dosing support in an electronic prescribing application should be more robust than adult, though some of the same considerations begin to apply again in geriatric populations.

2e) Dose calculation: chemotherapy: This area is as complex as it is important. Difficult issues arise for electronic prescribing applications used in outpatient oncology settings, particularly surrounding the management of orders for intravenous chemotherapy agents administered in the clinic. The feature as listed here applies to dosing support for chemotherapy prescriptions to be dispensed at a pharmacy, but could be extended to include ordering of drugs to be administered in the clinic (oral or intravenous).

2f) Common sigs: When configuring a new prescription, after a drug is selected, an electronic prescribing application can provide a default set of common sigs specific to that drug (e.g., for amoxicillin 250 mg capsule, common sigs could include "1 cap po tid" and "2 caps po tid"). In addition to being a workflow aid, this represents a subtle but real form of proactive clinical decision support.

2g) Structured sigs: Sigs (e.g., "1 cap PO tid") can be treated by electronic prescribing applications as text strings or as a set of discrete data items representing dose, dose form, route and frequency (e.g., "1," "capsule," "by mouth," "3 times daily"). While structured sigs is not itself a form of decision support, it is an important prerequisite for some other forms of dosing decision support, such as dose checking. See more information in the Standards and Vocabularies section.

3. Laboratory Decision Support

3a) Laboratory results lookup: passive: Lab results are available on the computer, but the user has to toggle to a lab results review section and browse for relevant results (e.g., renal, hepatic and/or bone marrow function).

3b) Laboratory results lookup: anticipatory: Lab results are not only available on the computer, but the prescribing interface anticipates the user's need for relevant data (e.g., renal, hepatic and/or bone marrow function) and either displays the data on a prescribing screen directly, or provides an iconic representation of normal/abnormal status with quick links to actual results. Other examples of this would be anticipatory displays of prior lipid values when a lipid-lowering drug is being prescribed, or INR values with warfarin prescribing.

3c) Placeholders for prescribing-related lab values: If there is no electronic interface to lab results, the prescribing application could still allow for manual entry of lab values (especially renal, hepatic and bone marrow function) and could use these entered values in dosing calculations.

3d) Drug-lab interaction checking: This does not denote drug interference with lab testing. Rather, this refers to drugs being contraindicated or requiring dosage adjustment in the presence of certain lab values. The most common situation would be medications that are contraindicated or require dose adjustment with abnormal renal function (high BUN and/or creatinine). Potassium level, liver function tests, and bone marrow function (hemoglobin, WBC, platelet count) are other examples of labs whose results may suggest dosage modification or discontinuation of a drug. This implies that the electronic prescribing application is integrated with lab data.

3e) Laboratory parameters to monitor: This denotes recommended lab tests to be followed with certain drugs, such as liver function with some cholesterol-lowering drugs or antifungal drugs, WBC with Clozaril, etc. A lab-integrated electronic prescribing application could potentially know what tests should be followed and alert users if recommended tests are due or overdue. As opposed to simply having parameters to monitor be available for lookup, the feature listed here assumes that the application is actually aware of whether or not the recommended monitoring test has been done.

4. Indication-based Decision Support

4a) Drug-to-indication linkages: Denotes the ability to pick a drug and see a list of indications associated with that drug. This makes it easier to assign an indication to a prescription (this is also a convenient way to capture diagnoses for a problem list, which is necessary for condition-contraindication checking for subsequent prescriptions). These linkages can include off-labeled indications.

4b) Indication-to-drug linkages (order by indication): Denotes the ability to pick an indication and see a list of drugs associated with that indication. This helps guide decision making, and can be particularly helpful if coupled with formulary data (e.g., showing a list of drugs that are available to treat a particular condition and are also on formulary). These linkages can include off-labeled indications.

4c) Supports creation of multi-drug regimens: Lets users or user organizations create order sets with more than one drug, usually for treating conditions that often require more than one drug (e.g., asthma, H. pylori, HIV, sinusitis). This is a form of indication-to-drug linkage.

4d) Indication-to-regimen linkages: Links regimens to specific indications, so that users can see the multi-drug regimens as well as individual drugs when choosing to see therapy options for an indication.

4e) Supports (and/or integrated with) active problem list: A patient's currently active problems are needed to drive condition-contraindication checking (i.e., it's difficult to deliver a warning that a beta-blocker could worsen a patient's asthma if the application isn't aware that the patient has asthma in the first place). Usually, the problem (or diagnosis) must be coded in order to be accessible to a drug knowledge base for contraindication checking.

4f) Complex protocol integration: Denotes interactive, form-based order sets or protocols. These are beginning to appear in commercial inpatient CPOE systems. These protocols can include lab monitoring as well as drug orders. Inpatient CPOE examples include heparin protocols for patients with DVT or PE, and chemotherapy protocols.

5. Online Reference Material/Knowledge Support

5a) Indications, contraindications, dosing, drug interactions: Online access to drug monographs, developed and maintained by the application vendor or a third party.

5b) Linkages to internal or external treatment guidelines: Rather than drug information per se, these guidelines would be indication-oriented (e.g., how to treat asthma, hypertension, diabetes, CHF, etc.).

6. Miscellaneous Data, Communication and Integration Issues

6a) Monthly (at least) updates of drug knowledge base: e.g., regular updates of the electronic dictionary that supports drug selection and allergy/interaction checking.

6b) Electronic interface with reference lab: Supplies data for lab-result-based decision support. Typically, this is more difficult to achieve for small practices.

6c) Filled prescription history: Supplied as a report or an interface, based on paid claims for patients who have a prescription benefit. Claims history makes it easier to assess patient compliance and to detect therapeutic duplications or dosing issues.

6d) Notify pharmacy of overridden alert: Whether via print or electronic message, pharmacists need to see what warnings were received and overridden during the prescription-writing process; otherwise, they may need to call the physician when the same warning appears in the pharmacy system. For the most severe warnings, a redundant phone call to verify override isn't necessarily a bad idea.

7. Formulary, Cost, Prescription Benefit

7a) Formulary status (on versus off): Denotes the simple display of whether a drug is on- or off-formulary.

7b) Preferred status: Even if a drug is on-formulary, there may be other on-formulary drugs in the same therapeutic class that are "preferred" for that patient's prescription benefit.

7c) Pointers to on-formulary/preferred drugs: Users can be frustrated if they look up a drug only to find out it is off-formulary, and then have to keep looking until they find one that is on-formulary. Direct pointers from off- to on-formulary, and from non-preferred to preferred drugs, alleviates this problem.

7d) Prior authorization management: Some drugs may be on-formulary, but only with prior authorization. The application could alert users to prior authorization status and requirements (e.g., "need a positive KOH smear to obtain prior auth for this drug when used for toenail fungus"), and potentially could expedite the approval process (e.g., format and send a fax or electronic communication with documentation required for prior authorization).

7e) Cost to patient: Some patients may not fill a prescription once they learn of their out-of-pocket costs, or they may call or return to their physician to request a less expensive alternative. The electronic prescribing application could alert physicians and patients to out-of-pocket costs (e.g., co-pay information if the patient has a prescription benefit, or estimated retail cost if they don't). Estimating actual cost to patient is both difficult and risky, since it may involve knowing exactly what brand and/or package size a pharmacist dispenses, and this usually can’t be known until after the prescription is sent to the pharmacy.

7f) Pharmacies in network: For patients with a prescription benefit, not all pharmacies participate in their benefit plan. It can be helpful to know this before a prescription is carried, faxed, or transmitted by EDI to a non-participating pharmacy. This information should include whether or not mail order is included in their pharmacy benefit (patients are often unaware of this and/or how to enroll).

Appendix D: Sample Implementation Plan

Sample Implementation Plan for Electronic Prescribing System

Introduction

Good implementation is critical to the success of any electronic prescribing project. The most intuitive software and cutting edge hardware will not stand on its own without a solid implementation plan. This paper will provide a sample high level project plan for implementing an electronic prescribing application. The milestones of this plan are divided into six major steps:

Step One:	Establish Expectations
Step Two:	Gain Commitment
Step Three:	Develop Detailed Plans
Step Four:	Construct the System
Step Five:	Go Live
Step Six:	Continuous Improvement

Details of each of these steps are listed on the following pages.

SAMPLE PROJECT PLAN

Step One: Establish Expectations

1A. Establish Goals

- Identify short term goals
- Identify long term goals
- Describe new processes
- Communicate goals to all users

1B. Gather Information

Assess readiness for electronic prescribing:
- Ability of local pharmacies to accept electronic prescriptions
- State regulations
- Office systems cost/difficulty for conversion of information
- Office staff comfort with computer tools

Project size

Project context:
- Is this part of a larger project such as an eventual EMR implementation
- Will the project be staged by functionality used, by floors, by departments or by other criteria

Target dates
Current hardware
Current staff

Interfaces needed:
- PMIS (generally required for successful implementation)
- Lab
- E-Prescribing connectivity hubs

Interface Notes:

- Demographic interfaces can be done real-time or batch or screen-scraping, but information must be present before the clinician sees the patient.

- Some electronic prescribing vendors may provide batch or real-time access to a patient's dispensed prescription claims history available from that patient's pharmacy benefit manager. While the practice does not need to be involved with implementing or maintaining this connection, there are patient consent issues involved that need to be addressed by the practice.

1C. Initial Meeting

Meet staff
Walk through site

Identify hardware needs:
- Handheld devices?
- Access points?
- Wireless network?
- Additional PCs or laptops?

Identify software needs:
- Correct operating systems?
- Correct Internet browsers?
- Any other software needs?

1D. Assemble Project Team

Select hardware source if needed
Identify project leader
Identify team members
Clarify roles

1E. Analyze Workflow

Analyze processes
Identify process changes
Validate hardware locations
Identify impact on staff
Identify training needs
Identify impact on others such as local pharmacies, patients and plan commutations such as letters for them

Step Two: Gain Commitment

2A. Staff Kick-off Meeting

Demonstrate software
Identify obstacles
Identify process changes
Solicit participation
Introduce project

2B. Confirm Goals

Confirm short term goals
Confirm long term goals
Confirm new processes
Communicate goals to all users

2C. Confirm Interface Availability *(see Electronic Prescribing Component List, **Error! Reference source not found.**, for detailed information)*

Identify data to transfer
Identify development
Identify transfer protocol
Determine timeline
Determine cost

Gaining Commitment Notes:

- The organization needs a fundamental commitment with clinician champions and administrative champions to drive adoption. The clinician champions should be formal or informal leaders who have the ability to influence other clinicians.
- It takes about 21 days to change behavior, so champions should plan for at least that length of time to be involved in coaching others in the office.

Step Three: Develop Detailed Plans

3A. Assemble Detailed Project Plan

List all tasks
Identify dependencies
Assign responsibility
Identify time line targets
Share with participants

3B. Agree to Project Plan

Reviewed by participants
Timelines validated
Task list validated
Agreed on by participants

3C. Implement Project Plan

Regular team meetings
Report on progress
Identify delays/problems
Refine project plan
Share with participants

Step Four: Construct System

4A. Install and Certify Hardware

Complete remodeling if needed
Access points, cabling and phone lines if needed
Install hardware if needed
Test operation

4B. Install and Certify Software

Access application
Install other software if needed
Test software operation
Set up training system if available

4C. Customize System Setup

Gather setup information:
- local pharmacy lists
- formulary mappings
- staff security/privileges

Set up live system
Begin pre-load of patient problem, medication and allergy histories
Set up training system
Fine-tune processes
Document new processes

Constructing System Notes:

There are a number of approaches to loading previous patient data:
- Obtain previous medication and problem lists from PBMs or PMIS systems.
- Abstract medication histories of all patients, or a selected subset of active patients, from charts or other systems when the electronic prescribing system is first implemented.
- Allow extra time for each patient the first time they are seen post-live and collect updated medications and problem histories at intake.
- Look ahead at scheduled patients 48 hours in advance and abstract their histories just prior to their visit.

Combinations and variations of the above approaches can be selected based on the needs and resources of the practice.

Depending on the sources of formulary data, a one-time mapping of individual insurers to the relevant formulary may need to be done during system setup.

4D. Test Interface Linkages (see attached Electronic Prescribing Component List for detailed information)

Test communications
Transfer sample data
Scrutinize data quality
Rework as needed
Write procedures

Step Five: Go Live

5A. Train Staff

Remedial Keyboard and Windows if needed
Application and Process training
Confirm new processes with simulation
Practice in teams

5B. Transfer Live Data through Interface

Register patients

5C. Online Operation

Begin with initial tasks
Start up support
Confirm ongoing support processes
Problem resolution
Process fine-tuning

Go Live Notes:

- Office staff is crucial to the success of the project. Do not focus training just on clinicians.

- Office workflows for new prescriptions, refills and renewals should be mapped out in detail well in advance of go live date. Do not wait until go live day and try to "wing it."

- Training costs can be a barrier, for both vendors and small offices. Explore creative training ideas such as CD-ROMs, webinars, web-conferencing and other forms of remote training. A well-written, user-friendly electronic prescribing tool should not average more than 2 hours of training per user.

  At Go Live, it is important to create a "drop dead" date in which the medication list in the electronic prescribing application is considered the primary and current list. This will need to be reinforced vigilantly until every staff member relies on that list for both current updating and when sharing information about the patient with other clinicians, etc. Do not allow the paper chart to be a "shadow chart" with partial medication information about patients as this can result in harm to patients and liability to the practice due to incomplete information.

Step Six: Continuous Improvement

6A. Process Improvement

Evaluate data quality
Evaluate new processes
Identify staff trained but not using the system
Take corrective action
Solicit feedback

6B. Technology Advancements

Evaluate hardware
Software enhancements
New technologies
Expanded use of features

Continuous Improvement Notes:

Once the application is live, the implementers will need to strike a reasonable balance between being responsive to user change requests and letting the users get some experience with the system before introducing numerous changes. Many implementers have found that they start out with a very long list of change requests in the first few weeks of use, but that many of these items resolve themselves as users figure out ways to use the system that do not require system or process changes. In general, it is important to be responsive to all concerns, making sure that the users know you are paying attention to them, and then to carefully determine which concerns are due to natural startup factors and which are real problems that will require a system change.

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Stand-Alone E-Prescribing: Ready or Not?

by Lyman Dennis

July 2007

Target Audience

This white paper is addressed to three audiences who may be considering adoption or support of stand-alone e-prescribing as an efficiency and quality of care measure: (1) managers of ambulatory community health organizations, (2) physicians and medical groups, and (3) managers of healthplans. Many of the considerations in this paper are also relevant to e-prescribing that is integrated with an electronic health record system. This paper builds upon the Healthcare Information and Systems Society (HIMSS) book published this year[i] on the factors impacting e-prescribing. The focus of this paper is how a physician or an organization decides if he/she/it desires to implement stand-alone e-prescribing.

Summary

Current prescribing practices are a weakness in the delivery of high quality medical care. Physicians write 4.5 billion new prescriptions annually[ii] and 1.5% to 4% of these contain errors. These errors cause 1 of every 131 deaths of ambulatory patients.[iii] Errors are caused primarily by communication of prescriptions: illegible handwriting, unclear abbreviations, dose errors, unclear oral orders, ambiguous orders and fax clarity. Electronic prescribing (e-prescribing) would require typed input, preferably from the physician, and would avoid most of these errors or allow them to be rectified online by the physician at the time of prescription writing.

The Medicare Prescription Drug Improvement and Modernization Act of 2003 (commonly called the "Medicare Modernization Act") began the Medicare Part D drug program. That law directed that healthplans sponsoring Part D drug programs begin supporting e-prescribing by May of 2009.[iv] The act also requires that physicians and pharmacies transmitting prescriptions electronically utilize standard transactions established under the act. While this is not a mandate to use e-prescribing throughout healthcare, by establishing a process, standards and timetable, many of the entities involved in prescribing are likely to adopt these practices, standards and the systems developed by vendors to support them.

Recently, a group of vendors and healthplans has developed what is called the National ePrescribing Safety Initiative or NEPSI. NEPSI is offering physicians software at no cost to perform e-prescribing. Because networks of pharmacies pay the connection cost, it is really possible for physicians to try and continue to use e-prescribing for "free". An interface between the NEPSI system and any practice management system is available for about $300 and $20 per month from Hilgraeve, Inc., so that patient demographics need not be re-keyed into the e-prescribing system.

Given these market forces and opportunities, this white paper explores the key considerations of moving to e-prescribing in order to help a community or rural clinic, a physician, a physician group, or a health plan decide whether to consider this option. In

doing this, the reader is told about the results of recent e-prescribing pilots conducted by the Center for Medicare and Medicaid Services, about e-prescribing for controlled substances, about the entities who provide networks supporting e-prescribing, and about key elements of e-prescribing. The aim of this white paper is to provide a framework for knowledgeable consideration of the e-prescribing alternative. The last section of the paper lists pros and cons of e-prescribing applicable to the clinic or physician.

Value of ePrescribing

Physicians and clinicians write more than 4.5 billion prescriptions each year and the volume of prescriptions rises annually. Between 1.5% and 4% of prescriptions contain errors that have a potentially detrimental effect upon the patient. Adverse drug events (ADEs) occur in 5% to 18 % of ambulatory patients. There are an average of 38 ADEs per physician per year of which 14 ADEs are preventable, including 42% of the most serious.[v] One of 131 ambulatory patient deaths is due to medication error.

Errors result from a number of factors. The most frequent source of error is miscommunication between the provider and the pharmacist. Communication errors stem most often from illegible handwriting, unclear abbreviations and dose indications, unclear telephone or verbal orders, and ambiguous orders and fax-clarity problems.[vi] Unreadable or vague prescriptions result in pharmacists making over 150 million calls to physicians seeking clarification annually.[vii] Other sources estimate that there are approximately 900 million prescription-related telephone calls per year with 30% of prescriptions requiring callbacks.[viii,ix] Estimates of the length of call-back calls are from 2 minutes to 10 minutes per call – a substantial amount of staff time given the number of callbacks.

The prescription process is more complex than it may at first appear to the patient. The physician may not have such information as: other medications the patient is taking, possible drug-to-drug interactions, the formulary of the patient's healthplan, current treatment guidelines of the payer, and information on healthplan requirements for prior authorizations.

The potential value of e-prescribing is in three areas: (1) patient safety, (2) increased physician office efficiency and (3) reduced cost. The above discussion makes it clear that there a potentially significant increase in patient safety because e-prescribing produces completely legible prescriptions in which all elements of the physician's intent are clear and compatible with the healthplan or payer formulary, other patient medications, patient allergies, etc.

Increased office efficiency is gained by the fact that the physician (or physician office worker) entering the prescription receives immediate feedback if a drug is not on the insurer's formulary that applies to the patient, if there is a dosage error, etc. There is seldom a callback needed to determine what was intended. The prescription is immediately transmitted to the pharmacy, so the process is more convenient for the patient as well.

Healthplans have a potential appreciable cost savings from e-prescribing. There are expected improvements in formulary adherence which have been estimated from 14% to 88%.[x] A healthplan which already manages its formulary well with its providers will have

a lower potential for improvement and a plan which manages its formulary loosely with respect to providers will have a large potential. Sierra Medical Associates, a large medical group, increased use of generics by 8.2% by adding e-prescribing.[xi] This is a significant savings to the healthplan. Another potential saving comes from enhancing the consistency with which formulary prior authorization requirements are observed and savings from medical care resulting from avoided ADEs.

Medicare Modernization Act of 2003

The Medicare Modernization Act of 2003 authorized the Medicare Part D drug program. Even though the act applies to a single federal program, it is likely to eventually drive transaction practices in almost all of healthcare. Doctors are not required by the act to prescribe electronically. The Medicare Modernization Act regulations do require that after 2009, physicians and pharmacies *who/that prescribe electronically* for Medicare Part D beneficiaries must utilize the final standards for transactions approved by the Center for Medicare and Medicaid Services (CMS) which are scheduled to be approved in April 2008. According to regulations, healthplans (Part D sponsors) are required to establish and maintain after 2009 an electronic prescription drug program that complies with transaction standards adopted by CMS.[xii]

National ePrescribing Safety Initiative

The National ePrescribing Safety Initiative (NEPSI) was developed by a group of vendors and healthplans which are committed to reduce medical errors and position themselves favorably in the healthcare market of the present and future. The organizations participating have agreed to offer stand-alone e-prescribing software at no cost to physicians for five years. After five years, those physicians and clinics not using an ERH will pay a per physician fee of $15 to $20 per month for use of the e-prescribing software. Pharmacies pay the cost of the prescribing networks. NEPSI has arranged that a third-party vendor will provide interfaces between its software (essentially, the Allscripts e-prescribing system from its TouchWorks EHR system) and physician practice management systems for a one-time fee (as of June 2007) of $299.

If a healthplan wishes to promote the NEPSI approach to its contacted physicians, the healthplan would currently incur some cost. In theory, this would be recouped through savings from higher use of generic medications, fewer member ADEs and their associated healthcare cost, and more efficient administration of medications requiring prior authorization.

The vendors and healthplans sponsoring NEPSI include Allscripts, Dell, three national or regional healthplans, five technology companies, SureScripts, Google, and a chemotherapy management organization. A list of sponsors is available at http://www.nationalerx.com/sponsors.htm.

E-Prescribing Pilot Implementations

Part of the sequence of e-prescribing standards development under the legislation was a pilot of e-prescribing standards. The Secretary of Health and Human Services, Michael Leavitt, reported these results on schedule in April 2007.[xiii]

That demonstration involved the use of the standards specified under the Medicare Modernization Act[xiv]. Based on the recommendation of the National Committee on Vital and Health Statistics (NCVHS), CMS adopted a set of foundation standards for e-prescribing. The term "foundation standards" was used because they do not support the full range of e-prescribing functionality, but they are a base on which other standards can be built. These foundation standards were initially four but after public comment were reduced to three:

1. Eligibility and benefits information, including the drugs included in the applicable formulary, and tiered formulary structure, and any requirements for prior authorization.

2. The following information with respect to the prescribing and dispensing of a covered Part D drug:

    a. Information on the drug being prescribed or dispensed and other drugs listed on the medication history, including information on drug-drug interactions, warning or cautions, and, when indicated, dosage adjustments; and

    b. Information on the availability of lower cost, therapeutically appropriate alternatives (if any) for the drug prescribed.

3. Information that related to the medical history concerning an individual and related to a covered Part D drug being prescribed or dispensed, upon request of the professional or pharmacist involved.

For the pilots, the Secretary and NCVHS eventually focused on six elements of the foundation standards:

1. **Formulary and benefits information**, National Council for Prescription Drug Programs (NCPDP) Formulary and Benefit Standard Version 1.0. Displays the formulary status and alternative drugs as well as co-pays and other status information. NCPDP has developed a standard using RxHub protocol. This transaction was used in conjunction with the eligibility request and response transaction, Accredited Standards Committee (ASC) X12N 270/271.

2. **Exchange of medical history**, NCPDP SCRIPT Standard Version 8.1 (updated during the pilots from Version 5.0). Includes the status, provider, patient, coordination of benefits, request and response segments of SCRIPT. Few physicians in the demonstrations actually accessed prescription history data. Many may not have known that it was available.

3. **Fill status notification**, NCPDP SCRIPT Version 8.1. Informs when Rx is filled, not filled, or partially filled. Includes provider, patient and drug segments of SCRIPT message. Not yet widely used as the majority of pharmacy systems either do not have this feature or have not implemented it.

4. **Prior authorization messages**, ASC X12N 278, Version 4010A1 and ASC X12N 275, Version 4010 with HL7. Requires header information, requester, subscriber, utilization management, and other relevant information for prior authorization requests. This transaction is not widely implemented and while it could be useful to simplify the over all prior authorization system, it is not technically able to support the complex nature of the prior authorization process.

5. **Structured and Codified SIG** (The "signature" section of prescription contains directions to the patient, often abbreviated "sig.", so as not to confuse the instructions with the provider's signature, which is also there.), NCPDP SCRIPT Standard Version 8.1 and Structured and Codified SIG Standard Version 1.0. Indication, dose, dose calculation, dose restriction, route, frequency, interval, site, administration time, duration and stop-order instructions. There is no standard format or vocabulary for SIGs leaving room for misinterpretation and error.

6. **Clinical drug terminology (RxNorm)**. A clinical drug nomenclature developed by the National Library of Medicine that provides standard names for clinical drugs and for dose forms as administered. It also provides links from clinical drugs to their active ingredients, drug components, and most related brand names. This nomenclature is promising but does not always link properly currently, requires the use of intermediary knowledge-based products, and does not handle pharmacy-compounded drugs.

Five applying pilot sites became grantees of CMS to test the above standards. The Agency for Healthcare Research and Quality's (AHRQ) National Resource Center for Health Information Technology (NRC) evaluated the efforts of the pilot sites. AHRQ/NRC concluded that the first three standards elements were technically able to convey the information needed to support its functions for use in Medicare Part D programs. The later three standards elements were found by AHRQ/NRC not to be ready for use. [xv] The comments in the above list indicate the reasons they were not accepted.

Like the Health Insurance Portability and Accountability Act (HIPAA), the Medicare Modernization Act contains a preemption clause indicating that the Act preempts conflicting state e-prescribing regulations. It appears that this clause may not be used aggressively by the federal government.

E-Prescribing for Controlled Substances

The Drug Enforcement Administration (DEA) of the U.S. Department of Justice, regulates and enforces the prescribing of controlled or scheduled drugs. The Controlled Substances Act is Title II of the Comprehensive Drug Abuse Prevention and Control Act of 1970.[xvi] The Controlled Substances Act places all controlled substances into one of five schedules based on medical use, potential for abuse and safety or potential for dependence. The DEA has responsibility for classification in these schedules, and it reclassifies drugs from time-to-time. Substances in Schedule I have no medical use and high potential for abuse. Drugs in Schedules II through V have a medical use and higher-numbered schedules have less potential for abuse.

Currently, the DEA does not allow e-prescribing for controlled substances. DEA regulations require that the pharmacist must have the original physical signed prescription slip prior to dispensing Schedule II controlled substances, with exceptions for emergency prescribing and long-term care facilities. Prescriptions for Schedule III and IV substances can be transmitted orally but must be written out by the pharmacist prior to filling. There appears to be no DEA requirement that prevents e-prescribing of Schedule V substances.[xvii] State laws and practices may be more stringent than DEA regulations for any schedule. Hereafter we do not distinguish Schedule V form Schedules III and IV.

The DEA has been drafting proposed rules for e-prescribing for several years. A Notice of Proposed Rulemaking for the Electronic Prescribing of Controlled Substances (EPCS) was to be published in the *Federal Register* in 2003 but has not yet appeared. A two-day hearing on the need for these regulations was conducted in July, 2006, by the DEA and the U.S. Department of Health and Human Services to solicit public testimony.

Until the DEA issues rules for EPCS, prescriptions can be transmitted by written prescription, by verbal order or by facsimile (via fax machine). The general practices of prescribers are as follows:[xviii]

1. For **Schedule II drugs**, the physician may call-in or fax the prescription to the pharmacy but the pharmacist must receive the original written and signed prescription before dispensing the prescription. (There are exceptions for emergencies, for long-term care facilities and for parenteral products.)

2. For **Schedule III through V drugs**, an original prescription signed by the physician and faxed to the pharmacy is considered a legal “oral” prescription. This may be accomplished four ways in conjunction with e-prescribing:

    a. Hand-write and sign the prescription and fax it to the pharmacy.

    b. E-prescribe these prescriptions, print and sign the prescription, and fax it to the pharmacy. (Pharmacy receives two copies, one e-prescribed and one faxed.)

    c. E-prescribe these prescriptions, print and sign the prescription, and have the patient take it to the pharmacy.

    d. E-prescribe these prescriptions and require the pharmacist to call the physician office to verify the prescription and log who verified it.

If a **prescription is generated by an electronic device** (PC, fax server, handheld device, cellular telephone, etc.) and either (a) is not signed or (b) contains an electronic signature, the prescription is not considered legal by the DEA. The EPCS regulations are expected to provide further options.

Entities Supporting E-Prescribing

For e-prescribing to function well, the prescribing physician's software needs to connect to a server or network that connects to all the pharmacies in the physician's area that a patient might prefer to use. Since patients may travel extensively and have a home in one location and vacation far away, national networks have been developed. All of the organizations mentioned below offer bi-directional networks: A pharmacy may send a transaction to a pharmacy and may receive information back from the pharmacy that the prescription was filled, partially filled, or not filled, for example. There are two types of networks of interest: networks of pharmacies and networks of prescription benefit management (PBM) companies.

Pharmacy networks. As used here, a *pharmacy network* is an entity that has electronic access to many pharmacies in the U.S. for the purpose of e-prescribing and other pharmacy transactions such as claims submission. There are currently three pharmacy networks: SureScripts, NDCHealth and Emdeon.

SureScripts was founded in 2001 by the National Association of Chain Drug Stores and the National Community Pharmacists Association, the latter composed of independent community pharmacies. SureScripts now has agreements with 95% of retail pharmacies in the U.S. for connection to its network. On May 1, 2007, SureScripts announced the acquisition of the ProxyMed/MedAvant's pharmacy network, until then one of the four largest pharmacy network.

NDCHealth grew out of a history of transaction processing for healthcare organizations. It provides claims processing and transaction services to 30,000 pharmacies and indicates a network connections to 80% of U.S. pharmacies.

Emdeon is the relatively new name of the merged entities Healtheon and WebMD, which merged in 1999. Emdeon provides a pharmacy network of unknown size, an e-prescribing product, and various pharmacy services.

Pharmacy networks typically charge a per-transaction fee for each transaction sent or received. In most cases, the pharmacy involved pays the fee to encourage the prescriber's patient to use that pharmacy.

Pharmacy benefit management network. There is a single major presence in this discipline, RxHub. RxHub was formed in 2001 by three PBMs: Advance PCS, Express Scripts and Medco Health Solutions. RxHub is designed to be attractive to other PBM besides the founders but PBMs outside the three founders of RxHub have been slow to join. The function of a PBM network is to allow prescribers to have access to prescription history, formularies, and other data that a PBM has available for a member served by a payer using that PBM. The pharmacy network vendors listed above are also attempting to capture the same information by tracking prescriptions filled and obtaining formularies either directly or through an intermediary such as Epocrates, which provides formularies for downloading to computers and personal digital assistants.

Elements of E-Prescribing

Core components. The prescribing components of e-prescribing can be grouped into core prescription capabilities, healthplan information and clinical alerts.[xix] The core components of e-prescribing are:

1. Medication lists searchable based on:
    a. Trade and generic availability
    b. Alphabetic listing of medications
    c. Diagnoses
    d. Therapeutic categories
    e. Physician favorites (most commonly prescribed medications)
2. Medication lists which include available dosage forms, strengths, route, frequency, duration (which together indicate quantity)
3. Directions to patients (SIG)
4. Prescriber's signature
5. Number of authorized refills
6. DAW (dispense as written) or substitution permitted
7. Field for comments to pharmacist
8. PRN (as needed) field

Healthplan information. These data elements, known to the member's healthplan, are necessary for prescribing and billing. Data elements include:

1. Member eligibility
2. Applicable formulary
3. Prior authorization requirements for certain medications (included in the formulary)
4. Medication history

All of these data may be provided through RxHub, if the healthplan or PBM contract with that entity. Alternatively, the member's healthplan may provide these data to the vendor of e-prescribing software or make arrangements to provide them to the pharmacy network vendor.

Clinical alerts. A member's demographics and medical history may indicate that a pharmaceutical will interact with the patient in an undesirable way. Some such situations include:

1. Drug-drug interactions
2. Drug-allergy or sensitivity
3. Drug contraindicated due to a patient condition
4. Age-specific warnings for pediatric and geriatric patients, for example
5. Dose adjustment needed for patient weight

If the flow of information to the prescriber includes lab information:

6. Drug-lab interactions
7. Lab values to monitor with medication(s)
8. Adjustments for patient lab results

If the member data includes electronic health record (EHR) information:

9. Consideration of pregnancy or lactation

An e-prescribing system may include drug reference materials such as the *Physician's Desk Reference* (PDR) and potential access to other guidance. If an e-prescribing system is part of or interfaced to an EHR, the system may have access to full member medical histories. Because this paper is focused on stand-alone e-prescribing systems, we only mention more extensive e-prescribing approaches.

When a clinical or other prescribing alert occurs, the prescriber should be able to determine the rationale for the alert (observed drug interaction, report of patient, non-formulary drug, etc.) and clinical alerts should be prioritized based on potential severity

and likelihood of the problem. Prescribers should be able to overrule an alert based on experience with the patient.

What Do Users Say About E-Prescribing?

To determine what users say about stand-alone e-prescribing, we interviewed two early adopters of the NEPSI solution, both of whom began use of the system in February 2007. One is a family practitioner in a small rural town in upper Michigan and the other is a pediatric allergist practicing in Philadelphia. Both were provided as references by the NEPSI program.

Rural family practice. The rural practitioner[xx] does not yet have eRx Now linked to his practice management system as he is in the process of implementing a new practice management system. Nurses or office staff enter the demographics of patients to be seen the next day into the e-prescribing system and he enters data on same-day patients, which he says is quick when it is necessary. There is little managed care in his market so obtaining formularies is not a priority. He does use Epocrates to view some formularies, but it is not linked to his system. He uses the e-prescribing system either on his desktop computer or through a Pocket PC smart phone.

The local Wall Mart and a large pharmacy are equipped to receive e-prescriptions but most pharmacists have not warmed to handling refills through the system yet. E-prescriptions to other local pharmacies are converted by NEPSI and go to rural pharmacies as faxes. The physician uses the option of prescribing by diagnoses, which builds both a diagnosis history for each patient and a list of favorite medications by diagnosis. To benefit from the drug-drug and allergy alerts requires substantial up-front data entry and he is not using those functions yet. He uses e-prescribing for all patients but prescriptions for controlled substances and mail order pharmacies need to be printed out and signed. Patients send the printed prescriptions to the mail-order pharmaceutical providers.

To date, he has written about 1,000 e-prescriptions and has had only 4 fail, for which he needed to follow-up by telephone with the pharmacy. He particularly likes being able to handle refills online for those pharmacies that are learning to do it and the ability to prescribe for a patient anywhere in the country when they are traveling.

Urban pediatric allergist. This specialist[xxi] does not have her practice management system linked to the e-prescribing system. When a current practice management upgrade is completed, the systems will be linked. Staff enter demographics on patients the day before appointments. E-prescriptions are sent to drug stores and refills are received from the pharmacies, an appreciated feature. There is only one significant healthplan in the market, which has an 85% market share. Its formulary is not available electronically. She uses a laptop at a central location near the sample closet to enter prescriptions, convenient as she provides samples to many patients.

She does not much use alerts yet as it takes time to build a pharmaceutical history in the system unless one takes the time to enter historical data up front. She is a solo practitioner so she sees only her own prescriptions in the system. She uses the system for 100% of prescriptions but she prints out slightly more that 50% as patients with

chronic diseases use mail order pharmacies and they are not yet able to accept e-prescriptions.

There are no problems in communicating instructions to pharmacies or with SIGs. In the early months, some features of the system were tweaked to enhance these abilities. There is a substantial list of reports available from the system, for example, to show patients who were prescribed a medication that has been recalled or to show a patient medication history. An important factor in e-prescribing success is adapting the office workflow to support the process.

Observation. These two examples demonstrate an interesting feature. Although we document many potentially automated features such as formulary compliance and clinical alerts, these physicians are effectively using limited forms of e-prescribing and are pleased with the features offered over prior manual script writing.

Is E-Prescribing Right for Me?

So what are the pros and cons of e-prescribing for a clinic, a physician or a practice at this time? There are a number of factors to consider:

Pros. There are a number of favorable factors:

1. **Regulation.** The Medicare Modernization Act will result in greater support for e-prescribing after May of 2009. This does not mean that e-prescribing will suddenly become the most common approach to prescribing, but it will likely mean that more and more providers will try and eventually adopt e-prescribing.

2. **Office efficiency.** At the point of change, practice efficiency may not immediately rise, but over time, the ability to prescribe in a clear and unambiguous way, considering the member's formulary and other medications, speeding processing of refill requests, and reducing callbacks will generate efficiency.

3. **Patient safety.** Increasing patient safety by clarity and consideration of other patient conditions, allergies, medications, etc., will eventually reduce malpractice premiums and the embarrassment and legal exposure of prescribing errors. An e-prescribing system will provide the physician with data on use of prescriptions (refills) so the physician can assess patient progress knowledgably.

4. **Patient satisfaction.** Members will be please with faster transmission of prescriptions to the pharmacy and will notice the fact that the prescribing physician has new information available at the time of prescribing. There will be fewer hassles due to prescribing of medications not on the member's formulary.

5. **Cost.** The physician will eventually enjoy savings based on office efficiency, less exposure to malpractice claims, and, with some healthplans, a share of the savings from prescribing more generics and less non-formulary drugs.

Cons. There are some negatives to be considered as well:

1. **Practice patterns and adoption.** Medicine is made up of many different individual physicians. Some are not highly interested in changing anything about practice patterns unless there is a clear and immediate time or cost savings. Others have grown up with computers and see that the computer-aided future is around the corner. They are ready to make some effort to meet the future halfway. There is no question that adoption is the biggest hurdle to e-prescribing. While there are some 150,000 physicians nationally who have the ability to e-prescribe, less than 3% of all prescriptions are electronic.[xxii] (There are on the order of 650,000 patient care physicians in the U.S.)[xxiii]

2. **Developmental processes.** While many parties support the idea of stand-alone (and integrated) e-prescribing, the processes are not yet completely refined. As the results of the CMS pilot tests indicate, some data cannot be transmitted unambiguously using standard formats. (It can be transmitted in narrative form but this is not ideal for computers as data cannot be identified by being in a designated field.) By the same token, if medicine waited for a way to unambiguously code medical records data without narrative, the practice of medicine might not begin for another century.

3. **Developmental networks.** Although SureScripts connects to 95% of all pharmacies on paper, a prescriber may sometimes find a local pharmacy of a connected chain or an independent pharmacy that is not yet listed in the system. These are problems that can be worked with some phone calls and emails.

4. **Dependency on a system.** The downside of depending on systems is that systems do go down and one needs to have a workaround or revert to manual systems when this occurs.

5. **Privacy concerns.** Some believe that electronic modalities produce a new risk that patient data will be compromised. With paper methods, the possibility of one patient record being compromised was probably greater than with electronic systems. The source of concern with electronics is that there is a possibility that many records can be inadvertently or purposely compromised. Sound privacy safeguards are crucial.

In summary, there are strong forces driving medicine toward electronic processes. E-prescribing is on the leading edge of this wave and is for physicians now a largely non-economic good as the cash price is zero. The real decision a physician must make is whether he or she wants to try the new technology. Given the low cost of entry, e-prescribing, unlike adopting an EHR, can be tried on a pilot basis and then adopted or not. With NEPSI, there is really a “free trial”. To carefully assess e-prescribing, a physician probably wants to have in place the practice management interface for demographics so that s/he can e-prescribe for all patients, not just those of a single payer.

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VENDOR SEARCH WORKSHEET

Practice Name: _____ Date: _____

Practice Contact: _____ Email address for sending results:_____

Core Functions	*P	Functional Requirements
Vendor Characteristics		☐ DOQIT vendor ☐ AAFP Discount Max Cost ($$) per provider Min Years in Business
Charting/ Documentation (Health Data)		☐ Structured Templates ☐ Patient Summary ☐ Automated Referrals ☐ E&M Coding recommend ☐ Voice Recognition ☐ Digital Dictation ☐ Internal Messaging ☐ Electronic Tasking ☐ Importing of scanned or electronic documents
e-Prescribing		☐ Digital send of Rx ☐ electronic fax send of Rx ☐ Surescripts certified ☐ RxHub Certified ☐ Drug-Drug Interaction Checking ☐ Drug-Allergy Interaction Checking ☐ Drug-Diagnosis Checking
Care Management		☐ Generate Patient Lists ☐ Produce Care Reminders ☐ Access to past results/records
Communication/ Connectivity		☐ Wireless option ☐ Remote connectivity ☐ ASP option ☐ CCR capable
Decision Support		☐ Linked to external evidence source ☐ Prompts for visits/health maintenance events ☐ Evidence support for Rx writing ☐ Evidence support for lab ordering
Order Management		☐ Direct submission of lab orders to lab ☐ Evidence based order sets
Patient Support		☐ Patient education materials ☐ Patient portal for self-scheduling ☐ PHR
Reports		☐ Report queries by multiple criteria ☐ Report queries by diagnosis/ disease ☐ Report queries by lab test ☐ Report queries by medication
Interfaces (Administrative Processes)		☐ PMS integrated with EMR ☐ Existing PMS interfaced with EMR ☐ laboratory (LabCorp) ☐ laboratory (Sonora Quest)

* *Put a number (1-10) in this box to identify your PRIORITY needs (1 being the greatest need) in an electronic health record.*

Kenneth G. Adler, MD, MMM

CME Covered in *FPM* Quiz

FPM Tool inside

How to Select an Electronic Health Record System

These 12 steps will help make the selection process easier and lead you to the EHR that's right for your practice.

So you've decided to purchase an electronic health record (EHR) system, and your initial research reveals that more than 200 companies claim to make an EHR. You've barely started looking, and already you feel overwhelmed. A natural tendency might be to call a few vendors that you've read or heard about and ask them for a demo. Stop. Unless you want the vendors to control the selection process, you need a plan. Remember, the EHR will have a huge impact on your practice, going to the very heart of how you practice medicine. A rushed or ill-informed decision could make your life miserable.

This article is designed to help you develop that plan. By adhering to a logical and systematic selection process, you'll be able to make a high-quality decision about which EHR to choose. The process described below is based on my experience and research as an EHR committee chair for an 86-physician group. Although my group is large, I work in an office of three physicians, and I believe the following steps will apply to practices of all sizes.

Step 1: Identify your decision makers

If you're in solo practice, this is easy. You're it. In a large group, a carefully selected committee will be more appropriate. Unlike, perhaps, selecting practice management software, this should be a physician-led effort, not one you delegate to your office manager or management team. Many selection efforts have been led by a "physician champion," someone absolutely committed to learning about EHRs and promoting the idea to his or her colleagues. This individual has to be willing to put in a lot of extra, typically

ILLUSTRATION BY CURTIS PARKER

Dr. Adler is a family physician in full-time clinical practice in Tucson, Ariz. He has a Master of Medical Management degree from Tulane University and a Certificate in Healthcare Information Technology from the University of Connecticut. Conflicts of interest: none reported.

SPEEDBAR®

Form a physician-led election committee early in the selection process.

Be sure to include your office manager or practice administrator, since he or she will have to be heavily involved in implementing the EHR your group chooses.

Before you start looking at specific systems, determine what you hope to accomplish with an EHR and identify the functionality you'll need to meet those goals.

uncompensated, hours doing research and management tasks. Since you're reading this article, perhaps that's you.

EHRs are often met with great skepticism and resistance. To avoid an aborted or seriously delayed selection process or a failed implementation, make sure that some of your practice's most influential people are on the selection committee. You will need at least one manager to help you implement this system, so make sure your practice manager or his or her trusted delegate is on the committee. If you have a key nurse or receptionist whom the others tend to follow, invite him or her aboard. If you have a partner who could easily derail this process, consider inviting him or her to participate as well. And remember, the most influential people are not always the ones with the titles.

Step 2: Clarify your goals

What inefficiencies or limitations do you have in your practice currently, and what do you hope to accomplish with an EHR? Do you waste a lot of time looking for charts? Do you play phone tag with patients because you don't have ready access to needed information? Do lab reports take forever to get into the chart? Are provider notes hard to read? Are you interested in electronic prescribing? Do you want to be able to print appropriate patient education materials with the push of a button? Do decision support tools matter to you? Is patient e-mail or Web access to your practice in your plan?

The list of EHR functionalities that appears below may be a useful tool as you begin to prioritize your needs.

Step 3: Write a request for proposal

This is a tedious but necessary step. A request for proposal (RFP) will tell the prospective vendor about your practice, its resources and

KEY POINTS

- To reduce your list of potential vendors to a manageable length, consider only those systems that have already developed interfaces with the practice management software you use, that are marketed to practices the same size as yours and that are well rated in published surveys.
- How the EHR enables users to create and complete tasks, find information, view labs, manage health maintenance reminders and write prescriptions can be more important than how easily it creates a patient note.

EHR FUNCTIONALITY

This list, which includes most of the capabilities of EHRs, is designed to help you organize your priorities. As you clarify your goals, you may want to rank each of these functionalities in order of need or divide the functions into three groups: must-have, want-to-have and not critical.

- ☐ Results reporting (lab, radiology, other)
- ☐ Order entry (lab, radiology, other)
- ☐ Multiple note creation options (templates, macros, dictation, voice recognition, hand writing recognition)
- ☐ Automated E/M coding adviser
- ☐ Software interfaces with internal and outside labs
- ☐ Prescription writer and database (with online formularies and drug-interaction checking)
- ☐ Flow charting (labs, vital signs, growth parameters)
- ☐ Remote access
- ☐ Referral ordering and tracking
- ☐ Patient registration information (master patient index)
- ☐ Telephone message documentation and tasking
- ☐ Internal e-mail
- ☐ Secure external e-mail for patients
- ☐ Patient Web portal
- ☐ Patient education
- ☐ Scanning
- ☐ Automated chart documentation (problem lists, medication lists, vital signs, health maintenance)
- ☐ Automated charge entry
- ☐ Inpatient reports (downloadable)
- ☐ Electronic fax reports (dictation, lab, radiology) to outside specialists
- ☐ Patient follow-up/health-maintenance deficiency alerts
- ☐ Practice population analysis tools
- ☐ Decision support tools
- ☐ Security (audit trails, user access hierarchy, passwords)

your priorities in terms of EHR functionality. The vendors' responses will allow side-by-side comparisons of products. Responding to a well-prepared RFP will take a fair amount of effort on the vendor's part, so invite only serious contenders to participate. For a sample RFP outline see below. A downloadable, modifiable RFP is available at http://www.orchardsoft.com/choosing/rfp/samplerfp.html. It is an RFP for a laboratory information system, but the basic structure and questions will work for an EHR.

Step 4: Selecting the RFP recipients

How do you go from more than 200 products to a dozen without seeing any products? I suggest you use three defining criteria to winnow the products: 1) Does the software have a history of interfacing with your practice management system (PMS)? 2) Is the EHR typically marketed to practices of your size? and 3) Does the EHR have favorable published ratings?

PMS interface. To avoid double entry of data such as patient demographics and diagnoses, your PMS and EHR must be able to share data. This is typically done through a software interface. To build and maintain an interface requires the cooperation of personnel from both the PMS and EHR companies. Each time the EHR software is upgraded (and most good EHR products promise at least one upgrade per year), any interfaces have to be updated. Many EHR developers will say that they can interface with any system, but frankly I wouldn't want to be their first. To determine which EHR companies have created interfaces with your PMS, ask your PMS company. This criterion alone may dramatically narrow the field.

If you aren't happy with your current PMS or anticipate outgrowing it soon, it may be a good idea to consider selecting a new one before you buy an EHR. Ideally, the PMS and EHR company would be one and the same, but your PMS company may not offer an EHR product, or if it does, it may not offer the functionality or service that you feel you need. As more physicians buy EHRs, the trend of the future will likely be integrated EHR-PMS products that don't require interfaces.

Practice size. Most EHR vendors market their products to smaller practices (one to 15 providers), medium-sized practices (10 to 99 providers) or large practices (greater than 100 providers,) although a few market to all sizes. Picking RFP recipients on this basis will help you avoid having a "large practice EHR" declining to respond to your RFP because you're "too small." ➤

REQUEST FOR PROPOSAL (RFP) OUTLINE

A request for proposal that follows an outline like the one below will tell prospective vendors what they need to know about your practice to provide you with useful information about their products, and it will help to ensure that the responses you receive can be more easily compared.

I. Cover letter
II. Introduction and selection process
III. Background information about your practice
  a. Size and location
  b. Current practice management system and any EHRs
  c. Current computer hardware
  d. Current network information
IV. Your practice's desired EHR functionality (prioritized)
V. Vendor information
  a. Company history
  b. Number of employees (separate numbers for sales, support, research and development, and management)
  c. Financial statements
  d. History of their EHR product
  e. List of all current EHR users and list of users similar to your practice in size and type (including how long they've been using the software and, ideally, what version they're using currently)
VI. Product description
  a. How it performs the functions described in section IV
  b. Other functions it performs
  c. Product brochures, etc.
  d. Software versions and release dates
VII. Hardware and network requirements
VIII. Customer maintenance and support
IX. Vendor training
X. Implementation plan
XI. Interface history and capabilities
XII. Proposed costs and payment schedule
XIII. Warranties
XIV. Sample contract

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Developing a request for proposal (RFP) will take significant effort, but it will impose some order on the responses you'll receive from vendors and make comparisons easier.

To shorten the list of vendors you'll send RFPs to, consider whether the vendor has already developed an interface with your practice management software, whether it markets its product to practices like yours and how it performs in published ratings.

If you are dissatisfied with your practice management software, it would be a good idea to replace it before you select an EHR.

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Published ratings of EHRs from organizations like Aurora Consulting Group, the annual TEPR conference and the AAFP's Center for Health Information Technology can be valuable resources to your selection committee.

You should narrow the field before scheduling vendor demonstrations to ensure that you won't have an impractical number of sessions to attend.

During vendor presentations, be prepared to present the vendor representatives with patient-visit scenarios to document so that you'll see more than a canned presentation.

Develop a rating form and be sure that each committee member fills it out at the end of the demo.

And it will prevent you from wasting time reviewing an RFP response from a vendor whose product turns out to be ill suited for a practice of your size. You can obtain information on who markets to whom in a useful free white paper by Mark Anderson entitled "2004 EMR Functionality Survey Results," which is available at http://www.acgroup.org/pages/396843/index.htm.

EHR ratings. Several excellent sources for EHR ratings are available. In 2003, the American College of Rheumatology, in conjunction with the Aurora Consulting Group, evaluated EHRs in small practices. Go to http://www.rheumatology.org/products/coding/03emr_ack.asp to download their 50-page paper. Other ratings sources include the Health Information Management Systems Society (http://www.himss.org) and a Web site developed by Kirk G. Voelker, MD, at http://www.elmr-electronic-medical-records-emr.com. And if you want to go to one place where more than 150 vendors show their wares, consider the annual conference known as TEPR (Toward an Electronic Patient Record). Information on this can be found at http://www.medrecinst.com/conferences/tepr/index.asp.

Finally, go to the AAFP's Center for Health Information Technology, http://www.centerforhit.org, for information on EHR vendors that have agreed to the center's principles of affordability, compatibility, interoperability and data stewardship. AAFP members can get discounts on several well-known systems, and the AAFP has arranged for purchases to be made on a subscription basis, with monthly payments.

Step 5: Review the RFPs and narrow the field

So you've narrowed the field, sent out the RFPs and received your responses. Now it's time to review the responses. Your goal is to pick the top contenders to visit you and give a demonstration of their system. These are typically two- to three-hour affairs in the evening with some health food – such as pizza. Everyone on the selection committee should attend every demo in order to make fair comparisons. This is a huge time commitment, and your group's willingness to spend evenings away from their families will determine how many demos you can tolerate. Our group chose five from an original field of eight. Of those that were eliminated, one vendor decided not to respond, one vendor didn't meet our training and service needs, and one didn't meet our deadline.

Step 6: Attend vendor demonstrations

Next, it's show time. Vendors will typically arrive for the demo with two to four people – one to two sales personnel, a skilled software presenter and perhaps a physician who is paid by the company. They'll be prepared to do a canned presentation that shows their software in the best light. For each of these presentations, you should do four things:

- Present them with one or two standard patient-visit scenarios to document, keeping the scenarios consistent from vendor to vendor;
- Try not to interrupt their demonstration every two minutes (my group was notorious for this);
- Don't focus solely on ease of note creation. Instead, pay attention to how the EHR enables users to find information, view labs, manage health maintenance reminders, write prescriptions, etc. These functions can be more important than how easily the EHR creates a patient note;
- Prepare a rating form in advance and ask every committee member to complete it at the end of each demo. You can then tabulate average or median results for each vendor. See the sample rating form on the opposite page.

Step 7: Check references

Check at least three references for every vendor that is still in the running. Ideally, references should include one or more physician users, an information technology (IT) person and a senior management person. The vendor will provide you with a list of references – likely the vendor's happiest customers, who may be financially rewarded for talking to you (e.g., discounts on service fees or individual rewards), so be skeptical. Nonetheless, these folks can be very informative and honest, in my experience. If you know a person or group not on the vendor's reference list that uses or has used their product, call them too. Have a prepared list of questions for these phone calls. A sample, structured interview is shown on page 60.

Another way to find references is to post a message on the AAFP-sponsored e-mail discussion list for EHRs. AAFP members can subscribe at http://www.aafp.org. From the

EHR DEMONSTRATION RATING FORM

Each person who observes vendor demonstrations should complete a form like the one below. The form you use should list the functionality that your selection group decided was most important to your practice. To analyze the results, assign 1 point to strongly disagree, 2 to disagree, 3 to unsure, 4 to agree, and 5 to strongly agree. Calculate average scores for each function and print a summary score sheet for each vendor.

PRODUCT: _____

DATE: _____

EVALUATOR: _____

Please evaluate the product based on all the information you have available at this time. If you need more information, please note that in your comments.

I. FUNCTIONALITY: This product performs the following functions with little user effort:

	Strongly disagree	Disagree	Unsure	Agree	Strongly agree
Results reporting (lab/X-ray)					
Progress/consult notes					
E/M coding					
Telephone message documentation and tasking					
Chart documentation (problem list, medication list, allergies, vital signs, health maintenance, trending lab values, etc.)					
Order entry (lab/X-ray)					
Prescription writer					
Formularies					
E-fax to outside physicians					
Remote access (e.g., to off-site transcription or physician's home)					
Referral management					
Charge capture without manual entry					
E-mail (encrypted)					
Health maintenance alerts					
Medical decision support tools					
Patient education materials					
Security (passwords, audit trails)					

Comments: _____

_____

_____

II. OVERALL EASE OF USE AND FLEXIBILITY

	Strongly disagree	Disagree	Unsure	Agree	Strongly agree
This product allows individual user-specific customization					
This product minimizes user data input					
This product offers multiple note creation options					

Comments: _____

_____

_____

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Check several references for each EHR you're considering, and go beyond the list of references the vendor provides you.

A vendor rating tool can help you narrow your list of contender to two or three, which will be the focus of your site visits.

Your rankings should be weighted to reflect the relative importance to your group of functionality, cost and vendor characteristics.

Don't underestimate the importance of service, training, implementation support and the long-term viability of the vendor and the product.

QUESTIONS TO ASK EHR REFERENCES

A list of questions like this one will help you to make the most of your opportunities to talk with other practices about their experience with the EHRs you're considering purchasing.

Background

- How many physicians/nurse practitioners/physician assistants are in your group?
- How many office sites do you have?
- What year did you go live?
- What practice management software do you use?
- Do you own your own lab? Does the EHR interface with your lab?
- How many interfaces do you have with the EHR?

Provider usage

- What percent of your providers use the EHR?
- What functions do most/all of your providers use?
- Do your providers still dictate?
- What has been the most frustrating thing about the EHR for the providers?
- What has been the best thing?
- How much individual physician customization is there?
- Are you happy with the templates? Were they pre-loaded? How do they get modified?
- Have you saved money? Have you broken even?
- Does electronic prescribing work?
- Does e-faxing work?
- How have patients responded to the system?
- Can your physicians access the system from home? How do they do this?

Training & support

- How long does it take a physician to become fully trained/efficient in using the EHR?
- How long does it take a medical assistant to be trained?
- What kind of support system did you set up for the EHR? How many full-time support people are required?
- Have you been happy with the upgrades and support?
- Do you have an EHR committee? An IT medical director? Are physician "champions" involved in the maintenance, training and upgrading of your EHR?

Implementation & hardware

- Did the implementation go smoothly? How long did it take?
- Do you have a wide area network (WAN)? How much bandwidth is used?
- Was the EHR preloaded with CPT and ICD-9 codes? Was it preloaded with formularies?
- What hardware do the physicians use? What hardware do the medical assistants use?
- If you are using a wireless network, how well does it work?
- How much of the paper chart did you scan or input into the EHR? How did you do it?
- Do you still use paper? If paperless, how long did that take?

Satisfaction

- Would you buy this system again?
- What would you do differently?

AAFP home page, click on e-mail discussion lists, under the Membership heading.

Step 8: Rank the vendors

Now that you've reviewed the RFPs, seen the demos and done the reference checks, it's time to rank the vendors and narrow the field to two or three vendors for site visits. Given the time and resources involved, doing more than three visits is impractical. Even one visit could be a challenge for a busy solo physician.

Before you rank the vendors, you should formally weigh your priorities in the following areas:

- **Functionality.** How well does the product perform your desired functions?
- **Total cost.** How much will the product cost, including hardware, software, support, etc.?
- **Vendor characteristics.** Does the vendor offer excellent service, training and implementation support, and are they financially secure?

Most physicians tend to put too much emphasis on functionality and cost while ignoring the critical nature of service, training, implementation support and the long-term viability of the vendor and product. If the system is not effectively implemented or maintained, it will not achieve its desired potential. And it will be more than a small inconvenience if the vendor you know and love goes bankrupt. We put a 40-percent emphasis on vendor characteristics, 40 percent on functionality and 20 percent on

VENDOR RATING TOOL

For each EHR product you are considering, assign a ranking from 1 to 5 (with 5 being best) for each of the criteria listed in the functionality and vendor characteristics categories below. Total the rankings for each vendor to determine a combined score for each category, then assign an overall ranking. For the cost section, supply a dollar amount for each criteria listed and then rank each vendor based on your assessment of its total initial and total annual costs. Next, consider the relative importance of the three categories and assign a percentage to each (e.g., functionality = 40 percent, cost = 20 percent and vendor characteristics = 40 percent). Finally, use these percentages to calculate the weighted scores for each vendor.

FUNCTIONALITY	**VENDOR 1**	**VENDOR 2**	**VENDOR 3**	**VENDOR 4**	**VENDOR 5**
Quality/presence of features we prioritized (see demo rating summaries)					
Ease of use (e.g., minimizes typing, is intuitive, simple layout)					
Speed (network/hardware configuration, minimizes keystrokes)					
Individual user flexibility • Multiple note creation options (transcribe, voice, template) • Provider can modify/create own templates • Provider can create own macros					
Preloaded templates and patient education					
Combined functionality score (total the rankings for each vendor)					
A Overall functionality ranking					

COST	**VENDOR 1**	**VENDOR 2**	**VENDOR 3**	**VENDOR 4**	**VENDOR 5**
Initial hardware and network upgrades					
Initial interfaces					
Initial software					
Total initial cost					
Annual software maintenance (includes upgrades and support)					
Annual interface upgrades					
Total annual cost (excludes initial costs)					
B Overall cost ranking					

VENDOR CHARACTERISTICS	**VENDOR 1**	**VENDOR 2**	**VENDOR 3**	**VENDOR 4**	**VENDOR 5**
Training					
Support					
Implementation					
Software upgrades					
Company stability					
Combined vendor characteristics score (total the rankings for each vendor)					
C Overall vendor characteristics ranking					

D Functionality	%
E Cost	%
F Vendor characteristics	%
	should total 100%

OVERALL RANKING	**VENDOR 1**	**VENDOR 2**	**VENDOR 3**	**VENDOR 4**	**VENDOR 5**
G Weighted functionality score ((A × D) ÷ 100)					
H Weighted cost score ((B × E) ÷ 100)					
I Weighted vendor characteristics score ((C × F) ÷ 100)					
Weighted overall score (G + H + I)					
Final Ranking					

FAMILY PRACTICE MANAGEMENT®

 "How to Select an Electronic Health Record System." Adler KG. *Family Practice Management.* Feb 2005;55-62; http://www.aafp.org/fpm/20050200/55howt.html.

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A thorough analysis of each vendor's costs is critical; a spreadsheet can help sort out the costs and facilitate comparisons.

When planning site visits, target practices that are similar to yours in size and, if possible, ones that use the same practice management software that you use.

Select your winner and a runner-up; having a good second choice will give you more negotiating leverage.

Negotiate a contract only after shoring up the support of all the stakeholders in your practice.

cost. The sample vendor rating tool on page 61 breaks the selection criteria into these same three categories. (For another example, go to http://www.chcf.org/topics/view.cfm?itemID=21520.)

Cost estimates can be tricky. Vendors tend to present these in a way that makes side-by-side comparisons difficult, and they focus only on software costs. Be sure to do a comparative spreadsheet that captures all associated costs over the first five years including new hardware costs, new IT personnel, network upgrades, extra licenses and annual service and maintenance. [One such spreadsheet can be downloaded from the *FPM* Web site at http://www.aafp.org/fpm/20020400/57howm.html#1.] When we did this for our top four choices, we found the costs to be surprisingly similar.

Vendors tend to present their costs in a way that makes side-by-side comparisons difficult, and they focus only on software costs.

Step 9: Conduct site visits

Once you've selected your final contenders, plan site visits to see how the systems perform. Go to practices that are similar in size and configuration to yours. If possible, go to one that is using the same PMS that you are using. Bring at least one physician and the most senior management person that will be responsible for the EHR purchase. Plan to visit with physicians and observe them with patients. Also talk to back-office personnel, relevant management and the practice's key IT personnel. Take notes. Use the visit to confirm or contradict your expectations of the product based on what you learned through the RFP, demo and references.

Step 10: Select a finalist

After each site visit, go back to your vendor ranking and see if it still holds. Select your top contender and a runner-up. If negotiations don't go well with your number one choice, you may want to fall back on number two. Also, having a serious back-up choice will give you more leverage in the negotiation process.

Step 11: Solidify organizational commitment

Now that you have picked the vendor you'd like to do business with, it's time to make sure the rest of the practice is with you. If you're in a small practice, hopefully you've involved all the key decision makers in the process to this point. If so, you can skip this step.

If you're in a larger practice, or one that has some potential naysayers, discuss your selection committee's recommendations with all the relevant stakeholders. Be prepared to "sell" your group on the EHR concept and this particular vendor. Invite the vendor to give another demo to the practice as a whole and be prepared to address a slew of questions and concerns. If significant concerns come to light that your committee didn't address previously (if you did your homework, that's unlikely), be prepared to drop back to step seven and repeat any steps necessary to solidify your practice's commitment to the EHR.

Step 12: Negotiate a contract

Typical EHR contracts span from 10 years to lifetime. If the contract is to terminate in 10 years, be sure you know what happens after that. Current and future costs should be spelled out, as should the role the vendor will play and the amount of time the vendor will commit to the implementation process. Be sure to consider the possibility that the vendor could go out of business before you do. Request that the vendor's source code be put into escrow, and clarify the circumstances under which you could get access to it. Have a lawyer experienced in software contracts help with this step.

Final note

The EHR selection process is time consuming, but for a decision as important as this one, it's necessary. You can't afford to purchase an EHR impulsively, and you want to make sure your practice is with you. The entire process can take from six months to two years. Our group took 13 months, which I suspect is about average. If your selection process is methodical, critical and inquisitive, you will undoubtedly be happy with your final EHR choice. Good luck on your quest. FPM

Send comments to fpmedit@aafp.org.

EHR Systems Selection: Selected Resources
Mapping Practice Needs, Choosing a System, and Contracting

The following provides information on how to assess practice needs, and how this can guide the selection of an electronic health record (EHR) system. Also included are resources on how to contract with a vendor, including negotiating and information on the RFP process. Resources come from a range of sources, including medical professional organization journals and periodicals, peer reviewed journals, and industry Web sites.

Mapping Practice Needs and System Selection

Assessing Practice Needs

Jerome H. Carter, ACP Observer, October 2003: **Interested in EMR software? Look before you leap.** Available at: http://www.acponline.org/journals/news/oct03/emr_software.htm

> Article discussing how to prepare for EHR implementation by assessing practice goals and identifying areas for improved workflow. Includes discussion of how to identify practice barriers to successful implementation.

Godfrey MM, Nelson EC, Batalden PB. **Assessing Your Practice: The Green Book**. Dartmouth College, Institute for Healthcare Improvement. 2004. Available at: http://www.clinicalmicrosystem.org/images/PDF%20Files/Assessing%20Your%20Practice%203-22-04.pdf.

> A workbook to help physicians collect information on patients, practices, and staff. A locally adaptable tool to identify opportunities, which can lead to quality improvements in patient care, outcomes, and staff experience.

Systems Selection and Aligning Systems with Practice Needs

Goverman IL. **Orienting health care information systems toward quality: How Group Health Cooperative of Puget Sound Did It.** Jt Comm J Qual Improv. 1994 Nov;20 (11):595-605.

> BACKGROUND: A large staff-model health maintenance organization is redesigning its information systems to provide the systems and information needed to support its quality agenda. PLANNING PROCESS: Long-range planning for information resources was done in three phases. In assessment, interviews, surveys, and a benchmarking effort identified strengths and weaknesses of the existing information systems. In direction setting, we developed six objectives. Detailed planning was used to define projects, timing, and resource allocations. MAJOR EFFORTS: Some of the most important efforts in the resulting five-year plan include the development of (1) a computerized patient record; (2) a provider-based clinical workstation for access to patient information, order entry, results reporting, guidelines, and reminders; (3) a comprehensive set of patient management and service quality systems; (4) reengineered structures, policies, and processes within the health plan, supported by a complete set of integrated information systems; (5) a standardized, high-capacity communications network to provide linkages both within GHC and among its business partners; and (6) a revised oversight structure for information services, which forms partnerships with users. CONCLUSIONS: A quality focus ensured that each project not only produced its own benefits but also supported the larger organizational goals associated with "total" quality.

Barrett MJ, Holmes BJ, McAulay S. **Electronic Medical Records: A Buyer's Guide for Small Physician Practices.** Forrester Research. Oakland, CA: California HealthCare Foundation. October 2003. Available at: http://www.chcf.org/documents/ihealth/ForresterEMRBuyersGuideRevise.pdf.

Provides a detailed analysis of eight EHR systems, chosen for the quality of their systems and the vendor's commitment to small physician practice. Outlines a 12-Step Program for physician offices selecting an EHR, and lists a broader set of considerations to be used in selecting an EHR.

Bush J. **Looking for a good electronic medical records system?** Fam Pract Manag. January 2002; 9: 50-1 [serial online]. Available at: http://www.aafp.org/fpm/20020100/50look.html

Presents a brief excerpt from the American Academy of Family Physician Ad Hoc Committee on Electronic Medical Records criteria for evaluating "family physician friendly" EMR systems.

Simon J, Powers M. **Chronic Disease Registries: A Product Review.** NAS Consulting Services. Oakland, CA: California HealthCare Foundation. May 2004. iHealth Reports Series. Available at: http://www.chcf.org/documents/chronicdisease/ChronicDiseaseRegistryReview.pdf

Intended to serve as a guide for providers in selecting a registry product, includes an evaluation of 16 public domain and commercial software computer registry applications along eight criteria. Certain products are recommended, depending on which criteria are most important to the organization.

Lowes, R. **How to test-drive medical software**. *Medical Economics.* Sep. 3, 2004;81:17. Available at: http://www.memag.com/memag/article/articleDetail.jsp?id=120987.

Brief article discussing how to prepare to buy an EHR or practice management system. Includes a list of guiding principles including knowing practice needs and workflow, as well as tips on how to approach vendors and assess products.

Terry, K. **EMRs: What you need to know.** *Medical Economics.* May 9, 2003; 80. Available at: http://www.memag.com/memag/article/articleDetail.jsp?id=111372

Article presenting considerations when buying an EHR, including costs, identifying EHR functional capabilities, and assessing usability. Also includes a list of EHR vendors.

Which Way Do I Go? Choosing the Right EMR for Your Practice
Available at: http://www.mdnetguide.com/departments/july_aug2004/cover.htm

Article discussing importance of planning for EHR selection as well as key EHR functionalities to consider when assessing a product. Includes a case study of how a 15-physician practice assessed, selected, and successfully implemented an EHR system.

Lowes, R. **How to get the lowdown on EMR software.** *Medical Economics.* 2002;19:42. Available at: http://www.memag.com/memag/article/articleDetail.jsp?id=116458

Article highlighting resources on where to find general information on EHRs, as well as places to go to get specific information on vendors and products.

Stello B, and Charlton E. **Avoiding Common Pitfalls in Selecting an EMR System.** Fam Pract Mgmt [serial online]. November/December 1999; 6. Available at: http://www.aafp.org/fpm/991100fm/computers.html

Article discussing ways to gather information on EHRs, key functionalities to consider, and areas of hidden cost associated with EHRs.

Carter J. **Tips for evaluating electronic medical record software.** ACP Observer, April 2004. Available at: http://www.acponline.org/journals/news/apr04/emrs.htm

A six-step process to manage EHR selection. Concrete things you can do to assess products and vendors.

Moore P. **We Bought the Wrong EMR!** Physicians Practice. March 2004. Available at: http://www.physicianspractice.com/index.cfm?method=parent&submethod=details&article_id=494&r=p%20

What to consider before buying an EHR, including identifying practice needs and matching products, involving physicians in the process, and carefully researching the vendor.

Moore P. **EMR Shopping?** Physicians Practice. September/October 2002. Available at: http://www.physicianspractice.com/index.cfm?method=parent&submethod=details&article_id=341&r=p

Discussion of ways to structure and guide EHR selection process, including defining practice needs and mapping products to them, as well as consulting other providers who have implemented similar EHR systems.

Bush J. **Looking for a Good Electronic Medical Records System?** Family Pract Mgmt [serial online] January 2002. Available at: http://www.aafp.org/fpm/20020100/50look.html

Presents an excerpt from the American Academy of Family Physicians Ad Hoc Committee on Electronic Medical Records' list of criteria for evaluating EMR systems, designed to aid family physicians in selecting EMR systems well suited to their practices.

Lenz R, Kuhn KA. **Towards a continuous evolution and adaptation of information systems in healthcare.** Int J Med Inform. 2004 Feb;73(1):75-89.

OBJECTIVES: To address the problem of alignment of health information systems to healthcare processes, which is a major challenge in healthcare organizations; to present a layered approach for system evolution and adaptation based on an application framework and rapid application development; to accomplish a demand-driven system evolution by embedding the software engineering process in business process optimization projects and by closely involving end users to improve their own work practices. METHODS: We have used a holistic health information system as a core application framework. System functionality is incrementally improved using an integrated "generator tool" for rapid application development. We have developed an iterative and participatory software engineering process, adapted to the conditions of the generator tool. The documentation techniques provided by the Unified Modeling Language (UML) were modified to achieve a straightforward documentation covering the whole development cycle from the business process model to generator-based computer applications. RESULTS AND CONCLUSION: The layered approach for system evolution did provide an environment in which a flexible and participatory software development process could be established. Today, generator-based applications are used in all clinical departments of our 1200-bed University Hospital. We expect that tools for rapid application development will be further improved and will play an increasingly important role to establish responsive IT-infrastructures where the application developer can concentrate on business process alignment instead of coding and debugging.

Austin CJ, Hornberger KD, Shmerling JE. **Managing information resources: a study of ten healthcare organizations.** J Healthc Manag. 2000 Jul-Aug;45(4):229-38; discussion 238-9.

This article presents the results of IT management audits conducted by senior executives at ten healthcare organizations. The audits evaluated how well the following seven information technology management responsibilities were carried out: (1) strategic information systems planning; (2) employment of a user focus in system development; (3) recruiting of competent personnel; (4) information systems integration; (5) protection of information security and confidentiality; (6) employment of effective project management in system development; and (7) post-implementation evaluation of information systems. The audit results suggest that most of these responsibilities are being met to a considerable extent by a majority of the organizations studied. However, substantial variation across organizations was noted. Executives participating in the study were able to define areas in which the management of information resources in their organizations was in need of attention. The audit process encourages senior management to provide the leadership required to ensure that information technology is used to maximum advantage.

Anderson M. **EMR Frontrunners in a crowded marketplace.** Healthc Inform [serial online]. May 2003. Available at: http://www.healthcare-informatics.com/issues/2003/05_03/cover_emr.htm

Article discussing results of AC Group's 2002 survey, including which systems are best for small and medium physician practices, based on functional capabilities.

Forrester Research and California Healthcare Foundation. **Electronic Medical Records: A Buyer's Guide for Small Physician Practices.** Available at: http://www.chcf.org/documents/ihealth/ForresterEMRBuyersGuideRevise.pdf.

This report provides a detailed analysis of eight EHR systems, chosen for the quality of their systems and the vendor's commitment to small physician practices. Analysis of EHR systems focuses on three key areas: quality of vendor's current offering (functionality, usability, support, costs), company's strategy for the future (vision, plans for product improvement), and market presence (financial strength, customer base, partnerships with firms). The eight systems reviewed differ in their strengths. The report outlines a 12-Step Program for physician offices selecting an EHR, and lists a broader set of considerations physicians should use when selecting an EHR.

Samuel W. McDowell, PhD, Regi Wahl, and James Michelson, MD. **Herding Cats: The Challenges of EMR Vendor Selection.** Journal of Healthc Inf Mgmt. Vol. 17, No. 3. Available at: http://www.himss.org/content/files/jhim/17-3/JHIMSummer03-mcdowell-wahl-michelson.pdf

Article discussing EHR selection process, including a detailed discussion of seven milestones in the selection process: establishing a decision team; establishing and agreeing upon selection criteria; developing clinical and implementation strategy; conducting product demonstrations; distributing requests for proposals (RFPs); conducting site visits; selecting a vendor.

Contracting: Negotiating and the RFP Process

Negotiating

Dotting the i's and crossing the t's: ensuring the best IT contract. Healthc Finance Mgmt. Available at: http://www.findarticles.com/p/articles/mi_m3257/is_2_58/ai_n6077512.

Detailed article discussing various aspects and considerations in developing a contract with an IT vendor.

Meyers J. **Electronic medical records: 10 Questions I didn't know to ask.** Fam Pract Mgmt, March 2001. Available at: http://www.aafp.org/fpm/20010300/29elec.html.

Written by a physician who has implemented an EHR, 10 questions to ask vendors before buying a system regarding licensing, vendor technical support, as well as hardware and software requirements and features.

RFP Process

Moore P. **Selecting a Vendor.** Physicians Practice. June 2004. Available at: http://www.physicianspractice.com/index.cfm?method=parent&submethod=details&article_id=537&r=p

Discusses advantages to using a request for proposal (RFP) when selecting software, including: improved ability to compare vendors and place them in a competitive situation, making more informed purchases, and learning about the practices needs and areas for improvement through the RFP process.

Physician Micro Systems, Inc. (PMSI). **Questions to Ask an EMR Vendor.** Available at: http://www.physicianspractice.com/tools/EMRQuestions.pdf

Comprehensive list of guiding questions to ask a vendor on the various aspects of an EHR, including: security and HIPAA, linking interfaces and outside documents with the EHR, vendor information, ability to view information over the web, and vendor technical support capabilities.

DOQ-IT
Doctor's Office Quality - Information Technology

EHR Roadmap WebEx

Stratis Health,
the Minnesota Quality Improvement Organization
in partnership with other QIOs, presents . .

Organizing Your Efforts

Presenter

- **Margret Amatayakul**

  RHIA, CHPS, CPHIT, CPEHR, FHIMSS
  President, Margret\A Consulting, LLC, Schaumburg, IL
  Consultant to Stratis Health DOQ-IT Project

- **Independent information management and systems consultant, focusing on EHRs and their value proposition**
- **Adjunct faculty College of St. Scholastica, Duluth, MN, masters program in health informatics**
- **Founder and former executive director of Computer-based Patient Record Institute, associate executive director AHIMA, associate professor Univ. of Ill., information services IEEI**
- **Active participant in standards development, HIMSS BOD, and co-founder of and faculty for Health IT Certification**

Objectives

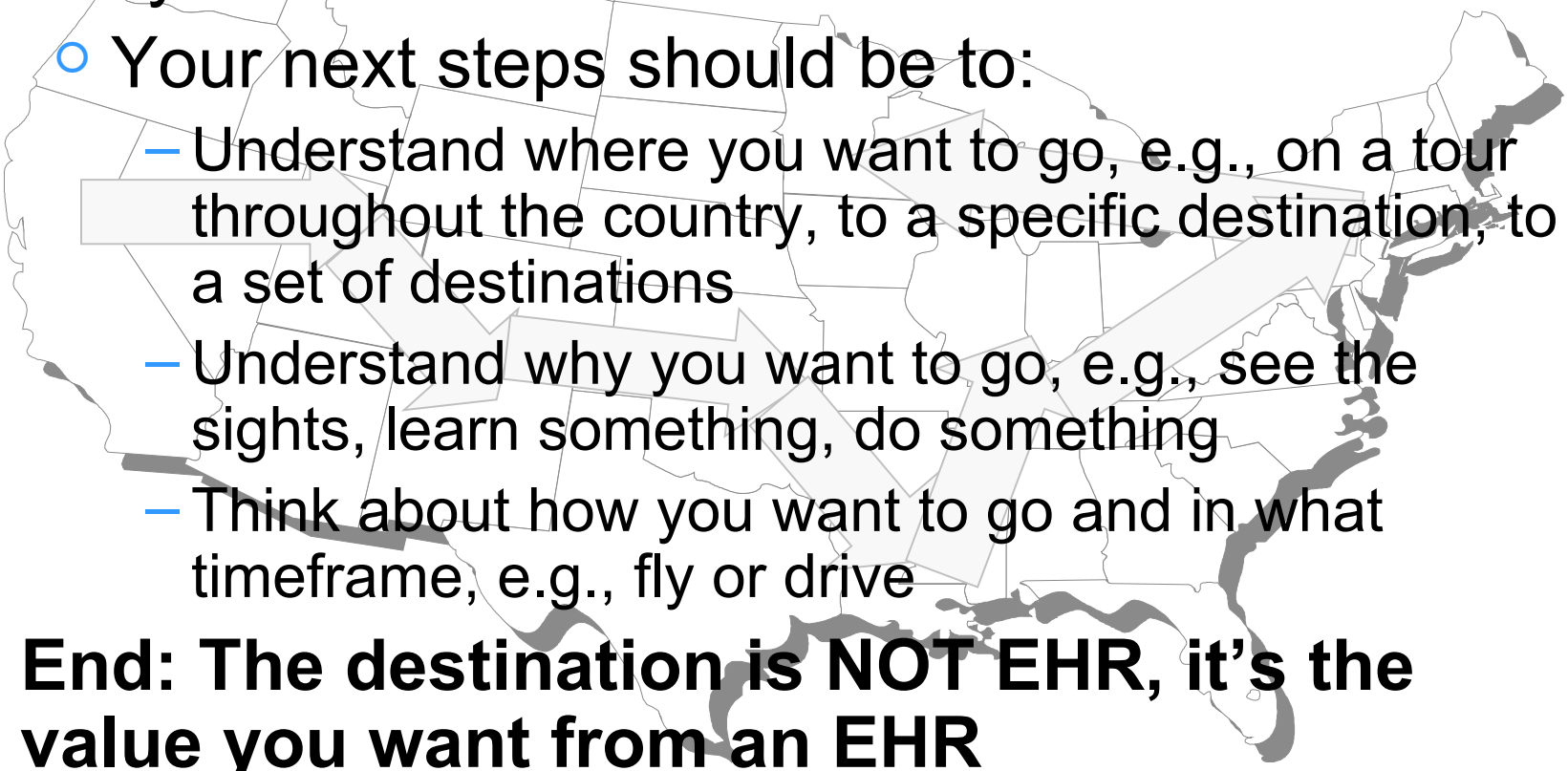
1. Understand the importance of planning and organizing for achieving value from EHR
2. Educate stakeholders about EHR and understand the readiness of the organization for EHR
3. Utilize a communication plan to ensure all stakeholders are kept informed
4. Organize the EHR planning activities
5. Establish goals that the EHR should support and develop expectations for achieving specific benefits
6. Develop a realistic timeline for the journey to EHR
7. Apply documentation principles to ensuring objectivity in selection and smooth transition from the paper to electronic world

Organizing Your Efforts

EHR Roadmap

EHR is a Journey

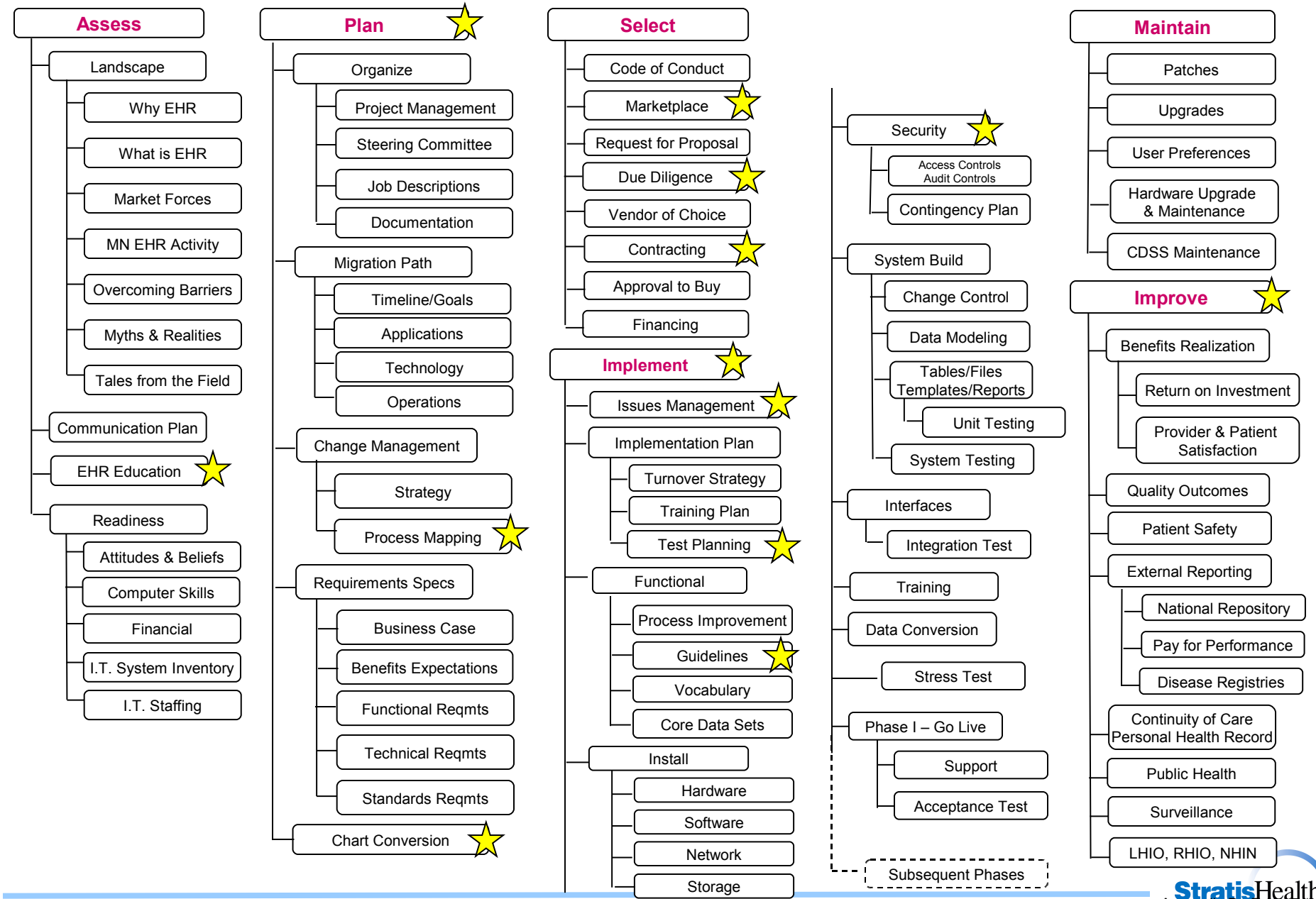
- **Start: We think we want an EHR**
  - Your next step should NOT be to ask do we fly or drive
  - Your next steps should be to:
    - Understand where you want to go, e.g., on a tour throughout the country, to a specific destination, to a set of destinations
    - Understand why you want to go, e.g., see the sights, learn something, do something
    - Think about how you want to go and in what timeframe, e.g., fly or drive
- **End: The destination is NOT EHR, it's the value you want from an EHR**



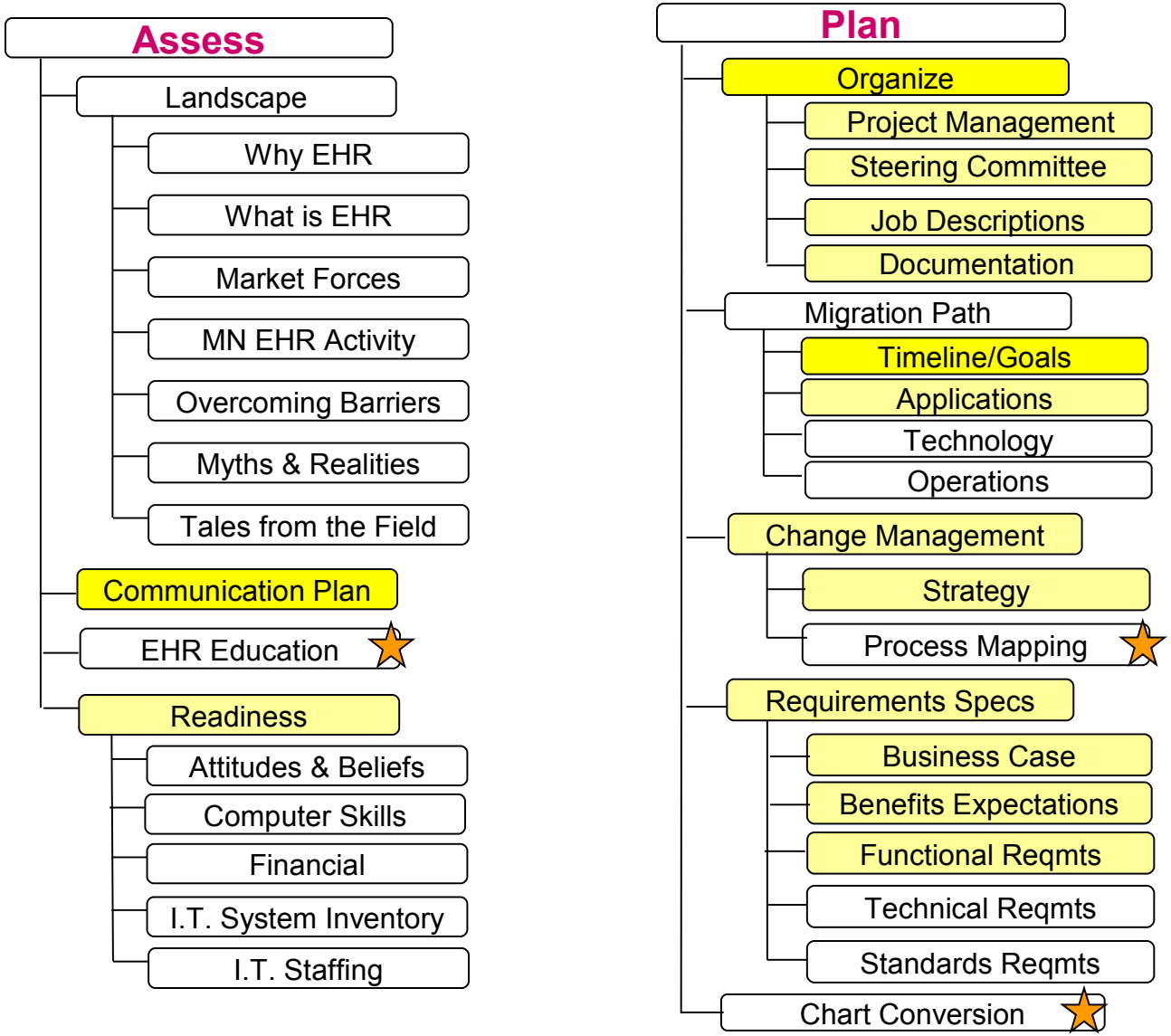
AAFP's EHR Pilot Project

- **Key Learnings from Six Small Family Practices, March 8, 2005 (sponsored by CMS)**
  - **Keys to Success**
    - **Community of learners**
    - **Planning that related EHR implementation with practice workflows**
    - **Starting with "easy wins"**
    - **Connectivity increased value proposition**
  - **Key Barriers**
    - **Partial implementation, which occurs frequently**
    - **Variability among practice styles and expectations**
    - **Challenge of structured data entry for optimal use**

EHR Roadmap


Assess
Landscape
Why EHR
What is EHR
Market Forces
MN EHR Activity
Overcoming Barriers
Myths & Realities
Tales from the Field
Communication Plan
EHR Education
Readiness
Attitudes & Beliefs
Computer Skills
Financial
I.T. System Inventory
I.T. Staffing
Plan
Organize
Project Management
Steering Committee
Job Descriptions
Documentation
Migration Path
Timeline/Goals
Applications
Technology
Operations
Change Management
Strategy
Process Mapping
Requirements Specs
Business Case
Benefits Expectations
Functional Reqmts
Technical Reqmts
Standards Reqmts
Chart Conversion
Select
Code of Conduct
Marketplace
Request for Proposal
Due Diligence
Vendor of Choice
Contracting
Approval to Buy
Financing
Implement
Issues Management
Implementation Plan
Turnover Strategy
Training Plan
Test Planning
Functional
Process Improvement
Guidelines
Vocabulary
Core Data Sets
Install
Hardware
Software
Network
Storage
Security
Access Controls
Audit Controls
Contingency Plan
System Build
Change Control
Data Modeling
Tables/Files
Templates/Reports
Unit Testing
System Testing
Interfaces
Integration Test
Training
Data Conversion
Stress Test
Phase I – Go Live
Support
Acceptance Test
Subsequent Phases
Maintain
Patches
Upgrades
User Preferences
Hardware Upgrade
& Maintenance
CDSS Maintenance
Improve
Benefits Realization
Return on Investment
Provider & Patient
Satisfaction
Quality Outcomes
Patient Safety
External Reporting
National Repository
Pay for Performance
Disease Registries
Continuity of Care
Personal Health Record
Public Health
Surveillance
LHIO, RHIO, NHIN

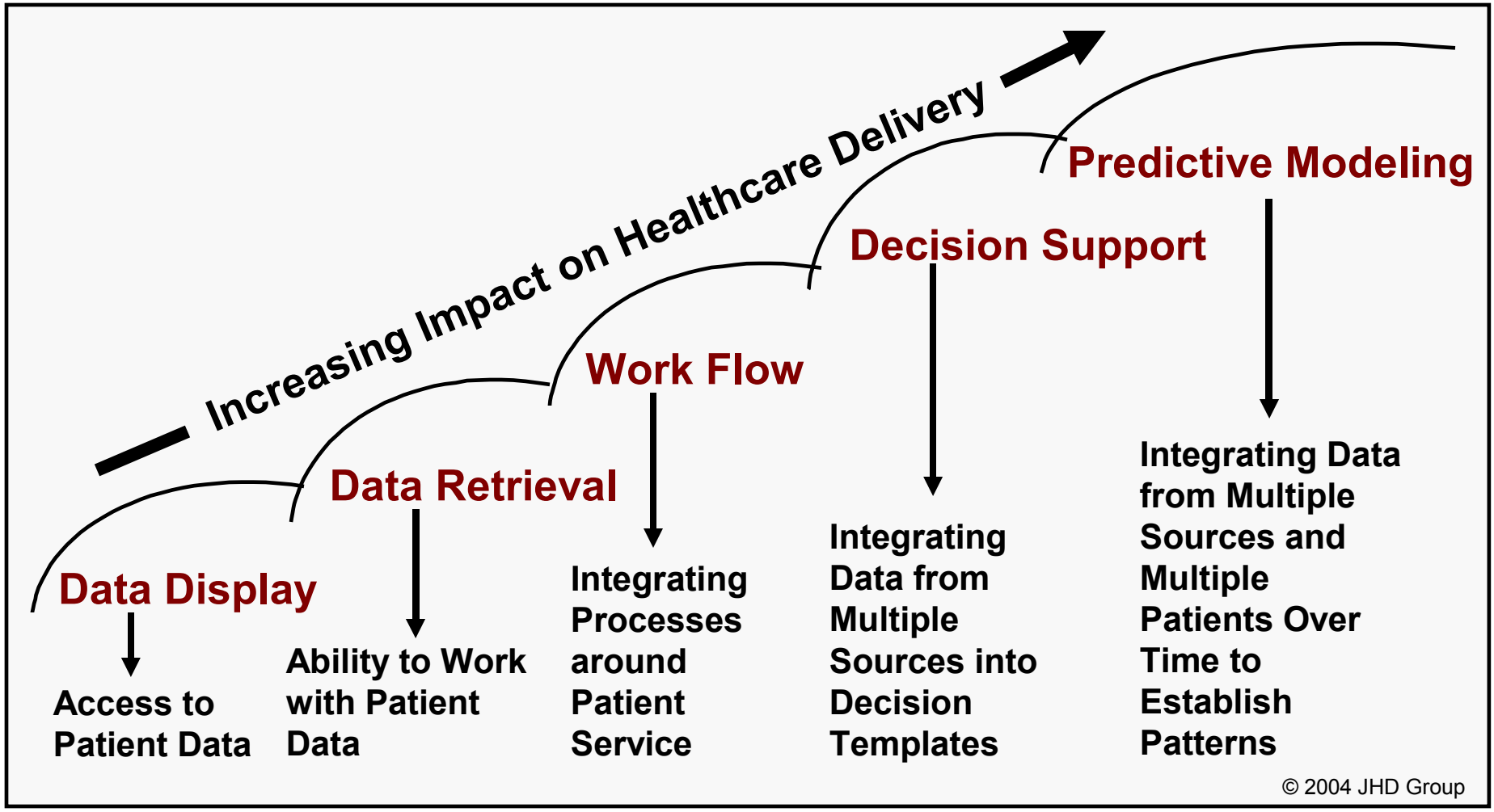
Key Planning Elements



Organizing Your Efforts

Readiness for EHR

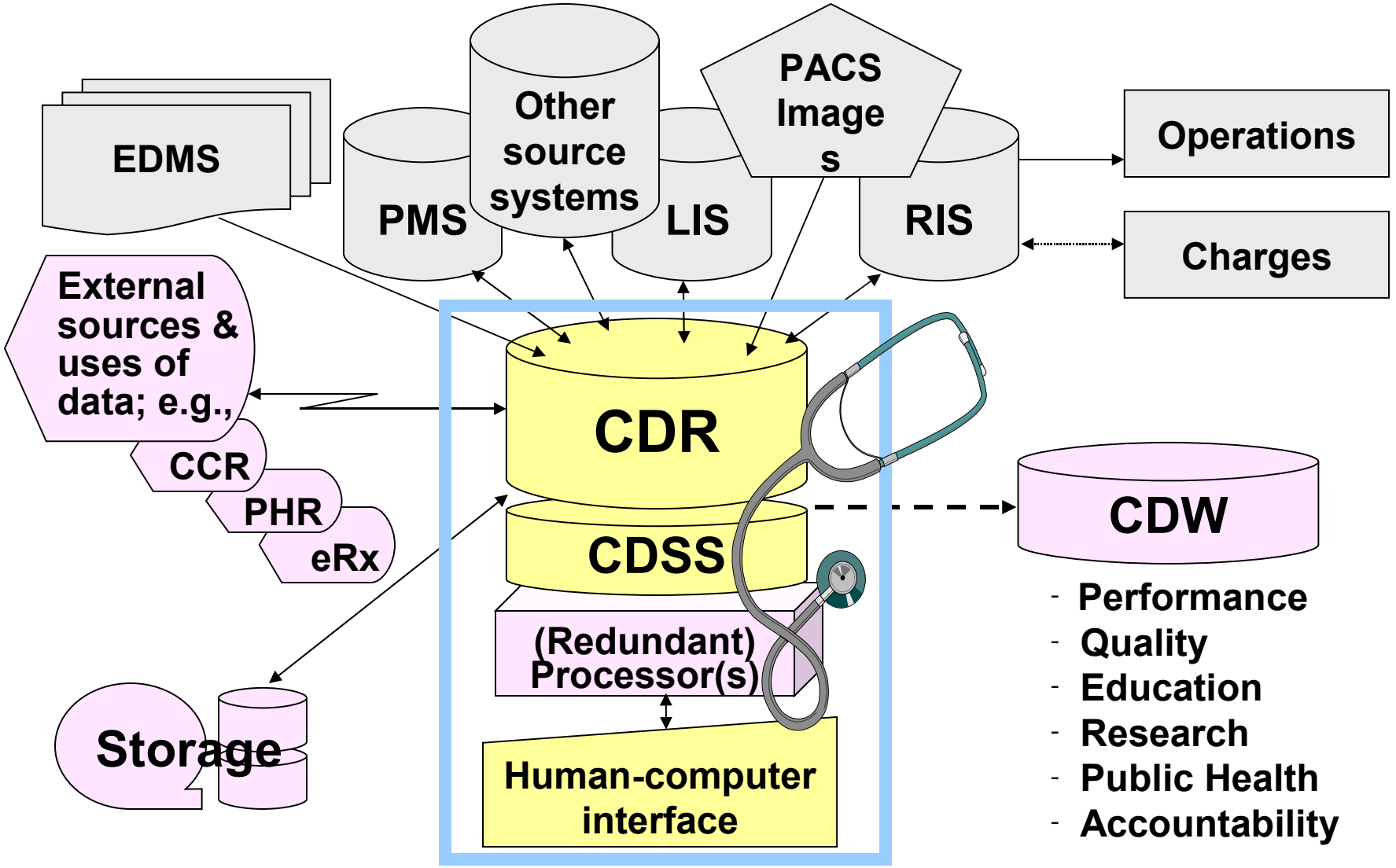
Where Do You Want to Go?



Why Do You Want to Go?

- **Improve quality of care**
  - Locally, or across the continuum
- **Enhance patient safety**
  - Early wins or aggressively
- **Support health maintenance, preventive care, wellness**
  - Culture or contracting
- **Increase productivity**
  - More patients or shorter days
- **Reduce hassle factors/improve satisfaction for clinicians, consumers, and caregivers**
- **Support revenue enhancement**
- **Support predictive modeling and contribute to development of evidence-based healthcare guidance**

Understand EHR

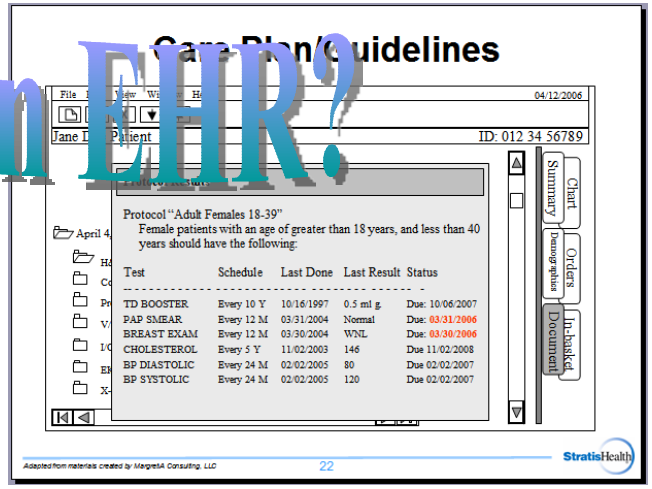


Glossary of Terms

Term	Definition
CCR	Continuity of care record – standard data content to send for referrals
CDR	Clinical data repository – database optimized for patient transactions
CDSS	Clinical decision support system – software that processes discrete data according to logical rules to provide reminders and alerts
CDW	Clinical data warehouse – database optimized for aggregate data analysis
Discrete data = individual data points that are entered via templates and which are computable; e.g., patient blood pressure, lab result, name of medication, dose	
EDI	Electronic data interchange – ability to send a standard transaction (e.g., claim, eligibility inquiry, prescription, or refill request) to another entity (e.g., payer, retail pharmacy)
EDMS	Electronic document management system – document imaging, email, efax, and other digital document (e.g., dictation) storage and retrieval
e-Rx	Electronic prescribing system – that supports drug selection and transmission of the prescription to a retail pharmacy
Human computer interface = data entry devices, such as workstations, tablets, speech recognition, and personal digital assistants (PDAs)	
LIS	Laboratory information system
PACS	Picture archiving and communication system – for x-rays and other clinical images
PHR	Personal health record – patient contributed data in many forms
PMS	Practice management system – application for practice operations, e.g., scheduling, billing
RIS	Radiology information system

Where to Learn More

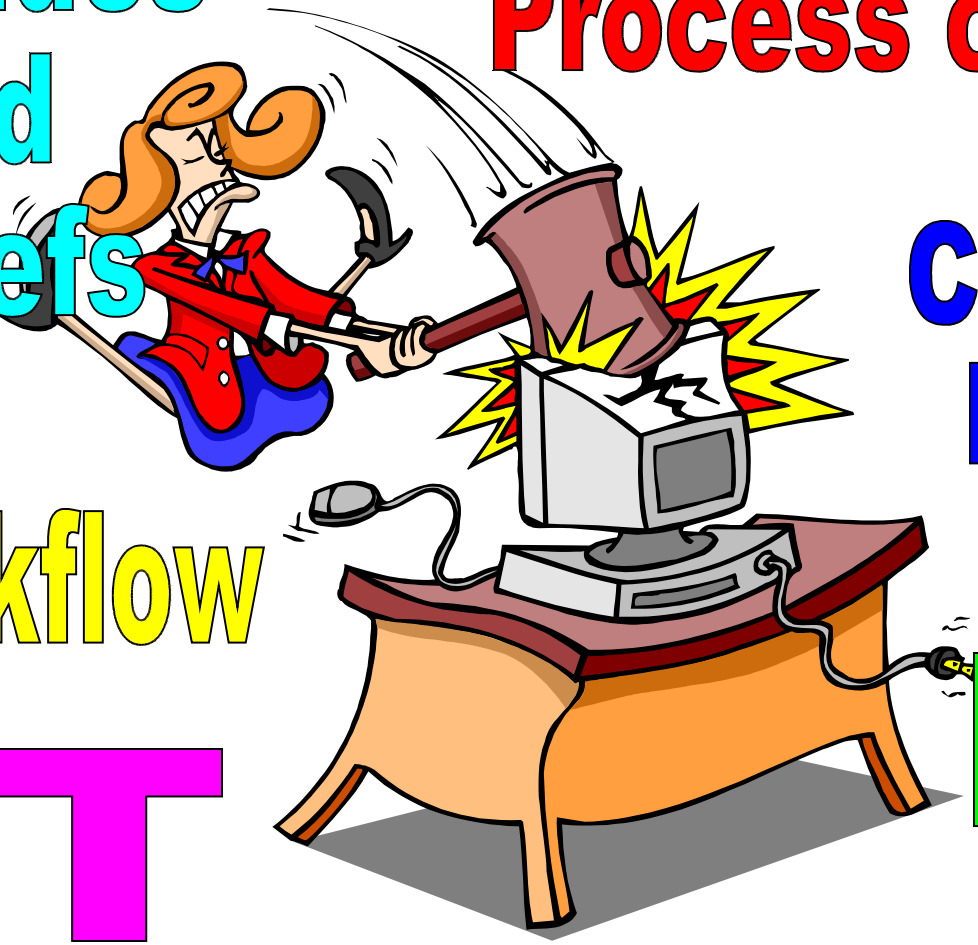
- www.StratisHealth.org
  - EHR Roadmap
    - Toolkit
    - Webex series
  - DOQ-IT
- Reference works from specialty societies
- Professional and trade journals
- Browse the Internet
  - eHealth Initiative
  - Connecting for Health
  - Agency for Health Care Research and Quality
  - Center for Information Technology Leadership (C!TL)
  - Many others
- Trade shows
- Network of peers



Assess Readiness

Attitudes and Beliefs

Process changes



Computer literacy

Workflow

IT

Financial

Communication

- Communicate
  - Early
  - Often
  - To all
  - In many ways
- Communication
  - Removes fear factor
  - Generates ideas
  - Gains buy-in
  - Achieves results
- Plan for Communication
  - Or will be forgotten

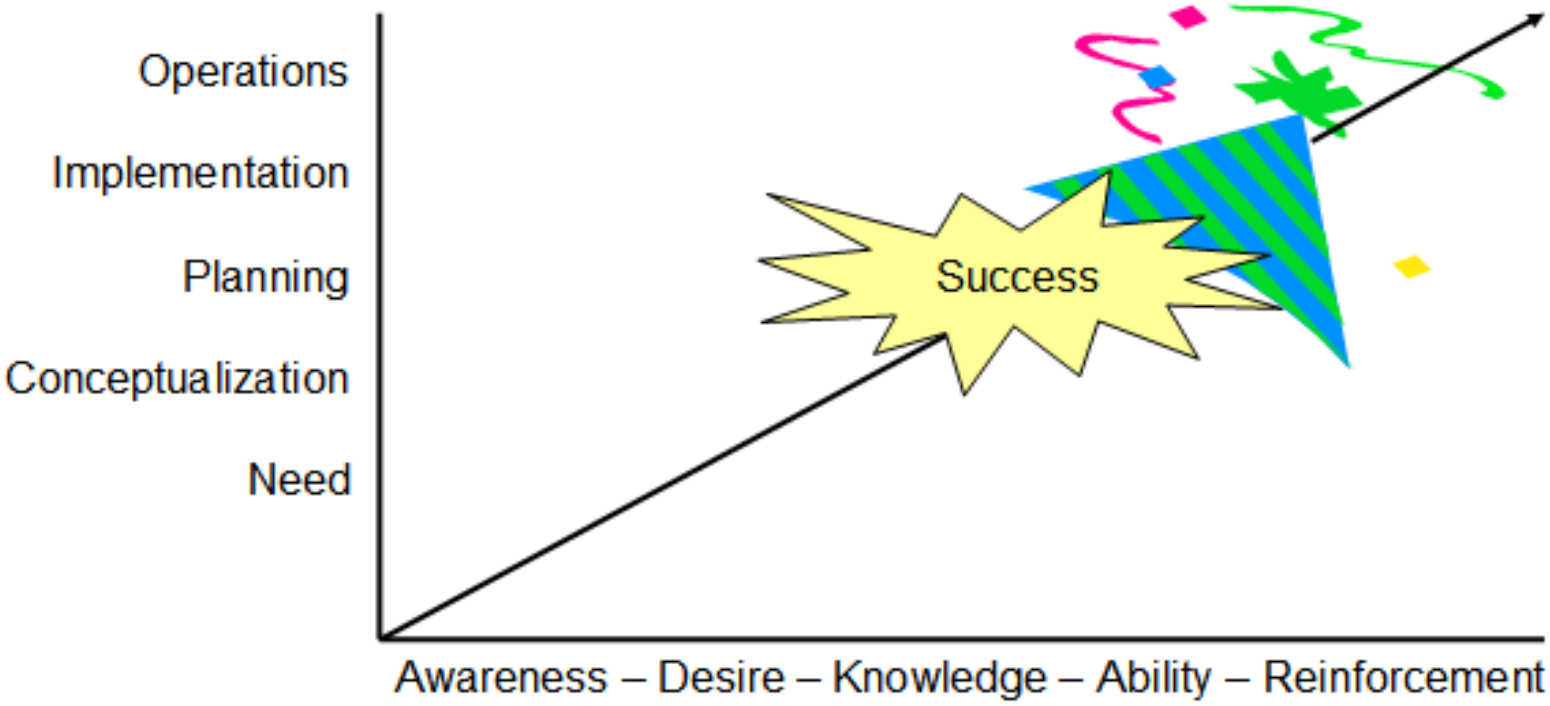
Stakeholders:

- Board of Directors
- Physicians
- Administrators
- Clinical leads
- All staff
- Patients
- Payers
- Insurers
- Employers
- Others

Communication Plan

Key Message	To Whom	From Whom	Medium	When	Date
9. These are specific benefits we expect to accomplish through EHR and want your input	Physicians	Medical director	Meeting	As steering committee begins to define benefits based on migration path and EHR education	
10. Appointment of medical director of information systems (MDIS)	Physicians All staff	Medical director	Memo	As soon as work load for physician champion exceeds casual time	
11. Here are ways we can start to prepare for EHR and want to congratulation each participant:					
a. Computer skills building	Physicians	MDIS Project manager	Training with certificate of completion	As vendor selection is started	
b. Procedures for using Microsoft Office for communications	All staff	MDIS Project manager	Training with certificate of completion	As vendor selection is started	
c. Revised chart forms to begin chart conversion	Physicians Other clinicians	MDIS	Policy and procedure	As vendor selection is started	
d. Clinic is planning to acquire an EHR and we are looking for	Bank Community	Medical director Administrator	Personal communication	As vendor selection is started	

ADKAR Model


Operations
Implementation
Planning
Conceptualization
Need
Success
Awareness – Desire – Knowledge – Ability – Reinforcement

Organizing Your Efforts

Project Management

Project Management

- Ensure readiness
  - Provide for EHR education
  - Assess readiness
  - Facilitate identifying goals, critical success factors, assumptions, risks, & obstacles
- Organize the effort
  - Facilitate formation of EHR steering committee
  - Develop job descriptions for new & changed positions
  - Plan communications
  - Document project tasks
- Initiate change management
  - Oversee process mapping
  - Identify EHR functional requirements
  - Coordinate technical requirements
  - Plan chart conversion
- Coordinate vendor selection
  - Support code of conduct
  - Aid in surveying marketplace & narrowing field of candidates
  - Coordinate RFI/RFP issuance, response, & evaluation
  - Coordinate due diligence activities
  - Assist in identifying financing/ROI
- Coordinate implementation
  - Establish progress reporting system
  - Maintain issues log problem-escalation
  - Install change control process
  - Harmonize project plan w/vendor's
  - Develop turnover strategy
  - Monitor task completion
  - Develop & oversee training plan
  - Develop & oversee test plan
  - Support system build
  - Plan & manage go live
- Coordinate ongoing maintenance & benefits realization

EHR Steering Committee

- Physician leader
- Other physician representatives, including
  - Champions
  - Curmudgeons
- Representatives from:
  - Nursing
  - Administration
  - Business office
  - IT
- Project manager

Use as applicable:

- Board liaison
- CFO
- Procurement specialist
- Legal counsel
- EHR consultant
- External contract negotiator

Documentation

Why

- Promotes objectivity
- Avoids re-work
- Helps achieve on-time, on-budget implementation
- Evidence of action
- Supports training
- Reference for future changes

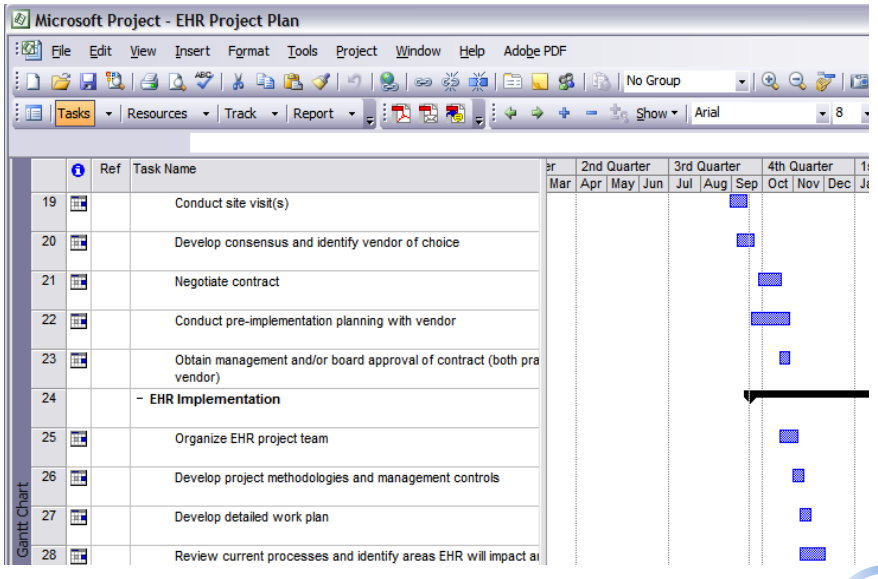
What

- Meeting agenda & minutes
- Journal of communications
- Selection evaluation
- Issues log
- Plans & progress
- Budgets & invoices
- Process improvement
- Change control
- Training logs
- Test results
- System documentation

Project Plan

- Start early to manage tasks
- Manage scope and timeline
- Control “implementation”
- Harmonize “installation” component with vendor

- Implementation
  - All aspects of installing, building, testing, training, conversion, evaluating
- Installation
  - Setting up equipment, loading software, writing interfaces, building tables/files, testing, training



Organizing Your Effort

Goals and Expectations

Great EHR Goals

- Improve quality of care
- Enhance patient safety
- Support health maintenance, preventive care, and wellness
- Increase productivity
- Reduce hassle factors/improve satisfaction for clinicians, consumers, and caregivers
- Support revenue enhancement
- Support predictive modeling and contribute to development of evidence-based healthcare guidance
- Maintain patient confidentiality and exchange data securely among all key stakeholders

But What Do You, Specifically, Hope to Achieve?

- **Specificity and completeness of goal statements often reflects level of understanding concerning EHR**
- **Getting specific early establishes expectations and directs requirements specifications for vendor selection**

Who
What
Why
How
When

"I've never met an IT system that paid for itself"

"We want to improve patient safety"

- **Will physicians?**
- **Use EHR at point of care?**
- **What is current level of medication error?**
- **Drug reference or full-blown e-prescribing?**
- **Within 12 months of implementation?**

See also Vendor Selection Webex

Reality!

- **EHR systems are an investment**
  - **May take 6 to 18 months to make a decision**
  - **So, expect 6 to 18 months to implement!**
- **EHR systems are powerful tools**

> "Merely automating the form, content, and procedures of current patient records will perpetuate their deficiencies and will be insufficient to meet emerging user needs." (IOM, 1991)

  - **It took many years to learn to use tools of medicine**
  - **So, expect it to take some time to learn this new tool**
- **EHR systems are tools**
  - **They are not substitutes for judgment**
  - **They are not perfect, but a well-planned implementation of a standard product often produces better results than a poorly planned implementation of a great product**

Stratis Health is a non-profit independent quality improvement organization that collaborates with providers and consumers to improve health care.

This presentation was created by Stratis Health under a contract with the Centers for Medicare & Medicaid Services (CMS).
The contents do not necessarily reflect CMS policy.

Operations, Office of the Chief Financial Officer, General Services Administration, 1800 F Street, NW., Washington DC, 20405.

NOTIFICATION PROCEDURE:

Employees may obtain information about whether they are a part of this system of records from the system manager at the above address.

RECORD ACCESS PROCEDURES:

Requests from individuals for access to their records should be addressed to the system manager.

CONTESTING RECORD PROCEDURES:

GSA rules for access to systems of records, contesting the contents of systems of records, and appealing initial determinations are published at 41 CFR Part 105—64.

RECORD SOURCE CATEGORIES:

The sources are individuals, other employees, supervisors, other agencies, management officials, and non-Federal sources such as private firms.

[FR Doc. E9–12372 Filed 5–27–09; 8:45 am]

BILLING CODE 6820–34–S

DEPARTMENT OF HEALTH AND HUMAN SERVICES

Office of the National Coordinator for Health Information Technology; Health Information Technology Extension Program

ACTION: Notice and request for comments.

SUMMARY: This notice announces the draft description of the program for establishing regional centers to assist providers seeking to adopt and become meaningful users of health information technology, as required under Section 3012(c) of the Public Health Service Act, as added by the American Recovery and Reinvestment Act of 2009 (Pub. L. 111–5) (ARRA).

DATES: All comments on the draft Plan should be received no later than 5 p.m. on June 11, 2009.

ADDRESSES: Electronic responses are preferred and should be addressed to *HealthIT-comments@hhs.gov*. Written comments may also be submitted and should be addressed to the Office of the National Coordinator for Health Information Technology, 200 Independence Ave, SW., Suite 729D, Washington, DC 20201, Attention: Health IT Extension Program Comments.

FOR FURTHER INFORMATION CONTACT: The Office of the National Coordinator for Health, Information Technology, 200 Independence Ave, SW., Suite 729D, Washington, DC 20201, Phone 202–690–7151, E-mail: *onc.request@hhs.gov*.

SUPPLEMENTARY INFORMATION:

I. Background

The American Recovery and Reinvestment Act of 2009 (Pub. L. 111–5) (ARRA) includes provisions to promote the adoption of interoperable health information technology to promote meaningful use of health information technology to improve the quality and value of American health care. These provisions are set forth in Title XIII of Division A and Title IV of Division B, which may together be cited as the ''Health Information Technology for Economic and Clinical Health Act'' or the ''HITECH Act''.

The ARRA appropriates a total of $2 billion in discretionary funding, in addition to incentive payments under the Medicare and Medicaid programs for providers' adoption and meaningful use of certified electronic health record technology.

Providers that seek to adopt and effectively use health information technology (health IT) face a complex variety of tasks. Those tasks include assessing needs, selecting and negotiating with a system vendor or reseller, and implementing workflow changes to improve clinical performance and, ultimately, outcomes. Past experiences have shown that without robust technical assistance, many EHRs that are purchased are never installed or are not used by some providers.

Section 3012 of the Public Health Service Act (PHSA), as added by the HITECH Act, authorizes a Health Information Technology Extension Program to make assistance available to all providers, but with priority given to assisting specific types of providers. By statute, the health information technology extension program (or ''Extension Program'') consists of a National Health Information Technology Research Center (HITRC) and Regional Extension Centers (or ''regional centers'').

The major focus for the Centers' work with most of the providers that they serve will be to help to select and successfully implement certified electronic health records (EHRs). While those providers that have already implemented a basic EHR may not require implementation assistance, they may require other technical assistance to achieve ''meaningful user'' status. All regional centers will assist adopters to effectively meet or exceed the requirements to be determined a ''meaningful user'' for purposes of earning the incentives authorized under Title IV of Division B. Lessons learned in the support of providers, both before and after their initial implementation of the EHR, will be shared among the regional centers and made publicly available.

The HITECH Act prioritizes access to health information technology for uninsured, underinsured, historically underserved and other special-needs populations, and use of that technology to achieve reduction in health disparities. The Extension Program will include provisions in both the HITRC and regional centers awards to assure that the program addresses the unique needs of providers serving American Indian and Alaska Native, non-English-speaking and other historically underserved populations, as well as those that serve patients with maternal, child, long-term care, and behavioral health needs.

II. Detailed Explanation and Goals of the Program

The HITECH Act directs the Secretary of Health and Human Services, through the Office of the National Coordinator for Health Information Technology (ONC), to establish Health Information Technology Regional Extension Centers to provide technical assistance and disseminate best practices and other information learned from the Center to support and accelerate efforts to adopt, implement and effectively utilize health information technology. In developing and implementing this and other programs pursuant to the HITECH Act, ONC is consulting with other Federal agencies with demonstrated experience and expertise in information technology services, such as the National Institute of Standards and Technology.

We propose that the goals of the regional center program should be to:

—Encourage adoption of electronic health records by clinicians and hospitals;
—Assist clinicians and hospitals to become meaningful users of electronic health records; and
—Increase the probability that adopters of electronic health record systems will become meaningful users of the technology.

The HITECH Act states that ''the objective of the regional centers is to enhance and promote the adoption of health information technology through—

(A) Assistance with the implementation, effective use, upgrading, and ongoing maintenance of health information technology,

including electronic health records, to healthcare providers nationwide;

(B) broad participation of individuals from industry, universities, and State governments;

(C) active dissemination of best practices and research on the implementation, effective use, upgrading, and ongoing maintenance of health information technology, including electronic health records, to health care providers in order to improve the quality of healthcare and protect the privacy and security of health information;

(D) participation, to the extent practicable, in health information exchanges;

(E) utilization, when appropriate, of the expertise and capability that exists in Federal agencies other than the Department; and

(F) integration of health information technology, including electronic health records, into the initial and ongoing training of health professionals and others in the healthcare industry that would be instrumental to improving the quality of healthcare through the smooth and accurate electronic use and exchange of health information.''

To achieve the centers' statutory objectives, we propose to establish regional centers to offer to all providers in a designated region access to information and to some level of assistance. The regional centers will become, upon award, members of a consortium that will be coordinated and facilitated by the Health Information Technology Research Center (HITRC) that the Secretary is directed to establish by Section 3012(b) of the PHSA as added by the HITECH Act. Whereas research and analysis of best practices regarding health IT utilization rests primarily with the HITRC, dissemination and implementation of those best practices learned from the HITRC will rest with the regional centers.

Per Section 3012(c)(4) of the PHSA as added by the HITECH Act, each regional center shall ''aim to provide assistance and education to all providers in a region but shall prioritize any direct assistance first to the following:

- Public or not-for-profit hospitals or critical-access hospitals.
- Federally qualified health centers (as defined in section 1861(aa)(4) of the Social Security Act).
- Entities that are located in rural and other areas that serve uninsured, underinsured, and medically underserved individuals (regardless of whether such area is urban or rural).
- Individual or small group practices (or a consortium thereof) that are primarily focused on primary care.''

Regional centers will therefore, as a core purpose of their establishment, furnish direct, individualized, and (as needed) on-site assistance to individual providers. This intensive assistance is, per statute, to be prioritized to providers identified in the statute. We expect that on-site assistance will be a key service offered by the regional centers to providers prioritized by the statute for direct assistance, and will represent a significant portion of the regional centers' activities.

Because of the nationwide scope of the Medicare and Medicaid payment incentives for adoption and meaningful use of certified EHRs, the Extension Program should provide at least a minimal level of technical assistance across the nation. We propose that the minimal level of support must include the provision of unbiased information on mechanisms to exchange health information in compliance with applicable statutory and regulatory requirements, and information to support the effective integration of health information exchange activities into practice workflow.

It is expected that each regional center will provide technical assistance within a defined geographic area, and that each defined geographic area will be served by only one center. At a minimum, the support should consist of materials designed to be widely and rapidly disseminated, both for provider self-study and for use by entities other than regional centers that have an interest and the ability to provide some assistance and information to providers adopting health IT.

As required by Section 3012(c)(8) of the Public Health Service Act as added by the HITECH Act, all regional centers will be evaluated to ensure they are meeting the needs of the health providers in their geographic area in a manner consistent with specified statutory objectives. All lessons learned from these efforts will be exchanged across regional centers, and with other stakeholders, including but not limited to other federal programs, to promote the availability of highly effective support to providers across the nation. All regional centers will be expected to use the lessons learned as important, but not the only, information to guide their internal self-evaluation and ongoing improvement processes.

A. Criteria for Determining Qualified Applicants

Section 3012(c)(2) of the PHSA as added by the HITECH Act requires that: ''Regional centers shall be affiliated with any United States-based nonprofit organization, or group thereof, that applies and is awarded financial assistance under this section. Individual awards shall be decided on the basis of merit.'' In addition, we propose the following requirements and preference criteria.

Required Criteria may include:

- Define the geographic region and the provider population within that region it proposes to serve.
- Describe proposed levels and approaches of support for prioritized and other providers to be served.
- Address how the applicant would structure its organization and staffing to enable providers served to have ready access to reasonably local health IT ''extension agents'' and provide training and on-going support for these critical workers.
- Demonstrate the capacity to facilitate and support cooperation among local providers, health systems, communities, and health information exchanges.
- Demonstrate that the applicant is able to meet the needs of providers prioritized for direct assistance by Section 3012(c)(4) of the PHSA as added by the HITECH Act.
- Propose an efficient and feasible strategy to furnish deep specialized expertise (in such areas as organizational development, legal issues, privacy and security, economic and financing issues, and evaluation) broadly to all providers served and intensive, individualized, ''local'' presence from an interdisciplinary extension agent to smaller groups of providers assigned to individual agents.

Preference Criteria may include:

- We propose to give preference to proposed regional center organizational plans and implementation strategies incorporating multi-stakeholder collaborations that leverage local resources. The local stakeholders and resources that applicants may wish to consider including in some combination, though not limited to, the following: Public and/or private universities with health professions, informatics, and allied health programs; state or regional medical/professional societies and other provider organizations; federally recognized state primary care associations; state or regional hospital organizations; large health centers and networks of rural and/or community health centers; other relevant health professional organizations; the regionally relevant state Area Health Education Center(s); health information exchange organizations serving providers in the

region; the Medicare Quality Improvement Organization(s)(QIO(s) serving providers that the proposed regional center aims to serve; state and tribal government entities in the center's geographic service area including, but not limited to, public health agencies; libraries and information centers with health professional and community outreach programs; and consumer/patient organizations.

• As noted below, we propose to give preference to applicants identifying viable sources of matching funds. Viable sources could include grants from states, non-profit foundations, and payment for services from providers able to make such payment. For example, Medicaid providers could choose to contract with a regional center in lieu of a corporate vendor for implementation and meaningful use support services, for which costs are reimbursable under Section 1903 of the Social Security Act, as amended by the HITECH Act. A regional center could also, theoretically, seek to establish itself as a first-choice source of assistance that would realize net retained earnings on service to non-prioritized providers and use those retained earnings as a source of matching funds for its grant-funded activities.

B. Maximum Support Levels Expected To Be Available to Centers Under the Program

Given current national economic conditions, we propose to exercise the option in the HITECH Act to not require matching funds for awards made in FY 2010. We will encourage use of matching funds and the coordination of existing resources to strengthen proposals for regional centers and potentially expand the number of providers that can be assisted. Review criteria may be established that give preference to proposals including matching funds but that do not automatically preclude otherwise technically meritorious proposals that do not include matching funds.

We propose using ARRA funding for two-year awards made in FY2010 and furnishing providers in awardees' areas with robust support. While we expect the actual ARRA funding awarded per center will vary based on the number and types of providers proposed to be served, and the amount of matching funds proposed by each regional center, we anticipate an average award value on the order of $1 million to $2 million per center. The maximum award value we anticipate making available to any one regional center is $10 million. Funding may also be approximately allocated to the regional centers in relative proportion to the numbers of prioritized direct assistance recipients identified in the HITECH Act.

C. Procedures To Be Followed by the Applicants

Timelines

This notice makes public and invites comments on the draft description of the regional centers program and is not a solicitation of proposals to serve as extension centers under this program. The Federal Government will award funding for the regional centers through a solicitation of proposals, after considering the comments obtained through this notice. The availability of this solicitation will be broadly announced through appropriate and familiar means, including publication in the **Federal Register** of a Notice of the solicitation's availability. This announcement of the solicitation will provide further details on the finalized requirements and application process for regional centers, pursuant to and in compliance with all applicable statutes and regulations, including but not limited to the Paperwork Reduction Act (44 U.S.C. 3501 *et seq.*).

Applicants well prepared to provide robust extension services will likely need at least two months to provide high quality proposals. It is expected, however, that other potential applicants will need more time to prepare proposals.

We propose to make initial awards for regional centers as early as the first quarter of FY2010 and continuing through the fourth quarter of FY2010. Multiple, closely spaced proposal submission dates will be established to allow each geographic area to begin receiving benefit of a regional center as soon as possible. We believe this approach is necessary to allow areas with well prepared applicants to begin work sooner, without excluding from consideration those areas where the best applicants require more time to convene a multi-stakeholder collaboration to develop a robust proposal that includes a viable organizational plan and implementation strategy. We solicit comment on our phased approach to proposal submission dates and issuance of awards.

The target timeframe for awards is intended to enable regional centers to begin supporting provider adoption in time for providers to receive incentive payments with respect to Fiscal Year (hospitals) or Calendar Year (physicians) 2011 and 2012, when potential Medicare incentives are greatest.

D. Comments on Draft Description

ONC requests comments on this draft description of the regional centers within the Extension Program. Please send comments to the address, for receipt by the due date, specified at the beginning of this notice.

Dated: May 22, 2009.

Charles P. Friedman,

Deputy National Coordinator for Health Information Technology.

[FR Doc. E9–12419 Filed 5–27–09; 8:45 am]

BILLING CODE 4150–45–P

DEPARTMENT OF HEALTH AND HUMAN SERVICES

Centers for Disease Control and Prevention

[60Day–0923–09BR]

Proposed Data Collections Submitted for Public Comment and Recommendations

In compliance with the requirement of Section 3506(c)(2)(A) of the Paperwork Reduction Act of 1995 for opportunity for public comment on proposed data collection projects, the Centers for Disease Control and Prevention (CDC) will publish periodic summaries of proposed projects. To request more information on the proposed projects or to obtain a copy of the data collection plans and instruments, call 404–639–5960 and send comments to Maryam I. Daneshvar, CDC Acting Reports Clearance Officer, 1600 Clifton Road, MS–D74, Atlanta, GA 30333 or send an e-mail to *omb@cdc.gov*.

Comments are invited on: (a) Whether the proposed collection of information is necessary for the proper performance of the functions of the agency, including whether the information shall have practical utility; (b) the accuracy of the agency's estimate of the burden of the proposed collection of information; (c) ways to enhance the quality, utility, and clarity of the information to be collected; and (d) ways to minimize the burden of the collection of information on respondents, including through the use of automated collection techniques or other forms of information technology. Written comments should be received within 60 days of this notice.

Proposed Project

Registration of individuals with Amyotrophic Lateral Sclerosis (ALS) in the National ALS Registry—New—Agency for Toxic Substances and Disease Registry (ATSDR), Coordinating

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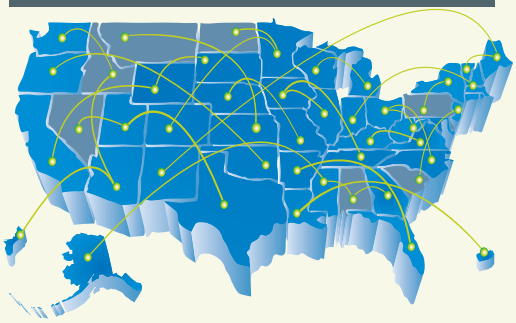
COLLABORATION



Executive Summary

Introduction

Established in June 2006 by RTI International through a contract with the U.S. Department of Health and Human Services (HHS), the Health Information Security and Privacy Collaboration (HISPC) originally comprised 34 states and territories. As phase 3 of the HISPC begins in April 2008, HISPC now comprises 42 states and territories, and aims to address the privacy and security challenges presented by electronic health information exchange through multistate collaboration. Each HISPC participant continues to have the support of its state or territorial governor and maintains a steering committee and contact with a range of local stakeholders to ensure that developed solutions accurately reflect local preferences.

Background

In the first phase of the project, the 34 teams followed a defined process: (1) assess variations in organization-level business policies and state laws that affect health information exchange; (2) identify and propose practical solutions, while preserving the privacy and security requirements in applicable federal and state laws; and (3) develop detailed plans to implement solutions.

In the second phase of the project, the 34 teams selected a foundational component of their larger implementation plan to be completed in a 6-month time frame. During this time, additional participation was sought for the HISPC's third phase, and new states and territories joined the original HISPC teams to review high-priority areas where multistate collaboration could foster the development of common, replicable solutions.

The third phase, which begins in 2008, comprises 7 multistate collaborative privacy and security projects focused on analyzing consent data elements in state law; studying intrastate and interstate consent policies; developing tools to help harmonize state privacy laws; developing tools and strategies to educate and engage consumers; developing a toolkit to educate providers; recommending basic security policy requirements; and developing interorganizational agreements. Each project is designed to develop common, replicable multistate solutions that have the potential to reduce variation in and harmonize privacy and security practices, policies, and laws. A cross-collaborative steering committee has been established for phase 3 to facilitate knowledge transfer among collaboratives and identify points of intersection. Participating states and territories are summarized in the table below, and a description of each project follows.

Collaborative	Participating States and Territories	
	N	Abbreviations
Consent 1 - Data Elements	11	IN, ME, MA, MN, NH, NY, OK, RI, UT, VT, WI
Consent 2 - Policy Options	4	CA, IL, NC, OH
Harmonizing Privacy Law	7	FL, KY, KS, MI, MO, NM, TX
Consumer Education and Engagement	8	CO, GA, KS, MA, NY, OR, WA, WV
Provider Education	8	FL, KY, LA, MI, MO, MS, TN, WY
Adoption of Standard Policies	10	AZ, CO, CT, MD, NE, OH, OK, UT, VA, WA
Interorganizational Agreements	7	AK, GU, IA, NJ, NC, PR, SD

Consent 1 - Data Elements

The primary goals of the Consent 1 - Data Elements collaborative are to

- establish a model for identifying and resolving patient consent and information disclosure requirements across states; and
- develop a foundational reference guide that describes and compares the requirements mandated by state law and any known regional or local consent policies and practices in each participating state.

The collaborative will focus on mandated (state law and regulation) requirements pertaining to consent and disclosure of health information needed in 3 high-priority treatment and/or public health scenarios. By clarifying and documenting consent requirements, the team will work to enable increased interstate electronic health information exchange.

Consent 2 - Policy Options

The primary goals of the Consent 2 - Policy Options collaborative are to

- identify the different consent approaches within and between states; and
- propose policy approaches for consent that facilitate interstate electronic health information exchange.

The collaborative will research the technological, public policy, and legal aspects of intrastate and interstate consent issues, produce tools for other states to use as they develop strategies for adopting consent policies, and provide policy recommendations for nationwide consideration.

Harmonizing Privacy Law

The primary goal of the Harmonizing Privacy Law collaborative is to

- advance the ability of states and territories to analyze and reform, if appropriate, their existing laws related to health information exchange.

The collaborative will develop a common subject-matter taxonomy (a classification of laws based on subject matter categories) to analyze existing laws and identify key areas that require revision of existing law or the adoption of new law. The common taxonomy will provide a framework for comparison, analysis, and, where appropriate, reformation of state laws related to health information exchange.

Consumer Education and Engagement

The primary goal of the Consumer Education and Engagement collaborative is to

- develop a series of coordinated, state-specific projects that focus on targeted population groups to describe the risks and benefits of health information exchange, educate consumers about privacy and security regarding health information exchange, and develop messaging to address consumer privacy and security concerns.

Collaborative products will address the different needs of urban and rural populations, varying literacy levels, and people with special health concerns. These products will also provide a range of materials for states and territories to adapt to meet their own needs.

Provider Education

The primary goals of the Provider Education collaborative are to

- create a toolkit to introduce electronic health information exchange to providers; and
- increase their awareness of the privacy and security benefits and challenges of electronic health information exchange.

The collaborative plans to work with professional medical associations, societies, and educational organizations that represent or serve providers; develop materials, tools, and techniques to better engage providers; raise their interest in electronic health information exchange; and address their privacy and security concerns.

Adoption of Standard Policies

The primary goals of the Adoption of Standard Policies collaborative are to

- develop a set of basic policy requirements for authentication and audit; and
- define an implementation strategy to help states and territories adopt agreed-upon policies.

Through its work, the collaborative will develop processes to help establish trust and bridge the policy differences between health information exchange models.

Interorganizational Agreements

The primary goals of the Interorganizational Agreements collaborative are to

- develop a standardized core set of privacy and security components to include in interorganizational agreements.
- execute said agreements and exchange data through cross-state pilots, wherever possible.

The collaborative plans to identify, and resolve by agreement between states and other entities, those privacy and security practices, procedures, and laws that pose challenges to the interstate exchange of health information.

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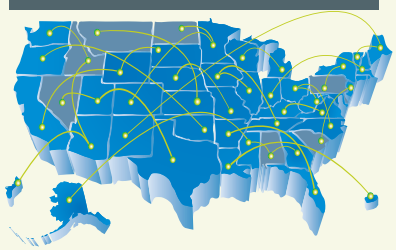


Executive Summary

For more information go to:
http://privacysecurity.rti.org/

Health-e Connection Update

By Melissa Rutala, MPH, Arizona Health-e Connection and
Debi Legner, PharmD, MS, University of Arizona

Federal Stimulus

There is a lot of buzz these days regarding the federal economic stimulus package (officially, the American Recovery and Reinvestment Act of 2009, or ARRA) and what it means for health care. For physicians, this legislation will make financial incentives available to those who are "meaningful users" of electronic health records (EHRs). But with so many unanswered questions, it is difficult for physicians to navigate the murky waters:

- What are the requirements to apply for and receive the incentives?
- What standard will be required, and what constitutes a certified EHR system?
- What does "meaningful use" mean?

While some answers are known, many more still linger. One thing is for sure, though – to be a "meaningful user" and receive stimulus incentives, physicians must electronically prescribe (the other requirements include using a "certified" EHR system, reporting clinical quality data, and being "connected" to a health information exchange).

Electronic Prescribing

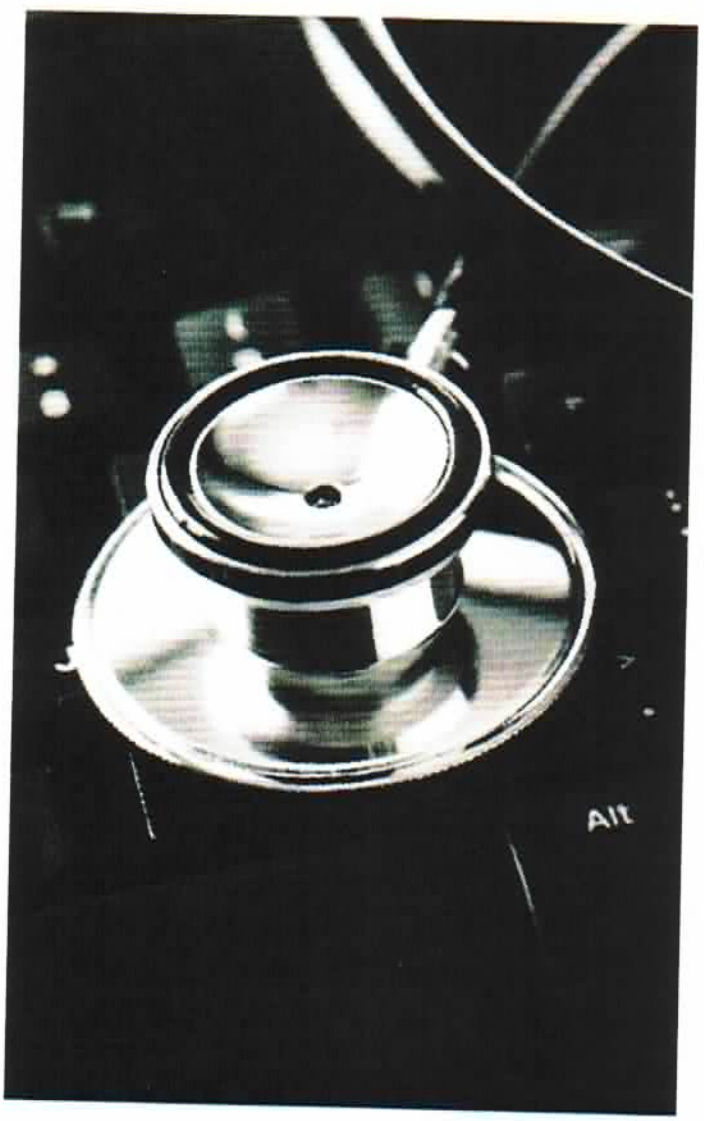
In 2008, Arizona ranked #8 in the nation in electronic prescribing (e-prescribing), based on the percent of prescriptions electronically prescribed, as a proportion of all possible e-prescriptions. Yet, as of November 2008, still only 5.7% of possible electronic prescriptions were actually e-prescribed, evidence that our state still has a long way to go.

Since May 2008, Arizona Health-e Connection (AzHeC) has led the statewide e-prescribing initiative, working with stakeholders throughout the health care industry to promote e-prescribing among Arizona clinicians. In an effort to discover Arizona current e-prescribers' attitudes and beliefs about e-prescribing, AzHeC partnered with the University of Arizona's College of Pharmacy to conduct a survey of registered e-prescribers. The survey produced some interesting results.

Physicians Attitudes Toward e-Prescribing

Debi Legner, PharmD, MS, led the project to measure the attitudes of Arizona e-prescribing clinicians regarding (1) the importance of key criteria that may be used in the selection of an e-prescribing system; and (2) their satisfaction with key criteria as implemented within their current e-presc ribing system. Clinicians were asked to rate the importance of e-prescribing feature on a five-point scale and to rate their satisfaction with their current e-prescribing system on a seven-point scale.

Questionnaires were completed and returned by 114 clinicians. The results suggest that Arizona e-prescribers are moderately



satisfied with the basic functions provided by their electronic prescribing systems. Their dissatisfaction with electronic prescribing systems may be due to vendor support and system costs.

Of the 39 criteria listed, nine were categorized as having high importance with low satisfaction. Interestingly, the nine criteria with high importance but low satisfaction was related to vendor support, system cost, lack of e-prescribing features, and unrealized benefits. With respect to the dissatisfaction with e-prescribing, system support provided by the vendor, initial system training, ongoing support, system updates, and general customer support were highly important criteria with low satisfaction. Since 75 percent of respondents were from practice sites with 10 or less employees, respondent dissatisfaction with system support may reflect insufficient employee resources or employee resources without the skill sets necessary to perform daily e-prescribing system upkeep and timely system updates.

As a result of this study, it is clear that e-prescribing vendors have areas in which they can, and should, improve. However, even in the absence of vendor support systems, alternative support mechanisms have been and are being developed to assist providers in the transition from paper to electronic prescriptions and patient records.

So, if you are a physician interested in e-prescribing, what is the best way to get started?

- **Is my practice ready?** Completing a practice readiness assessment is the first step to determine if you are ready for the changes that will come with health information technology adoption. A readiness assessment tool is available at www.getrxconnected.com.
- **Standalone e-prescribing or EHR with e-prescribing?** There are benefits to both, so it is important to weigh the pros and cons and decide which is best for you and your practice. For example, a standalone e-prescribing system is cheaper (even free) than an EHR system, but a full EHR system provides many more benefits and efficiencies, and is required in order to obtain the more substantial financial incentives through the federal stimulus.
- **What are the costs and what financing options are available?** Researching the costs of various systems, as well as the incentives available down the road, is very important. Visit www.cms.hhs.gov/eprescribing for information on the Medicare e-prescribing incentive program or visit www.azhec.org for details about the EHR stimulus incentives available.
- **Which system should I purchase?** After you decide which type of system you want, deciding on a vendor and purchasing a system is the next big step. Check out www.azhec.org for some great tools to assist you in your search.

What assistance and resources are available for physicians who are interested in e-prescribing?

- **Arizona Health-e Connection (AzHeC)**: AzHeC is the non-profit organization dedicated to "advancing health and wellness through information technology". As such, the AzHeC website, www.azhec.org, includes a wealth of information on everything you need to know about EHRs and e-prescribing.
- **Health Information Technology Regional Extension Centers:** For physicians who are interested in implementing an EHR and becoming a "meaningful user" to qualify for the stimulus incentives, the federal government will be creating, as early as this fall, regional extension centers that will provide technical and change management assistance to providers in adopting and using EHRs.
- **EHR Loan Program**: Through ARRA, states are able to establish EHR loan programs for providers to facilitate purchase of EHRs, enhance their use of EHRs, and improve secure exchange of information. The loan program will begin as early as 2010, although no further details on the program are available at this time.
- **Free E-Prescribing**: The National E-Prescribing Safety Initiative (NEPSI) offers free e-prescribing software, called Allscripts ePrescribe™, to every physician in America. Visit www.nationalerx.com for more information.

In the end, the road to e-prescribing may be a bit bumpy. Now more than ever, however, a commitment exists at the federal and state level to assist physicians in their adoption of technology. Working together, we will realize improvements in patient safety and the quality of care of all Arizonans.

Still got questions? Email Arizona Health-e Connection at info@azhec.org or call us at 602-288-5130. As the leader of Arizona's statewide e-prescribing initiative, we are here to help!

Arizona Geriatrics Society

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IN THIS ISSUE:

Arizona Geriatrics Society
JOURNAL
Volume 14 • Issue 1 2009

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VOLUME 14 NUMBER 1 AUGUST 2009

We Welcome Letters to the Editor

Letters must be submitted via email or in writing and include information on how to reach the writer. We reserve the right to edit for style, clarity and brevity. Send submission to: Letter to the Editor, Arizona Geriatrics Society, 5020 North 8th Place, Suite C, Phoenix, AZ 85014.

ARIZONA GERIATRICS SOCIETY
VOL. 14 NO.1

The Health Internet

Brad Tritle, CIPP, Executive Director, Arizona Health-eConnection, www.azhec.org

In the following Perspective, Brad Tritle, CIPP, Executive Director of Arizona Health-e Connection, discusses the recent history, future and importance of the electronic health record to improving the quality and safety of medical care in Arizona. Health information technology will play a particularly vital role in providing safe and effective care to older adults in Arizona. As just one example, transitional care—that care which occurs in the interfaces between home, emergency departments, hospital units, and rehabilitation and long-term care facilities--and which is currently so fraught with information and hence safety gaps,-- has the potential to be tremendously improved and transformed by making patients' records both digital and accessible digitally.

Background

Health information technology, and specifically electronic health records, is a topic of great interest and discussion nationally. This article explores the roots of the discussion, focusing on the desired outcomes, while also providing a simple analogy: creation of the Health Internet.

A great deal of emphasis nationally is currently being placed on implementation of electronic health records, including the establishment of incentives in the Federal Stimulus bill passed by Congress.[1] Several new words and phrases, formerly limited in usage to those in the health information technology industry, are making their way into use by doctors, nurses, caregivers, healthcare executives at all levels, and even patients. These words include "health information technology," "health information exchange," and "health information infrastructure." The purpose of this article is to briefly explore the roots of this discussion, introduce these and other terms, and frame the activity occurring around their current and future implementation here in Arizona.

Why

The Institute of Medicine (IOM) started much of the momentum in the area of electronic health records back in 2001.[2] In the IOM publication, *Crossing the Quality Chasm*, its Committee on Quality of Health Care in America recommended a common purpose, six aims for improvement, and ten "Simple Rules for the 21st-Century Health Care System."

The common purpose as outlined in the IOM report is fairly generic, and recommends that essentially all stakeholders in the health care system should seek to continually reduce the burden of illness, injury and disability and to improve the health and functioning of U.S. citizens.[2]

To achieve this purpose, six aims for improvement from the perspective of the patient are described: safety, effectiveness, patient-centeredness, timeliness, efficiency, and equity.[2] To further describe these aims, fictional, futuristic (though the technology is currently available) stories are related that show the patient (consumer) interacting with the health care system through various online tools. Some of these tools are used by individual physician offices --for example scheduling or online health risk appraisal. Others provide information to the consumer about treatment options, meanings of test results, side effects, and local resources, including support groups.

To accomplish these six aims, ten rules have been suggested. These rules are not intended to be ends in themselves, but guidance for behavior by health care professionals that would subsequently lead to innovation and creation of new systems to meet the aims. These rules are described by the IOM in a table which contrasts them with perceived present approaches.

It is easy to see that these rules are interrelated, and open to interpretation. This article will not seek to describe these rules, with the exception of clarifying one often misunderstood term, "evidence-based." Evidence-based medicine (EBM) is not merely "cookie-cutter medicine," but is instead meant to combine evidence from clinical studies with a clinician's expertise, and a patient's preferences and/or values.[3,4]

How

Whether or not these aims and rules are adopted in whole by a clinician, the value of many of the aims and rules is clear. Clinicians, consumers, and others seeking to adopt any one of them can be aided by the implementation of 1) health information technology (HIT); and 2) health information exchange (HIE).

The Arizona Health-e Connection Roadmap, developed by hundreds of healthcare stakeholders throughout Arizona in 2005-2006 established definitions of these two terms. HIT refers to the local deployment of technology, often within the four walls of an organization (e.g., electronic medical record, patient management system. HIE refers to the technology needed to share information between HIT deployments (e.g., electronically access a patient's medication history across multiple providers).[5]

Since 2006, additional examples of health information technology and exchange (or sharing) have arisen, and innovations continue to occur. Health information technology is really intended to include all related technologies, including those used for exchange. Health information exchange has been redefined by the federal government as a verb, meaning the process of exchanging health information.

Blumenthal and Glaser described health information technology in the *New England Journal of Medicine* as "an enormously diverse set of technologies for transmitting and managing health information for use by consumers, providers, payers, insurers, and all the other groups with an interest in health and health care."[6(p.2527)] They went on to say that "(a)lthough it is helpful to be familiar with the types of HIT, the implications of the technologies for doctors and patients really depend on nontechnical considerations."[6(p.2528)]

It may then come as no surprise that Dr. David Blumenthal has since become the Director of the Office of the National Coordinator of Health Information Technology, with John Glaser as one of his advisors. Both Blumenthal and Glaser continue to emphasize the importance of both the technical and non-technical considerations.

These non-technical considerations include managing the changes that will occur within a practice when technology is implemented, helping consumers to understand and filter through the information and tools that become available,

TABLE 301 Simple Rules for the 21st- Century Health Care System[2]	
Current Approach	**New Rule**
Care is based primarily on visits	Care is based on continuous healing relationships
Professional autonomy drives variability	Care is customized according to patient needs and values
Professionals control care	The patient is the source of control
Information is a record	Knowledge is shared and information flows freely
Decision making is based on training and experience	Decision making is evidence-based
Do no harm is an individual responsibility	Safety is a system property
Secrecy is necessary	Transparency is necessary
The system reacts to needs	Needs are anticipated
Cost reduction is sought	Waste is continuously decreased
Preference is given to professional roles over the system	Cooperation among clinicians is a priority

establishing governance and funding for technologies used by all stakeholders, and identifying policies that will be necessary for the successful implementation of the technologies. These are issues that are a top priority for the health care leaders that are members, committee members, and board members of Arizona Health-e Connection.

Arizona Health-e Connection's (AzHeC) Board adopted the following revised vision and mission on June 22, 2009:

VISION: Arizona Health-e Connection will be the international model for facilitation of health information infrastructure development and implementation.

> MISSION: To facilitate the design and implementation of integrated statewide Health Information Technology and Health Information Exchange that supports the information needs of all healthcare stakeholders to reduce healthcare costs, improve patient safety, and improve the quality and efficiency of healthcare and public health in Arizona

To accomplish the above vision and mission, a variety of strategies will be implemented over the coming years, and AzHeC is encouraging involvement by clinicians, consumers, and others throughout Arizona, to ensure that the implementations reflect the values and needs of Arizona's stakeholders.

Keeping it Simple, Yet not Easy

The title of this article is "The Health Internet." That is perhaps the easiest way to describe the future health information infrastructure (which includes the technology and the policies that accompany that technology). It will be a network that allows the appropriate sharing of information by those that need to provide or view the information, and a yet-undeveloped economy of businesses and innovations that will show value through the creation or use of this information. This requires that information be placed in digital format when it is created (e.g., a clinician's electronic medical record, a laboratory information system), and that each point of care have an electronic interface that allows the appropriate sharing of the information. This is similar to the way that Internet users access information (e.g., websites) that resides on servers located all over the world, or make such information available themselves through shared online tools (e.g., Facebook), or their own website or mobile device (e.g., smart phone).

An example might be a digital glucometer and scale at the home of a Type II diabetes patient that provide scheduled uploads of data to caregivers, care managers, and the patient's own personal health record (PHR) which will be available as needed by the patient's clinicians who can, in turn chart additional data. If the patient is a "snow bird" living in Arizona in the winter, lab results, medications, and information relative to the care provided in the patient's summer residence would now be available to Arizona clinicians. Likewise, if patients are traveling in Europe or Asia, they can either upload information through their smart phones to care managers back home, or, in the event of an emergency department visit in a foreign country, their health information (e.g., medication history) can, through health information exchange or a personal health record, be made available to the physicians caring for them abroad.

Simply described – yes. Easy to implement – no. It is going to take the cooperation of all, and interest in what's best for the patient, to ensure that solutions are win-win: improving experiences for both health care providers and health care consumers.

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Arizona Health-e Connection

Consumer Advisory Council

Council Charge

The charge of the Arizona Health-e Connection (AzHeC) Consumer Advisory Council is to advise the AzHeC Board, by providing a forum for consumer comment, education and the development of consumer stakeholder consensus on principles, standards and initiatives relating to the electronic transfer of personal health information as it relates to AzHeC activities. The council will address issues such as the privacy and security of personal health information and electronic exchanges and systems, consumer control of electronic personal health information, consumer access to electronic health information and related tools and services, and consumer education regarding electronic health information, technology and exchanges.

Member Composition and Responsibilities

The Consumer Advisory Council's goal is to reflect the demographic breadth of the state of Arizona, by calling on individuals from all walks of life. AzHeC is especially looking to engage consumers who are not employed within the health care industry. As a member of the council, your active participation and engagement will be essential to the success of the council. Therefore, responsibilities of council members will include, but are not limited to:

- Review of information about the organization, basic concepts of terminology of health information technology/exchange, new developments in the HIE/HIT market, and other relevant documents. It is expected this may result in 2-4 hours of reading and preparation each month.
- Attendance at Consumer Advisory Council meetings, to be held once a month. A conference call number will be provided for those individuals who are unable to attend in person.
- Active participation in council discussions and activities
- Assistance with distribution of information to the greater population

Council First Steps

Upon formation, the council will initially pursue the following steps:

- AzHeC will provide background information to the Consumer Advisory Council regarding Arizona Health-e Connection, national and Arizona HIT/HIE initiatives, and basic concepts and terminology of health information technology exchange. The "Consumer Engagement" portion of the *eHealth Initiative Blueprint* will be used as a primary resource for the Council.
- The Council will consider a recommendation to the Board regarding possible adoption of the Vision and Principles for Consumer Engagement contained in the *Blueprint*.
- The Board, with Council input, will identify initial projects for Council review and comments.

2007 Summit

Expenses	**description**	**amount**
itemized	Hyatt Regency A/V web casting	$6,909.25
	Hyatt Regency - general	$37,914.32
	Dr. Townsend expense - 1 ($30.98)	
	Dr. Townsend expense - 2 ($413.60)	$444.58
	Summit Binders	$2,621.43
	Summit Briefs	$6,431.95
	Flash Drives	$5,102.32
	Various signage	$1,450.71
	registration website, badges, etc.	$2,677.06
	printing	$2,962.20
Expense subtotal		$66,513.82
	expenses covered by RTI	$9,871.45
	Expenses to be paid by non-profit	$56,642.37

Income	**description**	
sponsorships	AHCCCS	$25,000.00
	Schaller Anderson	$25,000.00
	Ingenix	$10,000.00
	Sonora Quest	$5,000.00
sponsorship subtotal		$65,000.00
from Meetings & Concierges	Summit Registrations and Exhibit Subtotal	$24,245.74
	Additional registrations by check - needs to be reconciled; some received; some outstanding; BT and KS will handle	

Bank Balance	as of 4/26/07	$60,749.00
	anticipated on 4/27/07 - after deposit of Meetings & Concierges and ADHS check	$85,819.74
	anticipated after writing checks for summit	$29,177.37
	anticipated upon receipt of Ingenix sponsorship	$39,177.37

AzHeC Spring Summit
May 2-3, 2008
Phoenix Civic Center

Expenses	Description	Projected	Actual
Conference Center	Room Rental	$5,000.00	$2,797.50
	Security	$760.00	$760.65
	Exhibit Set-up	$1,500.00	$1,743.47
	Internet Connection	$800.00	$1,175.00
	Electric	$1,680.00	$2,464.91
	A/V	$15,500.00	$17,904.34
	Food and Beverage	$49,000.00	$41,785.27
Speakers	Speaker Expenses (4 @ $500)	$2,000.00	$1,875.30
	Speaker Rooms	$1,500.00	$1,885.75
	Newt Gingrich Video Tape	$6,000.00	$6,111.49
	Speaker Dinner	$2,500.00	$3,043.02
	Teleprompter Fee	$500.00	$500.00
	Speaker Gifts	$0.00	$214.82
Supplies	Copies	$3,000.00	$2,304.22
	CDs (based on 800)	$1,600.00	$1,759.61
	Summit Binders (600 @ $6.25 ea)	$3,750.00	$4,922.24
	Summit Bags (600 @ $11 ea)	$6,600.00	$5,485.40
	AzHeC Pens (1000 @ $0.55 ea)	$550.00	$648.18
	Flash Drives ($5100)	$0.00	$0.00
	Various signage, lanyards, badge ribbons	$1,500.00	$2,564.24
	Registration Website, Badges, etc.	$2,700.00	$2,768.61
	Miscellaneous Supplies	$0.00	$781.72
	Temp Admin Assistance	$0.00	$1,235.00
	Press Release- Mangus Media	$0.00	$212.50
Expense Subtotal		**$106,440.00**	**$104,943.24**
Revenues			
	Sponsor Platinum- $30,000 each	$60,000.00	$30,000.00
	Sponsor Gold- $15,000 each	$30,000.00	$30,000.00
	Sponsor Silver- $7,500 each	$37,500.00	$22,500.00
	Exhibitors- $2500 each	$37,500.00	$45,000.00
	Association Partners	$0.00	$2,000.00
	Registrations- 2 day (50 @ $120 each)	$6,000.00	$14,504.40
	Registrations- 1 day (600 @ $75 each)	$45,000.00	$7,338.00
	TOTAL	**$216,000.00**	**$151,342.40**
Net Revenue		**$109,560.00**	**$46,399.17**

Western States Health-e Connection Summit & Trade Show
May 2-3, 2008
Phoenix Convention Center

Expenses	Description	2009 Projected	2008 Actual	2009 Actual
Conference Center	Room Rental	$3,584.00	$2,797.50	$1,472.00
	Security	$1,975.00	$760.65	$1,973.72
	Exhibit Set-up	$3,675.00	$1,743.47	$3,359.37
	Internet Connection	$1,000.00	$1,175.00	$800.00
	Electric	$736.44	$2,464.91	$889.14
	A/V	$10,000.00	$17,904.34	$10,364.55
	Food and Beverage	$62,190.03	$41,785.27	$44,165.01
Speakers	Speaker Travel & Expenses (9 @ $500 each)	$4,500.00	$1,875.30	$2,913.58
	Speaker Rooms (9 @ $500 each)	$4,500.00	$1,885.75	$4,561.53
	Newt Gingrich Video Tape	$0.00	$6,111.49	$0.00
	Speaker Dinner	$3,200.00	$3,043.02	$4,550.88
	Teleprompter Fee	$0.00	$500.00	$0.00
	Speaker Gifts	$250.00	$214.82	$397.30
	Speaker Honorariums	$0.00	$0.00	$0.00
Supplies	Copies	$500.00	$2,304.22	$30.00
	Summit Brochure/Booklet	$5,000.00	$0.00	$2,382.82
	CDs or flash drives (based on 500)	$2,000.00	$1,759.61	$1,350.16
	Summit Binders (500 @ $6.25 ea)	$4,169.55	$4,922.24	$3,573.90
	Summit Bags (500 @ $11 ea)	$1,537.86	$5,485.40	$1,218.38
	AzHeC Pens (1000 @ $0.57 ea)	$308.66	$648.18	$351.17
	Various signage, lanyards, badge ribbons	$2,500.00	$2,564.24	$2,476.77
	Registration Website, Badges, etc.	$4,050.00	$2,768.61	$5,610.00
	Miscellaneous Supplies	$1,000.00	$781.72	$969.16
	Temp Admin Assistance	$8,960.00	$1,235.00	$6,640.00
	Press Release- Mangus Media	$0.00	$212.50	$0.00
	Graphic Design Assistance- (Scott Smiley)	$0.00	$0.00	$750.00
	Credit Card Fees (Merchant Account)	$500.00	$0.00	$2,805.57
Expense Subtotal		**$126,136.54**	**$104,943.24**	**$103,605.01**
Revenues				
	Sponsor Platinum- $30,000 each	$28,500.00	$30,000.00	$30,000.00
	Sponsor Gold- $15,000 each	$41,850.00	$30,000.00	$45,000.00
	Sponsor Silver- $7,500 each	$20,250.00	$22,500.00	$22,500.00
	Exhibitors- $2500 each	$70,400.00	$45,000.00	$92,300.00
	Association Partners	$2,800.00	$2,000.00	$7,500.00
	Registrations- 2 day (500 @ $150 each)	$52,500.00	$14,504.40	$32,640.00
	Registrations- 1 day (350 @ $100 each)	$0.00	$7,338.00	$0.00
	Trade Show Only Passes- (25 @ $20)	$500.00	$0.00	$640.00
	TOTAL	**$216,300.00**	**$151,342.40**	**$229,940.00**

Appendix C

Arizona Health-e Connection Business Plan

December 2007

Table of Contents

Summary

"I wish we had that two years ago," said a friend I'll call "Mary," as she asked what it was I was doing these days, and she began to recount how lost medical records and images during a referral to a specialist led to inaction for her husband's condition, which she believes was directly responsible for her husband's death this year.

Mary's experience is only one example of the how incomplete information at the point of care can lead to disaster. With the increase in chronic disease, such as Type II Diabetes, in the United States, the need for multiple providers to see a patient's complete records in order to coordinate care is increasing. One in five Medicare patients has five or more chronic conditions, and will see on average fourteen different providers for that care. This is in addition to the much-heard-of need for emergency room physicians to know basic items about an unconscious patient's health history, allergies, medications, and problems before they begin taking action.

There is talk nationally and locally about this need to address this lack of access to information in the health care industry just as we have in other industries – through implementation of information technology. People are used to using ATMs, doing online banking and research, and using electronic means (usually email) at their office to send and receive information between business partners. This does not occur in the health care industry. Though many hospitals have electronic health records, citizens are shocked to learn that only ten to twenty percent of physicians have their medical records in electronic form, and usually there is no back up – electronic or paper copy - of their health records at the doctor's office.

Arizona's leaders have decided it is time for our state to move ahead, and solve this problem of the need for electronic medical records, as well as the ability to exchange and combine these records. Not only did the Governor establish an executive order, and private foundations fund development of a roadmap document, but both the private and public sector have established an action-oriented not-for-profit organization through which to ensure this objective is met as quickly as possible – resulting in saved lives, more efficient care, and a much-desired handle on increasing healthcare costs.

Established in January 2007, Arizona Health-e Connection (AzHeC) is a statewide, public-private organization whose mission is to lead Arizona's establishment of health information exchange (HIE) and adoption of health information technology (HIT). Its goal is to achieve, by September 2010, interoperable electronic health records for every Arizonan, by continuing the implementation of the Arizona Health-e Connection Roadmap, which was initiated through the Governor's executive order. Arizona Health-e Connection is neither a regional health information organization (RHIO) nor an information exchange, but instead has a strategic direction to support the establishment of successful health information infrastructure in Arizona through activities in the following three areas:

I. Assessment and Communication

II. Policy Development

III. Support of Health Information Infrastructure Development

Arizona Health-e Connection can best be described as a statewide organization that Convenes, Coordinates, and Communicates in order to establish Health Information Infrastructure that benefits every Arizonan.

The organization currently has a $700,000 contract, over two years, with the Arizona Health Care Cost Containment System (AHCCCS), and made approximately $40,000 from its first statewide summit. In-kind funding has also been provided to date through the full time services of staff at the Government Information Technology Agency (2; GITA), and at AHCCCS (1). A full time executive director was hired in September 2007, and with the tightened State budget, Arizona Health-e Connection needed to replace most of the additional State staff resources. After circulating a request for in-kind staff to Board organizations, at a time when activities were increasing, the organization needed to move forward with in-house staff additions to maintain momentum. Current staff includes a full-time executive director, a full-time program manager, and a half-time administrative assistant.

The plan is for Arizona Health-e Connection's ongoing overhead and staff, to include the addition of a communications manager and implementation of a communications plan, to be sustained purely by membership dues from Arizona's healthcare and corporate leadership by January 2009. Prior to that time, the overhead and staff will be sustained by charter membership dues, and contract revenue. Additional funds may come as a result of successful grant proposals, but will be used primarily to fund initiatives, or aid with start-up costs. The organization also anticipates making a profit from its second statewide summit, to be held in May 2008.

Who is supporting or participating in AzHeC?

. Established in April 2007, the initial Board of Directors includes the following organizations and individuals:

Arizona Hospital and Healthcare Association, Arizona Medical Association, Arizona Office of the Governor, Arizona Osteopathic Medical Association, Arizona Pharmacy Alliance, Arizona Department of Health Services, Arizona Public Service (APS), Arizona State University, Arizona Health Care Cost Containment System (AHCCCS: State Medicaid Agency), Banner Health, Blue Cross Blue Shield of Arizona, Dr. Bruce Bethancourt (Phoenix Medical Trading Area Representative), CIGNA Healthcare of Arizona, Debra Nixon (Consumer Advocate), Government Information Technology Agency (GITA), Health Net of Arizona, Intel Corporation, Schaller Anderson, Sonora Quest Laboratory, Southern Arizona Health Information Exchange (SAHIE), United Health Care, University of Arizona College of Medicine/Arizona Telemedicine Program.

Additional membership work is underway to establish appropriate ways to include individuals, such as through the Consumer Advisory Council, and a wider range of stakeholders through a membership base.

There is no other organization identified, within or without Arizona, that both has this role to play and has most of the necessary and motivated stakeholders at the table. Arizona has been recognized as leading the country through this broad-based stakeholder approach. The time is now to involve additional stakeholders, such as individual clinicians, consumers, self-employed business owners, and employers, to ensure that Arizona truly achieves what has been referred to as a "transformation of the healthcare system" through information technology!

You have the opportunity to share in this transformation!

This Business Plan outlines Arizona Health-e Connection's Strategic Direction, conceived by the Board, as well as the activities, staff and funding required to carry out the chosen direction. It provides the plan for funding the organization on an ongoing basis through membership and contracts, as well as supplementation for specific initiatives through grants. All of the activities are part of the Strategic Direction, and work to accomplish the end of greater information for the clinician at the point of care, and empowering the consumer to take greater control of her health, through electronic health records.

Join us!

Assessment and Communications

Background

Without effective communications to all affected entities within Arizona, development of health information infrastructure cannot occur. This includes communication with entities within Arizona's health care industry, as well as all Arizona employers, citizens, and government agencies.

Research by e-Health Initiative has shown that the more consumers learn about secure electronic health information infrastructure, the greater their support. Surveys performed nationally also indicate that misperceptions exist among consumers regarding the existence of electronic health records. Almost half of all consumers believe that their physicians already have electronic health records, and most believe that their physicians have an offsite, electronic backup copy of their health records. These misperceptions must be addressed, in order for the consumer to recognize the need for action, and to get involved.

Clinicians, however, are extremely busy running their practices, and many have not taken the time to study health information infrastructure in depth, though many have formed opinions based on their own or their colleagues' experiences, information from vendors, or media articles. Surveys have shown that consumers trust clinicians more than any other individual or entity to advise them about electronic health records, and therefore there is a great need for education and communication to both consumers and providers. There is a great opportunity for clinicians to provide the doorway to information on this subject for the consumers.

In addition to information for the sake of knowledge, there is also a proven need for information for motivation to action. Some of the most effective implementations of health information infrastructure, such as e-prescribing, do not involve a heavy investment, but will impact the clinicians' workflow. Thus, even though financial incentives should be investigated, the majority of needed activity is education of the physicians regarding the "why" and "how" of successful health information technology implementation.

Especially due to the dynamic nature of the e-health marketplace and community, the AzHeC Board has also indicated that a key role for AzHeC to play is to research and then educate the organization's board and membership regarding new health information infrastructure business models, technologies, and other developments. Facilitation of this will include participating in national organizations and conferences, arranging presentations and site visits, and creating robust web-based information resources.

General Activities

Assessment and Communication

a. Measuring Arizona's implementation of health information infrastructure, and associated attitudes and opinions; Using this information to create effective initiatives
b. Convening and coordinating similar initiatives, in order to create more effective, unified messaging and communication

c. Serving as an educational resource and information clearinghouse for Arizona electronic health information infrastructure initiatives

d. Creating a comprehensive communications plan for the organization, incorporating associated initiatives

e. Convening Arizona stakeholders in statewide, and possibly regional, summits to further education, cooperation, and momentum.

Specific Goals/Deliverables:

- To begin issuing monthly email updates by January 31, 2008 to current list of 300+ individuals.
- Continuation of Clinical/Technical Standards Subcommittee reviewing HIEs around the U.S., with recommendation to add Clinical members, and continue monitoring HIEs to specifically identify where health care transformation is occurring.
- To establish a 20 to 25 member Consumer Advisory Council, meeting for the first time no later than February 29, 2008.
- For Arizona Health-e Connection staff to develop a Communications Plan, with input from the Education/Outreach Committee by March 31, 2008.
- To have 1000 subscribers to Arizona Health-e Connection email updates by June 30, 2008.
- To hold a statewide Summit annually.

Staffing

Arizona Health-e Connection's Board established an Education and Outreach Committee, comprised of Board organization experts in communications, marketing, advertising and government relations. Through research and discussion over several months, leading to recognition of the tremendous importance of communications to this effort, the Committee came to the conclusion that Arizona Health-e Connection should hire an experienced communications director from the healthcare industry. This communications director should have experience communicating with the physician community, and would be responsible for development of a multi-year communications plan for the organization.

Funding

Individual initiatives, such as an e-prescribing initiative, may have specific associated advertising or communications costs. It is anticipated that ongoing, general communications costs will be identified by the communications manager in the communications plan. The Education and Outreach Committee has drafted a communications director position description, based on their combined experience, and estimated that the salary for required experience would be between $80,000 and $110,000 per year.

Policy Development

Background

In 2006, the U.S. Department of Health and Human Services recognized that each state likely had its own laws, regulations and business practices that could potentially inhibit the exchange or adoption of electronic health records. Through the Health Information Security and Privacy Consortium (HISPC), initially thirty-four states and territories received grants of $350,000 to identify laws, regulations and business practices that are barriers to health information exchange, and to identify solutions to these barriers. Arizona received this grant, and involved hundreds of individuals and organizations in this process. An additional grant was received in 2007 for $250,000, which allowed Arizona to create a report outlining specific activities to be accomplished, and for the development of key model legal documents (e.g., contracts) that could be used by clinicians to participate in health information exchange.

In 2008, it is anticipated that Arizona and nine other states will receive Federal funds to work on development of policies that will facilitate inter-state exchange of records. It is also anticipated that additional legal work will need to be done throughout 2008 to prepare a legislative package for the 2009 State of Arizona legislative session.

General Activities

In 2007, the cataloguing process was done, and solutions were identified, which include the following activities:

a. Proposing legislative and regulatory changes to laws the pose barriers to the implementation of e-health technology adoption and exchange
b. Creating and supporting technical standards development that improves interoperability and facilitates the creation of secure regional and state information exchanges and electronic health adoption
c. Researching security and privacy practices that support the establishment of secure health information exchanges
d. Developing key documents that establish model terms and conditions for provider access to health information

Specific Goals/Deliverables:

- To take a complete package to the 2009 Arizona Legislature, incorporating changes to existing, or establishment of new, statutes to enable health information exchange.

Legislation recognizing Arizona Health-e Connection as the official health information organization for the State of Arizona should be considered.

- Finalize development of model participation agreements and policies, and work with stakeholder to apply these models to Arizona health information exchanges (ongoing)
- Secure legal, security and privacy consultants as needed to provide statewide guidance (ongoing).

Staffing

To date, the staffing of the Policy Development activities has been accomplished through a full-time project manager, occasional part-time staff, and academic and legal subcontractors hired by Arizona's Government Information Technology Agency (GITA), the agency which received the Federal funds. It is anticipated that additional legal work will need to be contracted for directly by Arizona Health-e Connection, as Federal funds will likely cease for intra-state activities. If Arizona Health-e Connection were to take on development, governance, or operations of specific statewide infrastructure in the future, it is possible that specific privacy and security policy staff would need to be hired. At this time, however, it is not anticipated that subject would be considered until 2009, though "on demand" security and privacy consultants may be contracted to provide general guidance to AzHeC in the interim.

Funding

As described above, most of the funding for this activity to date has been provided by the Federal government. An estimate for additional legal work necessary to complete the legislative package for the 2009 legislative session is currently being developed. A rough estimate of 100 hours at $300 per hour, or $30,000, is included for planning purposes at this time.

Support of Health Information Infrastructure

Background

There are two major overlapping directions for development of health information infrastructure today, which are not mutually exclusive. One is provider-to-provider health record exchange (health information exchange or HIE), and the other is consumers granting access to providers of their personal health records. In either case, adoption of electronic medical records by physicians and facilities (referred to as health information technology, or HIT, adoption) is necessary – as there can be no electronic exchange of information if the information is not already electronic. Most community efforts underway in the United States today are health information exchanges, but personal health records are currently witnessing support from health insurance companies, entrepreneurial physicians, and information technology companies such as Microsoft (i.e., HealthVault) and Intel (i.e., Dossia).

Support of Health Information Exchange Efforts

The Arizona Health-e Connection Board chose in its strategic plan to support health information infrastructure initiatives already underway in Arizona, as well as supporting the adoption of health information technology. Specifically, there are two health information exchanges currently being developed in Arizona – the Southern Arizonan Health Information Exchange (SAHIE) and the AHCCCS (State Medicaid Agency) Health Information Exchange/Electronic Health Record (HIeHR) project.

The Arizona Health-e Connection Roadmap suggested that the statewide organization, now known as Arizona Health-e Connection, would provide statewide coordinating and convening activities in support of health information exchanges and, as necessary, developing and operate specific statewide supporting infrastructure that would be needed by all Arizona HIEs – such as a statewide web portal, provider index, or possibly a statewide patient index and record locator service. The development of this infrastructure is being considered as AzHeC participates in the planning and implementation of the AHCCCS and SAHIE initiatives.

As health information infrastructure is relatively new, and effective business models are still being developed, it has been recognized that possibly either the AHCCCS or the SAHIE health information exchanges may in part or in full be considered for expansion throughout the state to support exchange of records for all Arizonans. For this and other coordinating purposes, Arizona Health-e Connection staff is involved by invitation with both the AHCCCS and SAHIE projects.

Arizona Health-e Connection has also formed a Clinical / Technical Committee, comprised of providers, chief information officers, chief medical information officers, and other individuals from throughout Arizona, to vet a variety of technical issues before presentation to the Board, and to serve as a technical forum for further coordination and development of consensus on HIT and HIE issues statewide.

Support for Health Information Technology Adoption

To promote adoption of health information technology, specifically electronic medical record systems, by physician offices, Arizona Health-e Connection is both assessing the current status of adoption through surveys, and serving as a coordinator and developer of initiatives. Research has established that physician adoption of e-prescribing technology offers a "quick win" on reduction of medical errors, while also "easing" physicians into the use of relatively low-cost, e-prescribing modules of electronic medical record systems. As several public and private leaders in Arizona were already considering disparate e-prescribing initiatives, the Board has decided to establish an ad hoc E-Prescribing Committee, in order to establish and implement a coordinated plan, and to document the process and results for reference by other states. This is the "First Step" in a statewide effort for adoption of complete electronic medical record systems by clinicians.

Support of Statewide Health Information Infrastructure

Due to the Board's continued interest in meeting the goals set by the Governor in her executive order, Arizona Health-e Connection has a responsibility to support development of a complete statewide infrastructure – so that all Arizonans, and those who utilize Arizona health care facilities, are able to have their appropriate information accessible at the point of care.

The task of "Support" includes items contained in Communications and Policy Development, but goes beyond that to ensuring that Arizona is ready to participate in a National Health Information Infrastructure (NHII), or Network (NHIN), and seeding and guiding the development of Arizona Regional Health Information Organizations (RHIOs).

Arizona Health-e Connection must not only measure Arizona's implementation of health information infrastructure on an ongoing basis, but has a responsibility to stay informed about the status of this infrastructure nationwide, identifying best practices for Arizona to adopt, as well as mistakes that Arizona should avoid. The Clinical / Technical Committee's Standards Subcommittee, for example, has interviewed all operational health information exchanges in the U.S., and is maintaining a catalog of such efforts, including their architectures, applications, and operational status.

Working in coordination with the Government Information Technology Agency, that has funding to hire consultants and provide grants for the development of rural RHIOs, AzHeC will help to seed and guide the development of RHIOs where they do not exist today. It is anticipated that AzHeC may also play a lead role in formation of a Phoenix-based task force, to investigate the interest in a Phoenix Area RHIO.

AzHeC may also choose to cooperate in pilot programs in areas without current interoperable health information infrastructure, utilizing the latest and best information available, and local leadership.

General Activities

Support of Health Information Infrastructure Development

a. Convening diverse stakeholders to provide a platform for education, negotiation, collaboration, and decision making relative to the statewide implementation of health information infrastructure
b. Working with clinicians in different practice settings to identify any barriers to adoption of technology and understand appropriate incentives for participation
c. As needed, undertaking specific initiatives that support the establishment of statewide health information infrastructure, as outlined in the Roadmap
d. Keeping the AzHeC Board informed of the status of health information infrastructure elsewhere in the United States, including practices that are and are not working.
e. Working with stakeholders and local leadership to seed and guide development of Regional Health Information Organizations, and associated infrastructure, throughout Arizona.

Specific Goals/Deliverables:

- The e-Prescribing Committee to recommend to the Board goals and a high-level plan for statewide e-Prescribing adoption no later than February 28, 2008.
- To establish a Phoenix-based RHIO task force by March 31, 2008.
- The Clinical/Technical Committee should review statewide Patient Index (not a single Patient Identifier number), Provider Index, and Web Portal options, and make a recommendation to the Board for the role of Health-e Connection relative to these infrastructure pieces no later than March 31, 2008. This recommendation should include goals for implementation that are synchronized with the needs of AHCCCS and SAHIE.
- Clinical/Technical Committee should establish a Subcommittee on EMR adoption, which will study initiatives and review results of Arizona surveys; a plan and goals for EMR adoption should be established no later than September 30, 2008 (this gives time for results of surveys to be analyzed, for both SAHIE and AHCCCS to have run pilots, and to establish initial lessons-learned from e-prescribing initiative)
- The Clinical / Technical Committee, in conjunction with the Executive Director, will monitor the dynamic Personal Health Record market through 2008, and make a recommendation regarding Arizona Health-e Connection's role in promotion of personal health records to the Board no later than December 31, 2008.

- By July 2009, to identify from initial results of AHCCCS and SAHIE implementations, and the results of the GITA rural RHIO grants, whether a single, statewide health information exchange or other infrastructure is needed, and if so, specify the recommended role of Arizona Health-e Connection. The Executive Director will work with the Executive Committee and other Board members to formulate a recommendation to the Board.

Staffing

This is the most staff-intensive area of Arizona Health-e Connection's operations. It includes strategy formation and implementation, staffing and support of the Clinical / Technical Committee, participation in national and regional conferences, staffing and preparation of any

initiatives, and participating in individual initiatives as a knowledgeable and active partner – such as the AHCCCS HIeHR and SAHIE initiatives.

The majority of the executive director's time is spent providing leadership for the convening and coordinating activities (in addition to organization administrative activities). Due to the preparation activities for e-prescribing, the annual summit, the formation of the Consumer Advisory Council, and staffing of the Clinical / Technical Committee, it also became prudent to hire an experienced program manager, so that AzHeC can continue to be proactive in its role.

Funding

It is estimated that the funding for the executive director, program manager, and miscellaneous support activities for health information infrastructure support will be approximately $250,000 per year. Should specific infrastructure be identified for development, such as a statewide provider index/directory or patient index and record locator service, new or enlarged funding sources will also need to be identified.

Other Organizational/Administrative Goals

- To move all Arizona Health-e Connection web infrastructure to AzHeC (currently with GITA), and have readily available in-house or contracted webmaster services by January 31, 2008.

- To add at least 40 new organizational members to Arizona Health-e Connection by December 31, 2008; target should be for approximately 20 health care provider organizations, and 20 other organizations (e.g., employer, government, non-profit associations)

AzHeC Board and Committee Structure

Arizona Health-e Connection

transition to private/public partnership

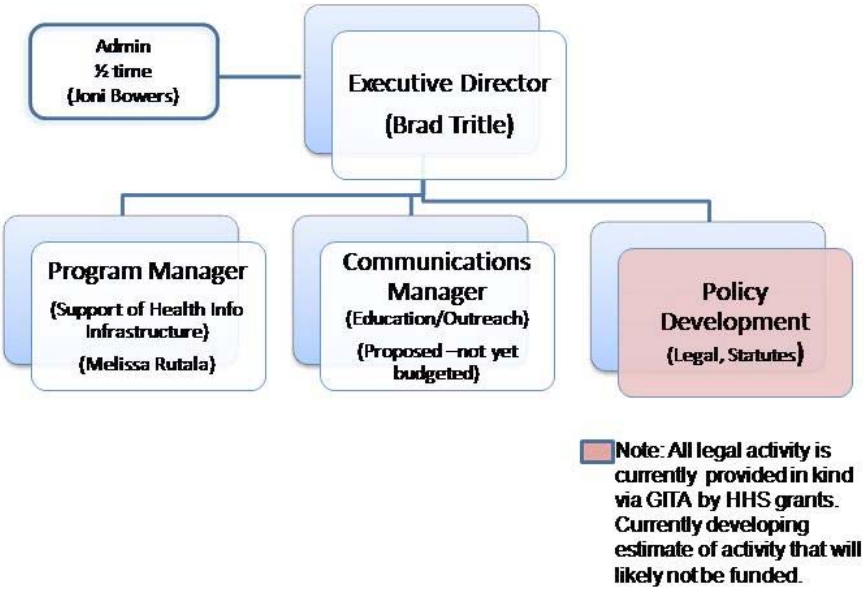
Permanent Board Representation

- *Governor's office*
- *AHCCCS*
- *ADHS*
- *AzHHA*
- *ArMA*
- *AOMA*
- *GITA*

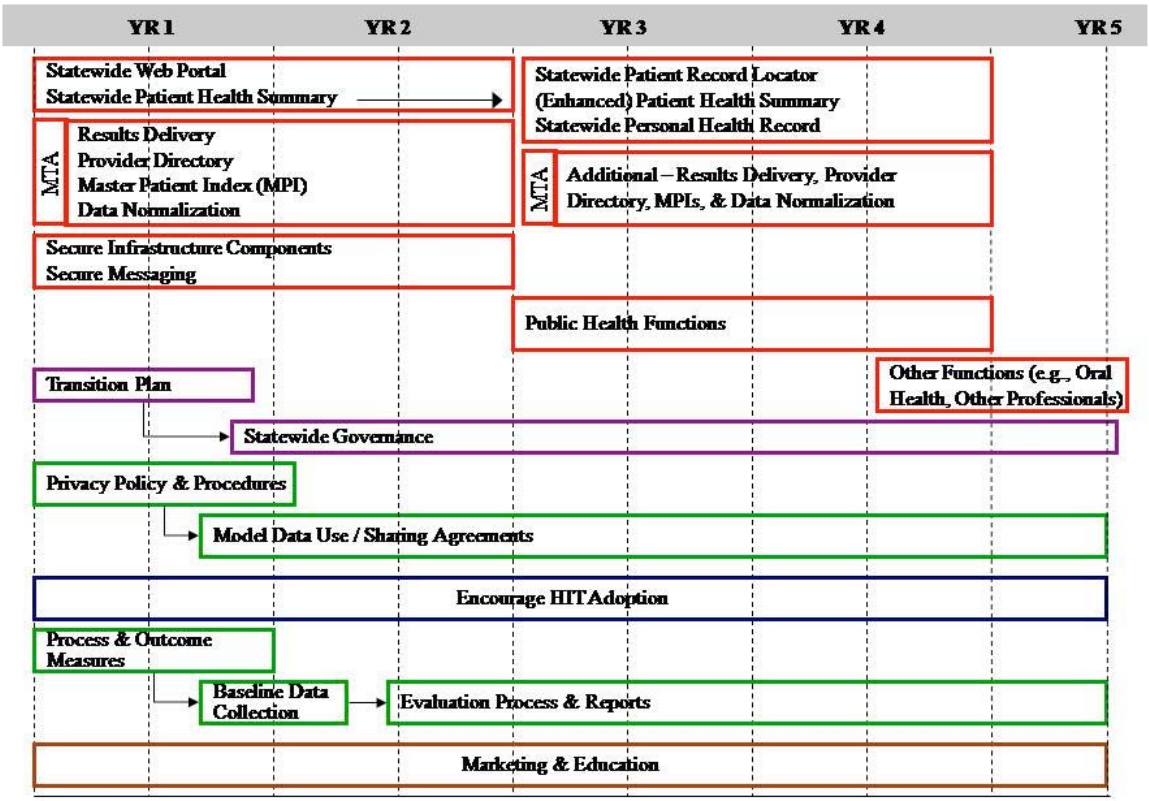
Additional Stakeholder Representation

- *Consumers*
- *Employers*
- *Insurers*
- *Health Care Providers*
- *Pharmacy*
- *Clinical Laboratories*
- *Higher Education*

AzHeC Organizational Structure for 2008



Original Roadmap Timeline



Executive Order 2005- 25
Arizona Health-e Connection Roadmap

WHEREAS, on April 12, 2004 President Bush called for widespread adoption of interoperable electronic health records (EHRs) within 10 years and established the Office of the National Coordinator for Health Information Technology (ONCHIT); and

WHEREAS, ONCHIT issued a ***Framework for Strategic Action: The Decade of Health Information Technology: Delivering Consumer-centric and Information-rich Health Care,*** (the "***Framework***") outlining four requirements for achieving the President's goal of widespread adoption of health information technology (HIT), including the need to: 1) develop interoperability standards; 2) support and encourage the development and use of EHRs and electronic data exchange infrastructure; 3) establish policies and regulation consistent with these goals and information security requirements; and 4) create an Internet-based architecture for nationwide health information exchange; and

WHEREAS, the ***Framework's*** goals are consistent with those of the State of Arizona to achieve 100% electronic health data exchange between payers, health care providers, consumers of health care, researchers, and government agencies as appropriate; and

WHEREAS, the federal Department of Health and Human Services (DHHS) estimates that savings of $140 billion per year, or close to 10% of total health spending in the United States, could be achieved through HIT by reducing duplicative care, lowering health care administrative costs, and avoiding errors in care; and

WHEREAS, the federal government intends to financially support local and statewide initiatives aligned with federal efforts to achieve the President's HIT goals; and

WHEREAS, Arizona recognizes that early adoption of a statewide e-health information infrastructure would improve the quality and reduce the cost of health care in Arizona by: 1) ensuring health information is available at the point of care for all patients; 2) reducing medical errors and avoiding duplicative medical procedures; 3) improving coordination of care between hospitals, physicians, and other health professionals; 4) furthering health care research; and 5) providing consumers with their own health information to encourage greater participation in their own health care decisions; and

WHEREAS, Arizona must control health care costs as a key to a long-term strategy of reducing state expenditures and enhancing the business environment for both large and small employers; and

WHEREAS, a statewide e-health information infrastructure must be organized and structured in a manner to protect the privacy and security of health information; and

WHEREAS, establishing an Arizona Health-e Connection Roadmap will guide legislative and regulatory actions, encourage coordinated efforts in the private health care sector, further public and private partnerships for the development of a statewide health information infrastructure, and maximize federal financial participation to support the goal of early adoption of an e-health information infrastructure;

NOW, THEREFORE, I, Janet Napolitano, Governor of the State of Arizona, by virtue of the authority vested in me by the Constitution and laws of this State, hereby order and direct as follows:

1. The Director of the Government Information Technology Agency ("GITA") shall convene a Call to Action Summit of health care industry executives, technology leaders, content experts, major employers, community leaders and interested government agencies within sixty (60) days of the execution of this Order to solicit input and participation in the creation of an e-health information infrastructure for Arizona.

2. There is hereby created a Steering Committee for Arizona Health-e Connection (the "Steering Committee"). The Steering Committee shall be chaired by the Director of GITA and shall comprehensively review issues surrounding the creation of an e-health information infrastructure in Arizona and develop guidance (to be known as the "Arizona Health-e Connection Roadmap") for the users of such infrastructure.

3. Members of the Steering Committee shall be appointed by, and serve without compensation at the pleasure of, the Governor. The Steering Committee shall include representatives from:
   - Major employers
   - Health plans
   - Physician community
   - Hospitals and hospital systems
   - Healthcare foundations and organizations involved in e-health information
   - Healthcare Associations
   - Arizona Health Care Cost Containment System
   - Arizona Department of Health Services
   - Arizona Department of Administration
   - Arizona Department of Insurance
   - Arizona Universities
   - Health information, privacy and security content experts

3. Task groups within the Steering Committee shall be formed to develop recommendations for:
   - Identifying existing e-health resources, including funding sources, to support the development of a statewide e-health information infrastructure;
   - Identifying technology options, and their advantages and disadvantages, for a statewide e-health information infrastructure;
   - Identifying options for serving consumer health information needs;
   - Ensuring health information privacy and security in electronic health information exchange;
   - Facilitating statewide adoption of electronic health record standards to enable health information exchange across the state and nationally; and

- Creating organizational and governance structures for a statewide e-health information infrastructure.

4. The Steering Committee shall explore funding options for the cost of developing the Arizona Health-e Connection Roadmap and the subsequent development of an e-health information infrastructure for Arizona.

5. No later than one hundred eighty (180) days following the Call to Action Summit, the Steering Committee shall submit to the Governor the Arizona Health-e Connection Roadmap, detailing recommended actions and key milestone dates to achieve within the next five years the goals stated in this Executive Order.

IN WITNESS WHEREOF, I have hereunto set my hand and caused to be affixed the Great Seal of the State of Arizona.

GOVERNOR

DONE at the Capitol in Phoenix on this 26th day of August in the Year Two Thousand and Five and of the Independence of the United States of America the Two Hundred and Thirtieth.

ATTEST:

Janice K. Brewer
SECRETARY OF STATE

Arizona Health-e Connection (AZHEC) was established in January 2007, as a not-for-profit organization whose mission is to lead Arizona's establishment of health information exchange (HIE), and adoption of health information technology (HIT). The organization evolved from a Governor-initiated, state-led program called upon to comprehensively review issues and develop recommendations, to an implementation organization directed by a very diverse, private-public partnership.

Arizona Health-e Connection's purpose is to achieve the goal of interoperable electronic health records, available at the point of care, for every Arizonan by 2010 in order to increase the quality and decrease the costs of health care. Through intense research, public input, and collaborative discussion, the Arizona Health-e Connection Roadmap was established, outlining various steps and suggested direction for reaching the goal.

The newly-established Arizona Health-e Connection Board met, reviewed the Roadmap and associated implementation team reports, and during a strategic planning session established strategic direction for the organization. The Board considered three areas of strategic activity for the organization:

1) **Information Clearinghouse / Educational Outreach**
2) **Standards / Rules Setting Body**
3) **Health Information Technology and Exchange Infrastructure**

The Board agreed that Arizona Health-e Connection should focus in the first two areas: (1) serving as an educational resource and information clearinghouse for electronic HIE initiatives throughout the state; and (2) serving as a standard and rules setting body to coordinate and foster HIE activities throughout the state. In addition, the Board agreed that Arizona Health-e Connection should identify and undertake, on an ongoing basis, specific infrastructure projects in the third area, where Health-e Connection's participation would support statewide and regional initiatives, foster efficiency and limit duplication of resources.

A general description of the Board-approved direction follows:

Information Clearinghouse / Educational Organization

Arizona Health-e Connection will act as a clearinghouse for information and best practices in support of HIEs within Arizona, such as the AHCCCS Medicaid HIE and the Southern Arizona Health Information Exchange (SAHIE). Examples of such information include:

- Sample policies and procedures
- Funding sources / financial viability guidance
- Sample legal agreements

Arizona Health-e Connection will also act as a clearinghouse for information in support of HIT adoption. Such information may include:

- Information on Electronic Health Record (EHR) vendors/products
- Sources of EHR implementation assistance (especially for small offices)
- Educational programs
- Sample contracts to purchase EHRs

Through the Arizona Health-e Connection Website (www.azhec.org), the organization will also provide links to other useful federal and state initiatives, grants, and programs, providing a single point for information for all Arizonans interested in HIE and HIT.

Standards / Rules Setting Body

Arizona Health-e Connection, through further investigation and convening of stakeholders, will identify or develop standards for the facilitation of HIEs. Examples of standards that may assist in the development of HIEs might include:·

- Software certification tools or standards for HIE
- Software certification tools or standards for HIT
- Guidance on best practices/policies for HIEs in Arizona
- Model participation agreement for access to HIEs in Arizona
- Access, Authentication, Authorization and Audit surrounding the sharing of electronic health records

Additionally, Arizona Health-e Connection will identify statutory barriers to HIE and sponsor legislation to amend those statutes.

Health Information Technology and Exchange Infrastructure

As Arizona Health-e Connection strives to support the establishment of HIEs throughout Arizona, it may become necessary to also establish certain statewide supportive infrastructure (or utilities). Both the clinical and technology task forces identified examples of Health Information Technology, and shared HIE utilities, that would provide value to both health care providers and HIEs.

The Board agreed that it would work closely with regional and statewide initiatives, such as SAHIE, DOQ-IT, GITA's Rural Health Information Technology Adoption Program and Arizona Health Privacy Project, the AHCCCS transformation grant initiative and Arizona HealthQuery, to identify specific infrastructure projects, activities, or incentives that would support these initiatives, maximize efficient use of resources and avoid duplication of effort. Examples of such infrastructure and programs may include a secure Web portal (potentially for accessing all health information exchanges), a statewide provider directory (that authenticates providers for access to health information exchanges), a patient health summary (that provides basic information for continuity of care), and identification and implementation of HIT adoption incentives and programs.

Looking Forward

There is a strong desire throughout Arizona, the United States and the world to establish the successful exchange of health information, and many initiatives are underway. By monitoring best practices and lessons learned in health information exchanges inside and outside Arizona, it is anticipated that new information will be made available to the Arizona Health-e Connection leadership, so that direction can modified accordingly.

AzHeC Business Plan

May 2009

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Contributors

This business plan is a product of the significant collaboration and work of many, dedicated stakeholders. The following individuals contributed to the development of this document, and the Arizona Health-e Connection staff extends to them heartfelt gratitude for their time and support. Please note, each contributor contributed to a specific section of the business plan; therefore, the recommendations contained within the business plan are not necessarily the views of all individuals listed below.

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Executive Summary

As a result of the Arizona Health-e Connection (AzHeC) Board of Directors Retreat on Friday, March 13, 2009, the Board directed AzHeC staff to undertake the production of a comprehensive business plan. It was requested that the business plan be developed to encompass the strategic direction proposed for Arizona Health-e Connection over the next three to five years.

The timing of this business plan development is extremely remarkable, as today the United States is both in a major recession, and yet, from the President to the physician's office to the consumer, extremely interested in discovering the role that health information technology can play to improve its citizens' health and economic welfare.

On the first point of timing, the economy, this business plan seeks to establish a firm direction that will facilitate establishing an interoperable health information infrastructure (HII), and necessarily enlarge the Arizona Health-e Connection organization to accomplish this direction, and its various strategic objectives. In the past, AzHeC has obtained its organizational funding through contracts, membership dues, profits from events, and to a lesser extent, grants.

Though the results of AzHeC's activities produce a statewide result (the HII, and use of it), AzHeC does not rely solely on the sale of tangible products or services in the marketplace, as most private companies would, nor does it rely on tax revenues as a government agency would, nor is it an established association representing a single profession, with a narrow focus on meeting the needs of a single stakeholder group, funded by dues and events for that profession. AzHeC is unique, as it represents all health care stakeholders: consumers, health care providers and laboratories, insurance companies, government agencies, and academic institutions, to name a few. AzHeC was started for the purpose of meeting the needs of all, without selling a service to all, or taxing all. Its activities and its methods for funding those activities are necessarily unique.

On the second point of timing, the nationwide interest in health information technology, the economic downturn prompted passage of the American Recovery and Reinvestment Act of 2009 (ARRA), which contains the Health Information Technology for Economic and Clinical Health Act (HITECH Act), providing over $36 Billion in direct and indirect (e.g, reimbursements) funding to aid in establishing the nation's health information infrastructure. Specific HITECH Act funding opportunities now exist that are "tailor-made" for an organization such as AzHeC, potentially allowing it to accomplish specific "heavy lifting" aspects of its direction over the next few years.

This business plan was not designed, however, to change the organization's direction in order to obtain federal funding. The strategic objectives outlined in this business plan comprise activities that are necessary for AzHeC to achieve the vision and mission for which it was founded while, using expert consulting from AzHeC Board and committee members, proposing the following "big vision," or end result, towards which AzHeC can move for the next eight to ten years:

> *Arizona Health-e Connection will be the international model for facilitation of Health Information Infrastructure development and implementation*

Also proposed in this business plan is an organizational mission defining the activity that AzHeC will do today, and over the next several years, to accomplish the Vision. The Organization's Mission is:

To facilitate the design and implementation of integrated statewide Health Information Technology and Health Information Exchange that supports the information needs of consumers, health plans, policymakers, providers, purchasers, and researchers to reduce healthcare costs, improve patient safety, and improve the quality and efficiency of healthcare and public health in Arizona.

As is typical of a business plan, the business activities of AzHeC must address specific needs. The following comprehensive problem statement was developed to define these needs, and therefore the scope of the business plan:

- An interoperable, statewide health information infrastructure does not exist in Arizona;
    - A comprehensive set of policies does not exist to facilitate statewide HIE infrastructure;
    - A common set of standards is not agreed upon by HIE stakeholders;
- Significant barriers exist to both Electronic Health Record and e-prescribing adoption by clinicians and health care institutions;
- Arizona Health-e Connection does not have a comprehensive plan to address the Federal Stimulus opportunities;
- Sufficient educational opportunities for the majority of health care providers, regarding Health Information Technology and Exchange, are not easily accessible; and
- Arizona consumers are largely unaware of Health Information Exchange, and its potential impact on their healthcare.

The majority of the business plan then describes the specific strategic objectives, otherwise thought of as "products," "services," or "business lines" that AzHeC staff recommend for approval by the Board in order to address the problem statement and accomplish the organizational mission. Some of these strategic objectives are current activities (e.g., policy development) that feature recommended enhancement, while other strategic objectives are new (e.g., EHR Initiative), but believed necessary to achieve the vision and perform the mission. Each of the strategic objective chapters includes a specific recommendation, goals and proposed high-level activities/key features. These recommendations, goals, and key features are also easily accessible in the Chapter 2 table entitled "Arizona Health-e Connection Business Plan Recommendations."

Following are the missions which describe activity for each strategic objective:

Strategic Objective Missions

HIE/HII Development: To ensure interoperability and coordination of health information exchange activities in Arizona, and to establish trust both as a statewide health information infrastructure governance organization, and as a source of information, education, and technical assistance to health care providers and consumers.

Policy Development: To create a policy and standards environment conducive to development of sustainable health information exchange and adoption of interoperable health information technology.

Electronic Health Records and E-Prescribing: To identify, create, or disseminate educational and financial programs and tools that facilitate successful implementation of electronic health records and electronic prescribing.

Western States Health-e Connection Summit & Trade Show: To create an internationally-recognized Health Information Technology conference and trade show, that facilitates dissemination of best practices and communication between vendors and health care leadership in the Western United States.

Federal Stimulus Opportunities: To maximize the effectiveness of HITECH Act funding to facilitate the implementation of sustainable health information infrastructure.

AzHeC staff has developed estimated organizational resources, both human and financial, required to accomplish initial activities described in this business plan, though further phases of exploration, and planning under each strategic objective will result in more exact estimates.

Following is specifically what is requested of the AzHeC Board relative to the business plan:

AzHeC staff ask that the AzHeC Board review this entire document prior to the May Board meeting, and be prepared to discuss and vote regarding approval of the business plan in its entirety or in part (by strategic objective). Following approval, AzHeC staff will develop specific strategy and tactics tables for each approved strategic objective and bring them before the Board at the July 2009 meeting. Approval of the Business Plan in whole or part does not financially obligate the organization or an individual Board member, but is instead a commitment by the Board member to the Business Plan direction and a statement that AzHeC staff can expect the Board to assist in the exploration and securing of funding and other means to achieve the direction. AzHeC staff asks each Board member to thoughtfully consider the commitment her/his organization may make, in direct or in-kind funding, to achieving the direction, as well as introductions to funding or other opportunities with which the Board member is or becomes acquainted.

Finally, it is worth mentioning the following two extremely important points:

1) What AzHeC and its stakeholders, including Arizona health information organizations (HIOs) are seeking to accomplish is unique, and complex. Following is a description of the health information exchange challenges specifically:

    - HIE is still a relatively new and challenging area, and its success is determined by synchronization of success in multiple interdependent domains, including:
        - Community Leadership
        - Political Support and Facilitation
        - Market Needs/Business Requirements Assessment
        - Technology Standards and Policy Development
        - Technology Development and Deployment
        - Business Plan Development
        - Business Plan Funding
        - Legal Review, Development and Approval
        - Communication and Education
        - Stakeholder Participation (providers, consumers)
        - And more!

- Developing and successfully implementing HIE is an exciting and extremely challenging endeavor. Some states have not yet attempted to even form a statewide HIE exploration or coordinating body, due to the enormous task and the associated need for leadership.

2) Establishing and maintaining trust within the AzHeC Board and organization, and then externally with all stakeholders, including providers and the public, is necessary to successful establishment of Arizona's health information infrastructure, and absolutely critical when attempting to move both quickly and effectively. Following are quotations that stress the importance of trust:

> "Trust is the most significant predictor of individuals' satisfaction within their organizations."
> -- Jim Kouzes and Barry Posner, Business Authors
>
> "The word trust embodies almost everything that you can strive for that will help you succeed. Show me any human relationship that works without trust, whether it is marriage, or a friendship, or in a social interaction; in the long run the same is true about business, especially businesses that deal with the public." – Jim Burke, CEO, Johnson & Johnson
>
> "You can have all the facts and figures, all the supporting evidence, all the endorsement that you want, but if you don't command trust, you won't get anywhere."
> -- Naill Fitzgerald, Former Chairman, Unilever

Arizona can move forward effectively and quickly to achieve our vision by first ensuring that the AzHeC business environment and external activities are "different" than what the people of the U.S. have experienced in recent months, as waves of hidden decisions, made for self-serving reasons, have surfaced and left a wave of destruction in their path.

Movement of consumers' health information, and establishing the mechanisms and organizations to accomplish this, will require more transparency and cooperation than likely has been required in establishing other industries. To interoperate, we must cooperate. To cooperate, we must trust. To ensure trust, we must embrace transparency, and act in the best interests of the public at large, and as individual providers and consumers.

AzHeC staff believe with an environment of trust, a recognition of the challenges associated with the uniqueness of our activities, and cooperatively striving in good faith to achieve the vision through the mission and strategic objectives contained herein, AzHeC will both "ensure interoperability and coordination of HIE activities," and facilitate creation of a health information infrastructure that will improve the lives of all Arizonans.

Chapter 1: Background and Current State

History of AzHeC

Arizona Health-e Connection grew out of an August 2005 executive order by Governor Napolitano and the subsequent work of hundreds of Arizona individuals and institutions. Within six months of the executive order, a blue-ribbon steering committee, working with eHealth Initiative (eHI) of Washington D.C., national subject matter experts, and Arizona volunteers, completed several deliverables, including a mission statement and a five-year plan, known as the Roadmap, for establishing the state's e-health infrastructure. To see the entire Roadmap document, please reference Appendix A.

The mission statement agreed upon was to "*Facilitate the design and implementation of integrated statewide health data information systems that support the information needs of consumers, health plans, policymakers, providers, purchasers, and researchers and that reduce healthcare costs, improve patient safety, and improve the quality and efficiency of healthcare and public health services in Arizona*."

The overall goal of the Roadmap was to achieve early adoption of a statewide e-health information infrastructure that would improve quality and reduce the cost of healthcare in Arizona with key benefits to include improved safety and patient self-management and improved surveillance and response to public health problems. The Roadmap also called for development of infrastructure on a regional basis, with the provision of shared infrastructure components by a state-wide, non-profit, public-private partnership. This statewide non-profit would also provide leadership for educating Arizonans on e-health, developing statewide policies and agreements, and promoting clinicians' adoption of electronic medical records, e-prescribing, and other health information technology. Arizona Health-e Connection was founded as a non-profit in January 2007, and chose Brad Tritle as its first executive director in September 2007. The organization currently maintains offices within the Arizona Medical Association (ArMA). Educational efforts include its annual summit in the spring of each year, which provides an overview of national, state, and regional efforts throughout the U.S. to Arizona's health care, government and business leaders, as well as consumers.

The Roadmap identified several significant challenges to sharing health information statewide. As these challenges were identified, the Roadmap was formulated to provide strategies to negate these hurdles. The challenges identified were:

- Multiple stakeholder expectations due to diversity and variety of stakeholders and their capabilities
- Geographic differences in each region of the state
- Legal and financial complexities

The Roadmap approach was based on several concepts, the first of which was the fundamental distinction between health information technology (HIT) and health information exchange (HIE) and several strategies to deal with each. In order to understand the distinction between the two terms, the following definitions were agreed upon:

Health Information Exchange (HIE): "the electronic movement of health-related data and information among organizations according to agreed standards, protocols and other criteria."

Health Information Technology (HIT): "the application of information processing involving both computer hardware and software that deals with the storage, retrieval, sharing, and use of healthcare information, data, and knowledge for communication and decision making within a single healthcare provider organization."

The Roadmap summarized the recommended HIT adoption strategies as follows:

- Partner with other organizations that already have HIT adoption programs
- Adopt and if necessary, set standards
- Provide guidance, direction and education
- Provide incentives
- Identify barriers and propose solutions

The Roadmap also summarized the recommended HIE strategies as follows:

- Begin by developing HIE regionally
- Leverage existing IT projects and rich data sources
- Develop key statewide resources for data access and sharing

These key strategies were reflected in the Roadmap Values and Guiding Principles (see *Appendix B*).

The second fundamental concept of the Roadmap was the timing balance between the perspectives of urgency and feasibility. The Roadmap was constructed with initiatives that provided either a high level of urgent value or feasible value or both. The final fundamental concept was the development of the concept of a *medical trading area (MTA)*, which defined a geographic area where a population cluster received its medical services. The following diagram from the Roadmap illustrates the urgency and feasibility associated with various strategies (see *Appendix A* for the full Roadmap):

Figure III: Urgency and Feasibility as Viewed in Year One of the Roadmap

	Higher Feasibility	Lower Feasibility
Higher Urgency	Year 1 - 2	Year 3 -4
	Web portal (statewide)	(Enhanced) Patient Health Summary - by MTA
	Statewide (Basic) Patient Health Summary	(Additional MTAs) - results delivery, provider directory, MPI, data normalization
	MTA results delivery	Encourage HIT adoption
	MTA provider directory	Statewide patient record locator
	MTA Master Patient Index (MPI)	
	MTA data normalization	
	Secure Infrastructure components	
	Secure messaging	
	Encourage HIT adoption	
Lower Urgency	Year 3 - 4	Beyond
	Statewide personal health record	Encourage HIT adoption
	Add public health functions	Add functions for oral health and other professionals

The final timeline of the Roadmap was based on a five year period of activities commencing in late 2005 and reaching completion in 2010. The following diagram from the Roadmap describes the activities for each of the five years (see *Appendix A* for the full Roadmap):

Figure XVII: Implementation Milestones by Year

Year	Milestones/Activities
1	• Establish Health-*e* Connection governance body • Develop statewide business plans • Develop model participation agreements • Identify and establish baseline measures of Health-*e* Connection outcomes • Identify and approach Arizona MTAs • Establish the first MTA information exchange with a results delivery service - Develop a provider directory - Begin a master patient index (MPI) - Begin data transformation • Develop Arizona's statewide Web portal with security infrastructure components • Pilot a basic patient health summary • Establish HIT adoption plan • Market and educate the healthcare community about Health-*e* Connection
2	• Provide guidance to first MTA information exchange for enhanced services • Establish other MTA information exchanges with results delivery services (including provider directories, master patient indexes, and data transformation) • Implement secured messaging • Obtain Health-*e* Connection outcome measurements • Encourage HIT adoption
3	• Establish and provide guidance to MTA information exchanges with results delivery services (including provider directories, master patient indexes, and data transformation) • Enhance the patient health summary with data from MTAs • Enhance public health functions • Obtain Health-*e* Connection outcome measurements • Encourage HIT adoption
4	• Establish and provide guidance to MTA information exchanges with results delivery services (including provider directories, master patient indexes, and data transformation) • Enhance the patient health summary with data from MTAs • Implement statewide patient locator • Develop statewide personal health record access • Obtain Health-*e* Connection outcome measurements • Encourage HIT adoption
5	• Enhance the patient health summary with data from MTAs • Add functions for oral health and other healthcare professions • Obtain Health-*e* Connection outcome measurements • Encourage HIT adoption

AzHeC Current Activities

In order to bring the Arizona Health-e Connection initiative out of the state government and form a non-profit public-private partnership, several milestones had to be accomplished. Bylaws that would govern the organization were developed by legal counsel, and were written based upon the recommendations of the original Roadmap Governance Committee. The organization was incorporated in January 2007, and the bylaws were adopted by the initial Board of Directors at their first meeting (to review the bylaws, please reference *Appendix B*). Within the first six months, the AzHeC Board of Directors developed and agreed upon three main strategic directions on which they wanted the organization to focus initially. At a high level, these strategic directions include (see *Appendix B* for the full Strategic Direction document agreed upon by the Board):

- Information Clearinghouse/Education Outreach
- Standards/Rules Setting Body
- Health Information Technology and Exchange Infrastructure

Since the hiring of its first executive director, Arizona Health-e Connection has been dedicated to the strategic directions above, and has tailored its activities and approaches accordingly.

Support of Health Information Infrastructure

This includes coordination among, but no operational management of, Arizona's current Health Information Exchange initiatives (AHCCCS, SAHIE, CAPAZ-MEX, etc.) To date, AzHeC has provided the following services:

- Legal analysis and support
- Policy development
- Council of Initiatives (facilitating communication/coordination among HIEs)
- Facilitating review and comment on systems
- Communications and educational support (nationwide and statewide)
- Promoting HIE participation to stakeholders (e.g., plans, hospitals, clinicians)
- Leading statewide e-prescribing initiative
- Convening statewide stakeholders annually

Information Clearinghouse

This includes participation in international and national HIT standards and policy organizations/associations to monitor trends, as well as the communications and education necessary to allow for successful HIT and HIE adoption and use. To date, AzHeC has provided the following services:

- Execution of Western States Health-e Connection Summit & Trade Show
- Leading statewide e-prescribing initiative
- Presentations to wide variety of Arizona health care stakeholders (e.g., physicians, nurse practitioners, physicians assistants, hospital executives, community health centers, senior living industry, behavioral health providers, etc.)
- National presentations to communicate Arizona's accomplishments and initiatives
- Deployment of comprehensive, educational website
- Creation of informational resources for healthcare providers
- Monitoring of national trends

Policy Development

This includes work required to ensure consistency and reduce duplication among all health information exchange initiatives in the state. To date, AzHeC has provided the following services (some of which were accomplished through the HISPC project):

- Development of model participation agreement
- Development of model policies and procedures for health information exchange
- Development of consent policies
- Work on draft legislation to allow for exchange of health information
- Development of policy for provider authentication and audit for health information exchange
- Collaboration with key stakeholders in multiple states through the HISPC project

Definitions

For the purposes of this business plan, the following terms and associated definitions are assumed. The development of these definitions was commissioned by the federal government in order to provide some standardization across the industry.

Table 1: Records Terms

Electronic Medical Record	Electronic Health Record	Personal Health Record
An electronic record of health-related information on an individual that can be created, gathered, managed, and consulted by authorized clinicians and staff within one health care organization.	An electronic record of health-related information on an individual that conforms to nationally recognized interoperability standards and that can be created, managed, and consulted by authorized clinicians and staff across more than one health care organization.	An electronic record of health-related information on an individual that conforms to nationally recognized interoperability standards and that can be drawn from multiple sources while being managed, shared, and controlled by the individual.

Table 2: Network Terms

Health Information Exchange	Health Information Organization	Regional Health Information Organization
The electronic movement of health-related information among organizations according to nationally recognized standards.	An organization that oversees and governs the exchange of health-related information among organizations according to nationally recognized standards.	A health information organization that brings together health care stakeholders within a defined geographic area and governs health information exchange among them for the purpose of improving health and care in that community.

Chapter 2: Problem Statement, Vision, Mission and Scope

Business Plan Development

As a result of the Arizona Health-e Connection Board of Directors Retreat on Friday, March 13, 2009, the Board directed AzHeC staff to undertake the production of a comprehensive business plan. It was requested that the business plan be developed to encompass the strategic direction proposed for Arizona Health-e Connection over the next three to five years. As a result, AzHeC staff enlisted the assistance of Celeste Null, given her extensive experience in strategic planning and product development at Intel Corporation. Under Ms. Null's direction, it was recommended that AzHeC staff determine the problem statement which the organization is addressing, the five to ten year vision of the organization and the mission of the organization. Development of these three key items would in turn determine the necessary strategic objectives for AzHeC to undertake in order to accomplish the vision.

After initial meetings between AzHeC staff and Ms. Null, a draft outline was created to explore pursuit of one of the following two business plan directions:

1) A business plan for the statewide Health Information Infrastructure, showing how the AzHeC organization would support its development.
2) A business plan for the AzHeC organization, showing how it would support development of the statewide Health Information Infrastructure.

After further consultation with stakeholders, including the Clinical/ Technical Co-chairs Bob Dowd and Dr. Craig Parker, and Sonora Quest Six Sigma consultant Camy Goebel-Rush, it was determined that #2 above was preferred: An organizational business plan would be developed.

The business plan structure was developed by merging a "traditional" business plan format with a product development format, as key features of each were desirable. It was determined that AzHeC would create "strategic objectives," representing each of the AzHeC "business lines" or "initiatives," such as e-prescribing, HIE coordination, electronic health record adoption, and the Western States Health-e Connection Summit & Trade Show. Additionally, even though policy development and the positioning of the organization relative to the Federal Stimulus support the aforementioned initiatives, it was suggested that these two items be addressed as additional strategic objectives given their importance to the overall vision. Later, these strategic objective sections of the business plan became referred to as chapters.

The primary chapter requiring intense collaboration was that regarding HII/HIE development. To facilitate this collaboration, standing weekly coordination meetings were established with the following participants (as available):

- Celeste Null, Arizona Health-e Connection Board Member
- Arizona Health Care Cost Containment System (AHCCCS)
- Southern Arizona Health Information Exchange (SAHIE)
- Arizona Department of Health Services (ADHS)
- Arizona Government Information Technology Agency (GITA)
- Maricopa Integrated Health System (an AMIE participant)
- Arizona Health-e Connection (AzHeC)

AzHeC staff first set about completing an initial draft of the Federal Stimulus chapter, which was reviewed and approved, together with an outline of the complete business plan, by the Executive Committee on April 14, 2009. Since that time, AzHeC staff has worked to both complete the remainder of the business plan, while also entering into exploratory discussions on several Federal Stimulus opportunities (e.g., EHR Loan Program).

Problem Statement

Following is the problem statement which this business plan will address:

- An interoperable, statewide health information infrastructure does not exist in Arizona;
    - A comprehensive set of policies does not exist to facilitate statewide HIE infrastructure;
    - A common set of standards is not agreed upon by HIE stakeholders;
- Significant barriers exist to both Electronic Health Record and e-prescribing adoption by clinicians and health care institutions;
- Arizona Health-e Connection does not have a comprehensive plan to address the Federal Stimulus opportunities;
- Sufficient educational opportunities for the majority of health care providers, regarding Health Information Technology and Exchange, are not easily accessible; and
- Arizona consumers are largely unaware of Health Information Exchange, and its potential impact on their healthcare.

Vision

In order to ensure that Arizona Health-e Connection sets a vision to which it can adhere for the next eight to ten years, the following vision statement is proposed:

> *Arizona Health-e Connection will be the international model for facilitation of Health Information Infrastructure development and implementation.*

Mission

The mission statements proposed here will carry the Arizona Health-e Connection organization through the next one to two years.

Organizational Mission
To facilitate the design and implementation of integrated statewide Health Information Technology and Health Information Exchange that supports the information needs of consumers, health plans, policymakers, providers, purchasers, and researchers to reduce healthcare costs, improve patient safety, and improve the quality and efficiency of healthcare and public health in Arizona.

Strategic Objective Missions
HIE/HII Development: To facilitate the design and implementation of integrated statewide Health Information Technology and Health Information Exchange that supports the information needs of

consumers, health plans, policymakers, providers, purchasers, and researchers to reduce healthcare costs, improve patient safety, and improve the quality and efficiency of healthcare and public health in Arizona.

Policy Development: To create a policy and standards environment conducive to development of sustainable Health Information Exchange and adoption of interoperable Health Information Technology.

Electronic Health Records and E-Prescribing: To identify, create, or disseminate educational and financial programs and tools that facilitate successful implementation of electronic health records and electronic prescribing by all willing Arizona providers.

Western States Health-e Connection Summit & Trade Show: To create an internationally-recognized health information technology conference and trade show, that facilitates dissemination of best practices and communication between vendors and health care leadership in the Western United States.

Federal Stimulus Opportunities: To maximize the effectiveness of HITECH Act funding to facilitate the implementation of sustainable health information infrastructure.

Business Plan Structure

As mentioned in the previous chapter, Arizona Health-e Connection has been conducting activities that align with the three strategic objectives that were originally agreed upon by the AzHeC Board in early 2007. These strategic objectives included:

- Information Clearinghouse/Educational Outreach
- Standards/Rules Setting Body
- Health Information Technology and Exchange Infrastructure

The Board agreed that Arizona Health-e Connection should focus in the first two areas: (1) serving as an educational resource and information clearinghouse for electronic HIE initiatives throughout the state; and (2) serving as a standard and rules setting body to coordinate and foster HIE activities throughout the state. In addition, the Board agreed that Arizona Health-e Connection should identify and undertake, on an ongoing basis, specific infrastructure projects in the third area, where Arizona Health-e Connection's participation would support statewide and regional initiatives, foster efficiency and limit duplication of resources. Please reference *Appendix B* to see the official document detailing these strategic directions.

In developing this business plan, the decision was made to focus the business plan on strategic objectives (or business lines) in which Arizona Health-e Connection proposes to focus their efforts over the next several years to move towards the accomplishment of the overall organizational vision. These strategic objectives preserve and expand upon the three strategic directions agreed upon by the Board in March 2007, but also incorporate additional key aspects to ensure that the overall vision is accomplished.

In order to succinctly present a detailed analysis of each strategic objective, including the official recommendation and associated proposal, a separate chapter of the business plan is dedicated to each strategic objective. Within each chapter, the following components are included:

- Background
- Recommendation
- Accomplishing the Recommendation

This structure will allow for a consistent approach for all strategic objectives (or "business lines") proposed, and is designed to provide the Board with an easy to digest document to review and support.

The information for each strategic objective presented in the business plan represents the exploration phase of a full, four-phase process that includes exploration, planning, development and implementation. AzHeC staff understands that upon the approval of the Board, each strategic objective must undergo additional planning and development before being successfully implemented. The necessary steps for these pre-implementation phases are summarized in each chapter, and estimated necessary funding allocations for such steps are also included.

Board Review Process

AzHeC staff ask that the AzHeC Board review this entire document prior to the May Board meeting, and be prepared to discuss and vote regarding approval of the business plan in its entirety or in part (by strategic objective). Following approval, AzHeC staff will develop specific strategy and tactic tables, along with other deliverables as requested, for each approved strategic objective and bring them before the Board at the July 2009 meeting. Approval of the Business Plan in whole or part does not financially obligate the organization or an individual Board member. It is instead a commitment by the Board member to the Business Plan direction and a statement that AzHeC staff can expect the Board to assist in the exploration and securing of funding and other means to achieve the direction. AzHeC staff ask each Board member to thoughtfully consider the commitment her/his organization may make, in direct or in-kind funding, to achieving the direction. Each Board member is also asked to consider facilitating introductions to funding or other opportunities with which the Board member is or becomes acquainted.

Identification of funding in a timely manner will be essential to successful achievement of the strategic objective recommendations by the proposed timeline. Any delay in securing necessary funds will require re-assessment and adjustment, if necessary, to the strategic objective's timeline and goals.

Due to the present environment with pending federal stimulus opportunities and requirements to respond, AzHeC staff may be required to move quickly to secure funding for the business plan implementation. AzHeC staff will work closely with the Board chair and Executive Committee to ensure the organization acts diligently and responsibly when committing to any action or obligating the organization. Transparent communication with the Board throughout such a process will occur, and any feedback is invited and will be considered.

Strategic Objectives Overview

In order to provide a succinct overview of each strategic objective, the table below was developed to incorporate high level information for each strategic objective. The official recommendation to the AzHeC Board is listed for each objective, as well as the objective's goals, a justification for why Arizona Health-e Connection is best positioned to accomplish the recommendation, and key features (or critical success factors) that must be addressed for the strategic objective and recommendation to be successful.

A few additional items to note with respect to the above recommendations and strategic objective details:

- Many of the strategic objectives are inter-related and therefore work in each of the areas is dependent upon or depended on by another strategic objective. This interdependence will be explained in detail within each subsequent chapter, so that there is an understanding of potential ramifications associated with pursuing one recommendation but discarding another.
- The HII/HIE Development strategic objective is reviewed first, as it includes the framework from which all other strategic objectives will follow. For instance, subsequent chapters will detail the proposed EHR and eRx initiatives will fit into the overall health information infrastructure.
- While the federal stimulus opportunities fit into the areas of HIE/HII Development and EHR Initiative, these opportunities are extensive enough and important enough to warrant distinction as a separate strategic objective. As the details of each strategic objective are reviewed, the relation to the federal stimulus recommendations will be noted.
- Similar to the federal stimulus recommendations, policy development is an area which spans across multiple strategic objectives, but is important enough in and of itself to warrant serving as a standalone strategic objective. As the details of this each strategic objective are reviewed, the relation to policy development will be noted.

Arizona Health-e Connection Business Plan Recommendations			
Strategic Objective	**Recommendation and Goals**	**Justification**	**Critical Success Factors & Key Features**
HII/HIE Development	Arizona Health-e Connection to be the statewide coordinator of Health Information Exchange development, and will ensure interoperability of such HIE initiatives. AzHeC has identified, and suggests, the following ten goals to "ensure interoperability and coordination of HIE activities in Arizona": <u>HIE Development Goals</u> *Preamble to Goal #1*: All Arizona providers choosing to implement an EHR will have opportunities to participate in a "qualified HIE" (per HHS definition), in order to qualify for EHR "meaningful use" under Medicaid/Medicare incentives. Such HIEs should be developed and expanded both thoughtfully, and urgently, to ensure that Arizona providers have opportunities to participate in incentive programs. Arizona Health-e Connection will continue to facilitate HIE development via standards setting, policy development, coordination activities, communications, and identification and sharing of HIE best practices. *Goal #1:* Once HHS has defined HIE requirements for "Meaningful Use," AzHeC will make every effort to promote development of qualifying HIOs across Arizona to reach all Arizona providers through participation in HIE not later than 2012, to ensure that Arizona providers are able to take full advantage of Federal EHR reimbursement incentives. *Goal #2:* To work with ADHS and other public health agencies to develop by no later than June 2010, a Public Health HIE Roadmap for incorporating public health	• Arizona Health-e Connection was developed for this purpose, and includes the necessary public and private stakeholders. • AzHeC is an independent non-profit, and thus can educate and communicate with providers and consumers from a perceived neutral viewpoint. • AzHeC continues to gain increasing trust of provider organizations, and will have a Consumer Advisory Council which should facilitate further consumer trust.	• Adopt federal standards accompanied by statewide standards development where no federal standards exist. Initial focus on standards will ensure interoperability between exchanges. • Facilitate flow through of federal (or other) funding to ensure coordinated result • Facilitate "meaningful" adoption of EHRs, recognizing such adoption as a precursor to successful HIE • Coordinate HIO and HIT initiatives through meetings, conferences, etc. • Coordinate identification and development of sustainable business models for HIOs to ensure HIE in Arizona continues beyond federal funding timelines • Facilitate ongoing success of HIE by: o Working to ensure consumer confidence that their information is protected o Working to ensure data providers understand and are comfortable with the liability of sharing information via HIOs o Participating in legislative activities to support these goals

Arizona Health-e Connection Business Plan Recommendations			
Strategic Objective	**Recommendation and Goals**	**Justification**	**Critical Success Factors & Key Features**
	reporting, and provision of existing public health information to the point of care. HIE Standards Setting Goal *Goal #3:* To ensure by October 2009, that developing HIOs and EHR vendors have an initial set of standards (which continue to develop) with which they must comply to interoperate with developing HIOs in Arizona. A preliminary Standards Roadmap of prioritized standards setting (or selection), which will include a detailed description of the standards setting (or dissemination of Federal standards, if they exist) process will also be released October 2009, and additional standards sets will be released periodically per the Roadmap. The purpose is to "fill in gaps" that may be left by Federal standards setting activity. HIE Standards Adherence Goal *Goal #4:* To develop a standards adherence structure (process and organization) to ensure statewide HIE standards adherence by July 2010. HIE Policy Development Goals *Goal #5:* A Policy Roadmap and policy development process will be developed by October 2009. *Goal #6:* Legislative package, incorporating HIE Consent Policy with other statute requirements, will be delivered to the Board for consideration at the July 2009 Board meeting. HIE Communications Goals In collaboration with other HIE and HIT advocacy activities in Arizona:		

Arizona Health-e Connection Business Plan Recommendations			
Strategic Objective	**Recommendation and Goals**	**Justification**	**Critical Success Factors & Key Features**
	Goal #7: Building and improving on the existing Strategic Communications Plan, AzHeC will develop a comprehensive, multi-year communications plan, including strategies and tactics to reach all appropriate stakeholders regarding various aspects of Health Information Infrastructure (HIE and HIT) by October 2009. The goal of this communications plan is for AzHeC to become the "trusted source" for HIE/HIT information and direction in Arizona. *Goal #8:* Develop initial set of HIE/HIT provider outreach materials (brochures, videos) by July 2009. *Goal #9:* Develop initial set of HIE/HIT consumer outreach materials (brochures, videos) by September 2009. *Goal #10:* Develop and implement a process by September 2009 for identifying HIE lessons learned and best practices (if existing) across the country, and disseminating this information to AzHeC members and Arizona stakeholders.		
Policy Development	Arizona Health-e Connection will continue to facilitate development of statewide policies, agreements and legislation required for successful HII implementation in Arizona. *Goal#1:* A Policy Roadmap and policy development process should be developed by October 2009. *Goal#2:* Legislative package, incorporating HIE Consent Policy with other statute requirements, will be delivered to the Board for consideration at the July 2009 Board meeting.	• Arizona Health-e Connection was developed for this purpose, and includes the necessary public and private stakeholders.	• Legislative package, to include consumer consent policy • Model agreements • Model policies • Policy recommendations • Educational resource for Arizona policymakers

Arizona Health-e Connection Business Plan Recommendations			
Strategic Objective	**Recommendation and Goals**	**Justification**	**Critical Success Factors & Key Features**
	* Above goals taken from HIE Development section.		
Electronic Health Record Initiative	Arizona Health-e Connection will launch a statewide EHR initiative, including a five year plan to facilitate an environment conducive to successful EHR adoption by all applicable providers in Arizona. *Goal #1:* To obtain physician/clinician (including dentists and nurses), hospital and health center leadership feedback before setting any goal for EHR adoption via an EHR Initiative Steering Committee. *Goal #2:* To select and disseminate an existing "toolkit" (e.g., HIMSS-developed or other such toolkit) for providers to adopt EHRs, by September 2009.	• Arizona Health-e Connection was developed for this purpose, and includes the necessary public and private stakeholders. • AzHeC is an independent non-profit, and thus can educate and communicate with providers and consumers from a perceived neutral viewpoint. • AzHeC continues to gain increasing trust of provider organizations.	• Implement HIT Regional Extension Center (with target market greater than federal requirements) • Develop guidance for providers outlining minimum requirements for EHRs to connect to Arizona's HII and qualify for "meaningful use." Assist efforts for successful adoption of EHRs that meet this criteria through HIT Regional Extension Center • Adopt PACeHR workgroups, products and services, as appropriate, to provide enhanced provider buy-in. • Coordinate EHR funding mechanisms, including use of federal EHR grant-to-loan program • Integrate with EAzRx, AzHeC's eRx initiative • Coordinate sponsorship of licensing surveys of physicians, implemented by ASU, and surveys of other providers (e.g, hospitals, community health centers, nurse practitioners) to ensure initiatives align with provider needs. • Utilize clinician "champions" to promote EHR adoption.
E-Prescribing	Arizona Health-e Connection will continue its five year	• AzHeC's Board, with encouragement	• Provide umbrella coordination

Arizona Health-e Connection Business Plan Recommendations			
Strategic Objective	**Recommendation and Goals**	**Justification**	**Critical Success Factors & Key Features**
Initiative	EAzRx initiative, including integration with the EHR initiative proposed. *Goal #1*: To reach the following levels of e-prescribing adoption by the end of 2012 (this may be adjusted, based on EHR initiative): 2008: 6% prescriptions e-prescribed 2009: 12% prescriptions e-prescribed 2010: 24% prescriptions e-prescribed 2011: 48% prescriptions e-prescribed 2012: 96% prescriptions e-prescribed * These percentages are based on the total number of e-prescriptions, as a proportion of the total number of possible e-prescriptions.	of state government leaders, adopted a statewide e-prescribing initiative, establishing a steering committee of appropriate stakeholders for this purpose in early 2008.	organization through the EAzRx Steering Committee • Provide information and statistics in easy-to-access, time saving format for providers • Recognize top e-prescribers in Arizona • Coordinate and publish Arizona case studies to educate the provider community • Work to identify real incentives and apply for grants to provide "flow-through" funding • Improve patient safety and encourage patient involvement in the e-prescribing process
Federal Stimulus Opportunities	Arizona Health-e Connection will become the "state designated entity" for HIE planning and implementation, utilizing federal funds as appropriate and making recommendations regarding use of federal HIT stimulus monies. *Goal #1:* To use effectively Stimulus dollars to meet goals set within specific strategic objectives	• Arizona Health-e Connection was developed for this purpose, and includes the necessary public and private stakeholders.	• "State designated entity" for HIE planning and implementation grants • Propose AzHeC as the HIT Regional Extension Center • Information clearinghouse with updates to all stakeholders regarding federal stimulus funds and opportunities • Recommendation for EHR loan program • Convene stakeholders within Arizona to coordinate federal stimulus HIT opportunities and projects • GITA Director/State CIO to ensure state agency compliance with

Arizona Health-e Connection Business Plan Recommendations			
Strategic Objective	**Recommendation and Goals**	**Justification**	**Critical Success Factors & Key Features**
			interoperability standards and certifications to enable participation in statewide HII
Summit & Trade Show	Arizona Health-e Connection will continue to manage and execute the Western States Health-e Connection Summit & Trade Show. *Goal #1:* To approximately double number of exhibit booths (to 100) in 2010, and proceed to increase exhibit booths by 20% in the following year Goal #2: To approximately increase Summit attendance increase by 20% per year.	• Past Summits have proven to be successful and capable of furthered growth. The market for the education, timely updates and exhibit opportunities is anticipated to continue to expand, due to the current national focus on HIT/HIE. • AzHeC has received initial interest from additional states to participate in 2010 Summit.	• Expand event to allow for greater education and national visibility • Contribution to AzHeC's ongoing financial sustainability • Attract more attendees and sponsors from all western states

Chapter 3: HII/HIE Development

Background

Health Information Infrastructure comprises Health Information Exchange and all of aspects of Health Information Technology (e.g., Electronic Health Records, Personal Health Records). Health Information Exchange (HIE) is the infrastructure and process that is necessary for the sharing of information between providers, providing a "full" or necessary picture of the patient at the point of care. HIE is still a relatively new and challenging area, and its success is determined by synchronization of success in multiple interdependent domains, including:

- Community Leadership
- Political Support and Facilitation
- Market Needs/Business Requirements Assessment
- Technology Standards and Policy Development
- Technology Development and Deployment
- Business Plan Development
- Business Plan Funding
- Legal Review, Development and Approval
- Communication and Education
- Stakeholder Participation (providers, consumers)
- And more!

Developing and successfully implementing HIE is an exciting and extremely challenging endeavor. Some states have not yet attempted to even form a statewide HIE exploration or coordinating body, due to the enormous task and the associated need for leadership. This chapter will catalog HIE models in development or operation outside and inside Arizona, and present a recommendation for AzHeC's future activities to support Arizona's health information infrastructure development.

Models of HIE in the United States

Health information exchanges in the United States have all primarily been formed for the same purposes, but each have a strong belief in their own uniqueness, and therefore have not been following a single model, according to the HIMSS HIE Best Practices Task Force report of March 2009.

In spite of their belief in uniqueness, there are many similarities among the HIEs. They primarily share the same stakeholders: health systems, primary care physicians, and specialty care physicians. Of the twenty-one operational (for at least 6 months) HIEs surveyed by HIMSS, all of those with self-reported, sustainable business models use a membership model. Over sixty percent are also, however, dependent upon grants and contracts from the government. Seven of the twenty-one reported they could operate indefinitely without grants or donations, due to a sustainable business model. Over seventy percent purchase HIE services or products from outside vendors – rather than build their own – and the same percentage also rely on outside hosting of the data and HIE service operations.[1]

[1] HIMSS Health Information Exchange Best Practices Task Force, *Health Information Exchanges: Similarities and Differences*. Chicago: Health Information Management and Systems Society (HIMSS). 2009.

Other similarities from this study include the following:

- No fully-federated HIEs (66% hybrid; 33% centralized architecture)
- Service Oriented Architecture (over 60%)
- Standards
    - Messaging: HL7 (over 90%)
    - Data: Most report using common health industry standards, specifically ICD-9, CPT-4, LOINC-1, and NDC. Many have plans to support SNOMED in the future.
- Data transformation strategies
    - Normalization/encoding
    - Data mapping/translation
- Bi-directional exchange capability (71%, with remainder planning to do so)
- Prevalent functions
    - Lab results
    - Prescriptions
- Consent (60% allow for opt-in or opt-out; remainder stated consent either was relevant for their use cases (e.g., lab results delivery, emergency department treatment), or their technology was too old)
- Most considering to exchange with other exchanges or National Health Information Network (85%)
- Considering establishing or linking with personal health records (79%)
- Non-profit organizations (90%)
- Tracking return on investment (63% indicated they have measurements to track ROI)

Establishing a sustainable business model continues to be a priority for health information exchanges. The 2008 eHealth Initiative annual HIE survey reported that 82% the 130 respondents indicated this is a "very difficult" or "moderately difficult" challenge.[2]

According to the eHealth Initiative (eHI) 2008 Fifth Annual Survey of Health Information Exchange at the State and Local Levels, there are 42 operational health information exchange initiatives in the United States, which is a 31 percent increase over 2007 survey results.[3]

eHI also reports that the results indicate a great improvement in improving patient care and lowering health care costs. Sixty nine percent of all respondents report an impact on decreasing dollars in redundant testing, staff time, and patient admissions. One-half of all respondents also report favorable impact on health care delivery, including improved access to test results and quality of practice life.[4] It is important to also note that in the 2008 survey was the first time HIEs were reporting a positive financial return on investment.

The survey also reports that although HIEs continue to focus their efforts on supporting care delivery, many are starting to work on improving population health. Ten HIEs reported they are offering chronic

[2] *eHealth Initiative's Fifth Annual Survey of Health Information Exchange at the State and Local Levels.* Washington, D.C.: eHealth Initiative. < http://www.ehealthinitiative.org/assets/Documents/eHI-HIESurveyResultsFinalReport-2008.pdf> . 2008.
[3] Ibid.
[4] Ibid.

disease management, six are offering public health reporting and five are offering quality improvement reporting for purchasers or payers. [5]

The national health information exchange efforts continue to be managed by the Department of Health and Human Services (HHS) under the Office of the National Coordinator (ONC). These initiatives include:

National Health Information Network (NHIN) – NHIN was developed in order to provide an interoperable, secure, nationwide health information infrastructure to connect states, providers, and consumers.[6] The approach to this initiative is threefold: Develop prototype architecture, support trial implementation, and production. Contracts were awarded to several states to participate in this project.

Health Information Security and Privacy Collaborative (HISPC) – This was established in June 2006 by RTI International through a contract with the U.S. Department of HHS.[7] The Health Information Security and Privacy Collaboration (HISPC) originally comprised 34 states and territories. Phases 1 and 2 of the HISPC project involved 34 states and territories who were awarded contracts to explore barriers around privacy and security for the exchange of electronic health records. Phase 3 of HISPC started in April 2008, and includes 42 state and territories who are working as a multi-state collaborative to address specific areas of privacy and security that were identified in Phases 1 and 2.

The State Level Health Information Exchange Consensus Project (SLHIE) – SLHIE focuses on activities states are performing to advance HIE.[8] By focusing on the individual state research, analysis, and consensus building activities, SLHIE continues to identify commonalities among states as well as distinct roles and contributions. The SLHIE steering committee is comprised of representatives from 13 states.

The following table is a result of an analysis performed by the Maryland Health Care Commission on forming and operational HIEs, and indicates additional similarities and differences among HIE models[9]. Please note there are some contradictions between the results of the various analyses:

[5] Ibid.
[6] *Nationwide Health Information Network (NHIN): Background*. Washington, D.C.: U.S. Department of Health & Human Services. <http://www.hhs.gov/healthit/healthnetwork/background>. 2009.
[7] *Health Information Security and Privacy Collaboration, Executive Summary*. Washington, D.C.: U.S. Department of Health & Human Services. <http://www.hhs.gov/healthit/privacy/execsum.htm>. 2009.
[8] *The State Level Health Information Exchange Consensus Project*, Washington, D.C.: U.S. Department of Health & Human Services. < http://www.slhie.org/> . 2009.
[9] *Building of a Statewide HIE: Implementation Effort Working Papers*. Baltimore: Maryland Health Care Commission . < http://mhcc.maryland.gov/electronichealth/hiecompare/index.html>. 2009.

Health Information Exchange Elements		
Category	Components	Examples
Financial Model & Sustainability	Revenue Sources	
	Transaction Fees	Vermont receives claims based fees for every claim processed by an insurer
	Subscription Fees	Not a common practice among HIOs researched
	Membership Fees	Not a common practice among HIOs researched* (note: HIMSS survey noted otherwise)
	Hospital Funding	MedVirginia is receiving fees from hospitals who pay annually to be part of the HIE
	State Funding	Tennessee, West Virginia and Virginia have received substantial state funding for start up costs
	Federal Funding	The majority of federal funding is for participation in the NHIN projects; Tennessee, West Virginia and Virginia are all participants
	Health Plan Funding	Vermont received $1M from 4 major insurers in Vermont for the health record pilot program
	Physician Funding	Not a common practice among HIOs researched
	Philanthropic Funding	Vermont received a community grant of $500,000
Benefit Realization	Financial Measurements	HealthBridge Ohio has ROI figures that support a .12 cost to the hospital for HIE. Vermont provides measurements for provider EHR implementations based on milestones in system use
	Quality Measurements	E-prescribing measurements are prominent; NYeC (New York) is implementing a plan to measure standardize measurement methods
	System Measurements	AMIE (Arizona) measurements include number of users, type of data being accessed, and help desk requests are used to measure system effectiveness
Governance Framework	Ownership Model	Most HIOs researched are non-profit with the exception of MedVirginia which is a for-profit limited liability company
	Separate governing structure from technical operations	NYeC was established as the governing structure to promote and facilitate HIE development in NY; create and deploy common policies, technical standards and protocols as well as regional bottom-up approach to allow communities to structure their own efforts on basis of clinical and patient priority; If the regionals don't follow NYeC policy and standards they are not eligible for state funding
	Committees	There are a variety of committees established at the HIOs researched; Common are Privacy and Security, Outreach and Education, Technical, Clinical and Finance
Privacy & Security ** Note each category applies to providers, consumers, public	Registration	Few HIOs researched have a "registration authority" for registering providers; Common is the establishment of a trusted relationship with hospitals
	Authentication	Most HIOs are using single factor authentication; Tennessee is using dual factor with a RSA token that physicians must carry

health, research organizations, data and system	Identification	MedVirginia, Vermont, Colorado are using a Master Person Index
	Audit	HIOs research are following HIPAA guidelines for audit and provide a list of who accessed what data
	Authorization	HIE (Kentucky) plans to allow consumers to authorize which provider can see their data, other options include having physicians attest to the relationship with the patient
	Access	CoRHIO (Colorado) and VWHIN (West Virginia) are using role based access based on HL7 standards
	Consent Framework	
	Opt-In	Most HIOs researched are using an opt-in model
	Opt-Out	CoRHIO is using an opt-out model
	Notice Only	
	No consent	
	Legal Agreements	
	Participation Agreements	All HIOs researched had a participation agreement
	Use Agreements	All HIOs researched had a use agreement
	Business Associate Agreements	All HIOs researched had a business associate agreement
	Policy and Procedures	All HIOs have published policy and procedure around privacy and security topics
Stakeholder Outreach & Education	Consumers, Providers, Public Health, Government Agencies, Research Facilities	All HIOs researched are performing stakeholder outreach; Most have found that consumer outreach is the most challenging and that using the consumer advocacy groups is the best channel for reaching the consumers
Care Delivery	Data Partners	
	Hospitals	Most HIOs researched had hospitals as data partners in phase 1 of the implementation
	Laboratories	Most HIOs researched had labs as data partners in phase 1 of the implementation
	Clinics	MSeHA (Tennessee) is using 15 ambulatory clinics in phase 1 of the implementation
	Pharmacies	Pharmacies were not considered in phase 1 of the HIE implementation for the HIOs researched
	Physician Practice	DHIN (Delaware), WVHIN (West Virginia), MedVirginia (Virginia), MSeHA (Tennessee), HealthBridge (Ohio), CoRHIO (Colorado) connected to physician offices in phase 1 of their implementation
	Nursing Homes	
	State Health Agency	HealthBridge (Ohio) connected to state health agencies in phase 1 of their implementation
	Quality Organizations	
	Medicare	
	Medicaid	
	Insurers	MSeHA (Tennessee) has the insurers as data partners to provide but not view the data
	Data Requirements for	

	Exchange	
	Medication History (pharmacy, inpatient, history, allergy)	Medication History is considered a top priority by all HIOs researched and one of the first types of data exchange to be implemented
	Laboratory Reports – inpatient / outpatient	Laboratory reports are considered a top priority by all HIOs researched and one of the first types of data exchange to be implemented
	Radiology Reports and Images	Radiology reports are considered a top priority by all HIOs researched and one of the first types of data exchange to be implemented
	Transcription	Clinical notes and documentation are considered a top priority by all HIOs researched although not all were able to implement in phase 1
	Claims	Not a common practice among HIOs researched
	Pathology	
	Insurance eligibility	HealthBridge (Ohio) can verify insurance eligibility and check the status of claims
	Discharge Summary	AMIE (Arizona), MSeHA (Tennessee), HealthBridge (Ohio) are exchanging discharge summary reports
	Emergency Room Reports	CoRHIO (Colorado) is connected to 500 emergency department physicians to exchange emergency room reports
	Patient Reported Data	Not a common practice among HIOs researched
	Immunization	Not a common practice among HIOs researched
	Medical Alerts	HealthBridge (Ohio) provides electronic disease reporting and public health alerts
	Clinical Messaging	MedVirginia (Virginia), VITL (Vermont), WVHIN (West Virginia) provide clinical messaging securely
	CCD (Continuity of Care Record)	All HIOs researched report this as a Phase 2 or 3 in their implementation
	Master Person index	MedVirginia (Virginia), CoRHIO (Colorado) use a Master Person Index
	Health Record Bank	Not a common practice among HIOs researched

*indicates research above that contradicts HIMSS HIE Best Practices Survey

Arizona Demographics and HIE Ecosystem

Arizona's demographics place it "in the middle" of the scale for facilitating health information exchange, though the relatively large number of small physician offices add additional complexity. Demographic measurements such as population, number of hospitals, and percentages of physicians in small offices (e.g., 1 to 3 provider offices) are indicators of health information exchange difficulty. Unfortunately, AzHeC staff has not yet found reliable sources indicating the percentage of Arizona physicians in small practices, though anecdotally, most agree that Arizona has comparatively a large number of physicians in small practices.

	California	New York	Arizona	Rhode Island	Delaware[10]
Community Hospitals	355	202	66	11	6
Population (millions)	36.1	19	6.3	1	.857
Current number of HIEs	15	22	3	1	1

The current HIE ecosystem in Arizona is comprised of three cross-organization, or community-based health information exchanges, in contrast to intra-organizational HIEs as may exist within systems such as Banner Health or Catholic Healthcare West. Additional community-based HIE efforts are in development. The three are as follows:

Arizona Medical Information Exchange (AMIE). Currently operated by AHCCCS, and developed using Medicaid Transformation Grants, AMIE began operating as a proof-of-concept in late September 2008. Current participants include Maricopa Integrated Health Systems, Banner Good Samaritan (not yet providing data), St. Joe's Hospital (CHW), Sonora Quest Laboratories, and provision of Medicaid PBM medication history.

As of May 2009, AMIE has the following characteristics:

- 2 million unique patients
- 3.5 million records, including:
    - 2.5 million lab records (Sonora Quest)
    - 897,000 medication histories
    - 50,000 discharge summaries
    - Approximately 100 trained clinicians

AMIE is currently expanding both geographically and functionally, allowing for the inclusion of both behavior health providers and behavioral health medications. It is funded currently through September 2009, but anticipated to be an ideal candidate, as a "shovel ready project," for federal stimulus HIE implementation funding.

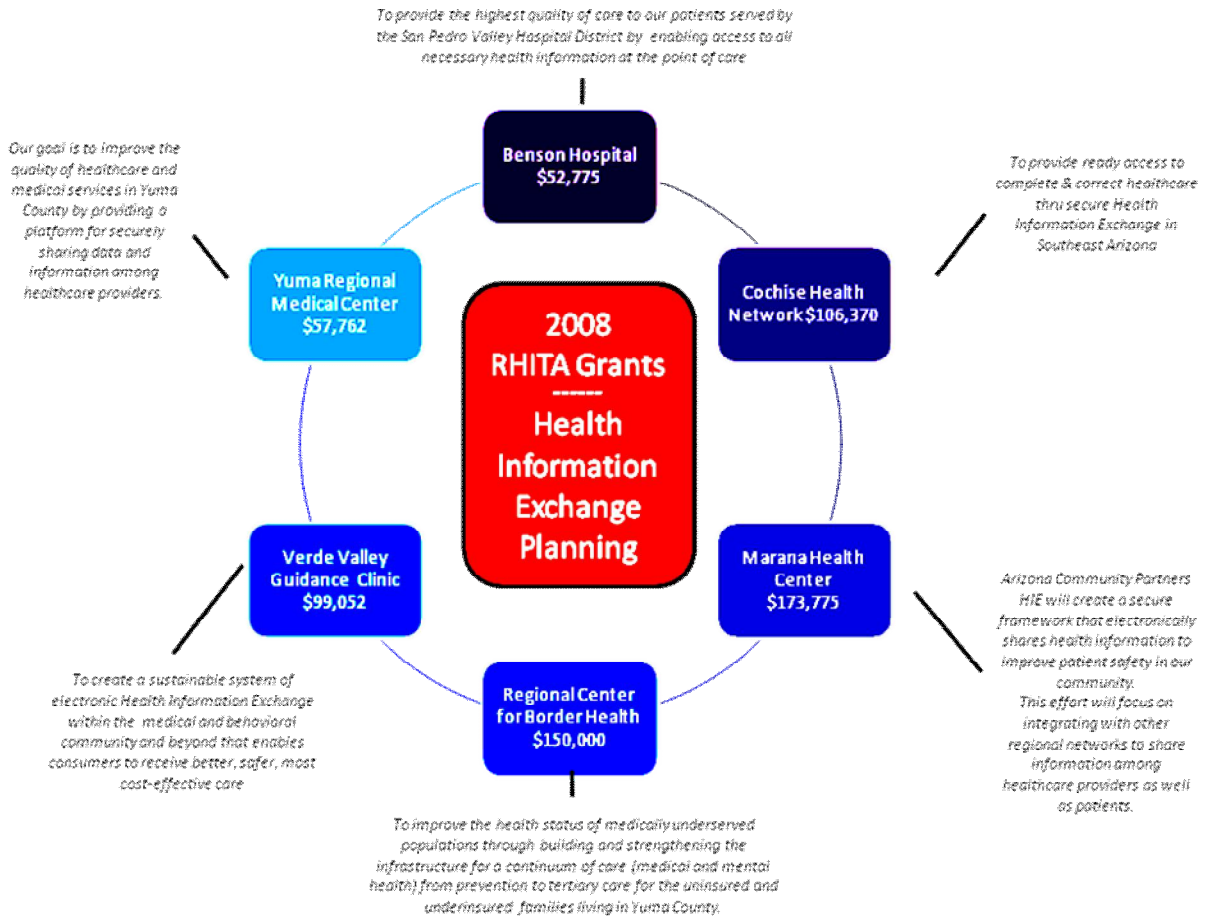
Southern Arizona Health Information Exchange (SAHIE). Formed initially by hospitals wanting to share data on the uninsured, to avoid duplication of services and to avoid associated uncompensated costs, SAHIE now represents 12 hospitals, clinics and community health centers throughout Pima, Santa Cruz and Cochise Counties. The formation of SAHIE has taken place over approximately four years, and has been very inclusive of stakeholders in the requirements development, organizational decisions, and procurement process. SAHIE is an independent corporation, anticipated to be a not-for-profit, and will hold its first Board meeting as such in May 2009. Through a Request for Concept process, SAHIE has down-selected to one HIE services vendor, and is expected to sign a contract in May 2009 and become

[10] Kaiser State Health Facts, California eHealth Collaborative, The Commonwealth Fund.

operational during the summer of 2009. The exchange will cover 1.1 million lives in Southern Arizona. SAHIE is also anticipated to be considered "shovel ready" for federal stimulus HIE implementation funding.

CAPAZ-MEX / Regional Center for Border Health (RCBH). The Community Access Program of Arizona and Mexico (CAPAZ-MEX) is a binational healthcare discount program for the uninsured, administered by the Regional Center for Border Health (RCBH). Through grant funding, CAPAZ-MEX has implemented a Continuity of Care Record (CCR) repository for patients that are seen by providers on both the Arizona and Mexico sides of the border. The goal is to reduce avoidable emergency room visits and hospital stays, through better care coordination. Though the CCR repository is already operational, a greater collaboration with Yuma Regional Medical Center, Hospital Santa Margarita (Mexico), and Community Intervention Associates (behavioral health) is underway to further develop a Yuma-area Regional Health Information Organization. Very likely, the regional collaborative will be at a point where it qualifies as "shovel ready" for either implementation or planning federal stimulus funding.

In addition to the above three initiatives that are either operational, or nearly operational, there are several communities in Arizona that received HIE planning grants from the State of Arizona Government Information Technology Agency's (GITA's) Rural Health Information Technology Adoption (RHITA) Program. The following six organizations received grants to lead broad-based community coalitions, having demonstrated capabilities for partnership, collaboration, and strategic planning:



Source: GITA

As these regional or community discussions take place, they will identify priority business needs that can be facilitated by health information exchange. Some are already participating in a health information organization, such as SAHIE or CAPAZ-MEX, and are using these planning monies to facilitate their participation. Either way, in the coming years, additional communities such as the above will define a desired direction, and seek to solidify community partnerships and buy-in, for health information exchange. The technology platforms that they will utilize may include use of existing HIE technology platforms operating in Arizona, such as SAHIE, or AMIE, development of their own solution, or licensing a solution from a vendor.

Through the AzHeC Council of Initiatives, all of the HIE programs and grantees listed above, as well as some additional parties such as the Arizona Department of Health Services, the Arizona Rural Health Office and Health Services Advisory Group, are brought together every three to four months to update one another on their projects, and to discuss challenges or opportunities facing all of them, such as business models, Master Patient Index development, and national HIE certification and accreditation.

Statewide Interoperability Models

There are currently two options for achieving statewide interoperable health information exchange: (1) a single HIE for the entire state supported by a single business model, business plan and architecture, and (2) a statewide infrastructure (based on a single business plan and necessary architecture) that would support several regional exchanges with variation in underlying business plan, technical architecture, vendor bases, and governance.

The Single, Statewide HIE concept

There are only two business models currently seen in the marketplace:

1) Funding for self-sustenance by the user and/or beneficiary entities in the private sector
2) Funding through long-term, government resource mobilization (direct and/or indirect taxes; excise and similar focused duties)

The single business plan may be disaggregated into phases of implementation, with functional priorities and timelines. Functional priorities may be driven by social objectives, presumably developed through a consensus-making mechanism – legislature, non-profit (such as a public-private partnership), etc.

The process of selecting the single architecture and the finalization of vendor contracts will be through some undefined process in the type (1) business model, or will be a standard, defined, technical and procurement process in the type (2i) business model.

It must be noted that in the absence of clear and constitutionally-valid legislation, it may not be possible to avoid local initiatives (one community, or one-hospital level) creating HIOs within the State. Thus, the presence of an independent body – completely independent of the local or the statewide HIE – is needed to ensure the creation, maintenance, and promotion of standards to allow inter-HIE interoperability within Arizona and into HIE activities across state borders.

The major strength of the single HIE concept is that there are enormous economies of scale to be gained.

The principal weaknesses lie in the following points:

- Possible lack of consensus among and between the sets of beneficiary entities and users (for type (1) business model), and the insertion of time-consuming bureaucracy into the entire structure (type (2) business model).

- The possibility of a single business model not fitting into the requirements of local communities within the State, resulting in inconsistent implementations, or lack of implementation, within communities. This factor in turn would significantly reduce the economic benefits and also have an impact on the economies of scale that might otherwise be possible.
- Regardless, a standards-setting and coordinating body at the state level is required.

The Statewide Health Infrastructure Concept

This concept requires, first, a clear and unambiguous definition of which components of an HIE go into the single, statewide infrastructure, and which are left to local autonomy. This can vary, and will not be speculated upon here. The weakest assumption is: whatever goes into the single infrastructure does not violate autonomous decisions at least on federated, centralized, and hybrid technological choices.

As with the single HIE concept, the infrastructure business model requirement also reduces to only two possible types:

(1) Funding for self-sustenance by the user and/or beneficiary entities in the private sector
(2) Funding through government resource mobilization (direct and/or indirect taxes; excise and similar focused duties) that may not be committed to self-sustenance as a goal.

The single business plan may be disaggregated into phases of implementation, with functional priorities and timelines. Functional priorities may give preference to social objectives, presumably with some consensus-making mechanism – legislature, public-private partnership, etc., but will have to be selected without violating local autonomy, or it runs the risk of merging with the Single HIE Model above.

The process of selecting the single architecture and the finalization of vendor contracts will be through some undefined process in the type (1) business model, or will be a standard, defined, technical and procurement process in the type (2) business model.

At the same time, it is assumed that local preferences will dictate the technology models adopted at the local levels, and these will be allowed to vary across the Arizona.

The advantages of this model are:

- With a careful separation between infrastructure and local components, a significant part of the economy of scale of statewide implementation can be achieved.
- Appropriately selected infrastructure components will ensure all local entities meet national standards for data storage and movement.
- Local autonomy will allow multiple business models to co-exist.
- Similarly, local autonomy will allow regional variations of the technology model, reducing the chances of patchy geographical implementation.

Among the disadvantages:

- Separation between local and statewide components may have an impact on acceptance at the local community unless done very minimally or very carefully. The community priorities on this separation may change over time, resulting in resistance to the system over the medium and long terms.
- Local autonomy in choices of business model and technology will have to be balanced by a non-trivial amount of standards and policy setting to ensure the infrastructure's technology is not rendered unusable.

Value Propositions

Following are descriptions of the value most often associated with successful health information exchange implementation:

For Single Statewide HIE Concept

Health Information Exchange will:

- Enhance the quality of clinical decision making by reducing uncertainty from incomplete information
- Raise the quality of care across the continuum by providing appropriate and more complete information at each point of care than is available in the absence of HIE
- Reduce the cost of care through drastic reduction in unnecessary services
- Develop self-sufficiency over a reasonable time period through realization of the above benefits

For Statewide HII (with Regional HIOs) Concept

Health information infrastructure will permit local communities and regions in the state to:

- Enhance the quality of clinical decision making by reducing uncertainty from incomplete information
- Raise the quality of care across the continuum by providing appropriate and more complete information at each point of care than is available in the absence of HIE
- Reduce the cost of care through drastic reduction in unnecessary services
- Develop self-sufficiency over a reasonable time period through realization of the above benefits
- Make it easier for local communities to exercise local choices and still be compliant with statewide and national standards

The following underlying problems of these value propositions are more or less the same:

- Identifying the benefits that can be realized
- Estimating the value of such benefits in economic terms
- Allocating the benefits appropriately by type of beneficiary (payer, provider institution, clinician, patient, ancillary service)
- Estimating the actual realized values on the ground
- Building a governance mechanism that can harness sufficiently the realized value toward operating, maintaining, and possibly expanding the scope of, a health information organization

The strengths of the value propositions are that:

- There is a set of known benefits
- Estimating their value has been made at the national level (CITL) and in at least one case at the regional level (SAHIE)
- Allocation of benefits has been shown to be possible and acceptable to beneficiaries (SAHIE)
- There is more than one business model that aims to harness the realized benefits to create self-sufficiency

Among the weaknesses:

1. Measurement of actual benefits has been only partially done as yet (Wisconsin study of Tennessee health information exchange)
2. Business models have not been compared using any standard measure

Projections for Next 3-5 Years

Arizona is recognized as a national leader in health information exchange. Strong leadership from our Governor and a dedicated group of stakeholders has put the state on the leading edge of HIE governance and policy development with a roadmap for success and the subsequent establishment of AzHeC. At the same time, a visionary group of stakeholders laid the framework for a regional health information exchange in southern Arizona known as the Southern Arizona Health Information Exchange (SAHIE). Shortly thereafter, the Director of our State Medicaid program, a nationally respected leader, qualified the state for federal funding to pilot a Health Information Exchange in Maricopa County known as the Arizona Medical Information Exchange (AMIE).

Today, Arizona is at a critical juncture facing decisions that will have broad and deep impacts on healthcare in the state. Arizona can continue to innovate and lead, or can let the opportunity pass by. If Arizona chooses to act, the challenges to be faced over the next three to five years will be to leverage what has already been accomplished by leveraging Federal EHR adoption incentives and related ARRA grant funds to accomplish three things (also key features of this recommendation):

1) Facilitate "meaningful use" EHR adoption by providers across the state. Without a high level of EHR adoption, effective HIE is not possible. "Meaningful use" is the criteria that will be defined by the Federal Government to qualify for Medicaid and Medicare incentives. Providers can qualify for these funds by affiliating with major health systems using an extension of their EHR, or by procuring their own EHR. Between AMIE in Maricopa County, SAHIE in Southern Arizona and the statewide PACeHR initiative for small and medium sized practices, Arizona can quickly build a critical mass of participants needed for a successful HIE.

2) Adopt standards for HIE interoperability. Health Information Exchanges can be developed by any group of participants, large or small, each providing value to the individual participants. Synergistic value can be realized if AzHeC facilitates connecting these exchanges together into statewide/nationwide network. A requirement for this to occur is the adoption of interoperability standards. AzHeC's first priority should be to adopt national standards. In the absence of such national standards, AzHeC should consider the alternatives and adopt standards that best meet Arizona's present and future needs. Standards are needed to define content structure, such as Clinical Document Architecture (CDA), and to define how nodes on the network interact, such as Cross-Enterprise Document Sharing-b (XDS.b). Standards are also needed to define how discrete data such as lab results (e.g. LOINC codes) are exchanged.

3) Remove roadblocks to success. Several roadblocks exist that will need to be overcome. First and foremost is to derive a sustainable business model to fund HIE. In the short term, HIOs may depend on federal funding to underwrite costs, but in a few years, a sustainable funding source will be vital to survival. SAHIE has laid a great foundation with its business model which allocates costs based on projected financial benefits. Other potential models could include raising funds by using the network to sell advertising or other added value services to consumers or providers. Legislation is needed to ensure that participants in the network are adequately protected if their information is misused by another party. At the same time, AzHeC must instill confidence in the consumers' minds that it is taking all necessary precautions to protect their information.

If AzHeC is successful at tackling these three things, it will have achieved the goal of connecting the community healthcare providers together, by delivering a complete, longitudinal medical record to each

provider at the point of care. Like the Internet, once this network is built, stakeholders can begin to layer in many "added value services." Approved commercial, government and non-profit data repositories can connect to collect information for research or analytics. Public health surveillance systems can connect to gather and analyze more real time information and eliminate the need for more burdensome reporting requirements. Consumer-driven personal health records (PHRs) can connect to deliver services meeting consumer demand. Each of these layers potentially becomes an additional revenue source for the network possibly leading to additional ongoing incentive payments to data providers.

Over the next three to five years, Arizona can leverage technology to allow physicians to make more informed decisions leading to the improved quality of health of its citizens.

Collaborators, Complementors, and Competitors

The following stakeholders are key to any and all health information technology or exchange initiatives in Arizona. A review of these key stakeholders is listed here, and will be referenced in subsequent chapters of the business plan.

Arizona Health Care Cost Containment System (AHCCCS; State Medicaid Agency)

AHCCCS, Arizona's State Medicaid Program established in 1982 and operating since that time under a Federal 1115 waiver (which allowed its innovative managed care program), has been under the direction of Director Anthony Rodgers since 2003.

Director Rodgers has been recognized nationally as having a vision for transforming Medicaid (and possibly health care in general) through health information technology. He was instrumental in the development and release of Governor Napolitano's Executive Order directing the Arizona Health-e Connection Roadmap development, and has served on the Arizona Health-e Connection Board since its initiation.

Under Mr. Rodgers' leadership, AHCCCS sought and obtained an $11.7 million Medicaid Transformation Grant in January 2007 to establish a health information exchange which would facilitate Medicaid providers' access to beneficiaries' medical records at the point of care. Specifically, the grant was to support the planning, design, development, testing, implementation and evaluation of such a health information exchange. The grant proposed, and was executed, using open source software, for the purpose of providing other states with an opportunity to adopt the HIE software without the cost of associated proprietary software license fees. Called the HIeHR project, the HIE portion is now known as the Arizona Medical Information Exchange (AMIE), and has been running as a proof of concept since late September 2008 in the Phoenix area.

An additional portion of the HIeHR project, called Arizona's Purchasing & Assistance Collaborative for Electronic Health Record (PACeHR), is now under development, which includes selection of a web-based electronic health record to which providers can subscribe for use (for all their patient records) on a monthly basis. It is anticipated that the PACeHR EHR may facilitate qualification by providers for Medicaid's "meaningful use" of EHR requirement (to qualify for reimbursement) through its quality measure reporting capability, interface with AMIE, electronic prescribing capability, and use of a "certified" EHR.

Currently, AHCCCS has implemented and runs the HIeHR project, with AMIE funding established through September 2009. AHCCCS proposes to establish sustainable business models for both AMIE and PACeHR

in the future. It is anticipated that, under continued leadership by Director Rodgers, AHCCCS will continue to play, and seek to play, a major role in deployment of Health IT in Arizona.

- Classification: Collaborator and Complementor.

- Strengths: Vision. National reputation. Unique access to Federal funding sources (e.g., CMS). Existence of operating HIE and associated staff. Ability to reassign existing staff or contract to perform work such as grant applications, strategic planning, marketing and operations. Ability to establish new strategies and make decisions quickly at the agency director level.

- Weaknesses: Perceived not as an independent body, but instead as both a payer and government. Strategic plans and goals are set internally (as a state agency, this is usual), and thus projects that impact the private sector may be perceived as lacking "stakeholder input," unless such input is proactively sought (as with PACeHR project).

- Advantages (over AzHeC): Operational for twenty-seven years. National reputation of director. History of receipt of Federal funding. Ability to apply for funds from CMS. Ability to establish new strategies and make decisions quickly at the agency director level. Existence of large staff, funding, and other resources. Ability to utilize shared services as a State agency, including legal counsel (internal and Attorney General's Office), procurement (AHCCCS procurement and State Procurement Office), facilities, telecommunications, employee benefits, etc.

- Trends: All Medicaid agencies will be trending towards greater involvement in the provider implementation of Health IT, due to the Medicaid EHR Reimbursement Incentive. AHCCCS, due to its existing, developing and expanding AMIE and PACeHR projects, will seek to play a major leadership role with the implementation of electronic health records by Arizona providers. Due to the downturn in the economy, enrollment in AHCCCS programs is estimated to increase, giving it greater payer market share, which could in turn continue to grow the overall size of the AHCCCS agency and resources.

Government Information Technology Agency (GITA)
The Government Information Technology Agency was established in 1996 as the information technology strategic planning and coordination agency for the State of Arizona. The GITA director also serves as the State CIO.

State agencies with information technology projects costing $25,000 or more must submit their projects to GITA for approval, with projects valued at $1 million or more requiring by state statute further submission to the GITA-staffed, Governor-appointed Information Technology Authorization Committee (ITAC) for approval. Approved projects are also under continued oversight by the agency.

The CIO Council, administered by GITA, is comprised of individual executive branch Chief Information Officers. This council serves as a technical advisory council to GITA, providing advice on a variety of information technology issues, but specifically regarding development and adoption of statewide IT policies, standards, and procedures.

State agencies must also submit annual information technology plans to GITA, and GITA issues a statewide Strategic IT Plan. Agencies also update their IT inventory with GITA annual, as well as perform an infrastructure and security compliance assessment. Starting in 2005, GITA has also played a role on

behalf of the State of Arizona, relating to statewide e-health activities. These include the following:

- In August 2005, GITA was directed by Governor Napolitano to provide leadership, as well as administrative and technical support, for the development of the *Arizona Health-e Connection Roadmap*, and to assist in staffing its initial implementation and transition to the private sector. The Roadmap development included facilitating outreach to over 300 participants from the private and public sector. eHealth Initiative was also contracted for the Roadmap development, using $150,000 in private foundation funds from St. Luke's Health Initiatives and the BHHS Legacy Foundation.

- In 2006, GITA was designated by the Governor's Office to apply for, and execute, a subcontract to the HHS Health Information Security and Privacy Collaborative (HISPC) contract, operated nationally by Research Triangle Institute (RTI). Initially over 33 states and territories participated in HISPC, though this has expanded to over 40 states and territories currently. Arizona's HISPC work is known as both the Arizona Health Privacy Project and the subsequent Arizona Health Security Project, and involved hundreds of Arizonans from the private and public sectors. This project has developed a variety of policies, model agreements, and suggested statute changes or additions believed required to facilitate (provider-to-provider) health information exchange in Arizona. The current HISPC funding extension for Arizona runs through July 2009.

- In FY 2007 and 2008 Arizona State budgets, GITA was also appropriated funding to facilitate information technology grants to rural health care providers. In FY 2007, $1.5 million was provided to seven rural health care institutions. In FY 2008, $685,535 was granted to rural institutions to lead or participate in health information exchange planning and implementation, and an additional $298,663 worth of health information exchange-related educational and consulting services were provided to rural institutions and communities.

The following characteristics describe GITA's role in the areas of health information technology and exchange:

- Classification: Collaborator and Complementor.

- Strengths: Reputation for delivery on projects, and knowledgeable, capable staff for strategic planning, policy development and oversight. Small and agile compared to other agencies. Directors typically held in high regard by Governor's Office. Current Senate President Bob Burns led establishment of GITA while in the House of Representatives. New director is well respected within the agency, by Governor's Office, and in the private sector.

- Weaknesses: Smaller staff, thus new projects and direction must be funded by new revenue sources (e.g., grants or agency transfers) to avoid loss of focus by existing staff on core responsibilities. Perception by current Governor's Office and Legislature that "mission creep" occurred in recent years, without sufficient additional funding and staff.

- Advantages (over AzHeC): Operational for 12 years. Ability to approve and oversee, with statutory authority, state agency health IT projects. Ability to utilize shared services as a State agency, including legal counsel (Attorney General's Office), procurement (State Procurement Office), facilities, telecommunications, employee benefits, etc.

- Trends: Chad Kirkpatrick is new State CIO/Director as of April 2009. Governor's Office wants GITA to focus both on core statutory responsibilities while playing appropriate strategic planning role regarding health IT.

Arizona Department of Health Services (ADHS)
As a collection of public health programs, ADHS plays many roles in Arizonans' health care. This includes providing birth and death certificates, monitoring diseases and controlling epidemics, ensuring safe food and water, maintaining a statewide immunization registry, testing newborns for metabolic disorders, monitoring hospitals, nursing homes, assisted living centers, child care centers, and other licensed facilities. Additionally, ADHS collects and publishes Arizona health statistics, provides tobacco cessation services in conjunction with an overall Tobacco Education and Prevention Program, and provides behavior health services both via Regional Behavioral Health Associations/contracts and the Arizona State Hospital.

ADHS has been very innovative in establishing electronic methods for health care providers to executive mandatory reporting, such as newborn screening, communicable disease reporting, births and deaths. As ADHS is a collection of various discrete operations, each of the information collection or viewing activities required its own separate portal and log in. This has recently been remedied, so that a single provider may have a single log-in to an ADHS portal to perform multiple activities.

In the future, it may be possible for providers to transition over to performing these activities via health information exchange, including performing them directly through an electronic health record. As this public health functionality is not currently required to be present in electronic health record applications, there is time to develop a Roadmap for transitioning providers and health information exchanges. ADHS is interested to work with AzHeC on development of such a Roadmap, and exploratory discussions have begun with the AHCCCS AMIE staff, AzHeC, and GITA to understand what would be necessary to transition Arizona State Immunization Information System (ASIIS) reporting and viewing functionality to HIE.

- Classification: Complementor and Collaborator.

- Strengths: Large, established and respected agency. Individual programs are well run. Many information technology programs, such as ASIIS and electronic disease reporting (SIREN), have been unique and often ahead of other states. Staff are knowledgeable and interested in collaboration. Have unique access to apply for certain Federal public health opportunities and monies (e.g. Centers for Disease Control and Prevention and Department of Homeland Security). Have highly visible communications activities with the general public.

- Weaknesses: Historically, information technology has been deployed through individual divisions, and only recently begun to transition to a more centralized IT organization. Public health has been an afterthought for health information exchange throughout the United States, so there are not clear models to emulate. Thought of as a regulatory agency primarily, and not as a facilitator to make providers' business easier. The interest and knowledge of the future permanent director in e-health activities is unknown (State currently completing a national search for director).

- Advantages (over AzHeC): The Agency has strong relationships with many of its data providers (health care providers), and already performs regulatory functions, which commands providers'

attention. Has ongoing communications activities with many of the same publics that AzHeC communicates with, or plans to communicate with.

- Trends: Centralized information technology leadership has been gaining attention and strength within the agency for vision and implementation of projects. Department and IT leadership interested to learn more about the public health agency role in HIE, and to continue participation in AzHeC activities.

Arizona's Public Universities

The Arizona Health Sciences Center (AHSC) at the University of Arizona (Medicine, Nursing, Public Health, and Pharmacy Colleges), the Arizona State University Department of Biomedical Informatics (merging June 1 with another department), and the Northern Arizona University School of Nursing have recently begun discussions of establishing a collaborative primarily for the purpose of undertaking new opportunities available through the Federal Stimulus funding.

- Classification: Collaborators and Complementors.

- Strengths: Each university has substantial resources. The universities have staff experienced in Federal grant writing and administration. ASU's Biomedical Informatics Department has staff recognized internationally for their expertise in health information technology, including Dr. Doug Fridsma, recently appointed to the national Health IT Standards Committee, and Dr. Bob Greenes, a member of the Institute of Medicine. The Center for Health Information and Research (CHIR), directed by Dr. William Johnson, already houses a great number of medical records for research purposes from Arizona's health care providers. The University of Arizona's Phoenix Medical School Campus was designed as the first medical school to integrate informatics into the curriculum. The Arizona Telemedicine Program (U of A) is extremely well respected and recognized, and its founding director, Dr. Ronald Weinstein, is past president of the American Telemedicine Association and is also successful at technology development and transfer. The University of Arizona's College of Pharmacy Dean Lyle Bootman is a nationally-recognized leader on the subject of electronic prescribing, and also a member of the Institute of Medicine. Current Senate President Bob Burns was instrumental in establishing the Arizona Telemedicine Program over ten years ago, and has been an active and interested participant in the Arizona Telemedicine Council (under the Legislature).

- Weaknesses: Budget cuts have affected the universities resources. The universities are known for education and research, but not otherwise thought of as independent resources for Arizona's health care providers. The loss of Dr. Ted Shortliffe, one of the most respected medical informaticians in the world, as Dean of the U of A Medical School Phoenix campus.

- Advantages (over AzHeC): Well-known experts in informatics and e-health, with established histories of receipt of Federal funding, on staff. Human and capital resources for time consuming administrative and project management work.

- Trends: ASU's Biomedical Informatics staff have been contracted by AHCCCS to assist with e-health planning. Dr. Doug Fridsma of ASU has been appointed to the National HIT Standards Committee.

Southern Arizona Health Information Exchange (SAHIE)
The Southern Arizona Health Information Exchange (SAHIE) was formed initially by hospitals wanting to share data on the uninsured, and to avoid duplication of services and associated uncompensated costs. SAHIE now represents 12 hospitals, clinics and community health centers throughout Pima, Santa Cruz and Cochise Counties. The formation of SAHIE has taken place over approximately four years, and been very inclusive of stakeholders in the requirements development, organizational decisions, and procurement process. SAHIE is an independent corporation, anticipated to be a not-for-profit, and will hold its first Board meeting as such in May 2009. Through a Request for Concept process, SAHIE has downselected to one HIE services vendor, Wellogic, and is expected to sign a contract in May 2009 and become operational during the summer of 2009. The exchange will cover 1.1 million lives in Southern Arizona. SAHIE is also anticipated to be considered "shovel ready" for Federal Stimulus HIE implementation funding.

- Classification: Collaborator and Complementor.
- Strengths: Large stakeholder collaboration developed over four years in Southern Arizona. Competent and recognized leadership. Focus on sustainability without reliance on grants.
- Weaknesses: Relatively new as a formal organization (formed non-profit in April 2009). Small staff currently (staff expands as needed).
- Advantages (over AzHeC): Unmatched provider collaboration in Southern Arizona.
- Trends: Will become operational as an HIE in summer of 2009. Staff and activities will expand.

AzHeC's Desired Position
Arizona Health-e Connection, by design, is a collection of various major healthcare stakeholders in Arizona. As such, most all of the organizations described as Collaborators, Complementors, and Competitors are represented on the AzHeC Board (with the exception of Northern Arizona University). AzHeC's strength is creating collaboration among the various stakeholders, in order to create consensus on statewide direction, policies, and standards. AzHeC desires to maintain and strengthen its leadership position through ongoing collaboration.

Recommendation

The one to two year mission for the HIE/HII Development strategic objective is *to facilitate the design and implementation of integrated statewide Health Information Technology and Health Information Exchange that supports the information needs of consumers, health plans, policymakers, providers, purchasers, and researchers to reduce healthcare costs, improve patient safety, and improve the quality and efficiency of healthcare and public health in Arizona*.

The official recommendation to the AzHeC Board is as follows:

> *It is recommended that Arizona Health-e Connection continue to play its role as educator, policy developer and supporter of HIE (and other HII) activities, but must expand and embrace a greater role as a standards setting and policy development organization to ensure*

interoperability in Arizona. This will include establishing comprehensive standards setting and policy development processes, and hiring associated staff with specific expertise. Furthermore, HIE cannot occur without successful implementation and meaningful use of EHRs. AzHeC's role in EHR adoption will be addressed under the EHR initiative.

Desired Goals for HIE/HII Coordination

Health information exchange is developing in Arizona at a fairly rapid pace. Part of the reason for this development is that individual organizations are providing HIE for their geographic or other distribution of medical trading (e.g., payer-based). Geographic distribution of health information exchange, specifically "Medical Trading Areas," or RHIOs, was anticipated and recommended by *The Arizona Health-e Connection Roadmap* (see *Appendix A*). Additionally, Arizona has been the recipient of federal funding of health information exchange through the AHCCCS program. Though not anticipated or detailed in *The Roadmap*, the AHCCCS HIE project has provided additional resources and momentum for development of HIE within Arizona. The role of AzHeC relative to both the geographic and payer-based HIE development is as a facilitator, coordinator, and supporter – identifying and performing statewide services that will allow these efforts to flourish, while also ensuring interoperability.

AzHeC has identified, and suggests, the following ten goals to "ensure interoperability and coordination of HIE activities in Arizona":

Goal #1: Once HHS has defined HIE requirements for "Meaningful Use," AzHeC will make every effort to promote development of qualifying HIEs across Arizona to reach all Arizona providers through participation in HIE not later than 2012, to ensure that Arizona providers are able to take full advantage of Federal EHR reimbursement incentives.

Goal #2: To work with ADHS and other public health agencies to develop by no later than June 2010, a Public Health HIE Roadmap for incorporating public health reporting, and provision of existing public health information to the point of care.

HIE Standards Setting Goal

Goal #3: To ensure by October 2009, that developing HIOs, EHR, and PHR vendors have an initial set of standards (which continue to develop) with which they must adhere to interoperate in Arizona. A preliminary Standards Roadmap of prioritized standards setting (or selection), which will include a detailed description of the standards setting (or dissemination of Federal standards, if they exist) process will also be released October 2009, and additional standards sets will be released periodically per the Roadmap. The purpose is to "fill in gaps" that may be left by Federal standards setting activity.

HIE Standards Adherence Goal

Goal #4: To develop a standards adherence structure (process and organization) to ensure statewide HIE standards adherence by July 2010.

HIE Policy Development Goals

Goal #5: A Policy Roadmap and policy development process should be developed by October 2009.

Goal #6: Legislative package, incorporating HIE Consent Policy with other statute requirements, will be delivered to the Board for consideration at the July 2009 Board meeting.

HIE Communications Goals
In collaboration with other HIE and HIT advocacy activities in Arizona:

Goal #7: Building and improving on the existing Strategic Communications Plan, AzHeC will develop a comprehensive, multi-year communications plan, including strategies and tactics to reach all appropriate stakeholders regarding various aspects of Health Information Infrastructure (HIE and HIT) by October 2009. The goal of this communications plan to become the "trusted source" for HIE/HIT information and direction in Arizona.

Goal #8: Develop initial set of HIE/HIT provider outreach materials (brochures, videos) by July 2009.

Goal #9: Develop initial set of HIE/HIT consumer outreach materials (brochures, videos) by September 2009.

Goal #10: Develop and implement a process by September 2009 for identifying HIE lessons learned, and best practices (if existing) across the country, and disseminating this information to AzHeC members and Arizona stakeholders.

The following bullets detail the justification for why Arizona Health-e Connection is uniquely suited to accomplish the above mission, recommendation and goals:

- Arizona Health-e Connection was developed for this purpose, and includes the necessary public and private stakeholders.
- AzHeC is an independent non-profit, and thus can educate and communicate with providers and consumers from a perceived neutral viewpoint.
- AzHeC continues to gain increasing trust of provider organizations, and will have a Consumer Advisory Council which should facilitate further consumer trust.

Accomplishing the Recommendation

To accomplish the recommendation and goals above, the following strategies are initially proposed. Additional strategies and tactics will be developed as necessary.

Formalize the Council of Initiatives
The existing Arizona RHIOs and other HIEs are all in various developmental stages. AzHeC provides a forum for them to inform each other about their projects through its Council of Initiatives meetings. The existing projects vary widely in size and available resources, with some being geographically oriented and others focusing on the needs of a specific population.

Creating a formal group structure for the Council of Initiatives, open to all Arizona-based RHIOs and HIOs, will yield the following short term results:

- The members can support each other in developing sound solutions to the problems faced by all HIOs, such as issues related to security and privacy issues, the need for consumer and provider education and the development of sound performance measures.
- The group can test policies, processes and standards being proposed, and can provide realistic feedback on their adoptability.
- By working together the members will develop the relationships with and trust in each other so essential to working together in the HIO to HIO environment to come.

A realistic short-term structure would feature:

- Governance led by AzHeC
- A Sub-Committee/Working Group body addressing specific subject areas as requested by AzHeC's Clinical/Technical Committee, and returning recommendations to the Committee.
- Decision-making by consensus, with majority and minority opinions voiced when consensus cannot be reached. Two concepts helpful in reaching consensus would be:
    - An understanding that current common practices and the level of technological development may fall short of what is desired for effective, reasonably-priced and secure exchange of health information. It may be necessary to establish standards for the present that must be improved as quickly as possible in the future.
    - An acceptance of the necessity for a minimum standard that is acceptable to organizations whose size, available resources, and complexity vary widely. Organizations must determine not only what policies they will adopt, but what minimum policies they require their exchange partners to have in place.
- Representation for all RHIOs/HIOs seeking membership.
- The ability to communicate preferences both by size of population served and by number of organizations regardless of size.

A long-term structure would evolve along with the national HIE landscape. It would certainly include continual re-evaluation of existing policies, standards and procedures and recommendations on new proposals. It might also include:

- Development of Arizona requirements for the exchange of health information
- Development or recognition of a certification process for Arizona HIOs
- Establishment of the Group as an separate entity
- Creation of a formal governance structure that could include licensing, certification, and adherence/accreditation components

HISPC Designation

An additional recommended Policy Development strategy, in support of HII/HIE Coordination, is that AzHeC be designated by the Governor to contract and manage all future HISPC activity, to ensure that standards and policy development work is coordinated. AzHeC will begin discussions immediately with the State CIO and Governor's Office relative to future HISPC subcontracts with RTI (Prime Contractor with HHS).

Core Requirements & Features

The core requirements for accomplishing statewide interoperability are statewide policies and standards that allow for interoperability between exchanges.

As outlined above, our first priority should be to adopt national standards, where they exist. In the absence of such national standards we should consider the alternatives and adopt what standards we feel suit our present and future needs best. Standards are needed to define content structure, such as Clinical Document Architecture (CDA), and to define how nodes on the network interact, such as Cross-Enterprise Document Sharing-b (XDS.b). Standards are also needed to define how discrete data such as lab results (e.g. LOINC codes) are exchanged. Adopting such standards will initially result in capability to connect AMIE with SAHIE. If we require the PACeHR vendor to adopt these standards, all of the PACeHR subscribers will seamlessly connect. Major hospitals with commercial EHRs can work with their vendors

(who will be motivated to adopt these standards to achieve CCHIT certification) to similarly connect to the network. Ideally, we will identify a solution for a statewide master patient index to minimize duplicates and maximize the opportunity for returning the right information to the right provider at the right time.

Extensive security, consent and privacy standards will be developed where national standards do not exist and, if needed, adopted into law to ensure compliance.

Statewide policy development work to ensure interoperability and coordination of HIE activities is contained in Chapter 4: Policy Development.

Each exchange will develop its own requirements and prioritize which information is important to publish. By adhering to the nationwide/statewide standards, they will ensure that their documents/data will be compatible for sharing on the network. The market will be free to develop "added value" services that leverage the network for consumer, public health and research benefits.

Market Composition

As a statewide coordinator of health information exchange, and State Designated Entity, AzHeC may be responsible for coordinating health information policies, development and enforcement of standards, and leading the effort for implementation of electronic health records, health information exchanges and e-prescribing in the State of Arizona.

Accordingly, AzHeC will be directly or indirectly interfacing with private, local and statewide health care entities such as acute and long term care hospitals, birthing centers, nursing homes and assisted living centers/homes, emergency medical service units, medical laboratories (that may be located in other states), behavioral health treatment centers, funeral homes, insurance companies and private physician practices as well as medical examiners.

The attached tables provide statewide view of the current health and vital records institution counts in Arizona. The data indicates that there are over 1600 medical facilities of various types, close to 1000 behavioral health clinics and treatment centers, hundreds of other types of healthcare entities including emergency medical units, funeral homes and others.

One area of relevance in this context are the CLIA (Clinical Laboratories Improvement Act) certified medical laboratories who provide medical test result data. These cannot be simply bracketed into a single state, including Arizona. For example, Bostwick Laboratories from Virginia provided confidential cancer test results to the Arizona Cancer Registry. Currently there are over 4000 CLIA-certified laboratories registered in Arizona.

Another major focus involves private physician offices and clinics. Currently, there are over 15,000 licensed physicians practicing in Arizona. There is no data regarding how many of these physicians are grouped within practices. Assuming an average of 1-4 physicians in a practice, that would result in about 3,000 practices that would still have to interface with other electronic health systems.

Of special interest are the Indian Health Service systems. Currently there are more than twenty different facilities located within the Navajo Nation, Phoenix and Tucson service areas.

In summary, the potential number of health IT (e.g., EHR, eRx, HIE) systems that AzHeC would interface with number in the thousands with further growth potential in the future. Currently, independent

estimates from hospital discharge and EMS data alone indicate annual electronic data transmissions in the range of 3 million each. Population growth estimates have slowed but still are assumed to be at least in the 3-5% range. As the entire population is brought online with electronic medical records, the potential numbers will be easily in the tens of millions. This is a large target market that is still in the infancy of HIT adoption.

Facility Type	Number
Medical Facilities	**1618**
Medicare Certified Ambulatory Surgical Centers	151
Medicare Certified Comprehensive Outpatient Rehabilitation Centers	7
Medicare Certified End State Renal Disease Centers	8
Federally Qualified Health Center	5
Home Health Agency	26
Medicare Certified Home Health Agency	118
Medicare Certified Hospice	98
Hospice (Out of State)	6
Hospitals (Acute Care)	58
Hospitals (Children)	2
Hospitals (Critical Access)	11
Hospitals (Long term care)	10
Hospitals (Psychiatric)	9
Hospitals (Rehabilitation)	7
Hospitals (Special Care)	3
Medical (Single Group Licensure/OTC)	106
Outpatient Surgery Center	12
Outpatient Treatment Centers	733
Physical/Speech Therapy OPT	57
Recovery Care Center	3
Medicare Certified Rural Health Centers	17
Unclassified Medical Facility	3
Portable X-Ray Facility	10
Other Types	158
Long Term Care Facilities	**2058**
Adult Day Health Care	23
Adult Foster Care	87
Assisted Living Center – Directed	150
Assisted Living Center – Personal	44
Assisted Living Center – Supervisory	15
Assisted Living Homes	1624
Assisted Living Home – Directed	11
Assisted Living Home – Personal	3
Assisted Living Home – Supervisory	11
Respite Unclassified	5
Vital Records Related Entities	
Birthing Hospitals	127
Medical Examiners (On a county basis)	12
Funeral Homes	157
Emergency Medical Services	
Certificates of Necessity Programs (on a county basis)	86
Municipal Ambulance and Fire Department Responders	250
Statewide Designated Trauma Centers (Hospitals)	9
National Medical Laboratories	
CLIA-Certified Laboratories	4022
Behavioral Health Treatment Centers	**842**
Adult Therapeutic Foster Home	22

Facility Type	Number
HB 2113 Juvenile Group Home/OPC	3
Juvenile Group Home	81
L1 PSY/L1 RTC/L1 Sub-Acute/OPC/L4 TR	1
Level 4 Shelter for Victims of Domestic Violence	16
Level 1 Psychiatric Hospital	10
Level 1 Psychiatric Hospital / Outpatient Clinic	12
Level 1 Residential Treatment Center	9
Level 1 RTC/Level 1 Sub-Acute	2
Level 1 RTC/Outpatient Clinic	2
Level 1 Specialized Transitional Agency	1
Level 1 Sub-Acute	15
Level 1 Sub-Acute / Outpatient Clinic	3
Level 1 Sub-Acute / Level 2 Residential	2
Level 2 Residential	129
Level 2 Residential / Outpatient Clinic	10
Level 2 / Level 3 Residential	1
Level 3 Behavioral Health Residential	19
Level 4 Rural Substance Abuse Transition	6
Level 4 Transition/Level 4 Domestic Violence / Outpatient Clinic	2
Level 4 Transitional Agency	19
Outpatient Clinic	477
Arizona State Hospital	1

Budget

The following budget contains an estimate of the time required by AzHeC staff, including one new staff member in the first year of the initiative, to conduct the necessary standards setting work. As is noted in Chapter 9, and an additional staff member will be required in Year 2 to oversee Standards Adherence.

Category	Hours	Rate (non-loaded)	Year 1 Totals
Executive Director	16 hours/week	$64.34	$53,530.88
Associate Director	4 hours/week	$49.00	$10,192.00
Policy Development*	20 hours/week	---	---
Standards Development	20 hours/week	$88.24	$91,769.60
		Total	$155,492.48

* See chapter 4 for details on the budget associated with policy development.

Funding

To accomplish the enhanced activity of HIE/HII Coordination, an expanded organizational chart has been developed in Chapter 9: Organizational Support.

Funding of this expanded organization and activities could be incorporated into an HIE Planning and Implementation grant request under the Federal Stimulus HITECH Act. These activities, however, are recommended to begin before HITECH funds are accessible, and should be performed regardless of the presence of HITECH funds. A budget for Year 1 staffing is incorporated in Chapter 9. AzHeC believes that sources of both initial and long-term funding for these activities should be established. Following are possible sources, in addition to, or in advance of, HITECH Funding:

- HIOs, or organizations supporting HIO development
  - AHCCCS
  - Health Insurance Companies

    - Hospitals
    - Laboratories
- Local (Arizona) private foundations
- Private foundations outside Arizona

Return on Investment

The following bullets detail the predicted return on investment for health information exchange in general, as well as for the specific strategy detailed in this section:

- The possible returns from HIE for HIOs and their stakeholders
- Improvement in quality and safety of decision making (due to improved completeness of information)
- Improvement in consistency of care (due to continuity of information)
- Saving in costs: (non-exhaustive set of examples below)
    - Reduction in volume of duplicated services
        - Lab and radiology tests
    - Avoidance of expensive consequences to decision-making-under-uncertainty
        - Adverse drug events
        - Ignorance of known allergies
        - Ignorance of patient's advance directives
    - Making certain labor processes obsolete
        - Chart pulls
            - Requests for charts from other entities
            - Chart pulls from prior visits at the other entities
            - Faxing or otherwise conveying chart copies to requestor
        - Adjudication cost avoidance for tests/Rx not ordered
            - Prescription information to authorizing agency
            - Telephone adjudication of prescription
        - Reducing multiple intermediaries in claims submission, processing, adjudication
- The measurable net benefits from these
- Accrual of net benefits by institution-types
- The possible returns for AzHeC (due to lack of infrastructure for which to study these returns, most of this is theoretically possible, but still speculative)
    - All of the above HIE benefits
    - Arizona benefits from more efficient and effective HIE efforts, due to coordination, communication, and shared resources
    - Improved health and wellness outcomes for Arizonans
        - Reduced absenteeism
        - Potentially lower health insurance premiums for employers and employees
    - Arizona will have an interoperable platform that will facilitate:
        - Consumer-to-provider communications
            - Patient retention and satisfaction[11]
        - Better informed patients/consumers
        - Development of innovative and valuable technologies
        - Economic development (local business innovation and development)

[11] Liederman E, Lee J., Baquero V, Seites P, *Patient-Physician Web Messaging: The Impact on Message Volume and Satisfaction.* Washington, D.C: The Society for General Internal Medicine. 2005

        - Improved disease and pandemic surveillance
        - Improved bioterrorism surveillance
        - Improved management of chronic disease
        - Improved communication between providers
    - Potentially lower liability insurance premiums for clinicians with better record-keeping
    - Lower costs of uncompensated care, due to reduced redundancy
    - Making Arizona a more attractive place to practice medicine, especially for new graduates
        - Increasing number of providers
    - Creating efficiencies in care management before the "tidal wave" of boomers begin to stress system

Risk Analysis

Risk to Act: As with any organization, to act is to risk failure, and thus reputation. AzHeC was designed to act in this space, however, and has the support of an extremely strong and knowledgeable Board, and cadre of volunteers through various committees. A great deal of good faith is exhibited by Board members who wish for the organization to succeed, and thus for Arizona to succeed. AzHeC risks little to act, as it was created for exactly the strategic objective described in this chapter.

Risk to Not Act: AzHeC risks a great deal by not acting on this HII/HIE Development Strategic Objective and associated goals. If AzHeC does not move forward in this area, it is giving up its unique place and responsibility for which it was founded. By not acting, either HIE would move forward in an uncoordinated fashion, costing more to all Arizonans directly or indirectly, or not at all, or another organization less suited to the task would attempt to fill the gap.

Chapter 4: Policy Development

Background

As e-health often involves the storage, viewing, or movement of individually identifiable health information, there are Federal policies such as the Health Insurance Portability and Accountability Act (HIPAA), which contain a wide variety of sub-policies, rules and standards, which apply. HIPAA, however, was not designed with electronic movement of health information in mind, and therefore, a large gap of laws, policies, and rules needed to facilitate e-health (EHR use and health information exchange) has existed.

ARRA has created additional laws primarily around privacy and security, but a large gap of laws, policies and rules still exist, some of which are expected to be, and may be preferable to be, implemented at the state level.

To date, most of the policy development activity for Arizona Health-e Connection and the State of Arizona on e-health has been facilitated by the HHS-funded Health Information Security and Privacy Collaborative (HISPC), under a subcontract (via HHS prime contractor RTI) to Arizona's Government Information Technology Agency (GITA).

HISPC

The Health Information Security and Privacy Collaborative (HISPC) was established in 2006 by the U.S. Department of Health and Human Services (HHS) Agency for Healthcare Research and Quality (AHRQ) and the Office of the National Coordinator for Health Information Technology (ONC). Thirty three states and Puerto Rico were awarded contracts to address barriers to the sharing of electronic health records and propose solutions to those barriers.

Phase 1

In March 2006, the Arizona Government Information Technology Agency (GITA) was awarded a $350,000 one year contract to work on the HISPC project. GITA partnered with the Center for Advancing Business through Information Technology (CABIT) and the law firm of Coppersmith, Gordon Schermer & Brockelman PLC to address barriers to health information exchange (HIE) in Arizona. GITA hired a consulting project manager to run this project. Highlights of the project include:

- 120 volunteers
- Focus groups conducted
- Major barriers: legislative, authentication, audit, authorization, access
- Final report submitted to ONC in June 2007

Phase 2

GITA wrote a second proposal in July 2007 to obtain an additional $210,000 to continue working on legal issues and authentication issues for the sharing of electronic health information. At this time, GITA partnered with Coppersmith Gordon, Schermer & Brockelman PLC. Highlights of this phase include:

- Master participation agreement to allow providers to access the HIE
- Research completed on authentication methods and national standards
- Policy and Procedure for the HIE

- Final Report submitted to ONC in December 2007

Phase 3
Phase 3 of the HISPC project involved 42 states working in a collaborative effort to address barriers to HIE across state line. Arizona again submitted a proposal with Coppersmith Gordon Schermer & Brockelman PLC to work on the Adoption of Standard Policies Collaborative to define minimum policy requirements for authentication and audit for HIE. A one year contract for $414,700 was awarded to GITA in April 2008. In addition, the GITA Project Manager serves as the co-chair of the ten states involved in this collaborative. Highlights of this phase include:

- Ten states negotiated minimum policy requirements for authentication and audit for HIE across state line
- Uniform Security Policy
- Guide to Adoption of Standard Policy
- Demonstration of policy components at the HIMSS 2009 National Conference
- Authentication White Paper
- Arizona policy and procedure for authentication and audit

Phase 3 Extension
The extension period for phase 3 involves the Adoption of Standard Policy Collaborative States working on access and authorization policy based on the AHIC Immunization Use Case. In addition, Arizona will be working on dissemination of Consumer Education Materials produced by the Consumer Education Collaborative from Phase 3 and the Provider Education Toolkit which was developed by the Provider Education Collaborative in Phase 3. Arizona Health-e Connection has been contracted with to conduct some of the provider education tasks for this extension. This includes 4 hours per week over the course of 4 months of AzHeC's Communications and Marketing Manager's time.

HISPC Legal Working Group / AzHeC Legal Committee
To facilitate development and approval of policies and agreements for the HISPC projects in Arizona, a Legal Working Group was established. The Legal Working Group comprises a variety of stakeholder institutions, and representatives of those institutions, and has been co-named the Arizona Health-e Connection Legal Committee.

With that in mind, the goals of the AzHeC Legal Committee include:

- Developing key model legal documents (e.g., contracts) that establish terms and conditions for provider access to health information
- Researching security and privacy practices that support the establishment of secure health information exchanges
- Performing additional legal work needed to prepare a legislative package that will change laws which currently pose barriers to the implementation of e-health technology adoption and exchange
- Creating and supporting technical standards development that improves interoperability and facilitates the creation of secure regional and state information exchanges and electronic health adoption

Legislative Package
The Legal Committee, and AzHeC Legal Counsel Kristen Rosati and Beth Schermer, developed a proposed legislative package in the fall of 2008. This proposal was presented to the AzHeC Board, but

deferred one more year (to the 2010 Legislative Session), to ensure its inclusion of a consent policy that is reflective of Arizona clinicians and consumers. There was concern that very little consumer outreach had been done to date. Other states that have performed consumer outreach activities have found it extremely helpful and strategic in the development of both consent policy and overall direction.

AzHeC staff sought pro bono legal assistance from the Board, to assist with this further legislative package development, and associated consumer outreach. Blue Cross Blue Shield of Arizona has responded, and is working closely with AzHeC staff.

Based on the legislative package developed in the fall of 2008, which was a culmination of work done over several years, it is anticipated the following policy areas may be addressed in a final legislative package[12]:

- Removing statutory barriers to (electronic) health information exchange
    - Removing requirements for "written in ink," "written" records, etc.
    - Disclosure of medical records by providers to health information organizations
    - Redisclosure of medical records
- Clarifying at what point externally-sourced information becomes part of a provider's record
- Ensuring rigorous privacy and security of consumers' health information
    - Access (who can; and how)
    - Authorization (who is; and how)
- Consumer Consent
    - Opt-in, Opt-out, No-consent, where consent is executed
- Regulation of health information organizations
- "Safe Harbor" for health care providers using HIE in good faith
- Expanding computer tampering statutes to include unauthorized access to health information organizations and health care providers
- Provision/release of State immunization registry data through health information organizations
- Provision/release of lab results through health information organizations
- Provision/release of communicable disease information through health information organizations
- Health care provider access to patient directives
- Considering use of health information organizations for public health purposes, such as disease, pandemic and bioterrorism surveillance
- Consumers' access to a copy of their information available through a health information organization
- Consumers' right to amend their information available through a Health Information Organization
- Ensuring health information organizations follow fair information practices
- Providing a statutory baseline of required HIO policies
- Ensuring participation in health information organizations is voluntary for health care providers
- Considering position of health information organizations relative to the subpoena process
- Enforcement, including injunction actions and penalties, for health information organizations' violations of statutes

[12] Rosati K, Schermer B, *Memorandum: Proposed Legislative Package to Support Health Information Exchange in Arizona,* Phoenix: Coppersmith Gordon Schermer & Brockelman PLC. 2008.

Collaborators, Complementors and Competitors

AHCCCS
AHCCCS has multiple e-health programs, such as AMIE, PACeHR, and e-prescribing, and has contracted with AzHeC in the past to work collaboratively on policy and standards development. AzHeC staff expects to continue this collaboration.

- Categorization: Collaborator and Complementor

Arizona Department of Health Services (ADHS)
ADHS has extensive activities and resources related to electronic public health, and has been a collaborator on most AzHeC activities, including the Legal Committee.

- Categorization: Collaborator and Complementor

Government Information Technology Agency (GITA)
GITA has been the designated subcontractor since 2006 for the federal Health Information Security and Privacy Collaborative (HISPC) activity in Arizona. This HISPC activity has included the Arizona Health Privacy Project and Arizona Health Security Project. AzHeC has worked closely with GITA on these projects, with the AzHeC Steering Committee, Executive Committee, and Clinical/Technical Committees (and its Security Subcommittee) serving key roles in fulfillment of these contracts. The HISPC work done in Arizona, over $900,000 in the past three years, has helped move most of AzHeC's policy development work forward. With GITA being asked to focus more on its key statutory mission, reductions in state budgets, and a need for AzHeC to play a more proactive role in policy development, it would be prudent for AzHeC and GITA leadership and staff to explore the possibility of designating AzHeC as the future HISPC state lead (subcontractor to RTI).

- Categorization: Collaborator, Complementor.

AzHeC Board Organization Staff
In order to ensure stakeholder input, and subsequent communication with all parties affected by policy, AzHeC may invite AzHeC Board organization staff to play a more formal role in policy development moving forward.

- Categorization: Collaborator, Complementor

AzHeC Consumer Advisory Council
Though AzHeC committees are inherently collaborators and part of AzHeC, and therefore not listed elsewhere in this document as an external collaborator, the Consumer Advisory Council is relatively new, and should be recognized as playing a key role moving forward in obtaining consumer input and feedback on policy. The Council's co-chairs, Debra Nixon and Surprise Mayor Lyn Truitt, were recently named, and the Council members are currently being populated as the result of a series of mini-Town Halls/Focus Groups being done throughout Arizona from April through June. The Council should be filled and have its first meeting during the summer of 2009.

- Categorization: Collaborator, Complementor

AzHeC Legal Counsel
To date, AzHeC has utilized Kristen Rosati, Beth Schermer and Sam Coppersmith of Coppersmith Gordon Schermer & Brockelman PLC as legal counsel. Mr. Coppersmith works primarily on corporate legal work, such as bylaws, internal policies, and incorporation activity for the AzHeC corporation. Kristen Rosati and Beth Schermer are contracted with GITA to work on HISPC, and Kristen Rosati chairs the AzHeC Legal Committee. Both Ms. Rosati and Ms. Schermer are nationally recognized health care attorneys, and extremely knowledgeable on areas related to medical records, liability, and e-health. AzHeC looks forward to continuing to leverage their expertise.

- Categorization: Collaborators, Complementors.

Recommendation

The following mission regarding policy development was mentioned in Chapter 2, is *to create a policy and standards environment conducive to development of sustainable Health Information Exchange and adoption of interoperable Health Information Technology*.

In order to ensure that the necessary policies are determined and implemented for health information exchange in Arizona, the official recommendation to the Board of Directors, as noted in Chapter 2, is that:

> *Arizona Health-e Connection will continue to facilitate development of statewide policies, agreements and legislation required for successful HII implementation in Arizona.*

The goals associated with the proposed recommendation are as follows (these goals are also listed in Chapter 3, the HII/HIE Development chapter):

Goal #1: A Policy Roadmap and policy development process will be developed by October 2009.

Goal #2: Legislative package, incorporating HIE Consent Policy with other statute requirements, will be delivered to the Board for consideration at the July 2009 Board meeting.

Justification for why Arizona Health-e Connection is best suited for this role includes that:

- Arizona Health-e Connection was developed for this purpose, and includes the necessary public and private stakeholders.

Accomplishing the Recommendation

Key Features of the proposal to accomplish the recommendation include:

- Legislative package, to include consumer consent policy
- Model agreements
- Model policies
- Policy recommendations
- Educational resource for Arizona policymakers

The passage of ARRA also created two new Federal Advisory Committees, the HIT Policy Committee and HIT Standards Committee, which are anticipated to significantly impact the scope policy and standards work required at a state level. The charges of these committees are described as follow:

The HIT Policy Committee "is charged with recommending to the National Coordinator a policy framework for the development and adoption of a nationwide health information technology infrastructure that permits the electronic exchange and use of health information as is consistent with the Federal Health IT Strategic Plan and that includes recommendations on the areas in which standards, implementation specifications, and certification criteria are needed. The HIT Policy Committee is also charged with recommending to the National Coordinator an order of priority for the development, harmonization, and recognition of such standards, specifications, and certification criteria.[13]

The HIT Standards Committee "is charged with making recommendations to the National Coordinator on standards, implementation specifications, and certification criteria for the electronic exchange and use of health information for purposes of adoption, consistent with the implementation of the Federal Health IT Strategic Plan, and in accordance with policies developed by the HIT Policy Committee.[14]

Thus, there is a strong connection between the policies and standards work that will be completed by the Federal Government in the coming year. Arizona Health-e Connection staff has consulted with individuals close to the federal activities, and determined that until these committees identify their specific scopes of policy and standards work, we cannot be assured of the work to be done at the state level – to fill in policy and standards gaps. However, it is possible to create a "catalog" of policies that must be in place, facilitated at the federal, state, regional, or institutional level, to facilitate health information exchange. Once this catalog has been developed, a policy team or committee can monitor federal activities, determine the priorities for filling policy gaps at the state level, and develop a timeline for completing these policies.

In addition to the policies listed in the "Legislative Package" section, a sample list of policies (and possibly model procedures) could include the following (there is an overlap with standards in some cases):

HIT and HIE Policies	
Policy Category	**Definition of Policy Needs**
Registration / Type of Registration	How do providers, consumers, public health, and others get registered to use the HIE?
Authentication	The process of establishing confidence in the identity of users or systems (NIST 800-63). Authentication policies should be developed for the following categories of individuals: • Providers • Consumers • Public Health • Other Institutions (educational) • Non-licensed Providers in State

[13] *Federal Register,* April 29, 2009

[14] Ibid.

	• Data Authentication (in and out of HIE) • System Authentication (system accessing HIE)
Identification	A unique identity of an individual person. Since the legal names of persons are not necessarily unique, the identity of a person must include sufficient additional information (for example an address, or some unique identifier such as an employee or account number) to make the complete name unique (NIST 800-63) • Use of Master Person Index to Provide Provider and Consumer Information • Public Health • Other Institutions (educational) • Non-licensed Providers in State • Data Identification • System Identification • Credentialing of Health Care Providers (verifying license, education etc.; professional credentialing)
Audit	Considerations when developing audit policies include: • What is Audited • Who Audits • How Often • External Audit Requirements (including consumer audit requirements) • Notification of Records Accessed (consumer)
Authorization	The following stakeholder groups must have clearly defined authorization policies defined which dictate what individuals are able to view and use what data: • Providers • Consumers • Public Health • Other Institutions (Educational) • Non-licensed Providers in State • Data Authorization • System Authorization
Access	Role Based using HL7 Standards. The granting of rights, which includes the granting of access based on access rights (ISO 7498). • Who Can Access What Data • Who Can Change and/or Update Data • Sensitive Specially Protected Health Information – Substance Abuse, HIV, SIDS, Genetic, etc.
Consent Framework	Various types of consent could include: • Opt-In • Opt-Out • Notice Only • No Consent
Legal Agreements	The following model agreements are necessary to operationalize a health information exchange: • Master Participation Agreements • Use Agreements • Business Associate Agreements
Miscellaneous	• Break the Glass

Policies	

Budget

The following budget table includes estimated costs associated with the recommendation above.

Category	Hours	Rate (non-loaded)	Year 1 Totals
Executive Director	8 hours/week	$64.34	$26,765.44
Policy Development*	20 hours/week	$49.02	$50,980.80
Associate Director	2 hours/week	$49.00	$ 5,096.00
Consumer Advisory Council Staff (part-time)	5 hours/week	$49.00	$12,740.00
Legal Counsel	8 hours/week	$300.00	$124,800.00
		Total	$220,382.24

Funding

Funding of this expanded organization and activities could be incorporated into an HIE Planning and Implementation grant request under the Federal Stimulus HITECH Act. These activities, however, are recommended to begin before HITECH funds are accessible, and should be performed regardless of the presence of HITECH funds. AzHeC believes that sources of both initial and long-term funding for these activities should be established. Following are possible sources, in addition to, or in advance of, HITECH Funding:

- HIOs, or organizations supporting HIO development
    - AHCCCS
    - Health Insurance Companies
    - Hospitals
    - Laboratories
- Local (Arizona) private foundations
- Private foundations outside Arizona

Return on Investment

Policy development activity is necessary to achieving any of the return on investment estimates for health information exchange and electronic health record adoption.

Risks

Risk to Act

By developing and establishing these policies, we are performing a requisite action to facilitate health information exchange. The risk is whether or not the policies adopted incorporate sufficient input from stakeholders to address any implementation barriers. To alleviate the risk of establishing policies that are not implementable, stakeholder input through the Legal Committee, Clinical / Technical Committee, and other means is necessary. Any statewide policy development activity will also necessarily monitor federal policy development, to prevent redundancies while also filling policy gaps.

Risk to Not Act

If AzHeC does not act to develop and establish the requisite policies to facilitate health information exchange, then either health information exchange will not move forward in Arizona, or, if it does, it will be in a very uncoordinated fashion, with individual HIOs needing to address policies individually. The latter will both slow down individual HIO development, and raise the development and operational costs of individual HIOs.

Chapter 5: Electronic Health Record Initiative

Background

Arizona Health-e Connection's original goal for EHR adoption was dictated in the HIT Adoption Strategies of the original AzHeC Roadmap. These included five approaches:

- Partner with other organizations that already have HIT adoption programs
- Adopt, and if necessary, set standards
- Provide guidance, direction and education
- Provide incentives
- Identify barriers and propose solutions
  (AzHeC Roadmap, page 18)

Building on The Roadmap, the new AzHeC Board completed a strategic planning process in April 2007, establishing the following three strategic directions for the organization:

- Statewide Health Information Technology and Exchange Education/Information Clearinghouse
- Statewide Health Information Technology and Exchange Policy Development
- Support of:
  - Developing Health Information Exchange initiatives
  - Health Information Technology Adoption (e.g., EMRs, e-prescribing)

AzHeC Board members, committees and staff have accomplished a great deal in all three strategic direction categories, including, but not limited to, establishing and leading a very robust statewide e-prescribing initiative, EAzRx. Through the establishment of strong relationships with provider, consumer, health IT and health records organizations in Arizona, and working with these organizations on specific activities and educational events, AzHeC has become the recognized leader in Arizona for establishment of Arizona's Health Information Infrastructure. In the area of EHR adoption, however, AzHeC's efforts have been primarily focused in the area of provider education.

With respect to the original roadmap, several strategies, coordination and partnerships with organizations that already have HIT adoption programs and provide guidance, direction and education, have already been accomplished. However, there is still more work to be done in the areas of:

- Adopt, and if necessary, set standards
- Provide incentives
- Identify barriers and propose solutions

These items, along with others that have since been identified, should be addressed immediately to ensure that providers in Arizona are ready to take advantage of all EHR incentives available in the coming years (primarily incentives detailed in the federal stimulus package, but more may become available eventually).

Many other states have undertaken EHR initiatives, each with their own unique characteristics. According to the Certification Commission for Health Information Technology (CCHIT), which certifies

EHR systems, over 40 EHR incentive programs have been offered by government agencies, health plans, employer coalitions and public-private partnerships since the organization began certifying technology systems in 2006. Some other statistics compiled by CCHIT include:[15]

- 59 programs, representing 159 hospitals, have been implemented in response to federal "safe harbor" regulations on health IT donations
- 52,474 physicians (and other clinicians) are receiving or have been offered financial assistance for the purchase of EHR capabilities
- $783.45 million in known dollar value of these incentive programs has been calculated
- 21 state governments enacting some form of EHR adoption program[16]

Researching of these initiatives and incorporation of resulting best practices and lessons will be a key component of the official AzHeC EHR recommendation later in this chapter. Please refer to the recommendation section for further details.

Due to ARRA, the level of EHR adoption is expected to significantly increase over the next three to five years. There are no predictions yet as to how many providers will take advantage of the impending federal stimulus incentive programs, but all signs to point to the fact that increased adoption will be significant. Predictions to date forecast that 10% of all providers may be eligible for the Medicaid incentives, and that 60-65% of all providers may be eligible for the Medicare incentives. (HIMSS handout)[17]

As EHR adoption is supported, the most important stakeholders with which to collaborate and engage include the clinician community (MDs, DOs, PAs, nurses, dentists, etc.), hospitals, community health centers, and any others who will be implementing an EHR system within their practice setting. The Arizona Board of Medical Examiners estimates that there are 18,000 licensed providers (MDs, DOs and PAs) in Arizona, yet 6,000 of those reside outside of Arizona. The Arizona Board of Nursing confirms approximately over 80,000 RNs, LPNs, and NPs. Finally, there are 143 hospitals in Arizona that service 14 counties, according to the Arizona Hospital and Healthcare Association.[18]

Market Composition

The closest approximation that we currently have to a market composition analysis is a result of a survey completed by the Arizona State University's Center for Health Information & Research. This survey of physicians in Arizona was led by Dr. Bill Johnson (who serves on the Arizona Health-e Connection Board of Directors) in collaboration with AHCCCS. Distribution of the survey was integrated with the medical license renewal application process that physicians must complete every one to two years. The survey findings are highlighted below:[19]

- Paper records remain the dominant form in which medical records are stored, whether as the sole medium of storage or in combination with EMRs or scanned files.
- Approximately 44% of physicians surveyed use some form of an EMR in their practice.
    - Use of EMRs is generally limited to intra-office use with little exchange capability
    - Use of EMRs is much higher the larger the organization

[15] http://ehrdecisions.com/incentive-programs/
[16] http://ehrdecisions.com/incentive-programs/
[17] HIMSS 2009
[18] www.azhha.org
[19] Presentation to Arizona Health-e Connection by Dr. Bill Johnson, November 18, 2008.

    - Use of EMRs is inversely related to age
    - Variance among counties is very large with some rural counties having utilization rates nearly as high as Maricopa and Pima
- Percentage of physicians with EMRs in Arizona is higher than national studies suggest
- EMR use is most prevalent in government practice settings and least prevalent in private solo practices.
- There is little difference in the prevalence of EMR use between the two most urban counties and other parts of Arizona.
- Physicians who use EMRs place a higher value on them than do physicians who have yet to adopt EMRs.
- Age is one of the critical variables in determining the likelihood of EMR use. The odds that a physician will use an EMR consistently and significantly increase as one moves from age 65+ to each of the younger age categories.
- Female physicians are less likely than males to utilize an EMR (although they are not less likely exchange information if they use an EMR).
- DOs with EMRS are more likely than MDs with EMRs to utilize a connected EMR.
- Utilization of EMRs is not synonymous with participation in health information exchange. Approximately 55% of the physicians with access to EMRs use an external connection to exchange EMR information.
- 600 of 1,461 respondents (41.1%) would be willing to participate in an HIE[20]

This data was presented to various healthcare stakeholders, and some concern was expressed that the percentage of EHR adoption in Arizona was significantly higher than the percentages of EHR adoption identified in other national studies. Therefore, the following comparison of national surveys below was compiled to illustrate the differences:

Comparison of Surveys Assessing EMR Adoption[21]

Study	*Data Source*	*Sample Size*	*Characteristics of Sample, Exclusions*	*Percent of Physicians with EMR**	*Definition of basic EMR*	*Definition of connected EMR*	*Definition of fully functional EMR*
Hing, et al. (2007)	2006 National Ambulatory Medical Care Survey	1,311	Non-federal, office-based physicians who see patients in an office setting (United States)	29.2% (B) 12.4% (F)	Use of full or partial electronic records	N/A	Can electronically order prescriptions & tests, report results to lab or radiology; manage clinical notes
DesRoches, et al. (2008)	Survey created by the study team and Research Triangle Institute	2,758	US physicians who provide direct patient care. Exclusions: D.O.s, residents, physicians in federally owned hospitals, retired physicians, radiologists,	13% (C) 4% (F)	NA	EMR can store demographic data, problem lists, medication lists, and clinical notes; can order prescriptions; can view laboratory	All capabilities listed in previous column, plus enhanced order-entry management and clinical-decision support

[20] Ibid.
[21] Ibid.

			anesthesiologists, pathologists, psychiatrists, hospitalists, part-time, physicians who worked < 20 hour per week. (United States)			results and imaging results. (Study authors refer to this type of record as a "basic EMR")	
AHCCCS/ CHIR (2008)	Created by study team and AzHHA; Licensing data from AZ Medical Board and AZBoard of Osteopathic Examiners	3,529	All AZ physicians with active licenses who renewed their license between 071707 & 053108. Exclusions: non-AZ physicians, fully retired (Arizona)	44.3% (B) 24.2% (C) 10.2% (F)	Use of electronic files as method of storing medical records	EMR that is connected to at least one of the following: hospital, radiology, lab, pharmacy	EMR that is connected to radiology, lab, pharmacy

EHR Value Proposition

The value of electronic health records to providers has been evaluated in multiple care settings. The following information refers to the benefit of electronic health records, as well as to the advantages and disadvantages of implementing EHRs in varying care settings:

Benefits of E-Prescribing and Electronic Health Records[22]	
Both stand alone e-prescribing systems and EHRs	• Increased practice efficiency handling med renewal requests • Increased prescriber accuracy resulting in fewer call-backs from pharmacies for legibility issues, drug incompatibility or ineligibility
Electronic health records	• Decreased chart pulls resulting in less staff time • Decreased transcription costs

Large Urban Practice Setting Advantages and Disadvantages to EHRs[23]	
Advantages	• Financial investment capability • Dedicated staff opportunity • Leverage with health plans and pharmacies, etc for connectivity • Often can leverage other incentive opportunities with health plans, P4P, PQRI etc
Disadvantages	• Organizational "buy in" with large potentially diverse physician staff often resulting in "hold outs" and partial

[22] Hale, Patricia L., MD, PhD, FACP. E-Prescribing Overview: What Works; What Doesn't and How Do We Implement It? HIMSS 09 Physician HIT Symposium, April 2009.

[23] Ibid.

	implementations • Major changes in workflow can be disruptive decreasing productivity making clinician payment strategies etc in need of temporary modifications • Significant Initial cost
Small Rural Practice Setting Advantages and Disadvantages to EHRs	
Advantages	• Organizational "buy in" less of an issue • Less total initial investment
Disadvantages	• Difficult to absorb cost including system cost and decreased productivity • Can have connectivity issues and difficulty obtaining skilled IT support • No leverage with health plans or pharmacies resulting in decreased opportunity for optimum data flow • No opportunity for dedicated staff to maximize success or take advantage of other incentives like P4P and PQRI

Additionally, Dr. Hale has evaluated the monetary ROI to practices of various sizes and types:

EHR and E-Prescribing "Bottom Line"[24]				
Practice Setting	Practice type	Prescriptions and Refills/day/ prescriber	Stand Alone e-Prescribing* length of time to achieve +ROI***	EMR** approximate length of time to achieve +ROI****
Rural Small 1-5 Docs	Primary Care	40/60	3-5+years	3-5+years
Rural Small 1-5 Docs	Specialty	20/40	2-5+ years	2-5+ years
Rural Large 10+	Primary Care	40/60	2-3+ years	2-4+ years
Rural Large 10+	Specialty	20/40	1-3+ years	2-4+ years
Urban Small 1-5	Primary care	40/60	2-3+ years	2-4+ years
Urban Small 1-5	Specialty	20/40	1-3+ years	2-4+ years

[24] Ibid.

Urban Large 10+	Primary Care	40/60	1-2+ years	2-3+ years
Urban Large 10+	Multispecialty	20/40	0.5-2+ years	1-3+ years

Competitors, Collaborators, Complementors

As has been stated earlier, it is Arizona Health-e Connection's objective to be as collaborative as possible, while staying in alignment with the goals of each strategic objective. With that in mind, the following organizations are viewed as collaborators, complementors and competitors in the electronic health record landscape:

AHCCCS

While a general description of AHCCCS' involvement in HIT and HIE is reviewed in Chapter 3, it is important to note their involvement in the electronic health record area specifically. As a portion of the HIeHR program, an EHR purchasing collaborative, PACeHR, was created as part of an overall electronic health record initiative.

- Classification: Collaborator, Complementor. It is the hope of AzHeC and AHCCCS (through discussions with PACeHR staff) that the relationship between PACeHR and any initiative that AzHeC adopts be a collaborative one. To ensure consistency and continuity of messaging, having AHCCCS as a collaborator and complementor is key to the success of overall EHR adoption in Arizona. However, if AzHeC and AHCCCS are unable to agree upon the direction and integration of a proposed EHR initiative, therein lies the potential for AHCCCS to be a competitor to AzHeC.

Medicaid/Medicare

Since the Center for Medicaid and Medicare Services (CMS) will ultimately be responsible for the EHR incentive payments that are distributed to providers, CMS will serve as a key stakeholder in any approach that AzHeC undertakes.

- Classification: Collaborator. Complementor.

SAHIE

The Southern Arizona Health Information Exchange will offer as part of its health information exchange an EMR-lite to any provider who wants to take advantage of basic EMR capabilities for a low cost. SAHIE is working with their selected vendor, Wellogic, to ensure that the EHR capabilities built into the system will meet the federal standards for "meaningful use."

- Classification: Collaborator. Complementor.

Professional Provider Associations

Organizations such as the Arizona Medical Association, Arizona Hospital and Healthcare Association, Arizona Osteopathic Medical Association, Arizona Nurses Association, etc. will be key stakeholders with which to engage as any EHR initiative in Arizona moves forward.

- Classification: Collaborator, Complementor.

Arizona Health-e Connection believes that ensuring collaboration between all of the stakeholders involved in electronic health record adoption will be key to the success of any such imitative. Therefore, AzHeC seeks to build a collaborative and complementary relationship with all of the key stakeholders listed above, as well as any identified throughout the duration of the recommended initiative.

Recommendation

Due to the growing national and statewide recognition for stronger Electronic Health Record (EHR) adoption activity, and the opportunity to apply lessons learned from Health Information Exchange (HIE) activities both outside and inside Arizona, it is proposed that AzHeC establish a more specific, AzHeC-led initiative for EHR adoption. Several members of the AzHeC Board have expressed a strong interest for establishing such an initiative. Though most of the interest has been on the need to assist private physician offices, it would be most effective to create an initiative that addresses the need for all providers to have Electronic Health Records.

The mission of any EHR activity adopted by AzHeC is *to identify, create, or disseminate educational and financial programs and tools that facilitate successful implementation of electronic health records and electronic prescribing by all willing Arizona providers*.

Thus, the official recommendation to the Board of Directors, as noted in Chapter 2, is that:

> *Arizona Health-e Connection will launch a statewide EHR initiative, including a five year plan to facilitate an environment conducive to successful EHR adoption by all applicable providers in Arizona.*

The goals associated with the proposed recommendation are as follows:

Goal #1: To obtain physician/clinician (including dentists and nurses), hospital and CHC leadership feedback before setting any goal for EHR adoption via an EHR Initiative Steering Committee.

Goal #2: To select and disseminate an existing "toolkit" (e.g., HIMSS-developed or other such toolkit) for providers to adopt EHRs, by September 2009.

Justification for why Arizona Health-e Connection is best suited for this role includes that:

- Arizona Health-e Connection was developed for this purpose, and includes the necessary public and private stakeholders.
- AzHeC is an independent non-profit, and thus can educate and communicate providers and consumers from a perceived neutral viewpoint.
- AzHeC has continues to gain increasing trust of provider

Relationship between existing initiatives
Consideration of how this recommendation will integrate with the PACeHR program and any other similar initiatives will be a key to success, to ensure that unnecessary duplication of activities does not occur. Alternatives for such integration and collaboration will be addressed in the following section.

Accomplishing the Recommendation

The key features and critical success factors identified for the EHR recommendation include the following:

- Implement HIT Regional Extension Center (with target market greater than federal requirements)
- Develop guidance for providers outlining minimum requirements for EHRs to connect to Arizona's HII and qualify for "meaningful use." Assist efforts for successful adoption of EHRs that meet this criteria through HIT Regional Extension Center, including collaboration with ASU's Biomedical Informatics Department
- Adopt PACeHR workgroups, products and services, as appropriate to provide enhanced provider buy-in.
- Coordinate EHR funding mechanisms, including use of federal EHR grant-to-loan program
- Integrate with EAzRx, AzHeC's eRx initiative
- Coordinate sponsorship of licensing surveys of physicians, implemented by ASU, and surveys of other providers (e.g, hospitals, community health centers, nurse practitioners) to ensure initiatives align with provider needs.
- Utilize clinician "champions" to promote EHR adoption.

To most effectively create an initiative that addresses the need for all providers to have electronic health records, it is recommended that the EHR initiative be designed by a Steering Committee that includes provider representatives and other stakeholder representatives that are identified as key collaborators in this area. This naturally will include a consideration of how an Arizona EHR initiative can be structured to effectively assist the providers in Arizona to adopt EHR, such that they are compliant with federal requirements for incentive payments, if a provider decides to take advantage of the incentives. It is imperative that a comprehensive approach be established, to enable the leveraging and most efficient and effective use of resources available.

It is proposed that a Steering Committee be established, co-chaired by a physician "champion" that has already adopted and successfully implemented an Electronic Health Record (in any setting) and an AzHeC Board member (or a designee from their organization) that is passionate about this program. It is anticipated there will be significant work for AzHeC staff on this initiative, including creating proposals to Federal agencies. This level of commitment will be details in the budget and resources section below.

The Steering Committee should be comprised of as many AzHeC Board members who are able to commit, clinicians from practices of various sizes, as well as additional representatives from health plans, hospitals, government agencies, laboratories, medical associations and societies (including nursing, behavioral health and long-term care), medical liability insurance companies, Arizona's Quality Improvement Organization (Health Services Advisory Group), higher education, and representatives of other non-profit organizations or associations that are aligned with this initiative (e.g., AMIA, HIMSS, AHITA, AHIMA, MGMA).

It is suggested that the Electronic Health Record Initiative should follow many of the same steps as the AzHeC E-Prescribing Initiative established in early 2008. These steps include the following:

- Review the methods and results of similar efforts in Arizona and elsewhere in the country, including:

    - Massachusetts eHealth Collaborative
    - Hawaii Medical Service Association (BCBS of Hawaii)
    - Discussions with CCHIT staff regarding the CCHIT Incentive Index, which details 90 different incentive programs totaling over $700 million. Incentives include funds for purchase of EHRs, incentives for use of EHRs, credits on medical liability insurance for clinicians that are both claims-free and adopt EHRs, establishment of shared EHRs, and more. AzHeC staff have already initiated discussions on this topic with CCHIT staff.
    - Experience of the Arizona Health Information Technology Accelerator (AHITA) in assisting Arizona clinicians with EMR/EHR selection and implementation.
    - Other projects as identified, and agreed upon.
- Establish a charter for the Committee
- Identify the baseline EHR adoption figures for Arizona; leveraging work done by AzHeC Board member Dr. Bill Johnson of ASU through the Arizona licensing boards' renewal application process. It is recommended that the EHR initiative also include continuation of the licensing board survey, to ensure consistent and accurate tracking of EHR adoption by Arizona clinicians.
- Agree on multi-year goals for adoption, considering the baseline (e.g., the EAzRx goals are to double e-prescribing adoption each year for the next five years). Establish plans, and identify necessary funding to continue monitoring adoption through future surveys via the medical licensing boards.
- Establish strategies for reaching the goals; examples of such strategies could include, but not limited to the following:
    - Education of clinicians (CME at conferences)
    - Use of EHR-using "champion" clinicians to advise peers
    - Work in tandem with eRx Utilization Team – the proposed hands-on troubleshooting team under AzHeC (possibly paid for by health plans) to increase e-prescribing utilization
    - Incentive program or EHR funding collaborative (taking into consideration federal stimulus opportunities in this area)
    - Possible use of shared regional or statewide web-based EHR (perhaps focus on primary care)
- Identify and solicit funding sources for administration of the program, Federal government and private, including any identified incentives

As noted previously, AHCCCS has already established a collaborative purchasing program for EHRs, called PACeHR, and has met several times with AzHeC staff to identify potential options for AzHeC's role in the PACeHR program moving forward. A wide spectrum of options have been explored, from Arizona Health-e Connection's participation on the PACeHR Leadership Council to AzHeC administration of certain workgroups identified within the PACeHR organization to complete administration of all PACeHR workgroups, products and services. As was mentioned earlier in the business plan, Arizona Health-e Connection suggests continued exploration of these options with AHCCCS, in an attempt to determine what structure makes the most sense from the standpoints of both AzHeC and AHCCCS. In the end, both organizations agree that any approach to increase EHR adoption must be coordinated and collaborative to ensure a consistent message to external audiences. If it is identified that AzHeC would undertake individual or all elements of the PACeHR program, its specific implementation should be reviewed by the EHR Steering Committee, and any consensus on recommendations for change in implementation strongly considered.

In order to proceed with this recommendation, the Board should decide the "type" of co-chairs they would prefer. Subsequently, AzHeC staff, along with the identified co-chairs, and in consultation with the Board chair, will decide the individual committee members.

Budget

The budget for the establishment of a statewide EHR Initiative is as follows, based on the first year of implementation:

Service/Product	Quantity	Price	Total
AzHeC AD Time (not loaded)	40 hours 1st month, 10% time thereafter	$49.00	$ 11,960.00
EHR Initiative Manager	1 FTE	---	$70,000.00
Annual Provider Survey (over 31 month period)*	1	---	$245,400.00
PACeHR Program Administration	??	??	??
		Year 1 Expenses	$327,360+

* This expense is based on an estimate from Dr. Bill Johnson. This expense is for 31 months of activity, and therefore could likely be spread across several years.

Funding

For the budget line items described above, several potential funding opportunities exist:

- Federal Stimulus. For the HIT Regional Extension Center that would accomplish some of the strategies likely to be adopted by the EHR Steering Committee, AzHeC has developed a recommendation regarding how to fund and implement a statewide Regional Extension Center as part of AzHeC's offerings. Please refer to Chapter 7 for further details on this proposal.

- PACeHR Administration. Depending on the level of administration for PACeHR which is agreed upon by AzHeC and AHCCCS, there is the potential that AzHeC could contract with AHCCCS to provide some of the necessary administration for the certain period of time. The details of such a contractual relationship has not yet been discussed.

Funding opportunities beyond the ones listed above need to be researched and explored further by AzHeC Staff, with the feedback and expertise of the EHR Steering Committee.

HOLDING PAGE FOR Addendum!

Risks

ROI

Chapter 6: E-Prescribing Initiative

Background

A key strategy of Arizona Health-e Connection, as it relates to the promotion of health information technology adoption across that state, is to promote specifically the adoption of electronic prescribing (e-prescribing, or eRx) by clinicians in Arizona. With the support of Governor Janet Napolitano, AzHeC initiated a five-year statewide e-prescribing initiative in May 2008, called EAzRx (pronounced "Easy Rx"), which has a goal to double the state's e-prescribing rate each year, to reach almost 100% in five years.

As approved by the EAzRx Steering Committee, electronic prescribing is defined as *the electronic generation of a legal prescription via a certified software solution, transmitted in a secure, standards-based format by and between the computers at the clinician practice and the pharmacy*.

EAzRx is the statewide e-prescribing initiative developed and overseen by the Arizona Health-e Connection E-Prescribing Steering Committee (now the EAzRx Steering Committee) to accomplish the following mission:

> *Arizona Health-e Connection and its EAzRx Steering Committee are committed to enhancing patient safety through increased e-prescribing adoption by clinicians in Arizona. We will use the combined expertise of the EAzRx Steering Committee, Arizona Partnership for Implementing Patient Safety, providers, pharmacists, and other stakeholders to further the initiative.*

The EAzRx Steering Committee is chaired by Dr. Brad Croft and Mindy Rasmussen, R.Ph., and includes representatives from the following organizations or categories: AHCCCS, ADHS, Americhoice/APIPA, Arizona Council of Human Service Providers, Arizona Government Information Technology Agency (GITA), Arizona Pharmacy Alliance, Arizona State University College of Nursing and Healthcare Innovation, Governor's Office, BlueCross BlueShield of Arizona, Community Physicians and Pharmacists, Dentists, Grand Canyon University College of Nursing & Health Sciences, Health Services Advisory Group, Managed Care Pharmacy Consultants, Midwestern University, National Council for Prescription Drug Programs (NCPDP), Pharmacist Attorneys, Sonora Quest, United Healthcare, University of Arizona College of Pharmacy, and the U.S. Department of Veterans Affairs.

Projections for next 3-5 years

Currently, fewer than 15% of prescribers use e-prescribing, according to a study commissioned by the Pharmaceutical Care Management Association and authored by the consulting firm Visante. The study predicts that 75% of prescribers will utilize e-prescribing by 2014. That predicted figure has increased dramatically since the passage of ARRA, due to the associated increase in e-prescribing that is expected to result from the available federal incentives. The impact on cost savings is predicted to more than cover the $19 in net federal stimulus investments, and is also expected to result in the prevention of 3.5 million adverse drug reactions and 585,000 hospitalizations stemming from those reactions.[25]

The report said e-prescribing saves money by:

[25] Ferris, Nancy. E-Prescribing savings will offset the $19B feds will spend for health IT, Government Health IT. http://www.govhealthit.com/Articles/2009/03/16/Eprescribing-saving.aspx

- "Informing doctors at the point of prescribing about the cost and clinical characteristics of medication options and letting doctors choose the best and most affordable drugs, including more generic drugs.
- Giving doctors the patient's medication history so that harmful drug interactions and duplicate prescriptions can be avoided.
- Notifying doctors of pharmacy options, including mail-order and retail drug stores, to help them hold down patients' out-of-pocket costs.
- Transmitting the prescription to the pharmacy electronically, thereby reducing waiting times and errors associated with illegible handwriting."[26]

Demographics & Market Composition

The demographics for e-prescribing closely mirror the demographics for electronic health records (see Chapter 5 for more information). Currently, demographics and market composition statistics are being tracked through the EAzRx initiative, in conjunction with Surescripts and Dr. Terri Warholak from the University of Arizona College of Pharmacy.

Value Proposition

E-prescribing has been demonstrated to eliminate interpretation errors caused by poor handwriting, improve provider efficiency, reduce pharmacist inquiries for clarification and lead to an overall improvement in patient safety and health outcomes. Yet, despite the availability of free and low cost e-prescribing software applications, the adoption of this emerging technology by healthcare providers has been relatively slow.

Regarding the value of e-prescribing to consumers, the following benefits are realized:

- E-prescribing can lead to a reduction in medication errors and injuries, greater convenience for patients, a more streamlined refill process, better management of medication costs, and healthier patients by helping people remember to take their medications properly.

- E-prescribing also makes it easier for your physician or nurse to access a list of your medications, and the technology can alert them to potential problems such as a drug allergy.

- There are no fees to the patient for e-prescriptions. With e-prescribing, however, a physician may have information at the time of prescribing that enables him or her to select a lower-cost medication that is equally effective so that the patient may have a lower out-of-pocket cost.[27]

Collaborators, Complementors and Competitors

The following collaborators and complementors have been identified with respect to e-prescribing. At this time, it is not viewed that there exist any competitors in this landscape:

AHCCCS

- Classification: Collaborator, Complementor.

[26] Ibid.
[27] Surescripts.

Medicaid/Medicare
Through the distribution of federal stimulus funds, CMS acts as a collaborator and complementor to any e-prescribing activities undertaken at the state level.

- Classification: Collaborator, Complementor.

Surescripts

- Classification: Collaborator

Academic Institutions
Universities with which the EAzRx initiative currently collaborates includes the University of Arizona College of Pharmacy and Midwestern University.

- Classification: Collaborator, Complementor.

SAHIE

- Classification: Collaborator, Complementor.

Recommendation

The overall mission with respect to EHR and E-Prescribing (as referenced in Chapter 2) is *to identify, create, or disseminate educational and financial programs and tools that facilitate successful implementation of electronic health records and electronic prescribing by all willing Arizona providers*.

Since Arizona Health-e Connection is already in Year 2 of the five-year statewide EAzRx initiative, the official recommendation to the AzHeC Board, is that:

> *Arizona Health-e Connection will continue its five year EAzRx initiative, including integration with the EHR initiative proposed.*

The following mission, goal and strategies were reviewed and adopted by the EAzRx Steering Committee at the beginning of the EAzRx initiative in May 2008, and remain the goals of the recommendation above:

Goal #1: To reach the following levels of e-prescribing adoption by the end of 2012 (this may be adjusted, based on EHR initiative):

2008: 6% prescriptions e-prescribed
2009: 12% prescriptions e-prescribed
2010: 24% prescriptions e-prescribed
2011: 48% prescriptions e-prescribed
2012: 96% prescriptions e-prescribed*

* These percentages are based on the total number of e-prescriptions, as a proportion of the total number of possible e-prescriptions.

As of the end of 2007, Arizona providers e-prescribed 3% of all possible e-prescriptions. This percentage increased to 5.8% in November 2008, and Surescripts will likely reveal the 2009 SafeRx Awards in the next 30-60 days, including the final percentages for each state in 2008. Given the rate of increase in e-

prescribing throughout 2008, it is likely that EAzRx will meet its 2008 goal of providers in Arizona electronically prescribing 6% of all possible e-prescriptions.

Accomplishing the Recommendation

To accomplish the recommendation, the following six strategies were adopted by the EAzRx Steering Committee in the spring of 2008, and still apply today. These same strategies are the proposed key features and critical success factors as it relates to the official Board recommendation of continuing with the current EAzRx Initiative:

EAzRx Strategies & Key Features	
Strategy	**Key Features**
Provide umbrella coordination organization (EAzRx Steering Committee)	• EAzRx e-Prescribing Steering Committee • Physician / Pharmacy Co-Chairs • Pulls together major stakeholder/constituency representatives • Coordinates with other organizations with an e-Rx initiative (e.g., payers) • Government organizations involved • Coordinates with APIPS eRx Committee • Consider potential legislative changes
Provide information and statistics in easy-to-access format (time saving for providers)	• Publish statistics (for eRx and EMR products), as well as related metrics • Troubleshooting for eRx and EMR • ROI for e-Prescribing (and EMRs) • What are the Feds doing/requiring • What are BCBS, UHC, and Cigna doing? • Consumer Reports-type document or instead point to existing information
Recognize top e-prescribers in Arizona	• Recognize AZ e-Prescribers at May Summit • Post top (or all) AZ e-Prescribers on AzHeC/EAzRx website • Create peer-to-peer interaction (funded via a grant?)
Coordinate and publish Arizona case studies to educate the provider community	• Use top e-Prescribers as champions and subjects of case studies • Panel of physicians using eRx and EMR at May Summit • Quarterly ongoing educational credits for providers and pharmacists • Post case studies online
Work to identify real incentives and apply for grants to provide "flow-through" funding	• Potential incentives (commercial payers, Feds, AHCCCS) • Free (NEPSI) and discounted product use • Identify and apply for grants that may be used as

	"pass through" funding for physicians and possibly independent pharmacies • Investigate possibilities of malpractice insurance premium credits for providers who e-prescribe
Improve patient safety and encourage patient involvement in the e-prescribing process	• Encourage patient involvement in recording an accurate medication history • Track patient safety indicators within e-prescribing • Publish results to confirm benefits of e-prescribing

Additional features that must be considered and addressed as appropriate, given the recent change in the health information technology landscape, include:

- E-Prescribing is a required component of "Meaningful Use" as defined in the ARRA. As such, the EAzRx Steering Committee should consider whether any strategies listed above should take on a higher priority to address the increased importance of e-prescribing, or whether additional strategies or tactics should be adopted. Additionally, within the definition of "meaningful use", it is uncertain whether the rules and regulations will allow for a patchwork approach of standalone e-prescribing with a separate EHR, or whether a fully integrated EHR with e-prescribing capability will be required. This needs to be monitored by the Steering Committee and AzHeC staff closely so that appropriate communications to the provider community can be developed and disseminated.

- Monitoring of e-prescribing certification processes
  Since the fate of the EHR certification process is unknown at this time, AzHeC staff and the EAzRx Steering Committee need to monitor the decisions of the federal government in this area very closely and subsequently communicate any changes in structure to the healthcare community and key stakeholders.

E-Prescribing Tactics

The following tactics were derived from the strategies listed above, and from subject matter experts in e-prescribing who have worked with e-prescribing initiatives around the country. EAzRx is attempting to prioritize these tactics, and assign them to a category for completion (ie, AzHeC staff, eRx Consultants, Project Assistant, etc.). Once the tasks are prioritized and assigned, AzHeC staff will determine funding needs, and as feasible, move forward with securing eRx consultants and a project assistant to begin work in these areas.

KEY	
I = Internal Staff C = Consultant PA = Project Assistant SR = Surescripts CM = Committee T = Terri Warholak (on contract)	High = 1-6 months Medium = 6-12 months Low = 12+ months

* Please note that this table was created in 2008, and therefore some tactics may no longer be relevant, or may have already been completed. However, the information contained within still provides a good overview of the amount of work that is needed to successfully accomplish the eRx goals set by the EAzRx Steering Committee.

PROVIDER-CENTRIC TACTICS		
Priority	**Assigned To**	**Task**
High	I, C	Support (Technology, Implementation and Change Management)
High	I	Peer to peer support from e-prescribing providers, initially via AzHeC blog on website
High	C	Discounts on consultants to assist with eRx or EMR implementation
High	I, PA, SR	eRx Troubleshooting
High	PA	Dedicated email account for troubleshooting
High	I, PA, SR	Work with Surescripts to provide expertise on addressing common troubleshooting issues
?? (Med?)	SR, PA	Address eRxers with faxed refill requests
High	SR	Find out which providers are receiving faxed refill requests from Surescripts.
High	PA	Call all providers on list to see if they are receiving faxed refill requests
High	PA(?)	For all providers receiving faxed refill requests, log a ticket with Surescripts or through vendor.
?? (Low?)	C, PA (Vendors?)	Work to convert EMR only docs to EMR/eRx docs
High	C	Contact EMR vendors with large market share in AZ to find docs who have EMR but not eRx
High	C	Obtain prescriber training and support commitment (and possibly incentives) from each vendor
High	PA	Call providers to encourage them to turn on eRx functionality
High	I, PA, CM(?)	Education
High	I	Speaking opportunities at currently scheduled meetings
High	I, PA	Breakfast or lunch meetings with provider groups/offices
High	I, PA	Continuing education session for providers in conjunction with professional associations (ArMA, AOMA, AzNA, ASAPA, etc.)
High	I, PA	Train on new Medicare eRx incentive payments
Med/High	I, PA, C	Communications (to promote adoption)
High	I, PA	Distribute information to providers on new Medicare eRx incentive payments
Medium	C	Use top e-prescribers as champions
Medium	C	Use top e-prescribers as subjects of AZ case studies; post case studies online
High	I, PA	Recruit top e-prescribers to be on AzHeC Speakers Bureau and identify 1-3 top prescribers to blog on AzHeC website
?? (Low?)	I, PA, C, CM	Incentives
High	CM	Research possible incentives, both monetary and non-monetary

Medium	CM, C, I, PA		Logo for providers to post in their office, along with public campaign to inform consumers
Medium	C		Potential monetary incentives via AHCCCS, health plans or EMR funding consortium
Medium	CM		Research potential vendor discounts for Az providers (Clinical/Technical Committee)
Med/High	I, PA, T		Potential grants to be used as "pass through" funding for providers
High	I		Investigate possibilities of malpractice insurance premium credits for providers who e-prescribe
High	SR, I, PA	Implement Surescripts pilot Improvement Program	
High	SR, I, PA		Intervention # 1 - Ensure all practice prescribers are accurately registered and enabled by your vendor for both electronic new prescriptions and electronic refill requests
High	SR, I, PA		Intervention # 2 - Ensure practice regularly has access to up-to-date pharmacy information so that all electronically enabled pharmacies are accessible for true electronic transmission
High	SR, I, PA		Intervention # 3 - Review medication management workflows with prescribers and practice staff
High	SR, I, PA		Intervention # 4 - Assign dedicated practice staff to monitor prescription logs and create "Super Users". Log cases with vendor regarding all prescription related issues. Communicate issues to Surescripts team members and pharmacy staff.
High	SR, I, PA		Intervention # 5 - Educate patients on e-prescribing practice and pharmacy workflows and e-prescriptions
High	SR, I, PA		Intervention # 6 – Share and review practice prescription utilization data among practice prescribers and encourage them to send all their prescriptions electronically.
High	SR, I, PA		Intervention # 7 – Participate in community e-prescribing workshops and online discussion forums to share best practices among area practices and pharmacies.
High	I, SR	Implement dedicated AzHeC "Get Connected" website (through Surescripts)	
PHARMACY-CENTRIC TACTICS			
Priority	**Assigned To**	**Task**	
High	SR, I, (Pharmacies ?)	Create a network of pharmacy IT staff and decision makers.	
High	SR, I		Identify market share of pharmacies in AZ and levels of connectedness of all AZ pharmacies

High	SR, I		Forge relationships with key pharmacies and involve them in the initiative, troubleshooting, etc. (Surescripts may be able to help) (Involve Steve Barry from CVS, he is an eRx advocate)
High	SR, PA	eRx Troubleshooting	
High	PA		Dedicated email account for troubleshooting
High	SR, PA		Work with Surescripts to provide expertise on addressing common troubleshooting issues
?? (Med?)	I, PA, CM(?)	Education	
High	I		Speaking opportunities at currently scheduled meetings
High	I, PA		Continuing education session for pharmacists in conjunction with professional associations and universities (AzPA, UofA, Midwestern University, etc.)
?? (Med?)	I, PA, T, CM	Incentives	
High	I, PA, T		Potential grants to be used as "pass through" funding for independent pharmacies
High	CM		Research other incentives for independent pharmacies to participate in e-prescribing
?? (Low?)	C, I, PA	Communications	
Medium	C		Use top pharmacists as champions
Medium	C		Use top pharmacists as subjects of AZ case studies; post case studies online
High	I, PA		Recruit top e-prescribers to be on AzHeC Speakers Bureau and identify 1-3 top prescribers to blog on AzHeC website
VENDOR-CENTRIC TACTICS			
Priority	**Assigned To**	**Task**	
?? (Med?)	C, SR(?)	Coordination with top AZ e-prescribing vendors	
High	C		Pressure vendors to have a dedicated AZ support person
High	C	Coordination with AZ pharmacy system vendors regarding troubleshooting for pharmacies	
STRATEGY AND PLANNING			
Priority	**Assigned To**	**Task**	
High	I, C, T	Coordination between eRx initiatives	
High	I		Coordinate other Az eRx initiatives- AHCCCS, SAHIE, etc.
High	C		Will Az payors be rolling out separate eRx programs? If so, what is strategy and how can we integrate with EAzRx?
High	I		Schedule and coordinate meetings with state department heads indicated in the eRx executive order
High	I, T, C	Research further funding options for eRx program	
High	I	Form incentive workgroup to discuss incentive options and strategies (Ken Baker to lead workgroup)	

?? (Low?)	PA, T, SR, C, I	Publish statistics on eRx and EMR adoption
High	PA, SR	Top 25 eRx prescribers posted quarterly on AzHeC website
High	PA, SR	Top 25 e-prescribers for the year announced and recognized at AzHeC annual Summit
High	T	Investigate other metrics to publish
Ongoing	C	Update resources on AzHeC website regarding eRx
Ongoing	I, PA	Coordinate committees, work groups and consultants
High	I, C, PA, CM	Policy work
High	CM	Identify any state or federal policies which may impede e-prescribing. Make adjustments as needed. (Legal Committee)
Ongoing	I	DEA Proposed Rule (track and communicate)
High	C, PA	Communicate policies, laws and regulations to providers and pharmacists.

RESEARCH AND OUTCOME MEASUREMENT

Priority	Assigned To	Task
Med/High	T	Track patient safety indicators within e-prescribing
Med/High	T	Lead the EAzRx Standards, Measures, and Outcomes work group
Med/High	T	Coordinate receipt and appropriate distribution of data from Surescripts
Med/High	T	Establish measures of success
Med/High	T	Design evaluations to assess progress
Med/High	T	Gather and share metrics (for eRx and EMR products)
Med/High	T	Develop methods to measure ROI for e-Prescribing (and EMRs)
Med/High	T	Track patient safety indicators within e-prescribing
Med/High	T	Identify demographics and characteristics of those using HIT
Med/High	T	Develop case studies for distribution

CONSUMER OUTREACH

Priority	Assigned To	Task
Medium (Low?)	C	Public outreach campaign to inform consumers about e-prescribing
Medium (High?)	C	Develop strategy to encourage patients to record accurate medication histories, preferably electronically.
Medium (Low?)	PA	Publish patient safety indicators

In consideration of the above tactics, and as AzHeC staff has explored various projects that will assist in the accomplishment of the intiative's goals, several proposals have been developed and submitted over the past six months (one proposal that will be submitted in the next two weeks). The following section describes the proposed projects, as it is the belief of AzHeC Staff and the EAzRx Steering Committee that these approaches would significantly increase the adoption of e-prescribing in Arizona.

eRx Utilization Improvement Program

As part of the EAzRx initiative, Arizona Health-e Connection has worked with top national experts to discuss strategies for increasing e-prescribing adoption and utilization. Surescripts in particular, has provided a wealth of expertise and advice to the EAzRx Initiative. Surescripts is the organization who manages the Pharmacy Health Information Exchange (which transmits electronic prescriptions from a clinician to a pharmacy) and the delivery of medication history, formularies and eligibility information from participating PBMs and health plans. Senior executives at Surescripts suggested that Arizona, through the EAzRx initiative, pursue a program that mirrors a pilot utilization program that they completed in the Washington, DC area. This e-prescribing utilization program is designed to target clinicians who are high prescribers and have already adopted e-prescribing technology, yet have very low utilization rates of e-prescribing. The goal of the program is to double or triple the volume of electronic prescriptions prescribed by these clinicians, and simultaneously address some of the common problems encountered when clinicians adopt e-prescribing technology.

Low utilization of e-prescribing applications results from several issues. Many times the clinician has an issue with the application they are using and business process re-design may be needed. In other cases the clinician's application has not been updated with accurate pharmacy information, resulting in electronic prescriptions that don't get transmitted correctly to the pharmacy. The full business plan for this proposal can be referenced in *Appendix D*.

United Healthcare E-Prescribing Proposal

The proposal to UnitedHealthcare primarily focused on implementing a unique consumer engagement strategy that was identified initially by Ken Baker, RPh, JD, a nationally recognized pharmacy consultant who chairs the EAzRx E-Prescribing Incentives Subcommittee. The idea was enthusiastically embraced by the EAzRx Steering Committee. To further validate the potential effectiveness of this concept, AzHeC staff has entered into discussion with Surescripts staff, and leaders in health information technology around the country. All are eager to see AzHeC implement this concept, as it could easily be expanded nationwide. A smaller amount of the proposal's request amount was to continue the use of the University of Arizona's College of Pharmacy e-prescribing expert Terri Warholak, PhD, to track and evaluate effective measurement of EAzRx's progress, and to engage a national e-prescribing consulting firm on a minimal retainer, to accomplish specific tactics deemed to require such expertise (primarily related to interaction with e-prescribing system vendors and pharmacy IT system vendors, and providing education on effectiveness of incentives tried elsewhere).

AHRQ E-Prescribing Demonstration Grant

Working with the University of Arizona College of Pharmacy and Midwestern University College of Pharmacy, AzHeC has developed a proposal to implement e-prescribing within community health centers throughout Arizona. The purpose of the project is to identify and remove barriers preventing the successful implementation of ambulatory-based e-prescribing in Community Health Center clinics (CHCs) in Arizona. This project is proposed to evaluate changes in quality, efficiency, and safety of e-prescribing within the context of these different clinic systems.

The grant would evaluate the structure and process characteristics of health care delivery within CHCs that lead to improvements in health outcomes. The overall project will last approximately three years and has four specific aims:

- Aim 1 is to assist at least three CHCs in the state of Arizona to *select and successfully implement an e-prescribing software application in their clinics*. The grant team will help CHCs identify barriers and provide solutions, including technical assistance. Arizona Health-e Connection will

serve as a resource to CHCs to successfully implement e-prescribing systems. Data provided by Surescripts, which operates the country's largest e-prescribing network, will allow us to accurately measure and monitor the e-prescriptions that are written by specific providers within each CHC clinic. The evaluation will examine perceptions of efficiency for refill requests and changes in provider attitudes toward e-prescribing over time.

- Aim 2 will focus on the *effect of e-prescribing on the quality of care within the CHCs*. Using trained observers in pharmacies located within clinics, we will evaluate the incidence and nature of prescriber-generated medication problems on e-prescription orders as compared to paper-based or verbal orders. Other medication quality metrics, such as reducing the incidence of duplicate therapy and increasing the rate of initial fills on essential medication therapy orders will also be evaluated.
- Aim 3 will consider the *effect of adding diagnostic information to e-prescribing orders that are reviewed and dispensed by CHC pharmacists*. Using pharmacy observers, the incidence of problematic prescription orders will be comparatively evaluated for e-prescription orders with and without corollary patient diagnosis information.
- Aim 4 is to *develop and disseminate e-prescribing best practices to other CHCs in the State of Arizona and nationally*. Information about the project and results from the evaluation will be placed on the Arizona Health-e Connection web portal and a series of educational outreach programs that include both live and enduring material will be produced.

The long-term goal of this project is to increase the rate of adoption of e-prescribing systems in a manner that improves prescribing quality, patient safety and healthcare outcomes for medically underserved populations in the state of Arizona. The overall budget for the proposed project will total $1.2 million over three years. If awarded, the following funds would be allocated to AzHeC to cover a percentage of currently incurred organizational costs. These costs will be calculated and included in the overall AzHeC budget, to be sent as an addendum to the business plan.

Budget

The following budget contains an estimate of the time required by AzHeC staff, including one new staff member in the first year of the initiative, to complete the necessary e-prescribing tactics mentioned above, in addition to any additional tactics identified by the Steering Committee.

Category	Hours	Rate (non-loaded)	Year 1 Totals
Associate Director	5% of time	$49.00	$5,000.00
eRx Manager	1 FTE	---	$70,000.00
Other Associated Costs	TBD	???	???
		Total	$75,000.00

* The costs associated with the project proposals listed above are not included here. The eRx Utilization Improvement program business proposal is located in Appendix D, and the other proposals can be made available to Board members upon request. The full costs for each program will be included in the overall organizational budget.

Funding

Most of the funding for the current programs mentioned above have been requested through grant proposals. However, the main outstanding expense not requested is the salary of an e-prescribing manager. AzHeC Staff will explore the possibility of including such a staff member in the eRx Utilization Improvement Program, which would likely be funded by health plans. Other funding opportunities will be explored, as necessary.

HOLDING PAGE FOR ADDENDUM!

Risks

ROI

Chapter 7: Federal Stimulus Opportunities

Executive Summary and Recommendations

The American Recovery and Reinvestment Act (ARRA) of 2009 contains a great emphasis on provision of monies and structure to facilitate the adoption of electronic health records, and to establish a National Health Information Infrastructure for the United States. Most of such ARRA funding is contained in a specific section of ARRA known as the Health Information Technology for Economic and Clinical Health (HITECH) Act.

Many of the HITECH Act funds available are to flow from the Federal government ultimately to health care providers, or to provide services or infrastructure for those health care providers. The caveat is that there are requirements for intermediaries at a state or other organizational level between the Federal government and the providers. These intermediaries will receive and distribute funding, and will provide such services as education and technical assistance, infrastructure development, or pass funds through to other entities (such as Health Information Organizations, HIOs) to build this infrastructure.

Arizona is ahead of other states in this regard: from August 2005 to December 2006, hundreds of Arizona health care stakeholders from diverse backgrounds and geographies met and discussed how the state should proceed with building this infrastructure. One of the primary outcomes: creation of Arizona Health-e Connection, a non-profit organization that brings the private and public sector together to ensure coordinated development of Arizona's Health Information Infrastructure. The following excerpt is from the original *Arizona Health-e Connection Roadmap:*

> The *Roadmap* recommends that a statewide nonprofit Health-e Connection corporation be created to provide leadership, negotiate standards, and encourage cooperation and collaboration. This organization would strategically collect and distribute funding, help align financial incentives, develop statewide technical infrastructure when needed, and advocate for needed policy change (*Roadmap;* pages 8 – 9).

Arizona Health-e Connection is a private organization: a tax exempt, not-for-profit that has both private sector and public sector leadership on its board of directors. This was a significant step that Arizona took, but one that follows Arizona's preference for private sector leadership when statewide programs are necessary. (An early example of that preference is the structure of Arizona's Medicaid Agency, AHCCCS, as a managed care program, where Medicaid recipients are provided with private sector health care coverage – paid for by the public sector.)

Innovation occurs in the private sector, where companies and products live, breathe, and die based on the concept of value. Valuable activities are supported and sustained, and those that are not valuable

fail, due to lack of interest and use or purchase. Placing Arizona Health-e Connection in the private sector ensures that the activities moving forward are reacting to real value and use in the marketplace, and are thus sustainable. To ensure value, the "customers" and supporters of the infrastructure, represented on the Arizona Health-e Connection Board of Directors, provide input and direction, bringing to bear their experience in the marketplace.

For the ARRA monies to be spent in the most valuable and efficient manner, we believe the design of the programs that are intended to support the physicians, nurses, hospitals, labs, pharmacists, community health centers, consumers and other stakeholders should be done by an organization that is also designed to reflect and react to their wants and needs – the "voice of the customer." Arizona Health-e Connection is that organization in Arizona.

In this paper, Arizona Health-e Connection makes specific recommendations regarding the pursuit of Federal funding by Arizona intermediaries, such as Arizona Health-e Connection, state agencies, and universities. Specifically, this paper outlines the analysis leading to the following recommendations:

1) Arizona Health-e Connection should be the state-designated entity (SDE) to apply for, receive and administer HIE planning and implementation grants from the Office of the National Coordinator (ONC).

2) Arizona Health-e Connection should pursue further review of options for the EHR Loan Program. If a new loan program is to exist, AzHeC recommends it be implemented using commercial lenders, to accommodate perceived wariness of government loans by private sector health care providers, with AzHeC administrating a guarantee of these loans using Federal funds. First, however, AzHeC staff wish to review an existing Small Loan Program administered by the Arizona Health Facilities Authority, to ascertain the value in the marketplace of such a loan program.

3) Arizona Health-e Connection should apply for the HIT Regional Extension Center program, in collaboration with the Arizona Telemedicine Program, and the Tri-University Collaborative (ASU, U of A, NAU). It is further recommended that leveraging of the existing Arizona Health Education Center (AHEC) program and the Agriculture Extension Service programs – both administered by the University of Arizona – be considered.

4) Arizona Health-e Connection should expand its educational programs for providers to include provision of instructions and tools that will enable compliance with Medicare and Medicaid Incentive programs for "meaningful use" of Electronic Health Records.

5) Arizona Health-e Connection should form, in conjunction with the Governor's Office, an ARRA HIT Committee of Federal and Arizona stakeholders directly affected by the HITECH Act and other ARRA Health Information Technology provisions to ensure coordinated implementation and communication of activities.

6) Arizona Health-e Connection should recommend that the State CIO's office, the Government Information Technology Agency (GITA), ensure State agency compliance and participation in statewide Health Information Infrastructure (its purview per statute), in coordination with AzHeC's direction, and that the State CIO/GITA Director play an active role on the AzHeC Board. The Director of GITA and State CIO, in accordance with the AzHeC bylaws, is a permanent member of the Board.

Background: ARRA HITECH Act, and the Need for Statewide Coordination

The American Recovery and Reinvestment Act (ARRA) of 2009 contains a great emphasis on provision of monies and structure to facilitate the adoption of electronic health records, and the establishment of a National Health Information Infrastructure for the United States. Most of such ARRA funding is contained in a specific section of ARRA known as the Health Information Technology for Economic and Clinical Health (HITECH) Act. Many of the HITECH Act funds available are to flow from the Federal government ultimately to health care providers, or to provide services or infrastructure for those health care providers. The caveat is that, with the exception of the Medicare and Medicaid incentives, there are requirements for intermediaries at a state or other organizational level between the Federal government and the providers. These intermediaries will receive and distribute funding, and/or will provide such services as education and technical assistance, infrastructure development, or pass funds through to other entities (such as Health Information Organizations, HIOs) to build this infrastructure. There are five major programs that we will detail here, plus a collection of additional Health Information Technology funding sources and programs for which we make recommendations.

Here are the major Health Information Technology programs with which we are most concerned, and their designated recipient categories:

HIE Planning and Implementation Grants. As part of the total $2 billion under administration by the Office of the National Coordinator (ONC), these are grants to state governments, or entities designated by a state to receive and administer such funds. Total amount available for distribution is $300 million. The program guidance and application process could be released in the summer of 2009, likely after a new HHS Secretary and National Coordinator for HIT are confirmed.

EHR Loan Programs. These are grants from the ONC to either state governments or tribal governments for distribution to health care providers either as loans, loan guarantees, or repayment to private entities for contribution to a Loan Fund. Health care providers utilizing these funds must report quality measures to the CMS Administrator. A $1 non-Federal match is required for each $5 of Federal funding. Total amount available is unknown, but the amount will be shared with other programs under the ONC $2 billion. The Secretary of HHS cannot make an award under this program prior to January 1, 2010.

HIT Regional Extension Centers. Financial support for up to four years will be provided by the Secretary of HHS to non-profit organizations for the purpose of creating and operating HIT Regional Extension Centers. These Regional Extension Centers (RECs) are intended to enhance and promote the adoption of HIT and participation in HIE through education and technical assistance. The Secretary may provide up to 50% of capital and operating costs, unless waived due to national economic conditions. It may be possible for other Federal funds to comprise the remainder of a REC's funding. Regional Extension Centers are encouraged when appropriate to use the capability and expertise of other Federal agencies. Total amount available is unknown, but the amount will be shared with other programs under the ONC $2 billion. A draft description of this program, possibly including the official funding announcement, will be published by May 18, 2009.

Medicare EHR Incentives*. Starting in Fiscal Year 2011, Medicare – via Medicare carriers - will be able to reimburse physicians and hospitals for "meaningful use" of Electronic Health Records (EHRs). Physicians may receive an amount up to $44,000 over five years, or $48,400 if in a health professional shortage area. Hospitals may receive a base amount of $2 million, plus an additional amount based on a formula utilizing Medicare and charity care shares of discharges.

Medicaid/AHCCCS EHR Incentives*. Starting in Fiscal Year 2011, State Medicaid Agencies will able to reimburse "eligible professionals"**(with 30% AHCCCS patient volume) a maximum of $65,000 over five years to cover costs of adopting, implementing or upgrading certified EHR technology in year one, and "meaningful use" of the EHR technology in subsequent years of payment. Children's hospitals, and the following entities also qualify for reimbursements if meeting qualified levels of AHCCCS beneficiaries: acute care hospitals (10%), non-hospital-based pediatricians (20%). Federally Qualified Health Centers must have 30% patient volume of "needy individuals"(includes AHCCCS, sliding scale and uncompensated care recipients). Third parties that sponsor and encourage EHR adoption (may include training on and operations of EHR; perhaps a purchasing collaborative), and are paid by eligible professionals voluntarily participating in such, may also qualify for receipt of funds (95% must be for EHR-related activities; 5% may be retained for overhead).

*Note. If a provider has few or no Medicare/Medicaid patients, they will not be eligible for incentive payments.

**Eligible professionals for Medicaid incentives include: physicians; dentists; certified nurse mid-wives; nurse practitioners; physician assistants leading the practice in a rural area or Federal Qualified Health Center

Other HIT Monies. There are additional programs for HIT-related activities, such as Workforce Training Grants by HHS and the National Science Foundation (NSF) to colleges and institutes of higher education for medical informatics programs, grants by the same to medical schools to integrate EHRs into the curricula, and National Institutes of Standards and Technology (NIST)/NSF grants for development of new technology by higher education institutions or Federal laboratories. There are additional monies outside of the HITECH Act – but still part of ARRA – for the Social Security Administration, Veterans Administration, and Indian Health Service for implementation of Health Information Technology. The National Institutes of Health (NIH), the Agency for Health Quality and Research (AHRQ), the Health

Resources and Services Administration (HRSA), and the Centers for Disease Control also have existing and new grant programs related to implementation or use of Health Information Technology, including data networks or Health Information Exchange.

The U.S. Department of Agriculture (USDA) Rural Utilities Service (RUS) will also have additional funds available for telemedicine, distance learning and broadband, and the U.S. Department of Commerce National Telecommunications and Information Administration (NTIA) will be administering the $4.7 billion Broadband Technologies Opportunities Program, which will contain competitive grants for expanding public computing centers ($200 million) and innovative programs to encourage adoption of broadband technologies ($250 million). NTIA may also transfer funds to the Federal Communications Commission (FCC) for broadband programs.

Need for Coordination at the State Level

To the greatest extent possible, Arizona Health-e Connection believes that the above funds should be channeled into coordinated programs or initiatives, and that communication occurs regarding the status of Arizona entity application for and receipt of funding. Specifically, due to the broad-based stakeholder input inherent in the Arizona Health-e Connection (AzHeC) Board and Membership, whenever possible and appropriate, AzHeC should pursue and administer or distribute such funding to achieve the greatest value for Arizona's citizens, health care providers, and institutions. The discussion around the need for such statewide coordination, and the recommendation of AzHeC to do so, was a product of the *Arizona Health-e Connection Roadmap* process, involving hundreds of Arizona stakeholders.

The following excerpt is from the original *Arizona Health-e Connection Roadmap:*

> The *Roadmap* recommends that a statewide nonprofit Health-e Connection corporation be created to provide leadership, negotiate standards, and encourage cooperation and collaboration. This organization would strategically collect and distribute funding, help align financial incentives, develop statewide technical infrastructure when needed, and advocate for needed policy change (*Roadmap;* pages 8 – 9).

State Designated Entity

For the purposes of pursuing, receiving and administering the HIE Planning and Implementation Grants, the HITECH Act states either a State government or qualified State-designated entity may do so. The following is taken directly from Section 3013 of the HITECH Act:

> (f) QUALIFIED STATE-DESIGNATED ENTITY. – For purposes of this section, to be a qualified State-designated entity, with respect to a State, an entity shall –
>
> 1) be designated by the State as eligible to receive awards under this section;
> 2) be a not-for-profit entity with broad stakeholder representation on its governing board;

3) demonstrate that one of its principal goals is to use information technology to improve health care quality and efficiency through the authorized and secure exchange and use of health information
4) adopt nondiscrimination and conflict of interest policies that demonstrate a commitment to open, fair, and nondiscriminatory participation by stakeholders; and
5) conform to such other requirements as the Secretary may establish.

Regardless of whether a State or a qualified State-designated entity seeks the HIE Planning Implementation, they must consult with a broad base of stakeholders (Section 3013, HITECH Act):

> (g) REQUIRED CONSULTATION. – In carrying out activities described in subsections (b) and (c), a State or qualified State-designated entity shall consult with and consider the recommendations of –
> 1) health care providers (including providers that provide services to low income and underserved populations);
> 2) health plans;
> 3) patient or consumer organizations that represent the population to be served;
> 4) health information technology vendors;
> 5) health care purchasers and employers;
> 6) public health agencies;
> 7) health professions schools, universities and colleges;
> 8) clinical researchers;
> 9) other users of health information technology such as the support and clerical staff of providers and others involved in the care and care coordination of patients; and
> 10) such other entities, as may be determined appropriate by the Secretary.

Currently, only one state to date – Colorado – has made a public announcement whether they will have a State agency facilitate this program, or select a State-designated entity. Other states may have already designated an agency or organization in statute, and thus not feel a need for further designation. Here are two examples of how states have decided to structure the coordination of health information technology programs and funds management:

> Colorado (example of State-designated entity selection). On Friday, April 3, Colorado Governor Ritter designated the Colorado Regional Health Information Organization (CORHIO), a statewide non-profit organization, to receive and administer all state-level Health Information Technology funding from ARRA. This includes the Medicaid incentives for EHRs, establishing a loan and grant program for providers, and other programs.
>
> Texas (example of state agency recommendaton). Though no decision has yet been made by the Governor, Health Information Exchanges in Texas, collectively known as the Texas HIE Coalition, are encouraging the State of Texas to pursue the funds and administer them potentially through the Texas Health Services Authority (THSA). THSA was designated already in

statute to promote, support and coordinate the electronic exchange of health information in Texas.

According to a staff member contracted for the State-Level HIE Forum (an ONC program), states that recommend a state agency lead their HIT and HIE efforts do so for three reasons:

1) No appropriate alternative entity (non-profit) exists
2) An existing entity lacks the capabilities to administer the funds
3) An existing entity lacks the purview to ensure state agencies will also participate and comply

AzHeC's recommendation for taking the lead role as a State-designated entity is further detailed under the Proposal for HIE Planning and Implementation Grants.

Federal Cost Principles and Administrative Requirements

For AzHeC to be the lead applicant for, and subsequent administrator of, Federal grants, AzHeC will need to ensure it is complying with the following Federal cost principles and administrative requirements:

1) OMB Circular A-122, Cost Principles for Non-Profit Organizations. AzHeC is currently seeking to comply with these principles in preparation for an AHRQ grant application due in May. These principles are not onerous, and AzHeC anticipates complying through transition to new accounting software and associated funding-by-program accounting practices.
2) OMB Circular A-110, Uniform Administrative Requirements for Grants and other Agreements with Institutions of Higher Education, Hospitals and Other Non-Profit Organizations. HHS' implementation of the OMB administrative grant guidance is contained in 45 CFR, Part 74. In order to ensure AzHeC compliance, and subsequent sub-award (e.g., SAHIE) compliance, AzHeC will need to hire or contract administrative staff familiar with these requirements.

Proposal for HIE Planning and Implementation Funds

Background

As stated in the American Recovery and Reinvestment Act, the Secretary may award grants to a State or State-designated entity:

> *To facilitate and expand the electronic movement and use of health information among organizations according to nationally recognized standards (Section 3013, HITECH Act)*

These grants may be awarded for the purpose of either:

1) Planning activities
2) Implementation activities

Implementation grants may be provided to implement a plan for health information exchange, regardless of whether the plan was originally funded under the HITECH Act. In either case, implementation plans must meet the following criteria:

1) Be pursued in the public interest
2) Be consistent with the ONC strategic plan
3) Include a description of how the activities will be implemented
4) Contain any other elements required by the Secretary

The funds may be used for the following activities:

1) Enhancing broad and varied participation in the authorized and secure nationwide electronic use and exchange of health information;
2) Identifying State or local resources available towards a nationwide effort to promote health information technology;
3) Complementing other Federal grants, programs, and efforts towards the promotion of health information technology;
4) Providing technical assistance for the development and dissemination of solutions to barriers to the exchange of electronic health information;
5) Promoting effective strategies to adopt and utilize health information technology in medically underserved communities;
6) Assisting patients with utilizing health information technology
7) Encouraging clinicians to work with Health Information Technology Regional Extension Centers as described in section 3012, to the extent they are available and valuable;
8) Supporting public health agencies' authorized use of and access to electronic health information;
9) Promoting the use of electronic health records for quality improvement including through quality measures reporting; and
10) Such other activities as the Secretary may specify

The total amount designated by the HITECH Act for these grants is $300 million. The program guidance and application process could be released in the summer of 2009, likely after a new HHS Secretary and National Coordinator for HIT are confirmed.

Collaborators, Complementors and Competitors

The American Recovery and Reinvestment Act (ARRA) of 2009 contains a great emphasis on provision of monies and structure to facilitate the adoption of electronic health records, and to establish a National Health Information Infrastructure for the United States. Most of such ARRA funding is contained in a specific section of ARRA known as the Health Information Technology for Economic and Clinical Health (HITECH) Act.

In addition to the monies that will be paid out by Medicare and Medicaid directly to health care providers for "meaningful use" of Electronic Health Records, there are additional HITECH Act Health IT programs and associated funding opportunities for which only specific categories of institutions may apply. We will list and discuss several Arizona entities, the roles that they qualify, or may qualify, to play, and ultimately their impact on Arizona Health-e Connection and its desired position.

AHCCCS

It is possible that additional CMS grant funds may be available to AHCCCS to extend or expand the operation of AMIE and PACeHR, while sustainable business models are developed. Under the Federal Stimulus, AHCCCS automatically will be the administrator of Medicaid EHR reimbursement funds in Arizona, and these funds could potentially aid in sustaining the PACeHR project. Additionally, AHCCCS may have the desire and potential to qualify for the following HITECH Act opportunities:

- *HIE Planning and Implementation Funds*. $300 million available from the DHHS Office of the National Coordinator of Health IT (ONC) to states or state-designated entities. Though a great amount of clarification of this program is forthcoming, it is anticipated that if the Governor's Office does not designate a specific entity, multiple state agencies may be able to apply directly to ONC. AHCCCS could also seek to be one of, or the only, state designated entity to access these funds within Arizona. Alternatively, if an entity other than AHCCCS is designated, AHCCCS may wish to partner or subcontract to such an entity.

- Classification: Collaborator, Complementor. AHCCCS is primarily a Collaborator and Complementor with AzHeC, but could be a Competitor with AzHeC for State designation under the HIE Planning and Implementation Grants if only one entity is allowed per State. If more than one entity is allowed per state, and both AHCCCS and AzHeC seek to be such, then complementary roles should be clearly established. Note: Implementation of a single-payer led/government-led HIE expanded statewide, could be perceived as competition to Regional Health Information Organizations (RHIOs), such as SAHIE, if AHCCCS through AMIE seeks to establish individual interfaces with providers within the existing RHIO's geographic territory. If the AMIE open source software is offered and utilized by such RHIOs, or AHCCCS establishes a single interface with the RHIO for the purpose of HIE between AHCCCS and the RHIO, AMIE could instead become a Collaborator or Complementor to such RHIOs.

ADHS

- Classification: Collaborator, Complementor. Not viewed as a Competitor for Stimulus Funds, as it is not anticipated that ADHS would seek to be a single State designated entity for HIE, though it may be one of several if multiple entities are allowed.

Arizona's Public Universities

The Arizona Health Sciences Center (AHSC) at the University of Arizona (Medicine, Nursing, Public Health, and Pharmacy Colleges), the Arizona State University Department of Biomedical Informatics (merging June 1 with another department), and the Northern Arizona University School of Nursing have recently begun discussions of establishing a collaborative primarily for the purpose of undertaking new opportunities available through the Federal Stimulus funding.

- Classification: Collaborator, Complementor for all activities, unless separately or together the universities seek to become the sole state designated entity for access to HIE Planning and Implementation funds.

SAHIE

- Classification: Collaborator and Complementor. SAHIE is very supportive of AzHeC, and of AzHeC being a State-designated entity for HIE planning and implementation grants.

AzHeC's Desired Position

Arizona Health-e Connection, by design, is a collection of various major healthcare stakeholders in Arizona. As such, most all of the organizations described as Collaborators, Complementors, and Competitors are represented on the AzHeC Board (with the exception of Northern Arizona University). AzHeC's strength is creating collaboration among the various stakeholders, in order to create consensus on statewide direction, policies, and standards. AzHeC desires to maintain and strengthen its leadership position through ongoing collaboration.

If only one State-designated entity is chosen for HIE planning and implementation, AzHeC desires to be that entity. If multiple organizations are chosen, AzHeC desires to firmly establish clear roles and responsibilities for each, and a special role for AzHeC that allows it to maintain its leadership role and the ability to "ensure interoperability and the coordination of HIE activities" throughout Arizona.

Proposal

As noted in the Executive Summary, Arizona Health-e Connection recommends that AzHeC be named as the State-designated entity for purposes of these grants funds. This would enable statewide coordinated development of the Health Information Infrastructure, including facilitating the statement of purpose adopted by the AzHeC Board on March 13, 2009:

> *To ensure statewide interoperability and coordination of Health Information Exchange activities.*

At the March 13 Board Retreat, the Board directed the Staff to develop a multi-year business plan. This Business Plan also contains a strategic plan component, which upon development will feature specific funding requirements and requests (under this Section 3013 of the HITECH Act) regarding the development of Arizona's Health Information Infrastructure. It is essential to establish strong coordination and collaboration with current health information exchange efforts to ensure the success of any proposed direction under this section.

AzHeC proposes leveraging our current work with the key stakeholders on our Board to create a comprehensive plan that will ensure a financially sustainable Health Information Infrastructure that serves the original vision for a National Health Information Infrastructure:

1) Health Care Delivery
2) Personal Health
3) Public Health

AzHeC Staff are already working closely with Clinical Technical Committee Co-Chairs Bob Dowd (Sonora Quest) and Craig Parker (ASU), and Board Member Celeste Null (Intel) to create the outline of this comprehensive business and strategic plans. Weekly coordination meetings with AHCCCS, GITA and AzHeC Staff have now been expanded to include SAHIE, Maricopa Integrated Health System, and Arizona

Department of Health Services. These coordination meetings will be used by AzHeC to seek additional input for the Business Plan, especially as it related to Health Information Infrastructure development.

The Business Plan will contain implementation recommendations, staffing requirements, and funding requirements, to further solidify the details for the proposed HIE Implementation and Planning grant program, and will align with the ONC National Strategic Plan for Health Information Technology. Prior to submission, the AzHeC Board will be consulted, and opportunities for further stakeholder input facilitated.

Key Features

No other entity in Arizona is as well positioned to pursue this role and associated grant funding. The following table illustrates how the HITECH requirements are perfectly in line with Arizona Health-e Connection's governance structure and why Arizona Health-e Connection is uniquely positioned to serve as the State-designated entity and coordinator of statewide HIE Planning and Implementation grant monies.

HITECH Act State Grant Requirement	AzHeC Board
Health Care Providers	Arizona Medical Association Arizona Osteopathic Medical Association Arizona Hospital and Healthcare Association Banner Health Systems Northern Arizona Healthcare Dr. Bruce Bethancourt CIGNA Medical Group
Health Plans	Blue Cross Blue Shield of Arizona CIGNA Medical Group Humana Schaller Anderson UnitedHealthcare
Patient or Consumer Organizations	Health Guide America
Health Information Technology Vendors	Intel Corporation Others as members
Healthcare Purchasers or Employers	Arizona Chamber of Commerce & Industry Intel Corporation
Public Health Agencies	Arizona Department of Health Services
Health Professions Schools, Universities and Colleges	Arizona State University University of Arizona
Clinical Researchers	University of Arizona
Other users of health information technology	Arizona Pharmacy Alliance Sonora Quest Laboratories
Note: AzHeC Board contains additional stakeholders not required by the HITECH Act	

Additionally, following are advantages identified by members of the State Level HIE Forum (both state agency and statewide non-profit members from across the country) for State-designated entities being utilized:

1. Staffing and Expertise. Most state governments face hiring freezes or mandatory reductions in staffing. Accordingly, they lack the ability to bring in the specialized skill sets to manage the complexity or range of anticipated HIT and HIE projects.

2. Procurement Process Efficiency. In some states, independent entities have more flexible and efficient procurement processes than State government.

3. Competing Financial Interests. Many states currently face dramatic budget shortfalls and a broad range of programs in need of financial support; these dire fiscal circumstances and competing financial interests may negatively impact the amount of funds available to directly support HIE activities. One respondent explained it by saying, "Times are so tough right now that we fear it might be really tempting for the State to siphon some of that money towards other things that are less directly tied to HIE or toward overhead costs/cost of administration, and this could make a difference for the funds that are available for state coordination and HIE activities."

4. Stakeholder Value and Input to Ensure Sustainability. A State-designated entity, that must have broad-based stakeholder membership, will ensure that the programs supported by ONC funding within the state will bring real value to the end-users: providers and consumers. Programs and technologies that are deemed of great value will have high utilization by the end users, which will lead to sustainability in the market. Programs and technologies that are designed "top down," with no "voice of the customer" input, as is typical of government programs by design, may provide described functionality, but due to lack of real value will not be sustainable without ongoing government funding.

5. Political changes. Some states have already encountered the changes in e-health programs that may occur due to a change in state administration, such as a change in governor. In this budget climate, budget priorities for new administrations (referenced above under "Competing Financial Interests") may override the perceived need for new or expanded e-health programs. A State-designated entity is not subject to changes in State government, and will ensure that programs will be ongoing.

6. Sources of matching funds. State-designated entities will be able to access funds from a variety of sources – private and public – to meet matching funds requirements of ONC programs. State governments may be prohibited by their constitutions or laws from accepting private sector contributions towards matching funds.

Resource Needs (HITECH Requirement)

In order to receive a grant, a State must make available matching, non-Federal funds or in-kind contributions starting in fiscal year 2011 at $1 per $10 of Federal funds, fiscal year 2012 at $1 per $7 of

Federal funds, and in fiscal year 2013 and subsequent years $1 per $3 in Federal funds. Prior to fiscal year 2011, the Secretary may determine to what extent a non-Federal contribution is required.

Budget

A high-level budget for Implementation will be included with the full AzHeC Business Plan. To complete the grant proposal as required by HHS, AzHeC Staff anticipates contracting with an experienced grant consulting and writing firm. AzHeC is currently contracted with Semilla Business Solutions, a grant writing and consultation firm, at the rate of $75/hour in pursuit of an AHRQ grant. AzHeC anticipates leveraging the knowledge gained by Semilla Business Solutions, including the knowledge of the AzHeC organization and activities and experience with Federal grants, in pursuit of this opportunity. AzHeC has also identified a specific accounting software that will be necessary to purchase for ongoing management by grant fund. Following is a breakdown of the costs associated with applying for the grant and preparing to administer multiple grant funds:

Service/Product	Quantity	Price	Total
AzHeC ED Time (loaded)	160 hours	$75.12	$12,019.20
AzHeC AD Time (loaded)	160 hours	$49.00	$ 7,840.00
Grant Writing Services	160 hours	$75.00	$12,000.00
Accounting Software	1	$749.95	$ 749.95
Accounting Services	15 hours	$60.00	$ 900.00
Legal Services	10 hours	$300.00	$ 3,000.00
Additional Insurance – Errors and Omissions	Sufficient to cover staff, plus 36 consultants	??	??
		Grant Application Total	$36,509.15
Associate Director of Finance and Administration (new hire)	1 (benefits loaded)	$100,000.00/year	$100,000.00/year
		Year 1 Grant Application and Administration Total	$136,509.15

Funding

AzHeC will need to identify a source of funds for the above budget. Existing funds can be utilized, but it is recommended a grant be sought from entities within Arizona for approximately $150,000 to ensure successful and efficient activities for the first year. This initial funding will be inclusive of the application process and administration of the grant monies receied via the new associate director of finance and administration, but is not inclusive of any project specific resource needs.

The funding necessary for the implementation of the Business Plan for overall health information infrastructure development, including matching funds, is yet to be determined.

Staffing

The preliminary staffing model incorporated into the budget above is based on the following:

- AzHeC Staff: Arizona Health-e Connection Executive Director and Associate Director may spend as much as 25% of their time over a four month period to work with stakeholders and finalize the Business Plan and Grant Application. Additionally, if AzHeC becomes the State-designated entity and either utilizes or passes through funding, it is highly recommended that AzHeC hire a full time Associate Director of Finance and Administration to ensure ongoing compliance.
- Grant Writer: AzHec anticipates utilizing Semilla Consulting for grant writing services. Typically, the grant submission on grants.gov alone takes approximately one week's time (40 hours). The total hours allocated in the budget above is inclusive of the submission of the grant, as well as the time spent gathering information and writing the application.
- Accounting Services: AzHeC will need to utilize our current accountant, Sutton Accounting, to assist with transfer of data from the current accounting system to AzHeC in-house system, and any additional accounting activity necessary for the grant application preparation.
- Legal Services: AzHeC anticipates we may need to utilize up to 10 hours of Legal Services to analyze specific grant requirements.

Risk

This opportunity has the highest risk for AzHeC, as it will require AzHeC to take full responsibility for developing a statewide implementation plan, and seeking and administering Federal funds.

Return on Investment

This opportunity has the greatest opportunity for return on investment, as successful execution will ensure that all stakeholders are represented in the design and implementation of statewide infrastructure, and thus the value to the end users and beneficiaries of the infrastructure should be high. Arizona Health-e Connection is the type of entity anticipated by the HITECH Act's inclusion of "State-designated entity" as an eligible recipient, thus there is a high chance of success. Successful execution of this proposal will also ensure that AzHeC can fulfill its mission, and will provide short-term funding to the still nascent organization. If a state agency is designated as the lead, it may jeopardize the purpose of the AzHeC organization.

Proposal for Electronic Health Record Loan Program

Background

The American Recovery and Reinvestment Act also includes funds that will be available for states or tribal governments to provide loans for electronic health records beginning as early as 2010. The legislation states that funds are available:

> *(a) For the establishment of programs for loans to health care providers to conduct the activities described in subsection (e).*
>
> *(e) Loans under this section may be used by a health care provider to:*

1) *facilitate purchase of certified EHR technology;*
2) *enhance the utilization of certified EHR technology (which may include costs associated with upgrading information technology so that it meets criteria necessary to be a certified EHR technology);*
3) *train personnel in the use of such technology; or*
4) *improve the secure electronic exchange of health information*

The eligible recipients of this funding include:

1) State governments
2) Indian tribes

Types of Assistance available under this Section include:

1) To award loans that are no more than the market interest rate, are amortized over no more than 10 years, and that will repay the Loan Fund
2) To guarantee or purchase insurance for a local obligation, if it improves credit market access or reduces the interest rate
3) As a source of revenue or security for the payment of principal and interest on revenue or general obligation bonds issued by the eligible entity if the proceeds from the bond sale is deposited into the Loan Fund
4) To earn interest on the amounts deposited into the Loan Fund
5) To reimburse private sector entities for contributions to the Loan Fund (principal amount only)

Health care providers who purchase EHRs with this financing will be required to:

1) Submit reports on quality measures
2) Demonstrate participation in Health Information Exchange
3) Comply with other requirements the Secretary or loaning entity may require
4) Submit a plan on how the EHR technology will be supported and maintained over time by the health care providers

AzHeC Staff have identified, however, that the Arizona Constitution may prohibit the state or any other political subdivision, from administering such a program. Article IX, Section 7 of the Arizona Constitution states:

> Gift or loan of credit; subsidies; stock ownership; joint ownership
> Section 7. Neither the state, nor any county, city, town, municipality, or other subdivision of the state shall ever give or loan its credit in the aid of, or make any donation or grant, by subsidy or otherwise, to any individual, association, or corporation, or become a subscriber to, or a shareholder in, any company or corporation, or become a joint owner with any person, company, or corporation, except as to such ownerships as may accrue to the state by operation or provision of law or as authorized by law solely for investment of the monies in the various funds of the state.

Additionally, AzHeC Staff are unsure of the demand in the marketplace for government or government-guaranteed loans that would require Federal government quality measure reporting by any health care provider utilizing the funding.

Currently, the Arizona Health Facilities Authority (AHFA) has a Small Loan Program for Health Care Providers. It is believed that analysis of the demand for this program, which may provide better interest rates and longer term loans than available under the proposed Federal EHR Loan Program, may be an indicator of the demand for the proposed EHR Loan Program. It may also be that the existing AHFA Small Loan Program may on its own be useful or more useful, subject to an increase in demand given the current environment. Following is a description of the AHFA Small Loan Program:

> "In 1999, the Authority established the Arizona Health Assistance Program. AHAP is designed to provide direct loans ranging from $20,000 to $250,000 to health care providers in Arizona. The interest rate on loans is 3% and the maximum term of the loans is 20 years. These loans are available for a broad variety of capital components, including medical and computer equipment. The Authority can structure the loans in a variety of ways to meet the needs of the applicants. The Authority is committed to maintaining this self sustaining, revolving loan fund as an integral component of a system designed to leverage public and private resources for the development of essential health care services." (http://www.azhfa.com/small_loan.asp)

Collaborators, Complementors and Competitors

AHCCCS
AHCCCS may have the desire and potential to qualify for the following HITECH Act opportunities:

- *EHR Loan Funds*. This is an ONC grant program to states or tribal governments to establish loan programs to facilitate purchase, implementation, training, and subsequent "meaningful use" of Electronic Health Records by providers. As a state agency, AHCCCS would likely meet Federal requirements, though the Arizona Constitution may be interpreted as prohibiting a state agency from establishing a loan program for for-profit providers.
- Classification: Collaborator.

Proposal
AzHeC proposes it be designated by the Governor to review the feasibility of setting up and administering a program deemed to be valuable through stakeholder input. Thus far, AzHeC staff have determined that due to the Arizona Constitution, and a desire by many stakeholders that government not provide direct loans, the loan program should be set up in the private sector. Further, due to the complexity of setting up and directly administering a loan program, AzHeC staff believe using the Federal funds as a guarantee for loans issued by one or more commercial lenders may be preferable.

Key Features

This program requires more investigation, in order to review options and make recommendations regarding the associated value and feasibility of the options. Upon further review and research, key features of a proposed program will be presented.

Resource Needs (HITECH Requirement)

The HITECH Act requires that the applying entity (a state or Indian tribe) provide matching funds equal to $1 in state funds for every $5 in federal funds. However, it is noted in the legislation that states may couple their grants with private sector contributions in an attempt to increase the amount of loan funding they can offer providers.

Budget

If the feasibility review determines no program is necessary, or promotion of existing programs (e.g., Arizona Health Facilities Authority Small Loan Program) is sufficient, few if any resources will be required.

In comparison with either State or AzHeC administration of a direct loan program, administering a loan guarantee program would be less resource intensive for AzHeC, while providing the functionality and value intended by the Federal government, and directly stimulating the commercial lending market. AzHeC staff would need to dedicate approximately 80 hours to further exploration of this topic.

Cost to further investigate the feasibility and cost of this program is proposed to include time for the AzHeC Executive Director to conduct necessary research and report back to the Board of Directors. The following table details the projected hours for this research:

Service	Quantity	Price	Total
AzHeC ED Time (loaded)	80 hours	$75.12	$6,009.60

Funding

It is recommended that this cost be included in a grant request, in conjunction with other proposals. Initial time can be absorbed through operating costs.

Staffing

Arizona Health-e Connection Executive Director will spend time researching this opportunity, and the feasibility of various options. In conjunction with the other proposals, it is recommended that AzHeC hire a full time Assistant Director of Finance and Administration to ensure ongoing compliance, should AzHeC initiate a program.

Risk

This opportunity represents low risk for Arizona Health-e Connection during the review of the feasibility of various options and the development of associated recommendations. It is anticipated the potential

recommendation options could range from low-risk (no loan program recommended) to medium risk (AzHeC facilitates a loan guarantee program) to high risk (AzHeC implements a direct loan program).

Return on Investment

This opportunity represents an anticipated high return on investment for the activity of reviewing the feasibility of options and making recommendations. The review of options will seek to identify both the value to stakeholders and AzHeC, and the cost of following a recommended option.

Proposal for HIT Regional Extension Centers

Background

As stated in the American Recovery and Reinvestment Act (ARRA):

> *To assist health care providers to adopt, implement and effectively use certified EHR technology that allows for the electronic exchange and use of health information, the Secretary, acting through the Office of the National Coordinator, shall establish a health information technology extension program to provide health information technology assistance services through the Department of Health and Human Services.* (Section 3012, HITECH Act)

The health information technology extension program will consist of a national Health Information Technology Resource Center (referred to as the "Center"), as well as Health Information Technology Regional Extension Centers (RECs) around the country. The purposes of the Center are to develop or recognize best practices in order to support efforts at the regional level that will assist clinicians with adopting, implementing and effectively utilizing health information technology.

The RECs will then be the linkage between the Center and the healthcare community and will enhance and promote the adoption of HIT and participation in HIE through education and technical assistance. Financial support for up to four years will be provided by the Secretary of HHS to non-profit organizations for the purpose of creating and operating RECs.

The main objectives of the RECs are to enhance and promote adoption of HIT through:

1) Technical assistance with the implementation, use and ongoing maintenance of electronic health records and other health information technologies
2) Broad stakeholder participation
3) Dissemination of best practices and research to ultimately improve quality of care and ensure privacy and security of health information
4) Participation, as possible, in health information exchange
5) Utilization of expertise within the federal government
6) Integration of HIT into the training of health professionals

Additionally, the ARRA requires that priority for direct assistance be provided to:

- Public, non-for-profit and critical access hospitals

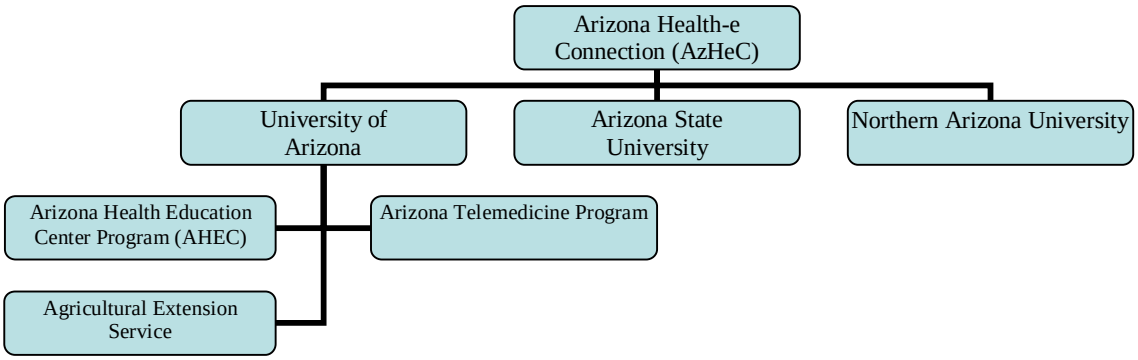
- Federally qualified health centers
- Entities located in rural areas or areas that serve uninsured, underinsured and medically underserved individuals
- Individual or small group primary care practices

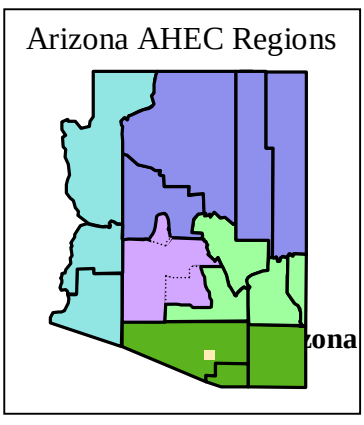
The Secretary may provide up to 50% of capital and operating costs for up to four years, unless waived due to national economic conditions. It may be possible for other federal funds to comprise the matching funds for the REC. The total amount that will be allocated to funds RECs across the country is not known, but the amount will be a portion of the $2 billion allocated to the ONC. A draft description of this program will be published by May 18, 2009.

Proposal

As was noted in the executive summary, the recommendation to the AzHeC Board of Directors is that Arizona Health-e Connection apply to be the HIT Regional Extension Center for the state of Arizona. Through collaboration with the Arizona Telemedicine Program and the Tri-Lateral Consortium (a collaboration between Arizona State University, University of Arizona and Northern Arizona University), AzHeC can capitalize on regional infrastructure that already exists throughout the state to reach all healthcare providers, especially those in rural areas. A key component of this regional collaboration and outreach may include partnering with the Arizona Telemedicine Program, the Arizona Health Education Center (AHEC) program and the Arizona Agriculture Extension Service program, all of which are administered by the University of Arizona.

The following table illustrates the possible coordination between AzHeC and the collaborators mentioned above:





The Arizona Health Education Center program, for example, has a central office in Tucson, and then an additional five regional offices throughout the state. The diagram here illustrates the six different regions that make up the AHEC program. AzHeC proposes that the regional offices of the Regional Extension Center include all five AHEC regions, but divide the northern region into two regions (Coconino and Yavapai counties together in one region, and Navajo and Apache

counties together in another region). The budget proposed below incorporates the assumption of six regional offices, with the statewide director of the program stationed at the Arizona Health-e Connection offices in Phoenix.

Regarding the technical assistance and education of healthcare providers, AzHeC recommends that the structure of the REC capitalize on the structure designed for the E-Prescribing (eRx) Utilization Improvement Program. This proposed AzHeC eRx program is designed to work directly with clinicians in Arizona to assist them in troubleshooting technical and workflow issues associated with successful e-prescribing adoption and utilization. The high touch approach with clinicians proposed in the eRx Utilization Improvement Program business plan, when combined with additional needs of the REC as defined by the Office of the National Coordinator, will be the essential ingredients for a successful program. Additionally, the eRx Utilization Improvement Program was designed in concert with Surescripts, who oversees the E-Prescribing Resource Center. This collaboration of a technical assistance program with a national resource center directly mirrors the linkage that the ARRA describes between the to-be-established national HIT Research Center and all Regional HIT Extension Centers, thereby illustrating that AzHeC is a seasoned collaborator in this area and is uniquely positioned to take on this role.

Key Features

The following key features illustrate why Arizona Health-e Connection is uniquely positioned to serve as the Health Information Technology Regional Extension Center for Arizona:

- Coordination with Key Stakeholders
  Arizona Health-e Connection is at its heart a collaboration of public agencies and private organizations designed to ensure successful adoption of health information technology by all healthcare providers in Arizona, and to coordinate the infrastructure that will allow for the sharing of health information. The original AzHeC roadmap has as a core HIT Roadmap Strategy to "partner with organizations involved in HIT adoption", and AzHeC has succeeded in doing just that over the past two years. As a collaborator, AzHeC already brings together key healthcare stakeholders from around the state to make the vision of health information technology adoption a reality. Add to this the further collaboration proposed with the three state universities, the Arizona Telemedicine Program, the AHEC program and other regional initiatives, and it is clear that Arizona Health-e Connection already coordinates with the key stakeholders that would be needed to successfully implement a REC in Arizona.

- Information Clearinghouse and Educator
  As determined by the AzHeC Board of Directors in April 2007, one of the three main strategic directions for AzHeC is to serve as an *information clearinghouse* in the areas of health information technology and exchange. This dovetails smoothly from the original AzHeC roadmap, in which one of the HIT Roadmap Strategies listed is to "provide guidance, director, and education". AzHeC has served in the capacity of information clearinghouse for over two years, by specifically:

- Designing the AzHeC website to serve as an educational resource in the areas of HIE, EHR, eRx, PHR, and Privacy/Security. The website provides key documents from the wealth of the information in the marketplace, to ensure that Arizona healthcare professionals, as well as consumers, can access reputable, accurate information.
- Presenting to a variety of healthcare stakeholders on the current status of health information technology and exchange in Arizona and nationally. Audiences have included physicians, nurse practitioners, physician assistants, health information technology professionals, community health centers, and hospital information technology staff, to name a few.
- Educating healthcare professionals annually at the Western States Health-e Connection Summit & Trade Show on the status of HIT and HIE initiatives in Arizona and around the country. The Summit draws national and state speakers, as well as HIT vendors from around the country.
- Serving as an overall resource on any health information technology and exchange issues. AzHeC staff has a broad range of knowledge on all key HIT/HIE strategic initiatives, and regularly provides assistance to any professional who calls or meets with staff. This ensures accurate and credible knowledge transfer among the healthcare industry.

For all of these reasons, Arizona Health-e Connection already has the knowledge base and educational infrastructure in place to ensure the proliferation of best practices amongst the healthcare stakeholders who will be implementing health information technology.

- Technical Assistance Structure Design
  The design of the REC will be a key component in the success of the technical assistance and education provided to clinicians. Arizona Health-e Connection experience to date with designing a technical assistance program for e-prescribing will position the organization as an expert in this area. The principles used to design the eRx Utilization Improvement program will serve as the basis for the technical assistance model for the REC, with the incorporation of other key components, including curriculum development and training of healthcare professionals. This feature directly correlates to a HIT Roadmap Strategy of "identify barriers and propose solutions", as the key purpose of the RECs will be to do just that. Intense, regular training sessions will be required to ensure that all REC staff are up-to-date on the most recent HIT developments and are able to use current best practices with the health providers that they serve.

- Ensure Interoperability with HIE Efforts
  The original AzHeC roadmap stated that a key HIT Roadmap Strategy was to "set and adopt standards (especially for integration with HIE)". So, while it seems that, per ARRA, some of the standards may be determined at the federal level, Arizona needs to ensure that these standards are communicated efficiently and that all electronic health records adopted and used will be able to interoperate with the health information infrastructure developed in the state. With

Arizona Health-e Connection's direction as the coordinator of all health information infrastructure initiatives, and as the proposed administrator of HIE Planning and Implementation grant funds, the organization is the ideal choice to ensure that the interoperability requirements are successfully communicated to and implemented for Arizona healthcare providers via the HIT Regional Extension Center.

Resource Needs (HITECH Requirement)

Per the HITECH Act (Section 3012), the Office of the National Coordinator may not provide more than 50% of the capital and annual operating and maintenance funds required to create and operate an HIT Regional Extension Center. Therefore, Arizona Health-e Connection will develop a plan for the acquiring at least half of the capital and annual operating and maintenance funds.

Budget

High level budget figures are listed in the table below, with the following assumptions included:

- Staffing for this regional extension center model would include one full-time statewide program director, as well as oversight and monitoring by core AzHeC staff.
- There would be six regional site established throughout the state, possibly co-located with the already established AHEC offices.
- Each site would employ one full-time manager, four HIT ambassadors, and one part-time administrative assistant.
- The budget items listed below are cumulative for all six sites and any additional statewide expenses.

Expense Description	Total Annual Expense
AzHeC Staff	$41,494
Payroll Expense (REC staff salaries)	$1,658,333
Payroll Fees	$36,000
Benefits	$447,750
Assets: Furniture and Equipment (one time expense)	$129,500
Office Expenses (rent, utilities, phones)	$72,000
Office Expense	$57,600
Postage and Delivery	$7,200
Printing and Copying	$18,000
Supplies	$12,960
Supplies: Meeting	$7,200
Mobile Phones	$46,500
Conference Calls and Webinars	$15,984
Mileage Reimbursement & Parking	$108,000
Travel	$15,000
Parking	$7,200
Meals (while travelling)	$21,600
Team Training	$32,000

Healthcare Provider Workshops	$36,000
Curriculum Development	$12,000
Evaluation & Annual Report	$24,000
Senior Staff Travel to DC	$3,384
TOTAL	$2,809,705

Funding

With total expenditures per year totaling approximately $2.8 million, approximate total expenditures over the course of four years will be $11.2 million. As noted in the background section, the Secretary of HHS may not provide more than 50% of the capital and annual operating and maintenance funds. However, the legislation does infer that matching funds may originate from other federally funded programs, departments or agencies.

Over the course of a year, AzHeC will be required to acquire matching funds totaling $1.4 million, or $5.6 million over the course of four years. Some initial ideas of how AzHeC may acquire the matching funds include:

- Federal Stimulus HIE grant funds
  Section 3013 of the ARRA describes the funds available for HIE planning and implementation activities, and notes that funds under the section may be used to complement other Federal grants, programs or efforts designed to promote HIT.

- Other Federal Programs and Agencies
  Collaborations with agencies such as SSA or IHS may allow for receipt of matching funds, especially if the activities of the REC directly impacts the providers of the agencies. Additional federal programs that AzHeC could collaborate with and secure matching funds from include the Arizona Telemedicine Program and the Arizona Health Education Centers.

- Health Plans, Laboratories, etc.
  Healthcare stakeholders such as health plans and laboratories will benefit from the widespread adoption of electronic health records by clinicians, and therefore may be willing to contribute matching funds to the REC program.

Staffing

The preliminary staffing model incorporated into the budget above is based on the following:

- AzHeC Staff: Arizona Health-e Connection staff would spend a portion of their time on the oversight and monitoring of the HIT Regional Extension Center. The budget incorporates 30% of the Associate Director's time and 15% of the Executive Director's time, over the course of the four year program.

- Statewide Director: Arizona Health-e Connection would hire a statewide director for the HIT REC. The responsibilities would include coordination at the state level of all regional offices, training of REC staff, coordination with the national Center, and overall management of the program. The budget assumes a salary of $100,000 for the statewide director.

- Regional Office Staff: At each regional office, AzHeC Staff anticipate the hiring of six staff members. One manager would be hired to oversee the activities of the regional office and serve as the liaison to the statewide director. An additional four HIT ambassadors would be hired to execute all of the technical assistance activities designated by the Office of the National Coordinator. Finally, a part-time administrative assistant would be hired to serve as a receptionist and assist with office duties as needed. The budget assumes an annual salary of $75,000 for each regional manager, $60,000 for each HIT ambassador, and $20,000 for the part-time administrative assistant.

Risk

This opportunity represents medium risk for Arizona Health-e Connection to take the lead, as it will be a collaborative effort with existing institutions and programs. Most of the risk associated with this program is whether there will be a demand for the services, and in the increased administrative activity associated with the execution of this program.

Return on Investment

This opportunity as proposed represents an anticipated high return on investment for AzHeC, as it will place AzHeC as the lead entity "on the front lines" for the provision of education and technical assistance. There will be decidedly less return on investment if the program is scaled back significantly. It is possible for government-executed programs, especially those suggesting they provide assistance to business, to obtain a larger perceived than actual value, due to their visibility. For an actual impact on Arizona's health care provider community (e.g., 20,000+ clinicians; possibly 3,000+ private practices) to occur, it is believed that this program must be executed on the scale detailed in this proposal to achieve real value and impact.

Proposal for Medicare and Medicaid Incentives

Background

The American Recovery and Reinvestment Act provides for approximately $19 billion in incentives to health care providers for the successful adoption and "meaningful use" of electronic health records. These incentives are provided via Medicare or Medicaid, and there are different requirements to obtain the incentives offered by each program. It is important to note that healthcare providers must decide whether to apply for the Medicare or Medicaid incentives, as they are mutually exclusive and each provider can only obtain incentives from one agency or the other.

Medicare EHR Incentives*. Starting in Fiscal Year 2011, Medicare – via Medicare carriers - will be able to reimburse physicians and hospitals for "meaningful use" of Electronic Health Records (EHRs).

Physicians may receive an amount up to $44,000 over five years, or $48,400 if in a health professional shortage area (see the chart below which breaks down the incentive payments over the course of five years- does not include additional funds for shortage areas). Hospitals may receive a base amount of $2 million, plus an additional amount based on a formula utilizing Medicare and charity care shares of discharges.

For purposes of the Medicare incentive program, "meaningful use" is defined in the legislation as follows:

- Physicians who demonstrate to HHS that they are using certified EHR technology in a meaningful manner
  Use of electronic prescribing
  Certified EHR technology is connected in a manner that provides for electronic exchange of health information to improve the quality of healthcare
  Submit information to HHS on clinical quality measures

With respect to these "meaningful use" requirements, it is important to note that the certification system has yet to be defined, although HIT experts suggest that it will likely be the already established certification organization, CCHIT, or a version thereof. Also important to note is that the details around the "connected" component of the definition are not yet clear, and will be defined by HHS, through the ONC.

Medicare Incentives for Physicians

	Adopt 2011	Adopt 2012	Adopt 2013	Adopt 2014	Adopt 2015+
2011	$18K	--	--	--	--
2012	$12K	$18K	--	--	--
2013	$8K	$12K	$15K	--	--
2014	$4K	$8K	$12K	$12K	--
2015	$2K	$4K	$8K	$8K	0
2016	$0	$2K	$4K	$4K	0
2017	$0	$0	$0	$0	0
TOTAL	**$44K**	**$44K**	**$39K**	**$24K**	**0**
Health shortage area	$48,400 (Additional 10%)	$48,400 (Additional 10%)	$42,900 (Additional 10%)	$26,400 (Additional 10%)	0

Medicaid/AHCCCS EHR Incentives*. Starting in Fiscal Year 2011, State Medicaid Agencies will be able to reimburse "eligible professionals" (physicians, dentists, certified nurse mid-wives, nurse practitioners,

physician assistants leading the practice in a rural area or Federal Qualified Health Center) that met Medicaid patient volume requirements (see table below) a maximum of $65,000 over five years to cover costs of adoption and "meaningful use" of electronic health records. A difference between the Medicare and Medicaid incentives is that the Medicaid incentives allow for funding of adopting, implementing or upgrading certified EHR technology in year one, and then require "meaningful use" of the adopted EHR technology in subsequent years of payment.

It is important to note that the definition of "meaningful use" has yet to be defined for Medicaid. The legislation implies that Medicaid agencies will have some discretion over the requirements in their state for "meaningful use". The state will propose a definition that must be in alignment with the Medicare "meaningful use" definition, and will require approval by HHS. Also important to note is that if a provider has few or no Medicare/Medicaid patients, they will not be eligible for incentive payments provided by the ARRA.

The following table describes the details for each population of potential recipients under the Medicaid incentive program.

Eligible Provider	Percent Match/ Limit	Medicaid Share	Limit Amount
Independent physician	85% net average allowable costs	>30%	$25,000 for purchase $10,000 for operations/maintenance Max of $64,000 in 5 years
Pediatrician (non-hospital based)	85% net average allowable costs	>20%	$16,667 for purchase, $6,667 for operations/maintenance Max of $51,200 in 5 years
Nurse mid-wife	85% net average allowable costs	>30%	$25,000 for purchase $10,000 for operations/maintenance Max of $64,000 in 5 years
Physician Assistant if is lead clinician at RQHC or FQHC	85% net average allowable costs	>30% "needy individuals" (AHCCCS, sliding scale & uncompensated care recipients)	By determination of the Secretary

Nurse practitioner	85% net average allowable costs	>30%	$25,000 for purchase $10,000 for operations/maintenance Max of $64,000 in 5 years
Hospital owned clinician practice	85% net average allowable costs	>10%	$25,000 for purchase $10,000 for operations/maintenance Max of $64,000 in 5 years
FQHC or RQHC-based practicing physician	85% net average allowable costs	>30% of patient population are "needy individuals"	$25,000 for purchase $10,000 for operations/maintenance Max of $64,000 in 5 years
Third-party sponsoring entity supporting EHR implementation	85% of net allowable costs; third-party entity can keep 5% of funds as pass-through	>30%	$25,000 for purchase $10,000 for operations/maintenance Max of $64,000 in 5 years

Proposal

It is recommended that Arizona Health-e Connection collaborate with AHCCCs to ensure that all voices are heard in the development of the Medicaid "meaningful use" definition. Additionally, it is recommended that AzHeC serve in their current role of information clearinghouse and educator, as it applies to informing clinicians and healthcare stakeholders about the specific details of the Medicare and Medicaid incentive programs. These recommendations are a natural extension of Arizona Health-e Connection's current role as a convener, collaborator and communicator.

Key Features

The following key features should be incorporated into the collaboration and education efforts described in the proposal overview:

- Keep healthcare stakeholders informed
  A main role of Arizona Health-e Connection is an information clearinghouse and educator. Applying these roles to the Medicare and Medicaid incentive programs could result in the following strategies:
  - Develop weekly or bi-weekly newsletters to be distributed to any and all interested parties (but at a minimum to healthcare providers) that details the most recent developments and announcements with respect to the Medicaid and Medicare incentives (this newsletter should also incorporate updates on other HIT and HIE areas of the ARRA)
  - Presentations to as many healthcare providers as possible, through the outlets already established (professional association meetings, etc.)

- Development of a step-by-step guide for healthcare providers to follow in order to receive the incentives for which they qualify, including the necessary steps to establish "meaningful use"

- Coordinate definition development with AHCCCS
  Given the broad stakeholder representation on the Arizona Health-e Connection board and within the AzHeC membership, coordination with AHCCCS as they define the Medicaid "meaningful use" requirements would ensure that the voice of all healthcare stakeholders is heard and taken into consideration. Being a coordinator is a well established role of Arizona Health-e Connection to date, so it would be relatively easy for AzHeC to serve in this role as it relates to the Medicaid incentive program.

Budget

The budget for this section has not yet been determined, but will likely require significant work in the area of communications to develop the Provider Guide. It will also require preparation and presentation on the incentive details by AzHeC staff, or members of the AzHeC Speakers Bureau, to be determined. Further budgetary details will be determined in the near future, and presented to the Executive Committee and Board of Directors as soon as they are available.

Funding

It seems that there may not be available funds within the ARRA to specifically cover these activities. However, it is possible that the funding may be available

- Medicaid Incentive Funds
  In Section 4201 of ARRA, the legislation notes that Medicaid must show evidence that they are "Pursuing initiatives to encourage the adoption of certified HER technology to promote healthcare quality and the exchange of healthcare information". Therefore, it is possible that Arizona Health-e Connection could contract with AHCCCS to provide these services on their behalf.

- Membership Dues/Summit Revenue
  A portion of the AzHeC membership dues or Summit revenue could be designated to support the proposed activities of this section.

Staffing

The staffing model has not been determined, but upon preliminary approval by the Executive Committee of this proposal, a full staffing model will be determined and presented to the Executive Committee and Board of Directors.

Risk

This opportunity represents low risk for Arizona Health-e Connection, as it is an expansion of existing programs and activities, and leverages the existing relationships with AHCCCS and CMS.

Return on Investment

This opportunity represents an anticipated high return on investment for the activity of supporting providers with additional information. AzHeC staff are already fielding calls from clinicians and provider organizations, and giving impromptu and formal presentations regarding the Stimulus Package Health IT provisions, and specifically the Medicare/Medicaid incentives.

Chapter 8: Summit & Trade Show

Background

The Western States Health-e Connection Summit & Trade Show has been a product of AzHeC for the past three years. Therefore, this chapter will serve as a review of the Summit & Trade Show and will include any potential changes to the current strategies, including the expansion of the event over the next several years.

In 2007 and 2008, AzHeC held an annual Summit bringing together health care stakeholders, providers, employers and consumers from around the state to learn about national Health Information Infrastructure (HII) progress, updates on Arizona initiatives and new developments in the HII industry at large. The Summit attracted over 350 attendees in each of those years, and at the time was the only statewide conference on health information infrastructure, technology and exchange. In 2008 the net revenue from the Summit was approximately $40,000 and in 2008 the net revenue was over $45,000.

In 2009, the Summit was expanded to include the Western States (California, Washington, Oregon, Utah, Nevada, New Mexico, Wyoming, Montana, Colorado, Idaho, Alaska and Hawaii). This expansion was in response to an observation that many of the western states do not currently hold their own statewide HIT/HIE annual conference. Therefore, it was concluded that Arizona Health-e Connection's expertise in this area could benefit neighboring states, while also providing additional revenue to the organization as we take advantage of an unfulfilled demand in the marketplace. Additionally in 2009, the Trade Show portion of the event was expanded from approximately 7 table top displays in 2008 to 20 10x10 exhibit booths in 2008 to over 55 10x10 exhibit booths in 2009. The 2009 Summit net revenue totaled approximately $125,000.

AzHeC's Desired Goal for the Summit & Trade Show

AzHeC's original goal for the Summit was to bring together healthcare stakeholders from throughout Arizona to discuss HIT and HIE developments in the industry. A large part of the original vision of the Summit was collaboration with other established industry organizations. The Summit was designed to serve as a physical embodiment of several objectives outlined in the original *Roadmap*, such as Partnerships, as identified in this excerpt:

> *The statewide Health-e Connection governance body will partner with organizations that are already focused on HIT adoption strategies. The governance body will coordinate activities with these partners as the Roadmap is being implemented. A sample of the organizations include the Health Services Advisory Group (HSAG) and its efforts to implement the national Doctor's Office Quality – Information Technology (DOQ-IT) initiative, the Arizona Chapter of the Healthcare Information and Management Systems Society (HIMSS), the Arizona Health IT Accelerator (AHITA), and various medical associations. The governance body will partner with these and other organizations and continue the work of HIT adoption in Arizona in a concerted way (AzHeC Roadmap; page 18).*

Additionally, segments of the *Roadmap* outlining goals for Marketing & Education are realized by the implementation of the Summit & Trade Show, such as:

- *Reaching out to key stakeholders*
- *Supporting and exchanging industry knowledge such as lessons learned and best practices*
- *Assisting statewide, regional and local organizations in obtaining assistance from national experts*
- *Expanding education opportunities by partnering with existing groups*
- *Maintaining a contact database*
- *Establishing media contacts*
- *Developing a media plan*

(AzHeC Roadmap; pages 45 – 46)

The overall goal for the Summit & Trade Show is that it become the premiere conference for healthcare stakeholders throughout the Western States who are interested in up-to-date information on state and national HIT and HIE developments. Arizona has already established itself as an industry leader through its statewide efforts in recent years, and in 2009, AzHeC took cautious yet bold strides to broaden its reach by expanding the "Arizona Health-e Connection Annual Summit" to the "Western States Health-e Connection Summit & Trade Show". In 2009, the Summit included two full days of presentations by industry experts from various Western States as well as national HIT and HIE experts. Additionally, the Summit featured experts from the legal field addressing privacy and security, as well as presentations from our partner organizations AzHIMSS and AzHIMA.

While the Summit remained the same duration from 2008 to 2009, and capitalized on the confirmation of renowned industry experts and timely topics, the expansion of the Trade Show was the most significant factor in the growth of this event in 2009. The increase from 20 10x10 exhibit booths lining the walls of the room where Summit breaks and lunches were held to a standalone 55+ booth exhibit hall propelled the Summit into a higher level conference and marketplace for our stakeholders. The development of the Trade Show as a separate event from the Summit also allowed AzHeC the opportunity to market and sell "Trade Show Only" passes, which brought additional value to all sponsors and exhibitors. The tools that were developed this year in planning the Summit & Trade Show (such as online registration, Summit webpage, marketing materials, sponsor documents and the development of the Vendor Member Category) will be useful for all events moving forward and as such, have enabled us to begin planning the 2010 Summit approximately 12 months in advance. This will be a significant advantage for the goal of growing the Summit and Trade Show. With the basic materials and support already in place, there will be ample opportunities to explore and implement new marketing techniques, build new relationships with potential speakers, exhibitors and sponsors, and seek out the most efficient and cost effective ways to plan, manage and execute the event.

Models from Across the Country

By reviewing other major HIT and HIE conferences in our region and throughout the country, we have identified several benchmarks measuring the reach and success of other conferences.

- Health Information and Management Systems Society (HIMSS)
  HIMSS has established itself as the healthcare industry's membership organization exclusively focused on providing global leadership for the optimal use of healthcare information technology (IT) and management systems for the betterment of healthcare (*www.himss.org*). Each year, HIMSS holds an Annual Conference and Exhibition offering 300+ education sessions and 900+ exhibitors. Attended by tens of thousands of HIT stakeholders, this event is currently positioned as the industry's leading conference & exhibition. While it does not make sense for AzHeC to compete with a conference of this magnitude, AzHeC has already formed a collaboration with the Arizona HIMSS Chapter, AzHIMSS, and has also established good relationships with national HIMSS executives. This has led to AzHIMSS officers participating in the Summit Coordinating Committee, leading to selection and recommendation of valuable speakers at the Summit, and increased market outreach to HIMSS members in all western states.

- American Health Information Management Association (AHIMA)
  Although much smaller in scope, AHIMA's Convention and Exhibit is similarly positioned to HIMSS' Conference and Exhibition, featuring education and networking opportunities to a wide spectrum of professionals, from entry-level to middle and senior management, including those working in information systems. (*www.ahima.org*). Offering a series of general sessions, workshops and CEU activities, AHIMA pairs their Convention with an Exhibit featuring over 200 exhibitors. The Arizona chapter of AHIMA, AzHIMA, has also been a valuable partner in the recommendation and selection of speakers, schedule development, and marketing for the Western States Health-e Connection Summit & Trade Show. At least one officer from AzHIMA participates in the Summit Coordinating Committee.

- American Medical Informatics Association (AMIA)
  The AMIA Annual Symposium, although more focused on biomedical and health informatics, provides a similar offering of sessions and exhibits. Although their sessions are more scientific in nature, they feature many exhibitors that are also targets for the Western States Health-e Connection Summit & Trade Show.

Market Composition

Arizona's demographics

According to the Arizona Hospital and Healthcare Association (AzHHA), Arizona's hospitals employ over 73,000 individuals, with the potential of up to 14,900 more employees each year as new hospitals are

built and expansion programs are executed (www.azhha.org). Other demographics referenced in previous chapters include the same stakeholders that would be targeted for the Summit & Trade Show.

Western States' demographics
Representing up to 13 states, the Summit & Trade Show has a potential reach of up to a half million potential industry stakeholders. As AzHeC continues to identify and pinpoint the target market segments for the Summit & Trade Show, AzHeC will rely upon their partner organizations throughout the Western States to determine the core market segments that should be included in the total available market for the event.

- *Total available market (TAM)*
  The total available market for the event includes all healthcare stakeholders including hospitals, healthcare provider organizations, health plans, government agencies, professional associations, information technology companies, HIT consultants, health information organizations and more.

- *Served available market (SAM)*
  The 2009 Summit & Trade Show attracted over 460 individuals, including 96 C-suite executives, 70 directors, assistant directors and associate directors, and 45 vice presidents, senior vice presidents and associate vice president. Other attendees fell into the categories listed in the total available market. It is important to note that the served available market consisted primarily of attendees from Arizona, so there exists a significant opportunity to

- *Market segmentation and trends*
  As one of the largest industries employing America, the hospital and healthcare industry is constantly growing and expanding. One key reason for planning the Summit & Trade Show on a year-long cycle is that we can stay ahead of the trends and figure out how to best market our event to the market segments we are targeting. For example, we have identified that clinicians, although a key market segment we would like to target, will most likely be unable to attend a two-day Summit mid-week. For this reason we are researching the possibility of adding a weekend-day or evening session in conjunction with the Summit, specifically target to clinicians.

Value Proposition
In order to review the value proposition of the Summit & Trade Show for all stakeholders, it is important to review that the goal of this event is to bring together HIT and HIE stakeholders from across the country to discuss developments in this dynamic industry. As such, the value proposition to the main segments of the target audience are as follows:

- For Sponsors/Exhibitors
  The Summit & Trade Show is a unique opportunity for companies and organizations to position themselves in front of leading HIT/HIE industry stakeholders in Arizona and

throughout the western states. Since AzHeC itself is a vendor-neutral organization, the Summit & Trade Show provides a neutral ground where all types of companies, organizations and vendors serving the industry can showcase their offerings to our constituents.

- For Attendees
  The Summit & Trade Show provides attendees with access to the leading experts in the field of HIT and HIE, through a packed agenda of leaders on topics ranging from health information exchange to e-prescribing and electronic health records to privacy and security as applied to the above. Attendees are also exposed to the leading vendors in these areas through the Trade Show aspect of the event. The following accolades best describe the value of this event to our attendees

  The Summit & Trade Show is an invaluable resource for attendees from every sector of healthcare. Whether you're contemplating purchase of an EMR or just want to learn about HIE opportunities, you'll find what you need at this show. (Dave Dexter, President & CEO, Sonora Quest Laboratories).

  The Western States Health-e Connection Summit & Trade Show was wonderfully run and included outstanding speakers on a variety of the most interesting contemporary topics in health information technology. (Holly Miller, Principal, Miller Health Information Technology Solutions).

  This year's Summit & Trade Show exceeded already high expectations and has become a vital resource for sharing ideas in Arizona and now the western states. (David Landrith, VP Policy and Political Affairs, Arizona Medical Association).

- For Speakers/Presenters
  As a regional event, the Summit & Trade Show provides an environment in which key leaders in our industry can attend and address hundreds of high-level HIT and HIE stakeholders at one time. The exchange of information and ideas throughout the sessions and networking events may be the equivalent of presenting at and/or attending multiple state conferences.

- For Board and/or Committee Members
  The AzHeC Board of Directors has a unique opportunity to engage in personal conversations with each other and with the speakers/presenters invite to be a part of the Summit & Trade Show. At a Speaker/Board dinner during the Summit, an intimate setting is provided to give only the speakers further insight into the mission of AzHeC by interacting personally with the Board of Directors and any other invited special guests.

Collaborators, Complementors, and Competitors

As identified in previous segments of this document, there are three key organizations we have identified as having similar membership bases and similar events.

- Arizona Chapter of HIMSS (AzHIMSS)
  On the local level, AzHIMSS was a key collaborator in the selection of speakers and schedule development of the 2009 Summit & Trade Show, through their involvement on the Summit Coordinating Committee. In addition, they have been a great complementor, specifically as a marketing partner. To encourage participation in the Summit & Trade Show by AzHIMSS members, and to demonstrate the strength of this partnership, a special discount code was created for all HIMSS members to use when registering for the event. This discount code offered attendees 25% off the full attendee registration fee. AzHIMSS members ensured this promotion was advertised through the Arizona chapter as well as other HIMSS chapters in the Western States. AzHIMSS members also staffed the HIMSS booth at the Trade Show and HIMSS executives were featured speakers at the Summit. On the national level, while we certainly see the HIMSS conference as a very successful model, we do not currently aspire to compete with a conference of that size and scope.

- Arizona Chapter of AHIMA (AzHIMA)
  As with AzHIMSS, the local AzHIMA chapter was another key component in the success of developing an effective Summit schedule and roster of qualified speakers/presenters. All AHIMA members were also given a special discount code (25% off full registration fee) to be used for Summit & Trade Show registration. AzHIMA members were very active in marketing the event through their state chapters as well, and we had several AzHIMA members in attendance. AHIMA's national presence was felt as well, as the Summit featured a speaker from their organization as well.

- American Medical Informatics Association (AMIA)
  AMIA has been identified as another association that we would like to partner with in the coming years. In 2008, AMIA was approached to determine their interest in collaboration. Unfortunately, they were unable to participate in 2008 due to a conflict with their 2008 annual conference, but they did express a high level of interest in assisting with future events. As such, the 2009 Summit & Trade Show was scheduled far enough away from the AMIA annual conference so that collaboration could occur this coming year.

- Other Collaborators, Complementors and Competitors
  AzHeC recognizes the possibility that any of the above entities (as well as several more local, regional and national organizations) may be seen as competitors, or our event may be seen as a competitor to their events. It is our desired position, relative to this perceived competition, that we work to ensure collaboration, not competition, with these organizations. It is our goal to carve out a niche in the Western States, and not to compete

with national conferences or exhibitions at this time. In order to ensure continued marketing and communications to HIT and HIE stakeholders in all the western states, it is anticipated that many more associations in the western states will be asked to participate in some capacity as 2010 planning begins.

Recommendation

AzHeC's official recommendation regarding the Western States Health-e Connection Summit & Trade Show is to continue to produce the event, to continue to grow and promote it as a western states/regional event, and to see the event as a educational deliverable, born from the foundation of the original *Roadmap*. This event has proven over the past three years that is has the potential to grow in reach, in size, and in revenue. As a source of revenue for AzHeC, the Summit & Trade Show is a vital component to the growth and reach of the organization.

The official recommendation to the AzHeC Board, as mentioned in Chapter 2, is that:

> *Arizona Health-e Connection will continue to manage and execute the Western States Health-e Connection Summit & Trade Show.*

The goals associated with the recommendation include:

Goal #1: To approximately double number of exhibit booths (to 100) in 2010, and proceed to increase exhibit booths by 20% in the following year

Goal #2: To approximately increase Summit attendance increase by 20% per year.

Justification as to why Arizona Health-e Connection is best suited for this role includes that:

- Past Summits have proven to be successful and capable of furthered growth. The market for the education, timely updates and exhibit opportunities is anticipated to continue to expand, due to the current national focus on HIT/HIE.
- AzHeC has received initial interest from additional states to participate in 2010 Summit.

Relationship between existing initiatives

One key to the future success of the Summit & Trade Show is to continue to grow the relationships that exist with other organizations and initiatives in Arizona and throughout the western states. In lieu of many smaller potentially "competitive" events throughout the Western States, AzHeC can use this opportunity to create a united front, and provide our attendees, sponsors and exhibitors with a higher quality, centralized event.

Accomplishing the Recommendation

Overall product vision

After experiencing a massive expansion of the Trade Show aspect of the event in 2009 (more than doubling the number of exhibits from the previous year), AzHeC staff envisions approximately one more year of similar growth, after which it expected that a minimum of 20% growth in subsequent years is sustained. For each of the three past Summits, the attendance numbers have remained nearly the same from year to year. However, with increased lead and planning time beginning with the 2010 conference, it is expected that the attendance has the potential to greatly increase through a longer, more structured marketing effort. The goal to host a minimum of 600 Summit attendees in 2010, and then proceed with a minimum 20% increase in attendance per year in subsequent years.

Potential risks

The greatest risks that potentially exist by moving forward with the recommendation are all financial risks. Even though many business sectors throughout the country continued to be effected by the economic crisis during the 2009 Summit & Trade Show, the event still experienced record growth. If the economic climate were to take a turn in which the HIT industry became hard hit, and the Summit & Trade Show was thus left without the financial support of the sponsors and exhibitors, AzHeC could find itself at a financial loss. Although this is not the predicted outcome, it should be documented as a potential risk. Other financial risks include advance payments and signed contracts with event venue and event service suppliers. If the Summit were to be cancelled, or poorly attended, AzHeC would still be responsible for honoring our contracts with such entities.

Key Features

The following items constitute the key features of the Western States Health-e Connection Summit and Trade Show:

- Summit

  The educational component of the Summit is perhaps the main factor in planning and executing a successful event. Careful attention must be paid to ensure that the Summit sessions offered are timely, appropriate, educational, and delivered by known industry experts. To continue to run a successful regional event, representatives and/or entities from all states should be invited to present and/or participate. While not all will accept the invitation, it is important to at least make the "ask" to ensure that a truly regional event is delivered. Other considerations include: checking with competing/collaborative conferences to ensure we are not overlapping dates, key speakers, themes or key topics. Additionally, ideas for future educational opportunities include: provider breakouts, clinician sessions held the Sunday afternoon or evening preceding the Summit or in the evening during the Summit, certification opportunities and offering continuing education credits.

- Trade Show
  Sponsors and exhibitors provide three very important parts of the success of the event: financial viability, marketing opportunities and a vendor neutral marketplace for our attendees.
    - From the financial standpoint, sponsor/exhibitor revenue is what makes the Summit & Trade Show financially viable for AzHeC. Revenue generated from attendance alone does not cover the costs of hosting the event, and without the sponsor/exhibitor revenue, the event would no longer serve as a revenue stream for AzHeC.
    - The sponsors/exhibitors assist AzHeC in marketing the event to other companies or individuals who may be interested in participating. Sponsor/exhibitor recognition on the Summit webpage (through placement of sponsor logo and weblink) demonstrates the high level of commitment we already have from key stakeholders in the industry and serves as marketing tool and of itself. We also offer all of our sponsors/exhibitors opportunities to market the event to their clients, staff and colleagues through the use of unlimited Trade Show Only passes. In 2009, sponsors and exhibitors even sent email blasts to all Summit and Trade Show attendees, promoting their presence at the event. All of this marketing outreach provides added value to AzHeC that is recognized through the increase in number of sponsors and exhibitors participating.
    - Finally, the Trade Show component of the event provides a vendor neutral marketplace for attendees to network, learn about new products and services available to them, and conduct peer-to-peer sales. To further this aspect of the Trade Show, increased sponsor/exhibitor activities are anticipated in future years, such as vendor hosted events, hospitality suites and increased sponsored meal functions.

- Speaker/Board Dinner
  While the Summit & Trade Show remains a financially conservative event, AzHeC understands the importance of allowing the Summit's nationally recognized speakers an opportunity to network with the AzHeC Board of Directors. This is accomplished through the invite-only Speaker/Board dinner during the Summit & Trade Show. This evening provides an intimate environment for the Board Members to network with the invited speakers, and any other special guests, and also provides a forum to thank the speakers for their willingness to present at the Summit. Eventually this dinner could grow to include invited media, government officials, or other guests of honor.

- Marketing and Communications
  As mentioned previously, the increased planning time for the 2010 Summit & Trade Show will provide sufficient time to plan and execute a structured marketing plan to promote this year's event. Marketing efforts for future years' events will include:
    - Promotion of the Summit & Trade Show in industry newsletters

- eNewsletters and/or email blasts to member based organizations
- Printed marketing materials for distribution to potential sponsors and attendees
- Updates to applicable AzHeC and Summit webpages
- Otther outreach opportunities.

- Online Registration Technology
  The continued use of technology will contribute to the success of the Summit & Trade Show in future years. In 2009, AzHeC signed a two year contract with Cvent, a web-based online registration system. This system allows for the creation and modification of the Summit webpage and registration system by AzHeC staff, and provides registration and email capabilities which allow tracking and reporting on registration statistics as often as desired. Cvent also links directly to AzHeC's merchant bank account, allowing for the acceptance of credit cards at the time of registration, and modules within the system track registrants who have paid and registrants who still owe money. Having this centralized, electronic registration system is one key to the success of the event.

- Event Management Outsourcing
  Another key to the financial viability and success of this event is AzHeC's ability to outsource selected services in preparation for the Summit & Trade Show. In preparation for the 2009 event, AzHeC contracted for a Summit Coordinator, as well as graphic design and printing services. As the organization continues to take on new initiatives, it is increasingly difficult for the existing staff to manage a growing Summit & Trade Show. Having the ability to outsource selected services ensures that AzHeC staff are able to focus on the other strategic objectives of the organization. AzHeC staff, however, will remain responsible for all approval of high level decisions and the approval of all financial expenditures.

Communications & Marketing

With this growth of the Summit & Trade Show, AzHeC has an opportunity to showcase its unique role/position in the marketplace. This can be done in the following ways:

- Reach out to long-lead publications in an effort to get them to do a story on the growth of the HIE/HIT industry and how AzHeC is helping to drive this growth and provide the most recent, accurate information on the subject, as well as access to vendors.

- Working with local media, seek a local media sponsorship of the event to help raise awareness and visibility among consumers and others. This would help advertise the event to a larger audience.

- If a media sponsorship does not come to fruition, attempt to secure an "exclusive" with one reporter or station that would guarantee coverage of the event.

- Identify a list of appropriate "trade" papers and begin sending them information months in advance to promote the Summit & Trade Show.

- Work with local Phoenix press to engage them in covering the event. They could be teamed with a presenter, or an association and have them speak to why they are participating and why that participation is important, what are the major topics of this year's Summit, trends in the Trade Show, etc.

- Conduct a concerted media pitching campaign a few weeks in advance of the event highlighting the nationally known presenters coming to the Summit and what the "news" could be that comes out of the Summit.

- Distribute a Media Advisory to the press a week in advance of the event encouraging coverage.

- If appropriate, conduct a press event surrounding a nationally recognized presenter or any "news" that would be coming out of the event. Offer access to the newsmaker to the press for individual interviews as well.

- Develop and distribute a Media Advisory to the media each day alerting them to the news that will come out of the event that day (new data, study, etc.).

- Once the event is concluded, distribute a News Release about the event covering the "news" that occurred during the event and offering access to the presenters for follow-up coverage.

Growth and scalability

As mentioned in previous segments of this document, the future vision for the Summit & Trade Show is largely based on continual growth in the coming years. The "immediate" goal would be to reach the 100-booth mark, with a minimum of 600 Summit attendees. Beyond that, a minimum of 20% growth would continue to be an annual goal. Some factors which could challenge this goal would include moving the event to another state. As a regional event, this will need to happen at some point, however, remaining in Arizona for at least one more year is part of the strategy to establish this as a premier event, so that even when moved out of state, it will be a "must" on our stakeholders' calendars. Growth opportunities are also largely tied to marketing and communications. Getting the word out to potential sponsors, exhibitors, speakers, attendees and media are all key to the growth strategy we have laid forth. Measurability, accountability and documentation must also occur to ensure that the strategies we have adopted are working to achieve the goals.

Budget

The table below details the actual budget for the 2009 Western States Health-e Connection Summit & Trade Show, and also includes the projected budgets for 2010 and 2011, which are based on the goals previously noted. The budget also denotes the breakdown of funding by category of sponsorship and registration. As a reminder, the goals for sponsors and attendees in the next two years are as follows:

- Sponsors
  Number of sponsors will be increased from 57 in 2009 to 100 in 2010 and 120 in 2011. Distibution of sponsorships among the varied sponsor levels is based on AzHeC staff's best estimate of how many sponsors will be confirmed in each category.

- Attendees
  The goal is that the number of attendees will increase each year by 20% each year, for at least the next three years, at which time the goal will be re-assessed and adjusted as necessary.

Expense Description	2009	2010	2011
Conference Center- Room Rental	$1,472	$2,000	$3,000
Conference Center- Security	$1,974	$2,500	$3,000
Conference Center- Internet Connection	$800	$800	$800
Conference Center- Food/Beverage	$44,165	$55,000	$65,000
Conference Center- Electric	$889	$1,000	$1,500
Audio/Visual	$10,365	$12,000	$15,000
Exhibit Booth Set-Up	$3,359	$7,000	$8,000
Speaker Travel & Expenses	$2,914	$4,500	$4,500
Speaker Hotel Rooms	$4,562	$5,000	$5,000
Speaker Honorariums	$0	$10,000	$10,000
Speaker/Board Dinner	$4,551	$5,000	$6,000
Speaker Thank You Gifts	$397	$400	$500
Copies	$30	$100	$200
Summit Brochure	$2,382	$3,000	$3,500
CDs of Summit presentations	$1,350	$1,500	$1,800
Summit Binders	$3,574	$4,000	$5,000
Summit Bags	$1,218	$1,500	$1,800
AzHeC Pens	$351	$500	$500
Signage, Lanyards, Badge Ribbons, etc.	$2,477	$2,500	$2,500
Registration Website	$5,610	$6,000	$7,000
Registration Credit Card Fees	$2,806	$3,000	$4,000
Miscellaneous Supplies	$969	$1,500	$2,000
Summit Coordinator	$5,616	$10,000	$12,000
Graphic Design	$750	$500	$500
Total Expenses	$102,581	$139,300	$163,100
Revenue Description	**2009**	**2010**	**2011**
Platinum Sponsors	$30,000	$30,000	$30,000
Gold Sponsors	$45,000	$60,000	$60,000
Silver Sponsors	$22,500	$30,000	$47,500
Exhibitor Sponsors	$92,500	$180,000	$215,000
Non-Profits Association/Education Institution Sponsors	$7,500	$7500	$7500
Summit Registration Fees	$32,440	$38,000	$45,000
Trade Show Only Registration Fees	$640	$800	$1000
Total Revenue	$230,580	$346,300	$406,000
Net Revenue	**2009**	**2010**	**2011**
Net Revenue	$127,999	$207,000	$242,900

Staffing

For the 2009 Summit, AzHeC utilized the services of a Summit Coordinator on a contract basis. The Summit Coordinator logged 352 hours working solely on the Summit between the last week of November 2008 and the second week of March 2009. Beginning with the planning of the 2010 Summit & Trade Show, a proposal has been submitted to AzHeC which would expand the responsibilities of the Summit Coordinator and allow the coordinator to execute the planning of the event throughout the entire year leading up to the conference. The proposal provides for an estimated 800 or more hours of work on Summit activities throughout the year. As noted in the table below, the following percentage of other AzHeC staff time is estimated to be needed (including the Summit Coordinator) in 2010:

Category	Hours	Rate (non-loaded)	Year 1 Totals
Associate Director	10% of time	$49.00	$10,000.00
Summit Coordinator	On contract	---	$12,000.00
Communications & Marketing Manager	10% of time	$24.04	$5,000.00
		Total	$27,000.00

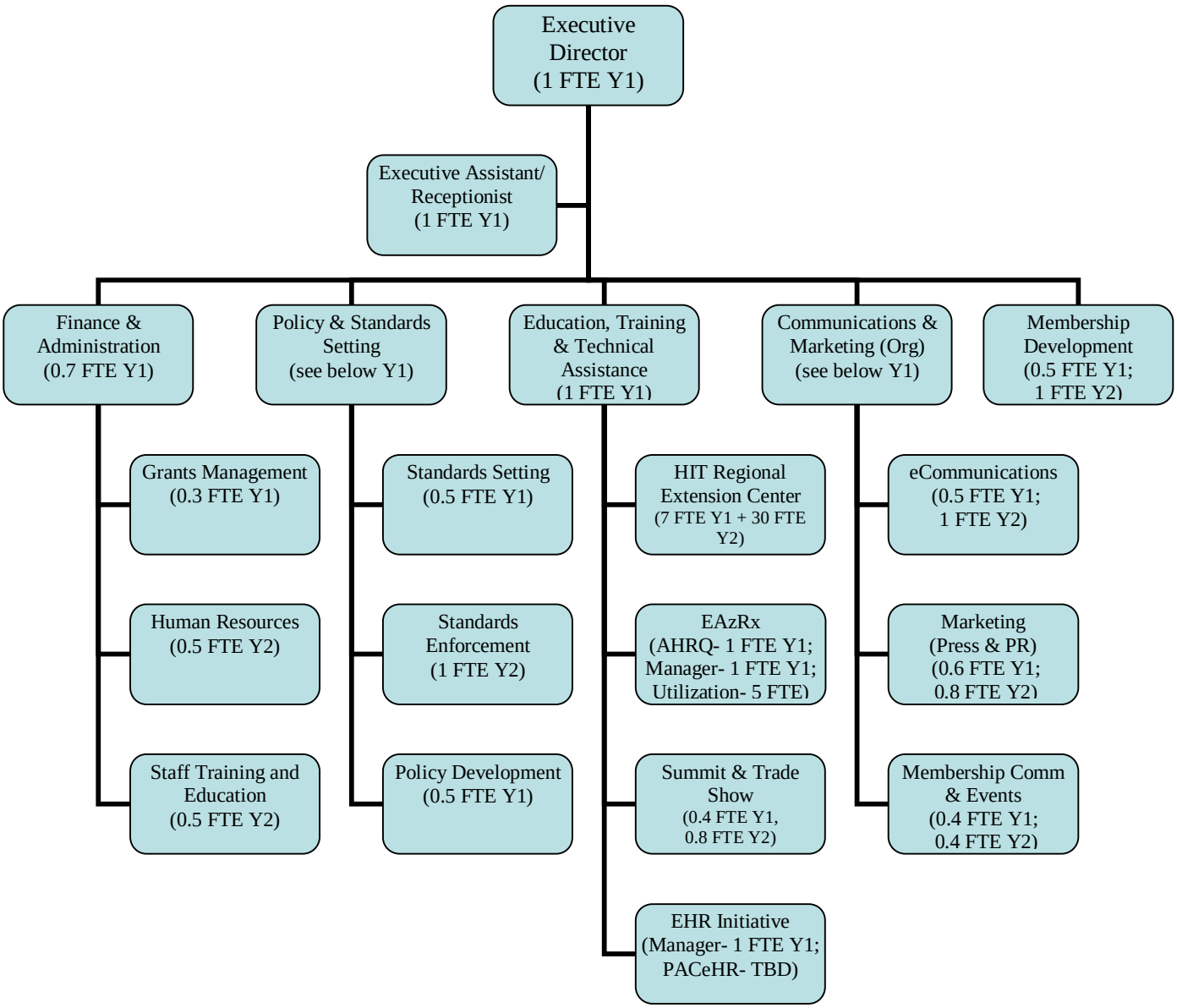
Return on Investment

As with all marketing, advertising and professional development opportunities, when our stakeholders make the decision to sponsor/exhibit or attend our event, their number one question will always be: What is my return on investment? They will be evaluating the risks involved with approving or making the expenditure to participate. They will be evaluating the total cost of participation, including travel costs, time spent away from their office, as well as the actual cost of participation in the event. For these reasons it is imperative that we continue to evaluate the needs of our attendees and sponsors/exhibitors, and ensure that we are delivering what we have advertised, which is a quality, concise, condensed, no-frills Summit. It is education based, with networking opportunities and a comprehensive marketplace environment provided by the Trade Show component.

Chapter 9: Organizational Support

Staffing Model

In order to accomplish the strategic objectives as proposed in this business plan, the staffing requirements for Arizona Health-e Connection have been compiled, including any additional support staff necessary. The following diagram denotes the structure as proposed, including the categorization of various positions, and the FTE required for each role.



The following table lists the proposed salaries for each of the positions described above:

Year 1 Staffing Details			
Title	**Salary**	**FTE**	**Total Cost Y1 (Loaded)**
Executive Director	$131,250	1 FTE	$166,687
Exec Asst/Receptionist	$35,000	1 FTE	$44,450
Finance & Administration Associate Director	$75,000	1 FTE	$95,250
Policy Development	$100,000	0.5 FTE	$63,500
Standards Setting	$180,000	0.5 FTE	$114,300
Education, Training and Technical Assistance	$100,000	1 FTE	$127,000
HIT REC Statewide Director	$100,000	1 FTE	$127,000
HIT REC Regional Manager	$70,000	6 FTE	$533,400
eRx Manager	$70,000	1 FTE	$88,900
AHRQ eRx Implementation Specialist	$80,000	0.75 FTE	$76,200
eRx Utilization Director	$100,000	1 FTE	$127,000
eRx Utilization Team Member	$70,000	4 FTE	$355,600
Summit & Trade Show Coordinator	Not-to-exceed contract	0.4 FTE	$12,000 (contract)
EHR Initiative Manager	$70,000	1 FTE	$88,900
Communications & Marketing	$50,000	1 FTE	$63,500
eCommunications	$40,000	0.5 FTE	$25,400
Membership Development	$80,000	0.5 FTE	$50,800
			YEAR ONE TOTAL: $2,159,888

* The loaded rate used to calculate the total cost for Year 1 is 27%.

Year 2 Staffing Details			
Title	**Salary**	**FTE**	**Total Cost Y2 (loaded)**
Executive Director	$131,250	1 FTE	$166,688
Exec Asst/Receptionist	$35,000	1 FTE	$44,450
Finance & Administration Associate Director	$75,000	1 FTE	$95,250
Human Resources Assistant	$45,000	1 FTE	$57,150
Policy Development	$100,000	0.5 FTE	$63,500
Standards Setting	$180,000	0.5 FTE	$114,300
Standards Adherence	$75,000	1 FTE	$95,250
Education, Training and Technical Assistance	$100,000	1 FTE	$127,000
HIT REC Statewide Director	$100,000	1 FTE	$127,000
HIT REC Regional Manager	$70,000	6 FTE	$533,400
HIT REC Ambassador	$60,000	30 FTE	$2,286,000
eRx Manager	$70,000	1 FTE	$88,900
AHRQ eRx Implementation Specialist	$80,000	0.75 FTE	$76,200

Year 2 Staffing Details			
Title	**Salary**	**FTE**	**Total Cost Y2 (loaded)**
eRx Utilization Director	$100,000	1 FTE	$127,000
eRx Utilization Team Member	$70,000	4 FTE	$355,600
Summit & Trade Show Coordinator	$45,000	1 FTE	$57,150
EHR Initiative Manager	$70,000	1 FTE	$88,900
Communications & Marketing	$50,000	1 FTE	$63,500
eCommunications	$40,000	1 FTE	$50,800
Membership Development	$80,000	1 FTE	$101,600
		YEAR TWO TOTAL:	**$4,719,638**
		YEAR ONE AND TWO TOTAL:	**$6,879,526**

* The loaded rate used to calculate the total cost for Year 1 is 27%.

Accounting policies, procedures and audit

Arizona Health-e Connection will comply with OMB Circular A-133, the definitive Federal regulation concerning the audits of non-profit organizations. Once the organization expends more than $500,000 in Federal dollars in a calendar year, AzHeC will be required to hire external auditors to perform an independent audit and issue audited financial statements. It is the intent of Arizona Health-e Connection to maintain a state of audit readiness at all times.

Arizona Health-e Connection is currently in the process of creating official Accounting Policies & Procedures. The policies and procedures will be complete and ready for Board approval by the July Board meeting. We have implemented an accounting structure that ensures the ability to provide accurate and complete information about all financial transactions related to all grants and contracts. Sound internal controls and segregation of duties have been put in place to ensure the integrity of all financial transactions within the organization.

Arizona Health-e Connection has contracted with a CPA to process and post all accounting transactions for the organization and provide monthly financial reports. The accounting software currently used is Quickbooks Pro which is licensed to the contracted CPA. It is intention of AzHeC to bring a software package in-house and allow the CPA to access the software for purpose of posting transactions, reconciling the monthly bank statements and providing financials via a secure VPN connection. AzHeC likely will purchase Quickbooks Premier for Non-Profits and begin using that on-site by July 31, 2009.

Membership Structure

In early 2009, the most recent membership structure for Arizona Health-e Connection was approved by the Board. The following excerpt from the Membership Value document details why organization should consider joining AzHeC as a corporate, government agency, non-profit association or vendor member.

Why should my organization join Arizona Health-e Connection?
The United States has contributed tremendously to advances in healthcare diagnostic and treatment technologies, procedures, and medications. This is not only due to the large investments in basic and

applied science and technology, but especially to the American spirit of entrepreneurialism, creative thinking, and freedom.

This same freedom allows Americans to move across the country, change jobs (and associated health plans), and seek treatment from new healthcare providers. This has resulted in Americans having medical information stored in multiple providers' offices, often thousands of miles apart. With the advent of technology, and the Internet, we would think this isn't a problem, but it is: most medical records are still paper based, and virtually none can be exchanged electronically. The information does not follow the patient, and therefore patients are routinely asked for the same information over and over. In some cases, people cannot recall the details of past treatments, or current medications. Even if a lab or test was ordered recently by a primary care provider, it is likely to not be readily accessible by an emergency department physician, who must order the same test again to ensure proper and prompt diagnosis and treatment. Decisions made without access to existing information are wasteful, and can cause errors.

In fact, the Institute of Medicine estimated in 1999 that between 44,000 and 99,000 Americans die of medical errors each year. This was an underestimation of the total errors, as it only included deaths in hospitals, not in clinics, nursing homes, or home health care settings. This means very likely upwards of 1,500 to 2,000 people die needlessly in Arizona each year. Deaths are the extreme case, and this is merely evidence that many other errors are occurring that decrease Arizonans' productivity, and quality of life. Yet, healthcare costs are increasing – so why isn't quality? Many agree that we're spending enough money -- it just isn't being spent effectively.

Arizona Health-e Connection is a continuation of an initiative in which over 400 Arizonans developed a Roadmap for Arizona's Health Information Infrastructure. Several efforts are already underway within Arizona and around the country to build infrastructure, and encourage clinicians' and consumers' adoption of technology, but the landscape is changing. The Federal Economic Stimulus Package has outlined some funding opportunities, as well as a changed governmental and standards structure for guiding these efforts. Now, more than ever, we need organizations and individuals from across Arizona and the United States to become engaged with the healthcare industry and government on this topic, to ensure that the strategies chosen are effective, and reflect the values that make this a great state and nation in which to live! This is an opportunity for you to learn, weigh in, and collaborate to create efficiencies in the health care system!

Membership Benefits
As a member of Arizona Health-e Connection, organizations will receive:

- A one-on-one welcome with AzHeC staff – which will combine a briefing on national and state activities, as well as an interview of your company regarding interest in participating in specific activities and/or committees.
- Access to AzHeC Member Meetings and Informational Webinars, where the latest ideas will be presented and considered.
- AzHeC Email updates and news
- Discounted attendance at the Summit
- Other benefits to be developed*

* Additional benefits are offered to organizations that join AzHeC as a vendor member.

The following membership dues categories exist for Arizona-based corporations that join as a corporate member:

Gross Revenues	Annual Dues
$1 billion or more	$15,000
$100 million to $999 million	$10,000
$10 million to $99.99 million	$5,000
$1 million to $9.99 million	$1,000
<$1 million	$325

Additional membership categories and corresponding dues were developed for the following organizations:

Type of Organization	Annual Dues
Non-Profit Association Under $1M Annual Revenue	$750
Non-Profit Association $1M - $4.99M	$2,000
Non-Profit Association $5M and up	$4,000
Colleges	$2,500
Government Agency	$500
Vendor Member	$2500

Communications & Marketing

AzHeC has the opportunity to significantly raise its profile among stakeholders, the general public and members of the Arizona legislature and government agencies. This increase in awareness of the organization will be essential to the success of all the recommendations contained within this business plan. Since its inception a little over two years ago, AzHeC has made significant headway in convening the right group of stakeholders to advance the topics of HIE/HIT across the state of Arizona. While these actions have been successful, the promotion of AzHeC as an organization been on the back burner due to competing priorities. Now is the time to push AzHeC, including its unique brand and mission, into the forefront to establish a firm foundation from which to launch the organization's messages, initiatives, and other activities. AzHeC needs to be positioned as the trusted, independent source for current, relevant, non-biased information on health information technology and exchange.

AzHeC has a niche in the marketplace that no other organization can occupy, and that is the pivotal message that should be stressed in communications and marketing to new stakeholders. The organization is a public/private partnership that was created in a unique way to accomplish a unique goal – "advancing health and wellness through information technology" – in an independent and objective manner. Focus should also be placed on the fact that AzHeC brings together an unrivaled group of stakeholders representing all facets of the Arizona HIE/HIT community.

Audiences to whom AzHeC should reach out, include:

- Healthcare Industry Decision makers: This includes stakeholders in the HIE/HIT arena such as insurance companies, hospitals, physicians, labs, government agencies (AHCCCS, GITA, et. al), and the legislature.

- Consumers: This is the contingent who has the biggest potential to change the culture and the climate in the state of Arizona by expressing their opinions on the subject of HIE/HIT -- once they've been informed – and that is AzHeC's role.

There are several established resources from which to access/tap when promoting the AzHeC "brand." These resources include the following:

Board Members
Members of the AzHeC Board of Directors represent many key statewide decision makers and opinion leaders in the health care industry. As such, Board Members have the ability to bring credibility to the organization by their very support. Additionally, it is recommended that AzHeC engage its Board Members in various communications activities to help promote the organization. This should be accomplished in a way that maximizes the Board Members' leadership positions within the industry and the state, yet is respectful of their time and commitment. Several possible activities include:

- Submission of opinion pieces to publications, co-signed by a Board Member and the AzHeC Executive Director. Topics of these opinion pieces would be mutually decided. AzHeC Staff could author the submissions, in accordance with the mutually agreed upon subject and position.

- Arrangement of Editorial Board meetings with newspapers across the state. This would include identification of the appropriate Board Member to accompany the AzHeC Executive Director depending on interest and availability. The subject of these meetings would be HIE/HIT issues and would include how these topics and industries will affect Arizona businesses, consumers and medical practices. These Editorial Board meetings would ideally be scheduled while the Legislature is not in session, thereby keeping the meeting free of any implied or tacit support for pending legislation.

- Coordinate an AzHeC Legislative Day at the State Capitol and engage Board Member participation based on interest, availability and targeted outreach, e.g., an existing relationship between a Board Member and a certain legislator, or identifying the legislator in whose district the Board Member's business is located.

- Leverage the opportunity to disseminate general HIE/HIT information in Board Members' company newsletters/websites. Such a publication would reference AzHeC's role in the HIT and HIE industry, in order to build trust and support. Examples of such communications include a banner ad encouraging individuals "learn more" by visiting the AzHeC website, or a brief newsletter article.

- Determine with Board members opportunities to appropriately leverage their participation as an AzHeC Board member among other constituencies of which they are members. Identify potential opportunities to present or exhibit at the Board member's Annual meeting, if one exists. Ideally this would be a no-cost activity, but if costs were involved AzHeC could negotiate a mutually beneficial exchange of participation at their meeting and the Western States Health-e Connection Summit & Trade Show.

Alliances with other Associations and Non-profits

AzHeC has positive relationships with most major health related state-wide non-profits/associations (e.g., ArMA, AOMA, AzHHA, AzNA, AzPA, and others). AzHeC should leverage those relationships to help bolster awareness of the organization and secure its position as the key leader in HIE/HIT information among their members as well as their external audiences through a variety of activities. *These activities can include*:

- Identify potential opportunities to present or exhibit at various Association meetings. Again, ideally this would be a no-cost activity, but if costs were involved AzHeC could negotiate a mutually beneficial exchange of participation at their meeting and the Western States Health-e Connection Summit & Trade Show. Additionally, many state-wide or state/local chapters of national organizations have smaller meetings throughout the year offering AzHeC other opportunities for participation/outreach.

- Participate in large association meetings, e.g. annual and semi-annual conventions, summits, etc. by securing booth space and distributing AzHeC materials. If booth space is not an option, AzHeC should also investigate buying advertising space in the event's program. Ideally, booth space would be free, but if it is not, AzHeC could negotiate a discount based on an exchange of booth space for the Western States Health-e Connection Summit & Trade Show.

- Potentially secure a speaking role within the meetings mentioned above for an AzHeC representative.

- Leverage the opportunity to disseminate general HIE/HIT information. Supply the associations with template articles for their newsletters. Include information about AzHeC's website as a resource for HIE/HIT related topics.

- Coordinate participation by select non-profits and organizations in the Western States Health-e Connection Summit & Trade Show. In addition to exhibit opportunities, AzHeC can engage their association and non-profit alliance members to help advertise the Western States Health-e Connection Summit & Trade Show to their local and regional membership.

Support of Health Information Infrastructure

As AzHeC takes on a larger coordination role in the HIE arena across the state, attention must be paid to the AzHeC brand and an effort should be made to blanket the state with it. This action would help to position AzHeC as a valuable, state-wide, independent source of information on HIE/HIT subject matter. Once positioned as the place for "one-stop shopping" for credible information on HIE/HIT, etc., AzHeC messages will carry more weight among all healthcare stakeholders. Defining coordination from a

communications standpoint would involve not only coordination of any meetings, etc., but coordination of the message(s) that come from the meetings themselves. This would offer a unified look and feel and help to "brand" these messages as emanating from AzHeC.

Website

The development of a Communications Tool Kit template is key to the branding of the organization. Once developed, this toolkit would appear on the AzHeC website to be available to both internal (staff, Board, Committee members) and external (consumers, health care professionals) audiences.

It is recommended that this toolkit contain several information pieces about AzHeC. The re-use and re-purposing of materials is key not only to keeping costs down, but also to keep messages as uniform as possible (reinforcing the brand message). Once these materials are developed they can easily be turned into Powerpoint slides.

These toolkit items would include, but are not limited to, "fact sheets" that include the following:

- Who is AzHeC?
- What has AzHeC's role been?
- What is AzHeC's vision for the future?
- Who is on the AzHeC Board?
- Glossary of HIE/HIT terms
- What is HIE/HIT and what does it mean to me?
- What is an EMR/EHR/PHR?
- What is eRx?
- What are the security & privacy issues surrounding EHRs?
- Frequently Asked Questions about AzHeC
- List of Board Members
- List of Resources available on the AzHeC website
- How can I become more involved in AzHeC? (membership information)

Information Clearinghouse

AzHeC must fulfill its role as an *independent, trusted resource* for HIE/HIT information. This includes a comprehensive, educational website, containing fact sheets, presentations to health care stakeholders across Arizona and across the country and other appropriate resources.

- AzHeC has many "ready-made" presentations on various HIE/HIT related topics. In order to ensure that these presentations are at a stage where they can be shared with the public and other interested third-parties, the presentations must be reviewed and catalogued.

- Once the presentations are reviewed and catalogued, AzHeC will let AzHeC members and other stakeholders know they are available.

As AzHeC continues to elevate its profile among various communities, the organization's role as a central information clearinghouse for HIE/HIT information and resources must be reinforced. AzHeC has the unique position and ability to gather resource from sources such as the HISPC project and offer those resource through a virtual clearinghouse setting.

Membership Communications

As AzHeC seeks to broaden its reach and imprint this can be done by the addition of new members from various constituencies. The organization has recently added their first member in the Vendor Member category; MediConnect Global, based in Salt Lake City, Utah. When a Vendor Member joins AzHeC one of the first things to occur is a vendor member webinar, offering the new member access to other AzHeC members to introduce themselves and their company.

AzHeC is always in search of companies, associations and others (academia, etc.) to become members and often use networking opportunities to identify and pursue likely candidates. Additionally, having membership applications at each and every event AzHeC hosts and mentioning these applications in all welcome and closing remarks is an easy way to consistently get the word out about membership opportunities.

AzHeC Member Forums are a privilege of membership and happen two ways. Every month AzHeC conducts either an "in-person" forum or a webinar on a subject of interest to our members. AzHeC lines up experts on the topic; sends out promotional materials via their website; and asks association partners to help get the word out via their newsletters and websites. An added benefit of an in-person forum is the opportunity to meet peers and colleagues face to face and network.

Additionally there is an opportunity to conduct new membership outreach activities in conjunction with the Western States Health-e Connection Summit & Trade Show. As AzHeC seeks to expand its influence to the western states (Arizona, California, New Mexico, Colorado, Nevada, Idaho, Utah, Montana, Wyoming, Oregon, Washington, Alaska and Hawaii) it will work with association partners who have either chapters in those states (e.g., HIMSS or professional "sister" associations such as the medical or osteopathic associations and others).

Materials for this outreach would include specific letters tailored to the various companies and/or organizations as well as supplementary materials.

Speakers Bureau

One strategy to aid in positioning AzHeC as the trusted source for HIE/HIT information in Arizona is to establish a Speakers Bureau.

AzHeC is in a position to offer interested parties a variety of speakers on HIE/HIT topics that are tailored to suit their individual needs. The organization has many existing presentations on HIE/HIT topics that can be customized for various audiences, such as doctors, nurses, pharmacists, senior citizens, college students, and business owners.

Currently, AzHeC staff and a few select initiative leaders (e.g., Dr. Bharathan of SAHIE, GITA's Eric Thomas) are attending meetings and presenting AzHeC information. As AzHeC grows, it can develop a statewide Speaker Bureau that potentially includes Board Members, Committee Chairs and others. This should also include others with whom AzHeC has good relationships, and who would be comfortable speaking with the media, if necessary. This might include clinicians, academics, hospital IT staff, insurance company representatives, etc.

Consumer Outreach

Consumers must be educated and informed on the issues of HIT and HIE – this is initially being done

through the Consumer Advisory Council, and a series of "Mini-Town Halls/Focus Groups" being executed as part of the legislative package development.

AzHeC's Consumer Advisory Council has recently been initiated. It is co-chaired by Mayor Lyn Truitt of the City of Surprise and Board Member (Consumer Representative) Debra Nixon, MSHA, BSN. The goal of this council is to ensure that AzHeC has access to, and feedback from, a broad cross section of Arizona citizens regarding HIE/HIT policies and issues.

As part of their consumer outreach and legislative package development efforts, AzHeC is currently conducting six Focus Groups/Mini-Town Halls from Flagstaff to Yuma to Marana, and cities in between, to discuss HIE/HIT with consumers of all walks of life. These Town Halls are also an example of successful collaboration between AzHeC staff, Board Members, consumer organizations, city government, and local provider organizations. This model has worked well and could be adapted for future consumer events.

General Media Outreach

Outreach to local reporters is two-fold: 1) to establish contact, and 2) to position AzHeC as the premier resource for HIE/HIT information. AzHeC is cultivating relationships with reporters to educate them on the topics AzHeC focuses on – HIE, HIT, EAzRx, etc. – and encouraging them to consider running stories. AzHeC's future strategy includes helping the reporters identify a unique angle to pitch to their editor (e.g., cost savings for physician practice thru adoption of e-prescribing, survey results, etc.).

Social Media sites/Outreach

AzHeC is investigating responsible use of Web 2.0 technologies, such as social networking and Twitter, to increase visibility, while building trust.

Legislative Outreach

As AzHeC strives to position itself as a unique, independent and objective entity and resource on the issues of HIT/HIE in Arizona, the opportunity to share these messages with policymakers is an imperative.

To date, the AzHeC Executive Director and Chair of the Board have made several trips to the State Capitol to meet with various legislators and present to the appropriate House and Senate committees. Thus far, these have been solely informational sessions, but have also been opportunities to inform legislators of a forthcoming legislative package for the 2010 session.

AzHeC Legislative outreach strategies include the following:

- Leverage current Board Chair David Landrith, who is VP of Public Policy for the Arizona Medical Association, and other Board organization lobbyists to promote AzHeC and the legislative package at the State Capitol.
- Coordinate an AzHeC Legislative Day at the State Capitol: engage MOB participation based on interest, availability and targeted outreach, e.g., an existing relationship between a MOB and a certain legislator, or identifying the legislator in whose district the MOB's business is located.
- Tie-in the AzHeC Legislative Day with an already established health or health IT day/week observance

Governing Structure- Board of Directors

The Arizona Health-e Connection Board of Directors shall contain between eighteen (18) and twenty-five (25) directors, each of whom must be an individual. The number of directors shall be determined by the Board, by resolution. Membership on the Board, for all directors, is extended only to the individual, not the organization, and membership is not transferable to another individual by the director; however, Permanent Directors may be removed and replaced by the appointing entity at any time. The Board is governed by the bylaws, which can be found in Appendix B. The following table illustrates the distribution of Board Members across the health care industry, in accordance with the bylaws, and includes the current Board Member within each category.

	Board Allocation	Current Board Organization	Current Director
Permanent Members	The Governor of Arizona	Governor's Office	Beth Kohler Lazare, Policy Advisor, Health and Human Services
	Arizona Health Care Cost Containment System (AHCCCS)	AHCCCS	Anthony Rodgers, Director
	Arizona Department of Health Services (ADHS)	ADHS	William Humble, Interim Director
	Arizona Government Information Technology Agency (GITA)	GITA	Chad Kirkpatrick, State CIO & Director
	Arizona Hospital & Healthcare Association	AzHHA	John Rivers, President & CEO
	Arizona Medical Association	ArMA	David Landrith, Vice President, Policy and Political Affairs
	Arizona Osteopathic Medical Association	AOMA	Amanda Weaver, Executive Director
Non-Permanent Members	Health Plans At least one (1) and max of five (5) representatives of AZ health plan or insurer	Blue Cross Blue Shield of AZ	Richard Boals, CEO and President
		Humana	Mark El-Tawil, President
		Schaller Anderson	Tom Kelly, President
		United Health Care	Benton Davis, CEO, Western States
		CIGNA	James Burrell, III, MD, CMO
	Hospitals Two (2) representatives of AZ hospitals and healthcare systems	Banner Health	Michael Warden, Sr. VP and CIO
		Northern Arizona Healthcare	James Puffenberger, President/CEO
	Employers At least one (1) and max of two (2) representatives of AZ employers or an association of AZ employers	Intel	Celeste Null, Principal Engineer & Director of Biomedical Engineering, Digital Health Group
		Arizona Chamber of Commerce & Industry	Glenn Hamer, President & CEO
	Higher Education One (1) representative of AZ institution of higher education	Arizona State University	William Johnson, PhD, Director, Center for Health Information and Research

	Board Allocation	Current Board Organization	Current Director
	Laboratory One (1) representative of AZ clinical laboratory or clinical laboratory association	Sonora Quest Laboratory	David Dexter, President and CEO
	Pharmacy One (1) director shall be a representative of an Arizona pharmacy or professional pharmacy organization	Arizona Pharmacy Alliance	Mindy Rasmussen, CEO
	Medical Trading Area (MTA) At least one (1) and max of four (4) representatives of MTA organization/ entity	Phoenix MTA	Bruce Bethancourt, MD
		Tucson MTA (SAHIE)	Norm Botsford, Chair
		VACANT	VACANT
		VACANT	VACANT
	At-Large Three (3) at-large directors, should include representatives of other stakeholders, such as consumers, long term care providers, nurses, and other stakeholders not designated with either Permanent Directors or with representative directors	Your Partners in Quality (consumer representative)	Debra Nixon
		Arizona Advisory Council on Indian Health Care	Bennett Smiley, Gila River
		University of Arizona, College of Medicine	Ronald Weinstein, MD, Founding Director, Arizona Telemedicine Program

Arizona Health-e Connection: A Strategic Direction

Arizona Health-e Connection (AZHEC) was established in January 2007, as a not-for-profit organization whose mission is to lead Arizona's establishment of health information exchange (HIE), and adoption of health information technology (HIT). The organization evolved from a Governor-initiated, state-led program called upon to comprehensively review issues and develop recommendations, to an implementation organization directed by a very diverse, private-public partnership.

Arizona Health-e Connection's purpose is to achieve the goal of interoperable electronic health records, available at the point of care, for every Arizonan by 2010 in order to increase the quality and decrease the costs of health care. Through intense research, public input, and collaborative discussion, the Arizona Health-e Connection Roadmap was established, outlining various steps and suggested direction for reaching the goal.

The newly-established Arizona Health-e Connection Board met, reviewed the Roadmap and associated implementation team reports, and during a strategic planning session established strategic direction for the organization. The Board considered three areas of strategic activity for the organization:

1) **Information Clearinghouse / Educational Outreach**
2) **Standards / Rules Setting Body**
3) **Health Information Technology and Exchange Infrastructure**

The Board agreed that Arizona Health-e Connection should focus in the first two areas: (1) serving as an educational resource and information clearinghouse for electronic HIE initiatives throughout the state; and (2) serving as a standard and rules setting body to coordinate and foster HIE activities throughout the state. In addition, the Board agreed that Arizona Health-e Connection should identify and undertake, on an ongoing basis, specific infrastructure projects in the third area, where Health-e Connection's participation would support statewide and regional initiatives, foster efficiency and limit duplication of resources.

A general description of the Board-approved direction follows:

Information Clearinghouse / Educational Organization
Arizona Health-e Connection will act as a clearinghouse for information and best practices in support of HIEs within Arizona, such as the AHCCCS Medicaid HIE and the Southern Arizona Health Information Exchange (SAHIE). Examples of such information include:

- Sample policies and procedures
- Funding sources / financial viability guidance
- Sample legal agreements

Arizona Health-e Connection will also act as a clearinghouse for information in support of HIT adoption. Such information may include:

- Information on Electronic Health Record (EHR) vendors/products
- Sources of EHR implementation assistance (especially for small offices)
- Educational programs
- Sample contracts to purchase EHRs

Through the Arizona Health-e Connection Website (www.azhec.org), the organization will also provide links to other useful federal and state initiatives, grants, and programs, providing a single point for information for all Arizonans interested in HIE and HIT.

Standards / Rules Setting Body

Arizona Health-e Connection, through further investigation and convening of stakeholders, will identify or develop standards for the facilitation of HIEs. Examples of standards that may assist in the development of HIEs might include:·

- Software certification tools or standards for HIE
- Software certification tools or standards for HIT
- Guidance on best practices/policies for HIEs in Arizona
- Model participation agreement for access to HIEs in Arizona
- Access, Authentication, Authorization and Audit surrounding the sharing of electronic health records

Additionally, Arizona Health-e Connection will identify statutory barriers to HIE and sponsor legislation to amend those statutes.

Health Information Technology and Exchange Infrastructure

As Arizona Health-e Connection strives to support the establishment of HIEs throughout Arizona, it may become necessary to also establish certain statewide supportive infrastructure (or utilities). Both the clinical and technology task forces identified examples of Health Information Technology, and shared HIE utilities, that would provide value to both health care providers and HIEs.

The Board agreed that it would work closely with regional and statewide initiatives, such as SAHIE, DOQ-IT, GITA's Rural Health Information Technology Adoption Program and Arizona Health Privacy Project, the AHCCCS transformation grant initiative and Arizona HealthQuery, to identify specific infrastructure projects, activities, or incentives that would support these initiatives, maximize efficient use of resources and avoid duplication of effort. Examples of such infrastructure and programs may include a secure Web portal (potentially for accessing all health information exchanges), a statewide provider directory (that authenticates providers for access to health information exchanges), a patient health summary (that provides basic information for

continuity of care), and identification and implementation of HIT adoption incentives and programs.

Looking Forward

There is a strong desire throughout Arizona, the United States and the world to establish the successful exchange of health information, and many initiatives are underway. By monitoring best practices and lessons learned in health information exchanges inside and outside Arizona, it is anticipated that new information will be made available to the Arizona Health-e Connection leadership, so that direction can modified accordingly.

Appendix D

Health Information Exchange
Security Overview
For Arizona Health-e Connection

Consulting presenter

Dr. Raja Kailar

Senior Security & Infrastructure Architect & Subject Matter Expert

&

Chief Technology Officer

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Dr.Raja Kailar

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Profile:

- CTO, Business Networks International Inc.
- Security Architect, CDC PHIN Messaging System
- Security Architect, NHIN Phase I Prototype
- Security Architect, NYeC Phase II Trial Implementation
- Senior Consultant, Council for Affordable Quality Healthcare

Specializing in:

- Enterprise Security
- Secure Messaging
- Perimeter Security
- Public Key Infrastructures
- Healthcare and Public Health IT Security and Connectivity Standards

Product Architecture:

- ManageSecure®
- SureDeliver™

Research Interests:

- Perimeter Security, Balanced Assurances
- Secure and Reliable B2B Messaging
- Recent Publication: “A Security Architecture for Health Information Networks” (AMIA 07)

Graduate Education: Doctorate in Electrical Engineering
Thesis: Network Security
Certification: NSA Certified Vendor Security analyst (Cryptography)

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Overview

- BNETAL – Company Background

- HIE Security Standards Information
  - Authentication
  - Audit
  - Consent

Note:

Please send questions to ***kailar@bnetal.com*** ***or*** ***skailar@twcny.rr.com***

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INTERNATIONAL INC.
bnetal.com

Company Background

- **Over 15 years in security analysis, architecture, design and development**

- **Successful execution of several large (nationwide) enterprise security and messaging projects**

- **Strong core competencies**
  - **Enterprise Security Architecture**
  - **Public Key Infrastructures**
  - **Secure Messaging**
  - **IT Project Management, Staff Augmentation & Human Resources**

  - **PhD, CISSP, MS, MBA, Certifications**
  - ✓ **Engineering background**
  - ✓ **Strong customer focus, team skills**

- **Extensive healthcare and public health IT experience**

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Healthcare IT Relevant Projects

- Public Health Information Network (PHIN) projects
- Council for Affordable Quality Healthcare – security, interoperability
- Nationwide Health Information Network Phase I Prototype - Security Architecture
- New York e-Health Collaborative – NHIN II Trial Implementation
- Many other Infrastructure projects in and outside US, Public Health, Healthcare IT, Education, Telecom and other sectors

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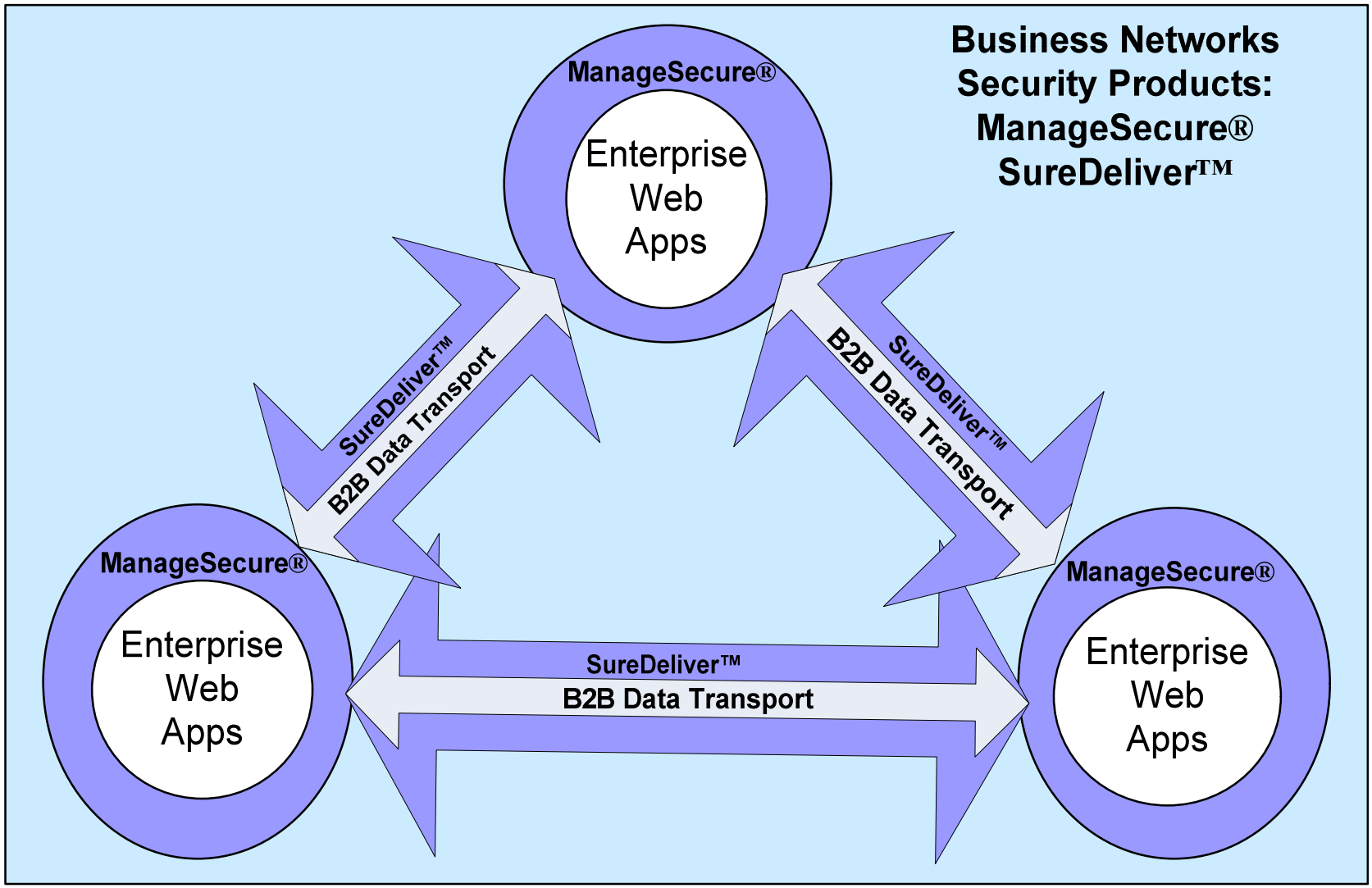
ManageSecure®

SureDeliver™



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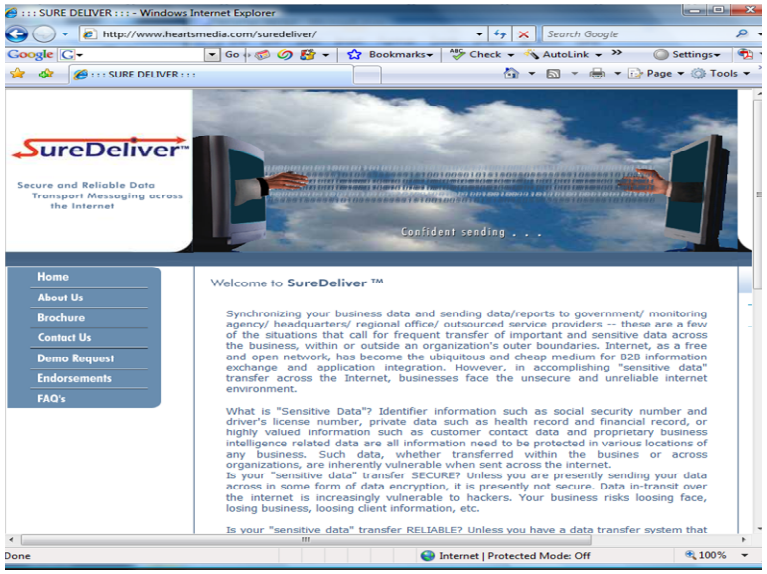
Company and Product Websites

- Corporate website:
  www.bnetal.com

- ManageSecure®
  www.managesecure.net

- SureDeliver™
  www.suredeliver.com



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Health Information Exchange Security Overview

- ***Authentication***
- ***Auditing***
- ***Secure Messaging***
- ***Consent Management***
- User Authorization
- User Identity Management
- Inter-domain Security
- System Availability and Integrity Protection
- Anonymization

Note: *Topics that are covered in this presentation are* ***bold-faced.***

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User Authentication Strength

- Authentication Factors
  - What the user knows, has, is

- NIST SP 800-63 - Electronic Authentication Guideline
  - Level 1: Single factor, no identity proofing, password not sent in clear
  - Level 2: Level 1 + identity proofing
  - Level 3: Level 2 + Multi-factor authentication (minimum = 2 factor)
  - Level 4: Level 3 + Hardware cryptographic tokens

- HIMSS Authentication White Paper – Assurance Levels
  - Level 1: Not assured that users are who they claim to be
  - Level 2: Somewhat assured that users are who they claim to be
  - Level 3: Very assured that users are who they claim to be
  - Level 4: Absolutely assured that users are who they claim to be

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Two-Factor Authentication – Regulations/Industry Trends

- AZ GITA P800-S820 (Authentication Standards)
  - 4.6. External connections to networks require strong authentication (2 factor)
- AZ GITA P800-S825 Rev 2.0 (Session Controls)
  - 4.4 Strong Authentication (at least 2 factor is recommended)
- CDC Public Health Information Network (PHIN)
  - "Best practice for Internet facing applications is to use two-factor authentication"
- Federal Financial Institutions Examination Council (FFIEC)
  - "Single-factor authentication, as the only control mechanism, is inadequate for Internet-based products and services such as online banking"
- Payment Card Industry (PCI)
  - "Implement two-factor authentication for remote-access to network by employees, administrators and third parties"
- HIEs requiring two-factor authentication to PHI:
  - Minnesota
  - Kansas

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Inter-Organization (B2B) Inter-Process Communication

- One-way SSL provides Server Authentication only

- Client Authentication options:
  - IP Address Filtering:
    - Advantages: Simple, no user credentials to manage
    - Challenges: Client IP address is not a 'secret', can be spoofed. Can be used to complement and strengthen other client authentication methods.

  - HTTP Basic Authentication:
    - Advantages: Simple, Part of HTTP Spec, Supported by most web-servers
    - Challenges: Dictionary attacks. Transport level (not end-to-end)

  - X.509 Client Certificate based Authentication
    - Advantages: Strong, HITSP T17, IHE ATNA compliant
    - Challenges: Management of Client Certificates. Transport level

  - WS-Security
    - Advantages: End-to-end (suited for multi-hop transport)
    - Challenges: Complexity, adoption, management of tokens

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HIE - Authentication Standards

Standard	Description
HITSP T17	Secured Communication Channel
ASTM E1762	Standard Guide for Electronic Authentication for Health Care Information
HITSP TN900	Security and Privacy
HITSP TP20	Access Control
HITSP C19	Entity Identity Assertion
NIST SP 800-63	Electronic Authentication Guideline, Recommendations of NIST
HIPAA 164.312(d)	Person or Entity Authentication
IHE ATNA	Audit Trail and Node Authentication
IHE XUA	Cross Enterprise User Assertions
FIPS PUB 112	Password Usage
AZ P800-S820 Rev 2.0	AZ GITA Statewide Standard Authentication and Directory Services
AZ P800-S825 Rev 2.0	Session Controls
OASIS WS-Security	Web-Services Security Standards
OASIS SAML 2.0	Security Assertion Markup Language

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HIE - Audit Standards

Standard	Description
HITSP T15	Collect and Communicate Security Audit Trail
IETF RFC 3881	Security Audit and Access Accountability Message XML Data Definitions for Healthcare Applications
ASTM E2147-01	Standard Specification for Audit and Disclosure Logs in Health Information Systems
HITSP T16	Consistent Time
IHE ATNA	Audit Trail and Node Authentication
HIPAA 164.312(b)	Audit Controls
ISO 10164-7	Security Alarm Reporting Function
IETF RFC 3164	The BSD Syslog Protocol

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Patient Privacy Consent

Relevant questions:

- What is required legally?
- What policies are appropriate for risk management purposes?
- What is best for public policy?
- What is best for the consumers?
- What are the standards?
- What is feasible from an implementation perspective?

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Consent Enforcement Models

- Enforcement
  - At the time of publication of index to RLS
    - Has the patient opted-out/opted-in/been notified?
  - At Requestor (Provider level)
    - Does the Provider requesting patient data have consent from patient to receive data (from this data source)?
  - At Responder (Medical Record level)
    - Has the Patient provided consent to the requesting Provider/organization to receive data (from this data source)?

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Patient Consent Standards

Standard	Description
HITSP TP30	Manage Consent Directives
IHE BPPC	Basic Patient Privacy Consents
HITSP TN900	Security and Privacy
HITSP TP20	Access Control
OASIS XACML	Extensible Access Control Markup Language

Questions?

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A Roadmap Strategic Realignment

August 19, 2008

Confidential – Not for Distribution

Introduction

The Arizona Health-e Connection Roadmap delivered to Governor Napolitano on April 4, 2006 established a five-year plan for establishing Arizona's Health Information Infrastructure. Two main categories of activities comprised the work to take place: 1) Supporting the adoption of Health Information Technology (HIT; e.g., Electronic Medical Records in doctors' offices) and 2) Developing the Health Information Exchange (HIE) technology platform throughout the state.

Much has occurred in the national, state and regional landscapes since the delivery of the Roadmap, including receipt of a Medicaid Transformation Grant by AHCCCS (State Medicaid Agency), continued evolution of the Southern Arizona Health Information Exchange, State grants (GITA's Rural Health Information Technology Adoption, or RHITA Program) to rural communities for HIE planning, and commercial development of personal health information platforms, such as Google Health, Microsoft HealthVault, and Dossia. Some prominent RHIOs have failed, while others have demonstrated clear, sustainable models. Most importantly for Arizona, the not-for-profit organization Arizona Health-e Connection (AzHeC) was incorporated, with an amazing breadth of stakeholder leadership on its board, to continue implementation of the Roadmap.

One of the primary assumptions of the Roadmap is that most of the information exchange that currently occurs manually is on a local or regional level (referred to in the Roadmap as a Medical Trading Area), thus it was and is anticipated that local and regional leaders need to discuss their particular needs for Health Information Exchange, and consider formation of a Regional Health Information Organization (RHIO). The Roadmap proposed developing certain levels of exchange activity, such as results delivery, on a local or regional level, and other infrastructure – such as a Web Portal, Master Patient Index, or Provider Directory – on a state level.

With both regional and statewide efforts begun, and the initial year of the not-for-profit AzHeC completed, many of the leaders believed in early 2008 it was time for further clarity of purpose for AzHeC, and description of the Health Information Exchange governance, technology and financing that should be implemented at a state level.

The purpose of this paper is to briefly present the findings and recommendations that evolved from a process referred to as the "Roadmap Strategic Realignment," or "Roadmap 2.0," completed from mid-May to mid-August 2008. The findings point towards the desire for a stronger statewide organization role.

The authors of this report are optimistic that the proposals and recommendations will find a welcome audience. Throughout this process, it has once again been made clear that Arizona has a special partnership developed among the Arizona Health-e Connection Board, and it is also clear that health care stakeholders throughout the state continue their own optimism that Arizona can develop an effective health information infrastructure that will raise the quality of care for all Arizonans, and establish efficiencies never before seen in this complex industry called Healthcare.

Summary

There is a desire to establish a state-wide Health Information Exchange (HIE) that draws together stakeholders in supporting the provision of high quality effective care in Arizona. Much groundwork has been laid, and stakeholders are interesting to keep the present momentum. In moving toward this, two key propositions are presented below:

1. Arizona Health-e Connection becomes the organization responsible for managing the HIE and ensuring appropriate funding is secured and delivered.

2. The HIE will be based upon a single technology that will be selected through the Southern Arizona Health Information Exchange. This technology will be the preferred HIE infrastructure throughout the state, but will also serve as the mechanism to network, statewide, the existing or to-be-developed HIEs, be they RHIOs or institutional (e.g., hospital system) exchanges.

Proposals

The remainder of this paper summarizes what needs to be done to achieve this position. There is still work to be done on developing the detail.

1. Arizona Health-e Connection becomes the organization responsible for managing the HIE and ensuring appropriate funding is secured and delivered.

The stakeholders involved in the Strategic Realignment process were asked, whether, in the event that it was decided to proceed with a statewide HIE they would have a preferred organization responsible for managing the operational environment and if there were any organizations that could perform this role that would prevent the stakeholder from participating in the HIE.

The summary of these views is that the preferred approach is to work with an independent organization that does not present a conflict of interests either in terms of its competitive profile relative to other stakeholders, or in terms of its business goals and objectives.

Recommendation: That Arizona Health-e Connection should be reconstituted to allow it to take on this role.

Failure to adopt this recommendation could result in stakeholders withdrawing support for the statewide HIE and pursuing their own approaches to information sharing and exchange.

2. The HIE will be based upon a single technology that will be selected through the Southern Arizona Health Information Exchange (SAHIE).

At the first Realignment Workshop, it was agreed that AzHeC should work within the constraints of what had been done to date, and not restart the process. It was agreed,

therefore, to focus on work done by AHCCCS and SAHIE to develop or procure an HIE. Additionally, there is a desire to promote the adoption of EMRs (including e-Prescribing) by physicians.

AHCCCS has already started work on developing its own HIE, known as the HIeHR Utility, based on an Open Source platform (MA-SHARE) and funded by grant monies. The first phase of this development focuses on exchanging data with institutional providers in the Phoenix area, and is due to be put through a proof of concept process between September and December 2008. It is essential that this proof of concept is closely monitored by AzHeC so that the key lessons can be learned, and reflected in the approach to the statewide HIE.

Consideration has been given as to whether the AHCCCS HIeHR Utility could become the basis for the statewide HIE. There were a number of reasons why it was felt that HIeHR could not fill that role at this time. Firstly, the current scope is limited to only exchanging information with institutional provider organizations in the Phoenix area and therefore the proof of concept would not, at this point, prove that HIeHR could meet the wider statewide requirements including the need to exchange information with physician practices and groups. Timing of future development phases is unclear at this time; as is the commitment of AHCCCS to continue the HIE development beyond Phase 1. Secondly, at this time, funding of HIeHR is based on a grant and therefore future developments could be dependent on AHCCCS raising funds from other sources that may not be compatible with the wider requirements of the statewide HIE and the ability to meet the expectations of the wider group of stakeholders. This is particularly relevant with the insurers who have raised the issue of the competitive position of AHCCCS relative to their businesses. A business model not reliant on grant monies has not yet been developed and shared. Thirdly, we understand that the current levels of adoption of the MA-SHARE technology are limited and that the future viability of HIeHR is dependent on AHCCCS making the solution available to other Information Exchanges. At this time it is not clear where this demand will come from or how it will be managed. These issues make it difficult to give preference to the HIeHR Utility (software/hardware/business model) in considering what would be the best solution for the Arizona HIE. It is clear that a great amount of experience and knowledge relative to Health Information Exchange is being developed within and around the HIeHR project, and it is imperative that this intellectual capital be shared and utilized for the benefit of the statewide HIE. The AHCCCS HIeHR Utility project deserves a great deal of credit for furthering

momentum and activity that have brought AzHeC to this strategic point, and AzHeC will continue to work closely with the HIeHR and other AHCCCS e-health projects (e.g., clinical decision support, EMR adoption, and e-prescribing) which seek to further the establishment of Health Information Infrastructure in Arizona.

SAHIE has made good progress in developing its business plan, engaging with its stakeholders and identifying a short list of vendors assessed against three "use cases" defined in a Request for Concept (RFC). Further progress, in the event that no statewide solution is identified, is predicated on securing additional funding from the SAHIE stakeholders.

From the beginning of the SAHIE project, in mid-2005, community stakeholders – both provider and payer organizations – have contributed to the project phases due to the value foreseen in the project for their organization. A great amount of "social capital," trust, and ownership in the project has been developed – which are key to the success of any Health Information Exchange program. These same stakeholders helped to define the requirements, draft and distribute the Request for Concept (released in September 2007), and review the responding proposals. The SAHIE Steering Committee, composed of over thirty organizations, is co-chaired by provider organizations – currently University Physicians/Kino Hospital and El Rio Community Health Center. Clinicians have played a key role in both identifying their functional requirements, and identifying their preference of vendor user interfaces.

The SAHIE business model, which will be shared with the AzHeC Board, is built upon the Center for Information Technology Leadership (CITL) identification of HIE value and savings, with further refinements developed by SAHIE consultants and SAHIE Project Director Dr. Bharathan (who is also an economist), and reviewed by payors and other stakeholders. Contributions will be shared between payers and providers in a specified ratio, with no necessary reliance upon grants. This business model has received a great deal of approval by stakeholders interviewed during the Realignment Process.

Recommendation: That AzHeC adopts the SAHIE HIE as the statewide HIE, subject to a number of activities being satisfactorily completed on behalf of AzHeC.

Considerations and Next Steps

Should the recommendations be accepted, then there are a number of tasks that will need to be completed. These are outlined below.

1. Arizona Health-e Connection will need to be reconstituted to reflect its wider sphere of activity. The Board structure may need to be changed to accommodate additional interest groups, or an AzHeC subsidiary company established to perform the operational role. If the former, this could be achieved through reducing the board size and introducing subsidiary committees that reflect these interests.

2. Operational policies and procedures will need to be defined and agreed upon to reflect these changes. Particularly important here is the need to define the rules of membership, i.e., how founder members are defined and how new members are brought in, in a fair and equal way; as well as how non-members are dealt with where their data is processed through the exchange.

3. The funding mechanism will need to be defined for initial start-up capitalization and for ongoing operations. This will reflect the perceived and actual benefit gained from the HIE by each of the stakeholders (the SAHIE model).

4. The SAHIE procurement will need to be expanded to enable additional Use Cases to be considered in the vendor selection process. Examples of additional Use Cases include:

    a. Accurate patient identification
    b. Linkages with Personal Health Records
    c. Linkages with Public Health organizations for Bio-surveillance
    d. Support for Chronic Disease Management

    These cases will be agreed with the stakeholders to ensure a thorough reflection of their wider functional, technical (including appropriate standards), and service requirements. These requirements, and the vendor commitment to meet them, will form the basis for the contract and service-level agreements (SLAs).

5. While it is appropriate and necessary for SAHIE to manage the procurement and pilot process, it is equally necessary that AzHeC be heavily involved in these processes so that other stakeholder interests can be fairly and openly represented.

    It is clear that SAHIE cannot perform the ongoing statewide governance role and therefore plans need to be developed during the pilot to effect a smooth transition from SAHIE to AzHeC for the responsibility of the exchange.

6. The pilot will need to be carefully evaluated against predetermined criteria and plans put in place to make any necessary adjustments to the solution.

7. Mobilization plans need to be developed to ensure AzHeC is able to commence its role of managing the HIE from a governance and operational oversight perspective once the pilot has been completed. This also needs to encompass the plans for rolling out the HIE in a timely manner to all other stakeholders. To achieve this, SLAs will need to be established between AzHeC and the end users as well as between AzHeC and the vendor.

8. The ongoing governance role will reflect the need to ensure careful management of capital and ongoing operational expense and revenue.

9. The ongoing requirement for AzHeC to play a role in facilitating EMR/e-Prescribing adoption needs to be incorporated into the set up and operational phases. One possibility is for AzHeC to be established as a Group Purchasing Organization (GPO) that will negotiate contracts with EMR vendors on behalf of stakeholders to establish a mechanism for physicians to procure and implement systems. The exact number of vendors to be included in this framework will need to be agreed upon, as will the nature of the resulting contracts.

10. Due to the large number of PHRs in the marketplace, AzHeC will not implement its own PHR at this time, but develop the exchange of information electronically, that will allow future interfaces with either personal health platforms such as Google Health, Microsoft HealthVault, and Dossia, or personal health records. AzHeC will begin exploration of a pilot of such interfaces, to be initiated after the HIE pilot. The Connecting for Health's Common Framework for Networked Personal Health Information provides detailed information on the proposed general architecture and policies.

Conclusion

The Realignment Process has helped to crystallize the thinking about what needs to be done to deliver a statewide Health Information Exchange for Arizona. There is a consensus that the HIE is a good thing and that it needs to be managed by an independent, trusted organization. A key requirement of the Realignment Process was to take account of work that had already been done and use that as the basis for future strategy. This paper presents two proposals in the context of the above that

need to be adopted so as to allow further substantive work to be undertaken. These are:

1. That AzHeC be adopted as the organization to manage the HIE

2. That SAHIE be adopted as the preferred HIE approach

The Board is asked to confirm their approval for these proposals and to allow progress on the other activities defined in this paper.

Appendix E

United Healthcare of Arizona Grant Proposal

Arizona E-Prescribing (and EMR "First Step") Initiative

Contact person: Bradley F. Tritle, Executive Director
Arizona Health-e Connection
602 288 5130
602 377 7378
brad.tritle@azhec.org
November 16, 2007

Narrative

Background

In 2006, the Institute of Medicine (IOM) released its landmark report *Preventing Medication Errors,* which indicated there are more than 1.5 million adverse drug reactions (ADEs) in the United States each year. When adjusted for population, that means that patients in Arizona are adversely affected by a prescribed medication over 31,500 times each year. What is the cause? According to the HIMSS publication *Electronic Prescribing for the Medical Practice,* these errors are most often due to "illegible handwriting, incoherent abbreviations and dose designations, unclear telephone or verbal orders, or ambiguous orders and fax-related problems."[1] The IOM report indicates that at least 25% of these ADEs could be prevented through activities such as electronic prescribing (e-prescribing) and consumers documenting their medications, nutritional supplements, and drug and food allergies.[2]

> Definitions adopted by the Institute of Medicine's Committee on Data Standards for Patient Safety and the Committee on Identifying and Preventing Medication Errors:
>
> - A medication error is defined as any error occurring in the medication use process
> - An adverse drug event is defined as any injury due to medication
> - An injury includes physical harm (for example, rash), mental harm (for example, confusion), or loss of function (for example, inability to drive a car)
>
> Originally developed by: Bates DW, Boyle DL, Vander Vliet MB, Schneider J, Leape L. 1995a. Relationship Between Medication Errors and Adverse Drug Events. *Journal of General Internal*

What is the impact of these adverse drug events? They negatively impact both patient safety and health care costs. The Center for Information Technology Leadership (CITL) states that between 1.4% and 4% of prescriptions have errors that could result in serious patient risk, and that 1 out of every 131 ambulatory patient

[1] Hale P, *Electronic Prescribing for the Medical Practice: Everything You Wanted to Know But Were Afraid to Ask*. Chicago: the Healthcare Information and Management Systems Society. 2007.

[2] Aspen D, Wolcott J, Bootman J, Cronenwett L, *Preventing Medication Errors*. Washington, D.C.: The National Academies Press. 2007.

deaths is due to medication error. The same study estimates that ADEs occur in 5% to 18% of ambulatory patients, and that this costs health care payers $2 billion/year.[3] This is approximately $6.67 for every citizen in the United States, or $42 million in additional ambulatory setting costs for the population of Arizona. It is clear to see both the patient safety and bottom-line costs of medication errors.

Are there additional e-prescribing savings??

Yes! Savings from Over/Underuse of Medications

10% average rate of overused medications which are medically unnecessary

$35 to $70 per member per year net savings generated from overuse and underuse of medications.

Most financial benefit goes to payors (estimated to be approximately 89%); only 1% goes to clinicians investing in systems

Johnston, D, Pan E, Walker J, Bates D, Middleton B. *The Value of Computerized Provider Order Entry in Ambulatory Settings*. Boston: Center for Information Technology Leadership; 2003

This data on both patient safety and costs, and the clear value of e-prescribing in addressing the issue, led the Institute of Medicine to recommend that all providers should be e-prescribing, and all pharmacies should be able to receive prescriptions electronically, by 2010. By 2008, all prescribers should have plans in place to implement electronic prescribing.

Similarly, early drafts of the Medicare Prescription Drug, Improvement, and Modernization Act (MMA) of 2003 mandated adoption of e-prescribing by 2007 by any provider writing prescriptions for Medicare Part D beneficiaries. The final version of the MMA, however, was revised to indicate that e-prescribing adoption by providers is voluntary, but any provider choosing to e-prescribe must still abide by e-prescribing standards established by CMS.

E-Prescribing Defined

E-prescribing, also called electronic prescribing and less commonly known as *ambulatory computerized prescriber order entry (ACPOE)*, is the electronic transmission of prescription or prescription-related information between a prescriber, dispenser, pharmacy benefit manager, or health plan, either directly or through an intermediary, including an e-prescribing network. E-prescribing includes two-way transmissions between the point of care (the point at which you and your patients interact) and the dispenser. (Please note that these

[3] Johns *vider Order Entry i* ; 2003.

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Arizona

Momentum has been building in Arizona around the issue of patient safety, and e-prescribing in particular. In mid-2007, the Arizona Partnership for Implementing Patient Safety (APIPS) established its e-Prescribing Subcommittee, co-chaired by Dr. Terri Warholak (Ph.D, R.Ph.) of the University of Arizona's College of Pharmacy, and Dr. Anita Murcko (M.D.) of the Arizona Healthcare Cost Containment System (AHCCCS) Health Information Exchange / Electronic Health Record (HIeHR) project. The Subcommittee's first activities included a review of statewide e-prescribing initiatives throughout the United States, so that their applicability to Arizona might be considered. Through communications with e-prescribing leaders in states such as Massachusetts, Tennessee, Rhode Island, New Jersey, Illinois, Florida, and others, initial lessons have been identified, and this subcommittee is formulating suggested incentives, timelines, possible legislative changes, and identification of "e-prescribing champions" for an Arizona initiative.

Important lessons learned from the APIPS e-Prescribing Subcommittee discussions with others states include the following:

- Need for a marketing/communications campaign to raise awareness and excitement, and to provide education regarding the benefits of e-prescribing
- Need for "hands on" assistance to providers during installation, training, and initial support

- Software is readily available at low or no cost, and other incentives – such as honorariums for certain levels of use – need to be considered
- Partnerships to be established include SureScripts, RxHub, and e-prescribing application vendors (initially a small number of such vendors)
- Implementation of incentives to encourage physician use should be considered.

In parallel, Governor Napolitano has noted both the positive results of e-prescribing initiatives in other states, as well as the large percentage of pharmacies in Arizona that are already certified to receive prescriptions electronically. Briefings between the Governor's policy advisor, State CIO, AHCCCS Director, Arizona Health-e Connection, APIPS chair, and APIPS e-Prescribing Subcommittee co-chairs have resulted in the conclusion that the time is right for Arizona to launch its own e-prescribing initiative. Due to the broad-based stakeholder presence on Arizona Health-e Connection's public-private board, and the organization's mission and strategic direction, it was also determined that Arizona Health-e Connection should be the organization to launch the Arizona e-prescribing initiative.

Arizona Health-e Connection intends to fully leverage, and work with and through, the APIPS e-Prescribing Subcommittee. Final organizational structure of the Initiative is yet to be determined, but it is proposed that the APIPS E-Prescribing Subcommittee consider nominating members for participation in the Arizona Health-e Connection e-Prescribing Initiative Committee, or merge with the Committee.

What is Arizona Health-e Connection?

A not-for-profit established in December 2006 to accomplish the following **Mission:**

- Facilitate the design and implementation of integrated statewide health information technology exchange

Arizona Health-e Connection staff has gained initial support from the organization's board, subject to formal approval in a Board vote on November 27th, to propose that United Healthcare consider funding a statewide e-prescribing initiative. Arizona Health-e Connection proposes the initiative contain the following major components:

- Establish highly visible and respected pharmacy and provider representatives as Initiative Co-Chairs (volunteers)
- Secure a medication safety subject matter expert, who is also an experienced project manager and researcher, to be the Initiative Project Director (paid position)
- Populate the Initiative Committee with "e-prescribing champions," and utilize input to design a detailed timeline and workplan. This detailed workplan will be delivered to United Healthcare for final review. This workplan should also detail how e-prescribing will incorporate EMR adoption promotion (many e-prescribing modules are part of more fully functional, electronic medical record systems).
- Hold a highly-visible, statewide Summit focusing on e-prescribing, with the support of the Governor. The summit should include national and

Arizona speakers. Secure initial Platinum Sponsor, to fund the organization of the Summit.

- Design and launch an education and communications campaign targeting primarily the provider/physician community, utilizing support of the Arizona Health-e Connection board organizations. For the benefit of the Initiative, a clear and comprehensive, multi-year communications plan should be developed for Arizona Health-e Connection, detailing the coordination of e-prescribing with, and leverage of, other health information infrastructure initiatives, especially the promotion of electronic medical record (EMR) adoption. Secure Initiative Communications Director (paid position).

- Design and launch a research component, in conjunction with the University of Arizona College of Pharmacy, that includes both quantitative and qualitative (e.g., attitudes) research, in order to measure the effectiveness of the Initiative's efforts. Best practices and lessons learned can be clearly identified and published for both continuous improvement of the Arizona Initiative, and the benefit of other state and national efforts (e.g., engagement of University of Arizona College of Pharmacy faculty). There is need nationwide for a best practices model, and we propose this grant will establish such a model.

- Work closely with Arizona's health insurance plans, soliciting participation in leadership roles for the Initiative, and exploring further use of incentives to encourage physician adoption of e-prescribing and eventually electronic medical records.

- Establish an incentive fund, to explore and pilot the use of incentives – either direct or indirect – to promote e-prescribing and overall electronic medical record adoption. Incentives to be considered include providing free or low-cost software applications or hardware to providers (direct); establishing or promoting hosted, web-based applications (indirect); providing trained staff

- To assist providers in the first days of application use (indirect).

E-prescribing: A "Beachhead" for the advancement of health information infrastructure

"As the U.S. moves toward a national healthcare information infrastructure (NHII) or nationwide health information network (NHIN), one commonly held notion is that e-prescribing will serve as a beachhead for the advancement of health information technology at the point of care." Martin R, *Electronic Prescribing for the Medical Practice, HIMSS.*

*****

"We applaud the commitment of Secretary Leavitt and Administrator Weems to accomplish President Bush's goal of broad physician adoption of Electronic Health Records by 2014.

"Although e-prescribing is the easiest, least expensive first step toward this goal, fewer than 10 percent of physicians have begun using it. That's unfortunate since e-prescribing is the only part of health IT in which clear national standards have already been developed in Medicare.

"The surest path to meeting the President's 2014 target is to begin requiring physicians to use e-prescribing in Medicare. This could prevent 1.9 million medication errors over the next decade and jump-start physician adoption of broader health IT." Pharmaceutical Care Management Association, *Press Release of October 30, 2007.*

*****

"E-prescribing — a relatively low-cost, easy-to-implement solution — is the logical starting point toward full-scale EHR implementation for all ambulatory

As e-prescribing is seen as a first step in advancing adoption of health information infrastructure by clinicians, it coordinates perfectly with Arizona Health-e Connection's current activities and strategic direction. These activities include providing strategic and statewide support of both the Southern Arizona Health Information Exchange (SAHIE) and the AHCCCS HIeHR projects, both of which are anticipated to benefit greatly from, or will include, an e-prescribing component.

This initiative, and the "ripple effect" it will create in Arizona's health information infrastructure, is anticipated to impact all Arizonans, of every race, ethnicity, and socioeconomic status, in every community. Efforts in other states have shown that once physicians successfully adopt e-prescribing, they recognize the benefits, and ongoing use is easily sustained. It is anticipated that two years of intense, coordinated organization, communications, and education through this initiative has the potential to dramatically increase the safety of patients in Arizona, and through

reduction in adverse drug events, also reduce associated ADE health care expenses. Arizona Health-e Connection is committed to evidence-based activities, and thus commits to ongoing research associated with this initiative, so that Arizona and the rest of the country will benefit from this investment of time, money, and energy.

So, what do physicians think of e-prescribing?

Health Management Technology commissioned a survey of 300 physicans by Epocrates, Inc, to determine physicians' support for e-prescribing, and its import to patient safety:

Results:
16% - Extremely important

39% - Very important

33% - Important

4% - Unimportant

Yet, the same survey indicated 72% of the same physicians are currently not e-prescribing!

Let's work together to make e-prescribing a common practice in Arizona!!

Key Personnel

Initiative Project Director

Terri Warholak, Ph.D, R.Ph., Clinical Assistant Professor, Pharmacy Practice and Science, University of Arizona College of Pharmacy.

Terri L. Warholak received a BS degree in pharmacy (1992), a MS in pharmacy administration (1999) and a PhD in pharmacy administration (2001) from Purdue University. Dr. Warholak's clinical pharmacy experience ranges from inpatient to community practice and includes 5 years as a commissioned officer in the United States Public Health Service where she served in the Indian Health Service and the Food and Drug Administration.

In 2001, Dr. Warholak joined the faculty at Midwestern University Chicago College of Pharmacy, where her teaching and research included medication error reduction and bringing pharmaceutical care to underserved populations. She was recognized in 2003 as winner of the American Association of Colleges of Pharmacy Council of Faculties Innovations in Teaching Competition for her work titled “Application of Quality Assurance Principles: Reducing Medication Errors in 30 Pharmacy Practice Settings.”

In July 2005, Dr. Warholak joined the faculty at the University of Arizona College of Pharmacy, where she researches medication error reduction and underserved populations. Current activities include working with University Medical Center on overall improvement of the quality of care patients receive, including the study of patient safety and electronic prescription methods.

Initiative Co-Chair (Pharmacy)

Mindy Rasmussen, R.Ph., Executive Director, Arizona Pharmacy Alliance

Mindy Rasmussen graduated from the University of Wyoming in 1995 with a B.S. in Zoology and continued at the University of Wyoming School of Pharmacy, graduating with a B.S. in Pharmacy in 1998.

For the past eight years, she has worked in various community pharmacy settings including independent pharmacies, grocery store pharmacies and large chains pharmacies. She has also worked for VA Hospitals.

Her primary career has been as a hospital pharmacist. She worked for the Wyoming Medical Center in Casper, Wyoming for two years before moving to Cheyenne where she worked full-time as a staff pharmacist at United Medical Center for the past four

years. In fact, Mindy was awarded the Health-System Clinical Pharmacist of the Year in June 2003. She was on many committees at the hospital, including the P&T Committee and Pain Committee, and was co-director of the UMC Pharmacy Anticoagulation Management Services.

Mindy also expressed her dedication to the profession of pharmacy by serving as the Executive Director of the Wyoming Pharmacy Association since May 2003 which led her to Arizona as the new Chief Executive Officer for the Arizona Pharmacy Alliance beginning February 1, 2006.

Initiative Co-Chair (Physician) – to be determined

It is anticipated this will be a physician very familiar with e-prescribing, including the challenges to implementation as well as the benefits, and well respected by her/his peers.

Communications Director – to be determined

It is anticipated this person will be given the title of "Associate Director" of Arizona Health-e Connection, as well as Communications Director for the E-Prescribing Initiative, in order to provide overall coordination of initiatives. A requirement for this position is 7+ years in health care communications management, familiarity with e-prescribing, and with experience communicating with the physician community. It is believed this is the most important portion of the e-prescribing initiative – choosing the right person for this position, and the creating and implementing the proper communications plan.

Executive Director, Arizona Health-e Connection

Brad Tritle was selected as Arizona Health-e Connection's first executive director in August of 2007. Mr. Tritle most recently served as project manager for Arizona Health-e Connection, and administrator of the Rural Health Information Technology Adoption (RHITA) program, while in the position of Strategic Initiatives Manager at Arizona's Government Information Technology Agency (GITA). Tritle's career has been a unique blend of international trade and investment, and strategic leadership at the nexus of technology and community/economic development.

For the past ten years, Mr. Tritle has been a leader in the electronic display (e.g., LCD) industry in Arizona, founding and chairing the Southwest Chapter of The Society for Information Display (SID.org), consulting on technology development projects, and working for both U.S. and Japanese firms on marketing and manufacturing projects -- often coordinating activities in four countries simultaneously for a single project.

After the Arizona Partnership for the New Economy completed its study in 2000, indicating telecommunications infrastructure was a primary building block for Arizona's future, the State CIO / GITA Director asked Tritle to initiate the position of Telecommunications Development Manager. In this position, Tritle shared the vision of a networked state with public and private sector leaders around Arizona, while also identifying the status of Arizona's existing network infrastructure and working across agencies and jurisdictions to launch community telecom assessments. Tritle was the primary author of a document entitled *Connecting Arizona: Ensuring Broadband Access for All*, which still serves as a primary background document for continuing broadband discussions and initiatives, especially where rural Arizona is concerned.

Mr. Tritle holds a B.A. with Honors in Asian Languages, and an Asian Studies Certificate, from Arizona State University.

Program Manager, Arizona Health-e Connection

Melissa Rutala joined Arizona Health-e Connection as Program Manager in November 2007, after having served as both a Consultant and Health Policy Analyst at the Deloitte Center for Health Solutions and Deloitte Consulting, LLP in Washington, D.C. While at Deloitte, Ms. Rutala worked extensively on several Medicaid, price transparency and cost-saving initiatives with organizations to include the U.S. Department of Health and Human Services, the National Governor's Association, and the Wisconsin Medicaid Program. She was a contributor and interviewer for the Deloitte Center for Health Solution's publication *Health Care Price Transparency: A Strategic Perspective for State Government Leaders.*

Prior to her work with Deloitte, Ms. Rutala was Associate Director of Programs - Medicine Programs – at Envision EMI. While at Envision, Ms. Rutala organized forums on Medicine and Nursing for 8500 students. Her activities included managing sixteen faculty advisors, recruiting 250 temporary staff, researching and developing curriculum, and organizing and managing expenditures.

Ms. Rutala gained additional experience in both training and curriculum development while at Envision, as well as coordination of the review of residency training programs for UNC Hospitals in Chapel Hill, North Carolina.

Ms. Rutala holds a Masters in Public Health from George Washington University with a concentration in health policy, and a Bachelor of Arts from the University of North Carolina, Chapel Hill.

Work Plan

The detailed Work Plan for the Initiative will be developed by the Co-Chairs, Project Director, and Arizona Health-e Connection staff, with the input from both pharmacy and clinician experts on the Committee. At this time, however, we are pleased to provide you with the plan for establishing the Initiative, and a "straw man" overview of expected calendar items for the Initiative:

November 2007:	Establish Co-Chairs, Project Director
	Arizona Health-e Connection Board approval of Initiative
	Continue involvement with APIPS e-Rx Subcommittee, including gathering of data from other states
	Apply for funding from United Healthcare
	Design position description for Communications Director
December 2007:	Secure funding from United Healthcare
	Establishment of e-Prescribing Committee
	Begin development of detailed work plan
	Complete Communications Director search
	Begin planning Summit (securing space, speaker schedules)
January 2008:	Finalize detailed work plan, present to United Healthcare for review
	Governor Napolitano announcement of e-Prescribing Initiative
	Establish brand for Initiative
	Begin stakeholder organization outreach (statewide associations)
	Secure partnerships with SureScripts, RxHub, and other possible strategic partners
	Begin review of e-prescribing application vendors
	Complete establishment of Committee

	E-Prescribing Survey to establish baseline metrics (possibly as component of larger survey)
	Communications director begins development of Communications Plan
February 2008:	Begin implementation of pilot program
	Completion of Communications Plan
May 2008:	E-Prescribing Summit
	Initial results of pilot program
	Pilot program lessons learned revealed
June 2008:	Begin large scale Initiative
January 2009:	Interim survey
February 2009:	Interim report on lessons learned; model evolving
December 2009:	Final report; prepare to publish best practices model

Budget

Year 1	Item	Amount
	Project Director – 20% of Professor Warholak's time, plus University of Arizona overhead	$30,771.23
	Communications Director – full time	$96,000
	Research and Communications: focus groups, advertising and events	$50,000
	Incentive Fund (pilots)	$30,000
	Additional part-time personnel or consultants for clinician training, and troubleshooting, legal fees	$40,000
	Platinum sponsorship of Summit	$30,000
Year 1 Subtotal		$276,771.23
Year 2	Project Director – 20% of Professor Warholak's time, University of Arizona overhead	$31,699.36
	Communications Director	$96,000
	Research and Communications: focus groups, and events (lessening in year two)	$25,000
	Additional part-time personnel or consultants for clinician training, a troubleshooting	$40,000
Year 2 Subtotal		$192,699.36
Total		$469,470.59

Requested		

Budget Narrative

As the main inhibitor to physicians' adoption of e-prescribing is not money, but education, understanding, motivation, and training, the majority of costs for this initiative are for communications, training, and incentive pilots. It is anticipated that the financial participation of additional organizations may be necessary if incentive pilots prove that incentives should be used for the entire physician population.

Arizona Health-e Connection plans for this initiative to be our primary need for communications over the next two years, and thus has asked for funding the salary of what is approximately the median salary within what our Education/Outreach Committee has deemed is an appropriate salary range for this function.

Both Dr. Warholak, and others on the APIPS e-Prescribing Subcommittee (including staff of Midwestern University) believe that Arizona, through proper research, documentation, analysis, and dissemination of information from this initiative, can establish a "best practices model" for use in promotion of e-prescribing throughout the United States. Focus groups and surveys are critical to establishment of this model.

We believe the Summit can generate national and statewide exposure to the issue of e-prescribing. Arizona Health-e Connection will use additional staff time not funded through this initiative, to manage the organization of the Summit (Melissa Rutala). It is anticipated that we will establish a minimum of four Platinum sponsors, and United Healthcare will be the first – an anchor sponsorship that will allow us to attract subsequent sponsors.

Brad Tritle will provide additional leadership for this initiative, but we are not asking for any compensation through this initiative for his time.

Financial Statements

As Arizona Health-e Connection began in January 2007, we do not have certified financial statements for the most recent fiscal year. Included with this proposal is the most recent financial statement from our CPA, Dakri Sutton.

Disclosure of Potential Conflicts

United Healthcare of Arizona: Benton Davis, CEO, is on our Board of Directors

Arizona Department of Insurance: None

Arizona Department of Health Services: Susan Gerard, Director, is on our Board of Directors

State of Arizona: January Contreras, Governor's Policy Advisor, is on our Board

Chris Cummiskey, State CIO and GITA Director, is on our Board

Anthony Rodgers, AHCCCS Director, is on our Board

Contact

Bradley F. Tritle, Executive Director
Arizona Health-e Connection
602 288 5130
602 377 7378
brad.tritle@azhec.org

BIOGRAPHICAL SKETCH

Provide the following information for the key personnel and other significant contributors in the order listed on Form Page 2.

Follow this format for each person. **DO NOT EXCEED FOUR PAGES.**

NAME Warholak, Terri L	Assistant Professor
eRA COMMONS USER NAME twarholak	

EDUCATION/TRAINING *(Begin with baccalaureate or other initial professional education, such as*

INSTITUTION AND LOCATION	DEGREE *(if applicable)*	YEAR(s)	FIELD OF STUDY
Purdue University, West Lafayette, IN	B.S.	1992	Pharmacy
Purdue University, West Lafayette, IN	M.S.	1999	Pharmacy Administration
Purdue University, West Lafayette, IN	Ph.D.	2001	Pharmacy Administration

Positions and Employment

1990 Commissioned Officer Student Training Externship Program (COSTEP), IHS, Sells, AZ
1991 Commissioned Officer Student Training Externship Program (COSTEP), FDA
1992-1996 Pharmacist, Indian Health Service (IHS), Phoenix Indian Medical Center
1997-1999 Pharmacist, Family PharmaCare Pharmacy, West Lafayette, IN
1997-1999 Graduate Teaching Assistant, Purdue University, School of Pharmacy and Pharmacal Sciences
1999-2000 Pharmacist, Emergency Department, Phoenix Indian Medical Center
1999-2000 Instructor of Pharmacy Practice, Midwestern University, College of Pharmacy-Glendale
2000-2003 Technical Assistance Consultant, Health Resources and Services Administration (HRSA)
2001-2005 Assistant Professor, Chicago College of Pharmacy, Midwestern University
2005-2007 Clinical Assistant Professor, College of Pharmacy, The University of Arizona
2007-present Assistant Professor, College of Pharmacy, The University of Arizona

Other Experience and Professional Memberships

1993-1995 Treasurer, Commissioned Officers Association, Phoenix Chapter
1994-1996 Member, Surgeon General's Professional Advisory Committee
1995 President Elect, Commissioned Officers Association, Phoenix Chapter
1995 Membership Chair, Surgeon General's Professional Advisory Committee
2001-present Member, Editorial Advisory Board, Research in Social and Administrative Pharmacy
2001-2003 Member, Task Force on Solutions to Inefficiencies to Prescription Processing
2003-2005 Member, Illinois Pharmacists for Quality Pharmaceutical Care
2004-2005 Member, Policy Review Committee, American Pharmacists Association
2006- Member, State Board Quality Assurance Regulation Taskforce
2007- Co-chair, Arizona Partnership for Implementing Patient Safety e-Rx Initiative
2007- Chair, Arizona Health-e Connections Standards, Measures, and Outcomes Committee
2007- Member, Legislative Action Committee Task Force, Arizona Pharmacy Alliance
2007 Chair, Academic Sub-Committee, Communication and Education, Pharmacy Quality Alliance
2007 - Member, Arizona Health e Connections EAzRx Steering Committee
2007 Member, American Association of Colleges of Pharmacy Task Force on Patient Safety

Honors

1992 Public Health Service Unit Commendation
1993 Public Health Service Citation
1994 Public Health Service Achievement Medal
1995 Committed to Caring Positive Action Award, The Phoenix Indian Medical Center
1995 Committed to Caring Positive Action Award, The Phoenix Indian Medical Center

Honors - Continued

1995	Committed to Caring Positive Action Award, The Phoenix Indian Medical Center
1995	Recommended, PHS Exceptional Capability Promotion (ECP)
1996	Committed to Caring Positive Action Award, The Phoenix Indian Medical Center
1997, 1998	Fellow, Purdue University Andrews Fellowship
1998	Rho Chi Professional Honor Society
1999, 2000	Fellow, American Foundation for Pharmaceutical Education
2003	American Association of Colleges of Pharmacy, Innovations in Teaching Award
2002	Mentor of the Year, Midwestern University Chicago College of Pharmacy
2008	Wal-Mart Annual American Association of Colleges of Pharmacy Conference Scholarship

Selected peer-reviewed publications (in chronological order).

1. **Warholak-Juarez T**, Rupp MT, Salazar TA, Foster S. The effect of patient information on pharmacists' drug use review decisions. *Journal of the American Pharmacists Association.* 2000; 40:500-8.
2. Millonig MK, **Jackson TL**, Ellis WM. Improving medication use through pharmacists' access to patient-specific health care information. *Journal of the American Pharmacists Association.* 2002; 42: 638-43.
3. **Jackson TL**, Rupp MT, Newton GD. Evaluation of a clinical decision aid and training program on the quality of pharmacists' prospective drug utilization review decisions. *American Journal of Pharmaceutical Education*. 2002; 66: 260-267.
4. **Jackson TL**. Application of quality assurance principles: Teaching students medication error reduction skills in a "Real World" environment. *American Journal of Pharmaceutical Education*. 2004; 68(1) Article 17.
5. **Jackson TL**, McCord AD, Dahdal WY, Zgarrick DP, Brock K. The use of a scholarship committee to foster scholarly growth of pharmacy practice faculty. *American Journal of Pharmaceutical Education*. 2005; 69(5): Article 1519.
6. **Jackson TL**. Ensuring quality in pharmacy operations. pp 125-149. In: *Pharmacy Management*. Desselle S and Zgarrick D (Eds). McGraw Hill Companies, Inc. 2005
7. Hassenplug K, Burkiewicz J, **Jackson T**, Peppers L. Effect of pharmacist education on patient knowledge of nosebleed management: An anticoagulation clinic intervention. *American Journal of Health-System Pharmacy.* 2006; 63(May 15): 909-911.
8. Bruce S, **Jackson TL**. Collaborative research: Benefits for all involved. *Journal of the American Pharmacists Association*. 2006; 46(6): 663-664.
9. **Jackson TL**, Stensland SL, Todd TJ, Lullo A, Mazan A, Masood AM. Assessment of a pediatric asthma awareness program. *Journal of Asthma*. 2006; 43: 311-317.
10. Gettig, J, **Warholak Jackson TL**. Clinical decision making: Application to the practice setting. In: *The Role of Drug Delivery Systems in Pharmaceutical Care: A Practitioner's Guide*. Gibaldi M, MacKichian JJ (Eds.) 2007.
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16. Sweeney BL, Burkiewicz JS, Peppers LR, **Warholak TL**. Group vs. individual appointments in a point-of-care anticoagulation clinic. *American Journal of Health-System Pharmacy.* (accepted).
17. **Warholak TL**, Rupp MT. Analysis of community pharmacists' interventions on electronic prescription errors. *Journal of the American Pharmacists Association*. 2009. (accepted).

Ongoing Research Support

(Warholak and Malone co – PIs) 7/1/05 – 6/31/09
The Arizona Health Care Cost Containment System (AHCCCS)
Project: Transformation grant I: The Health Information Exchange and Health Record Project (HieHR)
The major goals of this project are to design, implement and evaluate a health information exchange and personal health records for AHCCCS patients.
Role: Co-Principal Investigator

2 U18 HS10385-04 (Woosley-PI) 9/1/07-9/1/12
AHRQ
Center for Education and Research in Therapeutics
Project: Drug-Drug Outcomes Core
The major goals of this project are to examine factors affecting the incidence of serious drug-drug interactions in the community and Veterans Affairs medical centers.
Role: Co-Investigator

(Warholak PI) 5/15/08 – 5/14/09
United Health Care.
Project: Arizona e-Prescribing (and EMR First Step) Initiative
The major goals of this project are to design, launch and evaluate an electronic health exchange and electronic prescribing education and communications campaign targeting prescribers, pharmacists, nurses, and patients in Arizona.
Role: Principal Investigator

(Warholak PI) 6/15/08 – 12/15/08
The Pharmacy Quality Alliance (PQA)
Project: Educating Pharmacy Students and Pharmacists to Improve Quality
The major goals of this project is to develop quality improvement educational resources to be used by pharmacy faculty and others to educate pharmacy students, pharmacists, and other stakeholders about measuring, reporting, and improving quality in pharmacy practice.
Role: Principal Investigator

(Warholak PI) 7/1/08 – 6/30/09
The American Society of Health-System Pharmacy Foundation
Project: A Prospective Observational Study of Medication Errors in a Tertiary Care Emergency Department
The major goal of this project is to document the rate and types of medication errors occurring in a tertiary care emergency department.
Role: Co- Investigator

Relevant Completed Research Support

(Warholak Jackson PI) 11/9/05 – 4/8/06
Collaboration with MEDTAP Inc
Project: Asthma Burden of Illness Study
The major goal of this project was to examine factors associated with healthcare utilization in patients with asthma in the Arizona Medicaid population.
Role: Principal Investigator

1 U18 HS016394-01 (Lapane PI) 1/1/07 – 12/31/07
AHRQ
Project: Maximizing the Effectiveness of E-Prescribing Between Physicians and Community Pharmacies
The major goals of this project were to test the interoperability of electronic prescribing (e-prescribing) standards, certification processes and pilot testing; and to evaluate the implementation of the standards from multiple perspectives using a mixed-method approach.
Role: co - Investigator

(Warholak Jackson PI) 4/1/07-10/31/07
St. Luke's Health Initiatives
Project: The Impact of the Medicare Modernization Act on Outcomes of the Arizona Health Care Cost Containment System (AHCCCS) Medicaid/Medicare "Dual Eligible" Patients
The major goals of this project were to establish baseline data on costs and utilization of the Medicare/Medicaid dual eligible population and a control population.
Role: Principal Investigator PI

(Warholak and Malone (co – PIs) 1/1/08 – 10/31/08
AHCCCS
Project: Transformation Grant II: Value Driven Decision Support Tool Box.
The major goals of this project are to design, implement and evaluate clinician and patient health care decision support tools.
Role: Co-Principal Investigator

(Warholak PI) 3/15/08 – 9/15/08
Merck/National Alliance of State Pharmacy Associations
Project: Medication Reconciliation: Bringing pharmacists and patient care together
The major goal of this project is to compare two methods of medication reconciliation to determine which provides a more complete medication history upon hospital admit.
Role: Principal Investigator

United grant to AzHeC
Final report
Terri L Warholak, PhD

Goals and objectives
Vision: Majority of Arizona prescriptions are generated and transmitted by means of electronic prescribing.
Mission: Support the EAZRx initiative by leading the efforts aimed at making the process of electronic prescribing safe, easy and efficient, while proposing and implementing the metrics for doing so.

Specific Tasks Assigned	Activities carried out to meet project goals and objectives	Lessons Learned
Evaluate the impact of the Arizona E-Prescribing (and EMR "First Step") Initiative Grant outcomes		
Lead the EAzRx Standards, Measures, and Outcomes work group	* Established work group * Members include: Suzi Berman (State Medicaid), Ken Whittemore (Surescripts), Mike Rupp (Miswestern University), Melissa Rutala (AzHeC), Kim Harris-Salamone (Health Service Advisory Group), Terri Warholak (University of Arizona) * Led work group meetings * Led the creation of a list of mutually-agreed upon outcome measures * Determined the of number of active prescribers (MD, DO, NP, PA) in Arizona	* Outcomes will be difficult to assess without access to claims or other databases. * Additional money is needed to assess outcomes. Each assessment may take 50% of a dedicated person and cost at least $50,000 to perform.
Coordinate receipt and appropriate distribution of data from SureScriptsRxHub	* Utilized statewide e-prescribing statistics to create monthly report of Arizona e-prescribing statistics * Reported Arizona e-prescribing statistic summary monthly to AzHeC directors and EAZRx committee * Created PowerPoint slide set from Surescripts data * Slide set is intended for use in presentation of e-prescribing progress in Arizona	* There are areas in which AzHeC can make a big difference. For example, targeting providers who are registered to use e-prescribing but do not use e-prescribing and those who use e-prescribing for new prescriptions but not refills are providers who may be easily assisted by AzHeC. AcHeC has addressed this in their project titled "Arizona's eRx Utilization Improvement Program: The "EAzRx-Pert" Team."
Establish/share measures of	* Served on EAzRx Steering Committee	

success/metrics/methods to measure ROI for eRx and EMR products		
Design evaluations to assess progress	* Led a research project titled "Evaluation of Feature Importance and Satisfaction in Electronic Prescribing Systems Used by Arizona Clinicians" to measure the attitudes of Arizona e-prescribing clinicians regarding (1) the importance of key criteria that may be used in the selection of an e-prescribing system; and (2) their satisfaction with key criteria as implemented within their current e-prescribing system	* Providers in Arizona who replied to the questionnaire indicated that nine criteria with high importance but low satisfaction were related to vendor support, system cost, lack of e-prescribing features, and unrealized benefits. This information can be used by AzHeC and software vendors to improve systems and use rates.
	* Led research project titled "Evaluation of the Adoption of Health Information Technology and Electronic Prescribing in Arizona's Community Health Centers" to evaluate the extent to which Arizona community health centers have adopted the use of electronic health records and electronic prescribing in their practices. Furthermore, this study aims to identify the perceived barriers and benefits of electronic health records and electronic prescribing in Arizona's community health centers.	* Arizona Community Health Centers (CHCs) are each at a different level of health information technology adaption. Several centers indicated a need for assistance by AzHeC. This was addressed in the "Evaluation of Electronic Prescribing in Arizona Community Health Centers" grant application.
Develop case studies for distribution (from provider and pharmacist perspective)	No substantial progress in this area.	
Assist in grant responses and article writing		
	* Wrote a summary of "Evaluation of Feature Importance and Satisfaction in Electronic Prescribing Systems Used by Arizona Clinicians" for a journal article entitled *Electronic Prescribing: Arizona Clinicians' Beliefs and the Federal Stimulus* in the Arizona Osteopathic Medical Association's *AOMA Digest (Summer 2009).*	* It is important to share lessons learned with other members of the health care and information technology communities so that this information can be built upon by others.
	* In process of preparing the "Evaluation of Feature Importance and Satisfaction in Electronic	

	Prescribing Systems Used by Arizona Clinicians" manuscript for submission to a peer reviewed scientific publication.	
	* Co-authored a scientific poster on "Evaluation of Feature Importance and Satisfaction in Electronic Prescribing Systems Used by Arizona Clinicians" which was presented at the University of Arizona	
	* In process of preparing the "Evaluation of the Adoption of Health Information Technology and Electronic Prescribing in Arizona's Community Health Centers" manuscript for submission to a peer reviewed scientific publication.	
	* Co-wrote a federal grant application for a project titled "Evaluation of Electronic Prescribing in Arizona Community Health Centers." * The overall goal of this demonstration project was to evaluate factors associated with successful implementation and utilization of health information technology, specifically electronic prescribing (e-prescribing), in community health centers throughout Arizona to improve the quality, safety, effectiveness and efficiency of health care in ambulatory settings.	
	* Attended the CMS National E-prescribing Conference in Boston, MA.	
Coordinate outcomes w AHCCCS Transformation Grant #1, AHCCCS e-Rx initiative, SAHIE, APIPS		
	* Met with AHCCCS transformation grant representative on a weekly basis	* It is important for all those involved in health information technology initiatives in Arizona to communicate and collaborate.
	* Attended SAHIE meetings periodically	
	* Attended APIPS meetings	
	* Attended AzHeC Summit	
Assist in strategic planning for Arizona E-Prescribing (and EMR "First Step") Initiative		
	* Created and presented lectures on Preventing Medication Errors to 30 members of the public, 28 nurse practitioner students and, 230	* It is important for all those involved in health information technology initiatives in Arizona to let others in the health care community know

	pharmacy students concerning how they can contribute to increasing medication safety. A significant focus was placed on the hole of health information technology and AzHeC and their activities were introduced to each group.	what health information technology initiatives are in progress and how these initiatives can be used to improve the provision of medical care.
	* Co-created and co-presented "e-Prescribing level 1: Getting started" and "e-Prescribing level 2: Lessons learned – advanced implementation" to pharmacists attending the Southwestern Clinical Pharmacy Seminar.	
	* Reviewed and provided feedback for AzHeC planning documents such as 1) Arizona's eRx Utilization Improvement Program: The "EAzRx-Pert" Team; and 2) the AzHeC Business Plan.	
	* Keep abreast of state and local legislation which may impact health information technology	
	* Contacted pharmacy health information technology decision makers	

Next steps

There is much that AzHeC can do to coordinate and improve e-prescribing and the adoption of health information technology in the state of Arizona. Implementing the projects AzHeC has planned (such as the Arizona's eRx Utilization Improvement Program: The "EAzRx-Pert" Team, Evaluation of Electronic Prescribing in Arizona Community Health Centers, and others) will help the state increase health care quality, efficiency, and safety.

EAzRx Strategies and Tactics: The Road Ahead

STRATEGIES

The following mission, goal and strategies were reviewed and adopted by the EAzRx Steering Committee at the beginning of the EAzRx initiative in May 2008.

EAzRx Mission

Arizona Health-e Connection and its EAzRx Steering Committee are committed to enhancing patient safety through increased e-prescribing adoption by clinicians in Arizona. We will use the combined expertise of the EAzRx Steering Committee, Arizona Partnership for Implementing Patient Safety, providers, pharmacists, and other stakeholders to further the initiative.

EAzRx Goal

To achieve nearly 100% of possible e-prescriptions being e-prescribed by April 2013 (5 years). Yearly goals include:

- April 2009 (6%)
- April 2010 (12%)
- April 2011 (24%)
- April 2012 (48%)
- April 2013 (96%, close to 100%)
- Currently, AZ providers e-prescribe 3% of all possible e-prescriptions.
- Additional metrics will be identified and measured to further monitor the Initiative.

EAzRx Strategies

1) Provide **umbrella** coordination organization (EAzRx Steering Committee)

- EAzRx e-Prescribing Steering Committee
- Physician / Pharmacy Co-Chairs
- Pulls together major stakeholder/constituency representatives
- Coordinates with other organizations with an e-Rx initiative (e.g., payers)
- Government organizations involved
- Coordinates with APIPS eRx Committee
- Consider potential legislative changes

2) **Provide information** and statistics in easy-to-access format (time saving for providers)

- Publish statistics (for eRx and EMR products), as well as related metrics
- Troubleshooting for eRx and EMR
- ROI for e-Prescribing (and EMRs)
- What are the Feds doing/requiring
- What are BCBS, UHC, and Cigna doing?
- Consumer Reports-type document or instead point to existing information

3) **Recognize top e-prescribers** in Arizona

- Recognize AZ e-Prescribers at May Summit

- Post top (or all) AZ e-Prescribers on AzHeC/EAzRx website
- Create peer-to-peer interaction (funded via a grant?)

4) Coordinate and publish Arizona **case studies** to **educate** the provider community

- Use top e-Prescribers as champions and subjects of case studies
- Panel of physicians using eRx and EMR at May Summit
- Quarterly ongoing educational credits for providers and pharmacists
- Post case studies online

5) Work to identify real **incentives** and apply for grants to provide "flow-through" **funding**

- Potential incentives (commercial payers, Feds, AHCCCS)
- Free (NEPSI) and discounted product use
- Identify and apply for grants that may be used as "pass through" funding for physicians and possibly independent pharmacies
- Investigate possibilities of malpractice insurance premium credits for providers who e-prescribe

6) Improve **patient safety** and encourage **patient involvement** in the e-prescribing process

- Encourage patient involvement in recording an accurate medication history
- Track patient safety indicators within e-prescribing
- Publish results to confirm benefits of e-prescribing

EAzRx Strategies and Tactics: The Road Ahead

TACTICS

The following tactics were derived from the strategies listed above, and from subject matter experts in e-prescribing who have worked with e-prescribing initiatives around the country. EAzRx is attempting to prioritize these tactics, and assign them to a category for completion (ie, AzHeC staff, eRx Consultants, Project Assistant, etc.). Once the tasks are prioritized and assigned, AzHeC staff will determine funding needs, and as feasible, move forward with securing eRx consultants and a project assistant to begin work in these areas.

KEY

I= Internal Staff
C= Consultant
PA= Project Assistant
SR= SureScripts-RxHub
CM= Committee
T= Terri Warholak (on contract)

High= 1-6 months
Medium= 6-12 months
Low= 12+ months

PROVIDER-CENTRIC TACTICS

Priority	Assigned To	Task	
High	I, C	Support (Technology, Implementation and Change Management)	
High	I		Peer to peer support from e-prescribing providers, initially via AzHeC blog on website
High	C		Discounts on consultants to assist with eRx or EMR implementation
High	I, PA, SR	eRx Troubleshooting	
High	PA		Dedicated email account for troubleshooting
High	I, PA, SR		Work with SureScripts to provide expertise on addressing common troubleshooting issues
?? (Med?)	SR, PA	Address eRxers with faxed refill requests	
High	SR		Find out which providers are receiving faxed refill requests from SureScripts.
High	PA		Call all providers on list to see if they are receiving faxed refill requests
High	PA(?)		For all providers receiving faxed refill requests, log a ticket with SureScripts or through vendor.
?? (Low?)	C, PA (Vendors?)	Work to convert EMR only docs to EMR/eRx docs	

High	C		Contact EMR vendors with large market share in AZ to find docs who have EMR but not eRx
High	C		Obtain prescriber training and support commitment (and possibly incentives) from each vendor
High	PA		Call providers to encourage them to turn on eRx functionality
High	I, PA, CM(?)	Education	
High	I		Speaking opportunities at currently scheduled meetings
High	I, PA		Breakfast or lunch meetings with provider groups/offices
High	I, PA		Continuing education session for providers in conjunction with professional associations (ArMA, AOMA, AzNA, ASAPA, etc.)
High	I, PA		Train on new Medicare eRx incentive payments
Med/High	I, PA, C	Communications (to promote adoption)	
High	I, PA		Distribute information to providers on new Medicare eRx incentive payments
Medium	C		Use top e-prescribers as champions
Medium	C		Use top e-prescribers as subjects of AZ case studies; post case studies online
High	I, PA		Recruit top e-prescribers to be on AzHeC Speakers Bureau and identify 1-3 top prescribers to blog on AzHeC website
?? (Low?)	I, PA, C, CM	Incentives	
High	CM		Research possible incentives, both monetary and non-monetary
Medium	CM, C, I, PA		Logo for providers to post in their office, along with public campaign to inform consumers
Medium	C		Potential monetary incentives via AHCCCS, health plans or EMR funding consortium
Medium	CM		Research potential vendor discounts for Az providers (Clinical/Technical Committee)
Med/High	I, PA, T		Potential grants to be used as “pass through” funding for providers
High	I		Investigate possibilities of malpractice insurance premium credits for providers who e-prescribe
High	SR, I, PA	Implement SureScripts pilot Improvement Program	
High	SR, I, PA		Intervention # 1 - Ensure all practice prescribers are accurately registered and enabled by your vendor for both electronic new prescriptions and electronic refill requests
High	SR, I, PA		Intervention # 2 - Ensure practice regularly has access to up-to-date pharmacy information so that all electronically enabled pharmacies are accessible for true electronic transmission
High	SR, I, PA		Intervention # 3 - Review medication management workflows with prescribers and practice staff
High	SR, I, PA		Intervention # 4 - Assign dedicated practice staff to monitor prescription logs and create “Super Users”. Log cases with vendor regarding all prescription related issues. Communicate issues to SureScripts-RxHub team members and pharmacy

			staff.
High	SR, I, PA		Intervention # 5 - Educate patients on e-prescribing practice and pharmacy workflows and e-prescriptions
High	SR, I, PA		Intervention # 6 – Share and review practice prescription utilization data among practice prescribers and encourage them to send all their prescriptions electronically.
High	SR, I, PA		Intervention # 7 – Participate in community e-prescribing workshops and online discussion forums to share best practices among area practices and pharmacies.
High	I, SR	Implement dedicated AzHeC "Get Connected" website (through SureScripts)	

PHARMACY-CENTRIC TACTICS

Priority	Assigned To	Task	
High	SR, I, (Pharmacies?)	Create a network of pharmacy IT staff and decision makers.	
High	SR, I		Identify market share of pharmacies in AZ and levels of connectedness of all AZ pharmacies
High	SR, I		Forge relationships with key pharmacies and involve them in the initiative, troubleshooting, etc. (Surescripts may be able to help) (Involve Steve Barry from CVS, he is an eRx advocate)
High	SR, PA	eRx Troubleshooting	
High	PA		Dedicated email account for troubleshooting
High	SR, PA		Work with SureScripts to provide expertise on addressing common troubleshooting issues
?? (Med?)	I, PA, CM(?)	Education	
High	I		Speaking opportunities at currently scheduled meetings
High	I, PA		Continuing education session for pharmacists in conjunction with professional associations and universities (AzPA, UofA, Midwestern University, etc.)
?? (Med?)	I, PA, T, CM	Incentives	
High	I, PA, T		Potential grants to be used as "pass through" funding for independent pharmacies
High	CM		Research other incentives for independent pharmacies to participate in e-prescribing
?? (Low?)	C, I, PA	Communications	
Medium	C		Use top pharmacists as champions
Medium	C		Use top pharmacists as subjects of AZ case studies; post case studies online

High	I, PA		Recruit top e-prescribers to be on AzHeC Speakers Bureau and identify 1-3 top prescribers to blog on AzHeC website

VENDOR-CENTRIC TACTICS

Priority	Assigned To	Task
?? (Med?)	C, SR(?)	Coordination with top AZ e-prescribing vendors
High	C	Pressure vendors to have a dedicated AZ support person
High	C	Coordination with AZ pharmacy system vendors regarding troubleshooting for pharmacies

STRATEGY AND PLANNING

Priority	Assigned To	Task
High	I, C, T	Coordination between eRx initiatives
High	I	Coordinate other Az eRx initiatives- AHCCCS, SAHIE, etc.
High	C	Will AZ payors be rolling out separate eRx programs? If so, what is strategy and how can we integrate with EAzRx?
High	I	Schedule and coordinate meetings with state department heads indicated in the eRx executive order
High	I, T, C	Research further funding options for eRx program
High	I	Form incentive workgroup to discuss incentive options and strategies (Ken Baker to lead workgroup)
?? (Low?)	PA, T, SR, C, I	Publish statistics on eRx and EMR adoption
High	PA, SR	Top 25 eRx prescribers posted quarterly on AzHeC website
High	PA, SR	Top 25 e-prescribers for the year announced and recognized at AzHeC annual Summit
High	T	Investigate other metrics to publish
Ongoing	C	Update resources on AzHeC website regarding eRx
Ongoing	I, PA	Coordinate committees, work groups and consultants
High	I, C, PA, CM	Policy work
High	CM	Identify any state or federal policies which may impede e-prescribing. Make adjustments as needed. (Legal Committee)
Ongoing	I	DEA Proposed Rule (track and communicate)
High	C, PA	Communicate policies, laws and regulations to providers and pharmacists.

RESEARCH AND OUTCOME MEASUREMENT

Priority	Assigned	Task

	To	
Med/High	T	Track patient safety indicators within e-prescribing
Med/High	T	Lead the EAzRx Standards, Measures, and Outcomes work group
Med/High	T	Coordinate receipt and appropriate distribution of data from SureScriptsRxHub
Med/High	T	Establish measures of success
Med/High	T	Design evaluations to assess progress
Med/High	T	Gather and share metrics (for eRx and EMR products)
Med/High	T	Develop methods to measure ROI for e-Prescribing (and EMRs)
Med/High	T	Track patient safety indicators within e-prescribing
Med/High	T	Identify demographics and characteristics of those using HIT
Med/High	T	Develop case studies for distribution

CONSUMER OUTREACH

Priority	Assigned To	Task
Medium (Low?)	C	Public outreach campaign to inform consumers about e-prescribing
Medium (High?)	C	Develop strategy to encourage patients to record accurate medication histories, preferably electronically.
Medium (Low?)	PA	Publish patient safety indicators

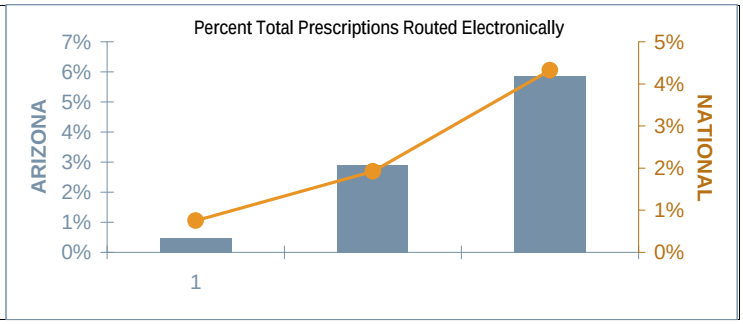
ARIZONA — State Progress Report on Electronic Prescribing

Data as of December 31, 2008

Introduction: This sheet summarizes state progress with electronic prescribing use and adoption. The data contained in this report is based on data compiled by Surescripts ®. The Surescripts network is the backbone that facilitates e-prescribing – a proven process that reduces healthcare costs, improves patient safety and increases systemic efficiency. By electronically connecting thousands of prescribers, pharmacists, payers and software vendors in the country's largest standards-based e-prescribing network, Surescripts is able to provide a detailed analysis of e-prescribing in the United States.

Immediately below is a reference to your state's Safe-Rx™ ranking. The ranking for 2008 (as with years 2006 and 2007) is based on the state's use of prescription routing. Prescription routing is one of three key measures that make up "meaningful use" of e-prescribing (see "Meaningful Use of E-Prescribing Defined" below). At the end of 2009, Surescripts will add the use of prescription benefit information and prescription history to the calculation of state Safe-Rx rankings. The ranking shown below for prescription benefit use illustrates this future direction.

SAFE-RX™ INFORMATION[1]	2006	2007	2008
Safe-Rx State Ranking	14	8	10
% of Total Prescriptions Routed Electronically	0.48%	2.89%	5.86%
Key Contributors Driving Success of E-Prescribing in this State	Arizona Health-e Connection		



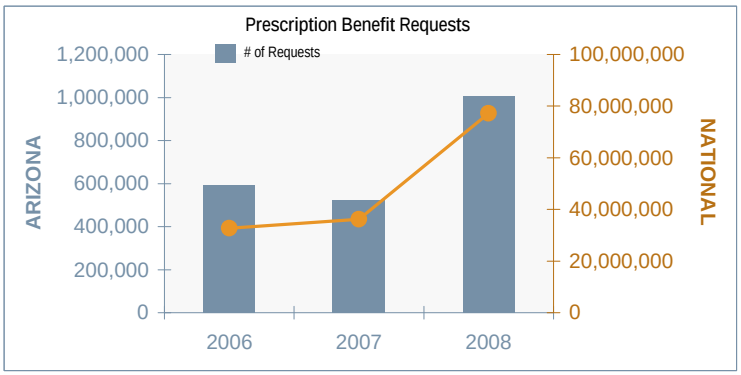
In addition to statistics detailing each state's use of e-prescribing, this progress report measures e-prescribing adoption by prescribers, payers and pharmacies (see "Part 2: Adoption Metrics"). While not a direct measure of actual e-prescribing use, providing adoption data allows each state's policymakers and healthcare leaders to track, understand and, in many cases, influence the metrics that ultimately drive their state's meaningful use of e-prescribing. In addition to statistics on adoption, the progress report provides each state with an indication of how it compares to other states.

Throughout this report, state-based statistics in graph images are shown in comparison to national trends for the years 2006 - 2008.

MEANINGFUL USE OF E-PRESCRIBING DEFINED:
Electronic prescribing includes the following three critical steps:
(1) PRESCRIPTION BENEFIT: The ability to electronically access a patient's prescription benefit from payers/PBMs.
(2) PRESCRIPTION HISTORY: With a patient's consent, the ability to electronically access that patient's prescription history from payers and community pharmacies.
(3) PRESCRIPTION ROUTING: The ability to electronically route the prescription to the patient's choice of pharmacy. When the patient runs out of refills his or her pharmacist can electronically send a renewal request to the physician's office for review and approval.

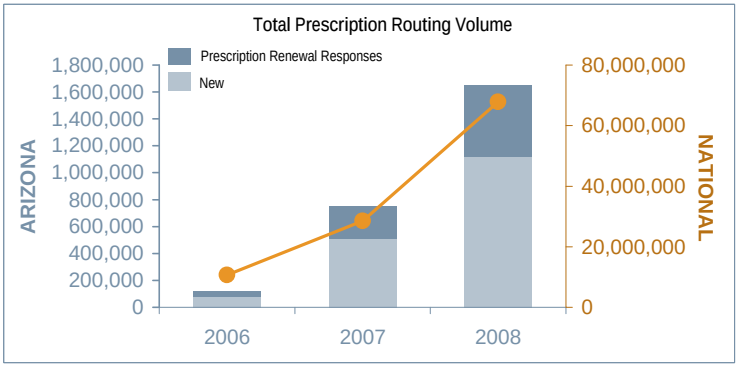
PART 1: USE METRICS

PRESCRIPTION BENEFIT	2006	2007	2008
% of Patient Visits w. a Prescription Benefit Request	4.50%	3.99%	7.65%
% of Patient Visits w. a Prescription Benefit Response	1.05%	1.31%	4.81%
State Ranking – 2008			18
Prescription Benefit Requests	592,882	525,343	1,008,606
Response Rate at Year-End	25.00%	47.12%	81.41%
Annual Growth in Prescription Benefit Requests	-	-11%	92%



PRESCRIPTION HISTORY	
% of Patient Visits w. Delivered Prescription History	Specific state-level information regarding prescription history requests and prescription history coverage is not available at this time but will be in the future.
Prescription Histories Delivered	

PRESCRIPTION ROUTING	2006	2007	2008
% of Total Prescriptions Routed Electronically	0.48%	2.89%	5.86%
Safe-Rx State Ranking	14	8	10
New Prescriptions	78,156	508,215	1,123,257
Prescription Renewal Responses	41,382	240,085	530,364
Prescription Renewal Response Rate	89%	89%	89%
Total Prescription Routing Volume	119,538	748,300	1,653,621
Annual Growth in Prescription Routing	-	526%	121%

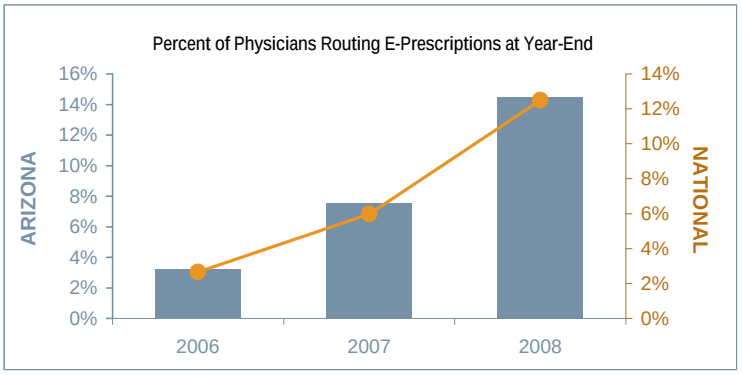


For more information about electronic prescribing, visit the E-Prescribing Resource Center at www.surescripts.com.

PART 2: ADOPTION METRICS

PHYSICIAN DATA[2]	2006	2007	2008
% of Physicians Routing E-Prescriptions at Year End	3.21%	7.59%	14.50%
State Ranking – 2008[4]			14
Physicians Routing E-Prescriptions at Year-End	290	686	1,311
Annual Growth in E-Prescribing Physicians	-	137%	91%

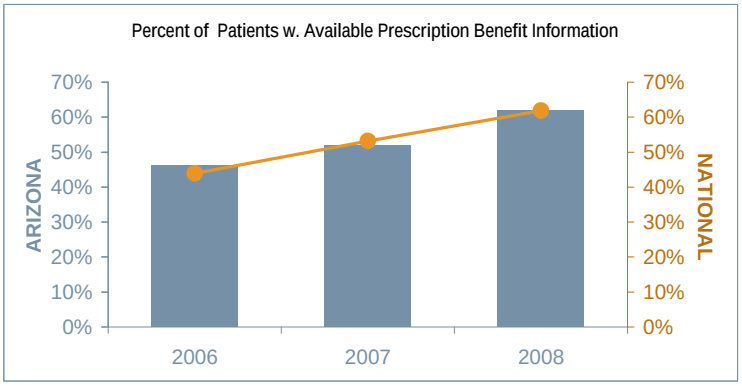
Click here to search for prescribers that e-prescribe in your area



Surescripts Solution Providers[3] operating in state as of December 31, 2008:	Allscripts-Misys EMR, DAW ScriptSure, DrFirst Rcopia, RxNT

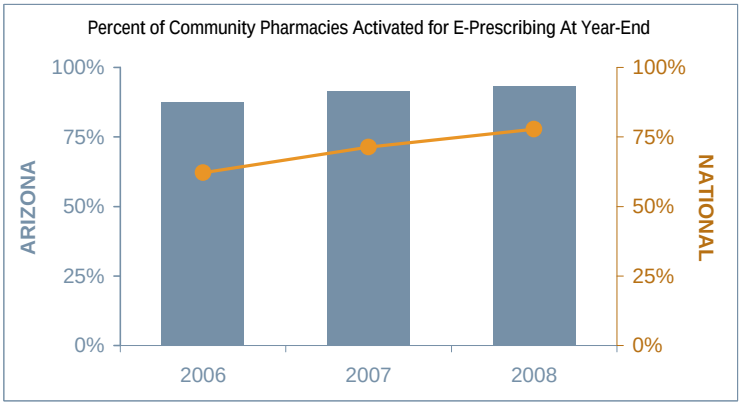
PAYER DATA	2006	2007	2008
% of Patients w. Avail. Prescription Benefit Information	46.34%	51.92%	61.90%
State Ranking - 2008[4]			29

Click here to view a list of payers connected to the Surescripts network



PHARMACY DATA[5]	2006	2007	2008
% of Total Community Pharmacies in State Activated for E-Prescribing	87.46%	91.49%	93.45%
State Ranking - 2008[4]			5
Community Pharmacies Capable of Routing E-Prescriptions at Year-End	802	871	928
Annual Growth in E-Prescribing Community Pharmacies	-	9%	7%

Click here to search for pharmacies that manage e-prescriptions in your area



ENDNOTES:

1. Safe-Rx calculations are based on the total number of new prescriptions and prescription renewals electronically routed over the Surescripts network as a percentage of the total number of new prescriptions and prescription renewals eligible for electronic routing in the state, according to Wolters Kluwer Health Source® Pharmaceutical Audit Suite. The total number of eligible prescriptions does not include controlled substances, as they are not eligible for e-prescribing under current DEA regulations. The total number of eligible prescriptions also excludes preauthorized refills on existing prescriptions, because they do not require communication between a physician and a pharmacist.
2. In addition to physicians, nurse practitioners and physician's assistants may also e-prescribe in your state. For a list of e-prescribers in your area, visit www.surescripts.com.
3. Solution Providers are defined as electronic prescribing applications that have been certified to access all three core e-prescribing services: Prescription Benefit, Prescription History, Prescription Routing. For the most up-to-date list of Surescripts Solution Providers, visit www.surescripts.com/certified.
4. These state ranking adoption metrics are presented for illustrative purposes only and will not be used to calculate future Safe-Rx rankings.
5. Pharmacy calculations use NCPDP-supplied data to determine total numbers of community pharmacies in each state

For more information about electronic prescribing, visit the E-Prescribing Resource Center at www.surescripts.com.

Arizona's eRx Utilization Improvement Program: The "EAzRx-Pert" Team

A Program of EAzRx, Arizona's E-Prescribing Initiative

March 2009

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INTRODUCTION

Arizona Health-e Connection (AzHeC) is a not-for-profit organization whose mission is to lead Arizona's establishment of health information exchange (HIE), and adoption of health information technology (HIT). A key strategy within the mission of the organization is to promote the adoption of electronic prescribing (e-prescribing, or eRx) by clinicians in Arizona. With the support of Governor Janet Napolitano, AzHeC initiated a five-year statewide e-prescribing initiative in May 2008, called EAzRx (pronounced "Easy Rx"), which has a goal to double the state's e-prescribing rate each year, to reach almost 100% in five years.

As part of the EAzRx initiative, Arizona Health-e Connection has worked with top national experts to discuss strategies for increasing e-prescribing adoption and utilization. Surescripts in particular, has provided a wealth of expertise and advice to the EAzRx Initiative. Surescripts is the organization who manages the Pharmacy Health Information Exchange (which transmits electronic prescriptions from a clinician to a pharmacy) and the delivery of medication history, formularies and eligibility information from participating PBMs and health plans. Senior executives at Surescripts suggested that Arizona, through the EAzRx initiative, pursue a program that mirrors a pilot utilization program that they completed in the Washington, DC area. This e-prescribing utilization program is designed to target clinicians who are high prescribers and have already adopted e-prescribing technology, yet have very low utilization rates of e-prescribing. The goal of the program is to double or triple the volume of electronic prescriptions prescribed by these clinicians, and simultaneously address some of the common problems encountered when clinicians adopt e-prescribing technology.

Low utilization of e-prescribing applications results from several issues. Many times the clinician has an issue with the application they are using and business process re-design may be needed. In other cases the clinician's application has not been updated with accurate pharmacy information, resulting in electronic prescriptions that don't get transmitted correctly to the pharmacy. These issues are outlined in detail in the *Project Plan* section of this paper.

For the purposes of this program, and as approved by the EAzRx Steering Committee, electronic prescribing is defined as the electronic generation of a legal prescription via a certified software solution, transmitted in a secure, standards-based format by and between the computers at the clinician practice and the pharmacy.

The benefits of e-prescribing apply to many different stakeholder groups. They include:

- To the prescriber: fewer pharmacy call-backs, notification of adverse drug effects (ADEs), reduced handwriting interpretation errors, formulary access, automated documentation of prescriptions, facilitated prior authorization, broad drug history access, one-click refills, remote/mobile access, real-time decision support (drug-drug, drug-allergy, diagnoses, weight, age, drug appropriateness/evidence-based medicine, correct dosing, contraindications, adverse reactions, duplicate therapy alert, abuse monitoring), facilitated care coordination, canned and custom reports.

- To office staff: fewer pharmacy call-backs, fewer workflow interruptions, fewer chart pulls/refills, less faxing in/out, reduced billing labor.

- To the patient: lower co-pays (formulary/generics), quicker pharmacy visits, facilitated compliance (lower cost, greater convenience, facilitated monitoring), increased patient education, increased safety.

- To the pharmacist: fewer prescriber call-backs (handwriting, coverage, prior authorization, drug interactions, drug-drug duplications, drug-allergy, drug dosing, contraindications), fewer insurance calls (coverage, formulary, prior authorization), better service to customers, less data entry, fewer errors due to hand-writing errors.

- To the payer/employer/consumer/society: better health due to increased time with clinicians (physician, pharmacist and other health care providers) which can be shifted to monitoring medication outcomes and appropriate use of medications, lower short-term costs (formulary/ generics), lower long-term costs (better compliance, fewer medication errors, less hospitalization), decreased medication errors leading to less hospitalizations.

The eRx Utilization Improvement Program involves having a team of e-prescribing business analysts/provider relations personnel called "EAzRx-Perts" (pronounced "easy R experts"). This team will be tasked with the following:

- Identify clinicians who are high prescribers with an e-prescribing system but have low utilization of their e-prescribing system.
- Work with those clinicians to determine the reason(s) why they are not using or underutilizing their e-prescribing system.
- Perform the necessary work to resolve the clinician issues to ensure they will use the e-prescribing system on a regular, routine basis.

The EAzRx-Pert team will include a Project Director who will be responsible for the project scope, objectives and schedule. The Director would also be responsible for approving the work of the EAzRx-Pert team and ensuring that the work is complete and all issues are resolved.

The EAzRx-Pert team will report to the AzHeC Associate Director and will have office space at the AzHeC office location.

PROGRAM OBJECTIVES

The e-Prescribing Utilization Improvement Program has the following objectives:

- Using the Surescripts listing of clinicians with e-prescribing capabilities and the prescribing data from the health plans, address high prescribers who are low eRx utilizers in order to analyze where the issues may be.

- Identify non-application issues with e-prescribing that can easily be solved which could involve workflow analysis and additional training for the clinician office. An example of this would be having a practice staff that is not adequately trained on e-prescribing workflows.
- Funnel all application related issues to vendors. Many times the application is not working as intended due to initial set up issues such as not being registered with Surescripts or the pharmacy may not be receiving the updated prescriber demographic information.

By completing the objectives outlined above, we can ensure that the clinicians have the tools they need to realize the advantages of eRx. We will complete these objectives by performing a detailed analysis of the issues within each clinician's office, preparing an issue list for review with the vendor, the clinician's office staff, and potentially the pharmacy, and troubleshooting the issues until they are resolved to the satisfaction of the clinician's office.

KEY SUCCESS FACTORS

We have developed several key success factors that will facilitate in measuring the success of this program. These success factors will impact not only the clinicians but also the health plans, pharmacies and patients by providing an efficient, quality method of transmitting prescriptions electronically.

Coordinate between health plans in Arizona

By developing core eRx expertise in Arizona, the state's health plans will benefit from the consistent messaging about e-prescribing across all plans. This will help reduce common errors in prescribing and increase efficiency in claims processing. Of further benefit to the health plans, the eRx expertise will ensure the ability of vendors to provide formulary and eligibility information to prescribers, as long as that information is available through the Surescripts network. For health plans whose eligibility, formulary and medication history is not included in the Surescripts database, the EAzRx-Pert team will work with those health plans to make the data available, if desired. Finally, all health plans participating in this program will be asked to participate in an E-Prescribing Health Plan Workgroup, to ensure consistent messaging between and among all health plans and the EAzRx-Pert team. This will help to standardize all communications to the medical community regarding the use of e-prescribing.

Coordinate with pharmacies

Coordination with Arizona's pharmacies is essential, so that they are aware of the program and are able to assist with any issues caused/originating with their pharmacy systems. Pharmacies often have issues with written prescriptions that can result in lower efficiencies in filling those prescriptions. This can be caused by poor handwriting, unknown drug-drug interactions, and several other issues that often necessitate time spent on the phone for clarification with the clinician's office. There appears

to also be a need to establish "ombudsman-like contacts" with the pharmacy chains that are e-prescribe-ready, but may not have fully integrated e-prescribing into their workflow. By coordinating with the pharmacies involved, Arizona clinicians will realize increased efficiencies and better customer service, as well as fewer errors in filling prescriptions which will also benefit consumers.

Coordinate with EMR/eRx vendors

Coordination with EMR/eRx vendors will result in improved use of existing eRx applications which in turn will benefit pharmacies, clinicians and consumers. The utilization improvement team will provide a "feedback loop," which will aid in streamlining EMR/eRx application issues for clinicians. By reviewing all the issues that the clinicians are having with the use of their e-prescribing application and resolving those particular issues, we will realize fewer medication errors, reduced costs and increases in the quality of care.

Program Evaluation and Expansion Plan

Evaluating the program after 90 days will allow the future direction of the team to be determined, including possible sustainable business models and the potential addition of increased eRx adoption activities. Once the eRx utilization team is established, one of the initial tasks will be to determine the method for measuring the success of the program. The team will establish detailed measurements that can be quantified at the end of 90 days, subsequently outlining what works and what should be re-evaluated or re-structured as the team moves forward. These measurements will also facilitate the adoption of a sustainable business model, including how to move forward with increased adoption of the utilization program and possible expansion of the program to address increased adoption of e-prescribing.

RISK ASSESSMENT AND MITIGATING FACTORS

Several key challenges have been identified that pose risk to the success of this program. These are as follows:

Risk	Mitigating Factor
Recruiting clinicians to participate may be difficult	The EAzRx-Pert team will begin the outreach program very early in the project by contacting clinicians to inform them of the upcoming utilization project.
It may be difficult to stay on schedule, due to challenge of scheduling site visits with a clinician's office.	The EAzRx-Pert team will be flexible in their approach to meeting with the clinicians' offices.
Initial target population may have to be expanded due to some clinicians' refusal to engage in the program	The EAzRx-Pert team will identify 400 Clinicians for the first six months and only plan to have 200 participate.

As the project plan is put in place, these risk factors will be reevaluated and any additional risk factors will be determined.

PROJECT PLAN

The project plan involves defining the detail project scope, project team, project methods for tracking and resolving issues, risk assessment as well as a detail project schedule. Detailed project planning will be completed once the project is funded.

The first step in the process is to select and train the EAzRx-Pert team. This will be completed by working in collaboration with Surescripts to ensure that the right skill sets are acquired. Once the team is selected, subject matter experts will assist with training the team to provide all team members with the additional skills required to evaluate and identify e-prescribing issues for resolution.

Once the training is completed the team will begin the process of conducting clinician practice visits to evaluate each practice's use of e-prescribing. To determine which clinicians and corresponding practices will be targeted for intervention the high prescribers in Arizona who are low e-prescribing utilizers must be identified. To accomplish this, the top prescribers from all participating health plans will be compiled and compared to the Surescripts database to identify:

- Those who e-prescribe and are high utilizers of their eRx application
- Those who e-prescribe and are low utilizers of their eRx application
- Those that have an EMR system but do not utilize the e-prescribing functionality

The geographic areas to be targeted will be Phoenix and Northern Arizona. Statistics show that the Phoenix area has the most clinicians with eRx capability but the lowest usage of e-prescribing. The team plans to target the Northern Arizona area so that the rural communities' use of e-prescribing can be facilitated. Once the first phase of the utilization improvement program is complete, expansion to Southern Arizona, and all other parts of the state will be incorporated into the business plan to ensure successful eRx utilization throughout Arizona.

Once this analysis is completed the team will target the low utilizing e-prescribers for inclusion in the initial utilization improvement program. Categories will be created to identify interventions and prioritize which clinicians will be contacted first. Outreach to these clinicians will be conducted in the following manner:

> Category 1 - This category will be comprised of clinicians who currently have an e-prescribing system but are low utilizers of the system. The EAzRx-Pert team will make initial phone calls followed by site visit(s) and ongoing communications. This will be the "High Touch" approach.

Category 2 – This category will be comprised of clinicians who have e-prescribing and have average utilization rates. These clinicians will be contacted to see if they have any issues with e-prescribing. These communications will be completed largely via fax, an online discussion forum or emails with occasional follow up phone call(s). These clinicians will also be invited to the workshops hosted by the EAzRx-Pert team so that they may share their best practices with the other clinicians. This strategy will be a "Low Touch" approach. It is also feasible that this approach could be used with a smaller clinician office whose clinicians are low utilizers, depending on the type of issues found at the small practice.

Category 1 – High Touch Approach

Category 1 includes clinicians who are low users of the e-prescribing system they have implemented in their practice. The following table outlines the initial interventions for Category 1. These interventions include a description of the intervention, the rationale and the benefit of the intervention, and the role of the EAzRx-Pert in implementation. Please see *Appendix A* for more details.

Intervention	Rationale	EAzRx-Pert Team Role	Benefit
Ensure that practice is accurately registered with vendor	eRx network database can't be updated if practice isn't registered correctly	Use utilization reports and ensure provider is accurately registered	Reduction of fax refill requests; accurate database uploads
Ensure pharmacy listings are up to date and electronically enabled	If a pharmacy is not electronically enabled they are receiving faxed prescriptions from e-prescribers which leads to delays in getting prescriptions filled	Ensure all pharmacies are accurately listed in the practice e-prescribing system	Patients no longer report missing prescriptions, practice no longer has to call in prescriptions.
Review medication management workflows at the practice and retrain staff as necessary	Multiple steps are needed to e-prescribe. Practice staff will need to learn workarounds and transaction flow through the system	Review optimal e-prescribing workflow with practice and create case studies, perform training	Practices learn new ways to make the system work for them resulting in enhanced productivity and end user satisfaction

Intervention	Rationale	EAzRx-Pert Team Role	Benefit
Create super user at each practice	Reduce the amount of time used making calls to the e-prescribing vendors or the EAzRx-Pert team	Educate the practice on identifying issues and reporting them	Improved performance and enhanced work quality
Have practice educate area pharmacy	Reduce amount of missing prescriptions; create awareness around problems that can arise	Provide feedback to regional pharmacy leaders and log cases to report pharmacy training issues	Satisfied patients, better communication with pharmacies leading to greater practice efficiency
Encourage practice to educate patients on e-prescribing	Set patient expectations regarding length of time to fill e-prescriptions and benefits of e-prescribing	Advise practice on the best way to reach out to patients about e-prescribing	Patients no longer call practice for refills or missing prescriptions; increased efficiency in practice
Review practice utilization data with e-prescribers	Practice will be educated on refill fax requests due to issues with system	Work with Surescripts to get utilization reports and discuss with practice	Practice will engage with their staff and encourage better application use
Participate in community workshops and electronic forums	EAzRx-Pert team will conduct workshops to encourage practice and pharmacy to share best practices	Facilitate workshops; educate on electronic forum	Best practices will be shared and each will understand the others workflow and issues

Category 2 – Low Touch Approach

This category is comprised of clinicians who have e-prescribing and have average utilization. As with the High Touch approach, the strategy for the Low Touch approach is divided into the intervention, the rationale and benefit of the intervention and the role of the EAzRx-Pert Team. The table below describes each intervention. Please see *Appendix A* for detail.

Intervention	Rationale	EAzRx-Pert Team Role	Benefits
Create fax or electronic version of utilization report for practice	Practice needs to be aware of utilization statistics	Manage the process of getting reports to practice; provide feedback response form and report back once changes are made	Improve utilization rates at practice
Provide copy of support protocol to practice with other education tools	Practice needs defined methods for reporting issues	Review support protocol with practice	Productivity is improved as methods of reporting issues are simple and efficient
Invite practice to post on electronic forum and attend workshops	Share best practices and provide method of communicating with peers	Facilitate the workshops and train practice on using electronic forum	Understand workflow issues that others may have, including pharmacy

MEASURING PROGRESS & NEXT STEPS

Tracking the success factors outlined above will be key to measuring the program outcomes. As previously stated, the team will define the metrics as part of the project planning. In addition, the Surescripts team will provide key tracking metrics based on utilization which will show an increase in each clinician's use of e-prescribing. Another measurement that can be easily tracked is the amount of support calls the team members receive after the clinicians' issues have been analyzed and resolved. Those support calls can be tracked for patterns in requests, which will in turn drive any re-engineering that may need to occur with the program.

As the program progresses, the team will be measuring results to determine the success of the program. After 90 days, the measurements will be used to determine lessons learned and reevaluate the program methods. The results of this evaluation will be used to improve continued assistance and interaction with the clinicians and practices, and adjustments to team processes will be adjusted as necessary. The team will also begin the process of analyzing additional support needed and how to best react to those support requirements. As the year progresses, additional items that may be considered as next steps for the project team include:

- Documenting and compiling all team related actions and processes into a package which can be adopted and replicated by other states. This would include the creation of a training curriculum, potentially in collaboration with Surescripts and eHealth Initiative.
- Assessing the success of the utilization improvement program and evaluating the possibility of transitioning to activities to increase e-prescribing adoption.
- Exploring the possibility of the team providing ongoing troubleshooting support to a wider population of e-prescribing clinicians, based on the determined need of the provider community.

All of these opportunities would help to standardize the e-prescribing efforts in Arizona, and would continue to position Arizona as a national leader in this area.

PROGRAM TEAM FORMATION

The success of the eRx Utilization Improvement Program will rely on the formation of an EAzRx-Pert team. The team will be comprised of a Project Director and two team members, adding more team members as the program reaches out to more clinicians.

First and foremost, the team members should have a very positive attitude and excellent change management skills in order to work with the clinicians and their staff. As is true in most technology projects, clinicians tend to be sensitive to changes in their workflow. It is critical that the team understand this and learn how to proceed with this in mind. Following is a high level outline of the qualifications envisioned for the EAzRx-Pert team members:

This junior to mid-level position is a blend of partner operational and technical support. The individual will need good process, testing, incident management, and general operational experience. The candidate will also need excellent communication skills in order to collaborate successfully with various healthcare stakeholders.

<u>MAJOR RESPONSIBILITIES</u>
Conducting clinical process/workflow observations and data collection, to analyze, report, and formulate policy and best practices recommendations for the improvement of e-prescribing processes and workflows in clinician practices

- *Leveraging best practice information to enhance prescriber practice end user support processes*
- *Collaborate with prescribers, clinician practices, pharmacy managers, and other support and operations personnel to effectively manage priorities, issues, communications, partner expectations, and progress*
- *Resolve incidents, issues, and problems*

- *Work closely with Surescripts, pharmacy and clinician technology business and support teams to ensure prompt resolution of e-prescribing related problems*

IDEAL EXPERIENCE

- *Experience with technology deployments including electronic medical record systems in clinician practices*
- *Experience with dealing with healthcare professionals including clinicians, pharmacists and related healthcare staff*
- *Strong customer-service orientation and a commitment to lead others to achieve outstanding customer satisfaction*
- *Experience working with partners to solve problems with available technology, including software, reporting, and communications*
- *Previous experience with Microsoft Word and Excel is expected; experience with other Microsoft software and tools is a plus*
- *Comfortable working on several initiatives in parallel and have a natural love of multi-tasking as the group works at a fast pace and regularly has to deal with changing or conflicting priorities*
- *Accustomed to working in a smaller, fast-paced organization; must be able to relate to a diverse group of people including technical and development personnel, management, business customers, and vendors in a constructive and effective manner*
- *A collaborative junior to mid-level analyst able to handle operational activities; must be able to work effectively with various partner support groups, especially those with differing missions and ideas*
- *Understanding of how to lead the process of gaining agreement and acceptance for a defined process; must be able to work independently or part of a cross-functional team*
- *Desire and ability to grasp new skills quickly, combined with deep attention to detail along with excellent verbal and written communication skills; must be resourceful, organized, and a problem solver*
- *Ability to forge strong relationships with a diverse group of stakeholders*
- *Ability to cultivate a collegial spirit and respect others' ideas and requirements, who is a team player, an excellent listener, and who doesn't have all the answers*
- *Highest level of personal integrity/values*

The eRx Utilization Improvement Program has defined two methods for populating the team. The preferred strategy for team formation is to recruit and hire new team members, who will serve as full-time employees or full-time contractors of Arizona Health-e Connection. A second strategy is to use provider relations employees of partnering health plans.

If it is determined that new staff should be hired, there is a wide range of individuals in Arizona who have expressed an interest in working on this program. If a health plan desires, the program could also incorporate an option whereby a health plan sponsoring the program could extend a guarantee

of employment to one of the team members, if the utilization program should come to a close. However, depending on the future of the program, the employee may also have the opportunity to continue as an employee of AzHeC, as conditions permit.

If a participating health plan prefers to offer a current provider relations employee as a loan to the program, we would request that they be assigned to work at AzHeC for a minimum duration of twelve months, to ensure continuity of the program in its first year of existence. These loaned employees would report directly to the Associate Director of AzHeC for the duration of their tenure on the project, as this will help the program to maintain consistency and build a strong team.

BUDGET

The summary of the first twelve months expenditures for the program is outlined in the table below. As the program progresses, additional years of funding may be requested.

EXPENSE DESCRIPTION	TOTAL ANNUAL EXPENSE (in dollars)
Workshops	4,000
Assets: Furniture & Equip	21,000
Meals/Entertainment	3,600
Mileage Reimbursement	7,800
Office Space/Phone Line	10,440
Office Expense	9,600
Parking	240
AzHeC Staff,	41,494
Payroll Expense	330,000
Payroll Fees	4,824
Benefits	66,000
Postage and Delivery	660
Printing/Copying	1,800
Supplies	2,160
Supplies: Mtg	2,400
Mobile Phone / Data	5,400
Surescripts Consulting Services	67,320
Training	12,000
Total Annual Expense	590,738

Please note the following assumptions:

a. The budget has been completed using employees AzHeC would hire/contract. In the detailed budget (provided under separate cover), there is a tab which includes all non-employee related overhead costs.
b. The program will start with a Project Director and two team members for the first six months. It is expected that it will be necessary to hire two more team members for the second six months of the project, and necessary employee expenses for such are included.
c. Surescripts has submitted a proposed budget to cover their program expenditures, such as initial training, ongoing support and assistance. These expenditures are budgeted for the full twelve months of the project, with a decrease in Surescripts fees in the second six months, when less assistance will be required.

FUNDING OPPORTUNITIES

In order for the eRx Utilization Improvement Program to be implemented and successful, AzHeC will require funding from their partner health plans. The participation of all health plans will benefit both health plans and Arizona clinicians in many ways. Ensuring that each participating health plan provides claims history and hence medication history for their covered lives to clinicians through connection to Surescripts will increase patient safety. A complete medication history at the point of care will also result in improved prescribing practices by reducing medication errors, including an understanding of potential patient drug-drug interactions.

AzHeC is requesting that each partner health plan contribute to the overhead cost of the program as well as to the cost of employees. The cost of employees can be funded by a direct donation to AzHeC to cover the employee costs or by donating a provider relations employee, as described previously.

If the partner health plan decides to donate an employee, AzHeC requests that the employee dedicate 100% of their time to this program and that the employee is housed at the AzHeC office location. This will ensure complete dedication to the program and help with team building and training, providing consistency within the team.

The anticipated start date of the program is Spring 2009. AzHeC is aiming to secure funding in March and begin the hiring process in early April.

CONCLUSION

As described in the introduction, e-prescribing has many advantages for all healthcare organizations. The biggest barriers in adoption of e-prescribing are noted in the press release below, taken from the eHealth Initiative website (www.ehealthinitiative.org) and issued in a press release dated October 7, 2008:

In June, eHI and the Center for Improving Medication Management released a report detailing the latest figures on e-Prescribing, including the progress made, the obstacles that remain, and recommendations for how different stakeholders in the system can support the migration from paper-based prescriptions to an electronic system. Among the findings from the report were the following:

- *More than 35 million prescription transactions were sent electronically in 2007, a 170 percent increase over the previous year.*
- *At the end of 2007, at least 35,000 prescribers were actively e-Prescribing. Estimates indicate there will be at least 85,000 active users of e-Prescribing by the end of 2008.*
- *While e-Prescribing is growing rapidly, the adoption level at the end of 2007 represents only about six percent of physicians.*
- *Only two percent of eligible prescriptions were transmitted electronically in 2007.*
- *The biggest challenges to widespread adoption of e-Prescribing by providers are financial burdens, workflow changes, continued needs for improved connectivity and technology, and the need for reconciled medication histories.*

Since e-prescribing can have one of the largest impacts on patient safety, it is critical that methods are found to help the clinician community implement and then effectively use e-prescribing technology. This program is structured to identify and address some of the main issues that initial e-prescribing adopters have encountered. If these issues are not identified and resolved, then these problems will expand exponentially as more providers adopt e-prescribing technology. It is believed that the continued success of e-prescribing will hinge on the success of addressing utilization issues at this early stage so that future adopters will have a positive and successful e-prescribing experience.

Ultimately, this program will not only improve patient care but it will increase clinician productivity, boost pharmacy efficiency, and will save health plans money as generic utilization and formulary compliance rates increase.

APPENDIX A – INTERVENTION DETAILS

Following is a detailed description of the interventions described in the project plan:

Category 1 – High Touch Approach

- Intervention: Ensure all prescribers are accurately registered and enabled by the vendor for both electronic new prescriptions and electronic refill requests

  Rationale: Surescripts and area pharmacies maintain a database of comprehensive prescriber demographics of all prescribers. The pharmacy database is updated on a nightly basis from central Surescripts database in order to keep the prescriber files up to date. If a prescriber is not accurately listed in the Surescripts master prescriber database then pharmacies are unable to match prescriber records. This will result in the practice to continue to receive fax refill requests from electronically enabled pharmacies ultimately resulting in workflow and increased workload for the prescriber.

  EAzRx-Pert Team Role: The team will procure individual practice utilization reports from Surescripts, and subsequently review the report with key practice staff and prescribers to ensure prescribers are accurately registered and enabled. The team will also introduce the www.rxsuccess.com website so that the practice can report fax refill requests from connected pharmacies directly with Surescripts which will result in updates to the database for registration information.

  Benefit: This intervention will result in an immediate reduction and elimination of fax refill requests. Clinicians can then choose to respond to their electronic refill requests from any location and at their own convenience. This can result in significant labor savings resulted from automating renewals (1/2 FTE per day has been reported).

- Intervention: Ensure practice pharmacy listings are updated on a regular basis and all electronically enabled area pharmacies are enabled in the system for true electronic transmission

  Rationale: Prescribers assume that prescriptions sent via their EMR systems or e-prescribing systems are transmitted electronically to area pharmacies. However, if the pharmacy is not enabled for electronic transmission in the system it receives this prescription as a fax transmission. Some pharmacies house a single fax machine that is often busy. During peak times this leads to considerable delays and often lost prescriptions. Furthermore, electronic prescriptions which are directly transmitted into pharmacy computer systems via bi-directional e-prescribing connectivity result in fewer patient safety errors and much greater accuracy.

EAzRx-Pert Team Role: Team members will work with key practice staff to ensure all electronically enabled pharmacies are accurately listed within the practice system. Project staff will use the www.rxsuccess.com website and the Surescripts admin console tool for this purpose.

Benefits: Patients no longer report "missing scripts". Prescribers no longer need to call in prescriptions to the pharmacy thus resulting in greater overall patient satisfaction and further reductions in work load.

- Intervention: Review of medication management workflows with prescribers and practice staff. Retrain practice staff on prescription writing and automated refill response workflows.

  Rationale: Through review of the workflow for the prescription writing process with prescribers and staff, improvements can be made in the process of e-prescribing. The prescription writing process within a clinician's application involves multiple steps and includes multiple entities. It takes time to master workarounds and various application features. Periodic staff and prescriber workflow analysis and retraining can go a long way with increasing end user efficiencies.

  EAzRx-Pert Team Role: Team members will review optimal e-prescribing workflow with the practice, and will create case studies of successful area practices using different applications to provide to practice prescribers. The team will connect practice prescribers and key administration staff with their peers who have been successful, to facilitate discussions between prescribers and provide additional peer to peer support. The team will introduce the www.rxsuccess.com website to the practice, and share general best practices and other vendor specific best practices with the practice.

  Benefits: Prescribers and staff learn new workarounds and application features that make the prescription writing process and automated refill response process much simpler leading to enhanced productivity and end user satisfaction.

- Intervention: Assign dedicated practice staff to review prescription logs and create Super Users.

  Rationale: Having a super user at each practice will reduce the amount of calls that are made to the vendor or to the EAzRx-Pert team.

  EAzRx-Pert Team Role: Team members will educate the practice on identifying their e-prescribing issues and the importance of reporting them. The team will aggregate all vendor related issues and provide feedback to the vendor and Surescripts. The team will also conduct additional research and log issues through the Surescripts Support portal.

Benefits: Most if not all practices report that after the initial preliminary kick-off phase their e-prescribing experience dramatically improves and the practice begins to reap the benefits within the first thirty to sixty day time period.

- Intervention: Practice to educate area pharmacies and communicate to them their e-prescribing connectivity

  Rationale: Most pharmacies are trained to process e-prescriptions. Reaching out to them proactively creates awareness and helps them be better prepared. Studies have shown that most reported "missing script" issues are caused due to staff training related issues.

  EAzRx-Pert Team Role: The team will reinstate confidence in the system. This will require providing feedback to regional pharmacy leadership and logging cases to report pharmacy training issues.

  Benefits: Satisfied patients, better communications with pharmacies ultimately leading to greater practice prescription efficiencies.

- Intervention: Encourage clinicians and their staff to educate patients on e-prescribing practice and pharmacy workflows and e-prescriptions

  Rationale: Prescribers should set right expectations with their patients. E-prescriptions are faster and more secure but pharmacies still need time to fill prescriptions. An example of this is to educate the clinician on methods they can use to educate their patients. For instance, clinicians should ask patients to wait for 45 to 50 minutes before they go to pick up their medications. This provides ample time for the pharmacies to process and fill a prescription. Clinicians can post clear signage in the waiting room areas and change Interactive Voice Response (IVR) messaging to educate patients on the benefits of e-prescriptions and request that they call in to their pharmacies to request their refills. Placing "patient notification cards" in the examination rooms for prescribers to hand them out to the patients is another good patient education strategy. These cards help reinforce the benefits of e-prescriptions with patients and also serve as reminder to the pharmacy staff.

  EAzRx-Pert Team Role: Team members will reiterate the importance of setting the right expectations with patients, and will advise practices to change their IVR messaging. The team will ensure that practices posts clear signage to educate patients, and will provide practices with the necessary verbiage and templates from the www.rxsuccess.com website.

  Benefits: Patients no longer call the practice to request refills or report missing scripts. Prescribers can respond to pharmacy e-refill requests as their work flow allows. Practice staff can now dedicate more time towards patient care than to answering prescription related phone calls. These measures will result in overall patient satisfaction.

- Intervention: Share and review practice prescription utilization data among practice prescribers and encourage them to send all their prescriptions electronically

  Rationale: Sometimes, prescribers are unaware that their prescriptions are being routed via fax to pharmacies. Regular sharing and review of prescription data creates awareness among users and encourages peer to peer discussions and sharing of best practices. Sending all prescriptions electronically will help generate awareness among pharmacies and encourage them to route all refill requests electronically to your practice.

  EAzRx-Pert Team Role: Team members will work with Surescripts staff to procure individual practice utilization reports. The team will then share and discuss these reports with individual practice prescribers and key staff members and answer resulting questions.

  Benefit: Practice prescribers will engage in constructive dialogue with their colleagues. This will encourage prescribers to better learn the application, utilize more and result in over all clinical and administrative benefits for the practice.

- Intervention: Participate in community e-prescribing workshops and online discussion forums to share best practices among area practices and pharmacies.

  Rationale: The team will conduct community e-prescribing workshops to encourage practices and pharmacies to share best practices and provide additional training. An online forum will be established where practices, prescribers and staff can log in to share best practices.

  EAzRx-Pert Team Role: The team will facilitate the workshops, and will also invite regional pharmacy leadership to attend and speak. Team members will educate clinicians on the online forum and encourage them to use this technology as an additional resource.

  Benefits: Practices and prescribers will learn from their peers outside of their practice. This will help initiate a dialogue with other community practices. Participants will also get a chance to better understand pharmacy e-prescribing workflows.

Category 2 – Low Touch Approach

- Intervention: Create facsimile or electronic versions of utilization reports to share with individual prescribers and group practices.

  Rationale: If a clinician's office is aware of the utilization rates for their practice, they will be inclined to either improve utilization by troubleshooting the issues or they may also be willing to share their best practices with the low utilization group of clinicians.

  EAzRx-Pert Team Role: The team will manage the process of getting the utilization reports to the clinician's office. The report will include a feedback response form so that practices can

respond back with changes. Team members will report back to the clinician once the changes have been made.

Benefits: The clinician will probably be able to improve his utilization rates further, knowing this basic information. He will become part of the team and be willing to share best practices with low utilization clinicians.

- Intervention: Provide a copy of established support protocol to the practices along with other education tools so they can report specific pharmacy related issues

  Rationale: Clinician practices need to have defined methods for reporting any issues they may have. This increases their efficiency when they have a problem with their e-prescribing.

  EAzRx-Pert Team Role: Once the support methods are defined, the team members will meet with the clinician and review the process for reporting issues.

  Benefit: The clinician will have a method for reporting issues and it will increase their productivity if it is simple and direct.

- Intervention: Invite practices to post to the online discussion forums and attend the community workshops

  Rationale: The team will conduct community e-prescribing workshops to encourage practices and pharmacies to share best practices and provide additional training. An online forum will be established where practices, prescribers and staff can log in to share best practices.

  EAzRx-Pert Team Role: Team members will facilitate the workshops, invite regional pharmacy leadership to attend and speak. The team will also educate clinicians on the online forum and encourage them to use this technology as an additional resource.

  Benefits: Practices and prescribers will learn from their peers outside of their practice. This will help initiate a dialogue with other community practices. Participants will also get a chance to better understand pharmacy e-prescribing workflows.

Communications and Marketing Manager

Job Title: Communications and Marketing Manager
Reports To: Executive Director
FLSA Status: Full-Time, Exempt

Summary

The Communications and Marketing Manager will be responsible for planning, organizing, and executing the Communications/Public Relations Program, as well as executing key tactics of the statewide electronic prescribing (e-prescribing) initiative. This position is based in Phoenix, Arizona.

Duties and Responsibilities include the following. Other duties may be assigned.

1. Supports Executive Director and Associate Director on major projects as they relate to meetings and communications utilizing appropriate project documentation, tracking and measurement tools.

2. Gathers and processes industry related information from a variety of sources including national experts, news stories, magazines and journal articles, special studies, governmental reports, industry studies, etc.

3. Working with the Executive Director, the manager coordinates the production and production scheduling of newsletters, magazine, conference brochures, and related collaterals.

4. Develops and writes original articles of interest both independently and in concert with the Executive Director and members of the Board, as requested.

5. Proactively develops systems to contact and submit newsworthy articles and items of interest to the press, trade publications and industry contacts.

6. Prepares marketing, news and related materials for trade conferences.

7. Assists senior leadership with various presentations to key internal and external audiences.

8. Creates and executes email campaigns and website promotion.

9. Manages and maintains AzHeC website, including ongoing review and updating of content, as well as creation of new content.

10. Manages and expands existing weblog (blog) program, including recruitment and management of blog authors.

11. Determines scope, priority and deadline for projects including assisting budget and tracking use.

12. Manages and expands Speakers Bureau.

13. As part of a statewide e-prescribing program, duties related to execution of specific tactics for this program will be assigned. Limited training related to e-prescribing will be provided. Related duties and responsibilities include, but are not limited to, the following:

    a. Calls on clinician offices to troubleshoot e-prescribing difficulties, performs associated logging, tracking, and resolving of issues, potentially with additional team member support.

    b. Coordinates continuing education sessions and other presentations with clinician organizations and events.

    c. Communicates policies, laws and regulations to clinicians and pharmacists.

    d. Works with Executive Director and Associate Director to develop and execute additional tactics.

14. Performs other related duties as assigned.

Qualifications

To perform this job successfully, an individual must be able to perform each essential duty satisfactorily. The requirements listed below are representative of the knowledge, skill, and/or ability required. Reasonable accommodations may be made to enable individuals with disabilities to perform the essential functions.

Education/Experience

2-5 years experience in related field with bachelor's degree in Business (with Marketing emphasis), Journalism, Communications or related area. Prior experience with preparation of written materials including but not limited to press releases, brochures, newsletters, and special studies.

Work Environment

The work environment characteristics described here are representative of those an employee encounters while performing the essential functions of this job. This includes availability to work non-regular hours as necessary, ability to periodically drive to and from clients, conference and event, and limited travel. Reasonable accommodations may be made to enable individuals with disabilities to perform the essential functions. The noise level in the work environment is usually moderate.

Physical Demands

The physical demands described here are representative of those that must be met by an employee to successfully perform the essential functions of this job. An employee must

occasionally lift and/or move up to 20 pounds. Reasonable accommodations may be made to enable individuals with disabilities to perform the essential functions.

Specific vision abilities required by this job include close vision and ability to adjust focus. While performing the duties of this job, the employee is regularly required to stand; walk; sit; use hands and talk or hear.

Skills

- Proficient with Microsoft Office applications
- Working knowledge of HTML, Adobe PhotoShop, XML and database management
- Writing and editing skills and ability to adapt writing styles for different audiences
- Clear and concise communication to all audiences through print and electronic media
- Ability to work independently as well as ability to effectively interact and maintain effective working relationships
- Ability to independently plan, organize, manage and prioritize multiple tasks and projects efficiently and effectively
- Ability to consistently meet strict deadlines
- Detail oriented
- Ability to handle confidential information with discretion
- Ability to embrace changes and adjust quickly to work demands and shifting priorities
- Bi-lingual (Spanish-English) speaking, writing, reading a plus
- Thorough and diligent fact-finder, internet researcher, proofreader and editor

Salary and Benefits

Salary range is anticipated to be $40,000 to $50,000, depending on experience. Medical and dental benefits and 401(k) are available. Two weeks of annual vacation. No relocation assistance available.

Company Overview

Arizona Health-e Connection (AzHeC) was established in January 2007, as a not-for-profit organization whose mission is to lead Arizona's establishment of health information exchange (HIE), and adoption of health information technology (HIT). Initially, AzHeC was a state-led program called upon by the Governor to comprehensively review issues and develop recommendations. Having accomplished that phase of our mission, we are now directed by a very diverse, private-public partnership to refine those recommendations and facilitate implementation. For more information, visit www.azhec.org.

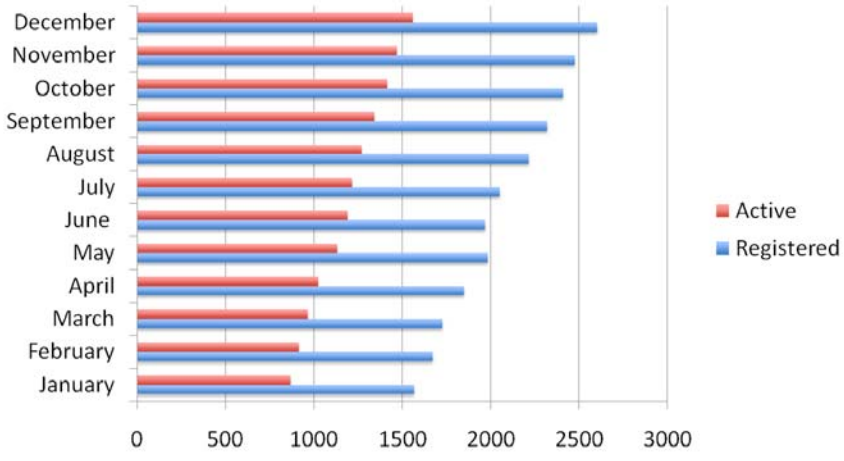
To Apply

To apply for this position, send your resume to info@azhec.org by Friday, November 7, 2008. No phone calls please.

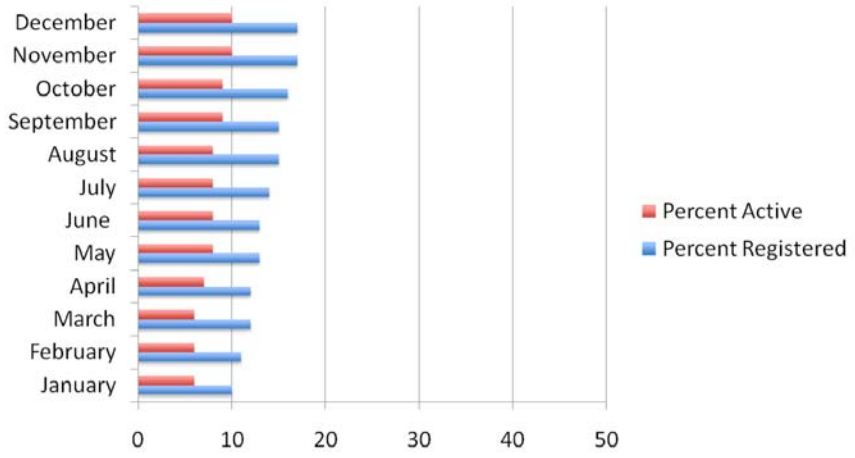
EAzRx Stats

Arizona Health-e Connection

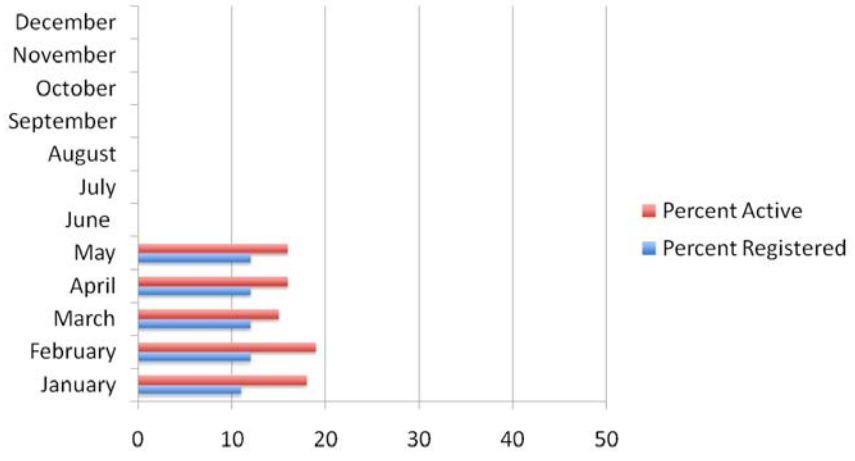
Az Prescribers on the Surescripts Network in 2008



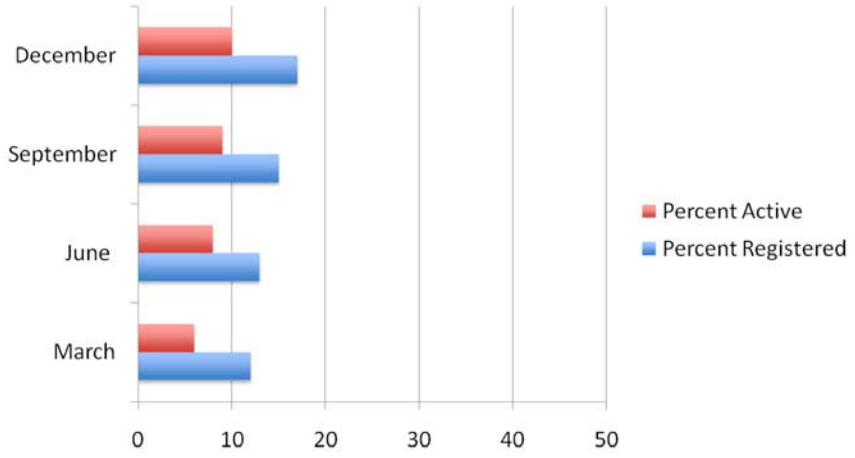
Percent of Az Prescribers on the Surescripts Network in 2008



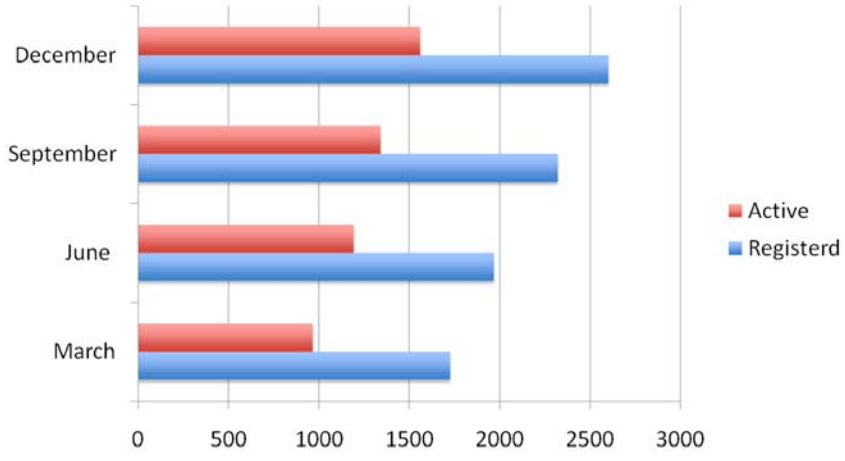
Percent of Az Prescribers on the Surescripts Network in 2009



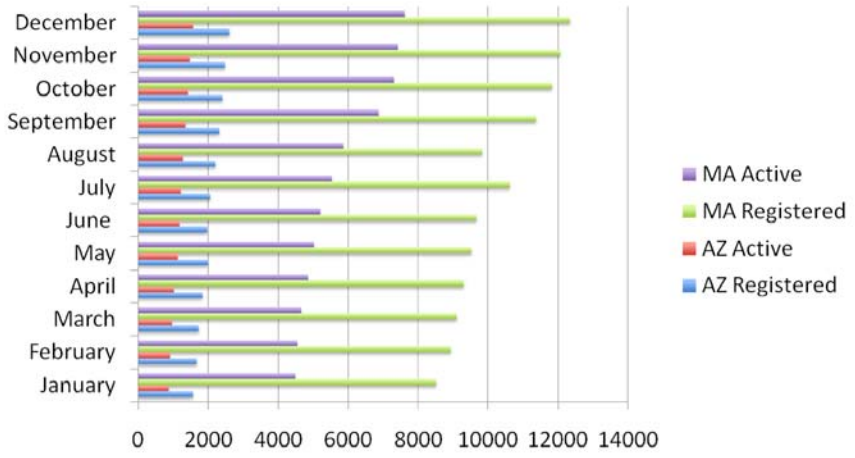
Percent of Az Prescribers on the Surescripts Network in 2008



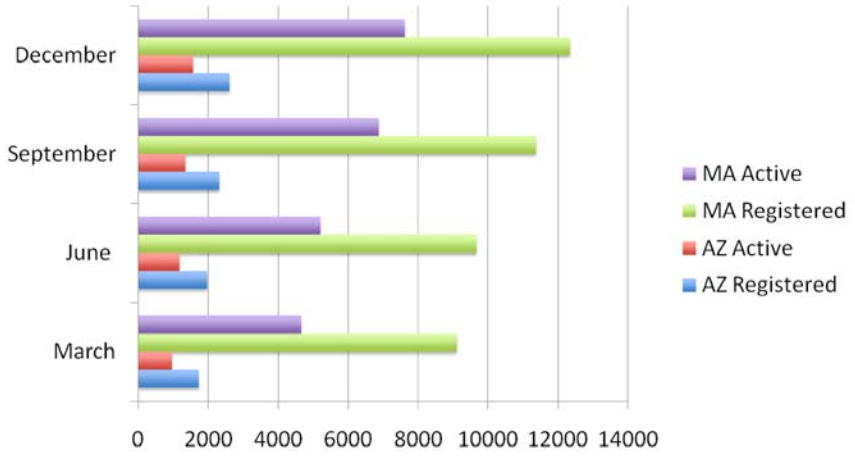
Az Prescribers on the Surescripts Network in 2008



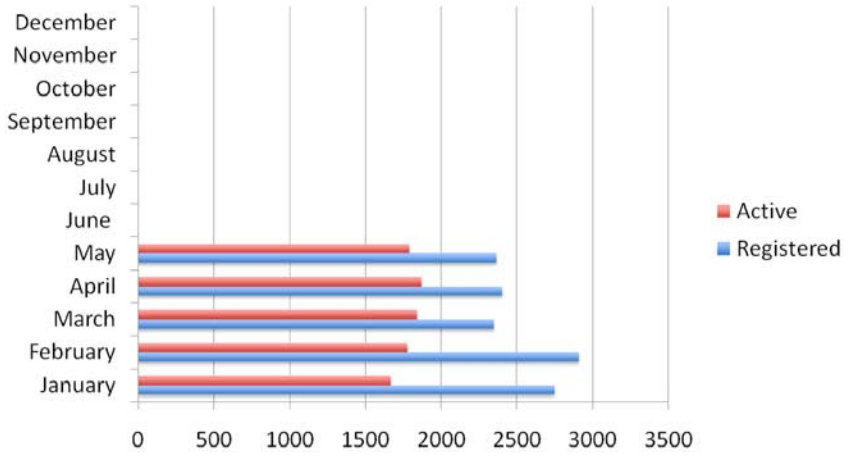
AZ and MA Prescribers on the Surescripts Network in 2008



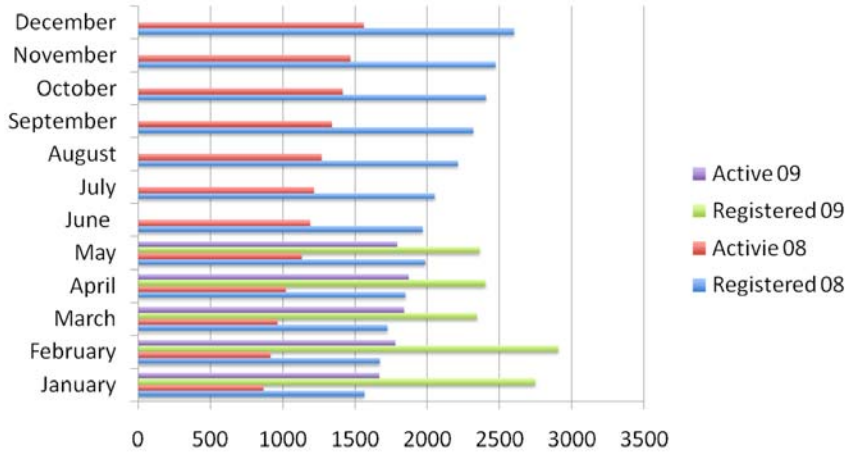
AZ and MA Prescribers on the Surescripts Network in 2008



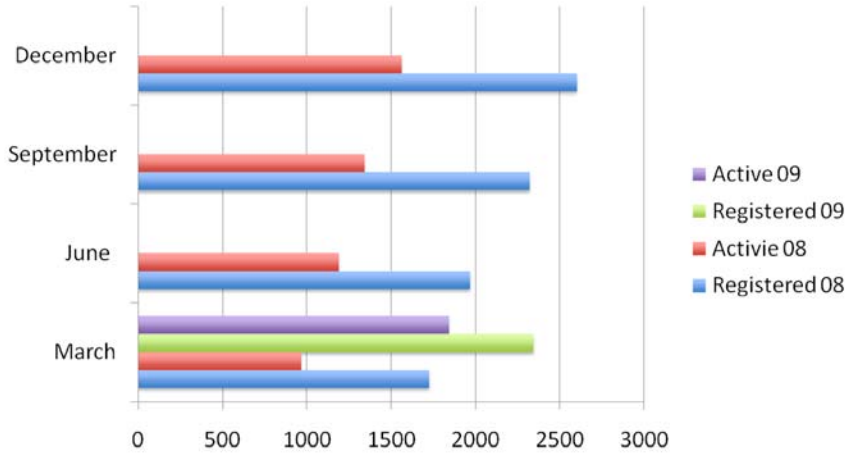
Az Prescribers on the Surescripts Network in 2009



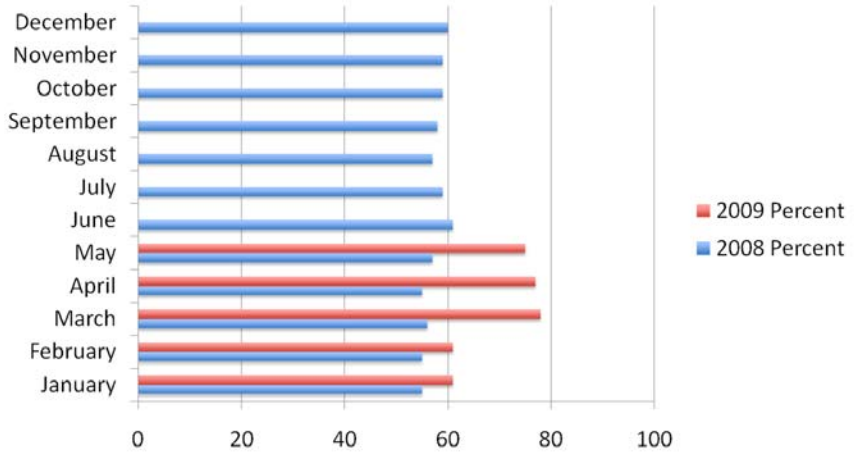
Az Prescribers on the Surescripts Network in 2008 vs 2009



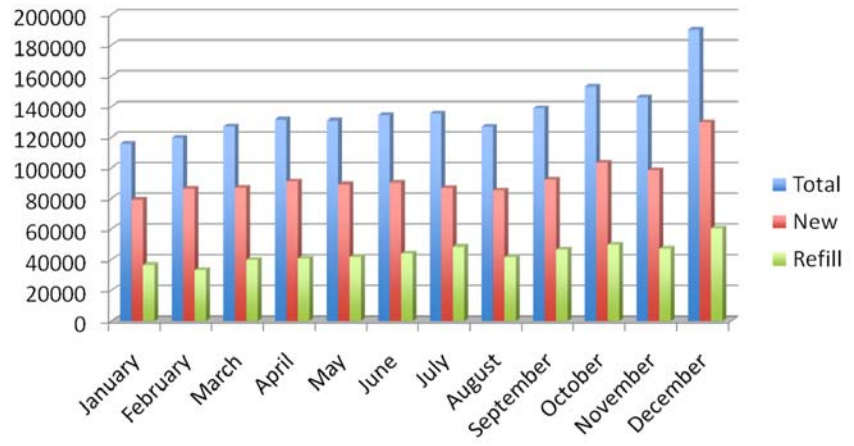
Az Prescribers on the Surescripts Network in 2008 vs 2009



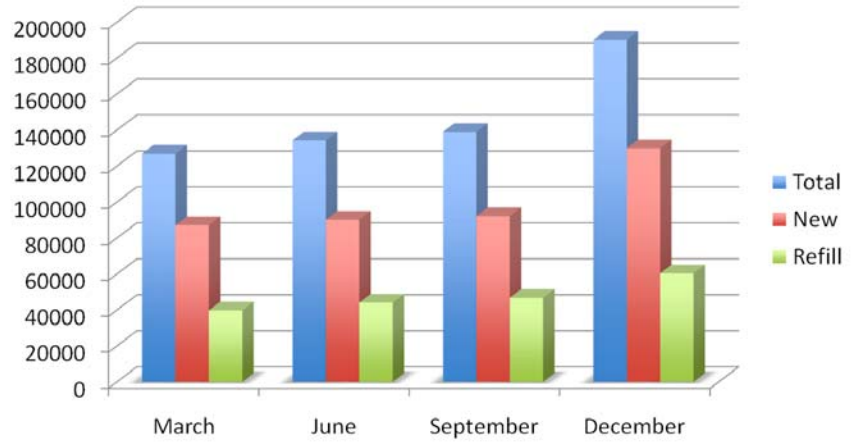
Percent of AZ Registered Providers Who Were Active in 2008 vs 2009



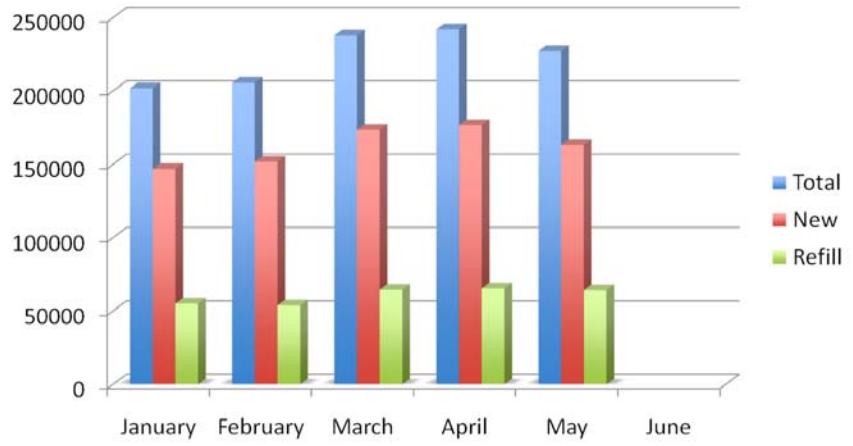
Number of e-prescriptions Written in Az in 2008



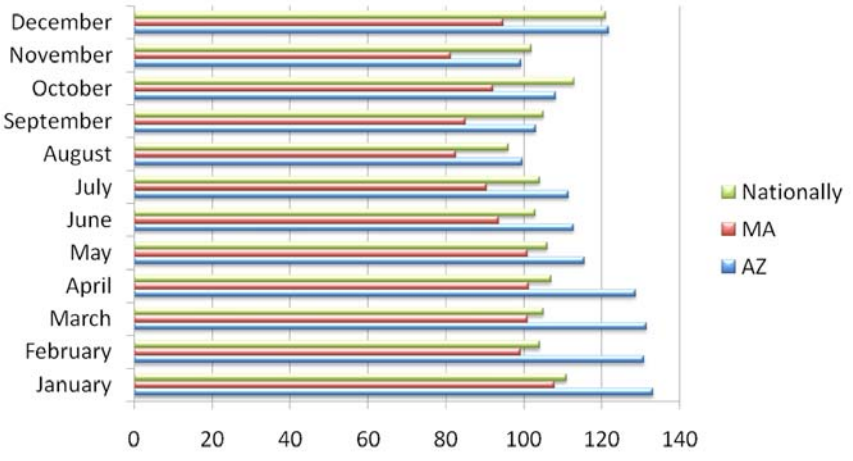
Number of e-prescriptions Written in Az in 2008



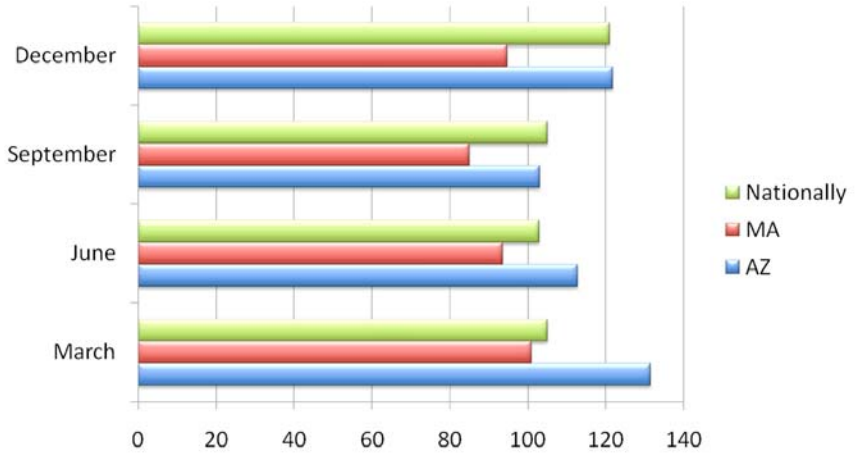
Number of e-prescriptions Written in Az in 2009



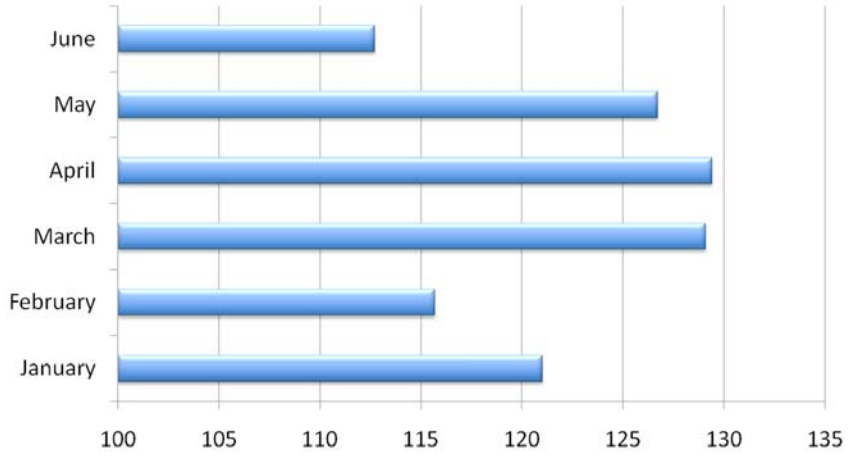
Average Number of e-prescription Transactions per Prescriber in 2008



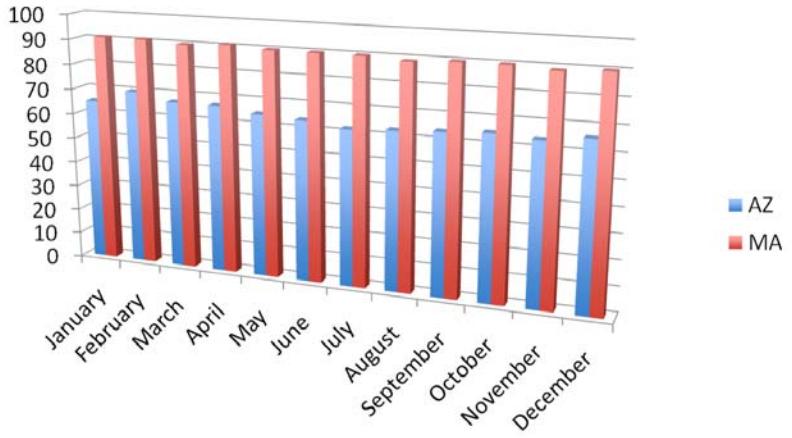
Average Number of e-prescription Transactions per Prescriber in 2008



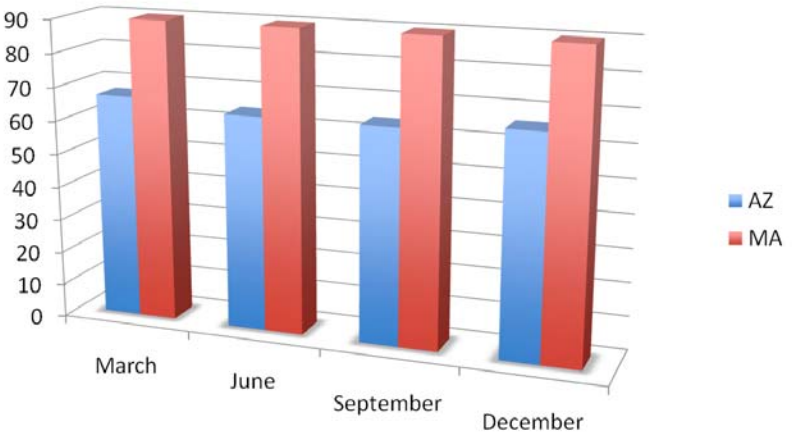
Average Number of e-prescription Transactions per Az-Prescriber in 2009



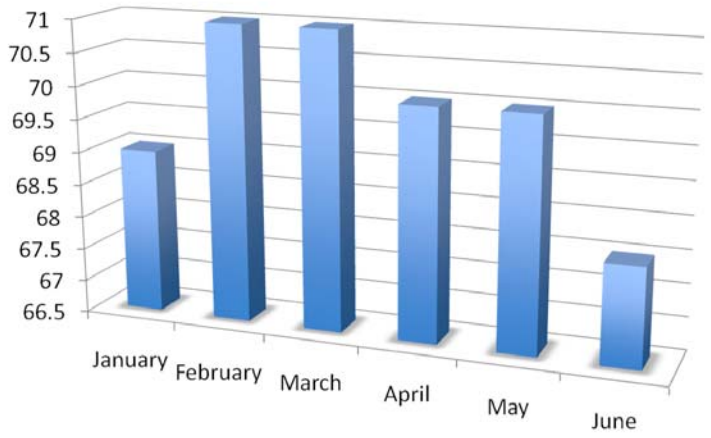
Transaction Mix: Percent of New Prescriptions Sent Electronically in 2008



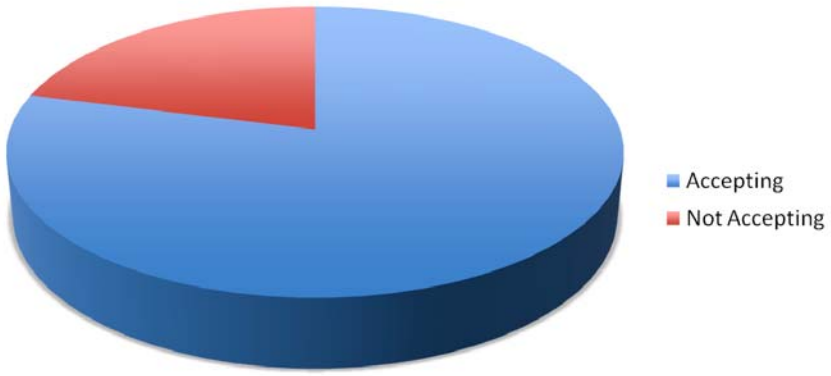
Transaction Mix: Percent of New Prescriptions Sent Electronically in 2008



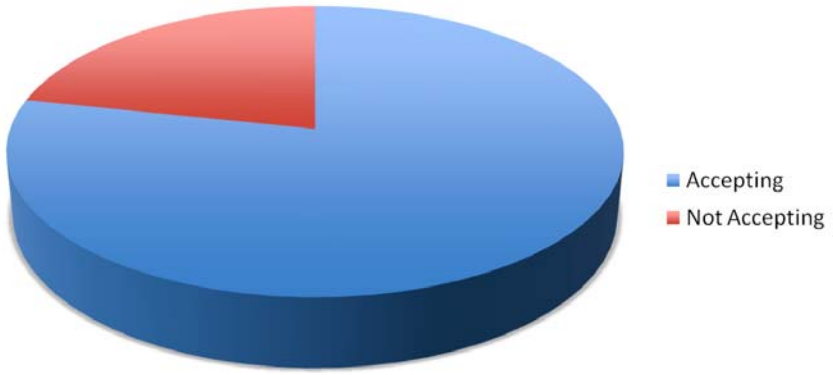
Transaction Mix: Percent of New Prescriptions Sent Electronically in AZ in 2009



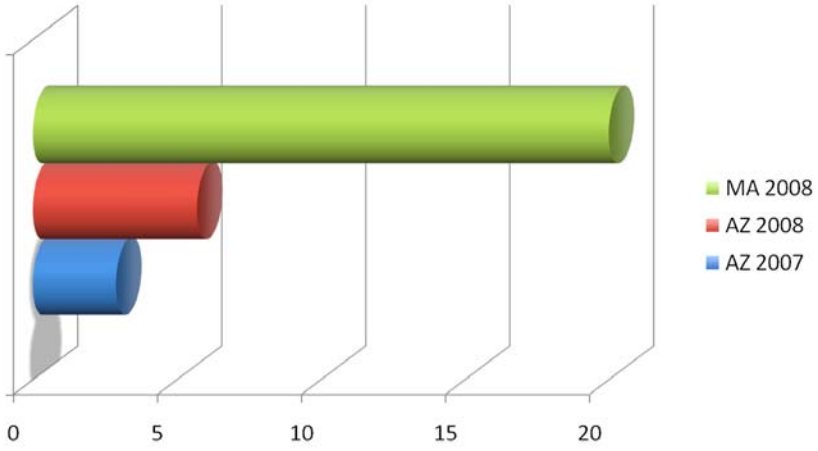
Percent of AZ Pharmacies Accepting e-prescriptions in December 2008



Percent of MA Pharmacies Accepting e-prescriptions in December 2008



Percent of Prescriptions Sent Electronically



Top AZ e-prescribers

Grant Agreement
Between
Arizona Health-e Connection
And
The Arizona Board of Regents, University of Arizona

This Grant Agreement is entered into between Arizona Health-e Connection and The Arizona Board of Regents, University of Arizona in support of the e-Prescribing Initiative. This Grant Agreement is subject to the following terms and conditions:

1. The Principal Investigator for the project will be: Dr. Terri Warholak
2. The Period of Performance for the project will be: May 15, 2008 – May 14, 2009
3. The amount of Funding for the project will be: $24,118
4. The type of Funding for the project is (check one):
   ☐ Cost Reimbursable ☒ Fixed Price
5. Payment will be made to the University and administered by the office of Sponsored Projects Services. Payment will be in two equal installments; 1) upon execution of this agreement and 2) at May 15, 2009. Payment shall be sent to:
   University of Arizona, FRS# _____
   PO Box 3520
   Tucson, AZ 85722-3520
6. Technical Reports will be provided by the Principal Investigator to Brad Tritle per Exhibit A of the Prime Award between Arizona Health-e Connection and United Healthcare.
7. Sponsor invoices and notices shall be sent to: Brad Tritle, Arizona Health-e Connection
   810 West Bethany Home Road
   Phoenix, AZ 85013
8. Administrative Notices shall be sent to: Sponsored Projects Services, PO Box 3308, Tucson, AZ 85722-3308 or sponsor@email.arizona.edu
9. Each party shall be responsible for its negligent acts or omissions and the negligent acts or omission of its employees, officers, or directors, to the extent allowed by law.
10. Either party may terminate this agreement with thirty days written notice.
11. This Agreement shall be interpreted pursuant to the laws of the State of Arizona.
12. The agreement is subject to the provisions of A.R.S. § 38-511 regarding Conflict of Interest.
13. The parties are required to comply with laws governing equal employment opportunity, nondiscrimination, and immigration.
14. The University shall retain any Intellectual Property that it develops during the course of the project.
15. The University shall be free to publish the findings of the project.
16. Any modification to the above understandings shall be in writing and signed by authorized individuals of both parties.

In Witness thereof, the Parties execute this Agreement as of the date written above.

The Arizona Board of Regents, University of Arizona		Arizona Health-e Connection	
Lee Anne T. Peters		3/26/09	
Name: Lee Anne T. Peters Contract Officer	Date	Name:	Date

PROPOSAL

TO: Brad Tritle, Executive Director, Arizona Health-e Connection
FROM: Andrea Smiley, APR, Project Manager
SUBJECT: Scope of Work
DATE: March 3, 2008

Thank you for the opportunity to provide you with an updated Scope of Work (SOW) to complete a strategic communications plan for the Arizona Health-e Connection (AzHeC) organization. This updated SOW provides more detail on how I will utilize a subcontractor to complete the plan, as well as more details on the final plan structure. I look forward to your feedback.

Strategic Communications Plan
Project Summary
In August 2005, Governor Napolitano issued an Executive Order and directed her information and technology staff to oversee the development of a statewide roadmap for e-health information infrastructure. Now, more than two years later, a non-profit organization with a board comprised of private and public stakeholders has been established to move the implementation activities forward.

While the Arizona Health-e Connection has accomplished a lot in a very short amount of time, there is much work to be done. Integral to efforts heretofore are solid communications engaging key stakeholders groups with appropriate messaging and activities that not only retain support, but garner new interest and participation from those within key stakeholder groups who do not yet to subscribe to the promise of e-health information.

To assist in achieving this goal, a strategic communications plan will be developed to direct activities communications activities to achieve determined goals.

Scope of Work
1. The strategic communications plan development will be split into four components: research collection, research evaluation and recommendation, plan development, and plan construction.
2. The research collection component of this SOW will include qualitative data collection (Phase One) in the form of 20-30 minute phone interviews with key stakeholder representatives; specifically:
    - Brad Tritle, AzHeC
    - David Landrith, ArMA
    - Anita Murcko, MD, AHCCCS
    - Bruce Bethancourt, MD, Banner
    - Chris Cummiskey, GITA
    - January Contreras, Governor's Office
    - John Rivers, AzHHA
    - Brad Croft, DO, physician representative
    - Kristin Rosati, JD, Chair, AzHeC Legal Committee
    - Nancy Kopplin, random public citizen

The interviews will seek the insight from these stakeholders as to:

- Their definitions of health information technology and health information exchange;
- Who they think our key audiences are or should be;
- What they think our key communication objectives should be;
- (same as below?)What barriers to effective communication they think we might face.

Phase Two of the research will be to complete a situational audit of the organization, specifically a SWOT analysis of AzHeC, as well as an environmental scan and reporting on of e-health initiatives in Arizona and elsewhere. This will provide perspective in the planning stage of the SOW to know the organization's current status and where it fits with the rest of Arizona and the nation.

3. The third component of the strategic communications will involve the plan development. This portion of the SOW will get down to the nuts and bolts, developing objectives, messaging, tactics and activities—all targeted at key audiences identified via research conducted.

4. The final component of the planning will involve the plan construction. This will entail the creation of the strategic plan document, complete with budget, timeline, and evaluation and measurement methodologies.

Here is an outline:

Work Item	Description	Timeframe for Completion	Responsible Party
	Qualitative data collection in the form of one-on-one interviews with key stakeholder representatives; specific list included above.	March 3-7 Make call appointments; 4 hours March 17-21 6 hours (20-30 min. interviews with each of the 10 interviewees)	DeEtte Person, Person Group
Research Collection (Phase One)	Situational audit (including a SWOT analysis, and an environmental scan) of e-health initiatives in Arizona and elsewhere.	March 24-28 15 hours	DeEtte Person, Person Group

Research Evaluation and Recommendations (Phase Two)	Review data collected and make recommendations for Communications Plan Development.	March 24-28 5 hours maximum	DeEtte Person, Person Group
Plan Development	Take the research and begin to identify key goals and objectives to meet those goals; identify key audiences; and, determine key messages and effective communications vehicles to deliver messages.	March 31-April 4 10 hours	Andrea Smiley, Project Manager
Plan Construction	Begin to put the plan together. Plan will include a discussion of research findings; executive summary; plan goals; objectives to meet goals; key messages to communicate to key audiences, who will also be defined; communications vehicles identified that will deliver messages to audiences; budget associated with vehicles; timeframe for completion efforts; and tactics grid that will organize plan data and outline evaluation and measurement methodologies.	March 31-April 4 14 hours	Andrea Smiley, Project Manager

Timeline & Cost
The timeline for completion of each phase and the cost of each phase are outlined below.

Research Collection, Evaluation and Recommendations
The research portion of the plan will take approximately 30 hours, beginning on Mon., March 3 and concluding on Fri., March 28. Cost: $2550 ($85 per hour).

Plan Development and Construction
The plan development portion of the plan will take approximately 24 hours, beginning on Mon., March 31, and concluding on Fri., April 4. Cost: $2040 ($85 per hour).

Terms & Acceptance
Each key element of this scope of work has been identified and priced separately (above in "Timeline and Cost"). Project Manager Andrea Smiley will oversee completion of the SOW and be reimbursed accordingly. Andrea Smiley will be responsible for reimbursing the subcontractor, DeEtte Person, Person Group, per the terms identified in this SOW.

Fifty percent of total amount is due at the acceptance and signing of this SOW. After the scope of work is completed and the final plan has been accepted by the undersigned, the other half of the payment will be due.

The undersigned agrees to the terms of this Scope of Work document.

_____	_____
Brad Tritle, Arizona Health-e Connection	Andrea Smiley, Project Manager
_____	_____
Date	Date

CONSULTING AGREEMENT

This agreement is made effective as of 1-6-09 between Arizona Health-e Connection(Client) and Snyder Consulting, dba Illumine IT Solutions (Consultant). This agreement is "in effect" whether signed or not whenever the Client seeks and receives consulting services from Consultant.

Description of Services:
The following services will be provided by Consultant to Client:

Writing the Proposal for e-Prescribing EAzRx-pert Concept Paper.

Assumptions:

- Consultant will have electronic copies of noted documents by end of day 1-6-09
- AzHeC will introduce me to Kate and Ajit for any questions I may have.
- AzHeC will contact Tom Kelly and any other payer board members to obtain salary information for an EAzRx-pert (combination business analyst, provider relations person), if possible a job description should also be obtained. (I am happy to contact the board members or their designee if you like).
- AzHeC will provide the e-Prescribing Strategy and Tactics document to me.
- AzHeC will provide electronic copies of the outline updated by SureScripts, Metropolitan DC E-Prescribing Improvement Program, Research Support Analyst Job Description and any other pertinent documentation.
- As I complete a draft section I will forward to Melissa for review; however I will continue on the other sections as this review is being completed.
- The concept paper will have a high level executive summary outlining the main concepts.
- For the budget, we will use: (please confirm the ?? items).
    - 20% load rate for 5 employees (4 EAzRx-pert's and one project director)
    - $2500 computer set up
    - $700 monthly rent for office space
    - Office furniture???
    - Training by SureScripts
    - Travel expenses
    - Utilities???
    - Telephone / Cell Phones??
    - Office supplies
- The total hours to complete this work will not exceed 16 hours at a rate of $125.00 for a total of $2000.00.
- This proposal does not include meeting with the payers to try and obtain funding.
- The final deliverable of a " Proposal for e-Prescribing EAzRx-pert Concept Paper " will be completed by January 15, 2009 assuming that reviews are completed by AzHeC in a timely manner.

Payment:

- Consultant will charge $125.00 per hour for time spent on the project

- Consultant will work not more than sixteen hours total without prior approval from client.
- Consultant will submit a bill weekly, due and payable within five working days.

New Project Approval:
Consultant and Client recognize that the Consultant services may include working on various projects for the Client. Consultant shall obtain the approval of the Client prior to the commencement of a new project. When the Client requests work to be done, new project approval is considered to have occurred.

Consultant and Client agree that the Consultant will not have authority to approve new projects or commit the financial resources of Company without prior written approval from a member of the Company executive team.

Term / Termination:
This agreement shall be in effect beginning 1-6-09. The agreement may be terminated by either party may elect to terminate or renew this agreement with 30 days notice.

Relationship of Parties:
It is understood by the parties that Consultant is an independent contractor with respect to Company and not an employee. Client will not provide fringe benefits, including health insurance benefits, paid vacation, or any other employee benefit, for the benefit of Consultant.

Confidentiality:

Consultant recognizes that Client may and will have the following information:
- inventions
- machinery
- products
- prices
- costs
- discounts
- future plans
- business affairs
- trade secrets
- technical information
- customer lists
- product design information
- copyrights

and other proprietary information (collectively, "Information") which are valuable, special and unique assets of Client. Consultant agrees that Consultant will not at any time or in any manner, either directly or indirectly, use any information for Consultant's own benefit, or divulge, disclose, or communicate in any manner any information to any third party without the prior written consent of Client. Consultant will protect the Information and treat it as strictly confidential. A violation of this paragraph shall be a material violation of this Agreement.

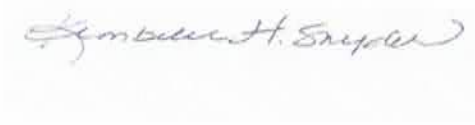
Confidentiality after Termination:

The confidentiality provisions of this Agreement shall remain in full force and effect after the termination of this Agreement.

Return of Records:

Upon termination of this Agreement, Consultant shall deliver all records, notes, data, memorandum, models, and equipment of any nature that are in Consultant's possession or under Consultant's control and that are Client property or relate to Client business.

Signed this day of January 6, 2009



Kimbelee H. Snyder, CEO

Snyder Consulting

Dba Illumine IT Solutions

Brad Tritle, Executive Director
Arizona Health-e Connection

UnitedHealthcare Grant Narrative Report and Project Financials

August 2009

Contact Information:
Brad Tritle
Executive Director
Arizona Health-e Connection (AzHeC)
brad.tritle@azhec.org
602-288-5130

I. Introduction

Arizona Health-e Connection received a one-time, $100,000 grant from UnitedHealthcare in mid-2008 to support the establishment of a statewide electronic prescribing (ePrescribing) initiative, now known as EAzRx.

EAzRx was founded in early 2008 as a statewide initiative to foster the adoption and utilization of electronic prescribing. Co-chairs and a steering committee were established prior to the receipt of the UnitedHealthcare (UHC) funding, and the UHC grant facilitated a variety of valuable activities which will have a lasting effect on the adoption of electronic prescribing statewide. AzHeC also moved forward on several activities once the UHC funding was awarded, but prior to its disbursement, such as featuring ePrescribing at the 2008 Arizona Health-e Connection Summit.

Grant-funded activities include establishing a workplan of strategies and tactics approved by the EAzRx Steering Committee, identifying the need for an ePrescribing utilization team and funding a business plan for such, performing surveys and studies on providers relative to ePrescribing, tracking ePrescribing metrics, identifying challenging areas for specific future activity (e.g., community health centers), and a great deal of education of physicians, nurses and nurse practitioners, physician assistants and pharmacists regarding electronic prescribing and electronic medical records (as well as health information exchange and personal health records).

In summary, the grant award from UnitedHealthcare has been instrumental in pushing forward electronic prescribing in Arizona, including the doubling the percentage of ePrescribing transactions.

II. Project Goals, Objectives, and Outcomes

This section will outline the original project goals and objectives, and specify the project outcomes.

In its original grant proposal (which requested a total of $250,000 – of which $100,000 was awarded), Arizona Health-e Connection proposed accomplishing the following:

- Establish highly visible and respected pharmacy and provider representatives as Initiative Co-Chairs (volunteers)
    - Outcome: Completed. Initiative (EAzRx) Co-Chairs are:
        - Bradford Croft, D.O. , an ePrescribing physician practicing in Flagstaff at East Flagstaff Family Practice.
        - Mindy Rasmussen, R.Ph., Executive Director of the Arizona Pharmacy Alliance.

- Secure a medication safety subject matter expert, who is also an experienced project manager and researcher, to be the Initiative Project Director (paid position)

    - Outcome: Completed, though role changed to "Principal Investigator," due to funding and scope. Medication safety subject matter expert contracted is:

        - Terri Warholak, Ph.D., R.Ph., Associate Professor, University of Arizona College of Pharmacy (Appendix A is Dr. Warholak biosketch; Appendix B is Final Report from Dr. Warholak).

- Populate the Initiative Committee with "e-prescribing champions," and utilize input to design a detailed timeline and workplan. This detailed workplan will be delivered to United Healthcare for final review. This workplan should also detail how e-prescribing will incorporate EMR adoption promotion (many e-prescribing modules are part of more fully functional, electronic medical record systems).

    - Outcome: Workplan. Appendix C is the EAzRx Strategy and Tactics Matrix with timing priority indicated. Some of these items are now expected to be implemented as part of an HIT Regional Extension Center under ARRA funding. Appendix F is the ePrescribing Utilization Business Plan, which is currently seeking funding from several commercial health plans (updated budget spreadsheet available), which is a concept and workplan that emerged from the EAzRx Steering Committee and discussions with both SureScripts and Arizona commercial health plans.

    - Outcome: EAzRx Steering Committee members are listed on the following page. Meetings are held at least nine times per year, monthly as needed.

EAzRx Steering Committee Members (ePrescribing Champions)			
Mindy	Rasmussen	Executive Director/CEO	Arizona Pharmacy Alliance
Brad	Croft, DO	D.O.	East Flagstaff Family Practice
Brad	Tritle	Executive Director	Arizona Health-e Connection
Ken	Baker	Of Counsel / Pharmacy Consultant	RENAUD COOK DRURY MESAROS, PA
Chris	Hogan	Director of Pharmacy	BCBS-AZ
Terri	Warholak	Assistant Professor	U of A College of Pharmacy
David	Decker	VP, Integration Services	GPT/Americhoice
Berman	Susan	Pharmacy Director	AHCCCS
Bill	Fink	President	RxAccord - Managed Care Pharmacy Consultants
Mark	Bosen, Pharm D	Director, Pharmacy Relations	The Apothecary Shops
Mervin	Myrvik	Physician	Veterans Affairs
Kim	Harris-Salamone	Director, Physicians Quality Program	Health Services Advisory Group
Bob	Dowd	Chief Information Officer	Sonora Quest
Michael	Rupp, PhD, RPh	Professor of Pharmacy Administration	Midwestern University-Glendale
Gina	Flores	Health Policy Advisor	AZ Office of Governor
Fran	Roberts	Vice President	College of Nursing and Health Sciences, Grand Canyon University
K. Mark	Wooden, PhD	Dean of Health Sciences	College of Nursing and Health Sciences, Grand Canyon University
Charles	Bell		
Cathy	Graeff	Senior VP, Communications and Industry Relations	NCPDP
Howard	Eng		University of Arizona
Marc	Leib	Chief Medical Officer	AHCCCS
Emily	Jenkins		Arizona Council of Human Service Providers
Carole	Slencsak, RPh, DDS		Practicing Dentist
Rodgers	Wilson, MD	Medical Director for Children Services	AzDHS
Chmura	David		Copper Queen Community Hospital
Additional Liaisons			
Laura	Carpenter	Council	AHCCCS
Anita	Murcko	Medical Director	AHCCCS
Kalyanraman	Bharathan	Project Director	SAHIE
Jack	Weiss, MD, MBA	Chief Medical Officer	APIPA/Americhoice
Eric	Thomas	RHITA Program Manager	AzGITA

- Hold a highly-visible, statewide Summit focusing on e-prescribing, with the support of the Governor. The summit should include national and Arizona speakers. Secure initial Platinum Sponsor, to fund the organization of the Summit.

    - Outcome: Completed. The second day of the 2008 Arizona Health-e Connection Summit was devoted primarily to ePrescribing.

        - See http://www.azhec.org/summit_08_0503.jsp

- Design and launch an education and communications campaign targeting primarily the provider/physician community, utilizing support of the Arizona Health-e Connection board organizations. For the benefit of the Initiative, a clear and comprehensive, multi-year communications plan should be developed for Arizona Health-e Connection, detailing the coordination of e-prescribing with, and leverage of, other health information infrastructure initiatives, especially the promotion of electronic medical record (EMR) adoption. Secure Initiative Communications Director (paid position).

    - Outcome: Strategic Communications Plan completed July 2008 (Appendix D). This plan is currently in implementation.

    - Outcome: Due to reduction in requested award amount, AzHeC hired a Communications Manager at the salary of $50,000 per year, instead of a Communications Director at $96,000 per year (as proposed). See Appendix G (Communications Manager position description).

- Design and launch a research component, in conjunction with the University of Arizona College of Pharmacy, that includes both quantitative and qualitative (e.g., attitudes) research, in order to measure the effectiveness of the Initiative's efforts. Best practices and lessons learned can be clearly identified and published for both continuous improvement of the Arizona Initiative, and the benefit of other state and national efforts (e.g., engagement of University of Arizona College of Pharmacy faculty). There is need nationwide for a best practices model, and we propose this grant will establish such a model.

    - Outcome: Completed. See Appendix A (Biosketch of Dr. Terri Warholak), Appendix B (Dr. Warholak Final Report), and

- Work closely with Arizona's health insurance plans, soliciting participation in leadership roles for the Initiative, and exploring further use of incentives to

encourage physician adoption of e-prescribing and eventually electronic medical records.

  - Outcome: In process. Commercial health plans, specifically UnitedHealthcare, BlueCrossBlueShield and the AHCCCS Managed Care Organizations are establishing individual plans to incent ePrescribing adoption by clinicians.

- Establish an incentive fund, to explore and pilot the use of incentives – either direct or indirect – to promote e-prescribing and overall electronic medical record adoption. Incentives to be considered include providing free or low-cost software applications or hardware to providers (direct); establishing or promoting hosted, web-based applications (indirect); providing trained staff

  - Outcome: Unable to be pursued, due to reduction in award funding.

- To assist providers in the first days of application use (indirect).

  - Outcome: In process. AHCCCS Managed Care Organizations are establishing process to assist several hundred providers with ePrescribing adoption. Though this was unable to be directly funded under this grant, AzHeC is rolling this objective into its application for an HIT Regional Extension Center under ARRA HITECH funding.

III. Participants and Demographics

See Appendix E - EAzRx Statistics, and Appendix H – ePrescribing Statistics Presentation. Due to this being a statewide initiative, with education and communications occurring via mass communications, as well as large educational sessions, the best measures of participants and demographics are reflected in the statewide figures reflecting demographics of ePrescribing clinicians, patients for which ePrescribing information is available, and pharmacies participating in ePrescribing.

IV. Addressing Barriers and Challenges

Two major barriers were identified, and both are being addressed.

Barrier 1 – Financial. Providers expressed disinterest in a process that may either require direct outlays of money to participate (e.g., purchase an ePrescribing software application or electronic medical record) and/or that would have indirect costs, such as temporary loss of productivity while learning the ePrescribing system, and adjusting their workflow.

- Barrier 1 is being addressed in three ways.
  - The Centers for Medicare and Medicaid Services has established a financial incentive for providers that utilize ePrescribing.
    - http://www.cms.hhs.gov/ERXincentive/
    - Section 132 of the Medicare Improvements for Patients and Providers Act of 2008 (MIPPA) authorizes a new and separate incentive program for individual eligible professionals who are successful electronic prescribers (e-Prescribers) as defined by MIPPA. This new incentive is separate from and is in addition to the quality reporting incentive program authorized by Division B of the Tax Relief and Health Care Act of 2006 - Medicare Improvements and Extension Act of 2006 (MIEA-TRHCA) and known as the Physician Quality Reporting Initiative (PQRI).
  - Also, Medicaid Managed Care Organizations in Arizona are helping to finance the adoption of ePrescribing.
  - ARRA HITECH funding will provide approximately $36 billion in incentives to providers throughout the United States that "meaningfully use" electronic health records, which includes the use of ePrescribing. See "meaningful use" link at:
    - http://healthit.hhs.gov/portal/server.pt

Barrier 2 – Issues with the ePrescribing process. It was identified early on, through discussions with clinicians that are currently ePrescribing, that a variety of issues exist that can make ePrescribing frustrating at various levels. In some cases, clinicians indicated they were on the verge of terminating their ePrescribing if issues could not be solved. Issues include ePrescribing or electronic medical record data transfer issues, pharmacy IT system issues, pharmacy workforce training issues, and other issues.

- Barrier 2 is being addressed in two ways.
  - EAzRx and AzHeC have created in conjunction with SureScripts and commercial health plan executives the concept of an ePrescribing Utilization team. This team will focus on high prescribing clinicians that are registered to ePrescribe, but are low utilizers or non-utilizers for unknown reasons. See Appendix F – Utilization Improvement Business Plan. AzHeC is currently soliciting funding from commercial health plans to implement this plan.
  - The ARRA HITECH Act created a program called the HIT Regional Extension Centers, that will provide hands-on support for clinicians as they adopt electronic medical records and seek to become meaningful users (which includes the use of ePrescribing). AzHeC is seeking to be an HIT Regional Extension Center for the State of Arizona, and establish such service availability throughout Arizona.

V. Lessons learned

A variety of lessons have been learned, some of which are detailed in Appendix B – Dr. Warholak's Final Report (see Lessons Learned section).

Additional lessons learned include:

- There are many aspects of ePrescribing that need to be improved. Troubleshooting with early adopters of the technology is critical, in order to identify improvements to the process that will reduce clinician and pharmacy frustration and improve utilization rates by existing users and adoption by new users.
- Incentive programs established by the payor community, including public payors such as Medicare, get the attention of providers. Receiving increased reimbursement (the incentives) under existing Federal programs can be onerous and a great deal of clinician hand-holding or training is needed (especially for office staff).
- It is important to hire full time staff to work on ePrescribing initiatives. Even though there is a great deal of value in committees, it is difficult in this economy to obtain large amounts of volunteer time to accomplish specific deliverables.
- Commercial health plans are interested in jointly supporting educational and strategic activities, but prefer to develop their own incentive and adoption programs, as they align with the competitive nature of establishing provider loyalty.

VI. Next Steps

AzHeC intends to roll much of the EAzRx program into the HIT Regional Extension Center Program, which if funded will begin on January 15, 2010.

AzHeC is currently soliciting funding from commercial health plans to fund the ePrescribing Utilization Improvement Program. It is anticipated that this program may begin in the fall of 2009.

VII. Sustainability

As indicated above in "Next Steps," AzHeC is planning to roll many of these activities and next steps into both the ARRA-funded HIT Regional Extension Center program (which will be establishing its own sustainability and business plan), and the ePrescribing Utilization Improvement Program (with its own business plan – Appendix F).

Additionally, AzHeC is incorporating many of the educational and communications activities into its ongoing operations and funding, including the communications manager position.

VIII. Acknowledgement of UnitedHealthcare

UnitedHealthcare has been acknowledged and recognized as a funder of Arizona's ePrescribing initiative at every EAzRx Steering Committee meeting (see list of Committee members above) since receipt of funding. Additionally, at all of the public presentations done by AzHeC staff, verbal recognition of UnitedHealthcare's role in funding the initiative was provided.

Additional recognition of UnitedHealthcare's role in funding this initiative was also provided at the following events:

- Southwest Nurse Practitioner Symposium (July 27, 2008)
- AZ State Association of Physicians Assistants Fall Conference (Oct 4, 2008)
- AzMGMA Annual Conference Closing Keynote
- Arizona Rural and Public Health Policy Forum (State Capitol; Feb 2, 2009)
- National eRx webinar sponsored by eHealth Initiative
- Arizona Osteopathic Medical Association Annual House of Delegates (April 23, 2009)
- National Council for Prescription Drug Programs (NCPDP) Annual Conference (May 5, 2009)
- Community Health Center Collaborative Ventures (May 7, 2009)
- Az Health Information Management Association Annual Conference (June 11, 2009)
- Southwest Clinical Pharmacy Seminar (February 28, 2009)
- 10th Anniversary Southwest Nephrology Conference (March 1, 2009)

IX. Original Proposed Budget to Actual.

Year 1	Item	Proposed Amount	Actual Expenditure
	Project Director – 20% of Professor Warholak's time, plus University of Arizona overhead	$30,771.23	$24,118 (see Appendix I)
	Communications Director – full time	$96,000	$29,166 (7 months; hired December 2008)
	Research and Communications: focus groups, advertising and events	$50,000	Communications Plan: $2550 (Research Collection, Evaluation and Recommendations) $2040 (Plan Development and Construction) $212.50 (Press Release

			Development and Dissemination) $1,000 (travel stipend for Dr. Warholak and Laura Carpenter, JD to attend National ePrescribing Conference in Boston)
	Incentive Fund (pilots)	$30,000	
	Additional part-time personnel or consultants for clinician training, and troubleshooting, legal fees	$40,000	$2,000 (Illumine IT consulting to develop Utilization Improvement Program (Appendix K). $31,200 (Established Associate Director Melissa Rutala as HIT Adoption Lead, focusing on ePrescribing and electronic medical record adoption; 40% of time at $78,000 annual salary). $12,500 (work on project by Executive Director Brad Tritle; 10% of time at $125,000 annual salary).
	Platinum sponsorship of Summit	$30,000	
Year 1 Subtotal		$276,771.23	$104,786 (additional travel expenses for in-state eRx presentations and staff travel to National ePrescribing Conference not included). The additional $4,786 was funded by AzHeC membership dues.
Year 2	Project Director – 20% of Professor Warholak's time, University of Arizona overhead	$31,699.36	Not funded
	Communications Director	$96,000	
	Research and Communications: focus groups, and events (lessening in year two)	$25,000	
	Additional part-time personnel or consultants for clinician training, a troubleshooting	$40,000	
Year 2 Subtotal		$192,699.36	
Total Requested		$469,470.59	

Services Agreement

This Services Agreement ("Agreement") for is between Arizona Health-e Connection, 810 W. Bethany Home Road, Suite 109, Phoenix, AZ 85013 ("Subcontractor") and Noridian Administrative Services, LLC ("NAS" or "Contractor"), Box 6750 Fargo, ND 58108-6750, Fargo, North Dakota 58103. In consideration of the mutual promises set forth the parties agree as follows:

1. **Contracted Services and Use of Supplemental Statements of Work.** Subcontractor will provide services to NAS as described in the Supplemental Statement of Work attached as Exhibit 6. If additional Supplemental Statements of Work are executed in the future to further define and refine the services to be rendered and the Deliverables to be delivered under this Agreement, or for additional services, the parties agree that effective upon the mutual signatures of the parties, each executed Supplemental Statement of Work shall be deemed integrated into this Agreement as if it were incorporated in its totality as of the Effective Date, and the parties further agree that the identification of any software or other deliverables in any Supplemental Statement of Work shall be deemed to be within the scope of the term "Deliverables" as defined by this Agreement. The parties agree that all Supplemental Statements of Work shall utilize a form substantially in compliance with Exhibit 6 hereto.

2. **Term of Agreement**. The term of this Agreement shall begin on June 15, 2009 and continue until December 31, 2010 or by sooner termination in accordance with the Termination Provisions of this Agreement.

3. **Termination**. In the event the Contract between the Secretary of Health and Human Services and NAS is terminated, this Agreement between NAS and Subcontractor shall automatically terminate upon notice by NAS to Subcontractor. In addition, this Agreement may be terminated by either party with or without cause upon thirty (30) days' written notice to the other party or at any time by mutual agreement. In the event of termination, the Subcontractor shall submit the final records and invoice within 30 days of the effective date of termination, and NAS shall make final payment 10 working days of receipt of such records and invoices. Contractor shall terminate by delivering to Subcontractor a Notice of Termination specifying the extent of termination and the effective date. Upon such termination, Contractor shall be liable only for payment under the payment provisions of this Agreement for Products and Services accepted prior to the effective date of termination, for Products that Contractor agrees to accept after the effective date of termination, and for the reasonable costs incurred complying with Contractor's requests for an orderly close-out of the terminated work

4. **Compensation.** NAS agrees to pay the Subcontractor a fee as described in the Supplemental Statement of Work for work performed by Subcontractor under this Agreement.

5. **Ownership of Information and Material.** All work products, deliverables, computer programs, documentation and data developed and provided to NAS during this project are the property of NAS. During this project, all work products, deliverables, computer programs, documentation and data will be available to NAS for review and assessment. All products resulting from this project will be demonstrated to NAS upon request.

6. **Reimbursement of Expenses.** NAS will reimburse the Subcontractor for reasonable out-of-pocket expenses pursuant to NAS policies with regard to expense reimbursement. Reimbursement of expenses shall be made on the basis of itemized statements, including necessary supporting documentation, submitted by the Subcontractor and approved by NAS. NAS recognizes that instances will occur that present issues not contemplated or addressed by this Policy. In such cases, the Chief Financial Officer may apply his or her judgment in the reimbursement of such expenses.

   NAS will pay the Federal Maximum Per Diem Rates, any rate or expense modifications applicable to this agreement. Subcontractor will contact Carolyn Fiechtner for negotiated rates at area hotels , 701-277-7611. Subcontractor will obtain approval from the NAS contact person prior to incurring out of pocket expenses. The NAS contact person is Amy Richardson, NAS Communications Manager.

7. **Invoice and payment.** The Subcontractor shall invoice NAS each month for all fees due. NAS agrees to pay the Subcontractor within 30 days after receipt of each invoice.

   Invoices shall be prepared and submitted on or before the 15th calendar day of the month. An original of each invoice shall be submitted, and the original shall be clearly marked "Original." Invoices shall be submitted on Subcontractor's letterhead, or standard public vouchers, and include the signature and title of a Subcontractor officer, approved by Contractor, certifying the accuracy of the invoice and Subcontractor's entitlement to the payment requested. All invoices must be submitted to Noridian Administrative Services, PO Box 6750, Fargo, ND 58103-6750 or electronically to *nasaccountspayable@noridian.com.*

   Each invoice shall include the following information:

   (i) Name and address of Subcontractor;
   (ii) Invoice date and invoice number (Subcontractor should date invoices as close as possible to the date of the mailing or transmission)
   (iii) NAS Master Agreement Contract Number and the effective date of the Statement of Work that is being invoiced. Each Statement of Work executed under this Master Agreement shall be invoiced separately;
   (iv) Identification of period of performance covered by the invoice;
   (v) Description of products and services delivered, including type, quantities, and applicable unit prices and/or rates;
   (vi) Extended totals;
   (vii) Name (where practicable), title, phone number, and mailing address of person to notify in the event of a deficient invoice;
   (viii) Electronic funds transfer (EFT) banking information, if applicable;
   (ix) NAS' valid purchase order number; and
   (x) Any other information or documentation required by this Agreement or reasonably requested by Contractor.

Invoices shall be accompanied by all supporting documentation necessary to substantiate that the Products and Services were delivered and accepted, and that the payment requested has been properly calculated in accordance with this Agreement. Any invoice for partial months will be prorated based on

the number of days in the month.

Subcontractor shall support any inspections conducted by the Government in accordance with FAR § 52.246-5

8. **Independent Contractor.** The Subcontractor, its "Personnel" as that term is described below in the "No Exclusion" section, will furnish its services as an independent contractor and not as an employee of NAS. The Subcontractor and Subcontractor Personnel have no authority to act for, represent or bind NAS in any manner, except as authorized in writing by NAS.

The Subcontractor and Subcontractor Personnel are NOT entitled to and further WAIVES any right to any of the following benefits which may be afforded employees of NAS: group hospital and physician coverage; dental coverage; vision coverage; group life insurance; long term care coverage; flexible benefits program; optional/voluntary insurance product; retirement program; long-term disability program; salary savings program; holidays; paid time off (PTO); extended illness bank (EIB); leave of absence; jury duty; guard or reservist duty; funeral leave; employee assistance program; and the affiliated employee credit union.

9. **Return of NAS's Property.** Upon the written request of NAS, and in any event upon termination of the Agreement for any reason, Subcontractor shall return to NAS all books, manuals, notebooks, notes, drawings, blueprints, photographs, reports, specifications, models, computer programs and software, databases, and other materials (1) supplied by NAS or (2) produced by Subcontractor for use during Subcontractor's performance under the Agreement or (3) relating to any Assigned Property. Subcontractor agrees to promptly deliver the most current version of the object code or the source code of the software for any Assigned Property upon the request of NAS. The confidentiality obligations set forth in this Agreement shall remain in full force and effect despite the return of such information.

10. **Code of Conduct and Physical and Systems Security** . NAS has adopted a Compliance Program and Code of Conduct ("Code") which establishes specific ethical standards and governs the conduct of every NAS employee as well as Subcontractor and to its Personnel, as defined below. Significant provisions of the Code include conflict of interest, gifts or gratuities, kickbacks, entertainment, improper payments and protecting information. Subcontractor acknowledges receipt of the Code or a summary of the Code as provided to it by Contractor and agrees to provide copies to its Personnel. Subcontractor agrees not to, and shall cause its Personnel not to engage in any conduct contrary to or in contravention of the Code. Subcontractor agrees to provide NAS with evidence of its compliance with the terms of this paragraph upon NAS' request.

Subcontractor shall report to NAS any reportable event, as described in JSM 05330 or unauthorized use or disclosure of protected health information, as described in JSM 05479.

Subcontractor and its employees agree to comply with all applicable systems and physical security policies and procedures.

Subcontractor, and as appropriate, its Personnel, shall receive training as requested by Contractor. Such training may be provided by Contractor or Subcontractor.

11. **Hold Harmless.** Subcontractor will hold NAS, its officers, directors, employees and agents harmless for any claims, suits, actions, investigations, proceedings, and related costs and expenses (including

attorney's fees), arising out of or in connections with Subcontractor's fraud, willful misconduct or gross negligence in his delivery of services or other actions arising from the Subcontractor's breach of the Agreement.

12. **Indemnification.** Subcontractor agrees to indemnify NAS, its officers, directors, employees and agents for any loss or liability to person or property arising from Subcontractor's performance of professional services under this Agreement to the extent arising out of the negligent acts, errors, omissions or willful misconduct of Subcontractor.

13. **Survival of Agreement.** The terms of this Agreement shall survive indefinitely for the purpose of protecting all Confidential and Proprietary information. Upon termination of this Agreement the parties shall coordinate their efforts to maximize the likelihood that at no time in the future will there be a disclosure of Confidential or Proprietary information.

14. **Licensing, Insurance or Board Certifications.** Subcontractor must demonstrate annually to NAS that Subcontractor has fulfilled all the necessary state, federal or professional requirements necessary to complete the services requested pursuant to this Agreement.

15. **Governing Law and Venue**. This Agreement shall be interpreted and governed in accordance with the laws of the State of North Dakota without giving effect to the choice of law principles. Any action brought arising out of this Agreement shall be venued in a state or federal court located in Fargo, North Dakota. Each party hereby expressly and irrevocably submits to the jurisdiction of such courts for the purposes of any such action and expressly and irrevocably waives, to the fullest extent permitted by law, any objection which it may have or hereafter may have to the laying of venue of any such action brought in any such court and any claim that any such action has been brought in an inconvenient forum.

16. **Assignment**. Subcontractor may not make any assignment of his benefits and/or responsibilities under the terms of this Agreement, as the performance of the services requested of the Subcontractor are considered unique to Subcontractor.

17. **No Exclusion**. Neither Subcontractor nor any of its officers, directors, principals, employees, or agents or independent contractors who will be providing Products or Services pursuant to this Agreement (all of which may be referred to as "Personnel" or "Subcontractor's Personnel" in this Agreement), (a) is presently suspended or debarred, proposed for suspension or debarment, or otherwise ineligible for award of a Government contract; (b) have been excluded or debarred by (i) the Secretary of the U.S. Department of Health and Human Services ("HHS") from participation in any federal or state health care program pursuant to 42 U.S.C. § 1320a-7, (ii) the HHS Office of Inspector General ("OIG") from participation in any federal or state health care program pursuant to 42 C.F.R. § 1001.101-.3005, or (iii) any other federal or state agency or regulatory entity possessing authority to exclude or debar potential government contractors (see 45 C.F.R. Part 76); (c) have been designated or proposed for designation pursuant to Executive Order 13224 (OFAC); or (d) would be subject to an Organizational Conflict of Interest under FAR Subpt. 9.5 or Section 21 as a result of the execution or performance of this Agreement. Upon request of Contractor, Subcontractor shall provide evidence that none of the persons or entities described above have been subject to the actions described above during the term of this Agreement and, at least annually, shall review its Personnel in this regard;

18. **Record Retention.** Subcontractor shall maintain accurate records and other evidence pertaining to the activities, costs and expenses for all Services performed under this Agreement in support of its

charges invoiced each month to Company and to demonstrate its compliance with all applicable laws, regulations, policies and procedures. Subcontractor shall not destroy the only copy of any information, data, or files related to this Contract. Subcontractor shall coordinate with Contractor to ensure that any such documents created or maintained by Subcontractor are retained as required by law.

Subcontractor shall l not destroy the only copy of any information, data, or files related to this Contract.

19. **INFORMATION and AUDIT.**

A. Information Provided by the Government or Generated During Performance. Data and information provided by the Government to Subcontractor or generated by activities under this Agreement shall be used only for the purposes of the Prime Contract and this Agreement, and in compliance with Contractor's Prime Contract with the Government. Subcontractor shall establish and maintain procedures and controls for the purpose of assuring that any information obtained from the Government or Contractor for use in performing this Agreement will be used and disclosed solely as provided in Section 1106 of the Social Security Act and its implementing regulations (42 C.F.R. 401, subpart B),

B. Audit.

1. Per IOM 100-6, Chapter 2, § 109.7, the Secretary of the U.S. Department of Health and Human Services and the Comptroller General of the United States shall, until the expiration of three years after termination of the Agreement, have access to and the right to examine any books, documents, papers and records of Subcontractor, involving transactions related to the Agreement. Contractor shall have the same access and right to examine as the Government. Subcontractor shall cooperate fully with any audit conducted by the Government or by Contractor under this Section

2. In the case of an audit or investigation by a Government agency or the Comptroller General, Subcontractor shall notify Contractor of such audit or investigation and shall ensure that a Contractor representative is present during such audit or investigation to the maximum extent permitted by law.

20. Survival. The provisions of sections 18, 19, 21 and the attached Schedules shall survive termination or expiration of this Agreement.

21. Conflicts of Interest

A. General. It is essential that the Subcontractor and the services provided to the Contractor under this Agreement be free, to the greatest extent possible, of all conflicts of interest. Except as provided below, the Contractor shall not enter into a subcontract with or maintain a subcontract with the Subcontractor where the Contractor determines that the Subcontractor has, or has the potential for, an unresolved conflict of interest. If an actual, apparent, or potential conflict of interest is suspected or identified, prior to execution of this Agreement or at any time during the term of this Agreement, the Contractor will prepare an appropriate mitigation plan as an amendment to this Agreement. Subcontractor's failure to agree to the mitigation plan shall constitute an event which permits the Contractor immediately to terminate this Agreement as if for cause.

B. Disclosure. Subcontractors must disclose all actual, apparent and potential conflicts of interest to the Contractor during the term of the Agreement in accordance with paragraph D below. The Subcontractor shall have programs in place to identify, evaluate and mitigate all actual, apparent and potential conflicts of interest that preclude, or would appear to preclude, the Subcontractor from rendering impartial assistance or advise on work performed for this Agreement. The Subcontractor's Conflict of Interest Certificate, that includes the Subcontractor's plan to mitigate all actual, apparent and potential conflicts of interest identified during the term of the Agreement, and certification that all work to be performed under this Agreement is free of unresolved conflicts of interest, will be incorporated into the Agreement after award.

C. Conflict of interest

1. Definitions: As used in this subpart, the following definitions apply:

(a) Financial relationship means—

(1) A direct or indirect ownership or investment interest (including an option or nonvested interest) in any entity that exists through equity, debt, or other means and includes any indirect ownership or investment interest no matter how many levels removed from a direct interest; or

(2) A compensation arrangement with an entity.

(b) Conflict of interest means that because of other activities or relationships with other persons, a person is unable or potentially unable to render impartial assistance or advice to the Contractor or the Government, or the person's objectivity in performing the contract work is or might be otherwise impaired, or a person has an unfair competitive advantage. For purposes of the Agreement, the activities and relationships described include those of the Subcontractor itself and other business related to it and those of officers, directors (including medical directors), managers, and lower-tier subcontractors.

2. Identification of conflict:

(a) The Contractor determines that a Subcontractor has an conflict of interest, or the potential for the conflict exists, if-

(1) The Subcontractor is an entity described in Subparagraph 21(C)(2)(c); or
(2) The Subcontractor has a present, or establishes a future, direct or indirect financial relationship with an entity described in Subparagraph 21(C)(2)(c).

(b) A financial relationship may exist either--

(1) Through a Subcontractor's parent companies, subsidiaries, affiliates, lower-tier subcontractors, or current clients; or
(2) From the activities and relationships of the officers, directors (including medical directors), or managers of the Subcontractor and may be either direct or indirect. An officer, director, or manager has an indirect financial relationship if an ownership or investment interest is held in the name of another but provides benefits to the officer, director, or manager. Examples of indirect financial

relationships are, but are not limited to, holdings in the name of a spouse or dependent child of the officer, director, or manager and holdings of other relatives who reside with the officer, director, or manager.

(c) For the purpose of identifying entities with conflicts of interest above, the entity is one that-

(1) Would review or does review, under the subcontract, Medicare services furnished by a provider or supplier that is a direct competitor of the Contractor or Subcontractor;
(2) Prepared work or is under contract to prepare work that would be reviewed under the Prime Contract with CMS or the Agreement;
(3) Is affiliated, as that term is explained in FAR 19.101, with a provider or supplier to be reviewed under the Prime Contract or the Agreement;

(d) The Contractor may determine that a Subcontractor has a conflict of interest, or the potential for a conflict exists, based on the following:

(1) Apparent conflicts of interest. An apparent conflict of interest exists if the NAS Compliance Director believes that the Subcontractor would have a conflict of interest in performing the requirements of the Agreement under this subpart. No inappropriate action by the Subcontractor is necessary for an apparent conflict of interest to exist.
(2) Other contracts and grants with the Contractor or with the Federal Government.

3. Exception. The Contractor may contract with a Subcontractor that has an unresolved conflict of interest if the Contractor determines, that it is in the best interest of the Contractor to do so.

4. Paragraph 4 has been intentionally omitted.

5. Post-award conflicts of interest.

(a) In addition to the conflicts identified in Subparagraph 21(C)(2)(c) regardless of when such conflict may arise, the Contractor considers that a conflict of interest has occurred if during the term of the Agreement—

(1) The Subcontractor receives any fee, compensation, gift, payment of expenses, or any other thing of value from any entity that is reviewed or contacted during the normal course of performing activities under the Agreement; or
(2) The Contractor determines that the Subcontractor's activities are creating a conflict of interest.

(b) In the event the Contractor determines that a conflict of interest exists during the term of the Agreement, the Contractor may take action including, but not limited to,

(1) Not renewing the Agreement for an additional term;
(2) Modifying the Agreement; or
(3) Terminating the Agreement.

D. Conflict of interest evaluation.

1. Disclosure. Subcontractors must submit, at times specified in Paragraph(D)(2), the attached Conflicts of Interest Certificate, Exhibit 5.

2. When disclosure is made. The Conflicts of Interest Certificate is submitted--

   (a) With the Subcontractor's proposal;

   (b) When the Contractor requests a revision in the Certificate;

   (c) As part of a compliance audit by Contractor or an independent auditor; and

   (d) Within 45 days of any change in the information submitted in accordance with Paragraph (D)(1) or (2). Only changed information must be submitted.

3. Evaluation. The Contractor evaluates conflicts of interest and potential conflicts, using the information provided in the Conflicts of Interest Certificate, information obtained from Contractor or independent compliance audits or examinations of Subcontractor's records, and information from other sources in order to promote the effective and efficient administration of the Agreement in relationship to the best interests of the Medicare program. For each conflict identified, the Contractor will evaluate the plan proposed by Subcontractor to mitigate the conflict to determine if the mitigation plan will allow the Subcontractor to render impartial assistance or advice to the Contractor.

Subcontractor agrees to accommodate all reasonable requests for information and otherwise cooperate with Contractor's evaluation of potential Subcontractor Conflicts of Interest, including a request to audit with respect to compliance with the terms of this section 21.

4. Protection of proprietary information disclosed.

   (a) The Contractor will protect disclosed proprietary information to the extent allowed under the Agreement or the Freedom of Information Act (5 U.S.C. 552).

   (b) The Contractor requires signed statements from Contractor personnel with access to proprietary information that prohibits personal use during the procurement process and term of the Agreement.

E. Conflict of Interest Resolution. Resolution of a conflict of interest is a determination that—

(1) The conflict has been mitigated;
(2) The conflict precludes award of a subcontract to the Subcontractor;
(3) The conflict requires that the Contractor modify an existing subcontract;
(4) The conflict requires that the Contractor terminate an existing subcontract; or
(5) It is in the best interest of the Contractor to contract with the Subcontractor even though the conflict exists.

22. **Exclusive Services**. The Subcontractor is allowed to provide consulting services to any other entity, business or company during the term of this Agreement as long as those services do not conflict with the services being provided to NAS under this Agreement.

23. **Miscellaneous**.

a. This Agreement, and attached Exhibits 1, 2, 3,4, 5, and 6 shall constitute the entire agreement between these parties with regard to the subject matter hereof and shall supersede any prior oral or written agreements on the subject matter hereof. No modification, amendment or waiver shall be binding without the written consent of both parties. It may also be modified or amended upon notice by Contractor to Subcontractor, if there are changes or amendments to the Contractor's agreement with the Government that affect this Agreement. This Agreement may be executed in counterparts, each of which shall be deemed to be an original, but all of which shall constitute the same Agreement. If any provision of the terms of this engagement are found by a court of competent jurisdiction to be unenforceable, such provision shall not affect the other provisions, but such unenforceable provision shall be deemed modified to the extent necessary to render it enforceable, preserving to the fullest extent permissible the intent of the parties set forth herein.

b. The waiver by either party of a breach of any provision of this Agreement will not operate or be interpreted as a waiver of any other or subsequent breach.

c. A photocopy or facsimile copy of the signed original of this Agreement shall be as effective for all purposes as if it were an original. This Agreement may be executed in counterparts and the two executed documents shall be considered as one.

d. In the event of a conflict between this Agreement, any of the exhibits attached hereto, and/or any Supplemental Statement of Work, then this Agreement shall govern and control in all cases. In no event shall the intellectual property rights as set forth in this Agreement be contradicted except by a written, executed amendment to this Agreement that expressly references and acknowledges this provision.

e. Section headings in this Agreement are for reference only and shall not be construed as modifying any provisions herein.

f. This Agreement shall inure to the benefit of and be binding upon the successors and permitted assigns of the respective Parties.

g. Any notice, invoice or other communication required or permitted to be made or given under this Agreement shall be in writing and shall be sent to the individuals listed below. Notices shall be deemed to have been duly given: (i) three (3) business days after the date of mailing if sent by registered or certified U.S. mail, postage prepaid, with return receipt requested; (ii) when transmitted if sent by facsimile, provided a confirmation of transmission is produced by the sending machine and a copy of such facsimile is promptly sent by another means specified in this section; or (iii) when delivered if delivered personally or sent by overnight mail or courier service. All notices will be sent to the other Party at its address as set forth below or at such other address as such Party will have specified in a notice given in accordance with this section:

If to NAS: If to Subcontractor:

Noridian Administrative Services, LLC
Attn: Greg Gullickson, General Counsel
Box 6055
Fargo, ND 58108-6055

Arizona Health-e Connection
Attn: Brad Tritle, Executive Director
810 W. Bethany Home Road, Suite 109
Phoenix, AZ 85013

IN WITNESS WHEREOF, the Parties hereto have executed this Agreement as of the day and year first written above.

Arizona Health-e Connection

By _____

Printed Name: Bradley F. Tritle

Title: Executive Director

Date: July 24, 2009

Tax ID No. 20-8381131

Noridian Administrative Services LLC

By _____

Printed Name: _____

Title: _____

Date: _____

Exhibit 1

NONDISCLOSURE AGREEMENT

1. As used in this Agreement, the term "Confidential and Proprietary Information" (Confidential Information) means CMS sensitive information; all information and materials that relate to NAS's business practices and all Medicare information or data, including information extrapolated from or regarding any Medicare information or data; all information which is, because of the nature of the information, protected by federal or state rules or regulations; and it also means nonpublic information that the Disclosing Party designates as being confidential or which, under the circumstances surrounding disclosure ought to be treated as confidential. Confidential Information includes, without limitation: negotiations relating to transactions between the parties, information about projects and promotions, trade secrets, technical information or know-how, performance or process data, cost or financial information, methods of doing business, customer or provider lists, strategic plans, marketing or business plans, or other items which are generally considered proprietary and confidential, together with any analysis, compilations, studies or other documents, whether prepared by either party or by others at its direction,, which contain or otherwise reflect such information.

Any information provided to the Subcontractor is solely for the purpose of allowing the Subcontractor to provide consulting services as requested by NAS. Subcontractor shall use Confidential and Proprietary information only for those purposes set fourth in this Agreement. Subcontractor shall make no other use or disclosure of Confidential or Proprietary information without the specific prior written consent of NAS.

Subcontractor shall maintain NAS's Confidential and Proprietary information in strict confidence and shall limit internal disclosure of the information to Subcontractor's employees having a legitimate need to know for purposes of this Agreement.

However, the term Confidential Information shall not include information which:

a) is or becomes generally available to the public other than as a result of a disclosure by the other party or any of its directors, officers, employees, representatives, agents or subcontractors (collectively, **"Representatives"**);

b) is or becomes available to the other party on a non-confidential basis from a source other than either party or its Representatives, which source is not prohibited from disclosing such information by a legal, contractual, fiduciary or other obligation to either party; or

c) is known to the other party prior to its disclosure by either party;

d) has been or is independently developed by the non-disclosing party.

Subcontractor agrees immediately to notify NAS promptly upon receipt of a request for disclosure of Confidential Information from any third party or governmental agency; including pursuant to any judicial, administrative, regulatory or governmental/quasi-governmental authority. Any efforts to prevent disclosure of the information shall be controlled by and at the expense of NAS.

The burden of establishing the applicability of any of the foregoing exceptions shall lie with the disclosing party.

2. All Confidential Information disclosed (by either party to the other) shall remain the exclusive property of the disclosing party. Nothing herein shall be construed as granting any right, title or interest, express or implied, under any patent or trade secret owned by either party to the other.

3. All Confidential Information (of both parties) will be held and treated by the other party and its Representatives in confidence and will not, except as hereinafter provided, without the prior written consent of disclosing party, be disclosed or used by the other party or its Representatives in any manner whatsoever other than in connection with the business purposes for which the information is disclosed. Both parties agrees to:

   a) treat and protect all Confidential Information it receives with at least the same degree of care it employs to protect its own confidential and proprietary information, and

   b) share the Confidential Information only with those of its Representatives who need to know it in order to evaluate the potential Arrangement and who are first informed of its confidential nature and have agreed to be bound by the terms of this Agreement.

Both parties agree to be fully responsible for any breach of this Agreement by any of its Representatives.

4. The parties agree that upon completion of projects or termination of any contractual agreement (relating to disclosed Confidential Information), all Confidential Information disclosed (by either party) will be returned to the disclosing party immediately with no copies retained. All Confidential Information that cannot be returned or destroyed and that is retained by the non-disclosing party shall continue to be subject to this Agreement.

5. If either party or any of its Representatives is requested or required to divulge any Confidential Information, whether by oral questions, interrogatories, requests for information or documents, subpoenas, or other processes, the party receiving the request will promptly provide the disclosing party with written notice of any such request or requirement so that the disclosing party may seek an appropriate protective order or other Agreement. If such protective order or other remedy is not obtained, or the disclosing party waives compliance with the non-disclosure provisions of this Agreement, the party will release only that portion of the Confidential Information as to which it has been advised by legal counsel, is legally required; and will exercise its best efforts to obtain reliable assurances that confidential treatment will be accorded to the Confidential Information that is released in response to such requests or requirements.

6. Both parties acknowledge that Confidential Information as provided "As Is" and that neither party nor any of its Representatives is making or has made any representation or warranty, either express or implied, as to the accuracy or completeness of any portion of the Confidential Information; and the parties agree, to the fullest extent permitted by law that neither of the parties nor any of its Representatives shall have any liability to the other party or any of its Representatives on any basis (including, without limitation, in contract, tort, or otherwise) as a result of the evaluation of any potential Arrangement and the use of the Confidential Information pursuant to the terms of the Agreement. Only those particular representations or warranties which may be contained in any definitive agreements when, as and if executed, and subject to such limitations and restrictions as may be specified therein, may be relied upon by the parties in any manner or have any legal effect whatsoever.

7. It is understood and agreed that both parties would be irreparably injured by a breach of this Agreement by either party; and that money damages would not be adequate remedy for any such

breach; and that either party shall be entitled to equitable relief, including injunctive relief and specific performance, as a remedy for any such breach, which shall not be the exclusive remedy for any breach of this Agreement. Both parties shall be entitled to reasonable attorneys' fees and other costs reasonably incurred to remedy any and all breaches of this Agreement by the other party.

8. This Agreement shall inure to the benefit of and be binding upon each party and its respective successors and assigns. It is further understood and agreed that no failure or delay in exercising any right, power or privilege hereunder shall operate as a waiver thereof, nor shall any single or partial exercise thereof preclude any other or further exercise thereof or the exercise of any right, power or privilege hereunder.

9. The obligations set forth in this Agreement shall survive termination of the agreement and shall remain in force for as long as the Confidential Information is protected by copyright, trade secret, or other intellectual property law, or a period of two (2) years, whichever is longer.

Exhibit 2

HIPAA BUSINESS ASSOCIATE REQUIREMENTS

A. Definitions:

All terms used herein shall have the same meaning as in the Health Insurance Portability and Accountability Act of 1996 ("HIPAA," 42 U.S.C. sec. 1320d) or the Privacy Rule as modified (45 C.F.R. §§ 160 and 164), as applicable and the corresponding implementing regulations.
"CMS" shall mean the Centers for Medicare and Medicaid Services.
"Contractor" shall mean Noridian Administrative Services, LLC.
"Secretary" means the Secretary of the Department of Health and Human Services.
"Subcontractor" shall mean Subcontractor defined above

B. Obligations and Activities of Subcontractor

1. Subcontractor agrees not to use or disclose Protected Health Information ("PHI") other than as permitted or required by this subcontract or as required by law.

2. Subcontractor agrees to use appropriate safeguards to prevent use or disclosure of the PHI other than as provided for by this subcontract. Furthermore, Subcontractor agrees to use appropriate administrative, physical and technical safeguards that reasonably and appropriately protect the confidentiality, integrity and availability of the electronic protected health information ("EPHI"), as defined in 45 C.F.R § 160.103, it creates, receives, maintains or transmits on behalf of the Contractor to prevent use or disclosure of such EPHI.

3. Subcontractor agrees to mitigate, to the extent practicable, any harmful effect that is known to Subcontractor of a use or disclosure of PHI by Subcontractor in violation of the requirements of this subcontract.

4. Subcontractor agrees to report to Contractor any use or disclosure of the PHI not provided for by this subcontract of which it becomes aware. Furthermore, Subcontractor agrees to report to Contractor any security incident involving EPHI of which it becomes aware.

5. Subcontractor agrees to ensure that any agent, including a lower-tier Subcontractor, to whom it provides PHI received from, or created or received by Subcontractor on behalf of Contractor, agrees to the same restrictions and conditions that apply through this subcontract to Subcontractor with respect to such information. Furthermore, Subcontractor agrees to ensure that its agents, including a lower-tier Subcontractor, implement reasonable and appropriate safeguards for the PHI received from or on behalf of the Subcontractor.

6. Subcontractor agrees to provide access, at the request of Contractor, to PHI received by the Subcontractor in the course of subcontract performance, to Contractor or, as directed by Contractor, to an individual in order to meet the requirements under 45 C.F.R. § 164.524.

7. Subcontractor agrees to make any amendment(s) to PHI in a designated record set that the Contractor directs or agrees to make pursuant to 45 C.F.R. § 164.526 at the request of Contractor or an individual.

8. Subcontractor agrees to make internal practices, books, and records, including policies and procedures and PHI, relating to the use and disclosure of PHI received from, or created or received by Subcontractor on behalf of the Contractor, available to the Contractor, or to the Secretary for purposes of the Secretary determining CMS' compliance with the Privacy Rule.

9. Subcontractor agrees to document such disclosures of PHI and information related to such disclosures as would be required for CMS to respond to a request by an individual for an accounting of disclosures of PHI in accordance with 45 C.F.R. § 164.528.

10. Subcontractor agrees to provide to Contractor or an individual information collected under this subcontract, to permit CMS to respond to a request by an individual for an accounting of disclosures of PHI in accordance with 45 C.F.R. § 164.528.

C. Permitted Uses and Disclosures by Subcontractor

Except as otherwise limited in this Exhibit, Subcontractor may use or disclose PHI on behalf of, or to provide services to, Contractor for purposes of the performance of this subcontract, if such use or disclosure of PHI would not violate the Privacy Rule if done by CMS or the minimum necessary policies and procedures of CMS.

D. Obligations of Contractor

1. Contractor shall notify Subcontractor of any limitation(s) in the notice of privacy practices of CMS in accordance with 45 C.F.R. § 164.520, to the extent that such limitation may affect Subcontractor's use or disclosure of PHI.

2. Contractor shall notify Subcontractor of any changes in, or revocation of, permission by individual to use or disclosure PHI, to the extent that such changes may affect Subcontractor's use or disclosure of PHI.

3. Contractor shall notify Subcontractor of any restriction to the use or disclosure of PHI that CMS has agreed to in accordance with 45 C.F.R. § 164.522, to the extent that such restriction may affect Subcontractor's use or disclosure of PHI.

E. Permissible Requests by Contractor

Contractor shall not request Subcontractor to use or disclose PHI in any manner that would not be permissible under the Privacy Rule if done by CMS.

F. Term

1. The term of this Schedule shall be effective as of the Effective Date and shall terminate when all of the PHI provided by Contractor to Subcontractor, or created or received by Subcontractor on behalf of Contractor, is destroyed or returned to Contractor, or, if it is infeasible to return or destroy PHI, protections are extended to such information, in accordance with the termination provisions in this section.

2. Upon Contractor's knowledge or a material breach by Subcontractor, Contractor shall either:

   a. Provide an opportunity for Subcontractor to cure the breach or end the violation. Consistent with the termination provisions of this subcontract, Contractor may terminate this subcontract if the Subcontractor does not cure the breach or end the violation within the time specified by Contractor;

b. Consistent with the termination provisions of this subcontract, terminate this subcontract if Subcontractor has breached a material term of this subcontract and cure is not possible; or

c. If neither termination nor cure is feasible, Contractor shall report the violation to CMS.

3. Effect of Termination.

a. Except as provided in paragraph (b) of this section, upon termination of this subcontract for any reason, Subcontractor shall return or destroy all PHI received from Contractor, or created or received by Subcontractor on behalf of Contractor. This provision shall apply to PHI that is in the possession of lower-tier Subcontractors or agents of Subcontractor. Subcontractor shall retain no copies of the PHI.

b. In the event that Subcontractor determines that the returning or destroying the PHI is infeasible, Subcontractor shall provide to Contractor notification of the conditions that make return or destruction infeasible. Upon such notice that return or destruction of PHI is infeasible, Subcontractor shall extend the protections of this subcontract to such PHI and limit further uses and disclosures of such PHI to those purposes that make the return or destruction infeasible, for so long as Subcontractor maintains such PHI.

G. Miscellaneous.

1. A reference in this subcontract to a section in the Privacy Rule means the section as in effect or as amended.

2. The Parties agree to take such action as is necessary to amend this subcontract from time to time as is necessary for NAS to comply with the requirements of the Privacy Rule and the Health Insurance Portability and Accountability Act of 1996, PL 104-191.

3. The respective rights and obligations of Subcontractor under this Schedule shall survive the termination of this subcontract.

4. Any ambiguity in this subcontract shall be resolved to permit CMS to comply with the Privacy rule.

5. Conflicts—The terms and conditions of this addendum will override and control any conflicting term or condition of agreement relating to PHI. All nonconflicting terms and conditions, as well as those provisions not related to PHI of agreement remain in full force and effect.

6. No Third-Party Beneficiaries—No third parties are intended to benefit from this Addendum and no third-party beneficiary rights will be implied from anything contained in this Addendum.

Exhibit 3

NORIDIAN ADMINISTRATIVE SERVICES, LLC
MEDICARE ADMINISTRATIVE CONTRACT (MAC) SUBCONTRACT CLAUSES FROM THE FEDERAL ACQUISITION REGULATION (COMMERCIAL SERVICES)

This Agreement incorporates the following FAR, HHSAR, and Prime Contract clauses by reference, subject to the revisions identified below, with the same force and effect as if set forth in full text. In the event of a conflict between any provision of the following clauses and any other provision of this Subcontract, Contractor may determine, in its sole discretion, which provision applies. Subcontractor acknowledges that it has read and understands each these clauses, which are available at http://www.arnet.gov/far/ or http://www.gpoaccess.gov/cfr/index.html, or from the Contractor upon request. Subcontractor agrees to flow down all applicable FAR, HHSAR, and Prime Contract clauses to lower-tier subcontractors, if any.

Wherever required to flow down Contractor's rights and obligations under the FAR, HHSAR, or Prime Contract clause incorporated below to Subcontractor, the terms "Contractor" or "prime contractor" shall mean "Subcontractor," and the terms "Government" or "Contracting Officer" shall mean "Contractor." In order to allow the Company sufficient time to perform its obligations under these clauses, whenever a clause requires action by the Subcontractor within a particular time, that action shall be completed five (5) calendar days prior to the time identified in the clause, unless the clause requires action within five (5) calendar days or less, in which event the action shall be completed (2) two calendar days prior to the time identified in the clause.

FAR CLAUSES INCORPORATED BY REFERENCE

52.203-3	GRATUITIES (APR 1984)
52.203-5	COVENANT AGAINST CONTINGENT FEES (APR 1984)
52.203-7	ANTI-KICKBACK PROCEDURES (JUL 1995)
52.203-8	CANCELLATION, RESCISSION, AND RECOVERY OF FUNDS FOR ILLEGAL OR IMPROPER ACTIVITY (JAN 1997)
52.203-10	PRICE OR FEE ADJUSTMENT FOR ILLEGAL OR IMPROPER ACTIVITY (JAN 1997)
52.203-11	CERTIFICATION AND DISCLOSURE REGARDING PAYMENTS TO INFLUENCE CERTAIN FEDERAL TRANSACTIONS (SEPT 2007). "Offer" shall mean this Subcontract.
52.203-12	LIMITATION ON PAYMENTS TO INFLUENCE CERTAIN FEDERAL TRANSACTIONS (SEPT 2007)

52.209-6	PROTECTING THE GOVERNMENTS INTEREST WHEN SUBCONTRACTING WITH CONTRACTORS DEBARRED, SUSPENDED, OR PROPOSED FOR DEBARMENT (SEPT 06)
52.217-8	OPTION TO EXTEND SERVICES (NOV 1999). Contractor may exercise this option by written notice to Subcontractor within 15 days of the expiration of the Subcontract.
52.217-9	OPTION TO EXTEND THE TERM OF THE CONTRACT (MAR 2000). The Government may exercise this option by written notice to the Contractor within 15 days of the expiration of the Subcontract; provided that Contractor gives Subcontractor a preliminary written notice of its intent to extend at least 30 days before the Subcontract expires.
52.219.8	UTILIZATION OF SMALL BUSINESS CONCERNS (MAY 2004)
52.222-21	PROHIBITION OF SEGREGATED FACILITIES (FEB 1999).
52.222-26	EQUAL OPPORTUNITY (MAR 2007)
52.222.35	AFFIRMATIVE ACTION FOR SPECIAL DISABLED AND VIETNAM ERA VETERANS (SEPT 2006).
52.222-36	AFFIRMATIVE ACTION FOR WORKERS WITH DISABILITIES. (JUN 1998).
52.222-37	EMPLOYMENT REPORTS ON SPECIAL DISABLED VETERANS AND VETERANS OF THE VIETNAM ERA (SEPT 2006).
52.222-39	NOTIFICATION OF EMPLOYEE RIGHTS CONCERNING PAYMENT OF UNION DUES OR FEES (DEC 04)
52.222-41	SERVICE CONTRACT ACT OF 1965 (NOV 2007). The applicable wage determinations shall be attached to the Prime Contract and provided to Subcontractor upon request.
52.222-50	COMBATING TRAFFICKING IN PERSONS (AUG 2007)
52.222-51	EXEMPTION FROM APPLICATION OF THE SERVICE CONTRACT ACT TO CONTRACTS FOR MAINTENANCE, CALIBRATION, OR REPAIR OF CERTAIN EQUIPMENT-REQUIREMENTS (NOV 2007)
52.222-53	EXEMPTION FROM APPLICATION OF THE SERVICE CONTRACT ACT TO CONTRACTS FOR CERTAIN SERVICES-REQUIREMENTS (NOV 2007)
52.227-23	RIGHTS TO PROPOSAL DATA (TECHNICAL) (JUN 1987)

52.232-17 INTEREST (JUN 1996)

52.233-3 PROTEST AFTER AWARD (AUG 2004)

52.237-3 CONTINUITY OF SERVICES (JAN 1991)

52.239-1 PRIVACY OR SECURITY SAFEGUARDS (AUG 1996)

52.242-13 BANKRUPTCY (JUL 1995)

52.242-15 STOP-WORK ORDER (AUG 1989). A claim under this clause shall not be allowed (1) for any costs incurred more than 10 days before the Subcontractor shall have notified the Contractor in writing of the act or failure to act involved (but this requirement shall not apply as to a claim resulting from a suspension order); and (2) unless the claim, in an amount stated, is asserted in writing as soon as practicable after the termination of the suspension, delay, or interruption, but not later than the date of final payment under the Subcontract.

52.243-6 CHANGE ORDER ACCOUNTING (APR 1984)

52.247-64 PREFERENCE FOR PRIVATELY OWNED U.S.-FLAG COMMERCIAL VESSELS (FEB 2006) [Greg: This should be deleted unless you plan on reselling or distributing items to the Government without adding value, e.g., by ordering items for f.o.b. destination shipment).

HHSAR CLAUSES INCORPORATED BY REFERENCE

352.232-9 WITHHOLDING OF CONTRACT PAYMENTS (JAN 2006)

352.233-70 LITIGATION AND CLAIMS (JAN 2006)

352.270-4 PRICING OF ADJUSTMENTS (JAN 2001)

352.270–10 ANTI-LOBBYING (JAN 2006)

352.270-19 ELECTRONIC INFORMATION AND TECHNOLOGY ACCESSIBILITY (JAN 2006)

I. Pursuant to Section 52.244-6 of the Federal Acquisition Regulation, this Subcontract incorporates the following Federal Acquisition Regulation (FAR) clauses by reference with the same force and effect as if they were given in full text. The full text of a clause may be accessed electronically at this address: http://www.arnet.gov/far/. The Subcontract contemplates services that meet the definition of "Commercial Item," as defined in FAR 2.101.

(i) 52.219-8, Utilization of Small Business Concerns (May 2004) (15 U.S.C. 637(d)(2)(3)), in all subcontracts that offer further subcontracting opportunities. If the subcontract (except subcontracts to small business concerns) exceed $550,000 ($1,000,000 for construction of any public facility), the subcontractor must include 52.219-8 in lower tier subcontracts that offer subcontracting opportunities.

(ii) 52.222-26, Equal Opportunity (Apr 2002) (E.O. 11246).

(iii) 52.222-35, Equal Opportunity for Special Disabled Veterans, Veterans of the Vietnam Era, and Other Eligible Veterans (Sep 2006) (38 U.S.C. 4212(a));

(iv) 52.222-36, Affirmative Action for Workers with Disabilities (Jun 1998) (29 U.S.C. 793).

(v) 52.222-39, Notification of Employee Rights Concerning Payment of Union Dues or Fees (Dec 2004) (E.O. 13201). (Flow down a required in accordance with paragraph (g) of FAR clause 52.222-39.)

(vi) 52.247-64, Preference for Privately Owned U.S.-Flag Commercial Vessels (Feb 2006) (46 U.S.C. Appx 1241 and 10 U.S.C. 2631) (flow down required in accordance with paragraph (d) of FAR clause 52.247-64).

Exhibit 4

PRIVACY ACT REQUIREMENTS

A. Subcontractor acknowledges that the Privacy Act of 1974 (the "Act"), 5 U.S.C. 552a, and implementing regulations and policies, FAR § 52.224-1, PRIVACY ACT NOTIFICATION (APR 1984), FAR § 52.224-2, PRIVACY ACT (APR 1984), HHSAR § 352.224-70, CONFIDENTIALITY OF INFORMATION (JAN 2006), and HHSAR § 352.270–11, PRIVACY ACT (JAN 2006), apply to this Subcontract, and are hereby incorporated by reference.

B. The Contractor will be required to design, develop, or operate a system of records on individuals, to accomplish an agency function subject to the Act and applicable agency regulations. Violation of the Act may involve the imposition of criminal penalties.

C. Subcontractor agrees to—

(1) Comply with the Act and the agency rules and regulations issued under the Act in the design, development, or operation of any system of records on individuals to accomplish an agency function when the Subcontract specifically identifies—

(i) The systems of records; and

(ii) The design, development, or operation work that the contractor is to perform;

(2) Include the Privacy Act notification contained in this contract in every solicitation and resulting subcontract and in every subcontract awarded without a solicitation, when the work statement in the proposed subcontract requires the redesign, development, or operation of a system of records on individuals that is subject to the Act; and

(3) Include this clause, including this paragraph (3), in all subcontracts awarded under this contract which requires the design, development, or operation of such a system of records.

D. In the event of violations of the Act, a civil action may be brought against the agency involved when the violation concerns the design, development, or operation of a system of records on individuals to accomplish an agency function, and criminal penalties may be imposed upon the officers or employees of the agency when the violation concerns the operation of a system of records on individuals to accomplish an agency function. For purposes of the Act, when the subcontract is for the operation of a system of records on individuals to accomplish an agency function, the Subcontractor is considered to be an employee of the agency.

E. Definitions.

(1) "Operation of a system of records," as used in this Schedule, means performance of any of the activities associated with maintaining the system of records, including the collection, use, and dissemination of records.

(2) "Record," as used in this Schedule, means any item, collection, or grouping of information about an individual that is maintained by an agency, including, but not limited to, education, financial transactions, medical history, and criminal or employment history and that contains the person's name, or the identifying number, symbol, or other identifying particular assigned to the individual, such as a fingerprint or voiceprint or a photograph.

(3) "System of records on individuals," as used in this Schedule, means a group of any records under the control of any agency from which information is retrieved by the name of the individual or by some identifying number, symbol, or other identifying particular assigned to the individual.

F. The following system of records will be applicable to this Subcontract and may be made available to the Subcontractor:

Carrier Medicare Claims Record (CMC)

System Record Number: 09-70-0501 (PDF, 69KB)

Intermediary Medicare Claims Record

System Record Number: 09-70-0503 (PDF, 64KB)

Common Working File (CWF)

System Record Number: 09-70-0526 (PDF, 69KB)

Intern and Resident Information System (IRIS)

System Record Number: 09-70-0524 (PDF, 55KB)

Provider Enrollment Chain and Ownership System (PECOS)

System Record Number: 09-70-0532 (PDF, 55KB)

Fiscal Intermediary Shared System (FISS)

System Record Number: 09-70-0503

Medicare Multi-Carrier Claims System (MCS)

System Record Number: 09-70-0501

G. "Confidential information," as used in HHSAR § 352.224-70 and this Schedule, means information or data of a personal nature about an individual, or proprietary information or data submitted by or pertaining to an institution or organization. The Contractor may identify other specific information and/or categories of information which shall be considered confidential. Confidential information shall not be disclosed without the prior written consent of the individual, institution, or organization. Whenever Subcontractor is uncertain with regard to the proper handling of material under the contract, or if the material in question is subject to the Privacy Act or is confidential information subject to the provisions of this clause, Subcontractor should obtain a written determination from Contractor prior to any release, disclosure, dissemination, or publication.

Exhibit 5

SUBCONTRACTOR ORGANIZATIONAL CONFLICT OF INTEREST CERTIFICATE

TO BE COMPLETED BY SUBCONTRACTOR/ SUBCONTRACTOR

(Attach additional pages as needed to fully respond)

(a) A description of all business or contractual relationships or activities that the Subcontractor's compliance officer has determined that such relationship could be viewed as a conflict of interest. None

(b) A description of the methods the Subcontractor will apply to mitigate any situations listed in the Certificate that could be identified as a conflict of interest. N/A

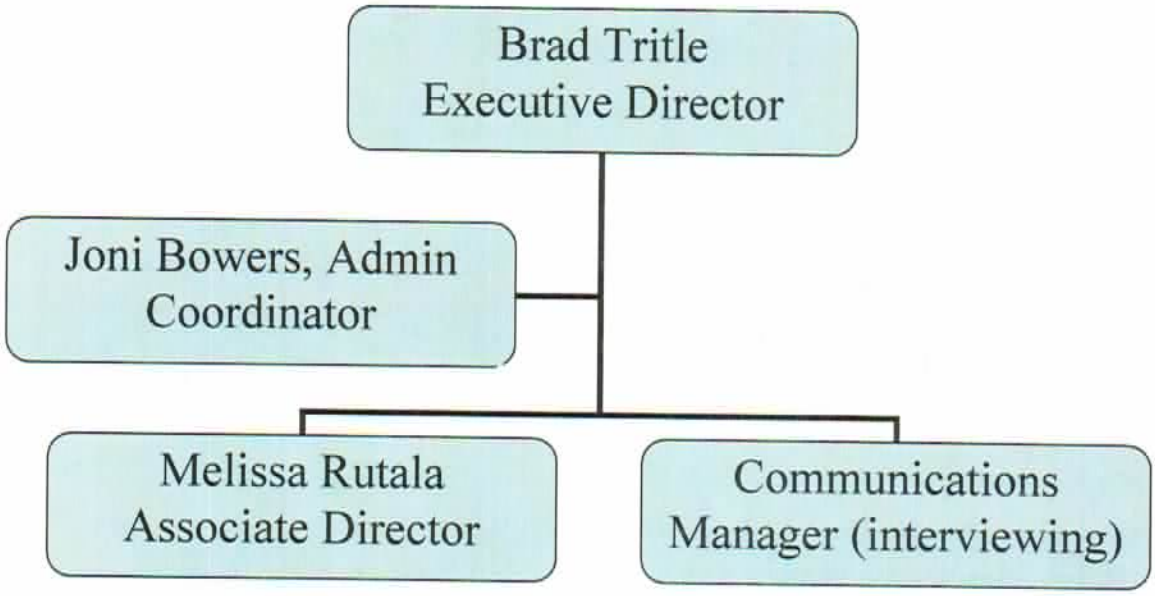
(c) A description of the Subcontractor's program to monitor its compliance and the compliance of its proposed and actual subcontractors with these conflict of interest requirements. AzHeC obtains and maintains conflict of interest statements from its Board members, and subcontractors.

(d) A description of the Subcontractor's plans to contract with an independent auditor to conduct an annual conflict of interest audit.
None

(Compliance Director decides when completing the Conflict of Interest worksheet.)

(e) A description of all other Medicare contracts or subcontracts that the Subcontractor or its parent, subsidiaries, or affiliated entities either hold or for which it is providing work.
None.

(f.) Subcontractor's Corporate and organizational structure



(g) Subcontractor's Financial interests in other entities

(1) Percentage of ownership in any other entity None

(2) Income generated from other sources Approximately $600,000/annually
Other Sources of Income: Membership dues, grants, contracts, event revenue.

(3) A list of current or known future contracts or arrangements, regardless of size, with any :

(i) Arrangements with any insurance organization or subcontractor of an insurance organization.
Of our 30 dues-paying member organizations, they include BlueCross BlueShield of Arizona, UnitedHealthcare, SchallerAnderson(Aetna subsidiary), Humana of Arizona, Cigna HealthCare of Arizona, and the State of Arizona Medicaid Agency (AHCCCS). These five commercial insurance companies, and the Medicaid Agency also have representatives on our Board of Directors, with both BlueCross BlueShield of AZ CEO Rich Boals as our Vice-Chair, and UnitedHealthCare Western States CEO Benton Davis on our Executive Committee. For two years, we had a $700,000 contract with AHCCCS (State Medicaid Agency) for services related to their Medicaid Transformation Grant for deployment of a Health Information Exchange and related technologies.

(ii) Arrangements with providers or suppliers furnishing health services for which payment may be made under the Medicare program.
Banner Health Systems CIO Michael Warden, and Banner Medical Group Chief Medical Officer Dr. Bruce Bethancourt are on our Board of Directors. Northern Arizona Healthcare CEO James Puffenberger was on our Board of Directors until July 3, 2009. Health Services Advisory Group (the Arizona

Medicare Quality Improvement Organization) is a dues-paying member of our organization, but not on the Board.

In the case of contracts or arrangements identified in accordance with this section (g)(3), the dollar amount of the contracts or arrangements, the type of work performed, and period of performance

The $700,000 contract with the State Medicaid Agency (the Arizona Health Care Cost Containment System, or AHCCCS) was from July 1, 2007 to June 30, 2009. The services performed were communications, and coordination activity to support establishment of a health information exchange and web-based electronic medical record for physicians – under a Medicaid Transformation Grant received by AHCCCS. Membership dues from the commercial insurance companies and providers listed above are renewed on an annual basis. Dues for the insurance companies range from $10,000 to $15,000 per year. Dues for Banner Health and Northern Arizona Healthcare are $15,000 and 10,000 per year, respectively. Dr. Bruce Bethancourt's dues are approximately $325. Health Services Advisory Group pays $1,000 in annual dues.

(h) The following information for all of the offeror's or Contractor's officers, directors (including medical directors), and managers who would be, or are involved with, the performance of the contract:

(1) The information required under paragraphs (a), (g)(3) and (4) above.
None – no conflicts of interest.

(2) The information specified in paragraphs (g)(1) and (2) above.

_None.

(f) An affirmation, using language provided below, signed and dated by an official authorized to bind the Contractor:

I, Bradley F. Tritle, Executive Director, certify that to the best of my knowledge and belief: 1) I am an official authorized to bind Arizona Health-e Connection; 2) the information contained in the Conflict of Interest Certificate is true and accurate as of July 25, 2009; and 3) I understand that NAS may consider any deception or omission in this Certificate to be grounds for nonconsideration for contract award, modification or nonrenewal or termination of the current contract, and/or other contract or legal action.

Bradley F. Tritle

(Signature) Date: July 24, 2009

Executive Director

Exhibit 6

Supplemental Statement of Work

This Supplemental Statement of Work (the "SSOW"), is effective as of June 15, 2009 (the "Effective Date"), by and between Noridian Administrative Services, LLC, with a principal place of business at 900 42nd Street South, Fargo, North Dakota 58103 ("NAS"), and Arizona Health-e Connection ("Subcontractor"), with a principal place of business at 810 W Bethany Home Rd, Suite 109, Phoenix, Az 85013 (each a "Party" and collectively, the "Parties" to this SSOW).

WHEREAS, NAS and Subcontractor previously entered into a Master Services Agreement dated effective June 15, 2009 (the "Master Agreement");

WHEREAS, The Parties desire to supplement and/or revise the prior and current statements of work as more particularly set forth below, and the Parties wish to be bound by this SSOW in accordance with the Master Agreement;

IN CONSIDERATION of the mutual promises and covenants set forth in this SSOW and other good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, the Parties, intending to be legally bound, agree as follows:

1. Supplemental Statement of Work. Arizona Health-e Connection will plan and execute a series of PHR outreach events during July 27-31 in five Arizona communities. The meetings will educate Medicare beneficiaries and caregivers.

Arizona Health-e Connection proposes to plan and execute a series of outreach events during one week of July 2009, the purpose of which are to achieve the following objectives:

- Educate Medicare beneficiaries regarding the features and benefits of Personal Health Records
- Educate Medicare beneficiaries regarding the Medicare PHR Choice Pilot Program, and its chosen vendors and Personal Health Record products/services
- Encourage Medicare beneficiaries to participate in the Medicare PHR Choice Pilot Program, by signing up for one of the chosen PHR products/services

Desired goal: Increased participation by Medicare beneficiaries in the Medicare PHR Choice Pilot Program, due to successful execution of the outreach events.

Recommended communities: Surprise, Scottsdale, Green Valley, Tucson, Flagstaff
Recommended venues: Libraries, Community or Civic Centers, Senior Centers, Town Halls, Schools

Additionally, Arizona Health-e Connection proposes taking advantage of the Noridian and PHR vendor staff presence in Arizona to also facilitate a requested meeting between Arizona hospital clinical IT staff and PHR vendors. AzHeC also proposes utilizing Dr. Holly Miller to facilitate this meeting, and has confirmed the interest of Dr. Miller in doing so.

A summary of the estimated activities and estimated associated costs that Arizona Health-e Connection proposes to perform in order to accomplish the objectives listed above is as follows:

Item	Cost	Quantity	Total Cost
Brad Tritle time on project	$90/hour	80 hours (20 hours preparation; 60 hours during week of events)	$7,200
Meeting Planner	$25/hour	120 hours (60 hours of preparation; 60 hour during week of events)	$3,000
Dr. Holly Miller: PHR presentations at each venue	Travel Expenses: $2,000 (airfare, hotel, meals, misc). Honorarium: $5,000 (5 days)	1	$7,000
Event Marketing/PR	$5,000	See detailed proposal	$5,000
Continental Breakfast / Light Refreshments	**$6.00/person - REVISED**	1,000	**$6,000**
Venue rental (if needed)	$250/room	5 venues	$1,250
Mileage	$0.55/mile	800 miles	$440
AzHeC Staff Hotel	$100/night (estimate)	4 Tucson; 2 Flagstaff	$600
		REVISED SUBTOTAL	**$30,490**
REVISED Advertising: Includes additional coverage in Tucson, Sun City/Surprise and Scottsdale (additional $4,587, to original $15,091)			**$19,678**
		REVISED Total, including Advertising	**$50,168**

2. Deliverables. The items identified below shall be deemed "Deliverables" within the meaning of Master Agreement:

- Advertising placement in publications reaching target communities
- Press release distribution and media contacts to promote the events
- Meeting site selections, set up and overall coordination for outreach meetings planned in target communities
- Distribution of promotional posters in target communities
- Coordination with keynote speaker and AZHeC participation in outreach meetings

3. Target Completion Date. Approximately July 31, 2009. Further project work may be initiated throughout 2009 and 2010 requiring additional cost estimates.

4. Cost. The total cost to NAS shall be approximately $50,168.00 July 2009 outreach events and promotion.

5. Integration into Master Agreement and Ratification. The parties intend that this SSOW shall be deemed incorporated into and become part of the Master Agreement, and the Parties hereby agree to ratify the Master Agreement as modified by this SSOW provided however (and this act of ratification extends only to the extent that) the SSOW does not violate Section 6(j) of the Master Agreement. Except as modified herein, the SSOW shall be deemed in full force and effect.

6. Miscellaneous.

a. *Modification of Agreement.* No waiver or modification of this Agreement or of any covenant, condition, or limitation herein contained shall be valid unless in writing and duly executed by both Parties.

b. *Term; Termination.* This SSOW shall begin on the Effective Date and continue until December 31, 2010 unless it has been terminated or extended before then. Either party may terminate upon 30 days notice to the other. Upon 30 days written notice, NAS may extend the term of this Agreement upon such terms as the parties may then agree.

c This Scope of Work is designed to supplement NAS's staff. As such Subcontractor and its employees will furnish their services as an independent contractor and not as employees of NAS. Neither Subcontractor nor its employees have any authority to act for or represent or bind NAS in any manner, except as authorized in writing by NAS. This transaction is being put in place to take advantage of competent, experienced employees of Subcontractor who will work under the direction of NAS project manager. Subcontractor's employees are NOT entitled to and further WAIVES any right to any of the benefits which may be afforded employees of NAS including: group hospital and physician coverage; program; optional/voluntary insurance product; retirement program; long-term disability program; salary savings program; holidays; paid time off (PTO); extended illness bank (EIB); leave of absence; jury duty; guard or reservist duty; funeral leave; employee assistance program; and the affiliated employee credit union

IN WITNESS WHEREOF, the Parties hereto have executed this Supplemental Statement of Work Agreement as of the day and year first written above.

Arizona Health-e Connection

By_____

Printed Name: Bradley F Tritle

Title: Executive Director

Date: July 25, 2009

Noridian Administrative Services LLC

By_____

Printed Name:_____

Title:_____

Date:_____

Appendix F

Arizona Health-e Connection

MODEL HEALTH INFORMATION EXCHANGE PARTICIPATION AGREEMENT

Arizona Health-e Connection (AzHEC), in conjunction with Coppersmith Gordon Schermer & Brockelman PLC, prepared this Model Health Information Organization (HIO) Participation Agreement (Model Agreement) as a guide to organizations developing health information exchange arrangements. This document is intended for information only and does not constitute legal advice. Organizations should consult their own counsel for advice on health information organization (HIO) matters and agreements. This Model HIO Participation Agreement may be reproduced, in whole or in part, with attribution to Arizona Health-e Connection.

This Model Agreement addresses key issues for HIO participation, with the expectation that the document would be adapted to reflect the specific structure, business model, policies and requirements of any given HIO. The Model Agreement reflects the following assumptions:

1. Federated HIO. The Model Agreement is based on a federated HIO, with the HIO identifying and facilitating transfer of protected health information (PHI). The Model Agreement does not contemplate the HIO storing PHI on behalf of participants or creating and storing a clinical care summary as an initial activity.

2. Permitted Use. The Model Agreement provides for Addenda that can be used to outline specific HIO Permitted Uses. The initial Permitted Use described in the Model Agreement is to allow health care providers and authorized users access to PHI to provide patient treatment. It is anticipated that additional Addenda would be developed to reflect additional Permitted Uses (such as HIO use for research purposes or public health purposes) and related terms and conditions if such uses are approved by the HIO's governance structure.

3. Single Model Agreement. The Model Agreement is a single document that covers both data providers (such as hospitals, clinical laboratories or physicians) and data recipients (under the initial permitted use, health care providers). The Model Agreement reflects the fact that data providers and data recipients may be the same individual or entity, such as a hospital or physician, when the initial Permitted Use is patient treatment. However, the Model Agreement can be split into separate agreements for data providers and data recipients if an HIO finds the separate documents more expedient.

4. Evolving Requirements; Attachments and Policies. The Model Agreement reflects the ongoing evolution of technical, legal and practical HIO requirements. As a result, the Model Agreement includes attachments for key obligations, such as system requirements and security requirements. These attachments could be expanded to include requirements in other areas, such as technical support, patient consent and privacy practices, depending upon the HIO's specific needs. However, in order to maintain flexibility to adapt to changing standards and circumstances, the Model Agreement also contemplates that the HIO will establish and post policies and procedures that will be incorporated by reference and updated over time. We note, however, that data providers and data recipients are far more willing to enter into an HIO Participation Agreement when key policies are known and confirmed in advance.

Arizona Health-e Connection

MODEL HEALTH INFORMATION ORGANIZATION PARTICIPATION AGREEMENT

PARTICIPANT	**HEALTH INFORMATION ORGANIZATION**
_____	_____
[Address]_____	[Address]_____
[City/State/Zip]_____	[City/State/Zip] _____
[Email]_____	[Email] _____
[Phone]_____	[Phone] _____
[Fax]_____	[Fax]_____

Background:

1. _____("HIO") is a [non-profit organization/governmental organization] that owns and operates an Internet-based system that provides for secure electronic health information exchange (the "Exchange").

2. Participants in the Exchange include Data Recipients (who may be Health Care Providers) that will access Data through the Exchange and Data Suppliers that will provide Data through the Exchange. A Participant may be both a Data Recipient and a Data Supplier. Participant is [check the applicable type]:

__ **BOTH.** Participant is both a Data Recipient and a Data Supplier.

__ **DATA RECIPIENT.** Participant is a Data Recipient that will participate in the Exchange to obtain health care information for a Permitted Use.

__ **DATA SUPPLIER**. Participant is a Data Supplier that makes or will make clinical Data available for access by Data Recipients (such as Health Care Providers and Authorized Users) for a Permitted Use.

Agreement:

1. HIO Activity. HIO will manage and administer the Exchange subject to the Terms and Conditions of this Agreement and applicable laws and regulations. HIO agrees to fulfill the obligations of Exchange as set forth in this Agreement, its Exhibits and Addenda.

2. Participant Activity. Participant, in its capacity as a Data Recipient and/or its capacity as a Data Supplier, as applicable, will participate in the transmission of Data through the Exchange ("Data Exchange") and the submission or use of such Data, as applicable, subject to this Agreement, its Exhibits and Addenda.

3. Complete Agreement. This Agreement includes, and incorporates by reference:

3.1 Exhibit A (Terms and Conditions);
3.2 Exhibit B (Authorized User Consent to Terms);
3.3 Exhibit C (Security Requirements);
3.4 Exhibit D (Data Recipient System Requirements);
3.5 Exhibit E (Data Supplier—Data Submission and System Requirements);
3.6 Exhibit F (HIPAA Business Associate Agreement);3.7 Exhibit G (HIO Fees)
3.8 Any Project Addenda attached to this Agreement and signed by the HIO and Participant; and
3.9 The HIO Policies and Standards found at www.xxxx.xxxx.

4. Effective Date. The Effective Date for this Agreement is _____. The Agreement will continue until terminated as set forth in Exhibit A, Section 10.

PARTICIPANT

By:_____
Its:_____

National Provider Identifier (if Participant is a Health Care Provider): _____

Date:_____

HEALTH INFORMATION EXCHANGE

By: _____
Its:_____

Date: _____

EXHIBIT A
TERMS AND CONDITIONS OF PARTICIPATION

1.0 DEFINITIONS

Authorized User means an individual authorized by HIO or by a Data Recipient under this Agreement to use the Exchange to access Data for a Permitted Use and who has signed an Authorized User Consent to Terms in the form set forth in Exhibit B.

Data means protected health information, or information that identifies a patient, provided to HIO by Data Suppliers. For the purposes of this Agreement, protected health information is defined by the Health Insurance Portability and Accountability Act (HIPAA) Standards for Privacy of Individually Identifiable Health Information, 45 C.F.R. Part 160 and Part 164, Subpart E, and the HIPAA Security Standards, 45 C.F.R. Part 160 and Part 164, Subpart C, both as amended from time to time.

Data Exchange means electronically providing or accessing Data through the Exchange.

Data Recipient means an individual or entity that has entered into an HIO Participation Agreement and whose Authorized Users will receive Data using the HIO.

Data Supplier means an organization, such as a hospital, physician, clinical laboratory, pharmacy claims aggregation company, governmental agency or other entity that makes Data available for access through the Exchange and has entered into an HIO Participation Agreement. A Data Supplier also may be a Data Recipient.

Health Care Provider means a physician, group practice, hospital or health system, or other health care organization or professional that provides treatment to Patients and has entered into an HIO Participation Agreement. A Health Care Provider also may be a Data Supplier, a Data Recipient and an Authorized User.

Patient means an individual who has received or will receive treatment or health care services from a Health Care Provider.

Participant means a Data Recipient and/or Data Supplier that has entered into a HIO Participation Agreement, including the Participant named as a party to this Agreement.

Permitted Use is the reason or reasons for which Participants and Authorized Users may access Data in the Exchange. For the purpose of this Agreement, Permitted Use is defined in the Project Addenda.

Project Addendum means an exhibit to this Agreement, signed by the HIO and Participant, that describes a specific project for use of the Exchange, the Permitted Use, applicable standards and

safeguards, and related terms. Future projects, phases or expanded use of the Exchange also will be set forth in Project Addenda signed by HIO and Participant.

2.0 HIO OBLIGATIONS

2.1 Services Provided by HIO.

(a) Exchange Operation. HIO will maintain and operate the Exchange. HIO may contract with subcontractors to maintain and operate the Exchange or to provide support services. HIO will require that its subcontractors comply with the applicable terms and conditions of this Agreement, applicable laws and regulations.

(b) Access to Exchange for Permitted Use. HIO will make the Exchange available to Participants, including: (i) Data Recipients and their Authorized Users, who may access Data through the Exchange only for a Permitted Use; and (ii) Data Suppliers that provide Data for access by Data Recipients through the Exchange. HIO may establish arrangements with other health information exchanges to allow Data Recipients access to additional Data for a Permitted Use. Any change to a Permitted Use must be documented in an Addendum and signed by the HIO and Participant.

(c) Exchange Availability. HIO will make all reasonable efforts to make the Exchange available to Participants 24 hours a day, 7 days a week; however, the Exchange availability may be temporarily suspended for maintenance or unscheduled interruptions. HIO will use its best efforts to provide reasonable advance notice of any such suspension or interruptions of Exchange availability and to restore Exchange availability. Data Recipients who are Health Care Providers are responsible for securing patient health information through other means during any periods when the Exchange is not available.

(d) Support Services. During the term of this Agreement, HIO will provide support services to assist Participant in the installation, implementation, and maintenance of the software and use of the Exchange and may establish a fee schedule for these services which will be posted at www.xxx.xxx. The Exchange help desk will be available at the number and for the hours set forth at www.xxx.xxx. All support services will be subject to the HIO fees set forth on **in Section 6 or posted at xxx.xxx.xxx.**

2.2 HIO Records; Use of Data.

(a) HIO Records. HIO will maintain records relating to the operation of the HIO, including records of the date, time and records accessed by a Data Recipient in each Data Exchange as set forth in its Policies and Standards described in Section 2.3. Unless otherwise required by an Addendum, HIO will not maintain, and will not be responsible for maintaining, records of the content of any Data Exchange or inspecting the content of Data.

(b) HIO Use and Disclosure of Information. HIO will not disclose Data or information relating to Data Exchanges to third parties except: (i) as provided by this Agreement; (ii) as required by law or subpoena; or (iii) as directed in writing by the originating party or intended recipient. HIO may access Data and information relating to Data Exchanges only for the operation of the Exchange, testing, performance verification, and investigations and actions relating to compliance with this Agreement, HIO Policies and Standards and applicable laws and regulations.

2.3 Policies and Standards. HIO will establish policies and standards (respectively, "Policies and Standards") that will govern HIO's and Participant's activity on the Exchange, and these Policies and Standards will be available at www.xxx.xxx. HIO encourages Participant to provide input in the development of Policies and Standards through HIO working groups and committees. These Policies and Standards govern HIO and Participant use of the Exchange and the use, submission, transfer, access, privacy and security of Data.

(a) Changes to Policies and Standards. HIO may change or amend the Policies and Standards from time to time at its discretion and will post notice of proposed and final changes at www.xxx.xxx. HIO will provide Participants notice of such changes to Policies and Standards by electronic mail. Any changes will be effective 60 days following adoption by HIO, unless HIO determines that an earlier effective date is required to address a legal requirement, a concern relating to the privacy or security of Data or an emergency situation. HIO also may postpone the effective date of a change if the HIO determines, in its sole discretion, that additional implementation time is required. Participant will have no ownership or other property rights in the Policies and Standards or other materials or services provided by HIO.

(b) Security. HIO will implement Policies and Standards that are reasonable and appropriate to provide that all Data Exchanges are authorized, to protect Data from improper access, tampering or unauthorized disclosure and to secure compliance with applicable laws and regulations. Such Policies and Standards will include administrative procedures, physical security measures, and technical security services that are reasonably necessary to secure the Data. HIO and Participant will comply with the security Policies and Standards established by HIO, including the requirements set forth on Exhibit C.

(c) Investigations, Corrections, Reports. HIO will adopt Policies and Standards for the investigation, resolution and reporting of Patient complaints, security breaches or other concerns relating to compliance with this Agreement, HIO Policies and Standards and applicable laws and regulations ("Compliance Concerns"). HIO will provide notice to Participants, pursuant to HIO policy and as required by law or regulation, of any Compliance Concern related to Participant's Authorized Users' use of the Exchange, and Participant will cooperate with HIO in its investigation of any Compliance Concern and corrective action.

3.0 DATA RECIPIENT OBLIGATIONS. The obligations of this Section 3.0 apply to Participant if either the "Both" or the "Data Recipient" line is checked on summary page of the Agreement. These

obligations do not apply to Participants who have only checked the "Data Supplier" line on the summary page of the Agreement, as those Participants will not have access to the Data in the Exchange.

3.1 Data Exchange. By engaging in Data Exchange, Data Recipient agrees that its participation in any Data Exchange, and use of the Exchange by Data Recipient and its Authorized Users, will comply with the terms of this Agreement and applicable laws and regulations. Data Recipient also agrees that Data Recipient has secured any required Patient permission to access the Data Exchange as set forth in Section 3.4.

3.2 Permitted Use. Data Recipient and its Authorized Users will use the Exchange only for a Permitted Use. Data Recipient and its Authorized Users will comply with this Agreement and all applicable laws and regulations governing the use, privacy and security of Data received through the Exchange. Data Recipient will decide in its discretion whether to use the Exchange, and to what extent.

3.3 Authorized Users. Data Recipient will identify and authenticate its Authorized Users, in accord with HIO's Policies and Standards, who may use the Exchange for the Permitted Use on behalf of Data Recipient and will require each Authorized User to execute an Authorized User Consent to Terms set forth in Exhibit B. Authorized Users will include only those individuals who require access to the Exchange to facilitate Data Recipient's use of the Data for a Permitted Use. Participant is responsible for Authorized Users complying with the terms and conditions of this Agreement and applicable laws and regulations.

3.4 Patient Permission for Data Exchange and Treatment; Notice. The parties acknowledge that certain uses of Data, including without limitation Treatment, Payment and certain Health Care Operations (as defined by the HIPAA Standards for Privacy of Individually Identifiable Health Information, 45 C.F.R. Part 164, Subpart E) do not require specific consent by a Patient under HIPAA or Arizona Law. However, Data Recipient is responsible for securing any Patient consent or authorization to access to Patient's Data through the Exchange as required by HIO Policies and Standards, as identified in a Project Addendum, or as otherwise required by law.

3.5 System Operations. Data Recipient, at its own expense, will provide and maintain the equipment, software, services and testing necessary to effectively and reliably participate in the Exchange as set forth in Exhibit D, except for such software expressly provided by HIO pursuant to Section 8.

3.6 Documentation of Information for Patient Treatment; Record Retention, Storage and Backup. If Data Recipient, is a Health Care Provider, it will maintain at its own expense records of Data accessed through the Exchange and used by Health Care Provider for Patient Treatment. Health Care Provider will maintain these records for all periods required by law. Health Care Provider will determine the form for such records, which may include incorporation of Data into Health Care Provider's medical record electronically, by hard copy or by other form of summary, notation or documentation.

3.7 Privacy, Security and Accuracy. Data Recipient will maintain sufficient safeguards and procedures, in compliance with Exhibit C, HIO Policies and Standards, and applicable laws and regulations, to maintain the security and privacy of Data received through the Exchange.

4.0 DATA PROVIDER OBLIGATIONS. The obligations of this Section 4.0 apply to Participant if either the "Both" or the "Data Supplier" line is checked on the summary page of the Agreement. These obligations do not apply to Participants who have only checked the "Data Recipient" line on the summary page of the Agreement.

4.1 Data Exchange and Data Submission. By engaging in Data Exchange, Data Supplier agrees that: (a) its participation in any Data Exchange will comply with the terms of this Agreement and applicable laws and regulations; (b) the Data provided or transferred by Data Supplier can be related to and identified with source records maintained by Data Supplier; and (c) Data Supplier has secured all authorizations for the submission of Data as set forth in Section 4.3. Data Supplier will make Data available for the Exchange in accordance with the scope, format and specifications set forth in Exhibit E.

4.2 Permitted Use. Data Supplier and its employees and agents will use the Exchange only to provide Data for a Permitted Use. Data Supplier, its employees and agents will comply with this Agreement and all applicable laws and regulations governing the use, privacy and security of Data made available to the Exchange.

4.3 Patient Permission for Data Submission and Data Exchange. Data Supplier and HIO acknowledge that Data Supplier will make Data available for access through the Exchange only for a Permitted Use. The parties acknowledge that certain uses of Data, including without limitation Treatment, Payment and certain Health Care Operations (as defined by the HIPAA Standards for Privacy of Individually Identifiable Health Information, 45 C.F.R. Part 164, Subpart E) do not require specific consent by a Patient under HIPAA or Arizona Law for these purposes. However, Data Supplier is responsible for securing any consent to supply Patient's Data to the Exchange as required by HIO Policies and Standards, as identified in a Project Addendum, or as otherwise required by law.

4.4 Data Return. HIO does not store or maintain Data and therefore has no obligation to return to Data Supplier any Data transferred or accessed pursuant to the terms of this Agreement.

4.5 Data Provided; System Operations.

(a) Systems Necessary to Participate in Exchange. Data Supplier will provide and maintain the equipment, software, services and testing necessary to effectively and reliably submit Data for access through the Exchange as set forth in Exhibit E, except for such software expressly provided by HIO pursuant to Section 8. The financial responsibility of Data Supplier and HIO in making such Data available and for providing and maintaining the equipment, software, services and testing are set forth in Exhibit E.

(b) Record Retention, Storage and Backup. Data Supplier, at its own expense, will maintain Data backup and retention to maintain adequate records of Data submitted to the Exchange for access by Data Recipients.

(c) Privacy, Security and Accuracy. Data Supplier will maintain sufficient safeguards and procedures, in compliance with the terms of this Agreement, HIO Policies and Standards, and applicable laws, to maintain the security, privacy and accuracy of Data. Data Supplier will promptly correct any errors discovered in Data it transmits to the Exchange and notify HIO of any such corrections pursuant to HIO Policies and Standards.

5.0 COMPLIANCE WITH LAWS; CONFIDENTIALITY

Both HIO and Participant, and their agents and employees, will comply with the federal and state laws and regulations applicable to this Agreement, including without limitation, laws on the use, security and privacy of Data, Patient consent for the use and transfer of Data and requirements for Data Exchanges. HIO and Participant, and their agents and employees, will maintain the confidentiality of Data as required by state and federal law. HIO's use of Data will be subject to this Agreement and the Business Associate Agreement set forth in Exhibit F.

6.0 FEES AND PAYMENT

Participant will pay HIO fees as set forth on Exhibit G.

7.0 PROPRIETARY INFORMATION

During the term of this Agreement, each party may have access to information about the other party that: (a) relates to past, present or future business activities, practices, protocols, products, services, information, content, and technical knowledge; and (b) has been identified as confidential (collectively, 'Proprietary Information") by such party. For the purposes of this provision, Proprietary Information will not include Data.

7.1 Non-disclosure. The parties will: (a) hold Proprietary Information in strict confidence; (b) not make the Proprietary Information available for any purpose other than as specified in the Agreement or as required by law or subpoena; and (c) take reasonable steps to ensure that the Proprietary Information is not disclosed or distributed by employees, agents or consultants (who will have access to the same only on a "need-to-know basis) to third parties in violation of this Agreement. If HIO or Participant receives a request for Proprietary Information, the party receiving the request will provide the other party notice of the request and an opportunity to seek a protective order limiting the nature and scope of the information to be disclosed, and the disclosing party is only permitted to disclose Proprietary Information to the extent required by law.

7.2 Exclusions. Proprietary Information will not include information that: (a) at the time of disclosure, is known or becomes known or available to general public through no act or omission of the receiving party; (b) was in the receiving party's lawful possession before it was provided to the receiving party by the disclosing party; (c) is disclosed to the receiving party by a third party having the right to make such disclosure; or (d) is independently developed by the receiving party without reference to the disclosing party's Proprietary Information.

7.3 Equitable Remedies. The parties agree that a breach of this Section will cause the disclosing party substantial and continuing damage, the value of which will be difficult or impossible to ascertain, and other irreparable harm for which the payment of damages alone will be inadequate. Therefore, in addition to any other remedy that the disclosing party may have under this Agreement, at law or in equity, in the event of such a breach or threatened breach by the receiving part of the terms of this Section, the disclosing party will be entitled, after notifying the receiving party in writing of the breach or threatened breach, to seek both temporary and permanent injunctive relief without the need to prove damage or post bond.

8.0 SOFTWARE LICENSE

8.1 Right to Use. HIO grants to Participant for the term of this Agreement a royalty-free, non-exclusive, nontransferable, non-assignable, non-sub-licensable, and limited right to use the software identified by HIO in its technical operation Standards for the sole purpose of participating in the Exchange under the terms and conditions of this Agreement ("**Software**"). THE SOFTWARE SHALL NOT BE USED FOR ANY OTHER PURPOSE WHATSOEVER, AND SHALL NOT OTHERWISE BE COPIED OR INCORPORATED INTO ANY OTHER COMPUTER PROGRAM, HARDWARE, FIRMWARE OR PRODUCT. THE SOFTWARE IS LICENSED"AS IS" AND HIO DISCLAIMS ALL REPRESENTATIONS AND WARRANTIES OF ANY KIND, INCLUDING, WITHOUT LIMITATION, ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR TITLE. Participant acknowledges that the Software may have been licensed to HIO by third parties, and that the license granted under this Agreement is subject in every respect to HIO's grant of license from such third parties. As additional software is developed by or for HIO for the Exchange, it shall become subject to this Agreement upon written notice to Participant, and such notice shall constitute an amendment to this Agreement and any the applicable Project Addendum and shall be binding upon the parties and subject to all terms and conditions of this Agreement. This Section 8.0 applies only to Software that is provided by HIO to Participant and not to any other software that Participant may use in providing treatment to Patients or for Participant's business operations.

8.2 No Transfer or Modification. Participant will not sell, rent, sublicense or otherwise share its right to use Software. Participant will not modify, reverse engineer, decompile, disassemble or otherwise attempt to learn the source code, structure or ideas upon which Software is based.

9.0 ELECTRONIC SIGNATURES

9.1 Signatures and Signed Documents. Participant, at HIO's request, will implement for its Authorized Users an electronic identification consisting of symbols or codes that are to be affixed to or contained in a Data Exchange made by the Participant ("Signatures"). Participant agrees that any Signature of such party affixed to or contained in any Data Exchange will be sufficient to verify that the party originated such Data Exchange. Any properly transmitted Data Exchange made pursuant to this Agreement shall be considered a "writing" or "in writing" and any such Data Exchange when containing, or to which there is affixed, a Signature ("Signed Documents") shall be deemed for all purposes: (a) to have been "signed;" and (b) to constitute an original when printed from electronic files or records established and maintained in the normal course of business.

9.2 Validity of Signed Documents. Participant will not contest the validity or enforceability of Signed Documents under the provisions of any applicable law relating to whether certain agreements are to be in writing or signed by the party to be bound thereby. Signed Documents, if introduced as evidence on paper in any judicial, arbitration, mediation, or administrative proceedings will be admissible as between the parties to the same extent and under the same condition as other business records originated and maintained in paper form.

10.0 TERM AND TERMINATION

10.1 Term and Termination. The term of this Agreement will begin on the Effective Date and will continue until terminated as set forth in this Section 10. This Agreement will terminate under any of the following circumstances:

(a) Violation of Law or Regulation. If either HIO or Participant determines that its continued participation in this Agreement would cause it to violate any law or regulation applicable to it, or would place it at material risk of suffering any sanction, penalty, or liability, then that party may terminate its participation in this Agreement immediately upon written notice to the other party.

(b) For Cause. If HIO or Participant determines that the other party or any of its employees, agents or contractors have breached this Agreement, then that party may terminate its participation in this Agreement on 30 days' advance written notice to the other party, provided that such notice identifies such area of non-compliance, and such non-compliance is not cured within 15 days of receipt of the notice of non-compliance. HIO may immediately terminate this Agreement upon written notice to Participant if HIO determines that Participant or its Authorized Users, employees or agents have used Data or the Exchange for any purpose other than the Permitted Use or in violation of security or privacy provisions under this Agreement or applicable laws and regulations.

(c) Without Cause. HIO or Participant may terminate this Agreement without cause upon 30 days' advance written notice of termination to the other party.

10.2 Termination Process and Access to Exchange and Data. Upon the effective date of termination of this Agreement, HIO will cease providing access to the Exchange for the Participant and its Authorized Users, and Participant and its Authorized Users will stop using the Exchange.

10.3 Effect of Termination.

(a) Rights and Duties. Any termination will not alter the rights or duties of the parties with respect to Signed Documents transmitted before the effective date of the termination or with respect to fees outstanding and payable under this Agreement. Upon termination of this Agreement, Exhibit A, Sections 7.0, 8.0, 10.2, 10.3(b), 11, 12, Exhibit E and any other obligations that by their nature extend beyond termination, cancellation or expiration of this Agreement, will survive such termination, cancellation or expiration and remain in effect.

(b) Return of Proprietary Information; Software; Fees. Within 30 days of the effective date of termination, each party will return to the other all Proprietary Information belonging to the other or certify the destruction of such Proprietary Information if agreed to by the party who originated the Proprietary Information. Within 30 days of the effective date of termination, Participant will de-install and return to HIO all software provided by HIO to Participant under this Agreement. If Participant has prepaid any Fees or Expenses as of the effective date of termination, Participant will be entitled to a pro rata refund of such advance payment. No Data will be returned to a Data Supplier upon termination of this Agreement.

11.0 LIMITED WARRANTIES AND DISCLAIMERS

11.1 Limited Warranty and Disclaimer of Other Warranties. HIO will use its best efforts to correctly transmit Data Exchanges between Participants on a timely basis. HIO MAKES NO REPRESENTATION OR WARRANTY THAT THE DATA DELIVERED TO THE PARTICIPANT WILL BE TIMELY, CORRECT OR COMPLETE. HIO MAKES NO WARRANTY OR REPRESENTATION REGARDING THE ACCURACY OR RELIABILITY OF ANY INFORMATION TECHNOLOGY SYSTEM USED FOR THE EXCHANGE. **HIO DISCLAIMS ALL WARRANTIES REGARDING ANY PRODUCT, SERVICES, OR RESOURCES PROVIDED BY IT, OR DATA EXCHANGES TRANSMITTED, PURSUANT TO THIS AGREEMENT INCLUDING WITHOUT LIMITATION ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.**

12.0 LIMITATION OF LIABILITY; INDEMNIFICATION

12.1 Limitation of Liability. Neither HIO nor Participant will be liable to the other for lost profits or Data, or any special, incidental, exemplary, indirect, consequential or punitive damages (including loss of use or lost profits) arising from any delay, omission or error in a Data Exchange or receipt of Data, or arising out of or in connection with this Agreement, whether such liability arises from

any claim based upon contract, warranty, tort (including negligence), product liability or otherwise, and whether or not either party has been advised of the possibility of such loss or damage.

12.2 Release of Liability. Participant releases HIO from any claim arising out of any inaccuracy or incompleteness of Data or any delay in the delivery of Data or failure to deliver a Data Exchange when requested except for those arising out of HIO's gross negligence.

12.3 Indemnification.

(a) HIO Indemnification for Infringement. HIO will indemnify and hold harmless Participant, its employees and agents from any damages, expenses and costs, including reasonable attorneys fees, arising out of claims by third parties that the use of the Exchange and any Software provided by HIO infringes any patents, copyrights or trademarks or is a misappropriation of trade secrets, provided that Participant notifies HIO in writing promptly upon discovery of any such claim and gives HIO complete authority and control of, and full cooperation with, the defense and settlement of such claim.

(b) Indemnification for Breach of Agreement. Participant will indemnify and hold harmless HIO, its employees and agents from any damages, expenses and costs, including reasonable attorneys fees, from claims by third parties arising from claims arising from Participant's or its Authorized Users' breach of this Agreement, including the unauthorized or improper use of the Exchange or Participant's or its Authorized Users' use or disclosure of Data for any purpose other than a Permitted Use. HIO will indemnify and hold harmless Participant, its employees and agents from any damages, expenses and costs, including reasonable attorneys fees, from claims by third parties arising from claims arising from HIO's breach of this Agreement, including the unauthorized or improper use of the Exchange or HIO's use or disclosure of Data for any purpose other than a Permitted Use or as otherwise allowed under this Agreement.

12.4 Not a Medical Service. The Exchange does not make clinical, medical or other decisions and is not a substitute for professional medical judgment applied by Participant or its Authorized Users. Participant and its Authorized Users are solely responsible for confirming the accuracy of all Data and making all medical and diagnostic decisions.

13.0 GENERAL PROVISIONS

13.1 No Exclusion. HIO represents and warrants to Participant, and Participant represents and warrants to HIO, that neither party nor their respective employees or agents have been placed on the sanctions list issued by the office of the Inspector General of the Department of Health and Human Services pursuant to the provisions of 42 U.S.C. 1320a(7), have been excluded from government contracts by the General Services Administration or have been convicted of a felony or any crime relating to health care. HIO and Participant will provide one another immediate written notice of any such placement on the sanctions list, exclusion or conviction.

13.2 Severability. Any provision of this Agreement that is determined to be invalid or unenforceable will be ineffective to the extent of such determination without invalidating the remaining provisions of this Agreement or affecting the validity or enforceability of such remaining provisions.

13.3 Entire Agreement. This Agreement constitutes the complete agreement of the parties relating to the matters specified in this Agreement and supersedes all earlier representations or agreements with respect to the subject matter of this Agreement, whether oral or written with respect to such matters. No oral modification or waiver of any of the provisions of this Agreement is binding on either party.

13.4 No Assignment. Neither HIO nor Participant may assign its rights or obligations under this Agreement without the advance written consent of the other party, except for a transfer or assignment to a parent, subsidiary or affiliate wholly owned by the party.

13.5 Governing Laws. This Agreement is governed by and interpreted in accordance with Arizona laws, without regard to its conflict of law provisions. The parties agree that jurisdiction over any action arising out of or relating to this Agreement shall be brought or filed in the State of Arizona.

13.6 Force Majeure. No party is liable for any failure to perform its obligations under this Agreement, where such failure results from any act of God or other cause beyond such party's reasonable control (including, without limitation, any mechanical, electronic, or communications failure).

13.7 Notices. All notices, requests, demands, and other communications required or permitted under this Agreement will be in writing. A notice, request, demand, or other communication will be deemed to have been duly given, made and received: (a) when personally delivered; (b) on the day specified for delivery when deposited with a courier service such as Federal Express for delivery to the intended addressee; or (c) three business days following the day when deposited in the United States mail, registered or certified mail, postage prepaid, return receipt requested, addressed as set forth below on the first page of the Agreement. Nothing in this section will prevent the parties from communicating via electronic mail, telephone, facsimile, or other forms of communication for the routine administration of the Exchange.

13.8 No Agency. HIO provides the Exchange services to Participant but does not act as Participant's agent. Participant will not be deemed an agent of another Participant as a result of participation in this Agreement.

13.9 No Relationship between Participants; No Third Party Rights. Nothing in this Agreement confers any rights or remedies under this Agreement on any persons other than HIO and Participant, and nothing in this Agreement is intended to create a contractual relationship or otherwise affect the

rights and obligations among Participants. Nothing in this Agreement will give any third party, including other Participants, any right of subrogation or action against any party to this Agreement.

END OF EXHIBIT A

EXHIBIT B

AUTHORIZED USER AGREEMENT TO TERMS OF ACCESS TO DATA THROUGH HIO

[Insert name of Health Information Organization] (HIO) facilitates the electronic availability of protected health information (Data) through a Health Information Exchange (the Exchange) to individuals and organizations contracting with the HIO in order to assist Health Care Providers in providing treatment to Patients. Participant (defined below) has entered into a Participation Agreement with HIO in order to facilitate this exchange of Data for these purposes.

You have been identified by Participant as an Authorized User of Data through the HIO. The HIO will agree to provide access to Data to you through the Exchange, only if you agree to the terms and conditions of this Agreement. **Agreement**

1. Compliance with Agreement

THIS IS A BINDING AGREEMENT. By signing below, you agree to comply with all terms and conditions for access to Data under this Agreement, the Participant's Participation Agreement, and all HIO policies and procedures. Failure to comply with these terms and conditions may be grounds for discipline, including without limitation, denial of your privileges to access Data through the HIO and termination of your employment or agency by Participant.

2. Permitted Use and Restrictions on Use.

2.1 Participant is a Health Care Provider who provides Treatment to Patients, as defined by the HIPAA Standards for Privacy of Individually Identifiable Health Information, 45 C.F.R. Part 160 and Part 164, Subpart E. As Participant's Authorized user, you may access the Exchange only to obtain Data to provide Treatment for Participant's Patients. You may not use the Exchange, or any hardware or software relating to use of the Exchange, for purposes that are outside the scope of your duties with Participant to provide Treatment to Patients.

2.2 This Consent grants you a nonexclusive, nontransferable right to use the HIO Exchange. This right is subject to the following restrictions:

a. This right is specific to you. You may not share, sell or sublicense this right with anyone else.

b. You may not change, reverse engineer, disassemble or otherwise try to learn the source code, structure or ideas underlying the Exchange's software or introduce a virus to the

Exchange. You may not connect or install unauthorized or uncertified equipment, hardware or software or improperly use the hardware or software relating to use of the Exchange.

3. Protection of Data.

3.1 Scope of Access. As an Authorized User, You may have access to Data that includes protected health information that is subject to confidentiality, privacy and security requirements under state and federal law and regulations. You agree that you will only access Data consistent with your access privileges, and pursuant to all requirements under this Agreement, the Participant's Participation Agreement, HIO policies and procedures, and applicable laws and regulations.

3.2 Protection of Data. As an Authorized User, you have an obligation to maintain the confidentiality, privacy and security of the Data.

a. You will not disclose Data except as required for your job with Participant and subject to all terms of this Agreement.

b. You will not access or view any information other than what is required for you to do your job.

c. You will not make any unauthorized copies of Data. You will not save Confidential Information to portable media devices (Floppies, ZIP disks, CDs, PDAs, and other devices).

d. You will not to email any Data to another email account.

e. You will not release your authentication code or device or password to any other person, including any employee or person acting on your behalf. You will not to allow anyone else to access the Exchange under your authentication code or device or password. You agree not to use or release anyone else's authentication code or device or password. You agree to notify HIO and Participant immediately if you become aware or suspect that another person has access to your authentication code or device or password.

f. You agree not to allow your family, friends or other persons to see the Data on your computer screen while you are accessing the Exchange. You agree to log out of the Exchange before leaving your workstation to prevent others from accessing the Exchange.

g. You agree never to access Data for "curiosity viewing." This includes viewing Data of your children, other family members, friends, or coworkers, unless access is necessary to provide services to a Patients with whom you or the physician(s) with whom you work have a treatment relationship with that Patient.

h. You will protect the accuracy of the Data submitted or received through the Exchange and will not insert information that you know is not accurate.

4. Audit and Review. HIO and Participant have the right at all times and without notice to access the Exchange and any hardware or software relating to the Exchange to review and audit your use of the Exchange and compliance with the terms of this Agreement. This includes any hardware or software located at your office, your home, or any other site from which you access the Exchange.

5. Sanctions. You understand that failure to comply with the terms of this Agreement, may result in disciplinary action against you, which may include loss of access to the Exchange as an Authorized User or termination of your employment or contract with Participant.

6. Duration. This Agreement will be in effect from the time it is signed until HIO or Participant terminates your status as an Authorized User or until you violate the terms of this Agreement. Any terms of this Agreement necessary to protect the Exchange and Data will survive the termination of this Agreement.

Agreed to by:

_____
Authorized User Signature

_____
Authorized User Printed Name

Date_____

Participant: _____

END OF EXHIBIT B

EXHIBIT C

PARTICIPANT SECURITY REQUIREMENTS

In addition to any obligations set forth in the Agreement and HIO Policies and Standards, Participant will observe the following requirements. HIO may amend or supplement these requirements on written notice to Participant.

1. Each of Participant's servers connecting to the HIO gateway will comply with HIO's authentication requirements, implementing Secure Sockets Layer (SSL) encryption and using certificates approved by HIO.

2. Participant will authenticate each Authorized User at the point of access and will implement password policies, both based on applicable laws and regulations and HIO Policies and Standards. Participant may elect to implement stronger authentication mechanisms at its discretion. Participant will review and update its list of Authorized Users as required under HIO Policies and Standards.

3. Participant will limit access of each Authorized User to a Permitted Use and according to Role Based Access principles. Participant will impose appropriate sanctions for its employees or agents who violate applicable security Policies and Standards or the Authorized User Terms of Consent or make improper use of the Exchange, including revocation of an Authorized User's authorization to access the Exchange as may be appropriate under the circumstances.

4. Participant will maintain access logs that capture end user identification information.

5. Participant will implement message-level security using WS-Security or other security technology acceptable to HIO.

6. Participant will implement firewalls and intrusion detection per HIO Policies and Standards.

7. Participant will implement other safeguards to protect servers based on information security best practices, such as the SANS Institute (www.sans.org) recommendations.

8. Participant will perform periodic automated and random manual review and verification of audit logs for both operational monitoring and system security as required by HIO Policies and Standards.

END OF EXHIBIT C

EXHIBIT D

DATA RECIPIENT—SYSTEM REQUIREMENTS

1. System Requirements.

HIO will provide a secure viewer application to Data Recipients to retrieve and view Data for their Patients. The secure viewer application is web-based and requires a secure system with an Internet connection and an Internet browser. HIO requires the following minimum system configuration options for running the HIO viewer on a browser.

[*Insert specific System Requirements*]

2. Additional Financial Requirements.

[*Insert Additional Financial Requirements supplementing Exhibit A, Section 3*]

3. Maintenance and Support Requirements.

[*Insert Maintenance and Support Requirements*]

END OF EXHIBIT D

EXHIBIT E

DATA SUPPLIER—DATA SUBMISSION, SYSTEM REQUIREMENTS AND FINANCIAL RESPONSIBILITIES

1. Data Provided.

Data Supplier will submit Data as set forth in the Addenda.

Data submitted shall be mapped to HIO standard terminologies and code systems according to the message specifications. HIO may provide message specifications and terminology standards as a reference when creating data maps. HIO and Data Supplier will cooperate with each other to mutually validate the data maps created.

2. System Requirements.

[*Insert System Requirements*]

3. Financial Responsibilities.

[*Insert Financial Responsibilities*]

4. Maintenance and Support Requirements.

[*Insert Maintenance and Support Requirements*]

END OF EXHIBIT E

EXHIBIT F

BUSINESS ASSOCIATE AGREEMENT

HIO and Participant agree to the terms and conditions of this Business Associate Agreement in order to comply with the use and handling of Protected Health Information ("PHI") under the HIPAA Standards for Privacy of Individually Identifiable Health Information, 45 C.F.R. Part 160 and Part 164, Subpart E ("Privacy Rule") and the HIPAA Security Standards, 45 C.F.R. Part 160 and Part 164, Subpart C ("Security Rule"), both as amended from time to time. Unless otherwise provided, all capitalized terms in this Business Associate Agreement will have the same meaning as provided under the Privacy Rule and Security Rule.

For purposes of this Business Associate Agreement, Protected Health Information ("PHI") or Electronic Protected Health Information ("ePHI") includes only individually identifiable health information handled by HIO that is provided to the Exchange by Participant.

1. USES AND DISCLOSURES OF PHI: HIO will use or disclose PHI only for those purposes necessary to perform Services under the Agreement, or as otherwise expressly permitted in the Agreement, its Exhibits including this Business Associate Agreement, or its Addenda, or as required by law, and will not further use or disclose PHI. HIO agrees that anytime it provides PHI to a subcontractor or agent to perform Services, HIO first will ensure that each such subcontractor or agent agrees to the same terms, conditions, and restrictions on the use and disclosure of PHI as contained in this Business Associate Agreement.

2. HIO USE OR DISCLOSURE OF PHI FOR ITS OWN PURPOSES: HIO may use or disclose PHI for HIO's management and administration, or to carry out its legal responsibilities. HIO may disclose PHI to a third party for such purposes if: (1) The disclosure is required by law; or (2) HIO secures written assurance from the receiving party that the receiving party will: (i) hold the PHI confidentially; (ii) use or disclose the PHI only as required by law or for the purposes for which it was disclosed to the recipient; and (iii) notify the HIO of any breaches in the confidentiality of the PHI. HIO also may aggregate the PHI with other PHI in its possession or otherwise de-identify PHI according to the requirements of 45 C.F.R. §164.514(b).

3. SAFEGUARDS: HIO will implement and maintain appropriate safeguards to prevent any use or disclosure of PHI for purposes other than those permitted by this Business Associate Agreement. HIO also will implement administrative, physical and technical safeguards to protect the confidentiality, integrity, and availability of any ePHI that HIO creates, receives, maintains, and transmits on behalf of Participant.

4. UNAUTHORIZED USES OR DISCLOSURES: HIO will report to Participant any successful unauthorized access, use, disclosure, modification, or destruction of ePHI or interference with system operations in an information system containing ePHI of which HIO becomes aware within 15 business

days of HIO's learning of such event. HIO will report the aggregate number of unsuccessful attempts to access, use, disclose, modify, or destroy ePHI or interfere with system operations in an information system containing ePHI of which HIO becomes aware, provided that such reports will be provided only as frequently as the parties mutually agree, but no more than once per month. If the definition of "Security Incident" under the Security Rule is amended to remove the requirement for reporting "unsuccessful" attempts to use, disclose, modify or destroy ePHI, HIO will cease reporting unauthorized attempts as of the effective date of such amendment.

5. INDIVIDUAL ACCESS TO PHI: If an individual makes a request to HIO for access to PHI, HIO will within 10 business days forward such request in writing to Participant. Participant will be responsible for making all determinations regarding the grant or denial of an individual's request for PHI and HIO will make no such determinations.

6. AMENDMENT OF PHI: If an individual makes a request to HIO for amendment of PHI, HIO will within 10 business days forward such request in writing to Participant. Participant will be responsible for making all determinations regarding amendments to PHI and HIO will make no such determinations.

7. ACCOUNTING OF DISCLOSURES OF PHI: If an individual makes a request to HIO for an accounting of disclosures of PHI, HIO will within 10 business days forward such request in writing to Participant. Participant will be responsible for preparing and delivering the accounting to the individual. Upon request, HIO will make available to Participant information about HIO's disclosures of PHI, if any, that must be included to respond to individual requests for accounting of disclosures of PHI under applicable law.

8. ACCESS TO BOOKS AND RECORDS: HIO will make its internal practices, books and records on the use and disclosure of PHI available to the Secretary of the Department of Health and Human Services to the extent required for determining Participant's compliance with the Privacy Rule. Notwithstanding this provision, no attorney-client, accountant-client or other legal privilege will be deemed waived by HIO or Participant as a result of this Section.

9. TERMINATION: Participant may terminate the Agreement upon written notice to HIO if HIO breaches a material term of this Business Associate Agreement and HIO fails to cure the breach within 30 days of the date of notice of the breach.

10. RETURN OR DESTRUCTION OF PHI: Participant understands that PHI provided to the Exchange may be integrated into the medical record of Data Recipients that access the Exchange. Moreover, HIO does not maintain or store PHI. As such, it is not feasible for HIO to return or destroy PHI upon termination of the Agreement. [HIO agrees to follow the provisions of this Business Associate Agreement for as long as it retains PHI, and will limit any further use or disclosure of PHI to those purposes allowed under this Business Associate Agreement, until such time as HIO either returns or destroys the PHI.]

END OF EXHIBIT F

EXHIBIT G

HIO FEES AND PAYMENT

1. Program Fee. Participant will pay a program fee ("Fee") to HIO in the amount of _____ _____ ($_____) per ***calendar quarter/ per month***. If this Agreement is in effect for part of a quarter/month, the Fee will be prorated on a daily basis. HIO may modify the Fee from time to time, but such modification will not become effective until Participant has received at least 60 days advance written notice of such modification. Such notice will specify the effective date of the modified Fee.

2. Technical Support Service Fee: Participant will pay HIO for technical support services as follows:

2 Payment. The Fee shall be payable in advance on or before the fifth day of each quarter/month. After 15 days, such payments shall accrue interest at the lesser of 1% per month or the highest rate allowed by applicable law.

END OF EXHIBIT G

PROJECT ADENDUM NO. 1

Project Name and Effective Date	Health Information Exchange for Treatment Purposes Effective: _____
Data Submitted for Exchange	[Insert description of Data for submission]
Permitted Uses	Health Care Provider and Authorized Users may access the Exchange to obtain Data for the Treatment (as defined in this Addendum) of Health Care Provider's Patients. If Health Care Provider includes Data in its Medical Record, Health Care Provider and Authorized Users may use Data only for those purposes permitted by law.
Authorized Users	Authorized Users are employees, independent contractors or agents of a Health Care Provider who (i) have been authenticated and given access in compliance with HIO Policies & Standards by the Participant; (ii) have executed an Authorized User Consent to Terms, and (iii) require access to Data to facilitate the provision of treatment by the Health Care Provider to Patients.
Specific Safeguards and Privacy Requirements	All Participants shall adhere to the HIO Policies and Standards available at www.xxx.xxx.
Licensed Software	
Certification Requirements	
Definitions for Project Addendum No. 1	1. "**Treatment**" means the provision, coordination or management of health care services by one or more Health Care Providers, as defined by HIPAA Standards for Privacy of Individually Identifiable Health Information, 45 C.F.R. Part 164, Subpart E. 2. "**Medical Record"** means all communications related to a Patient's physical or mental health or condition that are recorded in any form or medium and that are maintained by the Health Care Provider for purposes of Patient diagnosis or Treatment, including medical records that are prepared by the Health Care Provider or other providers, as defined by A.R.S. § 12-2291.

PARTICIPANT

By: _____
Its: _____
Date: _____

HEALTH INFORMATION EXCHANGE

By: _____
Its: _____
Date: _____

Appendix G

Arizona Health-e Connection

STRATEGIC COMMUNICATIONS PLAN

JULY 2008

Strategic Communications Plan

Arizona Health-e Connection

July 2008

EXECUTIVE SUMMARY

Saying "time is of the essence," during a healthcare emergency, is an understatement. In fact, providers call the first hour in an emergency the "Golden Hour"—defining how valuable that time is in terms of saving lives.

If you could introduce something into that first Golden Hour that could help save a life, you would do it, without question—especially if that Golden Hour was important to you or your loved one.

Health information technology (HIT) can do just that. It can help save a life. Actually, it can help save millions of lives. It can also help consumers have more control over their own healthcare information and activities. And it can save the system, providers and patients money. Lots of money!

Who wouldn't want something that could save lives, save money, and offer more control?

Unfortunately, most people in the United States—and Arizona—do not currently support HIT. Not because they don't think the promise of HIT is attractive. But because they don't understand it, or worry it's not secure, or haven't seen proof it will do what it claims it will do. However, research tells us that when given enough information about HIT, especially regarding security, most people will support it.

Research by *e-Health Initiative* found that the more consumers learn about secure electronic health information infrastructure, the greater their support. Surveys performed nationally also indicate that misperceptions exist among consumers regarding the existence of electronic health records. Almost half of all consumers believe their physicians already have electronic health records as well as electronic backup copies. These misperceptions must be addressed—through effective, strategic, two-way symmetrical communications—in order for the consumer to recognize the need for HIT and take action to make it a reality.

Healthcare providers are also slow to support HIT. They are extremely busy running their practices, and many have not taken the time to study health information infrastructure in depth, though many have formed opinions based on what they've heard from colleagues, information from vendors, or media articles. Surveys have shown that consumers trust physicians more than any other individual or entity to advise them about electronic health records and, therefore, there is a great need for education and communication to both consumers and providers. There is also a great opportunity for doctors to be a conduit on HIT for the consumers.

In August 2005, Governor Napolitano issued an Executive Order and directed her information and technology staff to oversee the development of a statewide roadmap for e-health information infrastructure. Now, nearly three years later, the non-profit organization, Arizona Health-e Connection, with a board comprised of private and public stakeholders, has been established and is working to move implementation of HIT forward in our state.

While the Arizona Health-e Connection has accomplished a lot in a very short amount of time, there is much work to be done. Integral to organizational efforts has to be solid communications engaging key publics with appropriate messaging and activities that not only retain support, but garner new interest and participation from those who do not yet to subscribe to the promise of e-health information and technology.

Our research has shown that there are three areas of communications emphasis that Arizona's Health-e Connection should focus on to support the organization's mission. First, effectively define and communicate health information exchange (HIE) and health information technology (HIT) to key publics to build confidence and support of this new direction in healthcare data collection, delivery and portability. Second, establish Arizona Health-e Connection as THE source in Arizona for credible, trustworthy and accurate information and discussion about HIE and HIT. And finally, identify, build, nurture and retain a cadre of healthcare community leaders and consumers who will act as an echo chamber of support for the Arizona Health-e Connection as well as HIT and HIE, in general, with peers, decision-makers, media and other leaders whose influence can help the organization achieve its organizational mission and goals.

These three areas of focus will serve as the basis of our strategic communications plan activities.

ABOUT THE COMMUNICATIONS PROCESS

Excellent communication is two-way. Communication practiced according to a two-way symmetrical model will enable Arizona Health-e Connection to build and maintain strong relationships with identified key publics. Two-way symmetrical communication means communication that is balanced. It means listening to others as well as disseminating messages. Effective two-way communication seeks to manage conflict and promote mutual understanding with key publics through negotiation. The goal is to find "win-win" solutions to situations and/or issues you face, and to capitalize on opportunities that are revealed through discussion and collaboration with key publics. Additionally, excellent, two-way communications should be done in concert with, and to benefit, the organization's strategic management direction—supporting overall business goals and objectives and aligning with the organizational mission.

ORGANIZATIONAL MISSION AND GOALS

Arizona Health-e Connection's charter is to help Arizona consumers, insurers and providers find their way in the space where the importance of medical information and the power of information technology come together. Their mission is to lead Arizona's establishment of health information exchange (HIE), and adoption of health information technology (HIT). Arizona Health-e Connection is neither a regional health information organization (RHIO) nor an information exchange, but instead has a strategic direction to support the establishment of successful health information infrastructure (HII) in Arizona through activities in the following three areas:

- Serving as an educator and statewide clearinghouse for information
- Researching and developing statewide policies and model legal agreements
- Supporting health information exchange and healthcare provider adoption of health information technology

RESEARCH

Primary Research

To develop an understanding of how key stakeholders view the strategic communication direction of Arizona Health-e Connection, primary research was conducted in the form of interviews with organizational leadership, as well as several members of the key publics, specfically consumers, large employers and govenment agencies. The interviews sought input on how the organization should conduct communications efforts. Several of those interviewed said they felt the communications plan should be first directed toward physicians and key stakeholder groups and not to consumers until there was a "product" to unveil. Although this recommendation is understandable, based upon on secondary research, there should also be ongoing messaging directed toward consumers, as a secondary key public. This direction could be compared to the communications currently being done regarding digital television broadcasting – we've known something was "coming" for awhile, but now that we're less than a year away from implementation, the messaging has shifted from "it's coming" to "here's what you need to do now." A similar approach could be applied with Arizona Health-e Connection's communications efforts to consumers. Details regarding the outcome of the primary research can be found in the Appendix.

Secondary Research

Our secondary research sought to look at the external landscape surrounding health information technology. Our research was not comprehensive, but enough study was done to garner a general understanding of the perception of HIT amongst key publics. Much research and discussion exists on the Internet, which is where our secondary research was conducted.

In our search, we learned that many say HIT has the potential to enable a dramatic transformation in the delivery of health care, by making it safer, more effective, and more efficient. Some organizations have already realized major gains through the implementation of multifunctional, interoperable HIT systems. However, widespread implementation of HIT has been limited by a lack of general knowledge about the technology (AHRQ Publication No. 06-E006, April 2006).

Despite spending over $1.6 trillion on health care as a nation, there are still serious concerns about preventable errors, uneven health care quality, and poor communication among doctors, hospitals, and

The widely-known Institute of Medicine report on medical errors estimates that between 44,000 and 98,000 Americans die each year from medical errors. Studies have found that as much as $300 billion is spent each year on healthcare that does not improve patient outcomes – treatment that is unnecessary, inappropriate, inefficient, or ineffective (www.iom.edu).

All of these problems—high costs, medical errors, variable quality, administrative inefficiencies, and poor coordination—can be closely connected, say experts, to a failure to use health information technology as an integral part of medical care.

In an outdated, paper-based system, which we currently have:

- Patients medical information is scattered across medical records kept by many different caregivers in many different locations – and all of the patient's medical information is often unavailable at the time of care. Also, patients with medical emergencies often are seen by doctors with no access to their critical medical information, such as allergies, current treatments or medications, and prior diagnoses.
- Physicians keep information about drugs, drug interactions, managed care formularies, clinical guidelines, and recent research in memory – a difficult task given the high volume of information.
- Medical orders and prescriptions are handwritten and are too often misunderstood or not followed in accordance with the physician's instructions.
- Consumers lack access to useful, credible health information about treatment alternatives, as well as which hospitals and physicians are best for their needs or their own health status.
- Physicians do not always have the best information to select the best treatments for their patients, resulting in an unacceptable lag time before new scientific advances are used in patient care. They also do not have ready access to complete information about their patients, do not know how other doctors are treating their same patients, or how other healthcare providers around the country treat patients with the same condition (www.whitehouse.com).

Many federal and state agencies and organizations have studied how to address the challenges that face our healthcare system. Many believe HIT holds the key to solving these challenges and creating a better system. Among the recommendations given, the following three encapsulate the overwhelming sentiment toward successfully adopting HIT:

- Adopt a clear, broadly motivating vision and practical adoption strategy for HIT in order to engage the largest number of people
- Lessons of adoption and success of IT in other industries should be used to inform and enhance adoption of HIT.
- Among its multiple stakeholders, the consumer—including individual beneficiaries, patients, family members, and the public at large—is key to adoption of HIT.

There is much data currently on consumer opinions about HIT. Below is summary taken from the *eHealth Initiative* study, "A Majority of Consumers Favor Secure Electronic Health Information

"Through a combination of focus groups and a phone survey of adults conducted in the five Gulf States (Alabama, Florida, Louisiana, Mississippi, and Texas) in 2006, Public Opinion Strategies conducted research to gain an understanding of public perception and attitudes about secure electronic health information exchange and determine what language and messaging was most effective in gaining support for its implementation. A number of findings emerged from the research that will support national, state and local efforts in communicating the importance of electronic health information exchange to consumers.

1. **Support is extremely strong among consumers for secure electronic health information exchange** with 70 percent of respondents favoring and 21 percent opposing its development. Support across political parties is equally strong, with 73 percent, 70 percent, and 67 percent of Republicans, Democrats and Independents, respectively, strongly favoring the development of health information exchange.

2. **The more consumers learn about the creation of secure electronic health information exchange, the greater their support**. Initial response to the term "secure electronic health information exchange" without any further information provided is relatively neutral, however the overall impression becomes significantly more positive when presented with a brief definition of the term.

3. Respondents' questions and concerns after hearing a definition of secure health information exchange provided guidance on improving how to communicate about health information exchange. Based on the research, **it's important when defining health information exchange to focus on: security, how it works, patient permission, who has access, and benefits of health information exchange to the patient and physician.**

4. Overwhelmingly, **the message that resonates the most for consumers is "having access to information in an emergency medical situation.**" Other messages that elicit positive response include those relating to "having access to your medical record when you are out of state," "having access to your medical record when you visit your doctor," and "having access during or after natural disasters."

5. **Consumers overwhelmingly trust doctors the most** to deliver them information about secure electronic health information exchange.

6. **Misperceptions about the prevalence of health IT and electronic health information exchange are common**. Almost half of consumers believe that their doctors already keep their medical records in electronic form, and a majority believe that it is likely that their doctors' medical records have a back-up copy off-site in electronic form."

Arizona Health-e Connection's Communications Committee has studied the *eHealth Initiative* research, as well as other national studies, and supports the notion (per their recommendations to the Arizona Health-e Connection board) that effective messaging and the role of doctors are critical to the successful implementation and acceptance of health information exchange among the general public. In addition, the committee made the following recommendations:

- Language and how health information exchange (HIE) is defined is very important. Getting out in front of this issue and positively framing how the public views HIE is essential. (Gulf State Research by e-Health Initiative)
- In focus groups comprised of primary care physicians, employers and consumers, respondents' initial impression of the term secure electronic health information exchange was relatively neutral.
- There remained confusion with respect of the meaning of the phrase "secure electronic health information exchange."
- The Gulf State Research was able to identify people who feel most positively and negatively about secure health information exchange. Those who were most positive included people who are confident in the security of health information online, household incomes over $100,000, women ages 18-34, people who say they would be likely to access their health information online, people who quickly adapt to technology, post graduates.
- The Gulf State Research project was able to identify those who felt most negatively about secure health information exchange. Those who felt most negative were: those not likely to access their health information online, people not at all confident that health information exchange is secure, people reluctant to adapt to new technologies, men ages 35-54, married women, retired men age 60+, people ages 45-54 and struggling households.
- When *e-Health Initiative* tested nine different messages in support of secure electronic health information exchange, when changes were made to key words and phrasing, people who characterized the message as very convincing went from 61% to 89% .
- Security is the greatest barrier to adoption for consumers, so it is an important point that needs to be conveyed in all material.
- Physicians are the messengers for the public but they are reluctant to participate until their issues or barriers of cost and liability are addressed.
- In the *e-Health Initiative* focus group with physicians, they presented the strongest resistance to adoption of health information exchange because
  - They worry about security of the information
  - They worry about liability (both individual and group) and where the program or system for the exchange would be uniform
  - Cost! Cost! Cost! - $$ Biggest Barrier

- When asked who respondents would trust the most to provide you with information about health information exchange, respondents rated Doctors way ahead of any other group.
  - 67% identified doctors as most likely to be trusted
  - 8% hospitals
  - 7% federal government
  - 5% health insurance company
  - 3% employers
  - 3% state government
- Messaging that drives support for HIE is access to patient's health information in an emergency.

  When asked which one of the following situations would be most important to you to have this service available to you, your doctors, or health care providers respondents indicated that having access in an emergency medical situation is clearly seen as the most important reason to have secure electronic health information exchange.
  - 46% having access in an emergency medical situation
  - 14% having access to your medical record when you are out of state
  - 10% having access to your medical history when you visit your doctor
  - 9% having access during or after a natural disasters
  - 7% transferring lab results, reports or x-rays between health care providers
  - 5% having access to your medication history when you want to refill your prescriptions.

One final note in our secondary research specific to physicians: The executive summary for the Robert Wood Johnson Foundation's forthcoming report, to be released in July, on health information technology adoption in the United States entitled, "Health Information Technology in the United States: Where We Stand, 2008," co-authored by the Institute for Health Policy at Massachusetts General Hospital and George Washington University, was released in coordination with a study in the June 19 online edition of the New England Journal of Medicine showing that, despite the promises it offers health care and quality improvement, only a small minority of U.S. physicians have embraced electronic health records (EHR) as a routine part of practice. The survey of more than 2,500 physicians—the most up-to-date and comprehensive picture of EHR adoption trends—shows that only 4 percent have a fully functional EHR system and 13 percent have a basic one.

With physicians identified as one of our key publics—and a key influencer of many of our other identified key publics—we have much work to do to create awareness among a population that is pivotal to the success of HIT.

Definitions

Health Information Infrastructure (HII)—A less formal umbrella term describing the wider arena of policies, procedures, technologies and industry standards that facilitate secure and accurate online sharing of electronic medical information between providers, payors and ultimately, patients and their guardians

Health Information Exchange (HIE)—The electronic movement of health-related data and information among organizations according to agreed standards, protocols and other criteria.

Health Information Technology (HIT)—The application of information processing involving both computer hardware and software that deals with the storage, retrieval, sharing, and use of healthcare information, data, and knowledge for communication and decision making within a single healthcare provider organization.

Current HII projects in Arizona

A number of statewide efforts are already underway to put the technical, legal and procedural fundamentals in place to move ahead with health information infrastructure. We list them here to help create context for our communications efforts.

AZ Health Privacy Project

The Arizona Health Privacy Project is funded by HISPC, the Health Information Security and Privacy Collaboration project, which was established and funded by the Agency for Healthcare Research and Quality in 2006 with 34 states participating. The Arizona Government Information Technology Agency received $350,000 in 2006 to participate in the HISPC - Arizona Health Privacy Project. In 2008, an additional $414,000 was awarded to the agency to participate on a multi-state collaborative to address standards for health information exchange.

RHITA

Arizona's Government Information Technology Agency (GITA) manages the Rural Health Information Technology Adoption (RHITA) grant program to support the implementation of healthcare information technology and healthcare information exchange among rural healthcare providers. The current RHITA program promotes the development of effective and secure Health Information Exchange (HIE) among medical providers serving rural Arizona.

AHCCCS HIeHR Utility

AHCCCS, Arizona's Medicaid agency, was awarded a Medicaid Transformation Grant from the Centers for Medicare and Medicaid Services (CMS) on January 25, 2007 to develop and implement a Web-based health information exchange (HIE) utility to give all Medicaid providers instant access to patient's health records at the point of service. The federal funds are being used to support the planning, design, development, testing, implementation and evaluation of the AHCCCS Health Information Exchange and Electronic Health Record (HIeHR) Utility.

SAHIE

The concept of a regional HIE for Southern Arizona got its formal start in early 2006. SAHIE grew from four initiating institutions in Phase One to now over 30 member organizations including hospitals, group practices, community physicians, health plans, diagnostic service organizations, the business community, and county administrations in Southern Arizona, as well as agencies of the State of Arizona. The mission is to improve the access, quality and safety of healthcare while reducing or stabilizing costs in Southern Arizona through the deployment of a regional, financially self-sustainable HIE. SAHIE is currently in the final stages of organizational and technology design, including vendor selection. It is

EAzRx

Arizona's statewide e-prescribing initiative, EAzRx is a five-year plan to encourage provider adoption of electronic prescribing, either through a standalone e-prescribing system or by e-prescribing functionality fully integrated into an electronic medical record system.

SWOT

Strengths	Weaknesses	Opportunities	Threats
Diverse board that operates on consensus.	Diversity can also be a weakness, making it tougher to reach consensus.	Educating stakeholders and consumers about the benefits of health information exchange.	Need to be careful not to get so wrapped up in the technology that the need itself is not met.
Effort is taking a look at the best technology for the job, not trying to force-fit technology to meet the needs.	The sheer complexity of this issue.	Doing something new – a true statewide system different than what others are doing.	Consumers asking physicians about it – and physicians not yet being on board or being informed.
There is a positive Arizona image and story on what we are doing to make this work in this state.	Expense of funding the effort – and how that will naturally make people resistant to the key messages.	Ultimately – the greatest opportunity is more effective and efficient healthcare.	Getting caught up in the complexity and "over-explaining" rather than giving information in plain English.
This is the future of healthcare, so not doing this is not an option.	This is new and so mistakes are inevitable.	There's an opportunity to collaborate with other states to obtain grant dollars.	Concerns over privacy protection that over-ride consumers' receptiveness to the message.
Those at the table are confident that this is a good thing and will make a positive impact on healthcare.	When it comes to physicians, trying to reach an extremely busy audience.	At the moment – there's lots of momentum and enthusiasm.	If cost savings aren't passed along, this would negate the positive message that could have been communicated.
Can ultimately result in a cost savings.		Lot of opportunities to get the word out through stakeholder publications, etc.	Natural resistance to change will be an obstacle to overcome.
		Can point to several examples (i.e. Katrina) of when this would have made a huge difference.	There's a risk to having this appear to be a "luxury" as opposed to an "essential."
		Opportunity to educate the legislature.	Dealing with a legislature that is typically averse to "new" ideas.

LIMITATIONS

Ideally, budget permitting, more primary research—in the form of focus groups with Arizona consumers and physicians—would have been conducted to get an even clearer picture of how Arizonans view health information technology and its impact on them and the role of Arizona Health-e Connection. While the data collected was sufficient to create this plan and provide an initial strategic direction for communications efforts, it is recommended that additional primary research be conducted in the near future in order to validate the efforts of this plan, as well as discover other strategies to reach key publics. That primary research should take the form of a public opinion survey, focus groups and content analysis, whereby a team of consumers evaluate communications tactics for effectiveness.

CORE PROBLEM/OPPORTUNITY

As a relatively new organization, Arizona Health-e Connection is not widely recognized by key publics that are integral to the organization achieving its mission, which is to lead Arizona's establishment of health information exchange (HIE), and adoption of health information technology (HIT). This plan seeks to create awareness about, and support of Arizona Health-e Connection through strategic communications and public relations to the organization's key publics in order to achieve its mission, build credibility and establish its brand.

ACTION PLAN & PROGRAMMING

Goal

Promote understanding and acceptance of health information technology in Arizona by a well-informed group of key publics, while at the same time generate awareness about the role of Arizona Health-e Connection in our state's health information technology efforts.

Objectives

1. Effectively define and communicate health information exchange (HIE) and health information technology (HIT) to key publics to build confidence and support of this new direction in healthcare data collection, delivery and portability by reaching all identified key publics at least six times in the next six months with two-way symmetrical communications and public relations.
2. Establish Arizona Health-e Connection as THE source in Arizona for credible, trustworthy and accurate information and discussion about HIE and HIT with all identified key publics by end of 2008 through effective branding efforts via two-way symmetrical communications, public relations and new media.
3. Identify, build, nurture and retain a cadre of healthcare community leaders who will act as an echo chamber of support for the Arizona Health-e Connection as well as HIT and HIE, in general, with peers, decision-makers, media and other leaders whose influence can help the organization achieve its organizational mission and goals.

Key Publics

The below key publics were determined through our primary and secondary research. Most were identified as audiences that must be reached by our interviews with leaders of Arizona Health-e Connection. Primary publics are the audiences that require the strongest focus and efforts. Secondary publics are those who we must reach in order to be successful with influencing our primary publics, or are "intervening publics," which are publics we will build relationships with in order to connect with primary publics. The media, for example, is an intervening public.

Primary publics

- Physicians/Physician Assistants
- Nurses/Nurse Practitioners
- Pharmacists
- Laboratories
- Administrators – hospitals, clinics, medical offices, nursing homes
- Healthcare associations and other associated groups (i.e. AARP)
- Insurance plans (including the State of Arizona)
- Large Employers
- Policy officials/legislators

Secondary publics

- Consumers/patients
- Affected government agencies
- Academic community
- Media

Messaging

Taking into account the organization's charter, as well as our primary research, action planning/ programming needs to focus on several core key messages to reach our key publics. Additionally, several key words should be included in collateral, Web site and other communications pieces to assist in branding Arizona Health-e Connection.

Core key messages are not always the actual phrases or wording used in communications, but can be. Oftentimes, they are guiding phrases that help set the tone and ensure consistency of communications.

Key words

Convene, coordinate, collaborate, security, safety, efficiency, portability, effectiveness, quality and communicate.

Key messages

#1. "Health information technology holds great promise to improve the quality, efficiency and safety of healthcare for all Arizonans by connecting doctors, nurses, hospitals and pharmacies via secure computer technology that will allow them to communicate—in real time—about your health, so you are taken care of faster and with more information available to your doctor, nurse and pharmacist."

#2. "Precautions are being taken to ensure privacy is protected—this is a priority. New information about you is not being created, but simply being shared in a different, better, more secure way between your healthcare providers."

#3. "Arizona has taken a leadership role with regard to health information technology and many other states are following our lead. However, there is still much work to be done for Arizonans to realize the promise that health information technology will bring to our state in the form of quality, security and huge cost savings—critical variables in a time when healthcare costs continue to accelerate and our state's population is exploding."

Action Plan — *July-December 2008*

Objective #1: Effectively define and communicate health information exchange (HIE) and health information technology (HIT) to key publics to build confidence and support of this new direction in healthcare data collection, delivery and portability by reaching all identified key publics at least six times in the next six months with two-way symmetrical communications and public relations.

Strategy: Utilize communication tactics that will reach target publics through varied vehicles—knowing that individuals all receive and retain information differently—at least six times in the coming six months.

Key Publics	Tactics	Proposed Timeline	Budget Estimates
Physicians/Physician Assistants Nurses/Nurse Practitioners Healthcare Administrators Pharmacists Laboratories	e-newsletter	Send monthly beginning in July	Approx. $500-750 to create e-newsletter template; approx. $250-500 per month for services to send and archive past editions.
	Blog on Web site	Begin in July. Coordinate monthly chats taht are touted in monthly e-newsletter.	Approx. $500-1000 to set up blog.
	Host forums;; consider offering CME. Partner with academic institutions to host events and participate as speakers *(ASU, NAU, U of A, etc)*	Quarterly beginning in July	Approx. $1000 per forum for refreshments, invitations, postage; does not include possible speaker honorariums
	Utilize New Media, such as Twitter, to send notes to subscribers when new information posts on Web site or blog	Begin in July	Costs to be researched
	Continue annual Summit	Ongoing; next one in 2009	Costs already known
	Host twice monthly breakfasts at physician practices to impart new information about HIT and answer questions	Begin in Sept. 2008	Costs associated with breakfast foods, handouts; approx. $250 per breakfast.
	Participate in allied association's annual meetings	Begin in 2009; spend 2008 developing booth materials; shoot for 3-5 in 2009	Approx. costs will depend upon how detailed booth will be

Continued from previous page

Key Publics	Tactics	Proposed Timeline	Budget Estimates
Healthcare associations Insurance plans Large employers Policy officials Consumers/patients Academic Community Media Affected Government Agencies	e-newsletter *(same as one proposed above)*	Send monthly beginning in July	Approx. $500-750 to create e-newsletter template; approx. $250-500 per month for services to send and archive past editions.
	Blog on Web site *(same as one proposed above)*	Begin in July. Coordinate monthly chats taht are touted in monthly e-newsletter.	Approx. $500-1000 to set up blog.
	Host forums targeted to these particular publics *(different than above forums; no educational credits)*; partner with publics like media, large employers, government agencies to help cover costs and provide speakers	Quarterly beginning in July	Approx. $1000 per forum for refreshments, invitations, postage; does not include possible speaker honorariums
	Utilize New Media, such as Twitter, to send notes to subscribers when new information posts on Web site or blog	Begin in July	Costs to be researched
	Continue annual Summit	Ongoing; next one in 2009	Costs already known

Objective #2: Establish Arizona Health-e Connection as THE source in Arizona for credible, trustworthy and accurate information and discussion about HIE and HIT with all identified key publics by end of 2008 through effective branding efforts via two-way symmetrical communications, public relations and new media.

Strategy: Utilize communication tactics that will reach target audiences through varied vehicles—knowing that individuals all receive and retain information differently—to brand Arizona Health-e Connection as THE source for HIT information.

Key Publics	Tactics	Proposed Timeline	Budget Estimates
Physicians/Physician Assistants Nurses/Nurse Practitioners Healthcare Administrators Pharmacists Laboratories Healthcare Associations Government Agencies Large employers	Columns in major healthcare association, large employer employee and government agency newsletters	At least quarterly; negotiate for monthly beginning in Sept. 2008	No hard costs; staff time
	Develop a Speakers Bureau	10-15 speaking opportunities per year; 6 by end of 2008	Approx. $3000-5000 for logistical costs *(setting up engagements)* promotional costs *(e.g. collateral, postage)*; training of speakers
	Develop 3-4 Arizona Health-e Connection one pagers about HIT that doctors and others can use with patients, media	Begin creating immediately and continue with new technologies, initiatives	Approx. $5000-6000 for designing and printing a quantity of approx. 5000 copies.
	Develop DVD about Arizona Health-e Connection and HIT that leadership and the Speakers Bureau can utilize when speaking at conferences	Begin creating immediately for debut 2009	$3000 for production, copy writing, and duplication of 10 copies
	Seek to present at 3-5 conferences per year that target key publics	Ongoing	Costs associated with travel, presentation preparation, etc. individual to each conference

Continued on next page

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Key Publics	Tactics	Proposed Timeline	Budget Estimates
Policy officials/ legislators Media Consumers/public	Annual "HIT Awareness Day" at the State Capitol	January 2009 or February 2009, shortly after session begins	Approx. $500-750 in costs associated with promoting the event *(e.g. invitations, postage)*; $500-750 for refreshments.
	Develop a Speakers Bureau *(same as above)*	10-15 speaking opportunities per year; six by end of 2008	Approx. $3000-5000 for logistical costs *(setting up engagements)* promotional costs *(e.g. collateral, postage)*; training of speakers
	Develop 3-4 Arizona Health-e Connection one pagers about HIT that doctors and others can use with patients, media *(same as above)*	Begin creating immediately and continue with new technologies, initiatives	Approx. $5000-6000 for designing and printing a quantity of approx. 5000 copies.
	Develop DVD about Arizona Health-e Connection and HIT that leadership and the Speakers Bureau can utilize when speaking at conferences, with legislators, etc. *(same as above)*	Begin creating immediately for debut 2009	$3000 for production, copy writing, and duplication of 10 copies

Objective #3: Identify, build, nurture and retain a cadre of healthcare community leaders who will act as an echo chamber of support for the Arizona Health-e Connection as well as HIT and HIE, in general, with peers, decision-makers, media and other leaders whose influence can help the organization achieve it's organizational mission and goals.

Strategy: Using current relationships, identify community leaders to recruit into echo chamber and build and nurture those relationships through two-way symmetrical communication.

Key Publics	Tactics	Proposed Timeline	Budget Estimates
Find leaders and influencers to create echo chamber from each of these key publics: Physicians/Physician Assistants Nurses/Nurse Practitioners Healthcare Administrators Pharmacists Laboratories Healthcare Associations Government Agencies Large employers Policy officials/ legislators Media Academic community Consumers/patients Insurance plans	Set up editorial board meetings with key media sources—both mainstream and trade	Conduct these meetings at least annually, or when you have new information to share. Begin in Sept. 2008. Consider conducting these meetings virtually, inviting media to participate remotely via an island created in Second Life for Arizona Health-e Connection. This novelty will help garner interest in participation	Costs associated with Second Life to be researched. Approx. $500 for media kits and invitations for typical editorial board meetings
	Special e-newsletter to echo chamber that includes key messaging you would like them to convey; promote this as an exclusive email just for supporters of Arizona Health-e Connection	Begin sending out in 2009 after spending rest of 2008 developing list of leaders to include in echo chamber	Approx. $500-750 to create e-newsletter template; use same service that is recommended for general, monthly e-newsletter
	Host annual recognition dinner to thank echo chamber members for their support and nurture relationships	Host first dinner in December 2008	Approx. $1000 for dinner expenses.

EVALUATION

Objective #1: Effectively define and communicate health information exchange (HIE) and health information technology (HIT) to key publics to build confidence and support of this new direction in healthcare data collection, delivery and portability by reaching all identified key publics at least six times in the next six months with two-way symmetrical communications and public relations.

- **Evaluation criteria:** Reach all identified key publics at least six times in the coming year with two-way symmetrical communications and public relations.
- **Evaluation tool:** At year end, identify six ways you reached out to key publics with communications and public relations. Convene a focus group representative of key publics to gauge thoughts on communications efforts.

Objective #2: Establish Arizona Health-e Connection as THE source in Arizona for credible, trustworthy and accurate information and discussion about HIE and HIT with all identified key publics by end of 2008 through effective branding efforts via two-way symmetrical communications, public relations and new media.

- **Evaluation criteria:** Effectively brand Arizona Health-e Connection as a credible, trustworthy and accurate source for healthcare information technology via two-way symmetrical communications, public relations and new media.
- **Evaluation tool:** Opinion survey of key publics in early 2009; this is in addition to focus group mentioned as a tool for evaluating Objective #1. This opinion survey would seek to determine key publics opinion of Arizona Health-e Connection's brand and if you effectively built and communicated your brand over the past six months.

Objective #3: Identify, build, nurture and retain a cadre of healthcare community leaders who will act as an echo chamber of support for the Arizona Health-e Connection as well as HIT and HIE, in general, with peers, decision-makers, media and other leaders whose influence can help the organization achieve its organizational mission and goals.

- **Evaluation criteria:** Identify, build, nurture and retain a cadre of healthcare community leaders who will act as an echo chamber of support for the Arizona Health-e Connection as well as HIT and HIE.
- **Evaluation tool:** Determine if you were effective in creating the echo chamber; have an end-of-year dinner debrief with echo chamber members, sort of an informal focus group, to gather feedback. Also, track media coverage, from July to December, and see how often a member of the echo chamber was quoted and if they conveyed key message language.

APPENDIX

Health-e Connection
Strategic Communications Plan
Feedback

To prepare this feedback report, 12 interviews were conducted between March and April 2008, with additional feedback provided in response to an e-mail questionnaire. A great deal of information was

What is your definition of health information exchange?

- An alternative and better way of doing business, which is faster and more accurate. This will eventually allow medical records to go places in real time, so physicians have the best past information at their fingertips when they need it. This will be especially critical in the Emergency Room. This is just another way of doing business that's afforded by the technology. If you get too wrapped up in the technology – you've missed the boat.
- Implementing the necessary technology to allow the right information about the right person to be available to the right provider at the right time.
- Sharing of health information, either electronically or through another means (example community health studies, repositories. etc.)
- When different electronic systems and different providers are able to talk with one another.
- The ability to provide relevant medical data between various electronic data systems.
- A personalized health record that an individual can have access to update their own health record. Healthcare providers can access this same information to provide continuity of care.
- The ability for all players in the healthcare system to transmit information to each other and to access information electronically.
- The exchange of electronic information between providers. This includes physicians, hospitals and providers of care (labs, x-rays, etc.).
- A system where health data can be easily accessed and shared statewide.
- All medical providers have access to a patient's medical records on a universal basis, regardless of which system they are using.
- The exchange of medical information which is authorized by the patient. Information is shared among providers and authorized entities who can finalize obligations to the patient.
- A place where providers can send information and users can retrieve that information when needed.
- A network that allows for medical records to be shared between providers, which hopefully also benefits the consumer.
- Taking advantage of the interconnectivity of information. Information is transparent and transportable.
- The ability to exchange patient specific information between healthcare providers to ensure the clinician has the most current data when making clinical decisions.
- Allows for the electronic sharing and use of medical records by individuals and groups authorized to have them. Can include other providers, insurance companies, researchers, government agencies, etc.
- Immediate access to medical records, which would be available to doctors and other healthcare providers (example: – your doctor can access your medical file and see what tests you have had and their results)

Which key audiences would you target when communicating information regarding Health-e Connections?

- Physicians
- Clinicians
- Hospitals and clinics -- administrators
- Pharmacies
- Nursing Homes
- Laboratories
- Patients/consumers
- Policy officials/legislators
- Health plans/insurers (include the state)
- Healthcare association leadership
- Government agencies
- Academic community
- AARP
- Employers
- Most agree that communication should go to physicians and providers first and not to consumers until we have a solid program in place.
- Several people mentioned that we need to get the word out in every way possible – PSAs, HOAs, fairs, etc. and to get regular columns in association newsletters.
- Initial survey work has shown that, in this realm, consumers trust MDs more than anyone else – the message needs to come from them. This is why we need to have physicians/ clinicians onboard first.
- With the cost of healthcare insurance, employers need to realize that they need to be part of this solution.

What should be our key communications objectives?

- Consistent messaging regarding what Health-e Connections is – and isn't. The importance of not only having an electronic medical record, but of the exchange of information
- Education regarding health information infrastructure, including what's happening nationally and statewide, as well as within specialties.
- Call to action to get involved.
- Let each audience know the value of Health-e Connections to them – reducing overall cost of healthcare, improving quality, reducing patient safety issues, improving efficiency, central repository of healthcare info, coordinated billing and payments. Message needs to be customized to each audience

- Mention of the value-added services of Health-e Connections – what role with this organization play in health information exchange?
- Different phasing and messaging for different audiences.
- Consistent language – clarity, few acronyms, plain English.
- Communicate frequently – in all association journals, meetings held at convenient times, lots of venues, educational seminars, etc.
- Anticipate objections and address them before they arise.
- Branding.
- Need to know what we're communicating before we communicate – no putting the cart before the horse.

What types of key messages do we want to disseminate?

- Privacy will be protected – you will know who has access to what.
- Medical errors can be reduced. (ex. ePrescribing – no more having to read a doctor's hand-writing, pharmacies having access to labs to confirm dosage, etc.)
- In the long run, this should make things more simple for providers – although it won't be simple at first.
- The importance of the exchange can't be overstated, especially in disasters such as Katrina, etc.
- Healthcare overall, will be improved because providers will have a complete picture of a patient's health history and ongoing treatments – continuity of care.
- Empowered patients – they are in charge of making this work and for taking control over their health.
- Cost savings, especially to insurers, should be enormous – but will this be passed along to consumer? Should lead to better care and lower costs – could save money and lives.
- Not new information – just a new way of sharing it.
- Information used for non-medical purposes (research, public health, etc.) would not have the patients name on it – no way to track back.

What communications challenges do you foresee?

- Resistance to change – human nature.
- Fear of past private information becoming public – "Big Brother."
- Fear of the internet.
- Trying to reach a very busy audience.
- Most people don't know what AzHEC is – lots of education needed.
- Audiences may not readily see this as valuable to them.

- Perceived as a luxury, as opposed to something that is urgently needed.
- People might turn off immediately because of cost.
- Status quo mentality
- For those "in the know" – they know of other similar efforts that have failed.
- Given the current state of the economy, consumers are more focused on managing day-to-day living expenses vs. health information exchange.
- Skepticism as to whether this can really "be done."

What barriers might we fact to the effort itself being successful?

- Money! (cost to build the system, transition to the system and maintain the system – spreading costs across those who will use it)
- Return on investment – have been studies that have shown there's not a good ROI for several years
- Time – people who expect that we'll be automated in a year or two
- Trust – how secure is it and who gets to see it
- Skepticism because of other efforts that have failed – need to communicate that we are aware of these and that we are learning from their mistakes
- Limitations of technology – reasons why certain solutions won't work because of security and privacy, once we know conceptually what this will be, how do we technically make that happen and how will everyone interface?
- Concerns re: conversion process and lost productivity
- Sustainability of funding
- Full participation and commitment – for this to successful, nobody can opt out everybody (insurance companies, hospitals, physician groups) must play or it will not work
- Confusion – if information provided isn't simple and clear
- Turn-over – changing workforces and ongoing training
- Government interference – does the government have the authority to direct or command participation?

What are some of the strengths of Health-e Connections?

- Operates on consensus – biggest strength and biggest weakness
- Goodwill expressed by a broad-base of stakeholders – unprecedented group that wants this to succeed
- Partnership and the board itself – diversity of board
- Creating something new

- Positive national image
- Neutral platform
- Future of healthcare – not doing this isn't an option
- Right people at the table
- All stakeholders there and participating
- Tremendous opportunity to educate
- Good strategy
- Sincere belief that this will make an impact on the quality and cost of care

What are some of the weaknesses of Health-e Connections?

- The consensus building can also be a weakness – the group is so diverse, it will be hard to reach consensus
- We need to be very careful with how we secure necessary legislation to implement this system – we're dealing with a group that tends to balk at new ideas – this can be a potential strength, if it's dealt with properly
- There are members who want to get a piece of the pie – who may be looking more at their own agenda
- This is very complex
- This is very expensive
- We will make mistakes!
- This is a massive undertaking
- Lack of funding
- There are some who view a process that's playing out over time – as that there's no progress – we're at a start-up point
- Technology is spotty, inconsistent and experimental – will take time to work the bugs out

What opportunities exist with Health-e Connections?

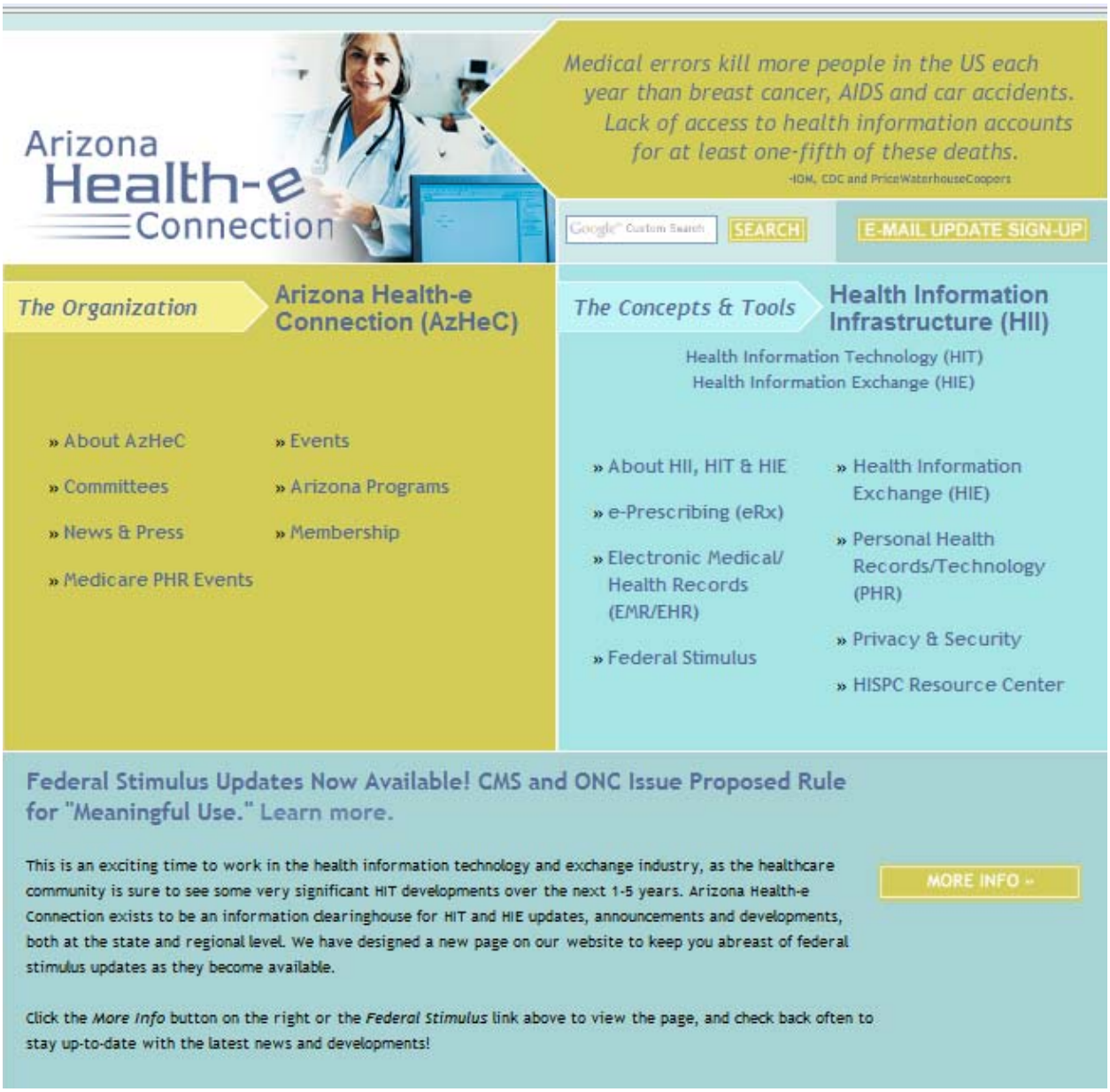
- Fostering something that is truly a statewide system. . . most other states are not going this way
- Ultimately – more efficient and effective healthcare
- Using collaborations to get grant dollars because there's no competing entity looking at this from a statewide perspective
- Being viewed as *the* statewide leader
- Lots of interest and momentum – but if we wait too long it will be gone.

- Can see people really embracing this and looking at it as a valuable resource
- Opportunity to make this real for people
- Less time spent moving around the system having tests and procedures that have already been done

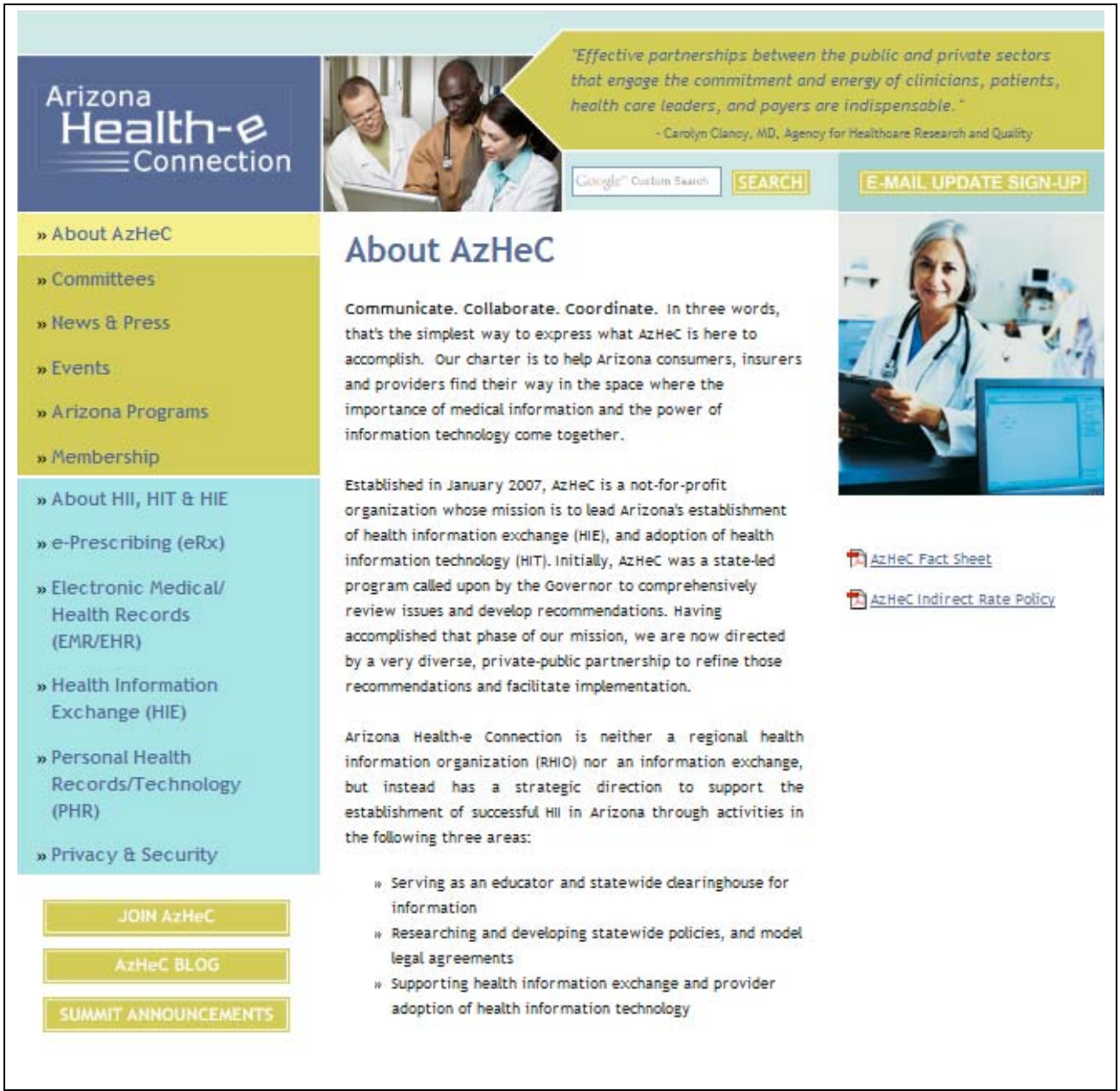
Additional comments:

- Not sure the board realizes how much communications means to this organization.
- Need to look at the objectives and the way things are phased. Are we raising awareness or are we driving an initiative (i.e. ePrescribing)? The approaches are different.
- Need to address negative factors to be mitigated – bad press, failure of some systems to protect information. Also need to be prepared with a crises communications plan.
- Should develop matrix regarding where we want to be within a year – at least 80% of providers are aware, etc. Drives approach to communications and gives the board a sense of the long-term nature of this project.
- There are a lot of people who have volunteered to step up to the plate with the hopes of improving medical care for the entire community. That speaks volumes and will lead to our success.
- Spend the upfront time to get this right. There is an ROI in terms of cost and quality.
- Ensure this effort is patient-centric.
- Involve the med schools and residency-training program. Develop our physicians of tomorrow to ensure they're in the loop. Train the new dogs while you're retraining the old dogs!
- Please consider sharing this information with the board – it's important that we all hear what each other is thinking.
- There needs to be some level of standards so people can feel comfortable.
- We need not punish providers for standing in the status quo, but to reward them for moving into this realm.
- The second someone decides not to play – that will fragment the system.
- The current governor is very supportive – but she's only there the next 2 ½ years.
- This incredibly complicated process requires mature governance – not discussing the color of paint on the walls.
- The landscape keeps changing – today's roadmap may be obsolete tomorrow. We need to be cognizant of what's happening.

Appendix H



Landing Page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About AzHeC
Communicate. Collaborate. Coordinate. In three words, that's the simplest way to express what AzHeC is here to accomplish. Our charter is to help Arizona consumers, insurers and providers find their way in the space where the importance of medical information and the power of information technology come together.
Established in January 2007, AzHeC is a not-for-profit organization whose mission is to lead Arizona's establishment of health information exchange (HIE), and adoption of health information technology (HIT). Initially, AzHeC was a state-led program called upon by the Governor to comprehensively review issues and develop recommendations. Having accomplished that phase of our mission, we are now directed by a very diverse, private-public partnership to refine those recommendations and facilitate implementation.
Arizona Health-e Connection is neither a regional health information organization (RHIO) nor an information exchange, but instead has a strategic direction to support the establishment of successful HII in Arizona through activities in the following three areas:
» Serving as an educator and statewide clearinghouse for information
» Researching and developing statewide policies, and model legal agreements
» Supporting health information exchange and provider adoption of health information technology
AzHeC Fact Sheet
AzHeC Indirect Rate Policy

About AzHeC


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Committees
All of the progress and accomplishments of Arizona Health-e Connection could not have been possible without the expertise and dedication of hundreds of volunteers throughout the state. Many of the subject matter experts who helped to develop the current organization continue to assist in the initiatives of AzHeC by serving on one or more of the following committees.
Budget/ Finance
e-Prescribing Steering
Education/ Outreach
Clinical/ Technical
Executive Committee
Membership
Legal
Arizona Health-e Connection Board
Consumer Advisory
Arizona Health-e Connection Committee Structure
Consumer Advisory Council
The Consumer Advisory Council is an avenue through which AzHeC can engage consumers in Arizona's HII, HIT and HIE initiatives. Since HII will ultimately benefit the quality of health care that consumers receive, we believe it is very important to have their voices heard throughout development of all HII initiatives.
Learn more >>
Clinical/Technical
The Clinical/Technical Committee, comprised of providers, chief information officers, chief medical information officers, and other subject matter experts from throughout Arizona, meets on a regular basis and is charged with vetting a variety of technical issues before presentation to the Board, and serving as a technical forum for further coordination, development and consensus on HIT and HIE issues statewide. Currently, subcommittees within the clinical/technical committee that work on specific topic areas include a Security Subcommittee, a Standards Subcommittee and a Laboratory Descriptors Subcommittee.
Consumer Advisory Council Overview
Letter to Consumers
Consumer Application

Committees

e-Prescribing

AzHeC's e-Prescribing Steering Committee leads the statewide e-prescribing initiative (branded "EAzRx") and is the umbrella organization under which all Arizona-based e-prescribing initiatives are coordinated. The steering committee meets regularly to oversee the direction of EAzRx, and they also work closely with the Arizona Partnership for Implementing Patient Safety (APIPS), providers, pharmacists, and other stakeholders to further the initiative.

Legal

In 2006, the U.S. Department of Health and Human Services recognized that each state likely had its own laws, regulations and business practices that could potentially inhibit the exchange or adoption of electronic health records. Arizona's Government Information Technology Agency (GITA) applied for, and received, grant monies to address many of the legal (primarily privacy and security) issues relative to the exchange of health information. GITA is both providing project leadership for what is known as the Arizona Health Security (formerly Privacy) Project, and working hand-in-hand with AzHeC's Legal Committee. With that in mind, the goals of the AzHeC Legal Committee include:

- Developing key model legal documents (e.g., contracts) that establish terms and conditions for provider access to health information
- Researching security and privacy practices that support the establishment of secure health information exchanges
- Performing the additional legal work needed throughout 2008 to prepare a legislative package for the 2009 State of Arizona legislative session that will change laws which currently pose barriers to the implementation of e-health technology adoption and exchange
- Creating and supporting technical standards development that improves interoperability and facilitates the creation of secure regional and state information exchanges and electronic health adoption

Membership

The membership committee nominates, reviews and approves potential board members, and reviews new member applications. Additionally, the committee reviews and approves member benefits and dues structure.

Financial & Budget

A small group of board members and board member designees serve on this committee and meet on a regular basis to provide oversight of the organization's finances and budget.

Committees (continued)

Education & Outreach

Without effective communications to all affected entities within Arizona, development of health information infrastructure cannot occur. This includes communication with entities within Arizona's health care industry, as well as all Arizona employers, citizens, and government agencies. The activities and goals of the education and outreach committee include:

- Measuring Arizona's implementation of health information infrastructure, and associated attitudes and opinions; Using this information to create effective initiatives
- Convening and coordinating similar initiatives, in order to create more effective, unified messaging and communication
- Serving as an educational resource and information clearinghouse for Arizona electronic health information infrastructure initiatives
- Creating a comprehensive communications plan for the organization, incorporating associated initiatives
- Convening Arizona stakeholders in statewide, and possibly regional, summits to further education, cooperation, and momentum.

Committees (continued)


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Arizona groups survey public attitudes on health information exchange
Government Health IT - a HIMSS Publication
February 26, 2009
Health organizations in southwestern Arizona are seeking public feedback on plans for starting a health information exchange in Yuma County.
Medicare selects four companies where beneficiaries can maintain their personal health records
CMS Office of Public Affairs
November 12, 2008
The Centers for Medicare & Medicaid Services (CMS) today announced the selection of four personal health record (PHR) companies to participate in the new Medicare PHR Choice Pilot in Arizona and Utah.
This pilot program will, beginning in early 2009, offer beneficiaries with Original Medicare the opportunity to choose one of the selected PHR companies to maintain their health record information electronically...
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News & Press

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- » Personal Health Records/Technology (PHR)
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Get involved. Stay connected. There's room for YOU at an AzHeC networking event! Whether you want to stay up to date on the latest developments, or start creating some of them yourself, AzHeC connects you with industry peers through regional annual summits, membership luncheons and ongoing webinars. AzHeC is the hub where health information infrastructure stakeholders can have a conversation, build a common frame of reference and work on solutions together.

2010 Summit & Trade Show
Summit Presentations
Member Events

SAVE THE DATE!
2010 Western States Health-e Connection Summit & Trade Show
April 12 & 13, 2010
Phoenix Convention Center
Phoenix, AZ

Educational Events

One of AzHeC's three key areas of focus is to serve as an educator and statewide clearinghouse for information. As such, AzHeC provides educational opportunities throughout the year to increase the awareness and knowledge of various health information infrastructure, technology and exchange topic areas. AzHeC Staff and representatives also present at local, state, regional and national events on all facets of health information technology and exchange. If you would like an AzHeC representative to present at an upcoming meeting you are coordinating, please contact us via email at info@azhec.org.

Arizona Health Care Community Discussion
In response to a request for input on Health Care Reform by the Obama-Biden Transition Team, AzHeC, ASU's CABIT, and fifteen partnering organizations held the Arizona Health Care Community Discussion at ASU's Memorial Union on Tuesday, December 30, 2008 (community discussions were to be held Dec 15 - 30). The agenda and summary of the discussion is posted below.

Arizona Community Health Care Discussion Agenda

Arizona Community Health Care Discussion Summary

Member Events

A benefit of AzHeC membership is the ability to participate in member-only webinars and in person meetings. These educational events will focus on cutting edge developments in the health information infrastructure industry. Join AzHeC today to take advantage of this exclusive opportunity!

Events

Arizona Programs

PACeHR

PACeHR (pronounced "pacer") is Arizona's Purchasing & Assistance Collaborative for Electronic Health Records. New this year, this unique program was launched to accelerate EHR adoption, improve quality, safety and efficiency, and promote a community of information sharing. Targeting small and medium-sized practices, PACeHR aims to leverage economies of scale, strategic partnering, and the power of web-based technologies to assure that every clinician in Arizona will have access to an affordable, interoperable, CCHIT-certified, web-based electronic health record solution, support, and related products and services.

The selection process for PACeHR's inaugural products (slated for June 2009 availability) is underway. Proposals from EHR companies that responded to the request posted are being reviewed by an expert panel that includes representatives from Arizona's provider organizations.

Learn more about PACeHR.

SAHIE

The concept of a regional HIE for Southern Arizona got its formal start in early 2006. SAHIE grew from four initiating institutions in Phase One to now over 30 member organizations including hospitals, group practices, community physicians, health plans, diagnostic service organizations, the business community, and county administrations in Southern Arizona, as well as agencies of the State of Arizona. The mission is to improve the access, quality and safety of healthcare while reducing or stabilizing costs in Southern Arizona through the deployment of a regional, financially self-sustainable HIE. SAHIE is currently in the final stages of organizational and technology design, including vendor selection.

EAzRx

Arizona's statewide e-Prescribing initiative, EAzRx is a five-year plan to encourage provider adoption of electronic prescribing, either through a standalone e-Prescribing system or by e-Prescribing functionality fully integrated into an electronic medical record system.

Mission: Arizona Health-e Connection and its EAzRx Steering Committee are committed to enhancing patient safety through increased e-prescribing adoption by clinicians in Arizona. We will use the combined expertise of the EAzRx Steering Committee, Arizona Partnership for Implementing Patient Safety, providers, pharmacists, and other stakeholders to further the initiative.

Arizona Programs (continued)


Arizona Health-e Connection
"Effective partnerships between the public and private sectors that engage the commitment and energy of clinicians, patients, health care leaders, and payers are indispensable."
- Carolyn Clancy, MD, Agency for Healthcare Research and Quality
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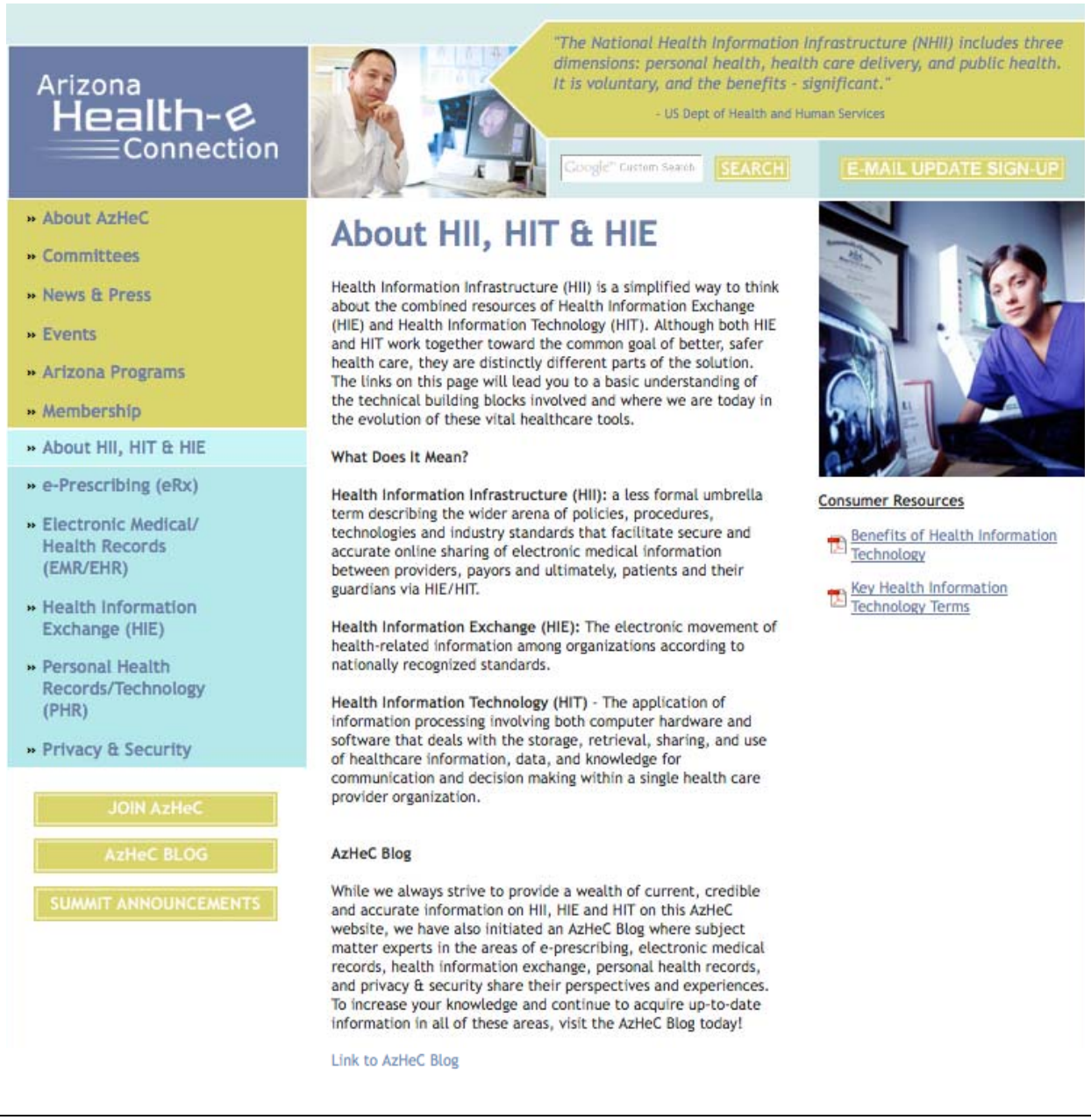
Every consumer, purchaser, insurer, and provider of healthcare has a stake in ensuring that the right information is available at the right time to the right person for the right purpose.
There is no other organization identified, within or without Arizona, that has the health information infrastructure role to play and most of the necessary and motivated stakeholders at the table. Arizona has been recognized as leading the country through this broad-based stakeholder approach. The time is now to involve additional stakeholders, such as individual clinicians, consumers, self-employed business owners, and employers, to ensure that Arizona truly achieves what has been referred to as a "transformation of the healthcare system" through information technology!
You have the opportunity to share in this transformation by becoming an AzHeC Member or Supporter!
Click the Become a Member link at the top of the page to download the Membership Value document and an AzHeC Membership Application for your organization today!
The Value of Being an AzHeC Member
The Value of Being an AzHeC Supporter

Membership



About HII, HIT & HIE

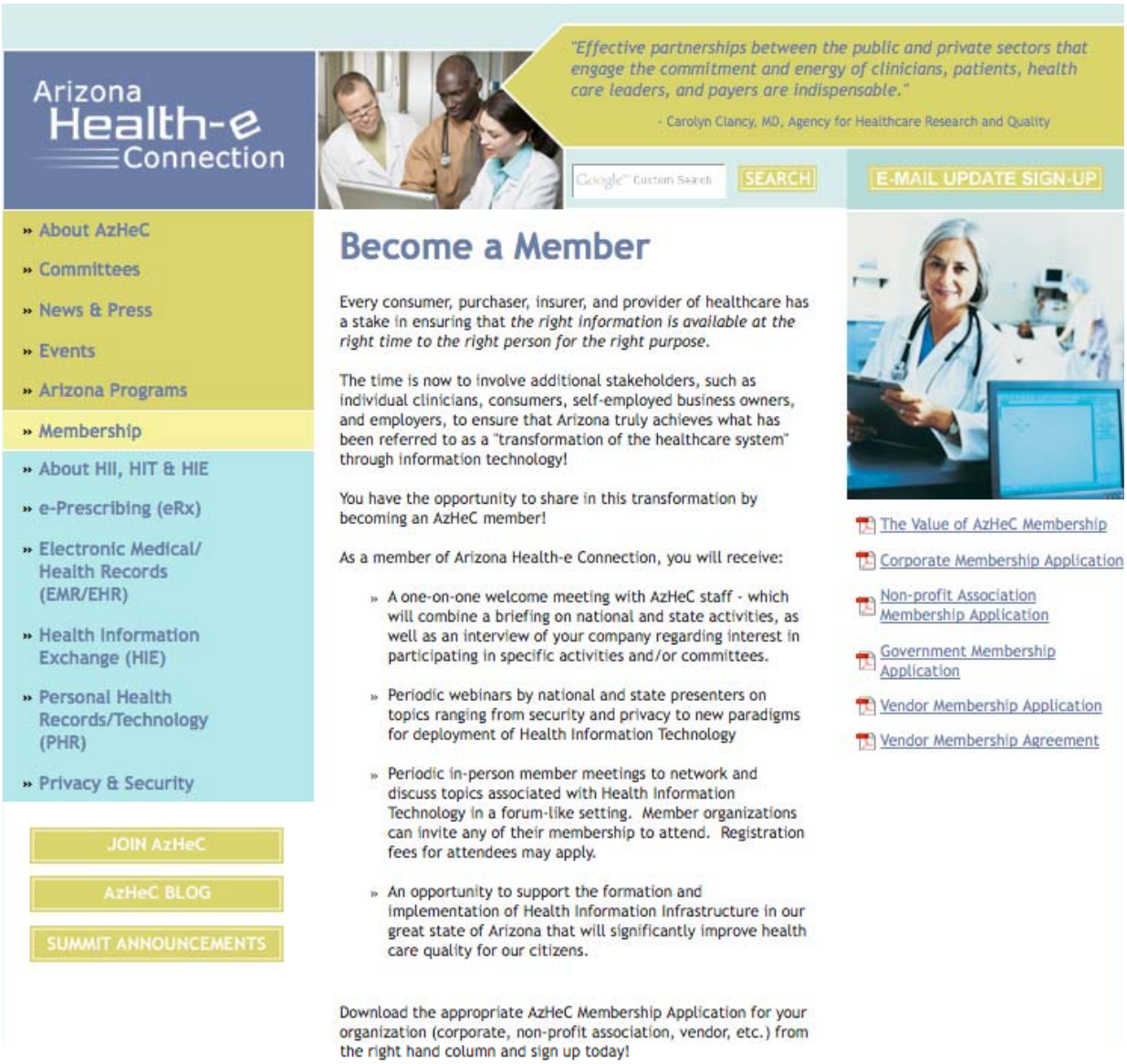
e-Prescribing (eRx)

Electronic Medical/Health Records

Health Information Exchange

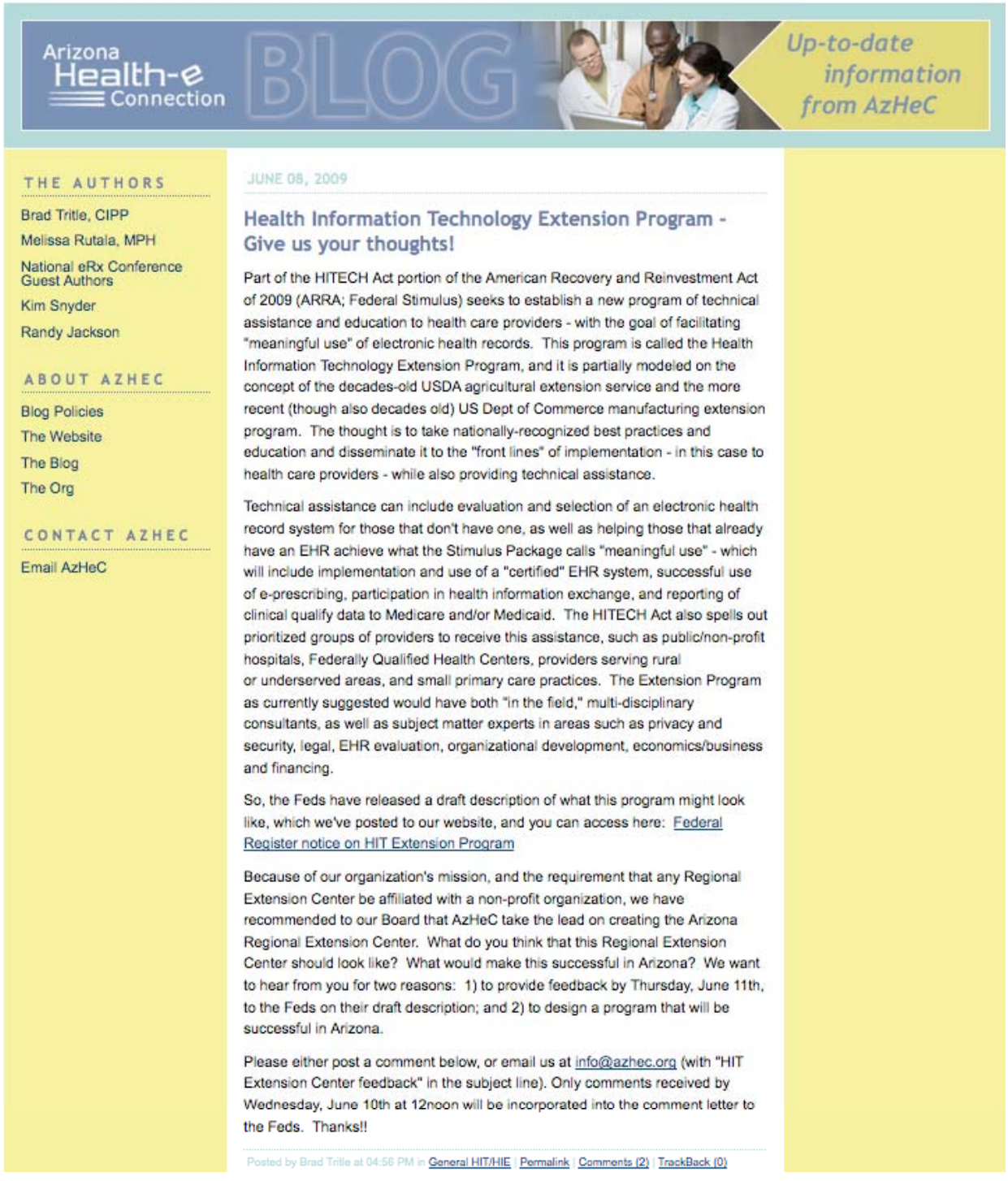
Personal Health Records/Technology

Privacy & Security



Become a Member

Blog Introduction


Arizona
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information
from AzHeC
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National eRx Conference Guest Authors
Kim Snyder
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JUNE 08, 2009
Health Information Technology Extension Program - Give us your thoughts!
Part of the HITECH Act portion of the American Recovery and Reinvestment Act of 2009 (ARRA; Federal Stimulus) seeks to establish a new program of technical assistance and education to health care providers - with the goal of facilitating "meaningful use" of electronic health records. This program is called the Health Information Technology Extension Program, and it is partially modeled on the concept of the decades-old USDA agricultural extension service and the more recent (though also decades old) US Dept of Commerce manufacturing extension program. The thought is to take nationally-recognized best practices and education and disseminate it to the "front lines" of implementation - in this case to health care providers - while also providing technical assistance.
Technical assistance can include evaluation and selection of an electronic health record system for those that don't have one, as well as helping those that already have an EHR achieve what the Stimulus Package calls "meaningful use" - which will include implementation and use of a "certified" EHR system, successful use of e-prescribing, participation in health information exchange, and reporting of clinical qualify data to Medicare and/or Medicaid. The HITECH Act also spells out prioritized groups of providers to receive this assistance, such as public/non-profit hospitals, Federally Qualified Health Centers, providers serving rural or underserved areas, and small primary care practices. The Extension Program as currently suggested would have both "in the field," multi-disciplinary consultants, as well as subject matter experts in areas such as privacy and security, legal, EHR evaluation, organizational development, economics/business and financing.
So, the Feds have released a draft description of what this program might look like, which we've posted to our website, and you can access here: Federal Register notice on HIT Extension Program
Because of our organization's mission, and the requirement that any Regional Extension Center be affiliated with a non-profit organization, we have recommended to our Board that AzHeC take the lead on creating the Arizona Regional Extension Center. What do you think that this Regional Extension Center should look like? What would make this successful in Arizona? We want to hear from you for two reasons: 1) to provide feedback by Thursday, June 11th, to the Feds on their draft description; and 2) to design a program that will be successful in Arizona.
Please either post a comment below, or email us at info@azhec.org (with "HIT Extension Center feedback" in the subject line). Only comments received by Wednesday, June 10th at 12noon will be incorporated into the comment letter to the Feds. Thanks!!
Posted by Brad Tritle at 04:56 PM in General HIT/HIE | Permalink | Comments (2) | TrackBack (0)

Blog