

eHealth Council
May 3, 2012
1:30 PM CT – 3:30 PM CT

Governor's Residence
1425 H Street, Lincoln, NE
Lower Level Meeting Room

Meeting Documents

Tentative Agenda

1:30	<p>Roll Call Notice of Posting of Agenda Notice of Nebraska Open Meetings Act Posting <i>Approval of Feb. 29, 2012 minutes*</i> Public Comment</p>
1:40	<p>Evaluation Activities—Don Klepser, UNMC</p> <ul style="list-style-type: none"> • Lab Census • Barriers to Electronic Prescribing: Nebraska Pharmacists' Perspective
2:10	<p>Membership--New Member*</p> <ul style="list-style-type: none"> • Sharon Medcalf
2:15	<p>Plan Updates</p> <p>ONC Guidance</p> <ul style="list-style-type: none"> • Program Information Notice 2: Requirements and Recommendations for the State HIE Cooperative Agreement Program • Program Information Notice 3: Privacy and Security Framework Requirements and Guidance for the State HIE Cooperative Agreement Program <p>Updated/New Sections*</p> <ul style="list-style-type: none"> • Tracking Program Progress <ul style="list-style-type: none"> ○ 2012 Goals • Privacy and Security Framework • Sustainability Plan • Program Evaluation • Project Management Plan

2:45	<p>Nebraska Updates</p> <ul style="list-style-type: none"> • NeHII • eBHIN • Wide River TEC • Medicaid • Nebraska Statewide Telehealth Network
3:10	<p>Updates on ONC and ONC-Related Activities</p> <ul style="list-style-type: none"> • ONC’s national health information exchange strategy <ul style="list-style-type: none"> ○ <i>Health Affairs</i> Article • NORC case study • Meaningful Use Acceleration Challenge
3:30	Adjourn

Meeting notice posted to the NITC and Public Meeting Websites on April 26, 2012. The agenda was posted on April 26, 2012.

*** Indicates action items.**

EHEALTH COUNCIL

February 29, 2012 1:30 PM CT – 4:00 PM CT

Lincoln: Nebraska Educational Telecommunications, 1800 N. 33rd, Board Rm., 1st Floor

Omaha: UNMC, College of Public Health/Maurer Center for Public Health, Room 3020

Kearney: Good Samaritan Hospital

MINUTES

MEMBERS PRESENT

Wende Baker
 Susan Courtney
 Joel Dougherty
 Donna Hammack
 Ken Lawonn
 Sue Medinger
 Laura Meyers
 Marsha Morien
 Todd Searls
 Nancy Shank
 Lianne Stevens
 Jason Davis
 Patrick Werner
 Delane Wycoff

MEMBERS ABSENT: Joni Cover, Vivianne Chaumont, Senator Annette Dubas, Congressman Jeff Fortenberry, Kimberly Galt, Alice Henneman, Harold Krueger, Kay Oestmann, Rita Parris, John Roberts

Guests and Staff: Anne Byers, Lori Lopez Urdiales, Sarah Briggs and Chris Henkenius

ROLL CALL NOTICE OF POSTING OF AGENDA NOTICE OF NEBRASKA OPEN MEETINGS ACT POSTING

Ms. Morien called the meeting to order at 1:35 p.m. There were 13 members present at the time of roll call. A quorum existed to conduct official business. The meeting notice was posted to the NITC and Public Meeting websites on February 3, 2012. The meeting agenda was posted on February 24, 2012.

APPROVAL OF APRIL 1, 2011 MINUTES and the OCTOBER 5, 2011 MINUTES*

Laura Meyers' name was corrected in the April minutes. Nancy Shank's name was corrected in both April and October minutes.

Ms. Hammack moved to approve the [April 1, 2011 minutes](#) and the [October 5, 2011 minutes](#) with the name corrections. Ms. Shank seconded. Roll call vote: Courtney-Yes, Dougherty-Yes, Hammack-Yes, Lawonn-Yes, Medinger -Yes, Meyers-Yes, Morien-Yes, Searls-Yes, Shank-Yes, Stevens-Yes, Davis-Yes, Werner-Yes, and Wycoff-Yes. Results: Yes-13, No-0, Abstained-0. Motion carried.

PUBLIC COMMENT

There was no public comment.

PRESCRIPTION DRUG MONITORING PROGRAM

Dr. Joann Schaefer, Chief Medical Officer and Director, DHHS Division of Public Health, Anne Dworak and Chris Henkenius, NeHII

Dr. Joann Schaefer gave an update on Nebraska's Prescription Drug Monitoring Program (PDMP). LB 237 gave the Department of Health and Human Services the authorization to develop the infrastructure

for a Prescription Drug Monitoring Program (PDMP). Nebraska has one of the lowest drug overdose death rates in the country. Nebraska's Prescription Drug Monitoring Program is focused on improving patient care and is not accessible by law enforcement officials. Participation by physicians and other health care providers is voluntary.

Ms. Baker arrived.

Anne Dworak and Chris Henkenius provided information on NeHII 's PDMP functionality. NeHII provides real-time data which includes medication history as well as other clinical information. Ms. Dworak provided a demonstration of the system. Approximately 80-85% of prescription data is available. The project is currently working with pharmacies to enter information.

Some physicians inform patients that opting out will not provide a comprehensive history to the physician necessary to safely prescribe narcotics. The cost is \$20/month for physicians/providers to be part of the system. Ms. Baker recommended that providers receive training on dealing with patients who may need treatment for addiction. NeHII is pursuing funding to develop alert functionality. NeHII demonstrated its PDMP functionality at the HIMSS conference.

MEMBERSHIP

The following members are up for membership renewals: Dr. Delane Wycoff; John Roberts; Harold Krueger; Joel Dougherty; Nancy Shank; and Donna Hammack. All have agreed to serve on the eHealth Council for another term.

Ms. Courtney moved to recommend the membership renewals to the NITC. Mr. Lawonn seconded. Roll call vote: Baker-Yes, Courtney-Yes, Dougherty-Yes, Hammack-Yes, Lawonn-Yes, Medinger - Yes, Meyers-Yes, Morien-Yes, Searls-Yes, Shank-Yes, Stevens-Yes, Davis-Yes, Werner-Yes, and Wycoff-Yes. Results: Yes-14, No-0, Abstained-0. Motion carried.

Joyce Beck and Jeff Kuhr have resigned from the Council.

UPDATING NEBRASKA'S STRATEGIC AND OPERATIONAL EHEALTH PLANS

([ONC Program Information Notice on Updating State eHealth Plans](#) and Expected ONC Program Information Notice on Privacy and Security)

On Feb 8, 2012, the ONC released a program information notice for the requirements for updating state plans. Plans are due on May 8, 90 days after the release of the notice. A privacy and security framework section is also required, but no information has been released yet for that section.

Ms. Byers proposed the following approach to complete and submit the updated Nebraska's Strategic and Operational eHealth Plans:

- Ms. Byers has analyzed requirements and developed a work plan.
- The eHealth Council will discuss any changes to Nebraska's HIE strategy and will approve a general work plan for updating state eHealth plans in February.
- Ms. Byers will work with the Nebraska eHealth Implementation Team, the ePrescribing Work Group, and the UNMC State HIE Evaluation Team to update the Nebraska eHealth Plan. The Nebraska Department of Health and Human Services Division of Medicaid and Long-Term Care, and Public Health on plan updates.
- The Nebraska Information Technology Commission will approve any changes in HIE strategy and the work plan.
- The eHealth Council will approve targets for 2012 and a draft plan in late April or early May.

DIRECT

Chris Henkenius, NeHII

Direct provides secure messaging for the exchange of health information. NeHII has Direct set up and the cost is \$15/month. Direct e-mail cannot be sent to any other e-mail system such as Hotmail, Yahoo, etc. Patients will either have to sign-up and pay for a direct e-mail address or utilize a patient portal. In some states, ONC is requiring a certain number of DIRECT users before implementation of a query-model health information exchange.

UPDATES

Expected Notice of Proposed Rule Making on Meaningful Use. ONC has released the proposed rules for Stage 2 Meaningful Use (Stage 2 NPRM) which will take effect in 2014. Members were encouraged to submit comments.

Legislation. LB 574 Adopt the Electronic Prescription Transmission Act is the only bill related to health IT this session.

Site visit by NORC at the University of Chicago. The ONC contracted with NORC at the University of Chicago to conduct case studies of HIE development in several states. Nebraska was one of the states selected. NORC will be sending Ms. Byers the initial draft of the evaluation to provide feedback prior to publishing.

Evaluation Activities. Don Klepser, University of Nebraska Medical Center, provided an update on evaluation activities. The survey of non-participating pharmacists received IRB approval. A letter was sent to pharmacists on Monday. This coming Monday, contacts will be made to approximately 42 pharmacists. It is anticipated that the survey results will be ready in April.

ONC is hosting a webinar tomorrow to discuss evaluation plans and the instrument to survey labs. In addition, the Evaluation Work Group has been working on the evaluation plan for the updated Nebraska eHealth State Plan. Ms. Byers thanked the UNMC evaluation team for their assistance.

NeHII. There are currently three hospitals in Iowa also interested in joining. Regional West in Scottsbluff is coming online. The project currently has over 800 doctors, 1,900 users, and 29 million records in the system. Agreements have been reached to provide services in Wyoming. Wyoming is working on getting 100 users on Direct.

eBHIN. Wendie Baker reported that the project currently has 170 providers and over 3,000 records on the network. Plans are underway for Region I to join the network. The focus has been on the finalization and customization of the wait list referral system so that it is more manageable and not done by hand. The project received funding the Lincoln Endowment Fund to add the Peoples City Health Clinic to the network. Ms. Baker shared a sample Center Point Medications List. The project will be meeting later this month with NeHII to discuss using DIRECT to send behavioral health information to NeHII users with patient consent.

Wide River Technology Extension Center. Todd Searls reported that Wide River Technology Extension Center has met its goal of recruiting 1,000 providers. Ninety-four percent (94%) of rural providers have signed up. Over 670 physicians working with Wide River TEC are live on a certified EHR and more than 145 have already met the requirements for stage one meaningful use within the Medicare EHR Incentive Program.

A Meaningful Use summit will be held on April 4th, Anne Byers. Lt. Governor Rick Sheehy will be providing opening remarks. The afternoon panel will be discussing the future of health IT and how it will affect Nebraska and the nation. A social media network will be rolled out similar to Facebook. User groups will also be created.

Medicaid. Sarah Briggs reported that CMS has approved Nebraska's SMHP. The EHR incentive program plan will launch on May 7, 2011. Nebraska's Medicaid program has been conducting outreach activities to help providers prepare for the launch.

Nebraska Statewide Telehealth Network. Laura Meyers reported that in addition to the mobile technologies initiative, the project is looking at expanding the backbone across the state. An RFI has been released. The project is hosting three webinar luncheon series geared towards providers - 1st one will be on reimbursement; the 2nd one will be on services that can be provided including Veteran's Affairs; and the 3rd one will be on mobile technologies. The webinar series will be posted on UNMC website after they have been held.

Dr. Wycoff informed the Council that he presented on Nebraska's eHealth efforts in early February at an international congress in Portugal.

ADJOURN

With no further business, Ms. Morien adjourned the meeting at 3:18 p.m.

Meeting minutes were taken by Lori Lopez Urdiales and reviewed by Anne Byers, Office of the CIO/NITC.

Nebraska Hospital and Independent Lab Census

As part of their plan updates due to the Office of the National Coordinator (ONC) in the late spring of 2012, all State Health Information Exchange were required to conduct a census of the hospital and independent laboratories within their respective states. The primary objective of the census was to determine the number of labs sending electronic lab results to ambulatory provider outside of their organization in a structured format in calendar year 2011. In addition, the ONC required that each lab be asked if they were following the Logical Observation Identifiers Names and Codes (LOINC) standards.

The ONC released the PIN (program information notice) with this requirement on February 8, 2012. While the ONC did not mandate a particular instrument or methodology, NORC did provide two brief instruments for the hospital and independent lab census nearly a month later on March 3, 2012. NORC recommended a standard mail survey using a modified Dillman approach to maximize response rate. They estimated a window of 30-60 days to complete such a process. At the time the recommendation was made, the due date for the report was 67 days out, which made it impractical to use the prescribed methodology. The UNMC research team chose to conduct a telephone census. Using a single trained caller and a script that incorporated the NORC surveys, it was expected that the majority of labs in the state could be contacted within 5 business days.

The following summarizes the results of our census:

116 Hospital labs were identified using the CMS OSCAR system

4 Hospitals reported that they did not have a lab

3 Labs had disconnected phones

16 Of the identified labs were duplicates (had same phone number) or reported to be serviced by another lab in the listing

93 Unique, operating, hospital laboratories were contacted

9 Labs (9.7%) were considered non-responders

84 Labs (90.3%) completed the survey

Of the 84 completed responses:

Labs sending results to ambulatory providers outside of their organization electronically in a structured format in calendar year 2011:

Yes - 17 (20.23%)

No - 66 (78.57%)

Did not know - 2 (2.38%)

Of those submitting structured electronic results (n = 17), the proportion of results being sent to EHRs and web portals were:

	EHR	Web Portal
0%	1 (5.88%)	3 (17.65%)
1-24%	2 (11.76%)	2 (11.76%)
25-49%	2 (11.76%)	1 (5.88%)
50-74%	5 (29.41%)	3 (17.65%)
75-99%	5 (29.41%)	3 (17.65%)
100%	0 (0%)	0 (0%)
Do not know	2 (11.76%)	5 (29.41%)

Labs following LOINC standards for test results send to ambulatory providers outside of their organization in calendar year 2011

Yes - 13 (15.48%)

No - 63 (75%)

Did not know - 8 (9.52%)

Of those submitting structure electronic results, 5 out of 17 (29.41%) followed the LOINC standards on at least some of the results sent during 2011.

Three of the four labs (75%) with more than 500,000 billable tests were sending results in a structured electronic format compared to 7 out 21 labs (33.3%) billing for between 100,000 and 499,999 labs, and 7 out of 54 labs (12.96%) billing for fewer than 100,000 labs.

None of the lab managers, directors, and supervisors surveyed could confirm that their lab had implemented the LRI guide. (8 did not know and 76 responded no)

Similarly, no respondent could indicate which of the HL7 standards they were using.

42 Independent labs were identified using the CMS OSCAR system

3 Reported that they were not a lab

1 Reported that they did not send out lab results (research lab)

1 Lab was closed

37 Independent laboratories were contacted

2 Labs (5.41%) Refused to participate

2 Labs (5.41%) did not respond to repeated contacts

33 Labs (89.19%) completed the survey

Two corporations accounted for 18 unique lab sites. Results are presented for all 33 labs.

Of the 33 completed responses:

Labs sending results to ambulatory providers outside of their organization electronically in a structure format in calendar year 2011:

Yes - 25 (75.76%)

No - 8 (24.24%)

Did not know - 0 (0%)

Of those submitting structured electronic results (n = 25), the proportion of results being sent to EHRs and web portals were:

	EHR	Web Portal
0%	0 (0%)	0 (0%)
1-24%	1 (4%)	2 (8%)
25-49%	1 (4%)	1 (4%)
50-74%	9 (36%)	9 (36%)
75-99%	12 (48%)	11 (44%)
100%	2 (8%)	2 (8%)
Do not know	0 (0%)	1 (4%)

Labs following LOINC standards for test results send to ambulatory providers outside of their organization in calendar year 2011

Yes - 1 (3.03%)

No - 15 (45.45%)

Did not know - 17 (51.52%)

Of those submitting structure electronic results, 12 out of 25 (48%) reported that they did not know if they followed the LOINC standards on at least some of the results sent during 2011. Of the remaining 13 labs, 12 (48%) indicated that they did not follow the LOINC standards on any results.

One of the lab managers, directors, and supervisors surveyed could confirm that their lab had implemented the LRI guide. (13 did not know and 19 responded no)

Twelve labs, eleven from the same corporation, could indicate which of the HL7 standards they were using (HL7 2.3.1).



**BARRIERS TO ELECTRONIC PRESCRIBING:
NEBRASKA PHARMACISTS' PERSPECTIVE**

Lina Lander, ScD

Donald G. Klepser, PhD

Gary L. Cochran, PhD

Daniel Lomelin, BS

Marsha Morien, MSBA

**University of Nebraska Medical Center
College of Pharmacy and College of Public Health**

April 25, 2012

EXECUTIVE SUMMARY

Electronic prescribing (e-prescribing) and its accompanying clinical decision support capabilities have been promoted as means for reducing medication error and improving efficiency and there has been a coordinated effort to increase the utilization of e-prescribing and other healthcare information technologies the United States. The objectives of this study were to identify the barriers to adoption of e-prescribing among all non-participating Nebraska pharmacies and to describe how the lack of pharmacy participation impacts the ability of physicians to meet meaningful use criteria. We used open ended questions and structured questionnaire to capture participants' responses.

Of the 23 participants, 10 (43%) reported planning to implement e-prescribing sometime in the future due to transaction fees and maintenance costs as well as demand from customers and prescribers to implement e-prescribing. Nine participants (39%) reported no intention to e-prescribe in the future citing startup costs for implementing e-prescribing, transaction fees and maintenance costs, happiness with the current system, and the lack of understanding about e-prescribing's benefits and how to implement e-prescribing.

The barriers to e-prescribing identified by both late adopters and those not willing to accept e-prescriptions were similar and were mainly initial costs and transaction fees associated with each new prescription. For some rural pharmacies, not participating in e-prescribing may be a rational business decision. To increase participation, waiving or reimbursing the transaction fees, based on demographic or financial characteristics of the pharmacy, may be warranted.

INTRODUCTION

Since the mid-1990s a great deal of emphasis has been placed on the need to reduce medication errors. Electronic prescribing (e-prescribing) and its accompanying clinical decision support (CDS) capabilities have been promoted as means for reducing medication error and improving efficiency.¹⁻

⁴ In an attempt to realize the potential improvements in care and reductions in costs, there has been a coordinated effort to increase the utilization of e-prescribing and other healthcare information technologies in the United States.⁵ The Office for the National Coordinator of Health Information Technology (ONC) in the U.S. Department of Health and Human Services has been charged with leading national efforts to use the most advanced healthcare information technology and exchange of health information.⁵⁻⁶

The electronic transmission of prescriptions to pharmacies is an important criterion for physicians to achieve meaningful use and qualify for the associated financial incentives.⁶ Physicians, particularly those practicing in a rural setting with a limited number of local pharmacies, will have difficulty achieving meaningful use if those pharmacies do not accept e-prescriptions. For this reason, the states are required by the ONC to track the percentage of pharmacies that currently accept e-prescriptions and to establish a quarterly goal for increasing pharmacy participation.⁷ To accomplish these goals, states need an accurate list of retail pharmacies from which a numerator and denominator can be established. Further, they need to understand the barriers to adoption of e-prescribing in order to improve participation through education, incentives, or policy change.

In November 2011, 93% of community pharmacies nationwide were enabled to accept e-prescription versus 89% of pharmacies in Nebraska.[Surescripts Data] In rural Nebraska counties,

the participation is even lower at 85%. [Surescripts Data] While the vast majority of pharmacies are now accepting electronic prescriptions, the barriers to adoption by the remaining pharmacies have not been systematically evaluated. The objectives of this study were to identify the barriers to adoption of e-prescribing among all non-participating Nebraska pharmacies and to describe how the lack of pharmacy participation impacts the ability of physicians to meet meaningful use criteria. A better understanding of the barriers and the impact on meaningful use may allow the policymakers to address these concerns through policy change or education.

METHODS

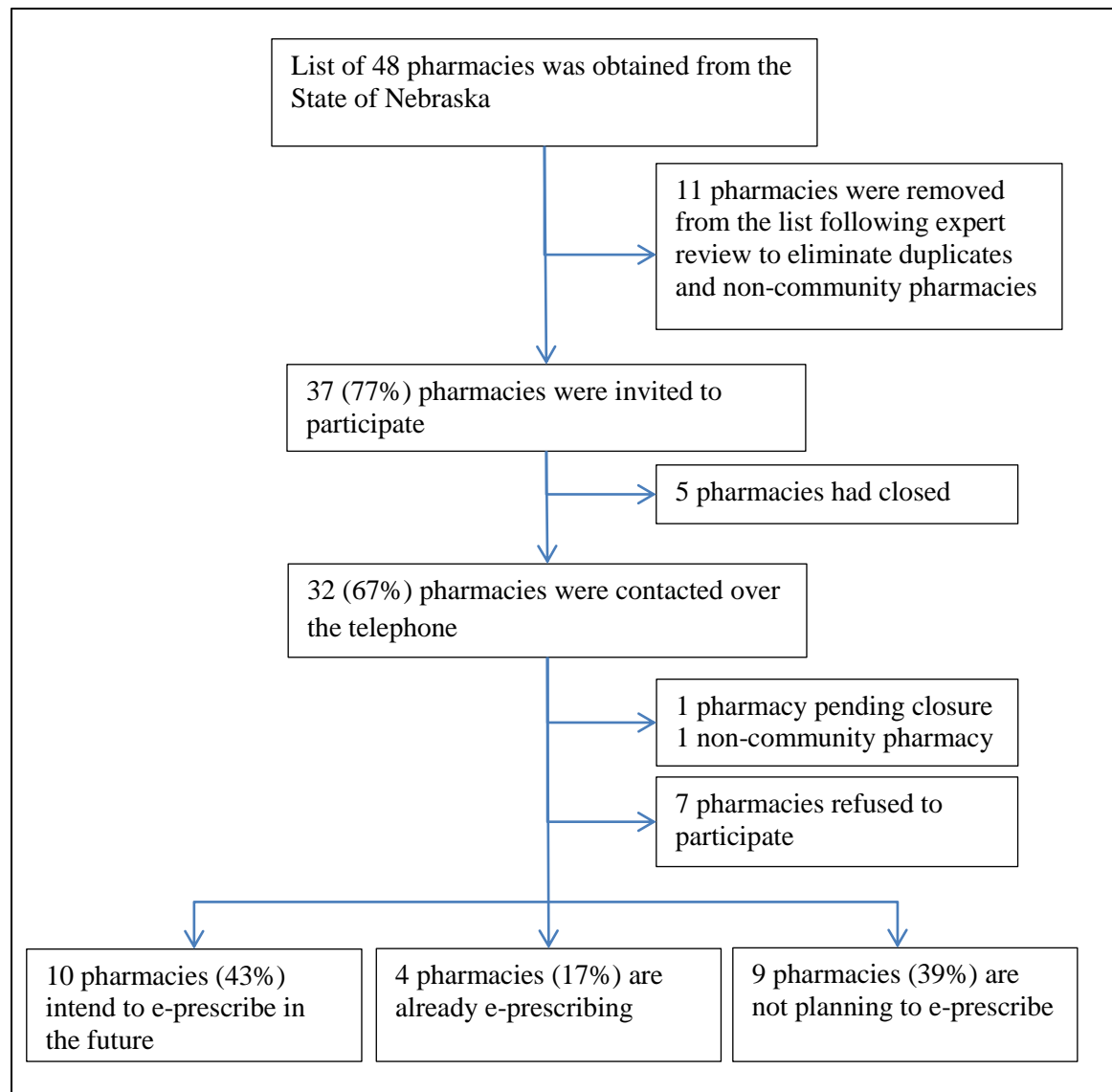
A list of 456 Nebraska pharmacies was obtained from the National Council for Prescription Drug Programs (NCPDP). Fifteen of those pharmacies were classified as either government or medical device manufacturers, leaving 441 retail community pharmacies according to the NCPDP classification. In addition, a list of 48 pharmacies that do not accept e-prescriptions was obtained from Surescripts (11%). Expert review (D.G.K) eliminated 11 pharmacies (23%) that were identified as duplicates and non-community serving, leaving 37 pharmacies available for structured telephone interviews (77%) (Figure1).

The study was approved by the Office of Regulatory Affairs of the University of Nebraska Medical Center. Participants were initially contacted through mailed invitation letters, then called over the telephone and invited to participate one week after mailing. Interviews were conducted over a two-week period in March of 2012. A total of 37 pharmacies were contacted over the phone. Of these, five were closed (14%), one was pending closure (3%), one was a non-community pharmacy (3%), and seven declined to participate (19%) leaving a sample of 23 pharmacies and participation rate of 77% (23 out of 30 eligible pharmacies).

Open ended questions were used to capture pharmacists' unprompted opinions. Participants were subsequently asked to select from a list of barriers to e-prescribe as read by the interviewer. These reasons included startup costs for implementing e-prescribing, lost productivity during initial implementation, transaction fees and maintenance costs, lack of demand or interest from customers and prescribers, insufficient prescription fill volume to gain efficiencies from e-prescribing, acceptable change to current workflow, access to network connectivity or expense, current system

is not working for the pharmacists or their customers, and lack of understanding about e-prescribing's benefits and how to implement it. Scripted responses in the 'intending to e-prescribe' and 'not intending to e-prescribe' groups were compared using Fisher's exact test.

Figure 1. Nebraska pharmacies that do not accept electronic prescribing – study participation flow chart



RESULTS

Of the 23 participants, 11 were pharmacists (48%), 10 owner/pharmacists (43%), and 2 pharmacy managers (9%). A total of 10 pharmacies (43%) reported planning to implement e-prescribing sometime in the future. Of these, 4 (40%) reported their intent to e-prescribe in the next 6 months. The unprompted reasons for implementing were costs (n=4), demand on behalf of the physicians (n=2), impending deadline (n=1), still receiving prescriptions over the phone (n=1), concern over usage of multiple pharmacies by one person (n=1), desire to keep up to date (n=1), concern over errors with sending and receiving (n=1), satisfaction with current practice of using fax (n=1), and lack of time to implement (n=1). Of those who intended to implement e-prescribing, transaction fees and maintenance costs was the most common barrier followed by lack of demand or interest from customers and prescribers to implement e-prescribing (Table 1).

Table 1. Barriers to e-prescribing as reported by pharmacists, Nebraska, 2012.

Scripted barriers to e-prescribe*	Intend to e-prescribe N=10	Do not intend to e-prescribe N=9	P-value**
Startup costs for implementing e-prescribing	4 (40%)	7 (78%)	0.170
Lost productivity during initial implementation	2 (20%)	4 (44%)	0.350
Transaction fees and maintenance costs	7 (70%)	7 (78%)	0.999
(Lack of) demand or interest from customers and prescribers	6 (60%)	3 (33%)	0.370
(In)sufficient prescription fill volume to gain efficiencies from e-prescribing	3 (30%)	3 (33%)	0.999
(Acceptable) change to current workflow	0	4 (44%)	0.033
Access to network connectivity or expense	3 (30%)	4 (44%)	0.650
Current system is (not) working for the pharmacists or their customers	1 (10%)	7 (78%)	0.006
(Lack of) understanding about e-prescribing's benefits and how to implement it	2 (20%)	5 (56%)	0.170

*Differences in script for those who intend and do not intend to implement e-prescribing are shown in brackets.

** Groups were compared using Fisher's exact test, significant differences are indicated in bold.

Nine pharmacists (39%) reported no intention to e-prescribe in the future. The unprompted reasons to not implement e-prescribing were cost of e-prescribing to be absorbed by the pharmacy (n=7), low profit margin (n=3), learning curve of using e-prescribing (n=3), concern with prescription errors (n=2), poor perception of e-prescribing (n=1), and concern over decrease in direct communication between physicians and pharmacists (n=1). The main scripted reasons for not implementing e-prescribing were startup costs for implementing e-prescribing, transaction fees and maintenance costs, happiness with the current system, and the lack of understanding about e-prescribing's benefits and how to implement e-prescribing.

These barriers were similar in the 'intend to e-prescribe' and 'do not intend to e-prescribe' groups with the exception of change to current workflow associated with e-prescribing implementation (0% vs. 44%, p-value 0.033) and satisfaction with the existing system (10% vs. 78%, p-value 0.006) (Table 1).

Although not statistically significant, pharmacies that expressed their intention to begin receiving e-prescriptions were more likely to have a competitor pharmacy in town (50% vs. 22% p=0.35) and were more likely to have one or more local physicians already sending e-prescriptions (70% vs. 44% p=0.37) than the pharmacies who do not intend to accept e-prescriptions (Table 2). Also, 50% of the pharmacies that intend to e-prescribe had a participating pharmacy within 10 miles, compared to 22% of pharmacies that do not intend to e-prescribe (p-value 0.35).

Table 2. Pharmacy access by e-prescribing participation, Nebraska, 2012.

Access indicator	Intend to e-prescribe N=10	Do not intend to e-prescribe N=9	P-value*
Number of other participating pharmacies in town, N (%)			0.35
0	5 (50%)	7 (78%)	
≥ 1	5 (50%)	2 (22%)	
Number of local e-prescribers, N (%)			0.37
0	3 (30%)	5 (56%)	
≥ 1	7 (70%)	4 (44%)	
Location of the to the nearest participating pharmacy, N (%)			0.35
< 10 miles	5 (50%)	2 (22%)	
≥ 10 miles	5 (50%)	7 (78%)	

* Groups were compared using Fisher's exact test.

DISCUSSION

A total of 18 of the 48 pharmacies (38%) listed as not accepting e-prescriptions were either not community pharmacies or were closed. Once those pharmacies were removed from the numerator and denominator, the percent participation in e-prescribing increased from 89.1% (393 participants out of 441 pharmacies) to 92.9% (393 participants out of 423 pharmacies). This 3.8% difference is important to note as states report their quarterly e-prescribing participation goals to the ONC.

The primary unsolicited barrier to accepting e-prescriptions was the transaction fee associated with each new prescription. While physicians are eligible to receive bonuses for sending e-prescriptions, pharmacies must pay for the service through transaction fees. Because most reimbursement for prescriptions and consumer co-payments are fixed by third party insurers, pharmacies cannot recover the additional fees. Some evaluations of the impact of electronic prescribing estimate that increases in pharmacy efficiency would offset this additional expense. The workflow efficiencies actually gained by small independent pharmacies with low prescription volume have not been well described. Anecdotal evidence provided to our evaluation team included reductions in efficiency related to frequent calls to the prescriber to clarify prescriptions. These instances will likely persist until prescribing and pharmacy software matures and users become more familiar with the process. While improved efficiency may lead to tangible benefits in busy pharmacies, it is unclear how a small reduction in prescription processing time will allow a low volume rural pharmacy to increase sales or decrease labor expenses.

The similar barriers to e-prescribing identified by both late adopters and those not willing to accept e-prescriptions demonstrate that the concerns are widespread. Our findings also suggest that local

competition and physician demand are likely important drivers for pharmacies to begin accepting e-prescriptions, regardless of financial or other concerns. Pharmacies who expressed a willingness to begin accepting e-prescriptions were more likely to have a local e-prescriber (70% vs. 44%) and/or have a local competitor pharmacy already accepting e-prescriptions (50% vs. 22%) compared to pharmacies who do not plan to accept e-prescriptions. At the time of this study, prescriptions sent electronically by a physician but received at the pharmacy via facsimile machine satisfied the requirements for meaningful use for physicians without incurring a transaction fee to the pharmacy. This policy likely blunts pressure that could be placed on non-participating pharmacies by physicians – especially for those pharmacies with local competitors.

We must recognize that for some rural pharmacies, the issue of non-participation is not a reflection of a recalcitrant pharmacist; rather it may be a rational business decision. The financial impact of the transaction fees on profitability in small pharmacies is unknown. The addition of a transaction fee, combined with already low prescription volume and diminishing prescription reimbursement, will reduce profitability and could lead to the closure of some rural pharmacies in areas where access to healthcare providers is already limited. Waiving or reimbursing the transaction fees based on demographic or financial characteristics of the pharmacy is one potential option to improve participation.

Similarly, allowing small independent pharmacies to use the same fee negotiated by large chain pharmacies could significantly lower the additional expense and increase participation. In the interim, allowing the prescriber to continue to receive “credit” for e-prescribing to non-participating pharmacies via fax would allow some of the benefits of e-prescribing to be realized, such as

reducing errors associated with illegible prescriptions and using the physician's clinical decision support system to reduce prescribing errors, without the pharmacy incurring the additional fees.

The Federal and State governments must also decide the value of pushing states toward 100% participation. How much time and money should be spent tracking and encouraging the few remaining pharmacies to accept e-prescriptions? One of the primary reasons to pursue 100% participation is so that every prescriber has the opportunity to meet meaningful use. If a community with a non-participating pharmacy also has at least one additional pharmacy that accepts e-prescriptions, a physician can simply choose to send electronic prescriptions to a competitor. Our study indicates that while 7 of the 9 pharmacies who do not plan on accepting e-prescriptions are the sole pharmacy in the community, 5 of those 7 pharmacies do not have a local prescriber actively sending e-prescriptions.

While dissatisfaction with transaction fees is likely a universal barrier, our other findings may not be generalizable to more urban states. The majority of pharmacies in our census were independent and located in rural settings where the numbers of prescribers and competitor pharmacies were low. The drivers for adoption and barriers to implementation may be different for pharmacies in urban settings and other states.

CONCLUSIONS

The barriers to e-prescribing identified by both late adopters and those not willing to accept e-prescriptions were similar and were mainly initial costs and transaction fees associated with each new prescription. Local competition and physician demand, however, were important determinants for pharmacies to begin accepting e-prescriptions. For some rural pharmacies, not participating in e-prescribing may be a rational business decision. To increase participation, waiving or reimbursing the transaction fees, based on demographic or financial characteristics of the pharmacy, may be warranted.

REFERENCES

1. Abramson EL, Barrón Y, Quaresimo J, Kaushal R. Electronic prescribing within an electronic health record reduces ambulatory prescribing errors. *Jt Comm J Qual Patient Saf.* 2011;37(10):470-8.
2. Kannry J. Effect of e-prescribing systems on patient safety. *Mt Sinai J Med.* 2011;78(6):827-33.
3. Kaushal R, Kern LM, Barrón Y, Quaresimo J, Abramson EL. Electronic prescribing improves medication safety in community-based office practices. *J Gen Intern Med.* 2010;25(6):530-6.
4. Devine EB, Hansen RN, Wilson-Norton JL, Lawless NM, Fisk AW, Blough DK, Martin DP, Sullivan SD. The impact of computerized provider order entry on medication errors in a multispecialty group practice. *J Am Med Inform Assoc.* 2010 Jan-Feb;17(1):78-84.
5. The Office of the National Coordinator for Health Information Technology (ONC)
http://healthit.hhs.gov/portal/server.pt/community/healthit_hhs_gov__onc/1200 (accessed April 25, 2012)
6. State Health Information Exchange Cooperative Agreements Program.
<http://statehiereresources.org/> (accessed April 25, 2012)
7. Blumenthal D, Tavenner M. The “meaningful use” regulation for electronic health records. *N Engl J Med* 2010;363:501-504.
8. Get the Facts about State Health Information Exchange Program.
<http://healthit.hhs.gov/portal/server.pt?open=512&mode=2&objID=1834> (accessed April 25, 2012).



Program Information Notice

DATE: February 8, 2012

Document Number: ONC-HIE-PIN-002

SUBJECT: Requirements and Recommendations for the State Health Information Exchange Cooperative Agreement Program

TO: State Health Information Exchange Cooperative Agreement Program Award Grantees

As stated in the State Health Information Exchange Cooperative Agreement Program Funding Opportunity Announcement (FOA), the Office of the National Coordinator for Health Information Technology (ONC) may offer program guidance to provide assistance and direction to states and State Designated Entities (SDEs) that receive awards under the program (Grantees). This Program Information Notice (PIN) provides direction on the timing, content and review process for annual updates to Grantee Strategic and Operational Plans (SOPs). This cover letter provides a summary of recommendations and requirements spelled out in the PIN. Detailed guidance follows in the body of the document.

The State Health Information Exchange Cooperative Agreement Program is at a critical stage. Grantees are intensely focused on ensuring that providers have affordable and usable options to meet the health information exchange (HIE) requirements of Stage 1 Meaningful Use. The requirements include e-prescribing, receiving electronic structured lab results from labs and sharing care summaries electronically with other providers to support patient transitions. These are the basic exchange building blocks that will support numerous care improvements for patients including better treatment and diagnosis, improved chronic care and reductions in medication errors and unnecessary repeat testing. At a minimum, they require the availability of ubiquitous directed exchange—information can be *sent* and *received* easily, securely and electronically—replacing fax, mail and phone.

While these requirements may seem straightforward, the effort required to make rapid progress is considerable. According to the 2010 American Hospital Association survey, fewer than one fifth of all hospitals (19 percent) have a mechanism to share electronic patient information with ambulatory providers outside their systems. Fortunately, the vast majority of pharmacies already participate in e-prescribing. Many providers already receive electronic results from labs and many partners within the healthcare system, including EHR vendors and hospital systems, are supporting the development of exchange capacity, sharing this burden.

Grantees have the opportunity to leverage and take advantage of these local and private sector investments while providing the gap-filling services, policy support and core infrastructure needed to ensure that every provider has affordable exchange options and to connect these diverse exchange networks—including state-supported networks—avoiding the perpetuation of “information silos”.

When the conditions are right, we see adoption of health IT rapidly progressing in a steep curve. For instance, provider participation in e-prescribing almost doubled in the last year, increasing from 26 to 43

percent, according to SureScripts data. In 2012 we expect to see a similar progression for care summary and lab results exchange. The conditions are in place:

- These are foundational requirements for Meaningful Use and were established as programmatic expectations in the State HIE Program Information Notice (PIN) issued July 6th, 2010 (#ONC-HIE-PIN-001). Every Grantee has identified and is executing the most effective strategies and tactics to make rapid progress in their state and local environments.
- Every certified EHR can produce a care summary and incorporate a structured lab result.
- ONC, working with a community of on-the-ground implementers, has specified essential transport and content standards that support exchange of structured lab results and patient care summaries.¹
- In addition, and importantly, payment reforms such as medical home efforts and accountable care organizations and new initiatives such as Partnership for Patients² are providing new incentives, business cases, and market conditions for health information exchange and care coordination.

Building on guidance outlined in the 2010 PIN, our 2012 goal is clear - ensuring that providers have options to meet the health information exchange (HIE) requirements of Stage 1 Meaningful Use - including for e-prescribing, receiving structured electronic lab results and sharing care summaries. This PIN offers guidance to support rapid progress towards this goal:

- **Phasing:** Many Grantees have phased approaches in their approved Strategic and Operational Plans with the first phase strongly focused on enabling Stage 1 Meaningful Use requirements. If we are to achieve our goal this year, we must rapidly demonstrate the success and impact of these initial efforts.

Subsequent phases of grantees' work focus on value-added services and more sophisticated exchange infrastructure. These services are essential and will be in increasing demand due to new payment approaches. In this area, as in others, Grantees will need to be creative and resourceful in identifying the specific gaps they should fill and the services that will deliver business value, leveraging the assets, infrastructure and business motivation of the private sector. Grantees should consider a "building block" approach deploying modular services like provider directories, identity management and master patient indices that can support multiple phases of work.

- **Sustainability:** Rapid progress will require two types of sustainability steps from Grantees. Both should be addressed in sustainability plans.

1. In coordination with state Medicaid and health reform efforts, Grantees should work to increase demand for information and the business case for exchange through leadership actions and the

¹ Direct and SOAP for transport, consolidated Clinical Document Architecture (CDA) and Laboratory Results Interface specifications for care summary and lab exchange.

² <http://www.healthcare.gov/compare/partnership-for-patients/index.html>

use of policy and purchasing levers. This key policy leadership role was outlined in the 2010 PIN document:

A key role for states can be to provide leadership and direction to public and private stakeholders. States may also use policy and purchasing levers to extend and enhance existing HIE activities in the state so as to encourage key trading partners such as pharmacies and clinical laboratories to participate in electronic service delivery and to enable providers to meet Meaningful Use requirements.

2. Grantees should assure the business viability of any services they are directly providing, ensuring that the services deliver value, are in demand and are affordable (e.g., providers, payers or other stakeholders are willing and able to pay for them), fill gaps in the market and are easily adopted and used by providers.
- **Evaluation:** We are charting new waters. Incredible progress in health IT adoption and use has already been achieved in a short period. Our future progress and success rests on whether we can effectively learn from each other over the next two years. Openly and quickly sharing results will support ongoing progress, ensure we gain maximum value from limited resources and help us avoid repeating costly mistakes.
 - **Tracking Program Progress:** We have set a clear goal for 2012: ensuring that providers have options to meet the Stage 1 Meaningful Use exchange requirements. But how will we know if we are on track to get there? Consistent with the 2010 PIN, we are asking Grantees to set goals and track progress for each of the three key core HIE program requirements—care summary exchange, lab exchange and e-prescribing—as well as for public health reporting.

If you have any questions or require further assistance, please do not hesitate to contact your State HIE Project Officer.

Sincerely,



Farzad Mostashari
National Coordinator for Health Information Technology

PURPOSE

This Program Information Notice (PIN) provides program guidance to all grantees under the State Health Information Exchange Cooperative Agreement Program (State HIE Program) on:

- What is required for Strategic and Operational Plans (SOP) updates
- Phasing of program activities
- The contents and information that will be required for sustainability and evaluation plans
- Requirements and measures for tracking program progress

ONC encourages grantees to coordinate all activities with their State Medicaid programs to ensure program alignment and rapid progress.

APPLICABILITY

This policy is applicable to all ONC State Health Information Exchange Cooperative Agreement Program Grantees (Grantees), whether the Grantee is a state government or a state designated entity. This PIN provides additional guidance to support the overall reporting requirements outlined in the Notice of Grant Award (NOA).

DISCUSSION

Grantees shall submit annual updates to their SOPs as required in the Funding Opportunity Announcement (FOA). This PIN provides a detailed explanation of the timing and contents of these SOP updates.

1. GENERAL REQUIREMENTS

1.1 Deadlines

Grantees shall submit SOP updates every year. Grantees whose SOPs were approved in 2010 will have 90 days from the release of this PIN to submit their SOP update. Grantees whose SOPs were approved in 2011 will have 120 days from the release of this PIN to submit their SOP update. The SOP update for 2013 will be due one year after the 2012 deadline. Only the "Tracking Program Progress" component of the SOP update will be required in 2014. This is due at the end of January, 2014.

Note: Grantees should disregard the annual SOP submission dates found in the NOA implementation requirements.

1.2 Review Process

If updates to the SOP do not require approval of a new budget, do not propose a significant shift in strategy or in phasing and do not propose substantial new services, the Project Officer will review and give written approval for the SOP update.

If proposed changes to the SOP require approval of a new budget, propose a significant shift in strategy or in phasing or propose substantial new services, the Program Manager and/or Program Director will review and give written approval for the SOP update.

In cases where the state has re-written the SOP with a new overall approach and strategy, re-approval by the National Coordinator will be required.

During review of all SOP updates, Program staff may ask for revisions or adjustments to the SOP.

Until written approval of SOP updates is provided, the existing SOP will be in effect.

1.3 SOP Update Format

Grantees shall use the following format for SOP updates:

Section	Submit in First SOP Update	Submit in Subsequent SOP Updates
1. Changes in HIE Strategy	Complete and submit relevant sections of <i>Changes in HIE Strategy</i> (Appendix A)	Complete and submit relevant sections of <i>Changes in HIE Strategy</i> (Appendix A)
2. Sustainability Plan	Submit <i>Sustainability Plan</i> (see section 2 of this PIN for requirements)	Complete and submit "Sustainability" section in <i>Changes in HIE Strategy</i> in Appendix A
3. Program Evaluation	Submit <i>Program Evaluation Plan</i> (see section 4 of this PIN for requirements)	Submit <i>Annual Program Evaluation Results Report</i> (see section 4 of this PIN for requirements)
4. Privacy and Security Framework	Submit <i>Privacy and Security Framework</i> (additional program guidance will be provided)	Complete and submit "Privacy and Security Framework" section in <i>Changes in HIE Strategy</i> in Appendix A
5. Project Management Plan	Submit updated <i>Project Management Plan</i> for the upcoming year, including an updated staffing plan and an updated discussion of risks and mitigation strategies as outlined in PIN #ONC-HIE-PIN-001, released on July 6, 2010. The project management plan should include an update of major activities for the upcoming year including timelines and milestones.	
6. Tracking Program Progress	<p>Complete and submit <i>Tracking Program Progress</i> for relevant year (Appendix C)</p> <p>Descriptions of measures and sources are in Appendix B</p> <p>This section shall be included in the first SOP update. For subsequent years, all Grantees shall submit this section of the SOP update in January of each year (e.g., January 2013, January 2014 etc)</p>	

In addition to completing the above modules, grantees shall also submit a “track changes” version of their Strategic and Operational plans once any revisions and additions are approved by the Project Officer.

1.4 PHASING

Many Grantees have phased approaches in their approved SOPs with the first phase strongly focused on rapidly enabling Stage 1 Meaningful Use exchange requirements. Success in these initial phases will be critical, ensuring that every provider has options to share care summaries, receive electronic lab results and e-prescribe, providing critical implementation experience and allowing time to scope and develop policies and approaches to implement future phases.

In keeping with these objectives, Grantees will need to demonstrate the success of the current phase and submit plans for implementation of the next phase before transitioning from one phase to the other.

We recognize that many providers have existing exchange options that support them in meeting Meaningful Use exchange requirements. Therefore, success of the first phase can be demonstrated in two ways. The first focuses on adoption and use of services offered or enabled by Grantees while the second addresses use of exchange services by providers whether or not these services are provided by the Grantee.

Grantees *with phased approaches* shall meet one of two thresholds in order to move from Phase One to Phase Two of their SOPs:

1. The number of providers actively using services offered or enabled by the Grantee to support care summary or lab exchange is at least 30 percent of the Priority Primary Care Providers (PPCP) Regional Extension Center (REC) target (with a maximum of 1000). The actual providers served by the Grantee do not need to be those registered with the REC nor do they need to be primary care providers.
2. At least 50 percent of REC-registered providers who have reached “Milestone Two” (providers have registered with the REC and implemented an EHR) have an option they are actively using to share care summaries with other providers and receive electronic lab results. Grantees would need to work with the REC to collect this information.*

*As the number of providers who have reached Milestone Two increases over time, Grantees choosing this option should consult their Project Officer for an updated threshold number

See Appendix D for target values for the two thresholds for each state. Note that not every state has a phased approach in their approved Strategic and Operational Plan.

While the targets are short of our goal—that EVERY eligible provider has options to meet Meaningful Use exchange requirements—they demonstrate that adoption and use of exchange services to meet Meaningful Use has reached a critical tipping point.

Grantees with more than two phases of work should consult with their Project Officers to determine success metrics and milestones that must be met for Phases Two and Three before proceeding to the next phase.

Information outlining plans for the next phase and demonstration of success with the current phase can be submitted separately at any time or as part of the annual SOP updates. The Project Officer shall provide written approval prior to the Grantee's transition from one phase to another.

To assure steady progress and provide the time and resources needed to plan and effectively implement the next phase, we would not expect a rigid stop and start of phases. For instance, planning for Phase Two can occur in Phase One. Planning activities might include work planning, developing policy requirements, issuing RFPs and potentially pilot testing approaches that will be deployed in the next phase. Grantees should discuss specifics with their Project Officers.

2. SUSTAINABILITY

Grantees are expected to create the "conditions" for the sustainability of information exchange in the state and also outline viable business plans for the sustainability of services they are directly providing or funding. As stated in PIN #ONC-HIE-PIN-001, released on July 6, 2010, "the primary focus of sustainability should be on sustaining information sharing efforts, and not necessarily the persistence of government-sponsored health information exchange entities".

As stated in the previous PIN released on July 6, 2010 (#ONC-HIE-PIN-001):

ONC is concerned that HIE sustainability models that rely on mandated provider or hospital participation in specific HIE services offered by the state or SDE might inappropriately limit provider choices in the full array of information exchange alternatives, thereby threatening the ability of providers to achieve Meaningful Use, particularly where state-designated services are still limited or nonfunctional.

Grantees shall submit a sustainability plan as part of their first SOP update addressing these two distinct components:

Conditions for sustainability of health information exchange: The Grantee shall submit a strategy and coordination plan to create the business drivers for safe and secure health information exchange to support care transformation and provider achievement of Meaningful Use. The strategy and coordination plan may include use of policy levers, payment reforms and purchaser requirements. Examples include:

- a. Create demand for exchange through policy and purchasing levers. For example:
 - i. Medicaid uses reimbursement levers to encourage participating providers to electronically share visit summaries with primary care providers and patients.
 - ii. State encourages private plans to give preference to labs sending electronic lab results in a structured format in their lab networks.
 - iii. State includes health information exchange requirements in its state employee insurance plan contracts.
- b. Advance care transformation models and payment reform initiatives that increase demand for exchange, and deliberately incorporate health IT adoption and health information exchange requirements into these efforts.

- i. Accountable Care/Shared Savings Initiatives
 - ii. Health homes
 - iii. Pay for performance
 - iv. Integrated care for dual eligibles
- c. Foster systemic changes to support health information exchange
- i. Engage consumers to request their own electronic health information, demand HIT-enabled care and expect that providers will make their transitions safe and effective.
 - ii. Increase provider engagement and adoption.
- (1) **Business sustainability of services directly offered or enabled:** The grantee shall also submit a thorough and thoughtful business plan for the sustainability of any services directly offered or funded by the Grantee. The starting place for this plan is not, “how do I generate enough income to maintain my organization at the current level of operation”, but rather “which services will fill market gaps, and offer valuable, affordable exchange options that will be widely adopted and used.” This plan should:
- a. Offer a clear description of services offered and fees for those services to different participants
 - i. Describe how these fees were set, including adoption assumptions
 - ii. Include data on the current adoption and use
 - b. Provide evidence that there is demand for the services from participants
 - i. Describe who will be adopting services and to perform what exchange tasks
 - ii. Describe how services will provide value in a competitive market
 - c. Describe ongoing public or private contributions to support exchange services

As a condition of the grant, ONC expects that all grantees will meet the Meaningful Use exchange needs of eligible providers, including those serving Medicaid patients and rural and underserved communities. We recognize that there is a potential tension between offering services that are self-sustaining and serving communities and providers with the fewest resources. One way Grantees can resolve this tension is by offering affordable and easy-to-adopt exchange options.

3. TRACKING PROGRESS

Demonstrating progress and the tangible results of Grantee implementation efforts is critical for encouraging participation in HIE, maintaining provider/user buy-in and trust and establishing the long-term sustainability of health information exchange. Both local and national stakeholders are looking to understand how HIE Cooperative Agreement funds are enabling health information exchange and supporting providers in achieving Meaningful Use.

Consistent with and building on the PIN released on July 6, 2010 (#ONC-HIE-PIN-001), Grantees shall monitor and track key Meaningful Use HIE capabilities in the state. This PIN provides further clarity on measures, which include:

1. % pharmacies participating in e-prescribing

2. % clinical laboratories sending lab results electronically and in structured format
3. % providers and hospitals sharing patient care summaries electronically
4. % state health departments electronically receiving immunizations, syndromic surveillance, and notifiable laboratory results. These data will need to be collected at the state or sub-state level, depending on the approach to public health reporting in the state.

Grantees shall report on progress and set annual targets for these key measures in their first SOP update due in 2012 and then separately in January 2013 and January 2014.

Appendix C provides a format for states to use in reporting progress and setting targets for these key measures while Appendix B outlines measure definitions and data sources.

As outlined in Appendix B, ONC will provide state-level data showing annual progress for areas 1 and 3 above. Grantees will need to collect data to show annual progress for areas 2 and 4.

4. PROGRAM EVALUATION

As required by section 3013 of the HITECH Act, ONC will conduct a national program evaluation and will provide documented lessons learned, technical assistance and program guidance based on the results.

As stated in the FOA, Grantees must comply with the requirements of and cooperate with ONC in completing the national evaluation. In addition, Grantees must conduct an annual state-level program evaluation. The grantee's evaluation plan shall be included in the first SOP update. The plan should be no more than 3,000 words. Revisions to the evaluation plan and annual evaluation results shall be reported in subsequent SOP updates. The FOA requires Grantees to use at least two percent of their funds for state-level program evaluations. ONC will make the national evaluation results available to Grantees to support rapid learning and encourages Grantees to quickly and openly share their own evaluation results.

State's program evaluations should:

1. Describe the approaches and strategies used to facilitate and expand health information exchange in the program priority areas and other areas as appropriate for the state's strategy. Program priority areas that must be included are:
 - a. Laboratories participating in delivering electronic structured lab results
 - b. Pharmacies participating in e-prescribing
 - c. Providers exchanging patient summary of care records
2. Identify and understand conditions that support and hinder implementation of those strategies (e.g. how did your governance model or engagement with stakeholders support your strategy to increase lab exchange activity in your state?)
3. Analyze HIE performance in each of the key program priority areas (e.g., where did your state/territory begin at the start of the program and how have you progressed?) Grantees with operational health information exchange underway are encouraged to assess participant adoption and use (e.g. measure provider adoption) and analyze its impact (e.g. assess impact on care transitions, patient safety, duplicate lab test ordering, etc.)

4. Assess how the key approaches and strategies contributed to progress in these areas, including lessons learned.

The following elements are required for the *evaluation plan* that shall be submitted to ONC in the first annual SOP update:

- Aims of the evaluation (as noted above), including key evaluation questions that the Grantee seeks to address.
- Evaluation framework to assess the aims (e.g., context, process, outcomes)
- Evaluation methods including:
 - **Study Design:** describe the study design, which should include both qualitative and quantitative components. For quantitative analysis, the use of comparison or control groups or designs that assess change over time (pre-post) is suggested to enhance the validity of the findings.
 - **Study population:** describe the population to be included in the evaluation (e.g. providers, pharmacies, laboratories, etc.) Specify inclusion and exclusion criteria as appropriate, and the recruitment strategy.
 - **Data sources and data collection methods:** describe the data collection approach to answer key evaluation questions, which may include implementing surveys, analysis of existing survey data, focus groups, interviews and audit log data from HIE vendors.
 - **Data analysis:** describe the analytic methods that will be used including sample size.
- The following elements are required for the *annual evaluation results reports* that shall be submitted to ONC in the 2013 SOP update and 30 days after the end of the Program:
 - Updates or changes to evaluation plan (if any).
 - Progress on the evaluation (e.g. describe data collection efforts underway) and any issues encountered while conducting the evaluation.
 - Results and interpretation of those results. Findings can be summarized as briefs (3-5 pages) or peer-reviewed publications on key topics.
 - Implications of the evaluation findings for program implementation and strategy.

APPENDIX A - Changes to HIE Strategy

Domain/Sections	Short Description of Approved Portion of SOP that Grantee is Proposing to Change (include page numbers)	Proposed Changes	Reason for the Proposed Changes	Budget Implications of Proposed Changes
<i>Include in First and Subsequent SOP Updates</i>				
Overall HIE Strategy including Phasing				
Governance				
Technology				
Financial				
Business Operations				
Legal/Policy				
Strategies for e-Prescribing				
Strategies for Structured Lab Results Exchange				
Strategies for Care Summary Exchange				
<i>The Core Documents Are Required As Part Of First SOP Update. Changes Should be Indicated in Subsequent SOP Update</i>				
Sustainability				
Privacy and Security Framework				
Evaluation Plan				

APPENDIX B

Measure Definitions and Sources to be used in completing Tracking Program Progress (Appendix C)

PIN Priority	Numerator	Denominator	Source
1. % of pharmacies participating in e-prescribing	Number of pharmacies that sent or received any electronic new prescription, refill request, or refill response messages in December of the former year via Surescripts network	Total number of licensed pharmacies operating in the state (per NCPDP)	Surescripts/NCPDP data ONC will provide data to Grantees
2. % of labs sending electronic lab results to providers in a structured format ³	Number of hospital and independent clinical laboratories that send electronic lab results to ambulatory care providers in a structured format	Total number of hospital and independent clinical laboratories that respond to census	Numerator: data collected through Grantee's lab census (a sample instrument will be provided following the release of this PIN) Denominator: Census should target all labs in "hospital" and "independent" lab categories, including LabCorp and Quest, in CLIA OSCAR database (http://wwwn.cdc.gov/clia/oscar.aspx) Grantee assesses. ONC will provide a sample instrument.

³ **Structured format:** Documentation of discrete data using controlled vocabulary, creating fixed fields within a record or file, or another method that provides clear structure to information (is not completely free text).

PIN Priority	Numerator	Denominator	Source
<p>3. % of labs sending electronic lab results to providers using LOINC</p>	<p>Number of hospital and independent clinical laboratories that send electronic lab results to ambulatory care providers using LOINC</p>	<p>Total number of hospital and independent clinical laboratories that respond to survey</p>	<p>Numerator: data collected through Grantee's lab census</p> <p>Denominator: Census should target all labs in "hospital" and "independent" lab categories, including LabCorp and Quest, in CLIA OSCAR database (http://wwwn.cdc.gov/clia/oscar.aspx)</p> <p>Grantee assesses. ONC will provide a sample instrument.</p>
<p>4. % of hospitals sharing electronic care summaries with (a) unaffiliated hospitals and (b) unaffiliated providers</p>	<p>Number of non-federal acute care hospitals sharing electronic clinical care summaries with the following entities as reported in the AHA HIT Supplement survey:</p> <ul style="list-style-type: none"> a. Hospitals outside their system b. Ambulatory care providers outside their system 	<p>Total number of non-federal acute care hospitals responding to AHA HIT supplement survey</p>	<p>AHA HIT supplement survey</p> <p>ONC will provide data to Grantees annually. Grantees may expect an annual release in December or January.</p>

PIN Priority	Numerator	Denominator	Source
<p>5. % of ambulatory providers electronically sharing care summaries with other providers</p>	<p>Number of ambulatory care, office-based physicians who share electronic clinical summaries or summary of care records with other providers</p>	<p>Total number of ambulatory care, office-based physicians who responded to the survey</p>	<p>National Ambulatory Medical Care Survey (NAMCS) Electronic Medical Records (EMR) Supplement (also known as National Electronic Health Records Survey)</p> <p>ONC will provide data to Grantees annually. Grantees may expect an annual release in December or January.</p>
<p>6. Public Health agencies receiving ELR data produced by EHRs or other electronic sources in HL7 2.5.1 format with LOINC and SNOMED.</p>	<p>1 = Yes 0 = No (or %)</p>		<p>Grantee assesses</p>

PIN Priority	Numerator	Denominator	Source
<p>7. Immunization registries receiving electronic immunization data produced by EHRs in HL7 2.3.1 or 2.5.1 formats using CVX codes.</p>	<p>1= Yes 0= No (or %)</p>		<p>Grantee assesses</p>
<p>8. Public Health agencies receiving electronic syndromic surveillance data from hospitals produced by EHRs in HL7 2.3.1 or 2.5.1 formats (using CDC reference guide)</p>	<p>1= Yes 0= No (or %)</p>		<p>Grantee assesses</p>

PIN Priority	Numerator	Denominator	Source
<p>9. Public Health agencies receiving electronic syndromic surveillance ambulatory data produced by EHRs in HL7 2.3.1 or 2.5.1 formats.</p>	<p>1= Yes 0= No (or %)</p>		

APPENDIX C

See Appendix B for measure definitions and sources

Tracking Program Progress

Program Priority	Report in first SOP update		Report January, 2013		Report January, 2014	
	Status as of December, 2011	Target for December, 2012	Status as of December, 2012	Target for December, 2013	Status as of December, 2013	Target for end of grant period
1. % of pharmacies participating in e-prescribing						
2. % of labs sending electronic lab results to providers in a structured format ⁴						
3. % of labs sending electronic lab results to providers using LOINC						
4. % of hospitals sharing electronic care summaries with unaffiliated hospitals and providers						

⁴ Structured format: Documentation of discrete data using controlled vocabulary, creating fixed fields within a record or file, or another method that provides clear structure to information (is not completely free text).

Program Priority	Report in first SOP update		Report January, 2013		Report January, 2014	
	Status as of December, 2011	Target for December, 2012	Status as of December, 2012	Target for December, 2013	Status as of December, 2013	Target for end of grant period
5. % of ambulatory providers electronically sharing care summaries with other providers						
6. Public Health agencies receiving ELR data produced by EHRs or other electronic sources. Data are received using HL7 2.5.1 LOINC and SNOMED. Yes/no or %						
7. Immunization registries receiving electronic immunization data produced by EHRs. Data are received in HL7 2.3.1 or 2.5.1 formats using CVX code. Yes/no or %						

Program Priority	Report in first SOP update		Report January, 2013		Report January, 2014	
	Status as of December, 2011	Target for December, 2012	Status as of December, 2012	Target for December, 2013	Status as of December, 2013	Target for end of grant period
<p>8. Public Health agencies receiving electronic syndromic surveillance hospital data produced by EHRs in HL7 2.3.1 or 2.5.1 formats (using CDC reference guide).</p> <p>Yes/no or %</p>						
<p>9. Public Health agencies receiving electronic syndromic surveillance ambulatory data produced by EHRs in HL7 2.3.1 or 2.5.1.</p> <p>Yes/no or %</p>						

APPENDIX D - Threshold Levels to Demonstrate Phase One Success

State*	30% of REC Target (max of 1000)	50% of REC Providers at Milestone 2**
Alaska	300	90
Alabama	391	343
Arkansas	384	258
Arizona	587	295
California	1000	1682
Colorado	689	730
Connecticut	392	249
District of Columbia	300	234
Deleware	300	430
Florida	1000	965
Georgia	1000	1049
Hawaii	300	51
Iowa	360	156
Illinois	836	468
Indiana	660	616
Kansas	360	248
Kentucky	300	152
Louisiana	313	112
Massachusetts	746	786
Maryland	300	231
Maine	300	143
Michigan	1000	680
Missouri	350	934
Mississippi	300	345
North Carolina	1000	835
Nebraska	339	143
New Hampshire	300	400
New Jersey	1000	1155
New Mexico	311	213
New York	1000	2173
Ohio	1000	1851
Oklahoma	300	258
Oregon	802	715
Pennsylvania	1000	1152
Puerto Rico	1000	213
Rhode Island	300	242
South Carolina	300	314
South Dakota	321	53
Tennessee	403	590
Texas	1000	664
Virginia	686	694
Vermont	330	278
Wisconsin	488	472
West Virginia	300	223
States in Multi-State RECs		
Idaho	130	146
Minnesota	962	949
Montana	197	102
Nevada	200	197
North Dakota	118	117
Utah	239	234
Washington	581	652
Wyoming	103	54

*Territories: Please consult your Project Officer for thresholds for American Samoa, Commonwealth of the Northern Mariana Islands, Guam, and the Virgin Islands.

**Please confirm current threshold with your Project Officer at time of submission.



Program Information Notice

Document Number: ONC-HIE-PIN-003

Date: March 22, 2012

Document Title: Privacy and Security Framework Requirements and Guidance for the State Health Information Exchange Cooperative Agreement Program

To: State Health Information Exchange Cooperative Agreement Program Award Recipients

As stated in the State Health Information Exchange Cooperative Agreement Program Funding Opportunity Announcement (FOA), the Office of the National Coordinator for Health Information Technology (ONC) may offer program guidance to provide assistance and direction to states and State Designated Entities (SDEs) that receive awards under the program. This Program Information Notice (PIN) provides additional direction to states and SDEs receiving funding under the State Health Information Exchange Cooperative Agreement Program on privacy and security frameworks required as part of grantee strategic and operational plan (SOP) updates.

The National Quality Strategy sets three aims for improving health care in our country: better care, affordable care, and healthy people and communities. Information that is accurate, up to date, and available when and where a patient seeks care is the lifeblood of health care improvement and crucial to reaching these goals. The stage is set for the nation to make rapid progress on health information exchange (HIE) this year supporting achievement of the three-part aim.

This PIN guidance provides a common set of privacy and security rules of the road to assure provider and public trust and enable rapid progress in health information exchange to support patient care. It addresses concerns from State leaders and other stakeholders that health information exchange efforts have been hampered and slowed by the lack of consistent approaches to core privacy and security issues and responds to requests for clear national guidance.

The guidance in this PIN builds from the privacy and security and governance recommendations of the Health IT Policy Committee as well as the *Nationwide Privacy and Security Framework for Electronic Exchange of Individually Identifiable Health Information*¹.

¹ http://healthit.hhs.gov/portal/server.pt/community/healthit_hhs_gov_privacy_security_framework/1173

This PIN guidance will be used by State Health Information Exchange Cooperative Agreement recipients to establish robust privacy and security policies and practices for health information exchange services as outlined in the [Funding Opportunity Announcement \(FOA\)](#) and in the [first PIN issued by the State HIE Program](#).

But the guidance will also be of great utility to state policy leaders and other stakeholders working diligently to establish common privacy and security policies and practices for communities, regions and states to enable provider and public trust and support rapid progress in health information exchange. This PIN can serve as a framework and offer specific direction and guidance to these efforts.

If you have any questions or require further assistance, please contact your Project Officer.

Sincerely,

Farzad Mostashari

National Coordinator for Health Information Technology

PURPOSE

This PIN provides direction to states and SDEs receiving funding under the State Health Information Exchange Cooperative Agreement Program on approaches to ensuring private and secure health information exchange of individually identifiable health information (IIHI) and on requirements for privacy and security frameworks submitted as part of 2012 annual updates to grantee SOPs.

APPLICABILITY

This guidance is applicable to all ONC State Health Information Exchange Cooperative Agreement Program recipients (hereafter referred to as “recipients”), whether the recipient is a state government or a state designated entity (SDE).

Please note that the terms “shall” and “should” are used in very specific ways in this document. “Shall” represents a mandatory action while “should” reflects a recommended course of action within the State HIE Program.

The requirements and guidance discussed in this PIN are not intended to and do not supercede any applicable provisions of Federal or State law, including the Health Insurance Portability and Accountability Act of 1996 (HIPAA) and its implementing regulations.

REQUIREMENTS FOR SUBMISSION

As part of their 2012 annual SOP updates, recipients shall submit their privacy and security frameworks consisting of all relevant statewide policies and practices adopted by recipients, and any operational policies and practices for health information exchange services being implemented by the recipient or funded in whole or in part with federal cooperative agreement funds. Please refer to Appendix A to determine which domains and specific guidance are applicable to the specific HIE architectural approach the recipient is taking and must be addressed. Recipients may use the template in Appendix A as a guide and tool for completing the privacy and security framework for 2012 SOP updates.

DISCUSSION

Recipients shall use this PIN guidance to do the following:

- Determine which domains and relevant guidance need to be addressed based on the architectural approach the recipient is taking (see Appendix A).
- Review existing privacy and security policies and practices to identify where the recipient’s approach aligns with the specific guidance provided for each domain (see “State Health Information Exchange Cooperative Agreement Program Guidance on Privacy and Security Frameworks”), and where gaps exist.
- Where privacy and security policies and practices align with the specific guidance provided for each domain, include these policies and practices as part of the 2012 annual SOP update.
- Where there are gaps in recipient privacy and security policies and practices, i.e., a domain is not addressed or policies are not in alignment with the specific guidance

provided for each domain, include a strategy, timeline and action plan for addressing these gaps in the 2012 SOP update.

Policies and practices may apply to HIE operations or to organizations and providers participating in exchange. Where recipients are funding multiple local health information organizations (HIOs) or other exchange efforts, Project Officers will provide guidance to cooperative agreement recipients on details to include in 2012 SOP updates.

State Health Information Exchange Cooperative Agreement Program Guidance on Privacy and Security Frameworks

This guidance addresses the core domains of the *Nationwide Privacy and Security Framework for Electronic Exchange of Individually Identifiable Health Information*², built from the fair information practice principles (FIPPs) that have guided privacy and security efforts worldwide for decades:

1. Individual access
2. Correction
3. Openness and transparency
4. Individual choice
5. Collection, use and disclosure limitation
6. Data quality and integrity
7. Safeguards
8. Accountability

State HIE Cooperative Agreement Program recipients should use the following guidance to evaluate their current privacy and security policies and practices and determine if alignment gaps exist. State policy makers and other stakeholders can use the guidance to determine, assess and fill gaps in current policies and practices to assure trusted health information exchange. The guidance outlines a core set of privacy and security expectations that should be consistently applied, but it is not exhaustive. Recipients will have additional policies and requirements that are critical to their efforts.

Please refer to Appendix A to determine which domains should apply, depending on the services provided and the architecture being used.

Domains: Individual Access and Correction

Individual Access. Individuals should be provided with a simple and timely means to access and obtain their individually identifiable health information (IIHI) in a readable form and format.

Correction. Individuals should be provided with a timely means to dispute the accuracy or integrity of their IIHI, and to have erroneous information corrected or to have a dispute documented if their requests are denied.

Specific Guidance

Where HIE entities store, assemble or aggregate IIHI, such as longitudinal patient records with data from multiple providers, HIE entities should make concrete plans to give patients electronic access to their compiled IIHI and develop clearly defined processes (1) for individuals to request

² http://healthit.hhs.gov/portal/server.pt/community/healthit_hhs_gov_privacy_security_framework/1173

corrections to their IHI and (2) to resolve disputes about information accuracy and document when requests are denied.

Domain: Openness and Transparency

Openness and transparency. There should be openness and transparency about policies, procedures, and technologies that directly affect individuals and/or their individually identifiable health information.

Specific Guidance

Individuals should be able to determine what information exists about them, how it is collected, used or disclosed and whether they can exercise choice over any of these elements. Where HIE entities store, assemble or aggregate IHI, individuals should have the ability to request and review documentation to determine who has accessed their information or to whom it has been disclosed. All policies and procedures consistent with the recipient's Privacy and Security Framework should be communicated to individuals in a manner that is appropriate and understandable.

HIE policies should make publicly available a notice of data practices describing why IHI is collected, how it is used, and to whom and for what reason(s) it is disclosed. This notice should be:

1. Simple, understandable, and at an appropriate literacy level.
2. Highlight, through layering or other techniques the disclosures and uses that are most relevant (for example, the notice of privacy practice could have a summary sheet followed by a description of actual use and disclosure practices).
3. Adhere to obligations for use of appropriate language(s) and accessibility to people with disabilities.

HIE policies should also encourage health care providers to be open and transparent with patients about their privacy and security practices and to discuss HIE with their patients.

Domain: Individual Choice

Individual Choice. Individuals should be provided a reasonable opportunity and capability to make informed decisions about the collection, use and disclosure of their individually identifiable health information. Individuals should be able to designate someone (family member, caregiver, domestic partner or legal guardian) to make decisions on their behalf. This process should be fair and not burdensome.

Specific Guidance

Where HIE entities serve solely as information conduits for directed exchange of IHI and do not access IHI or use IHI beyond what is required to encrypt and route it, patient choice is not

required beyond existing law. Such sharing of IIHI from one health care provider directly to another is currently within patient expectations.

Where HIE entities store, assemble or aggregate IIHI beyond what is required for an initial directed transaction, HIE entities should ensure individuals have meaningful choice regarding whether their IIHI may be exchanged through the HIE entity. This type of exchange will likely occur in a query/response model or where information is aggregated for analytics or reporting purposes.

A patient's *meaningful choice* means that choice is:

1. Made with advance knowledge/time;
2. Not used for discriminatory purposes or as condition for receiving medical treatment;
3. Made with full transparency and education;
4. Commensurate with circumstances for why IIHI is exchanged;
5. Consistent with patient expectations; and
6. Revocable at any time.

Both opt-in and opt-out models can be acceptable means of obtaining patient choice provided that choice is meaningful (i.e., use of either model must meet the requirements described above and not be limited to, for example, a provider's boilerplate form or reliance on the patient to read material posted on a provider's waiting room wall or website).

Where meaningful choice is required, HIE entities should either (1) directly ensure patients have the opportunity for meaningful choice; or (2) ensure that the health care providers for which it facilitates electronic health information exchange provide individuals with meaningful choice regarding the exchange of their IIHI. Choice should be offered to each patient on a prospective basis and periodically renewed.

Attention should be paid to minimizing provider burden.

Individuals should have choice about which providers can access their information. In addition, recipients are encouraged to develop policies and technical approaches that offer individuals more granular choice than having all or none of their information exchanged.

Domain: Collection, Use and Disclosure Limitation

Collection, Use and Disclosure Limitation. Individually identifiable health information should be collected, used and/or disclosed only to the extent necessary to accomplish a specified purpose and never to discriminate inappropriately. This information should only be collected, used or disclosed to accomplish a specific purpose, and purposes of information exchange should be specified.

Specific Guidance

Providers requesting or accessing IIHI by electronic means for “treatment” should have or be in the process of establishing a treatment relationship with the patient who is the subject of the requested information. The means of verifying whether such a relationship exists could include attestation or artifacts such as patient registration, prescriptions, consults, and referrals.

In principle, a health care provider should only access the minimum amount of information needed for treatment of the patient.

This guidance does not apply to de-identified data and would not otherwise apply to public health authorities that are legally authorized to receive the requested information. Neither does the guidance apply to situations where the patient has clearly and specifically given permission to the provider to access his/her information for treatment of another patient. For example, a woman could give permission for her health information to be accessed by a health care provider for treatment of her sister.

Domain: Data Quality and Integrity

Data Quality and Integrity. Persons and entities should take reasonable steps to ensure that individually identifiable health information is complete, accurate and up to date to the extent necessary for the person’s or entity’s intended purposes and has not been altered or destroyed in an unauthorized manner.

Specific Guidance

Where HIE entities store, assemble or aggregate IIHI, they should implement strategies and approaches to ensure the data exchanged are complete and accurate and that patients are correctly matched with their data. Processes should also be developed and documented to detect, prevent, and mitigate any unauthorized changes to, or deletions of, individually identifiable health information.

HIE entities that store, assemble or aggregate IIHI should also develop processes to communicate corrections in a timely manner to others with whom this information has been shared.

Recipients should describe their patient matching approach including the accuracy threshold achieved.

Domain: Safeguards

Safeguards. Individually identifiable health information should be protected with reasonable administrative, technical and physical safeguards to ensure its confidentiality, integrity and availability and to prevent unauthorized or inappropriate access, use or disclosure.

Specific Guidance

HIE entities should conduct a thorough assessment of risks and vulnerabilities. Please refer to the State HIE Security Checklist at: <http://hitrc-collaborative.org/confluence/display/hiecopprivacyandsecurity/Security>. This checklist may serve as a resource to assist HIE entities in evaluating their compliance with the HIPAA Security Rule and the Breach Notification Rule. Use of this checklist does not guarantee compliance; however, because safeguards must be evaluated within the specific context in which information is assembled, held and transmitted. It may be useful to retain a completed version of the checklist for record keeping.

Encryption. HIE entities should provide for the exchange of already encrypted IIHI, encrypt IIHI before exchanging it, and/or establish and make available encrypted channels through which electronic health information exchange could take place.

Authentication and Authorization. An HIE entity should only facilitate electronic health information exchange for parties it has authenticated and authorized. Verification of identity, authentication of users, and authorization of individuals could be accomplished directly by the HIE or indirectly by providers or other entities.

HIE entities should establish strong identity proofing and authentication policies for user access to electronic health information systems. Recipients should indicate the assurance level they are using in their privacy and security frameworks, using NIST 800-63 version 1.0.2³ as a guide and resource. The recommended assurance level is Level 3.

Domain: Accountability

Accountability. These principles should be implemented, and adherence assured, through appropriate monitoring and other means and methods should be in place to report and mitigate non-adherence and breaches.

Specific Guidance

HIE entities should ensure appropriate monitoring mechanisms are in place to report and mitigate non-adherence to policies and breaches. Reasonable mitigation strategies should be established and implemented as appropriate, including notice to individuals of privacy violations and security breaches.

³ csrc.nist.gov/publications/nistpubs/800-63/SP800-63V1_0_2.pdf

APPENDIX A. Templates for Guiding Statewide Privacy and Security Frameworks

Template 1

HIE Architectural Model: Point-to-Point Directed Exchange

Domain	Description of approach and where domain is addressed in policies and practices	Description of how stakeholders and the public are made aware of the approach, policies, and practices	Description of gap area and process and timeline for addressing <i>(if needed, use additional documents to describe and insert reference here)</i>
Required to address			
Openness and Transparency			
Collection, Use and Disclosure Limitation			
Safeguards			
Accountability			
Optional to address			
Individual Access			
Correction			
Individual Choice			
Data Quality and Integrity			

Template 2

HIE Architectural Model: Data Aggregation (HIE entities that store, assemble or aggregate individually identifiable health information, whether centrally or in a federated model)

Domain	Description of approach and where domain is addressed in policies and practices	Description of how stakeholders and the public are made aware of the approach, policies, and practices	Description of gap area and process and timeline for addressing <i>(if needed, use additional documents to describe and insert reference here)</i>
Required to address			
Individual Access			
Correction			
Openness and Transparency			
Individual Choice			
Collection, Use and Disclosure Limitation			
Data Quality and Integrity			
Safeguards			
Accountability			

Tracking Program Progress

Program Priority	Report May 2012		Report January 2013		Report January 2014	
	Status as of December 2011	Target for December 2012	Status as of December 2012	Target for December 2013	Status as of December 2013	Target for end of grant period
% of pharmacies participating in e-prescribing	90% Source: Surescripts Data Dec. 2011	92%				
% of labs sending electronic lab results to providers in a structured format	20% Source: UNMC Lab census conducted in March 2012					
% of labs sending electronic lab results to providers using LOINC	15% Source: UNMC Lab census conducted in March 2012					
% of hospitals sharing electronic care summaries with unaffiliated hospitals and providers	34% Source: AHA Survey, 2010	15% NeHII 14/95 hospitals as of Dec. 2012				
% of ambulatory providers electronically sharing care summaries with other providers	27% Source: NAMCS survey, 2010	21% NeHII 880 physicians and physician extenders out of 4, 266 as of Dec. 2012				
Public Health agencies receiving ELR data produced by EHRs or other electronic sources using HL7 2.5.1 LOINC and SNOMED.	100% Source: NDHHS Division of Public Health	100%				

	Report May 2012		Report January 2013		Report January 2014	
Program Priority	Status as of December 2011	Target for December 2012	Status as of December 2012	Target for December 2013	Status as of December 2013	Target for end of grant period
Immunization registries receiving electronic immunization data produced by EHRs in HL7 2.3.1 or 2.5.1 formats using CVX code.	100% Source: NDHHS Division of Public Health	100%				
Public Health agencies receiving electronic syndromic surveillance hospital data produced by EHRs in HL7 2.3.1 or 2.5.1 formats (using CDC reference guide).	100% Source: NDHHS Division of Public Health	100%				
Public Health agencies receiving electronic syndromic surveillance ambulatory data produced by EHRs in HL7 2.3.1 or 2.5.1.	100% Source: NDHHS Division of Public Health	100%				

Structured format: Documentation of discrete data using controlled vocabulary, creating fixed fields within a record or file, or another method that provides clear structure to information (is not completely free text)

Nebraska 2011 eHealth Goals and Progress

Jan. 2012

On March 15, 2010, the Nebraska Information Technology Commission received \$6.8 million in funding from the U.S. Department of Health and Human Services, Office of the National Coordinator for Health IT through the HITECH ACT enacted as part of the American Recovery and Reinvestment Act of 2009. The Nebraska Information Technology Commission is partnering with NeHII (Nebraska Health Information Initiative), eBHIN (Electronic Behavioral Health Information Network, the Nebraska Department of Health and Human Services Division of Public Health, and the Nebraska Statewide Telehealth Network to implement the cooperative agreement.

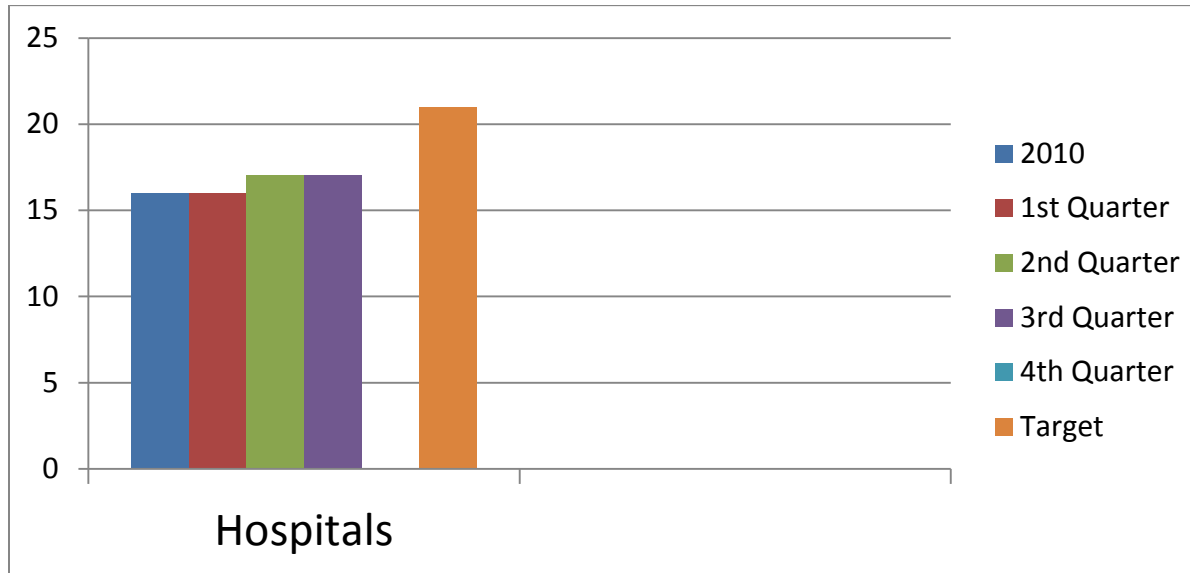
Over the past seven months, NeHII has begun implementation activities with 1 new hospital—Regional West Medical Center in Scottsbluff—and recruited 19 hospitals, including 15 Critical Access Hospitals, Boys Town National Research Hospital, Columbus Community Hospital, BryanLGH West and BryanLGH East. When these hospital implementations are completed in 2012, approximately two-thirds of the state's hospital beds will be covered by NeHII. NeHII now has over 2,000 users up from 1,288 on Dec. 31, 2010.

NeHII and the Nebraska Department of Health and Services Division of Public Health have been working with NeHII's vendor, Axolotl, to exchange information between the State of Nebraska's immunization registry, NESIIS, and NeHII. Phase I of the exchange is operational, allowing the exchange of data from NeHII's electronic health record (EHR) users to the immunization registry. Work continues on the other two phases of the project. NeHII, Axolotl, and the NDHSS Division of Public Health are also working on the exchange of information between NeHII and the State's disease reporting system (NEDSS) and the State's syndromic surveillance system.

NeHII began a pilot of the Direct project in late 2011 for results delivery via secure messaging with Pathology Services in North Platte.

Nebraska is also developing one of the country's first behavioral health information exchanges. eBHIN went live with its electronic health record and electronic practice management (EHR/EPM) system and data upload to Magellan, the State's administrative services organization, in the summer of 2011 in southeast Nebraska. In December 2011, behavioral health providers in Region I in the Panhandle went live with the EHR/EPM system. The HIE will go live in both regions early in 2012.

Participating Hospitals—NeHII



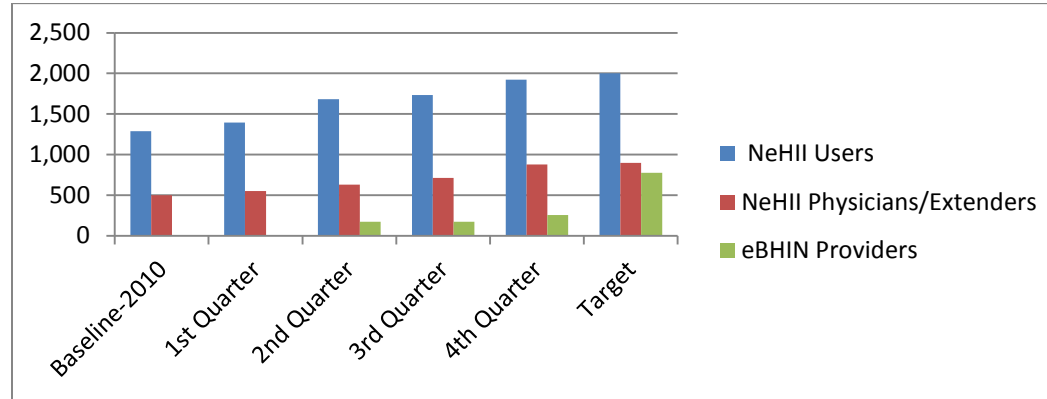
Participating Hospitals

Baseline—2010	1 st Quarter	2 nd Quarter	3 rd Quarter	4 th Quarter	Target-2011
NeHII 16 hospitals* 13% of Nebraska hospitals 39% of hospital beds	16 hospitals (13 Nebraska & 3 Iowa)	17 hospitals (14 Nebraska & 3 Iowa)	17 hospitals (14 Nebraska & 3 Iowa) *14 Critical Access Hospitals, 2 regional hospitals and 1 research hospital have signed participation agreements in Q3	17 hospitals (14 Nebraska & 3 Iowa) with Regional West Medical Center in implementation phase. 19 hospitals, including 15 Critical Access Hospitals, Boys Town National Research Hospital, Columbus Community Hospital, BryanLGH West and BryanLGH East have signed participation agreements.	NeHII 21 hospitals 22% of Nebraska hospitals 45% of hospital beds eBHIN 1 hospital

Participating Hospitals-NeHII

1 st Quarter	2 nd Quarter	3 rd Quarter	4 th Quarter
<ul style="list-style-type: none"> • Bellevue Medical Center - Bellevue, NE • Bergan Mercy Hospital - Omaha, NE • Children’s Hospital and Medical Center - Omaha, NE • Great Plains Regional Medical Center - Omaha, NE • Lakeside Hospital - Omaha, NE • Immanuel Hospital - Omaha, NE • Mary Lanning Memorial Hospital - Hastings, NE • Memorial Hospital -Schuyler, NE • Methodist Hospital - Omaha, NE • Methodist Women’s Hospital – Omaha, NE • Midlands Hospital -Papillion, NE • Nebraska Spine Hospital - Omaha, NE • The Nebraska Medical Center - Omaha, NE • Community Memorial Hospital - Missouri Valley, IA • Mercy Hospital - Corning, IA • Mercy Hospital - Council Bluffs, IA 	<ul style="list-style-type: none"> • Bellevue Medical Center - Bellevue, NE • Bergan Mercy Hospital - Omaha, NE • Children’s Hospital and Medical Center - Omaha, NE • Creighton University and Medical Center, Omaha, NE • Great Plains Regional Medical Center - Omaha, NE • Lakeside Hospital - Omaha, NE • Immanuel Hospital - Omaha, NE • Mary Lanning Memorial Hospital - Hastings, NE • Memorial Hospital -Schuyler, NE • Methodist Hospital - Omaha, NE • Methodist Women’s Hospital – Omaha, NE • Midlands Hospital -Papillion, NE • Nebraska Spine Hospital - Omaha, NE • The Nebraska Medical Center - Omaha, NE • Community Memorial Hospital - Missouri Valley, IA • Mercy Hospital - Corning, IA • Mercy Hospital - Council Bluffs, IA 	<ul style="list-style-type: none"> • Bellevue Medical Center - Bellevue, NE • Bergan Mercy Hospital - Omaha, NE • Children’s Hospital and Medical Center - Omaha, NE • Creighton University and Medical Center, Omaha, NE • Great Plains Regional Medical Center - Omaha, NE • Lakeside Hospital - Omaha, NE • Immanuel Hospital - Omaha, NE • Mary Lanning Memorial Hospital - Hastings, NE • Memorial Hospital -Schuyler, NE • Methodist Hospital - Omaha, NE • Methodist Women’s Hospital – Omaha, NE • Midlands Hospital -Papillion, NE • Nebraska Spine Hospital - Omaha, NE • The Nebraska Medical Center - Omaha, NE • Community Memorial Hospital - Missouri Valley, IA • Mercy Hospital - Corning, IA • Mercy Hospital - Council Bluffs, IA <p>• 14 Critical Access Hospitals, 2 regional hospitals and 1 research hospital have signed participation agreements in Q3</p>	<ul style="list-style-type: none"> • Bellevue Medical Center - Bellevue, NE • Bergan Mercy Hospital - Omaha, NE • Children’s Hospital and Medical Center - Omaha, NE • Creighton University and Medical Center, Omaha, NE • Great Plains Regional Medical Center - Omaha, NE • Lakeside Hospital - Omaha, NE • Immanuel Hospital - Omaha, NE • Mary Lanning Memorial Hospital - Hastings, NE • Memorial Hospital -Schuyler, NE • Methodist Hospital - Omaha, NE • Methodist Women’s Hospital – Omaha, NE • Midlands Hospital -Papillion, NE • Nebraska Spine Hospital - Omaha, NE • The Nebraska Medical Center - Omaha, NE • Community Memorial Hospital - Missouri Valley, IA • Mercy Hospital - Corning, IA • Mercy Hospital - Council Bluffs, IA <p>• 19 hospitals, including 15 Critical Access Hospitals, Boys Town National Research Hospital, Columbus Community Hospital, BryanLGH West and BryanLGH East have signed participation agreements.</p>

Nebraska HIE Users



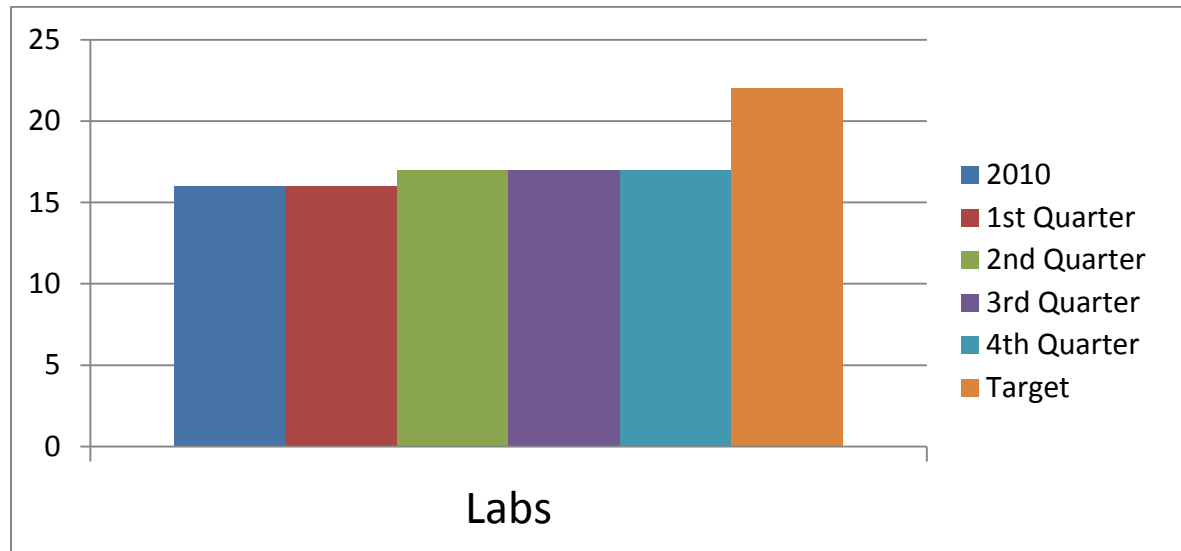
Nebraska HIE Users

Baseline-2010	1 st Quarter 2011	2 nd Quarter 2011	3 rd Quarter 2011	4 th Quarter 2011	Target 2011
<p>NeHII 1,288 total users, including physicians, mid-levels, nurses, pharmacists, and staff</p> <p>500 Physician and Physician Extenders out of 4,266 in state 12% of physicians and physician extenders</p>	<p>1,396 total users, including physicians, mid-levels, nurses, pharmacists, and staff</p> <p>554 physician and physician extenders</p>	<p>1,683 total users including physicians, mid-levels, nurses, pharmacists and staff</p> <p>633 physician and physician extenders</p> <p>eBHIN – 175 providers</p> <p>4% of behavioral health providers</p>	<p>1,773 total users including physicians, mid-levels, nurses, pharmacists and staff</p> <p>714 physician and physician extenders</p> <p>eBHIN – 175 providers</p> <p>4% of behavioral health providers</p>	<p>1,922 total users including physicians, mid-levels, nurses, long-term care providers, and home health)</p> <p>880 physicians and physician extenders</p> <p>eBHIN – 259 providers</p>	<p>2,000 total users, including physicians, mid-levels, nurses, pharmacists, and staff</p> <p>900 physicians and physician extenders out of 4,266 in state</p> <p>21% of physicians and physician extenders</p> <p>eBHIN 776 providers out of 3,929 behavioral health providers</p> <p>20% of behavioral health providers</p>

Health Plan Participation—NeHII

Baseline-2010	1st Quarter 2011	2nd Quarter 2011	3rd Quarter 2011	4th Quarter 2011	Target 2011
1 health plan (BlueCross BlueShield of Nebraska) currently participates	1 health plan	1	1	1	1

Participating Laboratories—NeHII



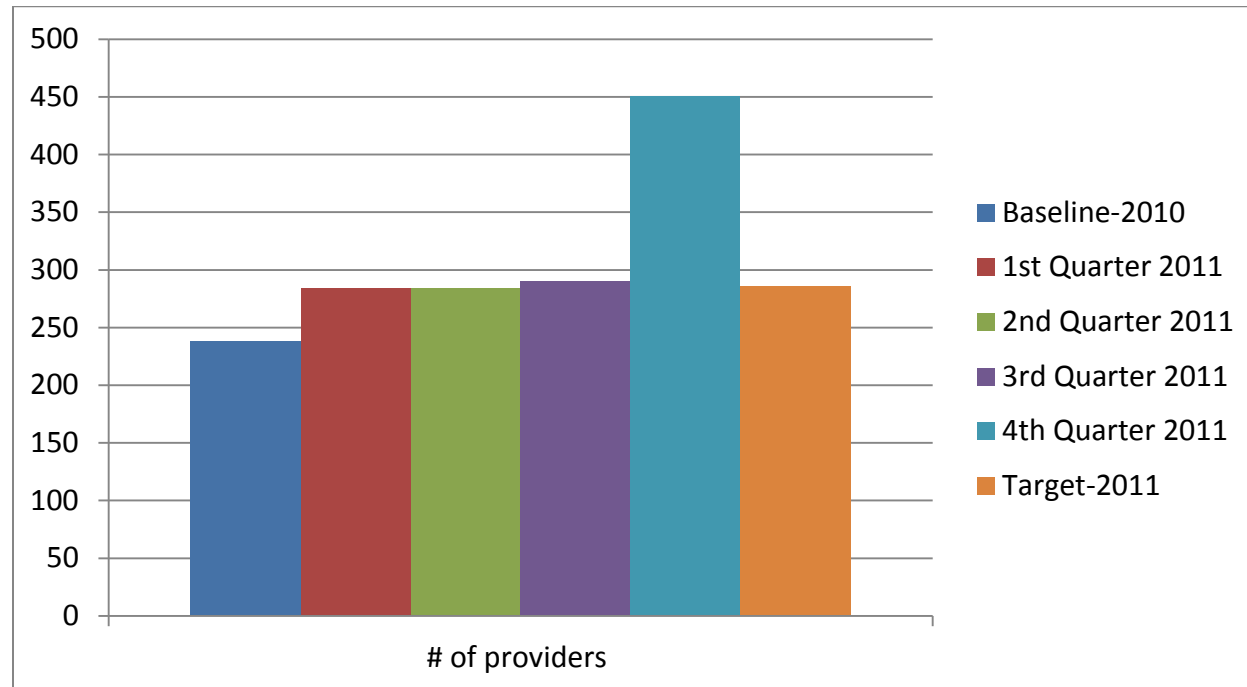
Laboratory Participation--NeHII

Baseline-2010	1 st Quarter 2011	2 nd Quarter 2011	3 rd Quarter 2011	4 th Quarter 2011	Target 2011
<p>NeHII 0 out of six independent reference labs 10 hospital labs out of 90 hospital labs 10% of 96 hospital and major independent reference labs</p>	<p>16 hospitals (13 Nebraska & 3 Iowa)</p>	<p>17 hospitals (14 Nebraska & 3 Iowa)</p>	<p>17 hospitals (14 Nebraska & 3 Iowa)</p> <p>*14 Critical Access Hospitals, 2 regional hospitals and 1 research hospital have signed participation agreements in Q3</p>	<p>17 hospitals (14 Nebraska & 3 Iowa)</p> <p>*14 Critical Access Hospitals, 2 regional hospitals and 1 research hospital have signed participation agreements in Q3</p>	<p>NeHII 1 out of six independent reference labs 21 hospital labs out of 90 hospital labs 21% of hospital and independent reference labs</p> <p>eBHIN N/A. eBHIN will most likely go through NeHII for laboratory information.</p>

Participating Laboratories--NeHII

1 st Quarter 2011	2 nd Quarter 2011	3 rd Quarter 2011	4 th Quarter 2011
<ul style="list-style-type: none"> • Bellevue Medical Center - Bellevue, NE • Bergan Mercy Hospital - Omaha, NE • Children's Hospital and Medical Center - Omaha, NE • Great Plains Regional Medical Center - Omaha, NE • Lakeside Hospital - Omaha, NE • Immanuel Hospital - Omaha, NE • Mary Lanning Memorial Hospital - Hastings, NE • Memorial Hospital -Schuyler, NE • Methodist Hospital - Omaha, NE • Methodist Women's Hospital – Omaha, NE • Midlands Hospital -Papillion, NE • Nebraska Spine Hospital - Omaha, NE • The Nebraska Medical Center - Omaha, NE • Community Memorial Hospital - Missouri Valley, IA • Mercy Hospital, Corning, IA • Mercy Hospital – Council Bluffs, IA 	<ul style="list-style-type: none"> • Bellevue Medical Center - Bellevue, NE • Bergan Mercy Hospital - Omaha, NE • Children's Hospital and Medical Center - Omaha, NE • Creighton University and Medical Center, Omaha, NE • Great Plains Regional Medical Center - Omaha, NE • Lakeside Hospital - Omaha, NE • Immanuel Hospital - Omaha, NE • Mary Lanning Memorial Hospital - Hastings, NE • Memorial Hospital -Schuyler, NE • Methodist Hospital - Omaha, NE • Methodist Women's Hospital – Omaha, NE • Midlands Hospital -Papillion, NE • Nebraska Spine Hospital - Omaha, NE • The Nebraska Medical Center - Omaha, NE • Community Memorial Hospital - Missouri Valley, IA • Mercy Hospital - Corning, IA • Mercy Hospital - Council Bluffs, IA 	<ul style="list-style-type: none"> • Bellevue Medical Center - Bellevue, NE • Bergan Mercy Hospital - Omaha, NE • Children's Hospital and Medical Center - Omaha, NE • Creighton University and Medical Center, Omaha, NE • Great Plains Regional Medical Center - Omaha, NE • Lakeside Hospital - Omaha, NE • Immanuel Hospital - Omaha, NE • Mary Lanning Memorial Hospital - Hastings, NE • Memorial Hospital -Schuyler, NE • Methodist Hospital - Omaha, NE • Methodist Women's Hospital – Omaha, NE • Midlands Hospital -Papillion, NE • Nebraska Spine Hospital - Omaha, NE • The Nebraska Medical Center - Omaha, NE • Community Memorial Hospital - Missouri Valley, IA • Mercy Hospital - Corning, IA • Mercy Hospital - Council Bluffs, IA <p>*14 Critical Access Hospitals, 2 regional hospitals and 1 research hospital have signed participation agreements in Q3</p>	<ul style="list-style-type: none"> • Bellevue Medical Center - Bellevue NE • Bergan Mercy Hospital - Omaha, NE • Children's Hospital and Medical Center - Omaha, NE • Creighton University and Medical Center, Omaha, NE • Great Plains Regional Medical Center - Omaha, NE • Lakeside Hospital - Omaha, NE • Immanuel Hospital - Omaha, NE • Mary Lanning Memorial Hospital - Hastings, NE • Memorial Hospital -Schuyler, NE • Methodist Hospital - Omaha, NE • Methodist Women's Hospital – Omaha, NE • Midlands Hospital -Papillion, NE • Nebraska Spine Hospital - Omaha, NE • The Nebraska Medical Center - Omaha, NE • Community Memorial Hospital - Missouri Valley, IA • Mercy Hospital - Corning, IA • Mercy Hospital - Council Bluffs, IA <p>*14 Critical Access Hospitals, 2 regional hospitals and 1 research hospital have signed participation agreements in Q3</p>

Providers Submitting to Immunization Registry



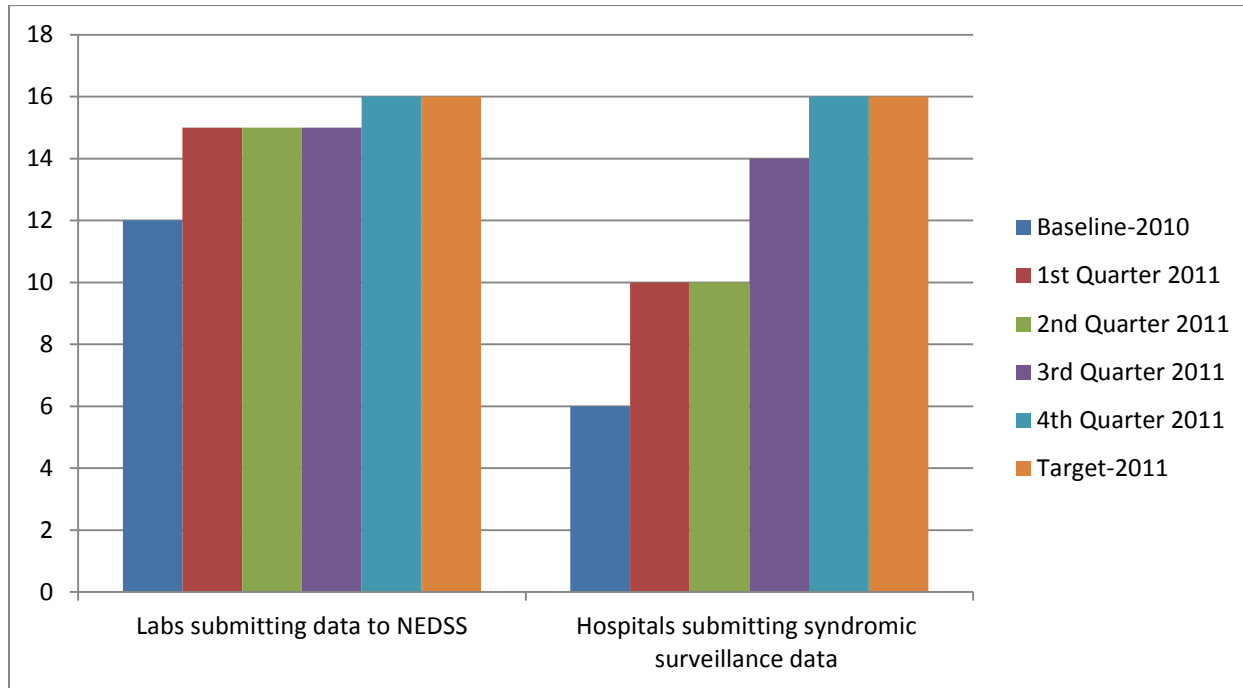
Providers Submitting to Immunization Registry

Baseline—2010	1 st Quarter	2 nd Quarter	3 rd Quarter	4 th Quarter	Target—End of 2011
238	284	284	290*	450**	An increase of 20% to 286

*Note: 31 providers were sending immunization data electronically at the end of the third quarter.

**Note: 450 providers were sending immunization data electronically at the end of the fourth quarter.

Public Health Reporting



Public Health Reporting

Public Health Reporting	Baseline—2010	1 st Quarter	2 nd Quarter	3 rd Quarter	4 th Quarter	Target—End of 2011
# of labs submitting data to NEDSS	12	15	15	15	16	An increase of 30% to 16
# of hospitals submitting data to the syndromic surveillance system	6	10	10	14	16	16

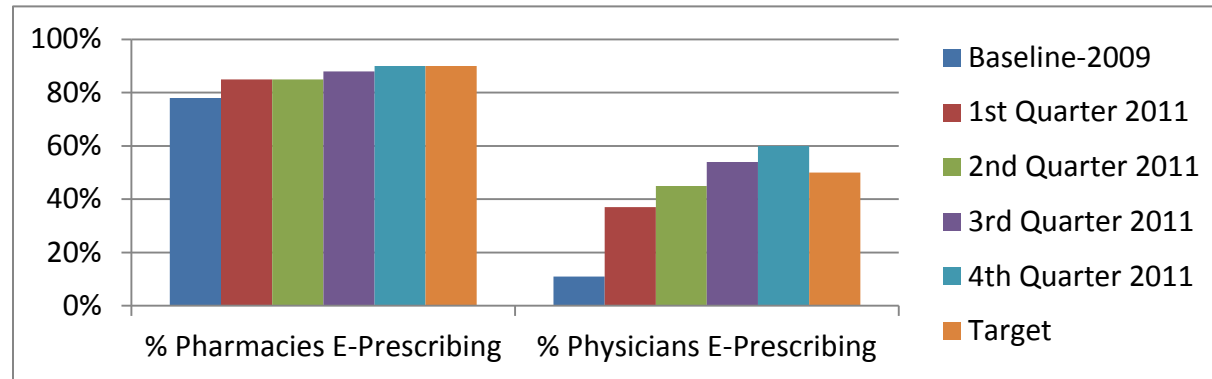
Public Health Reporting

Public Health Connections	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Labs submitting to NEDSS—Please list and include city	UNMC - Omaha Bryan LGH - Lincoln Columbus Community Hospital Faith Regional Medical Center - Norfolk Great Plains Regional-North Platte Regional West-Scottsbluff Children’s Hospital-Omaha ARUP-serves multiple cities in NE Cerner-serves multiple cities in NE Kearney Good Samaritan-Kearney Creighton Medical-Omaha PLab-Lincoln Quest-serves multiple cities in NE Catholic Health-Grand Island Alegent-Lincoln	UNMC - Omaha Bryan LGH - Lincoln Columbus Community Hospital Faith Regional Medical Center - Norfolk Great Plains Regional-North Platte Regional West-Scottsbluff Children’s Hospital-Omaha ARUP-serves multiple cities in NE Cerner-serves multiple cities in NE Kearney Good Samaritan-Kearney Creighton Medical-Omaha PLab-Lincoln Quest-serves multiple cities in NE Catholic Health-Grand Island Alegent-Lincoln	UNMC - Omaha Bryan LGH - Lincoln Columbus Community Hospital Faith Regional Medical Center - Norfolk Great Plains Regional-North Platte Regional West-Scottsbluff Children’s Hospital-Omaha ARUP-serves multiple cities in NE Cerner-serves multiple cities in NE Kearney Good Samaritan-Kearney Creighton Medical-Omaha PLab-Lincoln Quest-serves multiple cities in NE Catholic Health-Grand Island Alegent-Lincoln	UNMC - Omaha Bryan LGH - Lincoln Columbus Community Hospital Faith Regional Medical Center - Norfolk Great Plains Regional-North Platte Regional West-Scottsbluff Children’s Hospital-Omaha ARUP-serves multiple cities in NE Cerner-serves multiple cities in NE Kearney Good Samaritan-Kearney Creighton Medical-Omaha PLab-Lincoln Quest-serves multiple cities in NE Catholic Health-Grand Island Alegent-Lincoln Fremont Area Medical Center
Hospitals submitting syndromic surveillance data—Please list and include city	York General Hospital Children’s Hospital-Omaha Great Plains Reg Med Center-North Platte Fremont Area Medical Center Beatrice Comm. Hospital The NE Medical Center-Omaha Nebraska Methodist Hosp – Omaha Mary Lanning Hospital-Hastings Falls City Comm. Medical Center Box Butte General Hospital	York General Hospital Children’s Hospital-Omaha Great Plains Reg Med Center-North Platte Fremont Area Medical Center Beatrice Comm. Hospital The NE Medical Center-Omaha Nebraska Methodist Hosp – Omaha Mary Lanning Hospital-Hastings Falls City Comm. Medical Center Box Butte General Hospital	Children’s Hospital-Omaha Great Plains Reg Med Center-North Platte Fremont Area Medical Center Beatrice Comm. Hospital The NE Medical Center-Omaha Nebraska Methodist Hosp – Omaha Mary Lanning Hospital-Hastings Falls City Comm. Medical Center Box Butte General Hospital McCook Community Hospital Providence Medical Center (Wayne)	Children’s Hospital-Omaha Great Plains Reg Med Center-North Platte Fremont Area Medical Center Beatrice Comm. Hospital The NE Medical Center-Omaha Nebraska Methodist Hosp – Omaha Mary Lanning Hospital-Hastings Falls City Comm. Medical Center Box Butte General Hospital McCook Community Hospital Providence Medical Center (Wayne) Crete Area Medical Center Box Butte Primary Care

Public Health Reporting--Transactions

Transaction Type	July –Dec 2011			
Immunizations into NESIIS	232,458			
Lab Results into NEDSS	65,501			
Cardiovascular Disease Syndromic Syndromic Surveillance transactions	14,007			
ED Syndromic Surveillance transactions	164,827			
Total	476,793			

E-Prescribing Adoption



E-Prescribing Adoption

Baseline-- End of 2009	1 st Quarter	2 nd Quarter	3 rd Quarter	4 th Quarter	Target— End of 2011
78% of community pharmacies activated for e-prescribing	85% of pharmacies are activated for e-prescribing (March 2011) Note: Two pharmacies joined NeHII	85% of pharmacies are activated for e-prescribing (May 2011) Note: Four more pharmacies joined NeHII, bring the total to six	88% of pharmacies are activated for e-prescribing (August 2011)	90% of community pharmacies are activated for e-prescribing (November 2011)	90% of community pharmacies activated for e-prescribing
11% of physicians in Nebraska routed prescriptions electronically	37% (1197 out of 3202) of physicians in Nebraska are routing prescriptions electronically (March 2011)	45% (1436 out of 3202) of physicians in Nebraska are routing prescriptions electronically (May 2011)	54% (2342 out of 3202) of physicians in Nebraska are routing prescriptions electronically (August 2011)	60% of physicians in Nebraska are routing prescriptions electronically (November 2011)	50% of physicians in Nebraska routing prescriptions electronically

Nebraska State HIE Cooperative Agreement

Evaluation Plan

AIM

To determine if Nebraska has achieved a functioning eHealth environment with widespread participation by providers and consumers and if investments in eHealth have led to improvements in health care quality and efficiency in Nebraska.

Key Evaluation Questions

- **Has Nebraska achieved a functioning eHealth environment with widespread participation by providers and consumers?**
 - Did participation in health information exchange by hospitals, physicians, and other providers increase?
 - Did the exchange of structured lab results increase?
 - Did care summary exchange increase?
 - Did pharmacy and prescriber participation in e-prescribing increase?
 - Did utilization of Direct increase?
 - Has usage of eBHIN's medication reconciliation module increased?
 - Has the number of providers electronically submitting data to the immunization registry increased?
 - Has the number of labs submitting data electronically to the Nebraska Electronic Disease Surveillance System (NEDSS) increased?
 - Has the number of hospital emergency departments submitting syndromic surveillance data increased?
 - Are most consumers willing to have their health information available through NeHII?
 - Are behavioral health consumers willing to have their information available through eBHIN?

- **Have investments in eHealth led to improvements in health care quality and efficiency in Nebraska?**
 - How satisfied are the providers with HIE?
 - What are the consumer concerns surrounding health information security and privacy?
 - What are the levels of awareness and expectations of health information technology among consumers?
 - What is the discrepancy rate between what the physician intended to prescribe and what is dispensed at the pharmacy? What are the common causes of medication errors that reach the patient?

- Does access to the results of diagnostic laboratory and radiology tests through the health information exchange reduce rate of redundant testing?
- Does access to formulary and eligibility information improve medication adherence and generic utilization rates by making that information available at the time of prescribing?
- What HIE data elements would be useful in the ER setting?
- What information not currently available in the HIE would be useful?
- What are the barriers to using HIE?
- Would changes in equipment, personnel, or care delivery be necessary to access HIE data in the emergency room setting?

Evaluation Framework

The following logic model shows the relationships between Nebraska’s strategic and operational plans, State HIE Cooperative Agreement funding and activities, outputs, outcomes, and impact.

Nebraska State HIE Logic Model

State Plan	State HIE Grant		Intended Results		
	Inputs	Activities	Outputs	Outcomes	Impact
Vision Goals Objectives	Grant Funding Personnel Equipment	HIE development activities	Expanded HIE capabilities	Functioning eHealth environment with widespread participation by providers and consumers	Improvements in health care quality and efficiency

Nebraska’s State HIE Evaluation framework ties tier one outcome measures and tier two impact measures to objectives in Nebraska’s strategic eHealth plan.

Nebraska State HIE Evaluation Framework

Focus Area	Objectives	Tier One Outcome Measures—Is Nebraska achieving a functioning eHealth environment with widespread participation by providers and consumers?	Tier Two Impact Measures—Are investments in eHealth leading to improvements in health care quality and efficiency in Nebraska?

HIE Development	Support the development and expansion of health information exchanges to improve the quality and efficiency of care	NeHIE will track the number of hospitals using NeHIE.	
HIE Development	Support the development and expansion of health information exchanges to improve the quality and efficiency of care	NeHIE will track the number of physicians using NeHIE.	Focus groups of providers will be convened to determine what they see as the benefits and challenges of using health information exchange and health IT.
HIE Development	Support the development and expansion of health information exchanges to improve the quality and efficiency of care	NeHIE will track participation of long-term care facilities, pharmacists, dentists, home health providers, chiropractors, etc. eBHIN will track behavioral health providers participating in health information exchange.	
Care Summary Exchange Lab Results Delivery E-Prescribing Program Priority Area	Support meaningful use		Focus groups of providers will be convened to determine what they see as the benefits and challenges of using health information exchange and health IT, including cares summary exchange, lab results delivery, and e-prescribing.

HIE Development	Support the development of interconnections among health information exchanges in the state and nationwide	NeHII and eBHIN will develop policies, procedures, and technical infrastructure to exchange data between the two HIEs.	
Care Summary Exchange	Support meaningful use Support the development of interconnections among health information exchanges in the state and nationwide	<p>The exchange of patient care summaries within NeHII will be tracked.</p> <p>The exchange of patient care summaries between NeHII and eBHIN will be tracked.</p> <p>ONC will provide data on:</p> <ul style="list-style-type: none"> • % of hospitals sharing electronic care summaries with providers outside their system (AHA); • % of hospitals sharing electronic care summaries with hospitals outside their system (AHA); • % of hospitals sharing electronic care summaries with ambulatory providers outside their system (AHA); • % of ambulatory providers sharing care summaries with other providers (NAMCS). 	
Program Priority Area			
E-Prescribing	Support meaningful use	<p>The % of community pharmacists activated for e-prescribing will be tracked.</p> <p>Pharmacies which are not accepting e-prescriptions</p>	A study of e-prescribing usage and errors will be conducted to learn more about the benefits of e-prescribing and the prevalence and sources of errors.

Program Priority Area		will be surveyed to learn more about barriers.	
Program Priority Area	Support meaningful use	The % of physicians e-prescribing will be tracked.	
Program Priority Area	Support meaningful use	<p>The number of labs participating in NeHII will be tracked.</p> <p>ONC will provide data on:</p> <ul style="list-style-type: none"> • % of hospitals sharing laboratory results electronically with providers outside their system (AHA, roll up); • % of hospitals sharing laboratory results electronically with hospitals outside their system (AHA); • % of hospitals sharing laboratory results electronically with ambulatory providers outside their system (AHA); • % of office-based 	A study will be done to determine if the rate of redundant diagnostic radiology testing has decreased since the implementation of HIE.

		<p>physicians able to view lab results electronically (NAMCS);</p> <ul style="list-style-type: none"> • % of office-based physicians able to send lab orders electronically (NAMCS). <p>Labs will be surveyed annually to determine their ability to send lab results in a structured format and their ability to send lab results using LOINC.</p> <p>NeHII will query the number of lab queries when/if this functionality is available. (This information will not be available until NeHII has implemented the Axolotl Discovery Reporting Tool. This tool is still in development.)</p>	
HIE Development Quality of Care	<p>Support the development and expansion of health information exchanges to improve the quality and efficiency of care</p> <p>Support meaningful use</p>		<p>A study will be done to determine what is the value of health information exchange in the emergency department.</p>

HIE Development Quality of Care	Support the development and expansion of health information exchanges to improve the quality and efficiency of care Support meaningful use	Use of the eBHIN medication reconciliation module through each transition of care from one healthcare setting to another will be tracked to see if usage increases.	A study will be done to determine if there a decrease in re-hospitalization of behavioral health patients associated with a single episode of care i.e. demonstrating reduction in the 30-day readmission rate.
HIE Development Public Health	Support meaningful use Encourage the electronic exchange of public health data	The number of providers electronically submitting data to the immunization registry will be tracked.	
HIE Development Quality of Care	Support meaningful use Encourage the electronic exchange of public health data	The number of labs electronically submitting data to NEDSS will be tracked.	
HIE Development Quality of Care	Support meaningful use Encourage the electronic exchange of public health data	The number of hospital emergency departments electronically submitting syndromic surveillance data will be tracked.	
HIE Development	Support the development of a sustainable business model for building and maintaining health information exchange in Nebraska	NeHII and eBHIN will develop sustainable business models which will be included in plan updates submitted to ONC.	

HIE Development Privacy and Security	Ensure the security of health information exchange	eBHIN and NeHII will have 0 reportable data breaches.	
HIE Development Privacy and Security Consumer Engagement	Continue to address health information security and privacy concerns of providers and consumers		Focus groups of consumers will be held to determine what they see as benefits and concerns.
HIE Development Privacy and Security Consumer Engagement	Build awareness and trust of health information technology	The opt-out rate from NeHII will be tracked. eBHIN will track their opt-in rate.	
Consumer Engagement	Improve health literacy in the general population	ONC will provide data on: <ul style="list-style-type: none"> • % of ambulatory care physicians able to provide patients with clinical summaries for each visit (NAMCS, Q19I); • % of hospitals capable of providing patients with an electronic copy of their health information (AHA, Q8). 	

Key Evaluation Research Projects

Provider Satisfaction with HIE

Specific Research Question: How satisfied are the providers with HIE?

Study Design: Focus groups and surveys will be utilized to determine provider satisfaction with HIE.

Study Population: A list of HIE users will be obtained from NeHII. Non-users will be recruited for a list of medical clinics obtained from the Health Professionals Tracking Service (HPTS). We will randomly select participants to focus groups and conduct continuous recruitment to include:

1. Pharmacies who do not accept e-prescriptions (as requested by the State)
2. HIE users and non-users including eBHIN and Direct Services
3. Providers from urban and rural practices
4. Providers from large and small practices such as tertiary or primary hospitals
5. All primary healthcare providers including: MD, DO, RN, PA, NP, Pharmacists, MD office managers who interact with HIE system.

Data Sources and Data Collection Methods:

We anticipate conducting 4 to 5 focus groups with 8 to 10 participants in each group. The following are partial list of questions to be discussed during focus groups to gain understanding of the providers' satisfaction with HIE.

- Which providers are using HIE?
- What are the characteristics of those not participating in HIE? Why did they choose not to participate? What would encourage them to participate?
- What are the providers using the HIE to do?
- Are providers satisfied with the ease of use and integration into their work flow?
- Do providers feel that they are better able to provide care by having more complete patient information at the point of care?
- Do the providers have concerns about HIE?
- What improvements/enhancements would the providers like to see?
- What software are the providers using?
- What are the advantages and disadvantages of sharing health information?

Survey questions and response options will be based on feedback and discussion obtained during focus groups to gain a broader understanding of the provider satisfaction with HIE. We will use the last focus group to pilot test a draft of the questionnaire. We will also ask experts in the field to review the survey draft for clarity, completeness, and to establish face validity.

An e-mail distribution list of all healthcare clinics will be purchased from the Health Professionals Tracking Service (HPTS). The survey will ask questions about practice and usage of HIE, practice location and type, years in practice, satisfaction with the current system, areas of concern, and suggested areas for improvement. This survey will help provide an overview of provider satisfaction with HIE and potential future directions for NeHII.

Data Analysis: Qualitative and quantitative data will be tabulated and analyzed to assess providers' satisfaction with HIE.

Consumer satisfaction

Specific Research Question: What are the consumer concerns surrounding health information security and privacy? What are the levels of awareness and expectations of health information technology among consumers?

Study Design: Focus groups will be conducted to determine consumer satisfaction with HIE.

Study Population: Consumers will be recruited randomly from several clinics.

Data Sources and Data Collection Methods:

We will conduct up to ten focus groups with 8-10 participants in each group. We will strive to have a diverse group of participants including younger and older adults, women, and minorities. Focus group discussions will help provide information on the consumers' satisfaction with HIE, questions, and concerns.

The following types of questions will be discussed during the focus groups:

- What are the characteristics of consumers who opt out?
- Why do they choose to opt-out?
- What strategies could be used to better inform the consumers?
- What do patients think about HIE? What concerns do patients have about HIE?
- Are they satisfied with their experiences with NeHII and eBHIN?
- What do they see as the benefits of health information exchange?
- What do consumers know about e-prescribing?
- Are they satisfied with e-prescribing?
- Do they use a Personal Health Record (PHR)? Are they interested in using a PHR?
- Are the consumers experienced with information technology in healthcare?
- What do they want in a PHR? How do they see health IT helping them to better manage their health and their health care?
- Do patients want access to lab results?
- Have they directly accessed lab results?
- Are the consumers receiving summary information after visits to their physicians? Is this information useful to them?
- How comfortable are the consumers with sharing medical information electronically?
- What do consumers think about data transfer? Are they concerned with network or data storage vulnerability?
- How would the consumers like to be educated about HIE? Who should be responsible for consumer education?
- What role should the local and state government have in HIE?

Data Analysis: Qualitative data from focus groups will be tabulated and analyzed to assess consumers' satisfaction with HIE.

E-Prescribing

Specific Research Questions:

What is the discrepancy rate between what the physician intended to prescribe and what is dispensed at the pharmacy? What are the common causes of medication errors that reach the patient?

Study Design:

The study will use a retrospective, observational design.

Study Population:

Prescriptions transmitted electronically between primary care clinics and community pharmacies will be evaluated. We will identify an initial pilot site to refine the research methodology. One physician clinic and one retail pharmacy will be recruited for the pilot project. After completion of the pilot study, up to four additional sites will be recruited (2 urban, 2 rural).

Data Sources and Data Collection Methods:

The following information will be collected.

1. **Physician Intent:** What the physician intended to prescribe - identified from the patient's chart / clinic notes.
2. **e-Prescription:** What was initially sent from the physician's office using the e-prescribing software.
3. **Dispensed Medication:** What was dispensed by the pharmacy – identified from participating pharmacy records.

Data Collection:

The participating pharmacies will identify new prescriptions (refills will be excluded) written by participating providers during a defined study period. Information contained on the prescription label will be recorded. The prescription data gathered at the pharmacy will be taken to the prescriber's clinic. Details of the prescriptions that were electronically sent from the physician's office will be gathered from the clinic's electronic prescribing software. A trained research nurse will record physician intent by reviewing notes associated with the clinic visit where the electronic prescription was generated. The encrypted de-identified dataset will be returned to UNMC for analysis.

Follow-up:

When discrepancies are identified, the investigators will contact the physician's office and/or the pharmacy to determine why the discrepancy occurred.

Data Analysis:

Overall rates and causes of discrepancies will be reported.

Radiology and laboratory data

Specific Research Question: Does access to the results of diagnostic laboratory and radiology tests through the health information exchange reduce rate of redundant testing?

Study Design: Retrospective cohort study

Study Population: Patients of participating payers (Blue Cross and Blue Shield and/or Medicaid) with a qualifying diagnostic laboratory or radiology test.

Data Sources and Data Collection Methods: Claims data from participating payers will be utilized. Using a basket of diagnostic radiology procedures, developed via literature review and expert panel, we will quantify the number of procedures repeated within three time periods (24 hours, 7 days, and 30 days). To begin to evaluate the impact of the HIE on the rate of repeated procedures, we will perform a subgroup comparison among patients seen in a single system for their entire episode of care, patients seen in multiple systems that are member of the HIE, and patients seen in multiple systems where one or more providers did not participate in the HIE.

Data Analysis: The rates of redundant testing for a basket of procedures will be compared between the three cohorts of patients. Chi-square analysis and logistic regression models will be used to compare the rates of repeated tests in the specified time periods.

Utilization of Medication Histories

Specific Research Question: Does access to formulary and eligibility information improve medication adherence and generic utilization rates by making that information available at the time of prescribing?

Study Design: Retrospective cohort study

Study Population: Prescribers with a qualifying from a participating payer (Blue Cross and Blue Shield and/or Medicaid).

Data Sources and Data Collection Methods: Prescription claims data from participating payers will be used to determine the primary non-adherence, medication adherence, and generic utilization rates

between e-prescribers with access to medication histories through the HIE and those without. We will calculate quarterly rates for overall prescribing and by medication class.

Data Analysis: Chi-square and logistic regression models will be used to compare the rates between the cohorts.

Value of HIE in Emergency Department

Specific Research Questions:

The main objective of the focus groups is to determine and discuss the following questions:

- What HIE data elements would be useful in the ER setting?
- What information not currently available in the HIE would be useful?
- What are the barriers to using HIE?
- Would changes in equipment, personnel, or care delivery be necessary to access HIE data in the emergency room setting?

Study Design: Focus groups

Study Population:

Four focus groups will be conducted in the following hospital types:

1. Urban trauma center
2. Urban tertiary care hospital
3. Rural primary care hospital (excludes Omaha and Lincoln)
4. Critical access hospital

Data Sources and Data Collection Methods:

Up to ten healthcare providers that regularly provide care to emergency room patients will be included in each focus group. At a minimum, each group will consist of an ER physician and nursing staff. The focus group may also include members from other services such as radiology and pharmacy.

Data Analysis:

Qualitative data from focus groups will be tabulated and analyzed to assess the value of HIE in the Emergency Room setting.

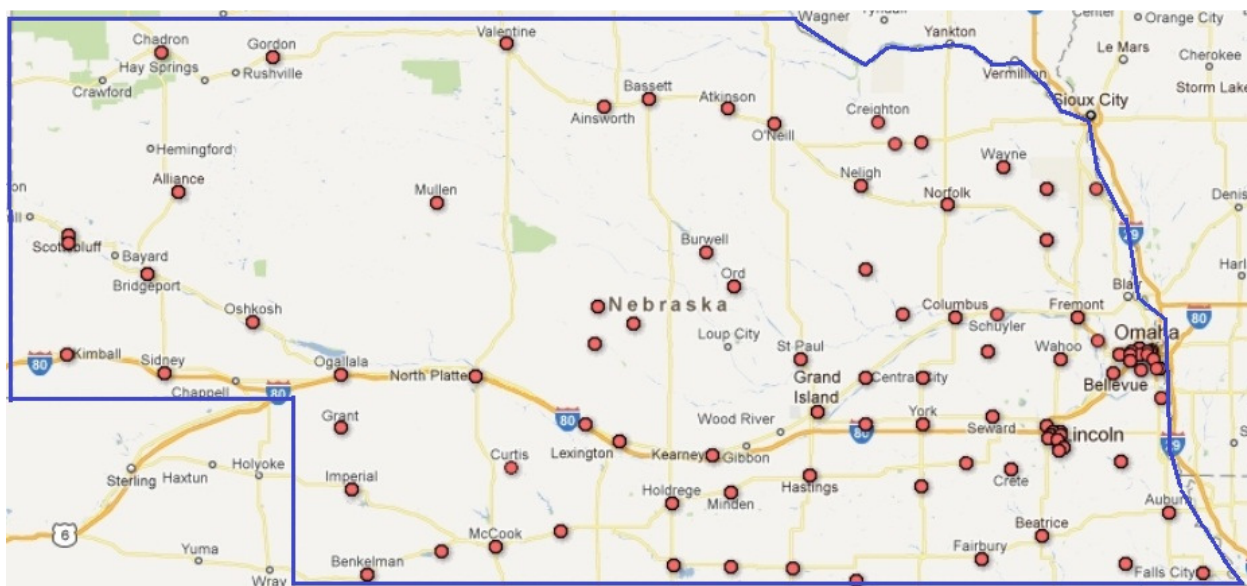
**Wide River TEC update for e-Health Council
May 3, 2012**

The following areas highlight recent developments in the Regional Extension Center (REC) program implementation by Wide River Technology Extension Center (WRTEC), a division of CIMRO of Nebraska, since award of the Cooperative Agreement on February 12, 2010 by the Office of the National Coordinator (ONC) for Health Information Technology.

A. Physician Practices

On April 3, 2012 Wide River TEC surpassed its Milestone 1 (signup) goal of 1000 PPCPs. As of April 21, 2012, Wide River TEC has enrolled 1,031 priority primary care providers (PPCPs) in over 185 client sites (both clinics and CAHs), representing over 90% of the rural PPCP population in the state.

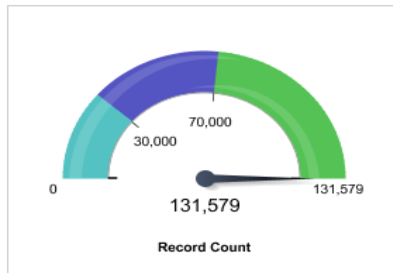
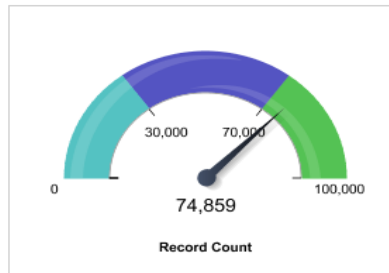
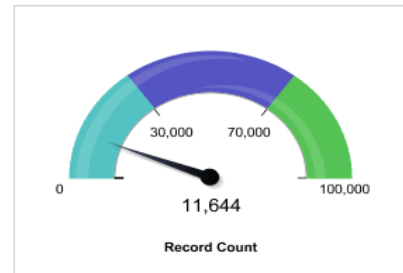
Geographic distribution of these clients is evenly distributed across the entire state:



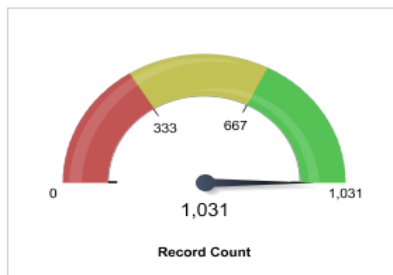
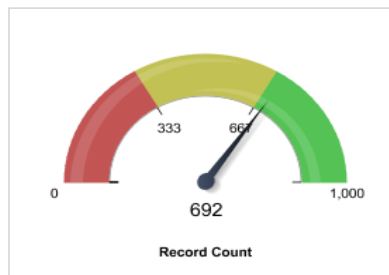
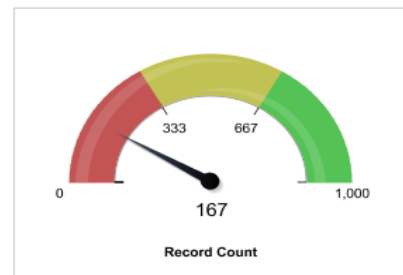
These clients also represent a diverse cross section of medical settings:

	CAH	Community Health Centers	Other Underserved Settings	Practice Consortium	Private Practice (1-10) PPCPs	Rural Health Clinics
PPCPs Recruited	121	60	143	190	384	133

Nationally over 131,000 PPCPs have been recruited by the 62 RECs, with just under 60% of that population live on an EHR product, and almost 9% having met Meaningful Use.

M1: Total PPCPs Signed Up**M2: Total PPCPs Live****M3: Total PPCPs at MU**

In Nebraska, almost 70% of our clients are live on an EHR and approximately 16% of those are meeting Meaningful Use.

Total PCPs Signed Up**PCPs at M2****PCPs at M3**

Currently, our clients have selected and/or implemented certified products from 27 different EHR vendors.

B. Critical Access Hospitals

In January 2011, Wide River TEC received supplemental grant funding to assist all Critical Access Hospitals in achieving their inpatient meaningful use goals. In late March 2011, Wide River TEC began offering one of two complimentary services to Critical Access Hospitals based on their current EHR implementation state:

- For those CAHs with no EHR or seeking to transition to another vendor's certified product, Wide River TEC will provide a complimentary EHR Readiness Assessment to help the hospital determine the best way to approach purchasing certified EHR technology. This will include site, workflow and IT assessments, as well as best practice approaches moving forward.
- For those CAHs who are already live on a certified EHR product, Wide River TEC will focus our complimentary service on performing a meaningful use Gap Analysis to help the hospital prepare for incentive attestation. We will work in partnership with the client and vendor to ensure that all meaningful use objectives are being achieved.

Wide River TEC has enrolled 51 of the 65 CAHs in the state, with several more agreements expected.

C. Education and Outreach Updates

Wide River TEC Hosted Events

On April 4, 2012, *The Foundation and Future of HIT: Meaningful Use, Patient-Centered Medical Home & Beyond* was conducted in Lincoln. Nebraska Lt. Governor Rick Sheehy kicked off this one-day conference that focused on Meaningful Use, Patient-Centered Medical Home, e-Prescribing and other issues related to current and future Health Information Technology incentives. Over 200 attendees had access to industry experts, including Nebraska Medicaid, HIT vendors and much more. Throughout the day, there were discussions on topics ranging from Meaningful Use, EHR user groups and how to find additional assistance in maximizing the value of health information technology in both clinics and hospitals.

Meaningful Use Vanguard

Healthcare clinicians who have made the successful transition to EHRs and are using their system as a clinical management tool have an opportunity to participate in a national movement called the Meaningful Use Vanguard (MUV). MUVers (members of the MUV program) are an exclusive group of champions of EHR adoption and meaningful use that serve as local leaders, advisors and role models in the move toward an electronically-enabled health care system.

In April at our event, we recognized two new MUVers, Dr. Edward Wicker and Dr. Peter Lueninghoener, for their leadership in the transition to EHRs. They were awarded certificates and a small keepsake for their contribution to the program thus far.

National Press

On April 3, Wide River TEC surpassed the goal of working with 1,000 Nebraska primary care providers to implement and meaningfully use EHRs. To announce this achievement, Wide River TEC distributed a press release on April 17th statewide via our website and our stakeholders. Two days later our press release was available via national web sites. Sites which ran our story included Yahoo News, EHRIntelligence.com, EMR Daily News, Virtual Strategy and All Voices. Todd Searls was interviewed by EHRIntelligence.com on April 20, 2012 as a result of the press release.

Monthly All-Client Webinars

Our monthly webinars continue to be well-attended. The last Wednesday of every month has been designated for our client-only webinars where we share useful tips and tools with our clients, as well as discuss things that we are finding out in the field. Our goal with the webinars is to continuously keep our clients in the know with the most up-to-date information surrounding Meaningful Use. During these webinars, clients have the opportunity to ask questions of Dr. Bob Rauner or any of our staff about Meaningful Use or other HIT questions/concerns you may have. We usually have around 25-50 attendees for these webinars.

Wide River TEC Social Media

Wide River TEC launched our blog, *The Wide River Current*, on September 12, 2011. This channel of communication is a more informal way for us to communicate with subscribers about pressing issues for Health IT. To date, we have 85 email followers and have posted 38 blog posts. The blog has received over 2954 hits since its inception.

Wide River TEC believes our client's experiences are one of our biggest assets. To enhance our client's knowledge and to encourage them to share their experiences with their NE peers, on April 3, 2012 we introduced *Wide River Splash*, a clients-only social media networking website. We have 73 members to date.

Meaningful Use Acceleration Challenge State Goal Submission Form

The Office of the National Coordinator (ONC) for Health IT and the Centers for Medicare & Medicaid Services (CMS) are joining forces to set forth a challenge to states to accelerate Meaningful Use by clinicians and hospitals across the country. If you choose to set a public goal, ONC can offer technical resources, toolkits, and participation of senior leadership in your state's Meaningful Use Acceleration events.

We invite States to join us and set ambitious and achievable goals. We plan to showcase vanguard states by publicizing your goals!

Please provide numerical goal for one or more of the following measures, and indicate who will coordinate statewide effort across ONC Programs and various key stakeholders. Please submit completed form back to your respective Project Officer and cc' Lee.Stevens@hhs.gov

State: Nebraska

State Lead/Point of Contact: Greg Schieke, Wide River TEC (gschieke@widerivertec.org)

Number of eligible professionals who have received an EHR incentive payment from the Medicare or Medicaid EHR Incentive Programs by December 31, 2012.

Statewide Goal:

_____ EP's who received Medicare EHR Incentive Payment by December 31, 2012.
_____ EP's who received Medicaid EHR Incentive Payment by December 31, 2012.

Number of eligible hospitals that have received a payment from the Medicare or Medicaid EHR Incentive Programs by December 31, 2012.

Statewide Goal:

_____ EH's who received Medicare EHR Incentive Payment by December 31, 2012.
_____ EH's who received Medicaid EHR Incentive Payment by December 31, 2012.

Number of eligible professionals in rural areas who have received a payment from the Medicare or Medicaid EHR Incentive Programs by December 31, 2012.

Statewide Goal:

330 EP's in rural areas who received Medicare or Medicaid EHR Incentive Payment by December 31, 2012.

36 EH's in rural areas who received Medicare or Medicaid EHR Incentive Payment by December 31, 2012.

Health Affairs

At the Intersection of Health, Health Care and Policy

Cite this article as:

Claudia Williams, Farzad Mostashari, Kory Mertz, Emily Hogin and Parmeeth Atwal
From The Office Of The National Coordinator: The Strategy For Advancing The
Exchange Of Health Information
Health Affairs, 31, no.3 (2012):527-536

doi: 10.1377/hlthaff.2011.1314

The online version of this article, along with updated information and services, is
available at:

<http://content.healthaffairs.org/content/31/3/527.full.html>

For Reprints, Links & Permissions:

http://healthaffairs.org/1340_reprints.php

E-mail Alerts : <http://content.healthaffairs.org/subscriptions/etoc.dtl>

To Subscribe: <http://content.healthaffairs.org/subscriptions/online.shtml>

Health Affairs is published monthly by Project HOPE at 7500 Old Georgetown Road, Suite 600, Bethesda, MD 20814-6133. Copyright © 2012 by Project HOPE - The People-to-People Health Foundation. As provided by United States copyright law (Title 17, U.S. Code), no part of *Health Affairs* may be reproduced, displayed, or transmitted in any form or by any means, electronic or mechanical, including photocopying or by information storage or retrieval systems, without prior written permission from the Publisher. All rights reserved.

Not for commercial use or unauthorized distribution

By Claudia Williams, Farzad Mostashari, Kory Mertz, Emily Hogin, and Parmeeth Atwal

From The Office Of The National Coordinator: The Strategy For Advancing The Exchange Of Health Information

DOI: 10.1377/hlthaff.2011.1314
HEALTH AFFAIRS 31,
NO. 3 (2012): 527–536
©2012 Project HOPE—
The People-to-People Health
Foundation, Inc.

ABSTRACT Electronic health information exchange addresses a critical need in the US health care system to have information follow patients to support patient care. Today little information is shared electronically, leaving doctors without the information they need to provide the best care. With payment reforms providing a strong business driver, the demand for health information exchange is poised to grow. The Office of the National Coordinator for Health Information Technology, Department of Health and Human Services, has led the process of establishing the essential building blocks that will support health information exchange. Over the coming year, this office will develop additional policies and standards that will make information exchange easier and cheaper and facilitate its use on a broader scale.

Claudia Williams (claudia.williams@hhs.gov) is director of the State Health Information Exchange Program at the Office of the National Coordinator for Health Information Technology (ONC), Department of Health and Human Services, in Washington, D.C.

Farzad Mostashari is the national coordinator for health information technology, in the Department of Health and Human Services.

Kory Mertz is challenge grant director in the ONC's State Health Information Exchange Program.

Emily Hogin is a former program analyst in the ONC's Office of Economic Analysis, Evaluations, and Modeling.

Parmeeth Atwal is senior manager for policy content development and media at the ONC.

The Health Information Technology for Economic and Clinical Health (HITECH) provisions of the American Recovery and Reinvestment Act of 2009 created the Medicare and Medicaid Electronic Health Records Incentive Programs, providing billions of dollars in incentive payments to eligible professionals and hospitals that adopt and meaningfully use electronic health records. The requirements of meaningful use provide a road map for using health information technology to improve the quality, safety, and efficiency of health care, preparing doctors and hospitals to engage in new payment and care delivery approaches such as bundled payment options, accountable care organizations, and medical home initiatives.

Meaningful-use requirements encompass critical aspects of health information exchange, including sharing important information with other providers and patients and reporting quality information and public health results (Exhibit 1).

This article describes the role of the Office of the National Coordinator for Health Information Technology and its strategy for advancing the

secure electronic exchange of health information. The article builds on the Federal Health Information Technology Strategic Plan, providing additional context, details, and explanations of the health information exchange strategy.¹

The Current Environment And Challenges

PATIENT CARE IS AT STAKE The goal of health information exchange is for information to follow patients, wherever and whenever they seek care, in a private and secure manner so that teams of doctors, nurses, and care managers can provide coordinated, effective, and efficient care.

For instance, timely sharing of key information when patients transition from one provider and setting to another can prevent readmissions, improve diagnoses, reduce duplicate testing, and prevent medication errors.^{2,3} Transitions are a frequent occurrence—more than 40 percent of all outpatient visits involve a transition between different medical groups⁴—and are especially common and risky for patients with complex and chronic conditions.

EXHIBIT 1

Key Health Information Exchange Requirements For Meaningful Use

Requirement	Specifics
Electronic exchange of lab results	Providers receive and use lab results, supplying critical information to make diagnoses, track treatment of chronically ill patients, and assess quality of care
Care and discharge summaries	When a patient is referred to a specialist or discharged from a hospital, care and discharge summaries are shared with the patient's primary care provider to enable the provider to make effective diagnoses, follow up with the patient in a timely and appropriate manner, prescribe appropriate medications, and avoid unnecessary services, so that patient transitions are safer and more effective
Public health reporting	Providers report key events relevant to public health (immunizations delivered, contagious diseases found), supporting improved population health
Quality reporting	Providers measure and share information about the quality of the care they deliver, creating critical feedback loops
Sharing information with patients	Providers share care summaries, reminders, and other key information with patients, improving care coordination and engaging patients in their own care

SOURCE Authors' analysis.

LITTLE ELECTRONIC INFORMATION SHARING OCCURS TODAY Critical information is not routinely shared across transitions of care today. When it is shared, it is most often by phone, fax, or mail, but not electronically. The information frequently arrives late, if at all, and is not available for decision making at the point of care.

According to the 2009 Commonwealth Fund International Health Policy Survey, 73 percent of the time, primary care providers in the United States do not receive discharge information from hospitals within two days of their patients' discharge. When discharge summaries are sent to primary care providers, they are rarely shared electronically.⁵ Indeed, only 19 percent of hospitals reported in 2010 that they exchanged patient clinical record information electronically with providers outside their system.⁶ Primary care physicians report that missing clinical information (such as medication lists, radiology images, and lab results) leads to delays in care and additional testing, imaging, and office visits.⁷

IMPLEMENTING INFORMATION EXCHANGE HAS BEEN EXPENSIVE The lack of widely adopted standards, failure to use existing standards, and flexibility in the way that standards are implemented have all contributed to the high cost of exchange. Today customized coding is often needed to connect health information technology systems and allow them to exchange information. Each connection—to receive lab results or report results to public health officials—might cost thousands of dollars to implement and require days of extra work.⁸ One clear opportunity is to increase the standardization of health information exchange, which would reduce the cost and complexity for providers, vendors, and health information exchange organizations.

THE DEMAND FOR EXCHANGE IS GROWING No

investment in standards or infrastructure for information exchange will rapidly mobilize information sharing if the underlying demand for the shared information is low. Demand for information is the business driver for health information exchange.

Fee-for-service payment that rewards the volume of care and not its quality or efficiency gives providers little incentive to share electronic information to support better patient care. New payment approaches advanced by public and private payers—including bundled payment options, accountable care organizations, and medical home initiatives—motivate providers to share information to achieve better coordinated, higher quality, and more efficient care for patients, creating a powerful business case for information exchange.^{9,10}

DIVERSE MODELS AND BUSINESS APPROACHES ARE EMERGING Until recently it has been assumed that information exchange would occur through the development of regional, local, or state nonprofit or government-sponsored exchange networks that would broadly support all providers in a community. Today many other approaches are emerging, including local models advanced by newly formed accountable care organizations, exchange options offered by electronic health records vendors, and services provided by national exchange networks.

For instance, hospital systems looking to support accountable care organizations are developing exchange and data analytics infrastructure to support care coordination and quality improvement. According to recent surveys, more than 70 percent of hospitals plan to invest in health information exchange services,¹¹ and the number of active private health information exchange entities tripled from 52 in 2009 to 161

in 2010.¹² It is clear that there will be a variety of exchange networks, services, and architectures to support different business models, local conditions, and provider requirements.

TRUST FACILITATES EXCHANGE, AND EXCHANGE BUILDS TRUST Public trust is a critical foundation for sustainable health information exchange. Where there is business demand and trust among a network of providers, we see exchange taking place. Sharing information to coordinate care—where information is sent and received between providers, such as a referral from a physician to a specialist—can build demand for, and trust required to support, other exchange models that involve aggregating and finding patient data.

The Role Of The Office Of The National Coordinator

In light of these market trends and challenges, the role of the Office of the National Coordinator in facilitating health information exchange includes the following.

SET CLEAR GOALS Success is measured by whether health information exchange is occurring among unaffiliated providers and patients to support meaningful use, better care coordination, and improved patient care.

LEAD DEVELOPMENT OF POLICY AND STANDARDS The Office of the National Coordinator's role is not to build exchange networks. Rather, it is to lead the community in the development of technical standards, services, and policies that both solve core problems for exchange participants and reduce the cost and complexity of exchange, and to establish governance (including enforcement) over these "rules of the road."

KEEP THE PATIENT AT THE CENTER Patients can and should be core participants in health information exchange, and they should have the ability to easily and routinely obtain electronic copies of their own health information as provided in the Health Insurance Portability and Accountability Act of 1996 and clarified in HITECH. And providers and consumers must be confident that laws, policies, and processes are in place and enforced to protect the privacy and security of their electronic health information.

The Office of the National Coordinator seeks to leverage private-sector exchange activity while addressing the gaps and unintended consequences of a market-based approach. It will focus on ensuring the availability of affordable exchange options for providers with limited resources while also putting in place the policies, standards, and professional expectations that will enable information to securely follow patients across diverse care settings and health information technology systems.

The Health Information Exchange Strategy

The Office of the National Coordinator is focused on establishing the initial set of policies and standards that are the foundation for the three following key forms of exchange: first, sending and receiving health information to support coordinated care (directed exchange); second, finding patient health information for unplanned care (query-based exchange, described further below); and third, enabling patients to aggregate their own health information (consumer-mediated exchange). The goal of the Office of the National Coordinator is to enable all three forms of exchange, which fulfill different purposes. They will all be needed—and will exist side by side—to support coordinated, high-quality, and efficient care.

Appendix Exhibit 1 in the online Appendix¹³ summarizes these forms of exchange, along with the uses for each, the cross-cutting building blocks that facilitate each form of exchange, and the additional policies and standards needed for each.

DIRECTED EXCHANGE Health care providers need a way to send and receive electronic information easily and securely when they exchange patient information such as laboratory orders and results, patient referrals, or discharge summaries. This form of directed exchange between known parties delivers critical information to providers and patients to enable coordinated care.

When physicians receive electronic lab results that can be incorporated into their electronic health records, they can generate lists of patients with diabetes, for example, and identify those with uncontrolled blood sugar and schedule needed follow-up appointments. A specialist who receives an electronic care summary before seeing a patient will have a core base of information—medications, problems, lab results—to inform the visit and help prevent the duplication of tests, redundant collection of information from the patient, wasted visits, and medication errors.

Even more so than meaningful-use requirements, new payment models will increasingly provide the business case to move from mail, phone, and fax to the routine electronic exchange of health information to support better coordinated patient care.

QUERY-BASED EXCHANGE Providers also need the ability to find information when they are delivering unplanned care. For example, when someone arrives at the emergency department with sudden chest pain, a physician will probably want to look up the patient's cardiac history.

Payment reform initiatives are also increasing the demand for this type of functionality. For

instance, hospitals facing penalties for readmissions and payment incentives for providing more efficient care need mechanisms to find key patient information such as medications, recent radiology images, and problem lists so that emergency department visits do not turn into costly, unnecessary inpatient stays.

CONSUMER-MEDIATED EXCHANGE Consumers with access to their own health information can improve the effectiveness and coordination of their health care by sharing information with other providers, identifying potential medical errors, correcting inaccurate health and billing information, and making more-informed decisions. Today consumers use the Internet and other technology to manage their finances and stay in touch with family and friends. We need to put these powerful tools in the hands of patients by giving them ready and secure access to their own electronic health information, which they can use and share to improve their health and make better health care decisions in partnership with providers.

COMMON BUILDING BLOCKS Although each form of exchange addresses a distinct and important need, all rely on the same core set of standard and policy building blocks. Each requires a common approach to transport, allowing information to move from one point to another, and content, so that patient data are packaged and structured in a way that is understandable to providers and usable by their electronic health record systems.

Based on the work of Office of the National Coordinator and its many collaborators over the last year, the building blocks required to initiate all three forms of exchange are complete, tested, and available today. These standards are already in use by private networks and electronic health records vendors to exchange documents within their own networks.

Two standardized transport approaches to securely move patient information are now specified. One of these, the Direct protocol,¹⁴ relies on widely adopted e-mail protocols for an easily implemented mechanism to send encrypted health information over the Internet. The Office of the National Coordinator has also developed clear specifications for the structured clinical content needed for patient transitions and for lab results.¹⁵

Priorities For 2012

During the coming year, the Office of the National Coordinator will address three additional gaps to rapidly advance and scale all three forms of exchange across organizational and vendor boundaries.

CLOSING THREE GAPS IN THE ADVANCEMENT OF EXCHANGES The first is provider directories. These phonebook-like mechanisms for finding providers and their electronic addresses enable directed, query, and consumer-mediated exchanges alike. The task of the Office of the National Coordinator is not to build directory services but to specify standards and policies to make directories consistent, reliable, findable, and open to queries.

The second is certificate discovery and management. Secure transmission of patient data will also require a scalable and reliable approach to manage and discover digital certificates, used to establish and verify a user's identity for electronic transactions in the same way that a passport or driver's license does for in-person transactions. Common guidelines for establishing and managing digital certificates and making the public information findable are core requirements for extending and accelerating health information exchange.

The third concerns governance. We lack a common set of rules to guide electronic health information exchange. As a result, local networks have had to spend considerable time and legal resources crafting their own agreements. Several states have begun to define qualifications and policies for information exchange entities, and some groups have adopted or adapted the Data Use and Reciprocal Support Agreement,¹⁶ which was developed as part of the Nationwide Health Information Network.

In 2012 the Office of the National Coordinator will establish a governance mechanism for the Nationwide Health Information Network that includes a baseline set of standards and policies to provide the foundations for trust and interoperability. It is hoped that these governance rules will accelerate exchange and reduce the cost and burden of negotiations among entities that wish to exchange health information electronically. The process is similar to how the Internet grew, based on the use of a few rules and protocols that avoided the need for specific agreements and negotiations among and between participants.

The Office of the National Coordinator will also continue to work with the group of federal agencies and private organizations that are using the Nationwide Health Information Network specifications for both directed and query-based exchange. These partners serve as vanguard implementers of all forms of information exchange and offer valuable lessons for the entire health care community.

In addition to the crosscutting elements (standards that are in place today for transport and content and the work that lies ahead on governance, certificate management, and directo-

ries), specific initiatives are under way to accelerate each of the three forms of exchange.

ENABLING EVERY PROVIDER TO SEND AND RECEIVE PATIENT DATA ELECTRONICALLY Giving every provider the means to securely send and receive patient information to support better care coordination and meaningful use is a top priority for the Office of the National Coordinator in 2012. The Direct protocol¹⁴ now provides a simple, secure, standardized way to send encrypted health information to trusted recipients over the Internet, enabling providers to meet meaningful-use exchange requirements. Currently, any two providers who have certified electronic health record systems, trust each other, and have Direct protocol addresses (similar to e-mail addresses) can send each other structured patient health information securely. They do not have to practice in an area with an active regional health information organization, be part of the same hospital system, or use the same electronic health record system.

The Direct protocol was developed and tested through an open, collaborative approach. Rapid results were achieved in large part because the vendors and technology experts who implement the protocol were the people who developed it.

The initial approaches were developed in ninety days. Pilot testing occurred within a few months, and we have seen market adoption in just a year. By the end of 2011 more than thirty-five vendors had incorporated Direct into their products, and more than forty states had made Direct part of their state health information exchange strategies to support providers in achieving meaningful use (Exhibit 2). Moreover, there are low monthly costs for Direct services. For example, the American Academy of Family Physicians is offering basic services for \$15 a month,¹⁷ comparable to what consumers pay for Internet service.

This year's initiatives will build on the Direct Project model of tackling specific problems by engaging implementers—including vendors and providers—in developing, testing, and adopting workable solutions.

SUPPORTING THE DEVELOPMENT AND SPREAD

OF INFORMATION EXCHANGE CAPABILITIES Today pockets of query-based exchange exist across the country, but the capability is not widely available. Although the pace of adoption is accelerating, building the infrastructure for query-based exchange—particularly at the community level—still often takes time, considerable resources, and a high degree of coordination and trust among participants.¹⁸

Query-based exchange can be operationalized in various forms with implications for the standards, infrastructure, and policies required. With the existing and prioritized building blocks (transport, content, certificates, and provider directories), a form of query can occur.

For example, a patient during an office visit might inform the provider, Dr. Jones, that he or she has information at Dr. Smith's office. Dr. Jones then uses a provider directory to find Dr. Smith and send an electronic request with sufficient demographic information to identify the patient. After Dr. Jones confirms a patient match with help from the patient, Dr. Jones asks Dr. Smith to send the patient's information. This version of querying provides an intriguing possibility for keeping the responsibility for patient matching and record locating with the patient and provider rather than relying on technical infrastructure.

Automated or "broadcast" approaches to querying—in which providers use infrastructure to electronically locate patient records without the patient's assistance—require additional policies and technical infrastructure. These requirements include rules for verifying a provider-patient care relationship; policies for populating record locators and linking patients to their records, including accuracy thresholds; master patient index and record locator services to support patient matching and record discovery; rules establishing who is authorized to use the exchange infrastructure and for what purposes; policies and services for auditing who is accessing information and making data corrections; and policies and mechanisms to give patients a meaningful choice to participate.

The Office of the National Coordinator is work-

EXHIBIT 2

Uses Of The Direct Protocol To Support Meaningful-Use Exchange Requirements

User	Use
Physicians in Rhode Island	Share care summaries when patients are referred
Providers in Minnesota	Report to the state's immunization registry
Consumers who used Google Health	Transfer information to Microsoft's HealthVault
Department of Veterans Affairs	Track mammography screening for patients referred to community providers

SOURCE Authors' analysis.

ing with public- and private-sector stakeholders to establish policy recommendations for these key issues that could be implemented through a variety of mechanisms. Those mechanisms include Nationwide Health Information Network governance rules, the health information technology certification program, and guidance to the office's grant program recipients.

Common policy approaches for the many policy questions that arise in developing "broadcast" query-based exchange capacity will speed development, provide greater certainty for participants, and support exchange across disparate exchange entities. Key input will include recommendations from the Health Information Technology Policy Committee, a federal advisory body established by HITECH and charged with making recommendations to the Office of the National Coordinator on a policy framework for the development and adoption of a nationwide health information technology infrastructure.

Several successful information exchange initiatives have begun with directed exchange to deliver lab results or discharge summaries, expanding over time to build capacity for providers to find patient information to support unplanned care (query-based exchange). Active involvement in information sharing enhances provider and public trust in exchange and increases the availability of, and demand for, electronic information. Participants also develop the motivation and commitment to tackle the policy and technical issues that need to be addressed with broadcast approaches to query-based exchange. Some community and state efforts have stalled at early stages because the demand for query-based exchange does not counterbalance the perceived costs and risks for participants.

Incrementally building the infrastructure needed for "broadcast" query-based exchange can support services that automate care management tasks for providers. For instance, a hospital might pair directed exchange with provider and

patient directories to automatically send a message to a patient's primary care provider when a patient is seen in an emergency department (Exhibit 3). The same directories can be reused to support query-based exchange.

ENABLING CONSUMERS TO AGGREGATE, USE, AND SHARE INFORMATION The Office of the National Coordinator has a key role in supporting consumers as they aggregate, use, and share their own health information, such as through patients' use of personally controlled health record platforms or by patients' designating a provider as their "health information home." Progress in this area will be made by increasing consumers' access to their own electronic health information and by working to resolve key implementation challenges that are hindering progress.

Like the Direct protocol, the Blue Button initiative offers easily implemented, secure mechanisms that enable providers to share information with patients.¹⁹ Blue Button allows consumers to obtain a copy of their available health information through a simple web-based download from participating organizations. Since its launch by the Department of Veterans Affairs in August 2010, more than 500,000 patients—including veterans, military personnel covered by the Defense Department's Military Health System, and Medicare enrollees—have used Blue Button to download their data.

In fall 2011 the Office of the National Coordinator launched a national campaign to increase consumers' access to their health information by obtaining commitments from a broad set of organizations including health care providers, health plans, vendors, and health information exchange organizations to share information electronically with consumers in an easy and timely manner.²⁰ In collaboration with federal partners, the Office of the National Coordinator will continue working to address real and perceived barriers that prevent patients from easily

EXHIBIT 3

Automating Care Coordination Tasks

Context

As providers seek to dramatically improve transitions and reduce hospital readmissions, there will be increasing innovation in automating care coordination tasks; these emerging practices require linking patients with the specific providers caring for them and can be supported by either directed or query-based exchange

Actions

Primary care providers "subscribe" to updates on the patients they regularly care for
Referrals are managed through automated messages ("I am sending you Mrs. Smith; here is her information")
Medical homes are notified when their patients are seen in the emergency department
Downloads of patient care summaries and medication lists are triggered by plan eligibility checks the night before an office visit

SOURCE Authors' analysis.

receiving their health information electronically.

The Office of the National Coordinator is working with the State Health Information Exchange Program, the Beacon Community Program, and regional extension center grantees to promote promising practices and provide training to support increased consumer access to health information as required for meaningful use. The State Health Information Exchange Program is demonstrating workable models for consumer-mediated exchange through breakthrough pilot projects in two states, Georgia and Indiana. These initiatives are focused on tackling the real-world technical and policy challenges around implementing consumer-mediated exchange—such as how to authenticate consumers, promote consumer adoption, and automate the workflow for providers to share electronic information with consumers—and will serve as a blueprint for other communities looking to launch consumer-mediated exchange.

A fundamental challenge for consumer-mediated exchange is a lack of commonly accepted approaches to identify and authenticate patients when they request access to their health information. The Health Information Technology Policy Committee has provided recommendations on this topic. The Office of the National Coordinator is working to rapidly act on these recommendations, collaborating with the National Institute of Standards and Technology, the National Strategy for Trusted Identities in Cyberspace, and other external partners to develop guidance for providers and exchange entities.

Consumer identity services are needed beyond the realm of health care for other government and private services. Therefore, a broad-based, market-oriented approach may be preferable and more efficient than a strategy narrowly focused on health information.

The Role For States

States are implementing the HITECH-funded State Health Information Exchange Program and are key agents in transforming health care through Medicaid programs. They will have ongoing roles in encouraging, developing, and sustaining health information exchange.

Some states will build and maintain actual technical infrastructure. But all states can take advantage of their unique leadership and policy-making roles to reduce the cost of exchange, increase trust among exchange participants, and increase the motivation of providers to exchange health information to support patient care.

Several clear models are emerging for State

Health Information Exchange Program implementation. Many states are starting directed exchange services to serve a wide base of providers, including those in rural and underserved areas. Several states are supporting emerging community-based or regional exchange entities and establishing the policies and infrastructure to connect these existing, disparate exchange nodes. And a few states are establishing statewide “public utility” exchange infrastructure that will broadly meet providers’ exchange requirements.

States are also providing local technical support and services to independent labs, rural hospitals, and others that lack health information technology expertise and infrastructure to participate in exchange. They are building shared services, such as provider directories that can reduce the cost of exchange for all participants. Finally, states are establishing common privacy and security policies and requirements that will increase participant and public trust; encouraging the use of national standards to reduce costs of exchange and avoid information lock-in; and using payment policies to increase the motivation of providers and data trading partners like clinical laboratories to exchange information to support patient care.

Future Challenges

As the volume and pace of health information exchange activity increases, new challenges will need to be addressed.

SECONDARY USES Electronic health information can support learning and health care improvement through research, quality improvement efforts, and predictive modeling. However, there is not yet a policy framework or public consensus on how to use technology to support these goals while protecting patient privacy and delivering public benefit.

PATIENT MATCHING Matching patients and their records is a challenge for providers and health information exchange organizations. It needs to be addressed through better standards and consistent policies.

CONNECTING EXCHANGE NODES We will need to advance the standards and policy expectations so that information will truly follow patients to support patient care across different exchange organizations, platforms, and networks, avoiding the development of “walled gardens of information.”

TRACKING SOURCES OF INFORMATION When information is shared and reshared, it will be critical to have reliable ways to track the origins and provenance of patients’ health information.

FILTERING AND SEARCHING As the trickle of information increases to a broader flow, provid-

ers will need tools and approaches to help them search, filter, compare, and judge the accuracy of information about their patients.

PROVIDER WORKFLOW Many exchange services require providers to leave their electronic health record environments to open web-based portals, limiting the utility and use of exchange functions. Building the core tasks of care management into the electronic health records workflow could greatly increase the adoption and use of exchange services. These tasks might include referring a patient, ordering a lab result, sharing information with patients, querying a patient's records, and receiving alerts when a patient is seen in an emergency department or hospital.

LIABILITY Increasing the amount of electronic information available for patient care raises a handful of liability questions for providers and health information exchange organizations. These include potential liability for relying on information received from other providers that is inaccurate or incomplete, for not accessing available information to make care decisions, and for breaches in security or inappropriate uses of information.

Conclusion

The Office of the National Coordinator has helped put in place the core set of building blocks—policies, standards, and services—that enable a wide variety of providers, from small practices to large hospitals, and patients to exchange information to support patient care.

These tools are available, tested, and already deployed to support exchange today.

In 2012 the Office of the National Coordinator will advance the growth and spread of exchange by specifying the next critical layer of core standards and policies. These will include establishing common rules for exchanging information through governance, developing an approach to manage and discover security certificates (used to identify and verify users), and specifying standards and policies to discover and query provider directories. The focus on the adoption and use of a few core standards and policies will ensure that information can truly follow patients as they move across the health care system and that the cost and complexity of exchange is reduced.

The Office of the National Coordinator's near-term goal is to ensure the widespread adoption and use of directed, electronic information sharing that allows providers and patients to securely send and receive information for coordinated, seamless care and to meet meaningful-use requirements. The growth and spread of query-based exchange will be supported by advancing the policy, technical, and governance requirements to support phased, modular development of exchange capabilities that allow providers to find information on a patient.

The Office of the National Coordinator will work with federal partners to expand patients' access to their own data and tackle the policy, implementation, and technical issues to support consumer-mediated exchange. ■

NOTES

- 1 Office of the National Coordinator for Health Information Technology. The Federal Health IT Strategic Plan 2011–2015 [Internet]. Washington (DC): Department of Health and Human Services [last updated 2011 Nov 4; cited 2012 Feb 20]. Available from: http://healthit.hhs.gov/portal/server.pt/community/federal_health_it_strategic_plan_-_overview/
- 2 Walker J, Pan E, Johnston D, Adler-Milstein J, Bates D, Middleton B. The value of health care information exchange and interoperability. *Health Aff (Millwood)*. 2005;24(1):W5-10-18. DOI: 10.1377/hlthaff.10.4.254.
- 3 Frisse M, Johnson K, Nian H, Davison C, Gadd C, Unertl K, et al. The financial impact of health information exchange on emergency department care. *J Am Med Inform Assoc*. 2011 Nov 4. [Epub ahead of print].
- 4 Rudin R, Salzberg C, Szolovits P, Volk L, Simon S, Bates D. Care transitions as opportunities for clinicians to use data exchange services: how often do they occur? *J Am Med Inform Assoc*. 2011;18(6):853–8.
- 5 Commonwealth Fund. 2009 Commonwealth Fund international health policy survey. New York (NY): Commonwealth Fund; 2009.
- 6 American Hospital Association. *AHA Hospital Survey*. Chicago (IL): AHA; 2010.
- 7 Smith P, Araya-Guerra R, Publitz C, Parnes B, Dickinson L, Van Vorst R, et al. Missing clinical information during primary care visits. *JAMA*. 2005;293(5):565–71.
- 8 Redwood MedNet. Health information exchange [Internet]. Ukiah (CA): Redwood MedNet [last updated 2011 Nov 18; cited 2012 Feb 20]. Available from: <http://www.redwoodmednet.org/projects/hie/pricing.html>
- 9 McClellan M, McKethan A, Lewis J, Roski J, Fisher E. A national strategy to put accountable care in practice. *Health Aff (Millwood)*. 2010;29(5):982–90.
- 10 Bates D, Bitton A. The future of health information technology in the patient-centered medical home. *Health Aff (Millwood)*. 2010;29(4):614–21.
- 11 CapSite. 2011 U.S. health information exchange (HIE) study [Internet]. Williston (VA): CapSite; 2011 Oct [cited 2012 Feb 20]. Available from: <http://capsite.com/assets/Uploads/2011-U.S.-Health-Information-Exchange-HIE-Study-TOC.pdf>
- 12 Allphin M. Health information exchanges: rapid growth in an evolving market. Orem (UT): KLAS Research; 2011 Jun.
- 13 To access the Appendix, click on the Appendix link in the box to the right of the article online.
- 14 The Direct protocol provides a simple, secure, standards-based way for providers and other participants to send encrypted health information directly to trusted recipients over the Internet—a kind of health e-mail message. It was developed by the Direct Project, a group of public and private stakeholders convened by the Office of the National Coordinator for Health Information Technology. Direct Project [home page on the Internet]. Washington (DC): Direct Project; [cited 2012 Feb 23]. Available from: <http://directproject.org>
- 15 Content standards were developed by the Standards and Interoperability Framework for care transitions (using the consolidated Clinical Document Architecture template) and lab results (Lab Results Interface). Standard and Interoperability Framework wiki [Internet]. Washington (DC): Department of Health and Human Services; [cited 2012 Feb 23]. Available from: <http://wiki.siframework.org/>
- 16 The Data Use Reciprocal Support Agreement is a multiparty legal agreement signed by participants of the Nationwide Health Information Network Exchange that wish to electronically exchange information with one another. It codifies a common set of expectations into an enforceable legal agreement. Office of the National Coordinator for Health Information Technology. Nationwide Health Information Network Exchange [Internet]. Washington (DC): Department of Health and Human Services; [last updated 2012 Jan 17; cited 2012 Feb 20]. Available from: http://healthit.hhs.gov/portal/server.pt/community/healthit_hhs_gov_nhin_exchange/1407
- 17 American Academy of Family Physicians. AAFP Physicians Direct [Internet]. Leawood (KS): AAFP; [cited 2012 Feb 20]. Available from: <http://www.aafp.org/online/en/home/practicemgt/physiciansdirect.html>
- 18 Requirements include consensus on a wide range of policy issues—such as who can access health information for what purposes—and the codification of this consensus in data use agreements and technical infrastructure. Required infrastructure and policies include data repositories that can be queried, policies and technology to implement meaningful patient choice in data sharing, indexes of patients and patient record locations, matching protocols so that providers can locate information on a particular patient, and provider directories.
- 19 Walker RW. VA's Blue Button innovation takes private healthcare sector by storm. AOL Government [serial on the Internet]. 2011 Nov 22 [cited 2012 Feb 20]. Available from: <http://gov.aol.com/2011/11/22/vas-blue-button-innovation-takes-private-healthcare-sector-by-s/>
- 20 The Office of the National Coordinator has launched a consumer pledge campaign to encourage patients to ask for and use their health information and to encourage health plans, providers, and other data holders to give them easy and secure mechanisms to do so. HealthIT.gov. Pledge [Internet]. Washington (DC): Department of Health and Human Services; [cited 2012 Feb 20]. Available from: <http://www.HealthIT.gov>

ABOUT THE AUTHORS: CLAUDIA WILLIAMS, FARZAD MOSTASHARI, KORY MERTZ, EMILY HOGIN & PARMEETH ATWAL



Claudia Williams is director of the State Health Information Exchange Program, Office of the National Coordinator for Health Information Technology.

In this month's *Health Affairs*, Claudia Williams and coauthors, all from the Office of the National Coordinator for Health Information Technology (ONC) in the Department of Health and Human Services, describe the role of their agency and its strategy for advancing the secure electronic exchange of health information.

To date, the authors write, the office has put into place policies, standards, and services to enable providers as well as patients to exchange information to support patient care. In 2012 the office's task is to advance the growth and spread of information exchange by developing the additional policies and standards that will make it easier and cheaper.

Williams is director of the State Health Information Exchange Program at the ONC. She was previously director of health policy and public affairs for the Markle Foundation. Williams holds a master's degree in health policy from the Harvard School of Public Health.



Farzad Mostashari is the national coordinator for health information technology.

Farzad Mostashari serves as national coordinator for health information technology. Previously, he was assistant commissioner for the Primary Care Information Project at the New York City Department of Health and Mental Hygiene. He also led the New York City Center of Excellence in Public Health Informatics, which was funded by the Centers for Disease Control and Prevention, and a project focused on quality measurement at the point of care, which was funded by the Agency for Healthcare Research and Quality. Mostashari holds a master's degree in population health from the Harvard School of Public Health and a medical degree from Yale Medical School.



Kory Mertz is challenge grant director in the ONC's State Health Information Exchange Program.

Kory Mertz is challenge grant director in the ONC's State Health Information Exchange Program. He holds a bachelor's degree from

Iowa State University, where he focused on economics and political science.



Emily Hogin is a former program analyst in the ONC's Office of Economic Analysis, Evaluations, and Modeling.

Emily Hogin is a former program analyst in the ONC's Office of Economic Analysis, Evaluations, and Modeling. She earned a bachelor's degree in social studies from Harvard University.



Parmeeth Atwal is senior manager for policy content development and media for the ONC.

Parmeeth Atwal is senior manager for policy content development and media for the ONC. Previously, he was a deputy editor of *Health Affairs*. Atwal received a master's degree in social sciences from the University of Chicago, a law degree from the Albany Law School of Union University, and a master's degree in public health with a specialization in management and finance from the Johns Hopkins Bloomberg School of Public Health.

Errata

BRAILER AND MOSTASHARI, MARCH 2012, P. 475 The introduction to this interview states that “in mid-February 2002, Secretary of Health and Human Services Kathleen Sebelius announced that nearly 2,000 US hospitals and more than 41,000 doctors have now met the standards for achieving meaningful use of health information technology and have received \$3.1 billion in federal incentive payments as a result.” The year should be 2012.

WILLIAMS ET AL., MARCH 2012, P. 535

In Note 4, the correct order of authors should be as follows: Rudin RS, Salzberg CA, Szolovits P, Volk LA, Simon SR, Bates DW.

WEEKS ET AL, MAY 2010, P. 997

In Note 7, the year of the article cited should be 2002, not 2004.

MARTIN ET AL., APRIL 2010, PP. 727–28

This article contained a few minor mistakes. In Exhibit 2, the row labeled “ADLs only” should be labeled “ADLs.” In Exhibit 4, correction of a data coding error results in small shifts (100–200

per 10,000) in the reports of age at onset of a condition causing need for help from the “age 50+” category to the “missing” category for each condition. The second and third sentences in the full paragraph above the exhibit should read: “Notably, for the top-six conditions, the most common age at onset is ages 30–49. For the other four conditions, onset is most common at age 50 and older.” These errors do not affect the article’s conclusions. The text and exhibits have been corrected online.