

Grant Final Report

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**Implementation of Health Improvement Collaboration
in Cherokee County, Oklahoma**

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Abstract

Purpose: The purpose of this study was to perform three projects utilizing health information technology.

Scope: The first was to evaluate the possibilities for construction of a widely diverse and inclusive organization to build multiple patient data exchanges for use by providers across Oklahoma. The second evaluated whether a model for prioritizing cost effective preventive care to shift population health status could be theoretically added to the network. The third examined whether a web based system could be built to help the population identify health providers in their area.

Methods: Consensus models were built using expert groups and consultants to develop all three projects.

Results: At the end of the project two complex health exchanges were implemented with over one million lives in the system, five cost effective preventive measures were identified that could be utilized to supplement an electronic healthcare system, and a web based application with over 10,000 providers was constructed. The interoperable network has reached financial self-sufficiency without government or grant support using a sustainability model.

Key Words: health information exchange, prevention, Native American

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Final Report

Purpose

The purpose of this study was to investigate whether methods and approaches utilizing health information technology could be developed to potentially improve health status in Oklahoma. The grant focused on three projects. Project 1 was to construct a wide scale patient data exchange. Project 2 was to develop a conceptual model for using evidence based preventive clinical interventions in primary care that could possibly be integrated into health information exchange. Project 3 was to develop a product that would allow internet based access to information for patients to assist them in locating a wide variety of health providers across Oklahoma.

Scope

The scope of this project is statewide and therefore we will address issues relating to background, context, settings, participants, incidence and prevalence within a statewide framework.

Background

At the point of application for AHRQ funding, a long standing and very diverse group of high level administrators who reside in Tahlequah, Oklahoma supported the application through a Memorandum of Understanding for the AHRQ grant “Transforming Healthcare Quality through Information Technology”. This group includes a city hospital, Native American tribe, federal hospital, public health, mental health, community health center and a university.

Thus, this group forms a very representative group, a microcosm, of statewide providers. It was felt that whatever this group would develop might therefore be applicable to like providers statewide. Added to this group by contract were pharmacists and physicians to get the widest possible representation.

Context

Over the last ten years the health status of Oklahoman’s has ranked between 46th and 49th. This is a decline from a ranking of 29th in the early 1990’s. At the same time, as rated by the Commonwealth Fund, Oklahoma is tied for last place nationally for the efficacy of its healthcare systems. Wide scale and significant interventions are needed to begin to turn the tide in the state. So, it is within this context that the grant recipients endeavored to utilize the funding to build something that could be utilized on a wide scale that could potentially impact the state’s health status over time.

Setting

Tahlequah, Oklahoma resides in Cherokee County, Oklahoma with a population of approximately 42,000 people and is located about an hour southeast of Tulsa on the eastern side of Oklahoma. The members of the taskforce that oversaw the grant all reside in the county. Several state officials also worked on the project by commuting periodically from Oklahoma City, through telephone conversations and email.

Participants

Participants are a highly diverse and complex group of provider entities that provide a very wide array of health services to many different populations.

The originating participants and their provider types are:

- Hospital - Tahlequah City Hospital
- Native American Tribe - The Cherokee Nation
- Federal Hospital - Hastings Indian Medical Center
- Public Health - Cherokee County Health Department/Oklahoma State Department of Health
- Mental Health - Bill Willis Mental Health and Substance Abuse Center/Oklahoma Department of Mental Health and Substance Abuse Services
- Community Health Center - NEO Community Health Center
- University - Northeastern State University

Incidence and Prevalence

The basic questions of incidence and prevalence relate to any previously existing approaches that already operate in Oklahoma within the objectives of the grant. These objectives would be to provide health information exchange, evidence based population health improvement services within the context of health information exchange, and a system that is available electronically to improve access to finding healthcare providers across the state.

Given these three objectives, at the time of the grant and up to the end of the grant, there were no such services or approaches in Oklahoma.

Methods

Study Design

Each of the three objectives required separate methods. Therefore, we have divided this section into Project 1 regarding health information exchange, Project 2 relating to identification of evidence based preventive services within the context of health information exchange, and Project 3 relating to the development of a method to improve access to finding healthcare providers.

Project 1: Development of Health Information Exchange

The first objective in building the health information exchange was to develop strategies to build a framework for a large scale health information exchange that could be utilized anywhere in Oklahoma. To develop such a service, many data sources were needed. These include public health, mental health, a Native American tribe, university, federal hospital, community health center, and a hospital. In order to specifically develop standards for such a complex exchange several taskforces were formed. An expert representing each of the participating entities was involved with each taskforce. The taskforces and their separate objectives are listed below and contain data sources, measures, and limitations.

Clinical Taskforce. The resources for this study were the clinical experts from each partner. The goal was to identify a clinical data set to be shared that would provide the basic set of patient information needed by the providers to treat a new patient. The measures were to specify each data type. The limitations related to the available data and legal boundaries regarding types of information that could be exchanged in Oklahoma.

Privacy Taskforce. The resources for this taskforce related to laws and privacy policies including the development of privacy practices including HIPAA compliance, patient notification, web portal, staff education and patient materials. Information from the state Health Security and Privacy Taskforce project was also used. Most notably, Dr Bill Braithwaite, the principal author of HIPAA, came to Tahlequah in 2005 and met with the members to help them understand and become comfortable with HIPAA within the context of patient data exchange. Interventions for this study are the materials they developed to aid in the effort to protect privacy. Limitations include the fact that national standards had not been developed and there were few privacy models available.

Legal Taskforce. The resources for this taskforce related to all the laws, regulations and legal practices of the partners. The goal was to develop a common legal document that would be workable by this wide array of provider entities to enable data exchange. Under the AHRQ grant Chris Sears, attorney with Ice Miller in Indianapolis, was retained to work with all the partner attorneys to develop a common agreement that could be utilized by a wide variety of health providers in Oklahoma. Mr. Sears does much of the legal work for Reigenstrief in Indianapolis and was therefore exceptionally helpful to construct this document in concert with several other attorneys. The intervention was to design the document and deploy in order to test acceptance by

providers. The measure would be the acceptance rate for the document. Limitations related to the fact that such a document would need to be complex, require some flexibility by new and existing providers as various compromises were needed to accommodate everyone, and that the document needed to be open to amendment as the network developed.

Technology Taskforce. The goal of the technology taskforce was to develop technical standards, identify a technology vendor and build a data sharing structure. Data sources came from the technology directors of the partners and their various software programs that contained patient health data. The interventions and measures were to develop a common template of data requirements and to develop an ITB to communicate and compare vendors around those requirements.

Governance Taskforce. The goals of the governance taskforce were to develop a clear vision, governance structure, voting procedures and a business and sustainability plan for the network. Data sources included executives from each participating partner and information from national sources, most particularly the Reigenstrief Institute. The group evaluated several governance models including 501 C3, 501 C4, private corporation, LLC, and governmental health authority. The taskforce was able to accomplish all of its goals and develop the basis for the interventions and measurements to monitor the progress of the network. The limitations relate to the availability of few successful models to utilize and the fact that new knowledge and products were consistently being introduced at the national level.

Project 2: Identification of Evidence Based Prevention Measures That Could Be Developed Into the Network

Data Sources, Interventions, Measures and Limitations. As stated earlier, Oklahoma ranks a near last in terms of its health status. It was felt that if the electronic network would be accepted statewide then it might be possible to build evidence based prevention procedures in the network that would highlight certain health cost effective and practical preventive interventions. If done on a broad scale, this effort might assist Oklahoma in changing its health status. To aid in the identification of the measures the project contracted with Partners for Prevention. This group is a national group, which is partially been funded by AHRQ, that reviews the existing prevention literature with an eye of effectiveness and cost effectiveness. The original study was performed by a group of researchers headed by Dr. David Satcher and reviewed over 2,000 articles on prevention. As a result they identified twenty-five clinical prevention interventions that ranked the highest according to their rating scale. In 2006 the literature was once again reviewed and a new ranking was provided. Current information about the rankings is available at www.prevent.org/content/view/42/70/.

To provide an expert source the project contracted with Partners for Prevention to send researchers to Oklahoma in 2006 to work with a representative group from the partners who could review the national literature, compare the possibilities for intervention to Oklahoma health status, and identify five measures that could provide effective possible cost effective procedures to reduce clinically preventive disease that might impact Oklahoma health status. The group met twice with many emails in-between to identify the interventions and methods to develop this function of the project. The selection criteria included:

- Is it important?
- Can it be improved?
- Is it measurable?
- Are there competing initiatives?
- Is the intervention practical for most providers?
- Is the scope adequate to address the problem
- Is the intervention attractive to providers?

The project was limited to the science and data set that was available at the time as well as resources to provide the interventions. For example, colorectal screening is cost effective, but it is unlikely that financial resources could be mustered to perform vastly increased procedures on a wide scale.

Project 3: Assistance to the Public to Find Providers

Data Sources, Interventions, Measures and Limitations. As a data source, an initial patient survey developed through the grant asked participants about the degree of difficulty they had locating providers. The results were surprising with over sixty percent stating they had difficulty finding appropriate services. The group managing the grant recommended that a web based service to find health providers be developed on a statewide basis. At the same time, a 24 hour telephone service was contracted to provide a telephone resource. The data set included 18 provider types, which were categorized by payment source, location, and special hours. Therefore, the deployment and use of the web based application was the intervention process. Limitations were largely due to the data sources being out of date. Therefore, a correctional procedure was developed within the application to allow providers a method to correct any data about their practice.

Results

Project 1: Health Information Exchange

The principal finding of the health information exchange effort was that it is possible to construct a data exchange that can provide a service to a wide variety of provider types, to govern such an entity, to establish privacy standards, to develop a standard data sharing agreement that can work for all provider types, and to have the data exchange be financially self sufficient without additional grant or government funding.

Outcomes. By September of 2008 the network, named SMRTNET (Secure Medical Records Transfer Network) had established two operational data exchanges including over one million patients that are located in twenty of the seventy seven counties in Oklahoma. Obligations already on the books for the network will have the data system growing to over two million patients, almost thirty million medical records and approximately thirty percent of the prescriptions filled in Oklahoma, by the end of 2008.

The clinical taskforce identified demographics, allergies and reactions, diagnosis, procedures, laboratory, medications, immunizations and data needed for up to five prevention services as the basic data set. Plans were also put into place to enlarge the data set to CCR standards as those evolve. Services to be offered initially include a community health record and e-prescribing. A personal health record, a hub service involving two way full time exchange of a wide variety of data between many sources, and condition management were also identified and can be made available through the network upon management committee decision.

The privacy taskforce developed brochures, policies, FAQ's, patient notification and opt out procedures, identified sensitive data, distributed over a dozen articles for staff to read that were read by over 2,000 employees of the partners, and a website portal with a wide variety of health exchange information which is publicly available at www.smrtnet.org.

The legal taskforce utilized the exchange document provided by Chris Sears, which was partially based on experience at Reigenstrief, to develop a final Oklahoma document. This process required over two years and a dozen attorneys as building a common document that can work for a hospitals, Native American tribe, the federal government, public health, community health centers, universities and mental health is very complex. The process to add the federal government through the Indian Health Service was a particular challenge. Leadership at Indian Health Service worked for almost two years to develop a template for data exchange. A large section of the federal template mirrored language from the Oklahoma data sharing agreement. In the end, it was not necessary for SMRTNET to develop the exchange with the federally funded Hastings Hospital as it was taken over by the Cherokees and therefore ceased to be a federal entity.

The SMRTNET Member Agreement is now in service with seventeen different entities. For an acceptance rate, the document was recently ratified by eleven different hospitals for data exchange without any needed modification and has been agreed to by the original partners. One exception is the mental health agency as this is requiring more legal work due to provisions of 42 CFR part 2.

The technology taskforce identified the unique needs of each software system, the needs of the system in general, interviewed nine vendors, and develop an invitation to bid with 117 questions and 78 performance criteria. Subsequently, the bids were evaluated and Cerner was chosen as it had good experience with interfaces, could demonstrate it could handle a large volume of data, and was within the possible price range.

The governance group decided to adopt a county health authority for the management of the network at the policy and financial management level. At the operational level a SMRTNET Management Committee was formed to run the more concrete functions of the network. We believe that using a county health authority is a unique arrangement for data exchanges. Its primary advantage is that the health authority is a government entity. Therefore, it is obligated to act in the public's best interest, operate under open meeting laws, function as a nonprofit, and also provides some liability protection for members. The group, called the Cherokee County Health Services Council, officially took over management of the network in 2008. They actively

serve as the contracting and primary signatory, policy board and financial manager for the network. In this model, the CCHSC operated the policy, legal and financial functions of the network and the SMRTNET management committee operated the day to day operational procedures of the two networks operating under the CCHSC.

Of particular interest is the financial sustainability model. The model adopted is based on the idea that, as most healthcare relationships are local or regional, that many different health exchanges may be needed to follow the contour of the naturally bound groups that perform healthcare. At the same time, few groups would have the two to three years and potentially millions of dollars and expertise needed to develop a network. It was also clear that if there were going to be multiple networks, that they must all “talk to” one another. Therefore, the Board decided to make SMRTNET a “utility company” for data exchange. The financial model is that SMRTNET can provide a basic interoperable service at low cost, do the planning and evaluation, prove data, and ramp the service up in a short period of time. If this would be the case, then these naturally occurring networks would be willing to finance such an effort.

Broadly defined, SMRTNET is a wide array of services that includes all the critical functions needed to form a successful data exchange. Many of the functional definitions of SMRTNET are listed below:

- SMRTNET is the product of a publicly sponsored four year \$ 3.4 million dollar effort to provide a capability for medical treatment providers to securely exchange electronic health information under federal and state law to help improve the quality and safety of patient care.
- A public non-profit body
- An open public management system which promotes transparency that is operated by the members for the benefit of providers and patients
- A process which helps improve patient medical quality and safety, improves public health and can help lower medical costs
- A capability to assist groups to build and partially self-manage multiple data exchanges that can all exchange data with one another. This is important as most data exchange entities only provide one network and individually sponsored separate networks frequently cannot share data with other outside networks.
- A “utility company” which provides exchange services at the lowest cost possible
- A non-profit research group that provides assistance in developing consensus based network planning around the following key elements for data exchange:
 - Management vision and structure
 - Sustainable financial planning
 - Clinical data selection

- Privacy compliance
 - Technology
 - Member data exchange agreement
 - Identification and measurement of quality improvement indicators
 - Return on investment calculations
 - Those utilizing the consensus based network planning service are not required to become members of SMRTNET
- A provider of legal assistance to help providers to exchange data under federal and state law utilizing a data sharing agreement which has been approved by over a dozen attorneys from many types of health data providers and users. Most systems do not supply this agreement which is time consuming and expensive to generate.
 - A support service that assists in the development of health information exchanges, especially where funds are limited as most exchanges require \$ 1.5 million to develop a complete implementation plan. SMRTNET can work with potential members to develop a complete plan at no charge or a very small percentage of the usual amount needed.
 - A process that helps to reduce implementation time and improve success. Most exchanges take two to three years to develop and typically encounter a seventy five percent failure rate. A SMRTNET project may require only a few months from planning to implementation.
 - A large and developing data source of over a 1.2 million patient lives, child and adult immunizations, and over 12 million prescriptions
 - An exchange service which is compatible with hospitals, laboratories, pharmacies, public health, tribal health, mental health, universities, and community health centers
 - A capacity that can assist providers in both receiving and sending patient data to and from individual provider electronic health record systems
 - A support service to help providers receive electronic health data in many formats including a community health record, electronic prescribing, personal health record, enhanced “hub service” to increase efficiency in medical practices, and condition management

Several of the research projects in the March 2006 plan were not able to be completed. These include use of preventive care interventions, increased number of compliant immunizations, patient satisfaction, completeness of records and user reported time savings. This was due to the

fact that the project changed from a local system to a statewide system. Please see the discussions for detail. The user satisfaction survey was issued as a premeasure.

For the evaluation method we utilized a custom nineteen question survey evaluating the confidence levels for our participating providers in their ability to access patient information with their current methods. The respondents were asked to score their answers using a five point poor/excellent scale. With a total number of respondents being 215, the 128 of professionals surveyed classified themselves as in direct care positions including 16 physicians. 29 classified themselves as in clerical positions, with the remaining 58 selecting medical records, information systems, billing, and other.

Table 1. Survey topics and results (total number of respondents: 215)

	poor	fair	good	v. good	excellent	NA	
1	22	24	34	24	25	81	Access to immunization records
2	20	29	41	24	23	72	Access to smoking status
3	26	14	44	24	11	91	Find screening results
4	14	2	34	51	42	68	Locate blood pressure results
5	16	12	34	37	41	71	Chart BP results over time
6	16	17	33	37	27	80	Locate glucose results
7	19	19	33	30	24	72	Chart glucose results over time
8	6	15	35	66	81	8	Confidence of in house privacy
9	5	17	44	70	73	5	Confidence of privacy in system
10	21	42	41	36	20	54	Locating patient data including referral
11	28	47	50	41	25	24	Saving time acquiring patient data
12	20	28	45	32	13	72	Prevention of duplicate tests/procedures
13	14	21	54	27	16	77	Prevention of medication errors
14	6	20	44	46	34	61	Ease of accessing allergies/reactions
15	31	40	51	35	12	39	Locating referral information
16	27	46	63	38	12	22	Job satisfaction/lowering stress level
17	35	41	33	25	16	60	Locating mental health status/history

Table 1a.

Respondents by Position*
Medical records: 1
Billing: 3
Clerical: 29
Direct Care: 112
Admissions: 2
Information systems/IT:2
Physician: 16
Other: 33

As a whole, the respondents were confident in the security of patient information at their own facilities as well as the healthcare system on a broader sense. However, the transfer of information within their own facility or between separate entities did not rate as highly. More people responded poor/fair than very good/excellent when asked to rate their ability to find complete patient information including test results and diagnostic information. Also, when asked to rate the usability of information systems more respondents scored poor/fair than very good/excellent. The ability of providers to access mental health history and diagnoses fared poorly as well with the majority of providers scoring their ability to access this information as poor/fair.

Overall, when asked to evaluate the accessibility of specific information such as blood pressure results, glucose level results, and allergies or reactions current information systems rated well with the majority of respondents selecting very good/excellent. Unfortunately, when asked to rate the accessibility of referral information for the patient or test results from outside facilities the majority of respondents rated poor/fair. Perhaps most telling is when asked if their health information system helped them to feel more fulfilled and less stressed in their job many more respondents rated the use of their health information system as poor/fair instead of good.

Discussion. The evolution of SMRTNET from a self contained regional data exchange into a multi-faceted statewide planning and oversight body that would help providers in Oklahoma plan, finance and operate many data exchanges that could share data with one another took place over a long period of time. In the end, as Oklahoma is experiencing such a serious series of health status and system problems, such a massive effort was needed to offer an opportunity to begin to rapidly adopt and utilize health information exchange in Oklahoma.

Perhaps the best example of the SMRTNET mission occurred in Oklahoma City in 2008. SMRTNET was asked by eleven OKC metro hospitals to help them plan and build a network that could subsequently be adopted for use by all the metro area health providers. The hospitals utilized the SMRTNET planning service to develop clinical, return on investment, quality improvement, business model, governance, privacy and legal criteria through a consensus building process. As a result, the group was able to agree on all aspects of the network. The ROI was \$14 million, quality improvements estimated that of ninety hospital quality measures thirty would be positively affected by the network and that care of the uninsured would be greatly improved. The results of this study only took two meetings of three hours each for each expert group. Overall approximately forty staff experts were involved. The network will cost \$400,000 per year compared to an ROI of \$14 million. The network will include nearly two million lives at its completion at the end of 2008.

The funds from this network are adequate to fund the effort both in Oklahoma City and northeastern Oklahoma. Therefore, the network is already financially independent of the AHRQ grant and requires no legislative or grant funding to sustain itself for several years. However we expect other providers to join the service as it demonstrates its effectiveness. And as each network has their own board, they can chose prices that may help defray costs for the members or to expand services. For example, in Oklahoma City the network will use some of their funds to build an interface to indigent clinics.

Unfortunately, growing into such a large system slowed down the projects ability to research results and outcomes as most of the time the system was under construction. Developmentally, most of the projects energy was spent building a huge base of patient data so that users would have something valuable and therefore want to use the system. Projects we had to forestall were

use of preventive care interventions, increased number of compliant immunizations, patient satisfaction, completeness of records and user reported time savings.

It is important to note that complexity slows speed when it comes to attorneys and complex member agreements. By combining community health centers, public health, mental health, Native American tribes, the federal government, hospitals and universities we created a very rich exchange. The legal work was nearly the most challenging and time consuming part of the project. Government based attorneys are very cautious in their approaches in that state and federal agencies worry a great deal about any perceptions and the area of HIE through networks is new to them. Also, we noticed that the entities that contracted for legal time got much faster responses than those entities that had in house attorneys.

Conclusion. As the result of this study, we have been able to demonstrate that it is possible to develop a health information exchange that can work for a wide variety of sources, develop multiple networks that can communicate with one another, exchange data, govern, comply with privacy laws, develop methods of evaluation regarding return on investment and quality improvement and reach financial self reliance without government or grant financing.

Significance. We believe the model we have developed here would work anywhere in the country. We believe that the development of multiple data exchanges that can communicate data with one another is important as this follows the natural landscape of how healthcare is managed and communicated. To form new networks, in most cases, the money, expertise and time it takes to form an exchange successfully would be a major barrier to their formation. Therefore, these groups need a wide variety of external expert services to assist them in developing exchanges in order for them to identify a successful process to plan, govern, evaluate, grow and measure results sufficient to make network members want to pay for data exchange. These groups need the exchange to be affordable, be rich in data and be constructed in a relatively short timeframe.

It may be that in some states they will develop one solitary data exchange. But, at a practical level, many of these are encountering problems getting to the point that they actually exchange data and are affordable because the memberships are so large, the timeframe is so long, and the costs are so high on a large scale. We feel, using the SMRTNET approach, that networks can be developed in a more natural way “from the bottom up” rather than the top down. And that as these smaller SMRTNET networks become successful, they will grow rapidly and additional groups will want to form their own networks or join an existing network. Again, SMRTNET will have over 2 million patients (there are 3.4 million people in Oklahoma). The two operational networks have developed in a one year timeframe and three more networks are in the discussion or planning phase as a result of the success of the current two networks in Oklahoma City and northeastern Oklahoma.

Implications. We feel the implications of using one broadly managed government health authority to quickly and inexpensively build multiple data exchanges may provide a model that can work in many areas of the country. Aside from some privacy and liability issues that are unique to Oklahoma there is nothing to say that this system could not be used in any other state or area.

Project 2: Identification of Evidence Based Prevention Measures that Could Be Developed into the Network

Principal Findings. A statewide expert taskforce from the Oklahoma State Health Department, Oklahoma Department of Mental Health and Substance Abuse Services, Hastings Indian Medical Center, Cherokee Nation health and the Governor’s office met twice for all day meetings with experts from the Partners for Prevention supplemented with several emails and discussions for a period of months. The goal of the group was to identify five prevention measures that could be adopted in Oklahoma that would be effective, cost effective and address some of the major causes of health status problems in Oklahoma. The groups were able to identify five interventions that according to the research by Partners for Prevention, should be effective in improving Oklahoma health status if they were widely accepted.

Outcomes. The prevention taskforce identified the following as the key health statistics that are the major contributors to the poor Oklahoma health status:

Table 2. Health conditions in OK versus the US

Condition	OK Rate	US Rate
Heart disease	307.1	240.8
Stroke	66.4	56.0
Smokers	26.0	20.8
High Blood Pressure	28.0	24.8
High cholesterol	32.0	33.1
Binge drinking	13.0	14.9

As a result of the study, the following clinical prevention activities were identified as the five interventions the taskforce felt would be effective:

Table 3 Five medical interventions

Committed Interventions	Evidence Based Effectiveness (1-10)	OK Compliance Rate
Compliance with blood pressure medications	8	40%
Compliance with cholesterol lowering medications	7	40%
Compliance with aspirin use	10	50%
Reduction in drinking by physician encouragement	8	unknown
Smoking reduction through medical office referral	10	unknown

At the same time the group discussed two methods of building these criteria into a data exchange. One method involved a paper form the patient could fill out in the waiting room and take into the visit that would be used in the visit and then machine scored later. The second method involved putting alerts into the electronic system. These models were subsequently evaluated and the electronic alerting system was encouraged.

It was also decided that building the prompts needed into the interoperable system was technologically very difficult in that most interoperable systems do not require heavy data entry on the part of the provider. Further, interoperable systems are not so much a medical record as a summation of other medical records. Another issue as that, for the most providers do not see the

electronic screen of the interoperable system when they are treating the patient. Therefore, it would be more effective to build these provider prompts into an electronic records system and use the network data to support the prevention items.

Discussion. The concept of building evidence based prevention measures into an interoperable network is an intriguing one as it may hold some hope for utilizing a network to help change population health status. On the other hand, these efforts require provider time and acceptance. Therefore, getting providers to agree on these measures on a wide scale would require action at a high level. At the same time, the conclusion reached is that we await a broad acceptance of electronic medical records for such a system to be practical and efficient.

Conclusion. As the study progressed several issues became apparent. One is that the science is there to identify and clinically track evidence based prevention services. On the other hand, a large consensus of providers is needed to get the time commitment to such an effort and a large population is needed to statistically prove that the effort was successful. A substantial issue is one that all providers share in that a wide use and acceptance of customizable electronic medical records would be needed to make the system work on a large scale basis.

Implications. As a result of our experience we believe that to affect population health on a wide scale it is necessary to build a large human provider group to effectively commit to, deliver and evaluate the impact of prevention priorities. Therefore, a large entity such as the state medical society or substantial city health entity might be the best vehicle for such an effort.

Project 3: Assistance to the Public to Find Providers

Principal Findings. It is possible to develop a web based system that includes the majority of providers in Oklahoma to help direct patients to the best provider resources in their area.

Outcomes. The result of this project can be seen at www.okhealthfinder.com. This system includes over 10,000 providers listed by type, location, payment sources and special hours. The goal of this system is to provide a public and objective link to locating healthcare providers.

Discussion. This work to develop the database proved to be more difficult than we anticipated in terms of getting valid listings and utilization. Provider data that is available from association and other resources is frequently not accurate. Therefore, it is necessary to “clean up” the data and this is time consuming. At the same time, other valuable uses have been found for the same data. For instance, it can be used to plan the location of new medical providers, hospitals, mental health and many other entities. For example, the data was shared with a public web based economic development system that does community economic planning at www.oklahomavirtualcommunity.com. The data has been used there for health planning by several entities, including optometry students at Northeastern State University who use the system to help them identify where to locate their practices. The data can also be used to assist with any of the eighteen services it tracks.

At the same time, the 24 hour phone service used to aid with telephone support was discontinued as a result of low usage.

A potentially important finding is that the number of active physicians in Oklahoma appears to be significantly less than the number generally accepted. In order to develop the service, we had to eliminate names who used addresses outside the state from the state medical registry. Surprisingly, over forty percent of all the registrations had addresses outside the state.

One special aspect of the system is how it navigates Native American services. There was a concern that this system would divert or confuse Native American users. Therefore, the system sorts users for Native American services into a separate provider network.

Conclusion. We consider this project a success in that the system works well, provides the necessary provider information, and even gives driving directions and the amount of time it would take to drive to the provider's office. Getting the system linked into other high traffic areas on the web is difficult as that web real estate is frequently used for priority projects or as a paid effort. Despite several efforts, traffic to the basic site has been low (average of less than 40 uses per month), as a self-standing entity. Therefore it is critical to convince other high traffic sites, such as the Oklahoma State Department of Health and Oklahoma Insurance Department to put a link to this service on the site. On the other hand, geocoding all the health sites in the state has proved very useful for health planning and the establishment of provider offices.

Implications. This model attempted to build a system from the ground up. It may be more effective to get early "buy-in" to develop a system as the large providers might feel a sense of ownership. At the same time, geocoding all health facilities can assist in improving health as it provides a basis for efficient location of provider resources.

List of Publications and Products

Conference Presentations

Mark Jones, Principal Investigator, Secure Medical Records Transfer Network. Incomplete Records, Shattered Care. August 28, 2006. Electronic Health Records Conference. Oklahoma Hospital Association

Mark Jones, Principal Investigator, Secure Medical Records Transfer Network. The Use of Health Information Exchange to Improve Prevention. April 26, 2006 Houston, Texas National Commission

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Web Based Tools

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