Health Information Technology and Health Information Exchange Implementation in Rural and Underserved Areas:

Findings from the AHRQ Health IT Portfolio

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Introduction

In 2004 and 2005, the Agency for Healthcare Research and Quality (AHRQ) awarded $139 million in funding for health information technology (health IT) and health information exchange (HIE) projects.[1] The AHRQ health IT portfolio consists of grants and contracts to support organizational and community-wide implementation and diffusion of health IT and to assess the extent to which health IT contributes to measurable and sustainable improvements in patient safety, cost, and overall quality of care. As part of this funding, AHRQ awarded 40 implementation grants under the Transforming Healthcare Quality through Information Technology (THQIT) grant program. These grants focused on improving care in rural and underserved areas and a significant portion of grantees concentrated their health IT funding to organizations providing care to these populations.

The AHRQ Health IT portfolio also includes a National Resource Center for Health IT (NRC), created to support the many projects funded by AHRQ and the Nation in adopting and evaluating health IT. The NRC has established an infrastructure for collecting, analyzing, and disseminating best practices and lessons learned from AHRQ's portfolio of health IT projects. This report focuses on the challenges facing rural and underserved communities in integrating health IT into their health care delivery systems.

The NRC Technical Assistance (TA) team developed this report to disseminate findings, solutions, and lessons learned on the potential barriers and challenges to implementing health IT and HIE applications to providers serving rural and underserved communities in the AHRQ Health IT TQHIT program. It is hoped that by disseminating these lessons learned, those who are new to the field will be able to avoid some of the pitfalls and build on the success stories.

Background

During an initial literature review, the NRC TA team found that many of the health concerns and access to care issues of rural communities are similar to those of other underserved communities. In addition, the literature review revealed that health IT adoption barriers and challenges of the health care organizations that serve rural and underserved populations are

also similar. Therefore, the approach for this project was to include grantees serving rural or underserved communities in a single findings report.

Rural and Underserved Communities

While there are many different definitions of rural communities, here we define rural populations as those residing within a county or area not designated by the Office of Management and Budget as a Metropolitan Statistical Area (MSA), which has at least one city with 50,000 or more inhabitants and a total population of at least 100,000.[2] Similarly, there is no single, accepted definition of an underserved population. Here, we define underserved populations as groups whose demographic, geographic, or economic characteristics impede or prevent their access to health care services,[3] such as low-income individuals, the uninsured, immigrants, racial and ethnic minorities, and the elderly.

There are significant health disparities and access to care issues that are specific to rural and underserved populations. Rural and urban areas differ in many ways, including demography, environment, economy, social structure, and availability of resources.[4] Compared to other geographic areas, rural residents are more likely to be elderly, poor, in fair or poor health, and to have higher rates of chronic disease and poor health behaviors. In addition, they are less likely to receive recommended preventive services and report, on average, fewer visits to health care providers.[4-7]

It is well known that the underserved, including low-income individuals, minorities, and the uninsured, are more likely to be in fair or poor health and to suffer from chronic diseases such as hypertension, asthma, and diabetes; have less access to health insurance; and are less likely to have a primary care provider and rely on the emergency department for their usual source of care.[5,8,9]

Access to care is an issue in regions where physician-to-patient ratios are inadequate, or where there are not enough medical specialists available to meet the population's needs. Rural areas struggle to maintain adequate numbers of clinical staff to serve their patient populations. While 20 percent of the U.S. population resides in rural areas, approximately 9 percent of physicians and 10 percent of specialists practice there.[10] Lack of access to

medical specialists is not just a rural problem. Many urban, underserved settings also do not have enough specialists to provide care in fields such as dermatology and stroke care.[11,12] Access to a regular source of care and specialty care can have a negative impact on health outcomes. When patients are better able to access medical care, they can have acute conditions treated locally, receive treatment for medical problems before they become critical, and receive care to better manage chronic conditions.[13,14] Clinical evidence indicates that access to appropriate care can improve the health status of patients with chronic diseases and thus reduce or eliminate health disparities.[15]

Benefits of Health IT and HIE

Health information technologies, such as electronic health records (EHRs), computerized provider order entry, clinical decision support, electronic prescribing, telehealth, and other technologies that enable HIE have been promoted as potential tools for improving the quality, cost, and efficiency of the U.S. health care system. A growing body of research demonstrates that health IT and HIE can improve medication safety, chronic care management, and compliance with treatment guidelines, as well as improve the efficiency of hospital workflow and reduce the cost of care.[16-26]

Despite the growing literature on general use of health IT, the majority of this information has focused on data from urban or suburban centers or academic medical centers; little is known about the benefit of health IT in rural and underserved settings.[27] However, the ability for health information to be exchanged between organizations may be more important for providers that care for underserved populations because these patients are more transient, less likely to have a primary care provider, and seek care from a variety of organizations (e.g., emergency department or county health department). Because patients seeking care from safety net providers often have more complex physical and mental health needs, health IT offers substantial potential benefit. Disease registries and decision support can help providers manage their complex chronic care needs, and HIE capabilities can allow providers to coordinate and manage patient care more effectively between multiple sites of care. Research has demonstrated that where access to medical specialties is scarce, telehealth technologies can improve access to specialty care in underserved urban and rural areas and among underserved populations who are institutionalized, such as inmates and nursing home residents.[11, 28-30]

Barriers of Health IT and HIE

Despite these potential benefits, it is estimated that only 8 to 12 percent of hospitals and 4 percent of ambulatory care providers in the United States have adopted comprehensive EHRs.[31, 32] The reasons for the relatively slow rate of adoption of technology in the overall health care field are increasingly well understood and include high capital and maintenance costs; lack of a sustainable business model; security or confidentiality issues; not finding a system that meets practice or department needs; end-user acceptance; absence of common data standards; lack of leadership or a strategic plan; concern that the system will become obsolete; and lack of available staff with adequate expertise in IT.[31-34] The success of HIE initiatives depends on the ability to address several complex and interdependent problems concurrently, including establishing interoperability, building public trust, assuring stakeholder cooperation, and developing financial sustainability,[35-39] all of which can contribute to slow adoption or even derail projects.

These issues are not unique to the organizations serving rural and underserved populations, but are exacerbated in these settings due to their lack of financial, personnel, and other resources. Barriers identified as unique to the health care organizations serving rural and underserved populations include products that are not applicable to community health centers (CHCs) or federally qualified health centers (FQHCs) who have unique reporting requirements, problems with reimbursement, and a focus on technology issues at the expense of health and business issues.[40,41]

Method and Approach

In July 2008, the NRC TA Team hosted an open forum with THQIT grantees that implemented technology in either a rural or underserved area. The NRC routinely conducts open forums with grantees to provide a venue for grantees to share experiences, challenges, and lessons learned with each other on a particular topic of interest. The grantees were invited to this open forum based on whether they self-identified as working with rural populations, safety net organizations, FQHCs, and organizations serving medically underserved areas or populations, including the elderly, uninsured, underinsured, Medicaid recipients, and other low-income groups.

A total of 13 grantees and members of their team participated in the voluntary open forum, as well as followup discussions, during routine technical assistance phone calls, during which grantees described their experiences implementing health IT in rural and undeserved areas. The open forum included a discussion of implementation challenges in the areas of interoperability, provider adoption, reporting/patient data management, resources, and vendor solutions. The group also discussed critical success factors for collaborative partnerships, financial support, IT capacity, organization size, provider adoption, and stakeholder support. The grantees represent geographically diverse areas in the United States, serving a wide range of populations in both rural and urban settings. While the technologies being implemented varied among grantees, the majority of grantee goals included improving access to care and some element of HIE between health care providers or organizations. More detail on each of the participants' projects is outlined in the Appendix.

The results of the open forum and followup calls were captured and summarized to identify themes and key points discussed. The purpose of this document is to highlight the challenges identified by the grantees along with their real-world solutions. This document is not meant to be a comprehensive overview of all health IT and HIE implementation challenges facing rural and underserved areas but highlights some key areas that are either unique or recognized as having a higher impact among these organizations.

Findings

The NRC TA Team identified four major themes from the open forum: technical, policy and procedures, organizational, and financial. Each is discussed in more detail below.

Technical

Connectivity

While the majority of Americans have access to adequate Internet connectivity,[42] broadband connectivity, the ability to quickly and reliably access the Internet by fixed and mobile communications devices, is still an issue for many of the rural grantees. The ability for them to utilize their health IT hinged on connectivity: temporary disruptions to productivity or disruptions in access to records when Internet connectivity was down or slow was cited as a huge challenge. These rural grantees cited events that would not be as common in urban areas such as hunters shooting down lines. However, because of this, the grantees noted that they felt like they are prepared and developed procedures and contingency plans for what to do when connectivity was down.

Because of the connectivity issue, some project teams were against using an application service model (ASP) for EHRs. While ASP EHR models are generally less expensive than local installations, since a server is not required at every individual practice location, the potential for Internet disruption could greatly disrupt information exchange and thus patient care. One grantee noted that they decided to implement the more expensive local installations for their providers because of this concern from their providers.

The Federal Government has taken steps to address Internet connectivity in the American Recovery and Reinvestment Act of 2009 (ARRA), which includes provisions aimed at increasing broadband service in underserved areas. Within the ARRA is the establishment of a "national broadband service development and expansion program," by the U.S. Department of Commerce in consultation with the Federal Communications Commission. The National Telecommunications and Information Agency was allocated $4.7 billion to be distributed as grants for a wide variety of purposes including: equipment purchases;

construction and deployment of broadband service related infrastructure; and facilitating access to low-income, unemployed, aged and other vulnerable populations.

Vendor Solutions and Capabilities

A major barrier cited by the majority of the grantees was that vendors did not have products that would adequately meet their needs. There was a discrepancy between the presentations organizations received from vendors and their actual ability to do what they promised. While the grantees acknowledged that vendors would never have a turn key product and that all technology implementations would require some level of customization, vendor products were not geared to their organizations. For example, one grantee remarked on the lack of experience of vendors working with the Indian Health Service Resource and Patient Management System (RPMS), while another described the difficulty in implementing software developed for the private-sector health maintenance organization (HMO) environment into a safety-net hospital due to the difference in Medicaid and HMO claims information.

Safety net organizations often need more vendor product customization and specialized support because of their patient populations, which require more complex and wide-ranging services; that care entails more complex billing and unique reporting. For example, CHCs funded through the Health Resources and Services Administration's (HRSA's) Health Center Program are required to submit the uniform data system (UDS) report annually; centers funded to provide HIV-AIDS services are required to report data for the Ryan White Services Report. Safety net providers are often funded from a variety of sources and thus required to generate separate reports to those funders regularly. Safety net and CHCs rely on their health IT systems to provide necessary information for reporting, but vendors are often not familiar with these specialized needs and the products often do not allow for this kind of reporting. Grantees discussed that vendors struggled to use software developed for the private environment and apply it to the safety net environment because of their unique reporting requirements and services. Some grantees reported that vendors were opposed to creating or developing solutions or interfaces for their environment or charged fees that were prohibitive for them.

While not unique to organizations serving rural and underserved communities, many grantees noted their frustration with vendors verbally committing to capabilities and support of these unique groups, and then ultimately not being able to deliver the desired functionality or increasing the price to do so. This underscores the importance of selecting a vendor with a satisfied customer base that includes organizations similar to the organization purchasing the system and developing well-defined contracts.

Policy and Procedures

The grantees cited that the most critical issues influencing health IT and HIE development and implementation are developing security and confidentiality policies and creating standards, which mirrors issues cited in the literature.[43]

Privacy and Confidentiality

While addressing privacy and security of personal health information (PHI) is critical for all organizations, it is an even greater concern for rural areas where most of the staff and patients know each other. It is also a concern in urban areas, where safety net clinics often make an effort to hire members of the community they serve. The grantees noted the significant concern of their patient populations in keeping records private in an environment where everybody knows one another. According to grantees, in small close-knit communities, close friends, neighbors, and family members often work at the local medical facilities, leading to concern among patients that specific individuals may gain access to their private medical records.

The grantees reported that they underestimated the complexity regarding privacy and security policies and procedures needed. Addressing these issues took longer than they planned for, and grantees spent significant time analyzing different breach scenarios. Specifically, much discussion surrounded setting policies and procedures for authorization (who is allowed to view a patient's PHI) and auditing functionality (the ability to track who has accessed a patient's PHI). One grantee noted that they convened a privacy and security workgroup to create the policies and procedures for their hospital within the context of

their State regulations. This grantee reported using the Connecting for Health Common Framework[44] documents as a starting point for creating policies and procedures for their hospitals and facilities and recommended that others consider using these documents. In addition, meeting HIPAA standards and keeping current with security regulations were cited as challenges by the rural and safety net providers who have fewer technical and human resources to address these requirements. This underscores the importance of the work of Federal and industry efforts to continue to develop repositories of best practices and guidance from experienced adopters of health IT in rural and underserved communities.

Additional solutions provided by the grantees included providing appropriate training to staff on patient privacy. However, because grantees' reported the concern by their patients of abuse and breaches of their PHI, it may also be useful to develop consumer education materials in order to increase patients' awareness of HIE, how their health information will be used and how it is protected.

Information Exchange Standards

To ensure that health care organizations can effectively exchange health information, systems must be able to communicate with each other, professionals must have agreed on which data are important to transmit, and the technical systems must be able to carry out these exchanges of data. While not unique to safety net and rural providers, sharing and exchanging data within a network is critical to maximizing the benefits of health IT and improving the quality of care; grantees stated that disparate systems were a significant barrier to sharing health information between partnering facilities. Because many of the projects were initiated before the introduction of nationally recognized interoperability standards and specifications for exchanging health data and standard-setting organizations, they often encountered barriers to information exchange. In addition, grantees noted that in smaller or resource-constrained communities, it was difficult for them to keep informed about the national health IT agenda and industry guidance.

In the last few years, knowledge in the area of clinical standards and data exchange has increased through efforts supported by the Federal Government, including the Health

Information Technology Standards Panel (HITSP), and the Certification Commission for Healthcare Information Technology (CCHIT). Certification organizations like CCHIT develop a comprehensive set of criteria for functionality, interoperability, and security that make it easier for systems to interoperate. These efforts will continue to increase with the funding available in ARRA: these funds will be directed towards qualified providers who are "meaningful" users of EHRs. This demonstrates the need for a repository of this information to serve as a resource for health IT implementers to find the most up-to-date national guidance.

Collaboration of all stakeholders at the planning stages of projects was reported as critical to the success of HIE between organizations. For example, one grantee convened a clinical information steering committee that included representatives from the nine communities in their system. This steering committee was charged with deciding what clinical data to be exchanged and the specific standards to use. This steering committee was integral in developing consensus and ensuring that the systems across the different organizations could communicate with each other.

Organizational

Insufficient Informatics Expertise

Adopting and implementing health IT and HIE technology requires hiring staff with specialized IT training, exacerbating the challenges rural and safety net provider organizations already face in hiring and maintaining qualified staff. The availability of staff with informatics and health informatics training in underserved and rural communities is limited. One grantee described this as the "lack of and/or fragility of the bench," meaning that the pool of personnel resources in rural and underserved areas is not comparable to that in urban areas or resource-rich health care organizations.

Several grantees reported the difficulty of hiring and retaining staff. Individuals are often recruited and trained to serve as in-house IT experts, and once they have achieved a certain amount of expertise, they are recruited and/or choose to work for a larger facility that can offer higher salaries and greater benefits.

Even in organizations with knowledgeable IT staff, grantees from smaller organizations had a limited number of IT staff, which contributed to delayed implementation and ongoing maintenance issues. For example, one grantee described how his team implemented their systems with only a handful of people who had to travel to multiple implementation sites in two States. In addition, grantees noted that when they had a limited of number of IT staff, these staff had many competing priorities because of their other responsibilities. With a limited number of staff to support the whole IT functions for their entire hospital, the first priority was to support normal hospital operations for patient care. This grantee noted, "While interoperability was universally accepted as something to support, the hospital's ability to function comes first."

Staff for Planning and Implementation

Limited involvement by IT staff during the planning and vendor selection phase of a health IT implementation project can negatively impact the project's success. One grantee noted that in their enthusiasm to take something that worked in the private sector and apply it to their safety net clinics, they underestimated the technology challenges as cited earlier. This could have been mitigated with the input of IT staff or a technology consultant. In addition, grantees stressed the importance of having qualified project management staff during both planning and implementation phases. At the beginning of the project, a grantee project had a physician leading the project and a nurse as the project manager. While their clinical input was necessary, high-level project management expertise was also necessary to provide support to the organizations and their providers as the system was implemented. While hiring technology staff or a project manager may be prohibitive for underresourced organizations, grantees suggested that private or government funding opportunities may be one way to pay for this expertise in the short term.

Lack of Basic Computer Literacy

To maximize health IT and HIE capacity, both physicians and other health care staff need to have some degree of computer literacy. Grantees noted that in some of their health care organizations, some front office staff did not know how to use a computer and that a basic

level of computer training was necessary for staff to be comfortable using IT. Workforce development and training, on both health IT and basic computer skills, are critical upfront so that staff feel comfortable using IT.

Training

Although not unique to rural and underserved settings, another crucial component to the success of the projects noted by the grantees was user training and outreach.[34,45] However, because of the computer literacy issue and limited informatics expertise mentioned previously, grantees noted that training or development of a training program may take longer or need to be tailored to address a lower level of familiarity with computer use. Grantees suggested multifaceted approaches such as the "train-the-trainer" model, one-on-one trainings with providers and staff, the development of pocket guides for providers and including training materials on organizations' Web sites.

One grantee emphasized the importance of training staff and providers on the integration of technology into office workflow. They had only focused the training on how to use the technology, in this case, a disease registry, but did not target training on how to integrate it into the office workflow. The grantee suggested that the ideal training for providers would include how to use the technology to maximize its benefit in encounters with patients.

Organizational Leadership

Introducing health technologies impacts the culture of an organization. According to grantees, effective implementation necessitates a change in provider culture, attitudes, and thought processes. A major lesson learned from the grantees was for leadership to be honest and upfront with providers and other staff about the change in culture and workflow, "to be as realistic as possible about the process and not try to sell anything." They stressed that these technologies are not simple tools that can be easily integrated into a new environment and that providers and staff will have to change the way they work. Implementation leaders must plan for social and cultural changes that will accompany the introduction of new technologies.

Grantees also stressed the importance of consistent and informed organizational leadership, which is consistent with existing literature.[46] Staff turnover at the leadership level was identified as a huge challenge by the grantees working in rural and underserved areas, and hiring new staff and getting them up to speed delayed the planned implementations. The time needed to rebuild the momentum, vision, and interest among key players was a challenge. Given the limited resources and the time and effort it takes to secure buy in to the vision and implementation plan, losing a project champion can slow down a project. Cultivating new relationships and gaining buy in has to be repeated, which takes staff time away from other priorities, and the outcome is not always positive for the project. One grantee noted that when a new CEO or other high-level leadership comes on board, there are many local issues that are on their priority list to be managed. This can impact the leaders' willingness to engage at a regional level and invest a large sum of money into a legacy project. In addition, other key players often lose interest once momentum slows down as new leadership comes up to speed. While the importance of organizational leadership is central to the success of health IT and HIE implementations in all settings, it is exacerbated in rural or underserved settings where resources are more limited and the time and cost of recruitment of leadership personnel is high.

Staff and Physician Buy In

It has been noted that when providers recognize the added value of a health IT tool, they are far more likely to adopt that technology than when there is no apparent added value. These grantees were no different, reporting staff and physician resistance to learning new systems and stressing the need for making the business case for the technology for every provider. Consistent with existing literature, the grantees stressed the importance of physician champions for technology or other types of practice change. For example, "we need a physician champion who can speak to why this can work and how it can fit into the eight minute visit." As previously noted, grantees reported the importance of staff and provider education of the value of the technologies to their patients and to their jobs.

Financial

Funding

A significant barrier cited by the majority of grantees was the financial resources required to fund their planning and implementation costs. Financial barriers are particularly pronounced for rural physicians because they typically practice in single-specialty, solo, or small groups which traditionally lack the financial resources needed for health IT implementation. In addition, most safety net providers are supported by government funding and have limited financial resources.

While grantees were provided with supplemental funding from AHRQ, start-up costs were significant and the grantees had to rely on other sources of funding. In addition to receiving grants from Federal and State agencies as well as other external organizations, facilities often rely on internal funding to begin, complete, or expand health IT implementation. Health care facilities operating in rural and underserved areas often have limited profit margins and therefore limited funding available to extend beyond direct patient care expenses. In addition, capital expenses for health IT were in "competition" for other equipment such as computed tomography (CT) scanners. As a result, health IT implementation projects can often be difficult to initiate and/or take a long time to roll-out because consistent funding can be difficult to secure. Grantees noted that without the availability of external funding, it would be difficult or near impossible for rural and underserved facilities to implement basic health IT. Specifically, one grantee noted that without the AHRQ funding, their project would not have been possible.

While grantees continue to rely on grants from Federal and State agencies and other nonprofit agencies, some of their solutions to overcome their financial disadvantage include pooling resources from participating facilities and approaching employers and other stakeholders who have a vested interested in improving the overall health of their community. Another grantee reported working directly with senior leadership to educate them on the benefits of the health IT to ensure their projects are considered in budget plans.

The absence of large employers can be a key component impacting the sustainability model for projects implementing an HIE. According to one grantee, it can be difficult to get buy in from large employers in their area, because in rural communities the number of large employers is limited and often includes the government, hospitals, and State prisons. In addition, the smaller employers tend not to offer health insurance and therefore are less likely to engage in HIE-related activities because they do not have as much financially at stake as employers that provide insurance coverage. To get buy in from employers, grantees recommended a variety of solutions: engaging employers before the implementation project begins to ensure their interests are included; creating a business case for employers to ensure their commitment over the long term; conducting presentations with large and small employers to demonstrate the benefit that population health management can have in their community, workforce, and financial strategy; holding live demonstrations once the project begins so employers can visualize the technology and see the progress; and partnering with any large, private health insurers who cover the area's population.

Funding in the ARRA presents an unprecedented opportunity to increase health IT adoption in the United States. The Health Information Technology for Economic and Clinical Health Act within the ARRA appropriates $36 billion to be used over the next 6 years to encourage health IT and HIE adoption. This includes grants for planning and implementation of health IT, EHR loan funds, and Medicare and Medicaid payments to incentivize providers to adopt. In addition, within the ARRA's broader health funding program, there is $1.5 billion in designated funds, to be disbursed through HRSA, for federally qualified health centers to improve their infrastructure. These funds can be used for construction, renovation, equipment, and acquisition of health IT.

Conclusion

AHRQ has funded a diverse set of projects to implement health IT and HIE in rural and underserved areas. The open forum discussion with grantees serving rural and undeserved communities provided rich detail about their experiences planning and implementing HIE and health information technologies, including major challenges, solutions, and lessons learned. The majority of the identified technical, policy, organizational, and financial challenges mirror much of what has previously been described, demonstrating the need for continued attention and a coordinated effort to support those new to health IT implementation. However, as more organizations serving rural and underserved communities implement health IT, it is imperative that these support mechanisms are in place as these organizations have even fewer financial and personnel resources and thus less room for failure.

From our discussions with the grantees, their primary challenge continues to be financial costs to plan and implement health IT, even with funding from AHRQ. The ARRA includes a variety of provisions that will impact the financing of health IT for rural and safety net health providers. Beginning in 2011, providers enrolled in the Medicare program who implement and report meaningful use of EHRs can receive initial incentive payments up to $18,000 and total payments up to $44,000. Providers in rural health professional shortage areas will be eligible for a 10-percent increase on these payment amounts. In addition, there are payments to State Medicaid plans that implement programs to encourage the adoption and use of certified EHRs. The programs may make payments to providers, up to $63,750 toward adoption, implementation, upgrades, maintenance, and operation of certified EHRs. Providers must choose between health IT funding through Medicare or Medicaid; however, acute care hospitals are eligible for both the Medicare and Medicaid incentive programs. These incentive programs present opportunities for rural and safety net providers to recoup some of the costs of their implementations, especially since they serve a large Medicare and Medicaid population.

An additional challenge cited by the rural grantees was the limited numbers of available individuals with IT or informatics expertise in their communities, revealing the need for

significant workforce training. Significant funding opportunities also are included in the ARRA for health IT training programs to increase the number of workers with this expertise. These include grants to academic institutions to expand medical informatics training programs and to integrate information technology into the curriculum of their clinical programs.

Finally, grantees continue to struggle with many issues related to planning and implementation, including vendor selection, privacy and confidentiality policies, and selection and use of standards. This underscores the importance of the NRC to continue to be a repository for best practices and lessons learned as well as a technical assistance provider.

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Appendix

Transforming Healthcare Quality Through Information Technology Open Forum Participants

*Grantee did not participate in the open forum but provided input during a followup discussion.

Project Name	Principal Investigator	Project Representatives	Short Description	Project Location	Population Served
Accessing the Cutting Edge-Implementing Technology to Transform Quality in SE Kern County	Kiki Nocella, MHA, PhD nocella@usc.edu	Kiki Nocella, MHA, PhD nocella@usc.edu Jami Young jamiyoung@tvhd.org	Goal: to have the ability to do population-wide prevention population methods, specifically immunization. Currently, 100 percent of PCPs are participating with EHRs. Implements and evaluates an Integrated Technology Association ("ITA") that addresses these three key aims: 1. Build infrastructure: Create a culture, organization, and mechanisms that promote safe, high-quality care. 2. Enhance the health professions workforce through education and organization. 3. Enhance quality care using health IT, focusing on diabetic care as a model.	California	Rural

Project Name	Principal Investigator	Project Representatives	Short Description	Project Location	Population Served
*Connecting Healthcare in Central Appalachia	Polly Bentley pbentley@arh.org	Polly Bentley pbentley@arh.org	Appalachian Regional Healthcare, Inc., is an integrated rural health care delivery system serving approximately 20 counties throughout eastern Kentucky and southern West Virginia. With this proposal, the various facilities that make up the ARM system will launch the implementation of a major component of its clinical information initiative. The implementation of the initial stages of electronic medical records will increase the timeliness and accuracy of care provided to patients, improve workflow throughout the system and across the continuum of care, and ultimately, improve the overall quality of care provided to patients. Funding requested with this proposal will provide essential hardware components to initiate this kick-off, training for project core team members and hospital medical records staff, and the personnel costs associated with the adaptation of the electronic medical records system to accommodate ARH's needs and the standardization of forms to complement the system.	Kentucky	Rural

Project Name	Principal Investigator	Project Representatives	Short Description	Project Location	Population Served
El Dorado County Safety Net Technology Project (ACCESS)	Greg Bergner, M.D. bergner@ sbcglobal.net	Sandra Dunn, sandradunn@ mindspring.com	The Project is an ambitious effort to affect the patient safety/quality of care delivered to uninsured/ underinsured children and employed adults and families in El Dorado County. The Network consists of the major providers of health care services to the safety net population (indigent, uninsured, underinsured) and includes local hospitals, community clinics, the County Mental Health, Public Health, and Human Services Depts., the Office of Education, and several non-profits serving this population. The Project will integrate the Network's "Access Product," a three-pronged approach to providing: 1. Outreach and enrollment for children eligible for public insurance 2. Access for those children not eligible for public insurance, up to 300 percent of the poverty level 3. Access to health care to those families employed by local small businesses unable to provide coverage for their workers.	El Dorado County, California	170,000 patients, 40% of which are below the Federal poverty level.

Project Name	Principal Investigator	Project Representatives	Short Description	Project Location	Population Served
Health Information Exchange: A Frontier Model	Nancy Shank nshank@ nebraska.edu	Nancy Shank nshank@ nebraska.edu Elizabeth Wilborn ewillborn@ nebraska.edu	Implements regional health information exchange (HIEs) within an established collaborative of rural hospitals, clinics, public health providers, behavioral health providers, and others across a 14,000 square mile remote area. The intended outcomes are to create electronic medical records that are integrated with other functional systems in all Critical Access Hospitals and Rural Health Clinics; HIE systems that provide current information, from all hospitals and rural health clinics, at the point of care; and an operational entity and incorporated RHIO to provide the sustainable infrastructure necessary to support regional HIE and common developments in the electronic health records.	Nebraska Panhandle	Rural health clinics Federal medical centers

Project Name	Principal Investigator	Project Representatives	Short Description	Project Location	Population Served
Holomua Project Improving Transitional Care in Hawaii	Christine Sakuda csakuda@ hawaiipca.net	Christine Sakuda csakuda@ hawaiipca.net Beverly Chin bchin@ hawaiipca.net	Increases patient safety, quality and continuity of care during transitional care for vulnerable populations in Hawaii through improving the flow of information between patients/ families, community health centers and hospitals using health IT. The project aims to: increase accuracy and timeliness of shared patient information during transitional care between primary care and tertiary care facilities; reduce incidence of medical errors that may occur due to linguistic and/or cultural barriers between patients and medical providers; reduce occurrences of duplicated diagnostic procedures performed on patients due to lack of communication between primary care and tertiary care facilities; increase participation and involvement in decision making by patients or family on health related matters; and determine mechanisms by which information resources, information systems, and other IT initiatives and/or networks in Hawaii can best support the Holomua Project.	Hawaii	Pacific Island pop. (do not speak English)

Project Name	Principal Investigator	Project Representatives	Short Description	Project Location	Population Served
Implement-ation of Health Collaboration in Oklahoma	Mark Jones markjhealth@ yahoo.com	Mark Jones markjhealth@ yahoo.com Joanna Walkingstick joannawalkingstick@ smrtnet.org	Implement a HIPAA-compliant approach to the selection of a common set of patient health data that can be transferred electronically between community health care providers, thereby resulting in an array of positive operational and secondary outcomes to community health networks. The primary goals are: Implementation of an Electronic Health Information System among 7 agencies; Implementation of a Web-based 24/7 Information and Referral Service that includes back-up 24/7 telephone service; and Implementation of a Community-wide science-based prevention strategy that is supported by community-based health IT data systems.	Oklahoma	Underserved, Tribal population
Integris Telewound Care Network	Charles Bryant Ehsdrbryant@ sbcglobal.net	Cynthia Scheideman-Miller clsmiller@ sbcglobal.net	Project tries to answer the question: "Can you reduce a patients 'healing time' by using health IT?" Demonstrates and evaluates the clinical effectiveness and cost-savings of utilizing telehealth technology to reduce the days to healing for chronic wounds by improving access to caregivers, point of care processes, and dissemination of best practice information.	Oklahoma	Rural and metro counties, predominantly with patients that have wounds that are not healing

Project Name	Principal Investigator	Project Representatives	Short Description	Project Location	Population Served
Metro DC Health Information Exchange (MeDHIX)	Thomas Lewis Tom_Lewis@ Primarycare coalition	Thomas Lewis Tom_Lewis@ Primarycare coalition	Address the health care needs of low-income, uninsured individuals and families using a secure, comprehensive, virtual health record for medically underserved patients that are longitudinal, portable, and accessible; spanning all forms of encounters across diverse health care settings. The principal forward-looking objective is to implement the health information technology infrastructure necessary to support a single, shared electronic medical record application that, in turn, will promote the community-wide exchange of patient information for clinical decision support; research; and disease management on behalf of low-income, uninsured people.	Metro DC	Low-SES, uninsured, urban community-based health care providers
Project ECHO Extension for Community Healthcare Outcomes	Sanjeev Arora Sarora@Salud. Unm.edu	Sanjeev Arora Sarora@Salud. Unm.edu John Brown	Connects urban medical center disease experts with rural general practitioners and community health representatives over a telehealth network to effectively treat patients with chronic, common and complex diseases who do not have direct access to specialty health care providers.	Albuquerque, New Mexico	Rural
Project Infocare	Peggy Esch Plesch@citizens memorial.com	Dinni McColm denni.mccolm@ citizensmemorial.com	Creates a community-wide electronic medical record with integrated clinical decision support that is available across the continuum of care including a rural hospital, a home health agency, 14 physician clinics, and 5 long-term care facilities.	Southwest Missouri	Rural

Project Name	Principal Investigator	Project Representatives	Short Description	Project Location	Population Served
Regional Approach for THQIT in Rural Settings	Francis Richards Frichards@ geisinger.edu	Jim Younkin jryounkin@ geisinger.edu James Walker Jmwalker@ geisinger.edu	This project is centered around three main objectives: improving access to existing clinical information by rural health care providers; improving communications between primary care providers and specialists; and laying the foundation for a regional network that supports information sharing among rural hospitals and providers and creates an environment that encourages the adoption of health information technology.	Central Pennsylvania	Rural
Rural Iowa Redesign of Care Delivery with EHR Functions	Donald Crandall Crandald@Trinity-Health.org	Jane Brokel brokelj@trinity-health.org	Implement a comprehensive, integrated, EHR system using data standards, with computerized provider order entry and clinical decision support tools, in several diverse, rural, northern Iowa health care settings (hospital inpatient units, ambulatory care, primary care and specialty clinics, home health, and hospice care) and to evaluate the effect of this electronic health record system on patient care and organizational culture.	North-central Iowa; worked with Trinity Health out of Michigan	Elderly population (14 counties) More than 40% of the population in the area serviced are over 80 years of age

Project Name	Principal Investigator	Project Representatives	Short Description	Project Location	Population Served
*Santa Cruz County Diabetes Mellitus Registry	Eleanor Littman ellie@hpscc.org	Eleanor Littman ellie@hpscc.org Dorian Seamster dorian@hipscc.org	The Santa Cruz County Diabetes Mellitus Registry project builds on a history of productive collaboration among the County's public, private, and not-for-profit health sectors. Two physician organizations, the County's Medicaid HMO, the health department, a local community college, and a local philanthropy form the project team. The clinical entities have agreed to share encounter/ claim, laboratory, and pharmacy data to populate a county-wide diabetes registry. The registry software was developed by one of the physician groups, whose Medical Director will serve as the project's principal investigator. The existing registry is Web-based and interactive, giving physicians and their colleagues many options for improving the standard of diabetes care provided to patients. Prompts can remind physicians and medical assistants about needed tests at the point of care; the registry also can generate lists of patients overdue for exams or tests so that medical office staff can accelerate the appointment process.	Santa Cruz, CA	Include Safety Net Clinics

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