FINAL PROGRESS REPORT
Regional Approach for THQIT in Rural Settings
AHRQ Grant: 1 P20 HS015457-01

Project Title: **"Regional Approach for THQIT in Rural Settings – Planning"**

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Structured Abstract

Purpose:

The purpose of the AHRQ Planning Grant was to determine the need and readiness for health information exchange in central and northeastern PA, to select technology to support this exchange, to develop a plan for piloting the system among three pilot organizations, and to begin the roll-out of the system to additional regional hospitals.

Scope:

Geisinger Health System has made a considerable investment in its electronic health record (EHR), including access by non-Geisinger physicians for shared patient records. For this grant, Geisinger introduced the idea of sharing health information with 53 hospitals in this mostly rural, 40-county area in Pennsylvania, and created a plan to begin a pilot information exchange with two community hospitals.

Methods:

Our project design focused on the completion of a regional gap analysis regarding access to clinical information and an evaluation of solutions to address the identified gaps. Our chief measure of success was the number of participants providing feedback at each step in our planning process.

Results:

Our principle findings include a regional assessment of the value of information sharing as well as readiness to collaborate. We concluded that an incremental implementation of information sharing is necessary to minimize initial costs and to enable organizations to determine benefits realized to justify ongoing expense.

Key Words:

Health Information Technology (HIT)
Central Penn Health Information Collaborative (CPHIC)
Collaborate
Electronic Health Record (EHR)

Gap Analysis
Geisinger
Incremental Implementation
Information Sharing
Resource Constraints
Regional Health Information Exchange (RHIE)
Regional Health Information Organization (RHIO)
Rural

Purpose

1. Determine the perceived need for regional health information exchange (RHIE) in central and northeastern Pennsylvania.
2. Determine regional readiness to participate in a RHIE.
3. Identify appropriate technology to support a RHIE among rural hospitals.
4. Create a project plan to implement the first phases of a RHIE.

Scope

Background:

As an integrated care delivery network, Geisinger Health System ("Geisinger") provides primary, specialty, and subspecialty care to people throughout northeastern and central Pennsylvania through its system of 41 outpatient clinics, four hospitals, and 650 physicians. In the mid-1990s, Geisinger realized that paper had become a significant barrier to effective coordination of care. Through multidisciplinary planning and high-level organizational support, Geisinger initiated an upgrade in its communications infrastructure in anticipation of implementing an electronic health record (EHR). Geisinger achieved full implementation of its ambulatory EHR in December 2002. Today, Geisinger's EHR provides over 3,000 direct caregivers ready access to diagnostic test data, medical images, and physician notes. It also allows clinicians to place orders with real-time alerts for drug-drug and drug-allergy interactions, provides reminders for health maintenance for their patients, and provides online access to the latest medical references.

But Geisinger does not exist in isolation. An information network limited to Geisinger patients does not solve the region's healthcare information needs. Three years ago, Geisinger began to address this challenge by providing independent (non-Geisinger) physicians access to clinical information on shared patients. Access to the Geisinger EHR is granted in a HIPAA-compliant manner and allows independent referring, consulting, and primary care physicians to view the same electronic records as their Geisinger colleagues. This enables a level of collaboration in patient care not achievable with paper records. The EHR also provides referring physicians access to patient demographics, insurance information, and clinic notes on their patients who are admitted to Geisinger hospitals for specialty and subspecialty care.

In May 2005, Geisinger hosted a regional health information exchange (RHIE) conference to discuss the need for healthcare organizations to share patient information. Twenty-four regional organizations attended the conference. Eight are moving forward as founding partners of the Central Penn Health Information Collaborative (CPHIC), with others interested in future participation.

Context/Settings:

Our research took place in a largely rural section of central and northeastern Pennsylvania, comprised of many geographically dispersed community hospitals with limited capital and IT resources. Though the need for health information sharing in this region extends to all healthcare providers, our initial project focused on hospitals and clinicians that use the services of the partnering hospitals. Because of a higher concentration of information technology and patient data available in hospitals (as well as the obvious business case for information exchange), we focused on partnerships with hospitals. Other types of healthcare providers (such as private physician offices) are still largely paper based and will require demonstration of a return on investment before joining an RHIE.

Participants:

We defined two levels of participants in our planning research. The first level was a group of partner hospitals that would pilot data exchange among their organizations. For this level, Geisinger partnered with two rural, community hospitals: Sunbury Community Hospital and Shamokin Area Community Hospital. Both hospitals are located within 20 miles of Geisinger Medical Center (GMC) – Geisinger's main campus. This partnership was formed because there is a great overlap in patient population and patients are often referred to GMC for specialty care. In addition, there are Geisinger physicians practicing in both of these hospitals, so improved data exchange with these organizations had mutual value for our organizations.

For the second group of participants, we contacted all 53 hospitals in a 40-county region. Most of the hospitals and physicians in this region are significantly removed (geographically and culturally) from other large Pennsylvania areas (i.e., Philadelphia and Pittsburgh).

Methods

Project Design:

Our design focused on the completion of a regional gap analysis regarding access to clinical information and an evaluation of solutions to address the identified gaps. First, clinical information needs were determined through a number of data sources and collection methods. The available technologies were then evaluated to determine how well they were able to meet identified needs. The gap between the needs and the capabilities made it clear what functionalities would have to be addressed in a regional health information sharing environment. At the same time, a barriers document was developed to list all potential roadblocks for implementing health information exchange in our region. The barriers (such as limited funds by community partners) helped determine specific requirements of a regional data sharing solution.

Data Sources/Collection:

We used a variety of methods to collect data for the clinical needs assessment and readiness evaluation.

1. **Steering Committee Meetings.** Our steering committee for this planning project was composed of an administrative, a clinical, and a technology leader from each of the three partner organizations, plus additional staff from Geisinger's planning team. These meetings were held quarterly throughout the grant period, with an effort to ensure that all organizations hosted at least one local meeting.
2. **Pilot Partner Interviews.** One or more physician/clinical leaders from each organization participated in a clinical information needs assessment; six physicians and one director of nursing completed both an interview and survey.
3. **Clinical Information Needs Workshop.** The results of the interviews and initial survey were presented at a workshop in which clinicians validated the responses.
4. **Shared Health Information Technology (HIT) Assets.** The technology leader of each partner organization completed a thorough identification of health information technology assets that were then compared to determine a common framework.
5. **Organizational Leader Interview.** In preparation for the regional meeting in May 2004, all 53 hospitals in our region were sent literature about our collaborative. Telephone introductions from the Principal Investigator were completed with 33 of these hospitals. Generally, the CEO or technology leader was interviewed.
6. **Survey Questionnaire**. An online survey questionnaire was sent to the administrative, clinical, and technology leaders of all 53 hospitals. We received responses from 30, representing 20 unique organizations. The survey included questions about the clinical needs of their organizations, their technology capabilities, and their business climate regarding health information exchange.
7. **Café-Style Discussion.** During the May 2004 meeting, each participant worked in small, "café-style" groups to answer questions about health information exchange.

Measures:

Throughout the planning period, the chief measure of success was participation. Each step was evaluated to determine how many were expected to participate and how many actually did. All organizations faithfully participated in the steering committee meetings.

The regional collaborative development began with invitations and concluded with a willingness to build a governing body for health information sharing in central and northeastern PA. Of the 53 hospitals, we were successful in speaking in person to leaders of 33. Twenty organizations completed the online regional survey questionnaire, 19 attended the May 2004 meeting, and nine continued work on governance development. As of December 1, seven organizations have signed a memorandum of understanding developed by the regional governance group, signifying their commitment to creating a formal, regional collaborative.

Limitations:

Central and northeastern PA is largely rural, with 16 counties officially designated as such. Rural healthcare communities have some unique challenges and benefits not applicable to urban areas. One of the main challenges for rural areas is that there is less of a concentration of clinical and information technology professionals. This makes it more difficult to recruit and retain this kind of talent. Without easy access to specialists, primary care physicians do not have the same opportunities for incidental consultation ("curbside consults") as their urban counterparts do. Poor financial performance also contributes to problems of recruitment and retention. The IT staffs of small community hospitals often have fewer than five people to support all the hospital's information technology needs. This makes it difficult to spare IT resources for anything other than mission-critical initiatives. Rural areas are by nature geographically dispersed and often served by small community hospitals that have limited funds. However, the geographic separation may positively contribute to a climate of willingness to exchange information. We were fortunate to be able to take advantage of Geisinger's robust IT infrastructure and visionary leadership that acknowledges their role in a regional system.

During the planning period, the PA Medical Society and the Quality Improvement Organization for PA, Quality Insights, were jointly forming a statewide initiative. Geisinger participated in the formation of the PA eHealth Initiative (PAeHI) and continues to support this new initiative as a member of the board of directors.

Results

Principal Findings:

Value of Information Sharing: The survey, interviews with physicians, the RHIE conference, and personal conversations with most of the hospitals indicated that there is a widely felt need across the region to improve patient care by providing more rapid access to healthcare information from multiple sites of care. A sustainable business case for information sharing was generally seen as a challenge in the current environment.

Readiness to Collaborate: Many hospitals and physician practices in central and northeastern Pennsylvania are ready to participate in health information sharing at a regional level, but many practical barriers exist, making implementation a challenge. Here are a few that we observed:

- Specific collaborations already exist between institutions that promote information sharing; broader collaboration can conflict with those collaborations and, therefore, is less attractive.
- Anxiety over data ownership, control, and access
- Creation of a financial model to support the ongoing cost

Resource Constraints: There is a critical shortage of capital, IT expertise, and change-management expertise in small, rural hospitals.

Technology Scarcity: We could not find a commercial RHIE software solution that met our needs for:

a. Low cost of entry for small hospitals;
b. Just-in-time scalability (in technology and cost) from three hospitals to 53 and from hundreds of users to many thousands;
c. Affordable total cost of ownership (purchase and sustainability).

Outcomes:

1. **Value of Information Sharing:** As a result of the information gathering and dissemination, the RHIE conference, the joint working meetings, and the project work, the charter members of the Central Penn Health Information Collaborative (CPHIC) have achieved a strong consensus that the value of regional information sharing justifies substantial commitment of their resources to the initiative.
2. **Readiness to Collaborate:**
    a. Of the total 53 regional hospitals, 33 were willing to discuss RHIE.
    b. Twenty hospitals attended the organizing conference for creating a regional health information organization (RHIO).
    c. Seven hospitals have signed a memorandum of understanding to work together as the charter members of CPHIC, whose purpose is to govern the region's health information exchange.
3. **Resource Constraints:** Although anticipated, we were surprised by the extreme constraints under which many small hospitals operate. Early in the process, we developed a mutually agreeable working arrangement in which Geisinger designs and builds the components of the RHIE (with frequent feedback to the other partners) and the other partners validate the design and the build.
4. **Technology Scarcity:** The minimum costs for the most basic information sharing technology backbone available (for example, to create just a community master patient index and record locator) outstrip the business case even for hospitals with a strong business need to collaborate.
5. **Incremental Implementation:** The pilot partners and charter members of CPHIC concluded that an incremental implementation of information sharing is necessary to minimize initial costs and to enable organizations to determine benefits realized to justify ongoing expense.

Discussion:

1. **Readiness:** The results of our online survey questionnaire in March 2005 indicated that there is a strong need and desire to work together to streamline the sharing of patient information. These results were supported at the RHIE conference last May. Though many of those organizations are small and have limited resources, nine elected to continue work on developing a governance structure for healthcare information exchange. Despite these positive changes, the business case for information exchange among small rural hospitals is not compelling enough to motivate the initial software and IT support costs necessary to start sharing information in the absence of substantial seed money or significantly altered payment incentives. Information sharing is further hampered by competitive, multi-hospital business arrangements. Some hospitals are creating exclusive working arrangements with other organizations and view general regional information sharing as conflicting with these relationships.
2. **Incremental Implementation:** After several unsuccessful attempts to locate software that could provide physicians rapid, inexpensive access to real-time patient information, we determined that we should take the approach of extending Geisinger's existing IT infrastructure to provide the starting point for information exchange. The plan calls for Geisinger to provide the basic information system to identify patients and provide the user with a path to obtain that information. Existing clinical information systems at each location will provide the actual clinical content, thus minimizing start-up costs. The wisdom of this approach will be tested as we move forward with assistance from AHRQ to implement regional health information exchange in central and northeastern PA.

Conclusions:

1. **Value of Information Sharing:** The value is seen by hospitals as real, but the cost is hard to justify in the current environment. Patients and payors seem to be the likely recipients of most of the benefit, but providers are being asked to bear much of the financial burden.

2. **Physician Interviews:** Obtaining and sustaining physician participation is an ongoing challenge. Physicians require face-to-face interviews (or interviews with their practice managers) to obtain input and validate plans. As part of the implementation, we plan to interview emergency department physicians personally and enlist interested practice managers to respond for their practices as resources permit.
3. **Readiness:** The need for information sharing has become more apparent, and some barriers have been reduced. Unfortunately, software costs still outstrip the value that most rural hospitals can identify. Physician practices where information is primarily paper based represent a particularly significant challenge to the RHIE concept. Barriers to implementation of clinical systems, such as culture, cost, and expertise, are more daunting in these practices than they are for hospitals.

Significance:

It is likely that there are other rural areas where a lack of leadership from state government and lack of funding (from state government or payors) will make even basic information sharing infrastructure unaffordable. It will take significant funding to create the first phase of infrastructure. Our own limited experience suggests that the technology infrastructure needed for a small rural hospital to participate in an information exchange will cost a minimum of $100,000.

The challenges are many, as we try not only to build systems to share data but also to put information into formats that can be shared (e.g., get the data in electronic form at the source). The current slow pace of EHR adoption by physician practices will quickly become a bottleneck to the realization of a comprehensive RHIE. If health information exchanges are to fulfill their goal of improved care through better access to information, EHRs in physician practices must become a national priority.

List of Publications and Products

1. Central Penn Health Information Collaborative Site. Funded in part by grant 1UC1HS016162-01 from the Agency for Healthcare Research and Quality. February 2005. http://www.cphic.org/
2. "Regional Health Information Assessment Survey." Survey questionnaire. Funded in part by grant 1UC1HS016162-01 from the Agency for Healthcare Research and Quality. March 2005. http://www.cphic.org/Documents/CPHIC_Assessment.pdf
3. "Regional Health Information Needs Assessment" by James R. Younkin and James M. Walker, MD. Poster. Funded in part by grant 1UC1HS016162-01 from the Agency for Healthcare Research and Quality. June 2005. http://Poster-RHI-NeedsAssessment.pdf