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Shank, Nancy; Engel, Kim; Frances, Joan; Krueger, Harold; Looney, Laura; Loring, William; McVay, John; and Neilan, Nicole, "REGIONAL HEALTH RECORDS FOR FRONTIER COMMUNITIES" (2005). *Publications of the University of Nebraska Public Policy Center.* Paper 116.
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REGIONAL HEALTH RECORDS FOR FRONTIER COMMUNITIES

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September 30, 2004 – September 29, 2005

Patrik Johansson, Federal Project Officer
This project was support by grant number 1 P20 HS015365 from the Agency for Healthcare Research and Quality
Grant Award Number: 1 P20 HS015365

STRUCTURED ABSTRACT

Purpose: This project produced a viable and sustainable plan for the implementation of regional health information exchange.
Scope: The project comprised partners within established networks of rural hospitals, clinics, public health providers, behavioral health providers, and others across a 14,000 square mile remote area.
Methods: The planning process included participation from all levels of leadership from participating partners, and worked within existing collaborative and information channels to ensure scalability and extensibility to other key health care providers.
Results: The process produced a viable plan and collaborative network poised to move forward into implementation

Key Words: Electronic health records, Rural, Health networks, Collaboration, Health information exchange, Regional health information organizations

PURPOSE

The purpose of the project was to develop both a **plan** and a **process** upon which regional health records implementation could be successfully executed. This project attended to both the product (the plan) and the process (leadership and ownership) since both are necessary, but neither is alone sufficient for implementation.

THE PLAN

1. The regional health record plan will delineate a standards-based, coherent, scalable, and achievable **technology solution** with a particular focus on identifying the most appropriate organizational structure to promote sustainability of the technology infrastructure in consideration of the unique constraints imposed by the economics of the rural environment.
2. The plan will articulate the tangible and intangible **value proposition** for individual organizational partners, the critical access network, and for the regional community.
3. The plan will include all **hospitals** within a regional critical access health network and will extend to all **health clinic** and **behavioral health** providers.

THE PROCESS

4. The planning process will include participation from **all levels** of leadership from participating partners.
5. The planning process will work within existing collaborative and information channels to ensure **scalability** and **extensibility** to other key health care providers, such as bioterrorism, public health, and other safety net providers.

The **Plan** will define and document: activities, deliverables, rollout timing, roles of team members, key risks, interdependencies, approval processes, and the roles of suppliers, resource owners, and end users. The Plan will also discuss the record rollout strategy. For example, records may be phased into the system on an encounter basis or some other system. A projected **budget** and **business plan**, and a more detailed **timeline** will be included in the plan. The plan will be developed through the recursive process involving end users, providers, collaborating partners, staff and subcontractors.

The **Process** is also key. As organizations across the country explore how to share information, they are finding that technology is not the barrier to implementation. Rather, it is all of the related issues of defining the vision, developing processes, building trust, executing necessary legal agreements, making purchases decisions, defining outcomes, and so forth. The partners involved in this planning process decided to spend time, upfront, to begin defining what they wanted and how they wanted it to operate, before rushing to market and implementation. The planning process took approximately one year and has involved the participation of health organization staff throughout the Panhandle. Collaboration is needed when a project needs the experience, resources, and participation beyond what may be accomplished by a single organization. Collaborations require participants to involve other stakeholders in the process of changing the ways things are done and to cede narrow decision making to a consensus-based approach. Chrislip & Larson (1994, pp. 108-9) assert "if you bring the appropriate people together in constructive ways with good information, they will create authentic visions and strategies for addressing the shared concerns of the organization or community."

SCOPE

The regional health records planning project was implemented in the 11-county Panhandle region, comprising all of Western Nebraska. The Panhandle region is especially remote: None of the counties fall within the Census Bureau's Metropolitan Statistical Area designation. Indeed, 8 of the 11 counties its 90,410 total population lives in are considered **frontier counties** (i.e., those with fewer than 7 persons per square mile). The Panhandle region of Nebraska is bordered by equally-isolated areas of Wyoming (west), Colorado (south), and South Dakota (north). Seven of the counties are full **Federally Designated Primary Medical Care Health Professional Shortage Areas**, one is a partial area, and one is special population shortage area (Fraser, Hesford, & Rauner, 2003). Three counties are entire Federally Designated Medically **Underserved Areas**, one is a Medically **Underserved Population** (Fraser et al., 2003). All eleven counties are Federally Designated **Mental Health Professional Shortage Areas**, with only six psychiatrists (all practicing in a single county) in the entire area.

Panhandle residents are **poorer** than those living in other parts of Nebraska and the nation. Forty-three percent of area individuals live at or below 200% of the federal poverty level, with 13.6% of Panhandle residents having incomes 100% below the federally defined poverty level. One of the 11 counties has one of the nation's ten **lowest per capita personal incomes**. The Panhandle's residents are also less likely to have access to insurance. It is estimated that just over 30% of the population is un/underinsured (NHHS-Western Service Area Profile -1999; Tripp, Umbach and Associates, 2000). The population has higher-than-average rates of: **unintentional injury** death rate (25% higher than the statewide rate), **motor vehicle death** rate (48% higher), and **suicide** rate (46% higher). Panhandle residents are 25% more likely than people in Nebraska overall to be hospitalized for digestive diseases, other respiratory diseases, injuries due to motor vehicle crashes, and self-inflicted injuries. It is widely estimated that 5% of the U.S. population experiences **Severe and Persistent Mental Illness**: This translates to 4,500 persons in the Panhandle. The Panhandle Mental Health Center serves approximately 550 persons with diagnosed with Severe and Persistent Mental Illness. For this most needy population, then 3,950 receive care outside of the specialty mental health setting or receive no care. The population of

the Panhandle is undergoing significant **change**. Although racial and ethnic minorities still account for a relatively small percentage (13.4 %) of the region's total population, the Panhandle is home to the largest population of non-federally-recognized Native Americans in Nebraska. Similar to many other rural areas, the age distribution is also undergoing dramatic reshaping: Over 21% (19,667) of the Panhandle's residents are over 60. Nearly 40% of these of the older adults are over 75 years of age.

For the past four years the Panhandle has been impacted by an increasingly serious drought. Nine Panhandle counties (in entirety or partially) are in *extreme* drought conditions. The remainder of the counties/areas are under *severe* drought conditions. The impact of the drought has been a $91 million drop in area farm incomes from $121 million (1999) to $30 million (2000). Statistics for 2002 and 2003 are not yet available, although 2002 production is widely considered to be the worst yet due to the drought. Since 2000, the impact on local families is seen in reduction of clinic utilization (as much as 30% in some areas).

Panhandle providers are suffering financially, just as are their patients. Between 1999 and 2002 the hospital Discharge Commercial Insurance Payer dropped from 35.5% to 22.3%. Area hospitals and Rural Health Clinics are seeing increasing levels of private pay with the highest rate (2002) topping 55%. Providers are experiencing increased levels of bad debt and charity care in area hospitals and clinics. The Network hospital has experienced a 201% increase in substantiated Charity Care between 2002 and 2003. Four Critical Access hospitals have seen a significant decline in county support: two of these were a complete removal from county budgets. Eighty percent of persons served by the Panhandle Mental Health Center are private pay or have public insurance.

CONNECTIVITY

In early 2002 Network members identified a need for high-speed connectivity in for telehealth activities and to lay the groundwork for regional health records sharing. The Network joined the High Plans cooperative to achieve this goal. Nearly the entire membership of the Network has subsequently been connected through T-1 lines with Regional West Medical Center as the hub.

SURVEY OF HOSPITAL TECHNOLOGICAL CAPACITY

Hospital technological capacity varies significantly, primarily due to the availability of financial resources and IT expertise. Two hospitals, Regional West Medical Center and Memorial Health Center, have developed state of the art electronic medical records systems. The Health Enterprise System at Regional West Medical Center utilizes McKesson software for electronic clinician documentation, order management, medication and IV administration, pharmacy management, laboratory management, radiology management, viewing and archiving (PACS) of radiologic images, document management, home health documentation, materials management, enterprise scheduling, and financial management tools for electronic claims processing and compliance checking. Physicians use a web-based portal for accessing patient information from any location. The Most Wired Survey and Benchmarking Study identified Regional West Medical Center as one of the most Small and Rural Hospitals in the United States (Solovy, 2003).

Seven other health systems are at varying levels of development. Three hospitals, Chadron, Gordon, and Morrill County Community Hospital are currently at the most basic level of

capability, lacking computer access at key work sites and functional internal networked systems. Of the remaining four health services, Kimball Health Services has a fully electronic system in the rural health clinic. Perkins County Health Services has clinic software that was designed by a physician, may be accessed in the hospital, but does not have interoperable capability. None of these hospitals have paperless electronic medical records.

METHODS

STRUCTURE

The CEOs from participating organizations endorsed a collaborative Planning Structure for the process (Figure 1 on next page). The Planning structure recognized the importance of information sharing at the local, regional, and executive levels. CEOs appointed staff to participate in the process and chartered each Team's work.

Steering Committee

The project Steering Committee comprises CEOs from all eight Critical Access Hospitals in the 11-county Nebraska Panhandle region and the Regional West Medical Center, the Panhandle Public Health District, Region I Mental Health and Substance Abuse, and the University of Nebraska Public Policy Center. The Steering Committee provides executive-level approval and facilitates communications between organizations. The Steering Committee met every other month during the planning process.

Regional Leadership Teams

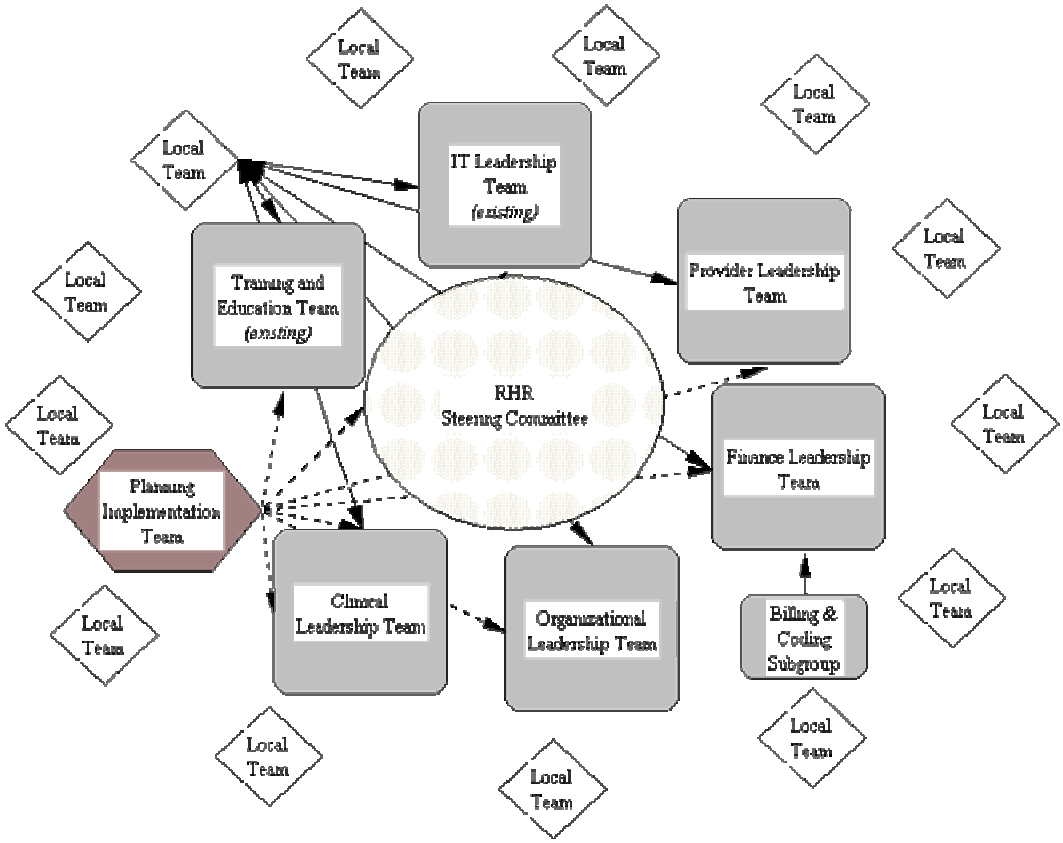
Each organizational partner has designated representatives to five Region-Wide Leadership Teams (Information Technology, Organizational, Financial, Clinical, Training & Education teams). These teams, chartered by the Steering Committee: draft regional priorities, policies & procedures; advise and evaluate the process; and serve as an information sharing forum regarding the work of the Local Teams. Members cover the widest breadth of organizational professional involvement, including: CEO's, CFO's, COO's, Directors of Nursing, HIPAA officers, education coordinators, information technology directors, nursing home staff, psychologists, lab technicians, public health administrators, nurses, project managers, patient accounts directors, health information managers, and admissions/discharge specialists. Regional Teams met at least monthly in the daylong joint leadership meetings.

Local Teams

Local Teams were tasked with planning and implementing internal-to-organization capability for sharing. Local Teams minimally included; IT person, clinical representative, administration, finance, providers, QA and HIPAA functions. The Teams are creating internal capacity in understanding business and clinical practices, workflows, information technologies, organizational change, and finances.

The local teams have become a significant component of the planning process and are expected to play a central role in the implementation of health information exchange. Members of the regionwide teams serve as communicators between the teams. For those organizations that do not currently use electronic medical records or other coordinated electronic communications, regionwide team members are taking their learning and processes from the regional work and

Figure 1. Regional Planning Structure



applying it to developing capacity and understanding within their own organizations. Local teams met at least monthly.

A **Planning Implementation Team** comprised planning and information technology consultants and the University of Nebraska Policy Center. This team was responsible for: ensuring that all project timelines and work plan are met, informing the Steering committee of any circumstances which may impact the project, and serving as non-voting resources to the Committee. The Planning Implementation Team produced all documents and plan components for review, identified additional resources and linkages, and ensured coordination with initiatives that may impact the Regional Health Records planning project.

Roles and Communications

The Structure allowed for role specificity and iterative communications between the Teams. Overlapping Team members, staff communications, electronic mail lists, website, and joint meetings ensured that participants at each level could readily be apprised of the work of the other teams (See Figure 2).

OTHER STAKEHOLDERS

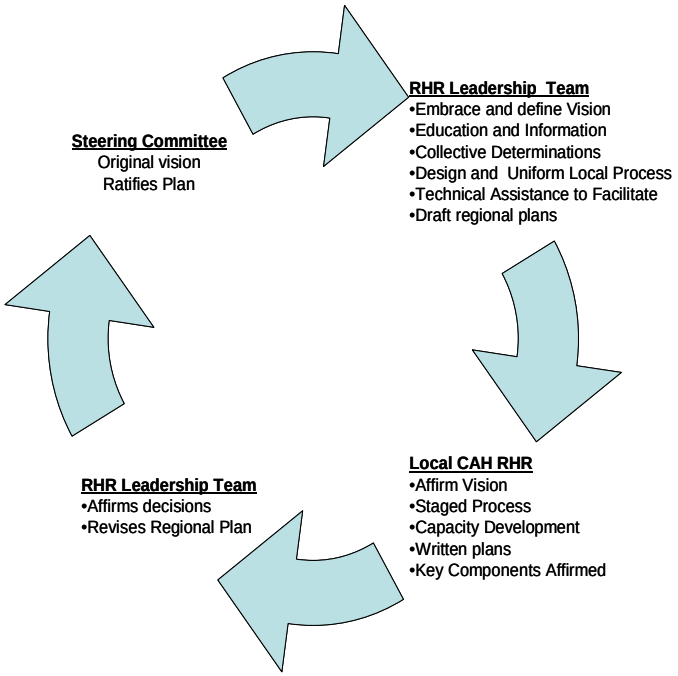
Physicians

Physician participation is essential to the success of this work. At the same time it is recognized that physicians' availability for time to attend regional meetings is limited. Local staff are sharing information with their physicians and beginning to identify champions. We expect that these champions will form a core of physicians willing to provide input, serve as communicators to their colleagues, and be among the first to test health information exchange.

Other Key Organizations

The planning process was open and transparent. Indeed, much information about the meetings is posted on www.comhealth.org. However, during the planning process, we did not actively seek to broadly communicate with other stakeholder organizations or to publicize the work. Instead, the process balanced openness with the desire to build capacity among existing partners and gain consensus among those organizations. It is expected that the hospitals and related clinics will serve as leaders in reaching out to other relevant stakeholders within their communities.

Figure 2. Roles and Communications



RESULTS

This evaluation of the Regional Records for Frontier Communities Project included three components:

1. **Analysis of the level of collaboration resulting from the initiative:** We surveyed team members using the Wilder Collaboration Factors Inventory to assess the strength of the collaboration.
2. **Assessment of the plan development process:** We conducted a focus group with the Planning Team to address what went well in developing the plan, what could have been improved, what lessons were learned, and whether the plan that was developed was likely to result in the desired outcomes. The focus groups were supplemented with individual interviews with hospital Chief Executive Officers.

3. **Evaluation of the product resulting from the planning process:** We asked experts from the National Resource Center for Health Information Technology to critique the project plan.

ANALYSIS OF THE LEVEL OF COLLABORATION RESULTING FROM THE INITIATIVE

An important part of devising a health records plan is collaboration among project partners and stakeholders. The planning process built on existing partnerships among organizations and coalitions such as the Rural Health Cooperative Network, the Panhandle Partnership for Health and Human Services, the Panhandle Public Health District, and the University of Nebraska Public Policy Center. Collaboration also occurred within the organizations; a project steering committee included the project partners and a number of work teams including clinical, financial, organizational, and administrative personnel from multiple agencies.

We employed the Wilder Collaboration Factors Inventory (WCFI) [1] to assess the level of collaboration among agencies and stakeholders developing the health-records plan. The WCFI authors created the inventory after conducting a meta-analysis of hundreds of writings on collaboration to identify 40 studies that describe factors crucial to collaboration. The WCFI measures team collaboration on twenty factors, which are grouped into six categories: Environment, Membership Characteristics, Process and Structure, Communication, Purpose, and Resources.

We administered the WCFI twice to people involved in the Panhandle collaboration. They took a survey where they rated their agreement with a number of statements that describe successful collaborations. A high level of agreement on an item indicates the collaboration is strong in that area. Scores are then combined to generate 20 factor and six category scores, which are interpreted as follows. Scores 4 and greater (on a scale from 1 to 5) show the strength of the collaboration, and do not need special attention from the team. When the score is between 3.0 and 3.9 the team should discuss those factors to decide if any special attention is warranted. Factors with scores at 2.9 or below indicate the team may have issues that need resolution for the collaborative effort to succeed.

The WCFI analysis indicated a strong collaboration among the project partners. Only one category score, Resources, fell below 4. This was because one of the two factors averaged together to create the category score received the lowest score, 3.2. The low score on that factor, “Sufficient funds, staff, materials, and time,” indicated that survey respondents were concerned about whether the collaborative group had an adequate, consistent financial base, along with the staff and materials needed to support its operations.

The other category scores were Environment, 4.0; Membership Characteristics, 4.07; Process and Structure, 4.14; Communication, 4.19; and Purpose, 4.32. While these category scores of 4 and higher indicate a generally strong collaboration, the Wilder inventory indicated some factors with scores below 4 that indicate discussion is needed. They were: History of collaboration or cooperation in the community; Collaborative group seen as a legitimate leader in the community; Appropriate cross section of members; Multiple layers of participation; and, as indicated above,

[1] Mattessich et al. 2001.

Sufficient funds, staff, materials, and time. Following are descriptions of and scores for the six categories and 20 factors.

	Wilder Collaboration Factors Inventory Results	Score
Category	Environment	**4.0**
	Environmental characteristics consist of the geographic location and social context within which a collaborative group exists. The group may be able to influence or affect these elements in some way, but it does not have control over them.	
Factors	History of collaboration or cooperation in the community	**3.71**
	A history of collaboration or cooperation exists in the community and offers the potential collaborative partners an understanding of the roles and expectations required in collaboration and enables them to trust the process.	
	Collaborative group seen as a legitimate leader in the community	**3.93**
	The collaborative group (and, by implication, the agencies in the group) is perceived within the community as reliable and competent – at least related to the goals and activities it intends to accomplish.	
	Favorable political and social climate	**4.36**
	Political leaders, opinion-makers, persons who control resources, and the general public support (or at least do note oppose) the mission of the collaborative group.	
Category	Membership Characteristics	**4.07**
	Membership characteristics consist of skills, attitudes, and opinions of the individuals in a collaborative group, as well as the culture and capacity of the organizations that form collaborative groups.	
Factors	Mutual respect, understanding, and trust	**4.09**
	Members of the collaborative group share an understanding and respect for each other and their respective organizations: how they operate, their cultural norms and values, their limitations, and their expectations.	
	Appropriate cross section of members	**3.67**
	To the extent that they are needed, the collaborative group includes representatives from each segment of the community who will be affected by its activities.	
	Members see collaboration as in their self-interest	**4.76**
	Collaborating partners believe that they will benefit from their involvement in the collaboration and that the advantages of membership will offset costs such as loss of autonomy and turf.	
	Ability to compromise	**4.16**

	Wilder Collaboration Factors Inventory Results	Score
	Collaborating partners are able to compromise, since the many decisions within a collaborative effort cannot possibly fit the preferences of every member perfectly.	
Category	Process and Structure Process and structure refers to the management, decision-making, and operational systems of a collaborative effort.	**4.14**
Factors	Members share a stake in both process and outcome Members of a collaborative group feel "ownership" of both the way the group works and the results or products of its work.	**4.32**
	Multiple layers of participation Every level (upper management, middle management, operations) within each partner organization has at least some representation and ongoing involvement in the collaboration initiative.	**3.93**
	Flexibility The collaborative group remains open to varied ways of organizing itself and accomplishing its work.	**4.27**
	Development of clear roles and policy guidelines The collaborative partners clearly understand their roles, rights, and responsibilities, and they understand how to carry out those responsibilities.	**3.96**
	Adaptability The collaborative group has the ability to sustain itself in the midst of major changes, even if it needs to change some major goals, members, etc., in order to deal with changing conditions.	**4.18**
	Appropriate pace of development The structure, resources, and activities of the collaborative group change over time to meet the needs of the group without overwhelming its capacity, at each point throughout the initiative.	**4.07**
Category	Communication Communication refers to the channels used by collaborative partners to send and receive information, keep one another informed, and convey opinions to influence the group's actions.	**4.19**
Factors	Open and frequent communication Collaborative group members interact often, update one another, discuss issues openly, and convey all necessary information to one another and to people outside the group.	**4.21**
	Established informal relationships and communication links In addition to formal channels of communication, members establish personal connections – producing a better, more informed, and cohesive group working on a common project.	**4.17**

	Wilder Collaboration Factors Inventory Results	Score
Category	Purpose Purpose refers to the reasons for development of a collaborative effort, the result or vision the collaborative group seeks, and the specific tasks or projects the collaborative group defines as necessary to accomplish. It is driven by a need, crisis, or opportunity.	**4.32**
Factors	Concrete, attainable goals and objectives Goals and objectives of the collaborative group are clear to all partners, and can realistically be attained.	**4.22**
	Shared vision Collaborating partners have the same vision, with clearly agreed-upon mission, objectives, and strategy. The shared vision may exist at the outset of collaboration, or the partners may develop a vision as they work together.	**4.20**
	Unique purpose The mission and goals, or approach, of the collaborative group differ, at least in part, from the mission and goals, or approach, of the member organizations.	**4.58**

ASSESSMENT OF THE PLAN DEVELOPMENT PROCESS

This evaluation assesses the planning process used to develop the plan for a regional health records system. The assessment identifies the following:

- Benefits of the project
- Barriers to project implementation
- Keys to the project's success
- Lessons learned for future projects

We used a focus group and individual interviews to assess these items. Participating in the focus group were members of the Planning Leadership Team: Nicole Neilan, Kimball Health Systems; Joan Frances and William Loring, Panhandle Partnership for Health and Human Services; Laura Looney, Regional West Medical Center; and Nancy Shank, University of Nebraska Public Policy Center. We conducted individual interviews with the CEOs of four hospitals involved in the partnership: Dan Griess, Box Butte General Hospital; Dr. Todd Sorensen, Regional West Medical Center; Diana Stevens, Garden City Health Services; and Kim Woods, Kimball Health Systems.[2]

It would be difficult to overstate the enthusiasm for the project expressed by those interviewed. They were to a person entirely positive about the planning process, and clearly struggled to come up with anything they would have done differently.

[2] Woods was CEO of Kimball Health Systems during the planning phase, but no longer holds that position.

Benefits of the Project
Benefits fell into four broad categories: benefits to the partnership, benefits to people in the partner organizations, benefits to patients, and monetary benefits.

Improved communication and the development of regional collaboration were the primary benefits to the partnership. The planning process opened lines of communication and collaboration both within and between partner organizations, and produced a single strategic direction for all to take. This had a positive effect not directly related to the project: The increased communication and collaboration improved the operation of the regional trauma network.

People benefited from the planning process chiefly by gaining new knowledge and skills. Staff at all levels of the partner organizations learned about health information technology and became aware of the complexity of health records sharing. Teamwork developed as people learned they could achieve more together than they could apart. Customer service from the partner organizations' information technology departments improved.

Anticipated benefits to patients revolved around safety and convenience. Improved sharing of information and continuity of care is expected to reduce drug interactions/medication errors and save patients the trouble of having to repeat their health histories to several different providers.

Barriers to Project Implementation
Many of the barriers to implementation they anticipated involved the high learning curve involved in health information technology.; although some saw staff training and learning as a benefit of the project. Others worried about physician and staff opposition to adopting a new system; one feared specifically that doctors would not be willing to use a system that required them to use a keyboard for input. Staff shortages were another issue, particularly in small organizations where the IT staff has other duties. Organizers mentioned cost as a barrier only twice; once in general, and once in relation to paying for legal advice. This was surprising given the response to the Wilder Collaboration Factors Inventory, discussed in the next section. In that survey, "Sufficient funds, staff, materials, and time" emerged as the factor about which respondents were most concerned.

Keys to the Project's Success
Upon examining the factors organizers mentioned as key to the planning process's success, it became clear that trust, respect, equality and information were essential. A transparent process and a commitment to settle disputes privately created trust. Respect was shown in giving serious consideration to all views. Also, the leadership team showed respect for the other planning teams by taking a leadership approach that empowered the subcommittees and their members. Equality was widespread; big organization/small organization domination was not an issue, members of teams shared the work equally, teams helped other teams, and everyone trained together so they started off with a shared, equal knowledge base. Sharing information proved important elsewhere, as well, as agendas helped keep meetings running efficiently, phone calls kept communications going outside of meetings, and everyone started the project with a clear idea of the large time commitment it would involve.

Lessons Learned for Future Projects

It was difficult for organizers to come up with anything they would have done differently, because they were so enthusiastic about the planning process. The few improvements they mentioned all concerned start-of-project preparations. They would have liked to begin sometime other than just before the winter holidays, so people would be easier to reach and able to start all at the same time; however, because of the federal funding cycle, the start of the project was beyond their control. They would also have provided more formal structure in the beginning, and would have set in place more project teams from the start to deal with the effort's complexity.

EVALUATION OF THE PRODUCT RESULTING FROM THE PLANNING PROCESS

The Panhandle Regional Health Records Project's goal was to create a viable and sustainable plan for the implementation of a regional health records system that would improve patient safety and enhance quality of care. To evaluate the product, the draft plan was reviewed by a team of health information technology experts from the National Resource Center for Health Information Technology, the technical assistance contractor of the Agency for Healthcare Research and Quality. The team assessed the degree to which plan reflected a collaborative process, how well it addressed the cost and feasibility of implementation and the extent to which implementation would enhance effectiveness, efficiency, coordination, quality, and cost-benefit of the service delivery system.

The expert team consisted of:

- Dr. Davis Bu of the Columbia University Department of Biomedical Informatics
- Dr. Mark Frisse, Director of Regional Informatics Programs at the Vanderbilt Center for Better Health
- Dr. Shaun Grannis, a Medical Informatics Researcher at the Regenstrief Institute, Inc. and Assistant Professor of Family Medicine at Indiana University School of Medicine
- Anita Samarth, a staff member at The eHealth Initiative

The experts praised the plan for providing a good overview of both the status of health information technology use in the Panhandle, and the project's plans to improve it, in language accessible to people without technical expertise. The plan employed an excellent collaboration design, they said. The experts wanted to see more specificity and detail, however. In their view, the plan did not adequately address each project partner's interfacing capabilities (that is, their differing levels of ability to connect to a shared information database), leaving the experts to wonder whether connectivity between the partners' individual information systems would work. The plan also left them unsure whether a firewall security system would function properly. Finally, the experts thought the plan could have been clearer in describing the project's future direction.

The experts offered these recommendations after reviewing the plan:

- Consider the middle ground between centralization and decentralization.
- Capture baseline data as soon as possible to facilitate pre-post comparisons. Consider using data from comparable organizations when certain interesting data are not available from the partner organizations.

- Aggregate and analyze data that is already being collected by the partner organizations. This can give an early indication of the project's value without inflicting the "pain" involved in setting up and implementing new procedures for data collection.
- Formalize the governance structure soon with a formal organization agreement and formal organizational chart.
- Provide more details on how the project will achieve goals such as reducing medical errors.

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