

Project Title:	Participation by Primary Care Practices in Health Information Exchange in Colorado
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Organization:	University of Colorado, Denver
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Strategic Goal: Develop and disseminate health IT evidence and evidence-based tools to support patient-centered care, the coordination of care across transitions in care settings, and the use of electronic exchange of health information to improve quality of care.

Business Goal: Synthesis and Dissemination

Target Population: General

Summary: Widespread participation in health information exchange (HIE) is needed to optimize the value of health information technology (IT). While smaller ambulatory practices provide much of the Nation’s care, they are underrepresented in HIE projects. To increase adoption, HIE’s value proposition in these settings must be thoroughly understood. Using a case study approach, this study evaluated the motivators, barriers, and potential facilitators of HIE in nine smaller primary care practices across a spectrum of health IT adoption levels. Through a mixture of telephone and on-site interviews, qualitative and quantitative data were collected to evaluate current methods of HIE, motivations for adopting HIE-related functions, barriers to adoption, and the appeal of potential incentives. Workflow processes related to health information were also mapped during site visits. Three of the practice sites had no electronic medical records (EMRs), two sites had only EMRs, and four sites were involved in a community-wide HIE program. For this project, a community-wide electronic HIE (CW HIE) initiative was defined as the exchange of electronic health information that includes more than one type of clinical data among multiple stakeholders in a community. A small- to medium-sized primary care practice was defined as a community-based medical practice that provides a full range of primary care services and involves 20 or fewer full-time clinicians. The analysis informed a set of recommendations on the structure and functions of HIE that smaller practices desire and methods that may promote their adoption of HIE.

Specific Aims

- Develop a report using published research and commentary on factors influencing stakeholder participation in community-wide HIE. **(Achieved)**
- Collect and analyze qualitative and quantitative data from nine primary care practices in three categories (“NO-EMR,” “EMR-ONLY,” and “CW HIE”) to assess perceived benefits of, readiness to engage in, and barriers to HIE participation. **(Achieved)**
- Based on this analysis, determine the relative strengths and weaknesses of different strategies for encouraging small- to medium-sized practices to participate in HIE. **(Achieved)**

2009 Activities: The activities in the final year of the project focused on on-site data collection and analysis. In-person interviews among key informants took place during half-day site visits, conducted by at least two members of the research team. The interviews were organized into the topic categories: 1) practice ownership and decisionmaking; 2) current use of charts and IT; 3) current electronic and non-electronic exchange of health information; 4) scenarios of community HIE; 5) motivators, barriers, and incentives for adoption of community HIE; and 6) governance of community HIE. Workflow processes related to health information were also mapped during the site visits. The sources of laboratory and

radiographic test results were catalogued. For each source, the methods of ordering tests, tracking and receiving results, presenting them to clinicians for review, acting on physician orders, and charting were determined. The same methods were used to map processes for obtaining clinical notes (e.g., from hospitals and consulting physicians).

Data from the telephone interviews completed in 2008 were consolidated with data from the site visit interviews into case reports for each practice. These were then reviewed by the research team to identify key themes and findings and questions needing further exploration regarding the motivators, facilitators, and potential incentives for the adoption of HIE by smaller primary care practices. Followup telephone calls were conducted with each practice to allow participants to validate, contradict, and elaborate on the preliminary analysis. Based on these discussions, any necessary refinements were made to the final analysis.

Impact and Findings: The participating primary care practices varied in their IT resources and their experiences with HIE but had similar perspectives on the value HIE would provide and functionality they desired.

Desired Functions of HIE

In general, improving the ability to receive and review clinical information from an HIE is much more valued than the ability to send or make available clinical information from the practice. In prioritizing the data elements to be made accessible, test results are considered most important, followed by discharge summaries and clinic notes. Participating practices place the following value on specific functions of the HIE:

- The most valued function overall is the ability to look up clinical information (test results, clinic notes, and discharge summaries) from their own practice, other practices, or hospitals as needed.
- Highly valued (nearly as much as the ability to look up information) is the delivery of all results of tests ordered by the practice, regardless of the entity performing the test (hospitals, radiology centers, independent laboratories), to the practice in a consistent, consolidated manner.
- Electronic prescribing is also highly valued overall, whether it is a standalone electronic prescribing function or prescribing functions integrated in EMRs.
- The ability to place non-prescription orders (e.g., laboratory tests, radiographic studies, and referrals) is considerably less valued. Some value is seen in consolidating various processes for placing orders or making referrals.
- Creating reports is the least valued function.

Motivators for Adopting HIE

Across functions, all practices saw the potential for HIE to improve efficiency (less effort needed to obtain clinical information), uniformity of workflows (reducing training costs), and quality of care (through better-informed decisionmaking), all of which are considered to be equally important. In particular, practices consistently identify two specific benefits as major motivators for adoption: improving the coordination of care (reducing fragmentation of care when patients were hospitalized or seen by multiple practices) and anywhere/anytime access to clinical information.

Barriers to Adopting HIE

There is great variability in the reported barriers to joining HIE networks. Technical barriers focus on the need to integrate HIE with practice management systems and (where employed) EMRs. Some practices also consider capital costs to adopt HIE as major barriers. These might entail installing and supporting new computers and upgraded networking in the practice.

Other Important Considerations

Practices also identified important attributes of HIE that could either enhance or inhibit adoption of HIE. Reliability is clearly an important attribute, particularly for delivery of results. The governance of HIE networks is another important consideration for practices. It is important for leaders in HIE networks to have clinical experience, IT savvy, and respect in the community. Practices strongly want governance to include representation of hospitals and ambulatory practices. Social networks also appear to play a strong role in fostering HIE participation. All practices felt that a sense of community facilitated the cooperation necessary to establish their Regional Health Information Organization. Apart from governance, legal and regulatory issues are considered to be important but unlikely to pose major barriers to adoption.

Facilitators and Incentives for Adopting HIE

The most important facilitators identified for joining an HIE network are technical assistance (for both implementation and maintenance) and training. Especially helpful for the HIE is assistance in creating electronic interfaces between the HIE network and the practice's management system and (if present) EMR. Financial incentives for adoption are felt to be helpful but not as important as ongoing technical and training assistance. In general, there is no consensus on whether it is best for existing practices to join HIE networks before, during, or after EMR implementation.

Selected Outputs

Ross SE, Schilling LM, Fernald DH, et al. Health information exchange in small-to-medium sized family medicine practices: motivators, barriers, and potential facilitators of adoption. *Int J Med Inform.* 2010 Feb;79(2):123-9.