

Value of Health Information Exchange in Ambulatory Care

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Organization:	Indiana University/Purdue University at Indianapolis
Mechanism:	RFA: HS04-012: Demonstrating the Value of Health Information Technology (THQIT)
Grant Number:	R01 HS 015409
Project Period:	September 2004 – September 2009, Including No-Cost Extension
AHRQ Funding Amount:	\$1,499,662
Summary Status as of:	September 2009, Conclusion of Grant

Target Population: General

Summary: This project assessed the value of health information exchange (HIE) in ambulatory care settings. HIE is a critical component of any broad health information technology (IT) effort. Any health IT-based application requires appropriate data, and it is rare that all required data are generated within a single health IT solution or care delivery organization, particularly in ambulatory settings. For this study, an existing HIE, the Indiana Network for Patient Care, was expanded to include several ambulatory care settings within the community.

The project refined an established economic model of HIE (from the Center for Information Technology Leadership [CITL]), created a “laboratory” in which that model could be tested, and tested the model’s predictions in a randomized, controlled trial. To measure the value of making data available from the HIE, access to these data was randomly allocated by patient, which allows controlling for practice and provider characteristics that had been identified as important covariates in previous studies. Claims data were used to measure any reduction in charges that result from the intervention. In addition, a prominent health care payer will provide clinical data and lay the foundation for changes in reimbursement models based on conclusions drawn from the project’s findings.

Insights gained from this modeling exercise helped design the analyses for this study. Given the incentives and investments included in the American Recovery and Reinvestment Act, it is important to understand the potential return from investments in HIE, especially at the level of the individual physician practice. This study should provide some of this important information. Savings may be realized through decreases in diagnostic testing, resource utilization (e.g., referrals), hospitalizations, or adverse drug events.

Specific Aims:

- Apply a previously developed economic model for the benefits of HIE to a specific geographic community or Metropolitan Statistical Area in order to determine the expected savings for the community. **(Achieved)**
- Identify, through utilization of the model, the categories of data (e.g., laboratory, radiology, administrative) that contribute the most to these savings and which participants (e.g., physicians, hospitals, payers) benefit. **(Achieved)**
- Create an HIE “laboratory” to measure the value of HIE. **(Achieved)**
- Conduct a randomized, controlled trial to measure the value of HIE (value to be measured in terms

of reduced costs of care and selected quality measures). **(Achieved)**

2009 Activities: A number of new data feeds went live in 2009, including new hospitals and a new laboratory. Direct phone followup was made with three originally identified specialty clinics to check whether their status has changed and if they may now be able to participate. Data extraction and analysis was the major activity in 2009.

Grantee's Most Recent Self-Reported Quarterly Status (as of September 2009): The project term ended in September with all project aims met.

Impact and Findings: The model quantified savings from health IT and HIE that projected net values over time and by type of organization. The model provides insights into the potential value of health IT and HIE for these organizations. The net value for small and medium practices and hospitals is quite low, which may make engaging these organizations difficult. These insights have informed business model development by the Indiana Health Information Exchange.

The model also quantified the benefits of providing access to community wide data through a lightweight electronic health record (EHR)—the ability to view data—versus a heavyweight EHR as was assumed in the original CITL models. The model demonstrated that deploying less-sophisticated EHR systems reaches breakeven (e.g., the point at which cost or expenses and benefit are equal) more quickly than deploying full function EHRs and HIE, though full function systems have a larger potential return in the long run. This insight may suggest an approach that leverages HIE and less sophisticated EHRs to create value that can then be invested in deploying full function EHRs. This is particularly relevant since clinical decision support (CDS) is essential to achieving this full value and there is little experience to guide the implementation of CDS at scale.

One of the key insights from this effort is that significant portions of the savings predicted by the model are “shadow costs.” Shadow costs occur if an organization is carrying out the activity prior to HIE implementation. The CITL model, for example, assumes that practices are forwarding patient information to consultants for every referral, which would obviously require an investment of staff time and other resources like fax transmission and mailing. The project’s validation highlighted that, in fact, a practice is often not sending these data and, therefore, is not incurring these costs. Eliminating this task through HIE will not achieve any savings. HIE has value but does not reduce a practice’s expenses.

Future analyses are necessary to draw firm conclusions about the impact of HIE on charges, test utilization, and hospitalization. The results of the modeling, the difficulty in engaging specialty practices, and the providers’ skepticism about the value of data available through HIE suggest that deployment of health IT and HIE will be challenging and may require an extended period of time to successfully complete. This conclusion strengthens the finding that deploying less sophisticated health IT sooner is a viable national strategy to reach the goal of a fully interoperable electronic record for all citizens and may even represent a more sensible pathway. The savings generated from deploying EHRs with a reduced feature set can be invested to support deployment of fully interoperable EHRs. Depending on the assumptions made for the length of time required to deploy a fully interoperable EHR, this phased, incremental strategy could provide greater value return and greater net value than a strategy that relies on an initial deployment of fully interoperable EHRs.

More detail on the project findings is included in Dr. Overhage’s final report: [Overhage 2009 Final Report](#).

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: Knowledge Creation