

**Project Title:** 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)  
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**Project Period:** 09/04 – 09/09, Including No-Cost Extension  
**AHRQ Funding Amount:** \$1,499,662  
**Summary Status as of:** December 2008

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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:** Knowledge Creation

**Summary:** This project will refine an established economic model of health information exchange (HIE), create a “laboratory” in which we can test that model, and finally, test the model’s predictions in a randomized, controlled trial. An existing HIE (the Indiana Network for Patient Care [INPC]) will be used as the foundation for this project. In addition, several payers have been engaged by this project to provide clinical data and also to lay the foundation for changes in reimbursement models that will be based on conclusions drawn from the project’s findings. In this project, we will bridge the macro and micro approaches by using a macro-model (derived from the Center for Information Technology and Leadership [CITL] model described below) to gauge the aggregate savings and to identify areas of highest value, which we will examine in more detail with an empirically-based micro-approach.

Our project to assess the value of HIE in the ambulatory setting is entering the data extraction and analysis phase. HIE is a critical component of any broad health information technology (IT) effort. Any health IT-based application requires the appropriate data, and it is rare that all of the data required are generated within that technology or a single care delivery organization, particularly in the ambulatory setting. We integrated data from the INPC, our locally developed HIE, into 21 primary care ambulatory practices as well as a subset of specialty practices to which they refer patients. In order to measure the value of making these data from the HIE available, we randomly allocated access to these data by patient, which allows us to control for practice and provider characteristics, which we have identified as important covariates in our previous studies of HIE value. We will use claims data to measure any reduction in charges that result from the intervention. In addition, we have created a revised model of the value of HIE based on initial work by the CITL. We parameterized the model for Indianapolis, the market in which we are conducting the trial, and validated the model’s predictions with practice managers and hospital financial experts in the market. One of our key insights from this effort was that significant portions of the savings predicted by the model are “shadow costs.” Shadow costs are costs that would occur if the organization were carrying out the activity. The CITL model, for example, assumes that providers are forwarding patient information to consultants for every referral, which obviously would require an investment of staff time and other resources, such as facsimile transmission and mailing. Our validation highlighted that, in fact, the practice is often not sending these data and, therefore, not incurring these costs and so they will not achieve any savings from HIE by eliminating this task. It has value but will not reduce the practice’s expenses. We will use the insights gained from this modeling exercise to design our analyses. Particularly given the incentives and investments included in the American Recovery and Reinvestment Act (ARRA), it is important to understand the return that we may expect to gain from

investments in HIE, especially at the level of the individual physician practice, and our study should provide some of this important information.

### Specific Aims

- Apply a previously developed economic model for the benefits of HIE to a specific geographic community or Metropolitan Statistical Area (Indianapolis MSA) in order to determine the expected savings for the community; the model will identify 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. **(Ongoing)**

**2008 Activities:** We initiated the randomized, controlled trial to measure the value of HIE during 2008 and continued to support the infrastructure and the end users during this period.

**Preliminary Impact and Findings:** We have learned a variety of lessons during the course of our study that could be of broader interest. First, our experience implementing HIE with ambulatory practices reinforced our appreciation for how resource-limited these environments are, particularly in terms of management attention. Second, while the INPC contains a considerable amount of data for patients being seen in these practices and can organize and synthesize it efficiently, providers subjectively found only marginal value for most patient encounters. There were two main drivers for this perception. First, for many patients, there were some important data sources that INPC does not include, reducing the value; and second, for most patients, the provider already had all of the relevant data (in part as a result of the DOCS4DOCS® results delivery system that is part of the exchange, which electronically delivers data to providers). There were certainly examples where the data available in the INPC were highly relevant and important but not for the majority of patients. This perception led the providers to implement a “pull” approach—looking up data on patients when they identified a need—rather than a “push” approach that we initially proposed. A third important lesson that we learned is how to think about the results of economic models for HIE more precisely. Specifically, we now categorize projected savings into three categories—hard savings, soft savings, and shadow savings. Hard savings are those that a practice can actually expect to achieve. Soft savings are those that free resources for other purposes but do not actually result in a reduction of expenditures. An employee function for which the model predicts a 10 percent full-time equivalent (FTE) reduction, for example, would be treated as a soft saving since, at least in a small practice setting, the time savings are too small to expect an actual staff reduction, but the person’s time might be reallocated to other useful functions. Finally, shadow savings are those that the model predicts the practice should achieve but in fact the practice is not doing those activities, so no savings will occur. From a very pragmatic standpoint, only hard savings are meaningful to the practice.

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### Selected Outputs

None available.

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### Grantee’s Most Recent Self-Reported Quarterly Status:

**Milestones:** Progress is on track in some respects but not others.

**Budget:** Significantly under spent, more than 20 percent.