

Project Title: Showing Health Information Value in a Community Network
Principal Investigator: Lobach, David F., M.D., Ph.D., M.S.
Organization: Duke University
Mechanism: RFA: HS04-012: Demonstrating the Value of Health Information Technology (THQIT)
Grant Number: R01 HS 015057
Project Period: 09/04 – 08/08, Including No-Cost Extension
AHRQ Funding Amount: \$1,487,072
Summary Status as of: August 2008, Conclusion of Grant

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: Health information technology (IT) is a promising strategy for improving the quality of health care. However, little is known of the specific benefits of health IT to share information in a community setting using a population health management care model. The purpose of this project was to: 1) increase knowledge and understanding regarding the value of health IT at clinical, organizational, and financial levels within a community partnership focusing on care management of a vulnerable population, 2) determine its value to various stakeholders, and, 3) demonstrate a generalizable approach to health IT in a community setting that can be replicated at other sites. A study population of 20,108 Medicaid beneficiaries in Durham, North Carolina, was randomly assigned by family unit to receive either health IT-augmented or usual care. For the intervention group, sentinel health events were detected using a standards-based clinical decision support tool that conducted routine surveillance on a centralized regional health information exchange database. Events were grouped as:

- Events of commission (i.e., reflecting an activity done by a patient) that were the target of Phase 1 of the study
- Events of omission (i.e., reflecting activities neglected by a patient such as preventive health services), that were the focus of Phase 2
- Events self-reported by patients through questionnaires on health risk and barriers-to-care-access completed by patients on free-standing public kiosks

Because fewer than 150 patient-reported events were detected out of all of the possible question responses from the four kiosks in Durham County, these findings were not included in the analysis. Notifications were sent to patients' assigned care managers through weekly e-mails, to patients' assigned clinical homes via quarterly feedback reports, and to patients directly through weekly postal letters. The impact of the three notification methods on emergency care use, hospitalizations, and care quality was compared to usual care and to each other using regression model techniques. Patient satisfaction and quality of life were assessed using the Computer Assessment of Healthcare Providers and Systems (CAHPS) and the EuroQoL survey instruments, respectively. Provider opinions were assessed using validated survey instruments for assessing usability.

Specific Aims

- Evaluate from a societal perspective the clinical, organizational, and financial value of health IT in a community network. **(Achieved)**

- Evaluate the value of health IT in a community network from the perspective of specific stakeholder groups, including patients, providers, hospitals, payers, and purchasers. **(Ongoing*)**
- Disseminate the design of the community-based health information network, the techniques of the intervention approaches, and the results of the evaluation to interested stakeholders. **(Ongoing*)**

**This aim was not completed prior to scheduled conclusion of the grant (August, 2008) however, research will continue through other funding sources.*

2008 Activities: Data for the primary and secondary outcomes were obtained from claims data from the North Carolina Department of Health and Human Services. Analyses were delayed at least 6 months after the completion of each study phase to ensure that the claims dataset was complete and stable. As a consequence of these delays, preliminary analyses have not been performed for all phases. After further validation and subanalyses, the results from the subsequent phases will be submitted for peer-reviewed publication.

Impact and Findings: The primary finding from this investigation is that weekly e-mail notices sent to care managers regarding sentinel health events—a diagnosis for an individual that may indicate a broader need for preventive care—can lower emergency department (ED) use for low-severity issues. These notifications are well received by care managers and are reported to enhance productivity. In contrast, feedback reports sent quarterly to clinic managers did not impact ED use or hospitalizations, nor did letters sent to patients.

The net effect of the intervention was to decrease ED use and inpatient reimbursements (for ED and hospital care) for patients randomized to the group whose care managers received weekly e-mail notifications about sentinel events. There were no hospital effects for patients in the two other intervention groups. There was an increase in outpatient costs, but these were for mental health services that were not associated with the study interventions. The cost changes observed in this study were associated with reductions in copayments for study patients randomized to care manager-notice intervention, and with increases in payer reimbursements for patients randomized to receive patient letters. The net results on stakeholder groups are that patients may get more appropriate and perhaps higher quality care; providers may see patients in more appropriate settings and feel that they are delivering better care; hospitals (and their EDs) may save money by handling fewer Medicaid cases; and payers and purchasers experience no benefits or detriments because there were no net changes in total costs.

CAHPS-Medicaid patient surveys were completed by 146 adults and on behalf of 174 children by a parent or guardian. There were no statistically significant differences except that adult respondents in the control group indicated a greater need for specialists relative to the intervention group. The EuroQol quality-of-life survey was completed by 143 adults. When compared with the combined intervention groups, the control group had higher scores for pain/discomfort and for anxiety/depression. Several valuable lessons were learned through the development, implementation, and operational support of this population health management system. In the area of system development, resolving political issues related to the exchange of clinical information and identifying resources to implement the data exchange are often more challenging and time consuming than the technical aspects of information exchange. However, once the exchanged information was in use for proactive care management, clinical sites began to offer their information to the health information exchange so that they could reap the benefits of the proactive care notices.

Selected Outputs

Eisenstein EL, Anstrom KJ, Macri JM, et al. Assessing the potential economic value of health information technology interventions. *AMIA Annu Symp Proc* 2005;221-5.

Eisenstein EL, Lobach DF, Montgomery P, et al. Evaluating implementation fidelity in health information technology interventions. AMIA Annu Symp Proc 2007;211-5.

Eisenstein EL, Ortiz M, Anstrom KJ, et al. Assessment of the quality of medical information technology economic evaluations: room for improvement. AMIA Annu Symp Proc 2006;234-8.

Kawamoto K, Lobach DF. Design, implementation, use, and preliminary evaluation of SEBASTIAN, a standards-based Web service for clinical decision support. AMIA Annu Symp Proc 2005;380-4.

Lobach DF, Kawamoto K, Anstrom KJ, et al. Proactive population health management in the context of a regional health information exchange using standards-based decision support. AMIA Annu Symp Proc 2007;473-7.

Lobach DF, Silvey G, Willis J, et al. Coupling direct collection of health risk information from patients through kiosks with decision support for proactive care management. AMIA Annu Symp Proc 2008;429-33.

Grantee's Most Recent Self-Reported Status (as of August 2008): Data collection and some preliminary analyses are complete, including all analysis of Phase 1. Further conclusions will be disseminated through peer-reviewed publication and other mechanisms as they are developed.

Milestones: Progress is mostly on track.

Budget: Spending is roughly on target.