Project Title:	Showing Health Information Value in a Community Network
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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: The use of health information technology (IT) has been identified as a promising strategy for improving the quality of health care. However, little is known of the specific benefits of using 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) to determine its value to various stakeholders; and 3) to 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 care 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 are 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; and events self-reported by patients through questionnaires on health risk and barriers to care access completed by patients on free-standing public kiosks. During the study period, less than 150 patient-reported events were detected from all of the possible question responses from the 4 kiosks in Durham County, so these findings are not included as part of the analysis due to small sample size. 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 the clinical, organizational, and financial value of health IT in a community network from a societal perspective. **(Achieved)**
- Evaluate the value of health IT in a community network from the perspective of specific stakeholder groups. These groups include patients, providers, hospitals, payers, and purchasers. **(Ongoing*)**

- Disseminate the design of our community-based health information network, the techniques of our intervention approaches and the results of our evaluation to interested stakeholders. **(Ongoing*)**

** Some aims of the grant were not completed prior to conclusion of the AHRQ funding period in August 2008. Yet, since other sources of funding have been secured, these aims are still targeted for timely completion.*

2008 Activities: Data collection continued through the middle of 2008. 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 by 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, but the completed and verified analyses from Phase 1 provide the primary content for this report. After further validation and sub-analyses, the results from the subsequent phases will be submitted for peer reviewed publication.

Preliminary Impact and Findings: The primary finding from this investigation is that e-mail notices sent to care managers weekly regarding sentinel health events—a diagnosis for an individual that may indicate a broader need for preventative care—can lower emergency department 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 emergency department (ED) use or hospitalizations, nor did letters sent to patients. None of the interventions appeared to have a significant verifiable impact on health care costs or quality. No deterioration of quality was detected in the setting of reduced ED utilization for low severity issues.

With regard to this study's primary stakeholders (patients, providers, hospitals, payers, and purchasers), the net effect of the intervention was to decrease emergency department use and inpatient reimbursements (for ED and hospital care) for patients randomized to the group whose care managers received weekly email notifications about sentinel events. There were no hospital effects for patients in the two other intervention groups. There also was an increase in outpatient costs; however, these were for mental health services that were not associated with the interventions provided in this study. The cost changes observed in this study were associated with reductions in co-payments for study patients randomized to care manager notices and with increases in payer reimbursements for patients randomized to patient letters. The net results on stakeholder groups are that patients may get more appropriate care, which could mean higher quality; providers could 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 one 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 ($p=0.0393$). 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 ($p=0.0379$) and for anxiety/depression ($p=0.0237$). 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 HIE so that they could reap the benefits of the proactive care notices.

Selected Outputs

Lobach DF, Kawamoto K, Anstrom KJ, et al. Development, deployment and usability of a point-of-care decision support system for chronic disease management using the recently-approved HL7 Decision Support Service Standard. MedInfo 2007;861-5.

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.

Eisenstein EL, Lobach DF, Montgomery P, et al. Evaluating Implementation Fidelity in Health Information Technology Interventions. AMIA Annu Symp Proc 2007;211-5.

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.

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.

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.

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.

Grantee's Most Recent Self-Reported Status: 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. All principal aims of the project are complete or on track to be completed. During data validation efforts, missing claims data were discovered in the master Medicaid dataset. Collaboration with state employees eventually resolved these errors, but these incidents illustrated the need to defer analysis of all data until they can be confirmed to be complete, delaying analysis by several months.

Milestones: Progress is mostly on track.

Budget: Spending is roughly on target.