

Project Title:	Using Health Information Technology to Improve Ambulatory Chronic Disease Care
Principal Investigator:	Mehr, David, M.D., M.S.
Organization:	University of Missouri–Columbia
Mechanism:	RFA: HS07-006: Ambulatory and Safety Quality Program: Improving Quality through Clinician Use of Health IT (IQHIT)
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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: Implementation and Use

Summary: This project was initiated in September 2007 and has completed the first third of the grant period. To improve patient care quality and safety outcomes, the Family Medicine and General Internal Medicine practices at the University of Missouri–Columbia (MU) are conducting a phased implementation of selected ambulatory care health information technology (health IT) systems and functions. This research demonstration project proposes a formative (in-process evaluation aimed at improvement) and summative (final overall) evaluation of health IT innovations designed to foster improved chronic disease care in the ambulatory primary care practices at MU. These innovations result directly from a collaboration of MU clinicians from the Department of Family and Community Medicine (FCM) with MU’s medical record vendor, the Cerner Corporation, which is certified by the Certification Commission for Healthcare Information Technology (CCHIT). This health IT implementation uses specific strategies to: 1) improve providers’ access to information, allowing individual providers to compare and improve their clinical performance against standardized performance targets and peers’ performance; and 2) enhance patient-provider connectivity and communication to improve clinical decision-making, patient participation in the care process, and, ultimately, patient care outcomes. Specific strategies include providing physicians with comparative performance reports in one of three formats, and providing patients with access to a Web-based, interactive software system. This includes secure messaging and in-home reconciliation of all medications, to Cerner IQ Health Cycle 8 release (in the process of upgrading to Cycle 11 with an estimated implementation target of the end of May 2009), and using in-home “smart” diagnostic devices that send patient data directly to the care team. The project proposes a multi-method evaluation of health IT innovations designed to enhance the quality of primary care for chronic diseases, including qualitative interviews, surveys, and analysis of outcome data in the evaluation. The planned health IT systems for improving chronic disease care at MU are being implemented differently in various practices and with different associated care systems. This variation in care processes provides an extraordinary opportunity to evaluate factors that influence whether health IT innovations will aid in performance-based quality improvement, assist with care coordination, and facilitate patient self-management.

Specific Aims

- Evaluate the change in patient care processes and outcomes following introduction of health IT-generated clinician quality performance reports with comparison across practices and different peer comparisons. **(Ongoing)**

- Evaluate the effectiveness and changes associated with an interactive Web-based patient interface software system (IQ Health), including in-home medication reconciliation. **(Ongoing)**
- Evaluate the use of in-home “smart” diagnostic devices (e.g., blood pressure cuffs, glucometers) connecting patients with their patient care teams. **(Ongoing)**
- Disseminate information regarding the development and impact of the interventions through Web teleconferences, professional meetings, educational lectures, and peer review journals. **(Ongoing)**

2008 Activities: While performance reports were delayed, a new functionality, the diabetes summary screen, was introduced in April 2008. This provides summary information—including blood pressure, laboratory data, and medications for an individual patient—which demonstrates whether most quality indicators have been achieved for that patient. A data dump of pertinent clinical data from the electronic record will allow tracking whether this new functionality is associated with altered clinical outcomes and whether it interacts with the performance reports when they become available (early 2009). The usability and impact of the summary screens were evaluated in a mixed methods study using Morae™ software and through a questionnaire disseminated to faculty physicians, resident physicians, and nurse practitioners. The subgroup working on evaluating the impact of smart devices on blood pressure and blood glucose measures met frequently to fine-tune the intervention protocol, data collection process, and instruments. In the upcoming quarter, these documents will be reviewed by the steering committee, followed shortly thereafter by the initiation of the intervention and data collection. The contract with the vendor for needed equipment has been signed. IQ Health has been launched for patient use in three sites, and the project team began gathering information about its use and implementation, as well as undertaking a small exploratory pilot project to gather information about how easily and accurately patients could use the online form for medication reconciliation. Project staff are continuing to interview/meet with the implementation team and collect documents concerning changes in electronic health records to facilitate chronic disease care.

Preliminary Impact and Findings: IQ Health Pilot findings were planned for development in the first quarter of 2009. The summary screen was demonstrated to save substantial time in locating needed information for an ambulatory visit with a patient with diabetes.

Selected Outputs

IQHealth Benchmarking Survey.

Patient Computer Use Survey.

Presented at the Cerner Health Conference in Kansas City, MO.

Presented at the North American Primary Care Research Group (NAPCRG) Annual Meeting, November 2008, in Puerto Rico.

Provider Experience and Perception Survey.

Provider Information Needs and Uses Survey.

Provider Needs and Use Survey: Getting Information out of PowerChart.

Provider Survey for IQ Health.

Summary Screen Interview Protocol.

Grantee’s Most Recent Self-Reported Quarterly Status: Early on, delays in the implementation of health IT features affected the project’s ability to proceed with evaluation efforts according to our initial

timelines. In order to resolve implementation issues and move forward, a group was constituted to guide implementation and learn from it with key stakeholders included. This group has been successful in moving IQHealth, an important facet of the project, into production. With IQHealth available, the project is able to move forward with several other aims. Performance reports remained unavailable, and the data dump to provide baseline data had not been completed by the end of the year. However, completion of both is expected in early 2009. Hopefully, the extra time that was spent on development of the performance reports will result in a better product, released early in the first quarter of 2009, and the project will be able to proceed with evaluation efforts soon after. Similarly, the “smart devices” portion of the study is slightly delayed due to delays in purchasing the devices. Since delays with IQHealth and the smart devices have now been resolved, no further delays in this area are anticipated. Moreover, implementation of the summary screens, not anticipated until 2009 or 2010 at the time of grant submission, enriches the project’s ability to study impacts of health IT on chronic disease care. With the purchase contract completed during December 2008, the project will no longer be significantly under spending its budget.

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

Budget: Significantly under spent, more than 20 percent.