Veterans Administration Integrated Medication Manager

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Organization: Western Institute for Biomedical Research
Mechanism: RFA: HS07-006: Ambulatory Safety and Quality Program: Improving Quality Through Clinician Use of Health Information Technology (IQHIT)
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AHRQ Funding Amount: $594,582
Summary Status as of: December 2010

Target Population: Adults, Veterans

Summary: Computerized clinical decision support (CDS) research is often focused on improving technology, but more research is needed on how the use of CDS in the context of the process of clinical care can improve patient outcomes. The Veterans Administration (VA) has implemented CDS to assist clinicians in reaching quality goals. However, in 2006, 25 percent of hypertensive patients did not reach the performance standards. To better support providers in reaching quality goals for more hypertensive patients, this project funds the development and evaluation of a new health information technology application called the Integrated Medication Manager (IMM). The IMM facilitates clinicians' decisionmaking by helping them consider relevant data when planning patient care. In a departure from the traditional medical record, a major feature of this system is the explicit linking of patient problems, therapies, and goals. This project will compare IMM to a standard electronic health record (EHR), thereby generating new knowledge about medication management.

Design guidelines for the IMM were determined by analyzing providers' cognitive processing of information and how and what information is shared among a clinical team. In the first phase of the project, physicians, mid-level providers, and pharmacists were followed during clinical visits. Between patients, they were asked to "think aloud" and describe their thought processes as they worked through decisionmaking for a patient using the EHR. The findings of the observations were shared with the development team to guide them as they refined the IMM software.

The second phase of the project evaluates the IMM software using test cases in simulation studies. The simulation studies provide insight into how providers integrate information and further support evaluation of the IMM.

Specific Aims:

- Identify cognitive components of providers' therapeutic decisionmaking in the field. **(Achieved)**
- Refine and evaluate the IMM using simulation studies. **(Ongoing)**

2010 Activities: The software design was completed for the IMM and the focus of the work was the development of test cases for the simulation studies. The research team completed creating, pilot testing, and revising all test cases. The team's approach to creating test cases changed based on lessons learned in building the first case. The team initially thought creating test cases would be more difficult than using real patient cases but found that the reverse is true. Real patient cases are, in fact, too complex to be used for the tests.

Materials to support the simulation experiment, including followup interview questions, were also finalized. Pilot testing for the simulation experiment concluded in fall 2010. Pilot testing served three purposes: 1) testing the simulation design and materials; 2) evaluating the quality and accuracy of the test cases; and 3) refining interfaces and logic of the IMM software.

The pilot compared the new IMM software to the standard VA software. The goal is for the new software to allow faster decisionmaking by providing higher-quality data to the provider, especially when the patient's problems are complex. Throughout the test cases, the complexity, time horizon, and saliency of the available information differ. The focus disease is more evident or less evident, important information is located further back in time in the patient's medical history or is more recent, and patients' problems are highly complex or less complex. And finally, in certain test cases, the provider is interrupted while the complexity of the case is manipulated to see if the provider can quickly recover and return to what they were doing. In all cases, the hypothesis is that faster and higher-quality decisionmaking will occur when providers use the new software instead of the standard EHR.

The first study participant completed the simulation experiment in December 2010, and experimentation has continued with other participants. The participants include VA and non-VA physicians and mid-level providers. Ten test cases are presented to each participant and the participants are randomly assigned to the new software or to the standard control software. The evaluation will measure the speed and quality of software use.

Grantee's Most Recent Self-Reported Quarterly Status (as of December 2010): Progress is mostly on track. The team is meeting about 80 to 99 percent of their milestones and is generally on time. Project spending is roughly on target.

Preliminary Impact and Findings: The project team has completed the cognitive components analysis and is eager to share the results of this analysis and its implications on human factors analysis.

Strategic Goal: Develop and disseminate health IT evidence and evidence-based tools to improve the quality and safety of medication management via the integration and utilization of medication management systems and technologies.

Business Goal: Implementation and Use