

**Project Title:** Veterans Administration (VA) Integrated Medication Manager  
**Principal Investigator:** Nebeker, Jonathan, M.D.  
**Organization:** Western Institute for Biomedical Research  
**Mechanism:** RFA: HS07-006: Ambulatory Safety and Quality Program: Improving Quality through Clinician Use of Health IT (IQHIT)  
**Grant Number:** R18 HS 017186  
**Project Period:** 09/07 – 03/10  
**AHRQ Funding Amount:** \$594,582  
**Summary Status as of:** December 2008

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**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

**Summary:** This project was initiated in September 2007 and has completed the first third of the grant period. This project features the development and evaluation of a new health information technology (health IT) application called the Integrated Medication Manager (IMM). This application was developed using well-established theories of cognition, notably Hollnagel's Contextual Control Theory, and is designed to facilitate improved decisionmaking by helping clinicians to consider more relevant data, and to better plan patient care. One of the major features of this system is the explicit linking of patient problems, therapies, and goals. This project will compare the new IMM to the current version of the Veterans Administration's (VA) Computerized Patient Record System. This project focuses on generating new knowledge about medication management. The VA Office of Information and Technology is the primary organizer. The study occurs in three phases over 2½ years. During the first year, mixed methods were used to elucidate the technology's socio-cognitive mechanisms of action. The preliminary findings of this phase were shared with the development team, who refined the software based on the findings. There is some modest overlap in the first-year studies and those begun subsequently. During the second year, the project will continue to analyze data from the first year and implement the software in a cluster-randomized trial. During the final 6 months, the clinical data will be analyzed.

In addition to the immediate aims that will be attained during the life of this grant, the project team plans to apply for funding for the following future aims: evaluate the impact of the IMM on team interactions and communication; evaluate the effect of the IMM on adverse drug events; implement and evaluate the effect of integrating patient-entered clinical information and goals through myHealthVet, the VA patient Web portal; implement and evaluate rich, condition-specific decision support for hypertension and other conditions; evaluate the IMM as a tool for continuous medication reconciliation; and evaluate the cost, cost effectiveness, and cost benefit of the IMM and related systems.

### Specific Aims

- Identify cognitive components of providers' therapeutic decisionmaking in the field. **(Upcoming)**
- Refine and evaluate the IMM using simulation studies. **(Upcoming)**
- Implement and evaluate the IMM in a cluster-randomized trial. **(Ongoing)**

**2008 Activities:** The process of working with standards committees in the VA to apply knowledge representations such as National Drug File Reference Terminology, which links drug ingredients to indications and adverse effects, was completed, along with the construction of compact representations for use in testing. Identification of cognitive components of providers' therapeutic decisionmaking in the field was completed and pilot data was collected. The computerized data collection tools were finalized and are in use. Institutional review board (IRB) approval was previously obtained for the first two aims listed above for some sites; however, the remaining two sites for the first aim are within the VA Puget Sound Health Care System, where a moratorium was placed on all research currently being conducted or pending approval. Thus, IRB approval will be pending until they lift restrictions and grant approval for the study. The project hopes to receive approval in year two quarter two, but has no definite timeline for when approval will be granted. Data collection at one of the five sites has been collected with the target of collecting data from two additional sites by quarter two of year two still on track.

**Preliminary Impact and Findings:** The project has no findings to report at this time.

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### **Selected Outputs**

AHRQ 2008 Annual Conference presentation: Human Factors in Prescription Medication Management ([PowerPoint@ File](#), 1.2 MB; [Web Version](#)).

AHRQ 2008 Annual Conference presentation: Information Integration to Support Medication Management ([PowerPoint@ File](#), 2.1 MB; [Web Version](#)).

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**Grantee's Most Recent Self-Reported Quarterly Status:** The project is mostly on track with 80 to 99 percent of its milestones and is generally on time.

**Milestones:** Progress is mostly on track.

**Budget:** Spending is roughly on target.