

RxSafe: Shared Medication Management and Decision Support for Rural Clinicians

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Organization:	Oregon Health & Science University
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Target Population: Adults, Chronic Care*

Summary: It is widely recognized that health information technology (IT) can improve medical care and patient safety, but questions remain about how best to put health IT systems into practice. This project seeks to provide important information about how to integrate decision support into clinical practices to improve the quality and safety of medication management for people with chronic illnesses. This project investigates the feasibility and impact of novel approaches to clinical decision support in multidisciplinary ambulatory care, emphasizing high-risk transitions of care. The project has developed technology to support shared medication management for persons with chronic conditions. This health IT will be used to facilitate clinician decisionmaking, and improve outcomes for patients and providers in the management of chronic conditions. Ultimately, the project aims to show improvements in medication management by 1) providing the means to effectively share medication information, 2) making any corrections or improvements made by one team member to the regimen visible to all team members, and 3) providing clinicians using the system with access to evidence-based information at the time and place it is needed.

This project is a continuation of a successful collaboration between community-based nurses and physicians providing ambulatory services in an Oregon coastal community, a multidisciplinary team of university-based investigators with expertise in medicine, nursing, medical informatics, and computer science, and the Oregon Rural Practice-based Research Network, which provides the infrastructure, coordination, and support. Clinical settings for the project are independent clinic practices in two coastal communities, local home health services, and transitions in care into and out of the single community hospital and its emergency room. The patient focus is on community-dwelling persons with chronic conditions on multiple medications. The choice of these specific innovations was informed by experience with development and early deployment of RxSafe, a system that consolidates medication lists of patients in long-term care to integrate information for providers involved in prescribing, dispensing, administering, or monitoring medications.

Specific Aims:

- Enhance clinician cognitive performance in medication management tasks by exploiting the

underlying semantics of medication lists to improve the organization and presentation of medication list information. **(Ongoing)**

- Implement medication list management tools that are integrated into clinician-specific and task-specific workflows to support medication reconciliation at high-risk transitions as well as in ongoing ambulatory care. **(Ongoing)**
- Increase the effectiveness of medication management activities of clinicians in multiple roles by improving their coordination and communication using shared medication management tools. **(Ongoing)**
- Employ evolving standards and architectures to link external, machine-actionable, evidence-based clinical information in context-appropriate and user-appropriate ways to support shared medication management by clinicians practicing in ambulatory settings. **(Ongoing)**

2010 Activities: Field observations of clinical medication management tasks remained on track to produce descriptions of cognitive resources and task models during this period (Aims 1, 2). The team evaluated medication management open source software solutions including MyRxPad, MyMedicationList, and OpenMRS platform (Aim 3). The team configured these clients to interact through the versioning system (SyncRx) and explored the usefulness of this technology in prototype testing, to determine the requirements and challenges to its development and deployment (Aim 3).

Pharmacy students were recruited to develop test sets of medication data for evaluating performance of other classification schemas (USP DI, WHO-ATC, and AHFS). Refinement of the documentation for the parser function was completed. The prototype for the identifier module underwent trial-and-error testing. The classifier completed its demonstration phase and began classifying medications automatically using National Drug File Reference Terminology (NDFRT) classes (Aim 4).

The team completed the “pipeline” prototype, demonstrating the Web-based clinical decision support model that would allow composition of independent medication information related services. The demonstration included services for parsing, identification (using RxNorm), and classification (using NDFRT) of medication information, and a software harness to allow composition of these and other medication management services.

A “SyncRx” prototype for collaborative medication management was being developed, based on the Markle Foundation Common Framework for health information exchange, using open source approaches including OpenMRS-based clients as well as client software based on the National Library of Medicine MyRxPad and MyMedicationList software.

Grantee’s Most Recent Self-Reported Quarterly Status (as of December 2010): Project progress is mostly on track, meeting most milestones on time. The project budget was significantly underspent. Funds will be used to underwrite expenses during the no-cost extension. The project is focusing on analysis of field data and disseminating findings from field observation as well as software tools. The team anticipates this will be a major activity moving forward.

Preliminary Impact and Findings: The project team found that nurses, pharmacists, and physicians used different categorization schemes when thinking about medications. Physicians form sophisticated initial mental models of the patient when performing a simple medication reconciliation task, and these models reinforce cognitive performance. Pharmacists and nurses performing medication management

tasks identify and correct discrepancies in the medication regimens of their patients in a more complex fashion than what is commonly defined and performed as “medication reconciliation”. This work is embedded in other tasks relating to the total care of the patient. Finally, no publicly-available standard for classifying medications is in use, and this is a major barrier to effective multidisciplinary distributed decision support.

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

* *AHRQ Priority Population*