

## Personal Health Records and Elder Medication Use Quality

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<b>Organization:</b>	University of Iowa
<b>Mechanism:</b>	RFA: HS07-007: Ambulatory Safety and Quality Program: Enabling Patient-Centered Care through Health Information Technology (PCC)
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<b>Project Period:</b>	September 2007 – August 2011, Including No-Cost Extension
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<b>Summary Status as of:</b>	December 2010

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**Target Population:** Elderly\*, Medicare

**Summary:** Use of medications by older adults living in the community is far from optimal as medication errors including overuse, underuse, and misuse, are common. The Medicare Modernization Act (MMA) of 2003 required health plans to provide medication therapy management (MTM) services to optimize therapeutic outcomes among high-risk patients with multiple chronic conditions taking multiple medications. Because the MMA did not dictate how health plans should deliver MTM, various delivery methods exist. Regardless of delivery method, a model of patient-centered MTM requires that the patient play a pivotal role in self-monitoring, self-evaluation, goal setting, and medication taking. The features of a patient controlled personal health record (PHR) system parallel and are thought to enhance these critical behaviors. By enhancing patient MTM behaviors, the use of PHRs may result in improved patient-provider communication, care continuity, better prescribing, and medication adherence.

The project is evaluating the ability of a PHR to support and improve elderly patients' medication adherence, use, and management. The team is testing the hypothesis that a successfully maintained PHR provides reinforcement to build self-efficacy for MTM, that an up-to-date PHR increases patient knowledge about medications, and that PHR-gained information allows patients to shift their beliefs about medication from concern to understanding.

Phase I of the project consisted of a series of patient, caregiver, and provider focus groups aimed at identifying patient and physician medication management practices, barriers to PHR use, and physician office workflow issues. Through the evaluation of the feedback received during these sessions, the project team identified patients' and providers' wants and needs with respect to the varied functionalities of PHR products and developed a formal measure of the patients' role in maintaining their health. The project team also conducted an environmental scan of commercially available PHR products to identify existing core PHR functions available to elderly patients. The project team developed a PHR that best met the criteria of the identified core functions.

Phases II and III are hands-on trials of patients' interaction with the internally developed PHR. The team tested the PHR by measuring elderly patients' interaction with the technology and their resulting self-activation with respect to medication management. Based on Phase I feedback, the project team incorporated patient and provider suggestions into the product. Phase II was a usability study of the PHR, via a human-computer interaction (HCI) laboratory assessment of elderly adults, to identify the challenges patients face when using the PHR, and the support needed to facilitate usage. After Phase

II testing, it was determined that the commercially available PHR was not well-suited for medication management activities. A new PHR was therefore developed using participatory design methodologies. Phase III is a randomized controlled trial of the new PHR comparing older adults using the PHR with those randomized to no PHR use across outcomes, patient-physician communication, and other technology utilization measures. Core activities to be analyzed as behavior-based measures of patient participation include keeping an active medication list, recording the purpose of each medication, reporting side effects to providers, and asking questions about medications.

### Specific Aims:

- Develop measures of patient MTM behaviors and patient self-efficacy for MTM. **(Achieved)**
- Compare the patient-reported MTM behaviors, medication adherence, patient- and physician-centric medication quality indicators, patient self-efficacy for MTM, and patient beliefs about medication among patients randomized to a current, representative PHR system versus patients randomized to usual care. **(Ongoing)**
- Investigate the usability of PHR system in an HCI interaction laboratory compared with alternative prototypes developed through participatory design with older adults of varying ability levels. Associate PHR performance with measures of cognitive, motor, and perceptual ability. **(Ongoing)**

**2010 Activities:** As part of the PHR development process, staff incorporated most of the “desirable” functions as identified through their earlier focus group and participatory design sessions. In addition, they incorporated detailed tracking functionality to enable them to describe the PHR user experience. Seventeen medication messages, grounded in Assessing Care of Vulnerable Elderly quality indicators, were developed and are displayed to PHR users upon entry of a trigger medication. The messages were evaluated by two physicians and two pharmacists and the study team implemented revisions based upon their feedback. Each resulting message contains three levels of increasingly detailed information. Three focus groups with older adults were conducted to elicit feedback on the PHR prototype (University of Iowa version). In two of the sessions, the team presented the medication entry form to participants and asked for feedback on PHR layout and functionality. For the remaining session, the team presented examples of draft medication messages and received feedback on layout, structure, and content.

At the end of 2010, questionnaires were sent to 2,372 people who were eligible for the trial per their screening questionnaire responses. Of these individuals, 1,176 completed and returned baseline questionnaires, for a response rate of 49.6 percent. The team randomized individuals (at a 3:1 ratio) and sent invitations and a quick start guide to use the PHR (PHR group), or a thank you letter (control group) to 840 and 280 people, respectively.

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**Grantee’s Most Recent Self-Reported Quarterly Status (as of December 2010):** Project progress is mostly on track, and project spending is roughly on target. The intervention is underway and the project team is focused upon collection and analysis of qualitative and quantitative data.

**Preliminary Impact and Findings:** Findings from the focus groups with family physicians suggested that providers predominantly view PHRs as a backup source of medical information, secondary to the patient’s medical record, as opposed to a tool for patients. While providers believe PHRs have the potential to decrease errors and increase efficiency, they are concerned about how to integrate PHRs into patient visits that are already too short. Preliminary results revealed that older users were much less likely to be able to complete key medication-related tasks using the commercial PHR system. For example, whereas

69 percent of younger users were able to successfully enter medications into the system, the same was true for only 25 percent of older users. All younger users were able to successfully change the strength of a medication, while only 25 percent of older users were able to do so.

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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 exchange of electronic health information to improve quality of care.

**Business Goal:** Implementation and Use

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\* *AHRQ Priority Population*