

Self-Management & Reminders with Technology: SMART Appraisal of an Integrated Personal Health Record

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Mechanism:	PAR: HS08-270: Utilizing Health Information Technology to Improve Health Care Quality Grant (R18)
Grant Number:	R18 HS 018167
Project Period:	October 2009 – September 2013
AHRQ Funding Amount:	\$1,183,337

Summary: The Self-Management & Reminders with Technology: SMART Appraisal of an Integrated Personal Health Record project was designed to improve health care outcomes in complex patients who have or are at high risk of developing cardiovascular disease by promoting patient self-management through the use of an active and interactive personal health record (PHR) integrated into an electronic health record (EHR). Specifically, the project sought to help determine if the use of an active patient self-management version of an existing PHR could reduce cardiovascular risk factors and improve outcomes.

The project modified an existing passive PHR to become active and interactive. The standard passive version allowed patients to view portions of their EHR, including problem lists, medication lists, and test results, to communicate electronically with their physician's office and track home-monitored blood pressure and glucose values. The active version had the features of the passive PHR, but also electronically advised patients to check a secure Web site when disease self-management tasks or preventive services were necessary. Once logged in, patients saw a list of prevention tips, "gaps" in their care, and the action needed to close those gaps.

A randomized controlled trial of patients using the enhanced PHR versus those using the standard passive version was conducted. Participants were recruited from the University of Pittsburgh Medical Center practices that use the EHR, and were then randomized to the passive (n = 585) or active (n = 584) version of the PHR. Primary outcomes included the closure of prevention and treatment gaps. Secondary outcomes included calculations of 10-year cardiovascular risk, changes in cardiovascular risk prediction biomarkers, and patient satisfaction with and barriers to use of a PHR.

Specific Aims:

- Develop a patient-specific, active component for an existing electronic PHR for patients with complex illnesses and conditions that contribute to the development of cardiovascular disease. **(Achieved)**
- Conduct a randomized controlled trial of the effectiveness of passive and active PHR systems for improving adherence and clinical outcomes of these patients in an ambulatory environment. **(Achieved)**
- Enumerate the barriers to and facilitators of implementation and use of an electronic PHR among providers and patients in an ambulatory setting. **(Achieved)**

Impact and Findings: The primary data source for the study was the EHR. Data for the secondary outcomes came from a computerized baseline data form, a health literacy questionnaire, a computer literacy assessment, a patient satisfaction survey, a health utilization form, a PHR feature evaluation form, an assessment tool that asked about barriers to patient self-management, and PHR utilization data.

The primary outcome analysis showed that the intervention did not improve prevention or treatment gap closure among patients with or at high risk for developing cardiovascular disease, compared to patients enrolled in the passive version of the PHR. None of the gap closure rates were significantly different in the intervention when compared to the control group, and the intervention did not have an effect on physiological variables at 1-year, nor on the calculated 10-year cardiovascular risk score. Theories behind the negative result are available in the project's final report.

Regarding the secondary outcomes, the analysis looked at the rate at which gaps were closed in the intervention arm as a function of the specific reminder cycle of the alert sent to the patient. While the study only included three cycles, the results consistently showed that patients responded and closed gaps after multiple reminders, thereby discounting the presence of any significant alert fatigue.

Several themes arose from focus group discussions regarding potential barriers to and facilitators of implementing and using the PHR. First, users found that the active portal increased their awareness of health care conditions and they felt more proactive about using and keeping track of their health care information. Second, the active portal was a facilitator of patient-driven communication, and features such as test result notification and reminders of particular prevention needs were useful. Finally, interaction with the active portal improved many patients' preparation for meetings with providers and allowed them to be more engaged in care discussions. Further data analysis was still underway at the time of this summary.

In conclusion, while the randomized controlled trial found no significant difference in prevention and treatment gap closure rates between an active and interactive PHR and a standard, passive version, the study found that patients are interested in engaging in their healthcare through this technology. Use of the active and interactive PHR significantly improved patients' abilities to understand their health issues and communicate with health care providers. The findings indicate that more research is needed to fully understand the impact of PHRs.

Target Population: Adults, Coronary Artery Disease

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: Knowledge Creation
