

Improving Post-Hospital Medication Management of Older Adults With Health Information Technology

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Mechanism:	RFA: HS07-006: Ambulatory Safety and Quality Program: Improving Quality Through Clinician Use of Health Information Technology (IQHIT)
Grant Number:	R18 HS 017203
Project Period:	September 2007– August 2011
AHRQ Funding Amount:	\$1,199,952

Summary: The project employed a randomized controlled trial design to test the ability of a health information technology (IT)-based transitional care intervention that enhanced medication reconciliation and therapeutic monitoring to improve the quality and safety of patient monitoring and medication management. The intervention was integrated into the EpicCare Ambulatory electronic medical record (EMR), and focused specifically on the transition from inpatient to ambulatory settings for older adults who have multiple comorbid conditions and are prescribed high-risk medications. This research examined the quality of followup, outpatient clinician workflow, occurrence of adverse drug events (ADEs), and health care utilization, to gain insight into the effective use of clinical alerts and coordinated delivery of actionable information to outpatient clinicians in the management of ambulatory elderly patients after hospital discharge.

Management of complex information and coordination of data sharing across multiple settings often hamper clinician workflow in the post-hospitalization setting. The intervention addressed these special challenges by automating key steps in the transition of care from the hospital to home, including: 1) expediting and facilitating discharge followup appointment scheduling, including monitoring for no-shows; 2) generating medication lists that alert the primary care provider to key therapeutic additions; and 3) generating patient-specific therapeutic monitoring recommendations for high-risk medications in the post-hospitalization period.

Specific Aims:

- Evaluate the impact of automated scheduling alerts on the rate of followup to an outpatient provider within 14 days of hospital discharge. **(Achieved)**
- Evaluate the impact of automated monitoring alerts on the prevalence of appropriate monitoring for selected high-risk medications at 30 days from the time of hospital discharge. **(Achieved)**
- Evaluate the impact of a health IT-based transitional care intervention on the incidence of ADEs within 45 days of hospital discharge. **(Achieved)**
- Evaluate the impact of a health IT-based transitional care intervention on the rate of hospital readmissions and emergency department visits within 30 days of discharge. **(Achieved)**
- Assess (by level of comorbidity, number of medications, and use of specific high-risk medications) whether a health IT-based transitional care intervention is more effective in subgroups of

patients. **(Achieved)**

- Determine costs directly related to the development and installation of the health IT-based transitional care intervention. **(Achieved)**

2011 Activities: The project team conducted two analyses. The first assessed the impact of the intervention on visits to the outpatient provider, hospital readmissions, and emergency department visits. The second analysis determined the investments of time and effort required to develop, test, and launch the EMR-based post-discharge intervention. The latter analysis is a preliminary step for the planned return-on-investment analysis.

The team of clinical research pharmacists continued to review the EMR for ADEs. They also initiated adjudication sessions with the physician reviewers to classify the abstracted events. Due to delays in programming of the EMR, the project team used a 1-year no-cost extension. As last self-reported in the AHRQ Research Reporting System, project progress was completely on track and project budget spending was on target. The project was completed in August 2011.

Impact and Findings: Overall, the project did not find significant improvements in visit rates to outpatient providers following discharge from the hospital, laboratory monitoring in response to alerts, adverse drug event rates, or rehospitalization and emergency department visit rates relating to the intervention.

Visits to the outpatient provider: There were 1,024 visits (54.4 percent of subjects) to an outpatient provider within 14 days of hospital discharge among patients in the intervention group, and 964 in the control group (53.6 percent of subjects).

Laboratory monitoring: Appropriate monitoring for selected high-risk medications within 45 days from time of hospital discharge was 2.35 percent in intervention groups and 1.11 percent in control groups.

Adverse drug events: The first 1,000 hospital discharges for all patients included in the study were comprehensively evaluated, with 514 discharges in the intervention group and 486 discharges in the control group. Among 514 discharges in the intervention group, 107 discharges were identified (20.8 percent), of which there was at least one adverse drug event during the 45-day period after discharge. Among 486 discharges in the control group, 82 discharges were identified (16.9 percent), of which there was at least one adverse drug event during the 45-day period after discharge.

Hospital readmission and emergency department visits: During the 12-month intervention period, in the 30-day period following hospital discharge of the patient, there were 1,884 eligible discharges and 241 rehospitalizations in the intervention group (12.8 percent), and 1797 eligible discharges with 235 rehospitalizations in the control group (13.1 percent). For the same period, again looking at the 30-day period following hospital discharge of the patient, there were 271 emergency department visits in the intervention group (14.4 percent), and 272 emergency department visits in the control group (15.1 percent).

Costs: The total estimate of costs for personnel involved in developing and implementing the transition intervention was \$76,314. The time spent on the project across all personnel was 1,308 hours.

Target Population: Elderly*

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

** This target population is one of AHRQ's priority populations.*