

Virtual Patient Advocate to Reduce Ambulatory Adverse Drug Events

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Organization:	Boston Medical Center
Mechanism:	RFA: HS07-007: Ambulatory Safety and Quality Program: Enabling Patient-Centered Care (PCC) Through Health Information Technology
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Summary: The transition period between hospitalization and the first post-hospitalization ambulatory visit has a high risk for medical errors. The objective of this project was to expand the use of an animated conversational agent to assist patients during this transition. In prior AHRQ-funded studies (UC1 HS 014289 and U18 HS 015905), the research team developed a paper-based tool, the After Hospital Care Plan (AHCP), to deliver the Re-Engineered Hospital Discharge, a set of recommended activities to be performed at the time of discharge. Subsequently, in order to make the AHCP electronically available, Dr. Jack and his team developed the Virtual Patient Advocate (VPA), a computerized animated character named “Louise” that emulates the face-to-face conversational behavior of an empathic provider.

Louise offers health education, advice on monitoring and self-care, and assessment of medication dosing and adherence. To meet the needs of an ambulatory environment, the team modified the content, logic, layout, workstation, AHCP, and training manual. The team also developed links between the VPA system, Boston Medical Center’s electronic medical record (EMR), and the ambulatory providers’ information technology systems. They conducted a series of qualitative evaluations with potential users and clinicians. Once the beta version of the VPA was prepared, the team pre-tested the system with potential users and clinicians, made modifications pursuant to findings, and conducted a randomized controlled trial with subjects who were at high risk of adverse drug events.

The participants in the randomized trial were instructed to: 1) check in with the Louise via computer following discharge from the hospital and on a regular basis before the first post-hospital visit; 2) bring to the first post-discharge visit the result of the online interactions, which is a list of items to discuss with the clinician; and 3) meet with the Louise after the ambulatory visit for instructions on any medication regimen changes made during the office visit. The team evaluated the intervention by comparing process outcomes (i.e., enrollment, adherence, attrition, fidelity, therapeutic alliance, and patient activation) and clinical outcomes (i.e., patient and provider satisfaction, patient knowledge of self-care and medications, adverse events, and pharmacist interventions) of those using the VPA to outcomes for a usual-care group. Concurrently, the team pursued dissemination of the VPA by introducing the system to other interested health care organizations.

Specific Aims:

- Program the VPA, a computer-based, interactive, animated character, to offer patients with limited health literacy or health education advice on self-care and medication use during the transition from hospital to ambulatory care. **(Achieved)**

- Design and implement an ambulatory care plan using the VPA to educate the patient and respond to questions. **(Achieved)**
- Evaluate the intervention in the ambulatory setting. **(Achieved)**
- Build a robust dissemination program that will introduce this system into a health care system that is a member of a national test bed. **(Achieved)**

2011 Activities: The focus of 2011 was data entry, cleaning, and analysis. A 1-year no-cost extension was used to complete technology development and patient recruitment. The project timeline was therefore adjusted to allow time for data analysis in 2011. As last self-reported in the AHRQ Research Reporting System, project progress was on track and project budget spending was on target. This project was completed in August 2011.

Preliminary Impact and Findings: A total of 47 patients enrolled in the study. Sixty-two percent of enrolled patients were female, 64 percent were between the ages of 40-69, 66 percent were black, and 81 percent were single, divorced, separated, or widowed. Of enrolled patients 70 percent screened with high health literacy. Twenty-three enrollees were randomized to the control group and 24 to the intervention group. The study cohort was followed from discharge until their first appointment with their primary care provider, a time of approximately 2 weeks. Of the 47 randomized patients, four logged into the system. The four patients logged in an average of eight times each, to generate a total of 31 alerts. Fifty-five percent of the alerts related to a possible side effect. Other alerts included inability to pick up medications, intentional non-adherence, and appointment rescheduling.

The project team hypothesizes that patients may have used the system only if they were concerned about their health. None of the four users were re-hospitalized or had an emergency room visit. Dr. Jack reported that the study was limited by participants' lack of access to the Internet in their homes, which was crucial for the success of this project. Dr. Jack would like to conduct a fully-powered randomized controlled study following this pilot study.

Target Population: Adults, Low-SES/Low Income*, Medically Underserved, Racial or Ethnic Minorities*

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: Implementation and Use

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