Implementation Outcomes of a Health Information Technology Program For Vulnerable Diabetes Patients

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Summary: This study evaluated the Self-Management Automated Real-Time Telephone Support (SMART-Steps) program, which was developed through a previous Agency for Healthcare Research and Quality grant ([R18 HS 017261](#)). SMART-Steps used an automated telephone self-management (ATSM) support system to provide monitoring and education for diabetic patients enrolled in the San Francisco Health Plan (SFHP). The ATSM used health information technology (IT) to help patients manage their care outside traditional ambulatory settings, blending automated pre-recorded telephone queries and education with targeted 'live' telephone counseling by care managers. Care managers called if patients responded 'out of range' to a query, such as not having checked their blood sugar in the prior 7 days. Counseling focused on self-efficacy and self-management skills. The research team evaluated SMART-Steps' effect on patient-centered outcomes, safety events, and measures from the Healthcare Effectiveness Data and Information Set amongst English-, Spanish-, and Cantonese-speaking diabetes patients. SMART-Steps provided a unique opportunity to examine the real-world implementation process for an evidence-based health IT intervention.

The objective of this study was to describe implementation fidelity—the degree to which the intervention is delivered as intended—for core ATSM intervention components. The core components were: 1) population-based data linkage to determine eligibility; 2) electronic exchange of health information to deliver ATSM queries to patients; 3) electronic integration of health information to identify patients requiring a call-back for an ATSM trigger; and 4) electronic integration of data to identify patients requiring a call-back for a medication or laboratory trigger. Additionally, the study described the potential impacts of moderating factors or barriers to implementation fidelity as well as adaptations of ATSM from planned to actual implementation. Moderating factors included representation of participants versus eligible patients as measured by demographics and baseline clinical measurements, quality of intervention delivery in call-backs, and consistency of delivery over time. The team reviewed findings and identified adaptations made during implementation to inform future scale-up efforts.

Specific Aims:

- Estimate the proportion of patients identified as SMART-Steps-eligible who were ineligible, and describe reasons for ineligibility. **(Achieved)**
- Determine if SMART-Steps patients received ATSM calls with intended frequency (weekly), content (questions/language), and duration (27 weeks). **(Achieved)**
- Estimate the frequency with which electronic exchange for out-of-range triggers (from ATSM

and SFHP clinical registry/pharmacy claims) resulted in a documented call-back, in a sample of patients stratified by language. **(Achieved)**

- Compare SMART-Steps-enrolled to -eligible patients for clinic, age, language, sex, hemoglobin A1c, insulin use, blood pressure, cholesterol, and prior medication non-adherence. **(Achieved)**
- Describe the quality of intervention delivery from care managers call-backs, including frequency of supplemental self-management support, call duration, adherence to protocols, and creation of patient action plans, for a diverse sample of patient triggers. **(Achieved)**
- Identify differences in average length of call-backs, proportion of call-backs made for triggers, and whether wait-list patients (vs. not) had differential ATSM engagement. **(Achieved)**
- Summarize fidelity assessment findings, adaptations and implications for real-world ATSM implementation and related health IT interventions into a guide, with SFHP partnership. **(Achieved)**

2012 Activities: The research team focused on the qualitative analysis of the implementation fidelity of the SMART-Steps program protocol. Due to challenges securing the time of a statistician, Dr. Handley used a 6-month no-cost extension. As last reported in the ARHQ Research Reporting System, progress was completely on track and spending was on target. This project was completed in December 2012.

Impact and Findings: To participate in the study, patients needed to meet the following criteria: diabetic; enrolled in the health plan; and English-, Cantonese-, or Spanish-speaking. Patients were screened based on these criteria using health plan records and the electronic medical record. The SMART-Steps program was offered as a health plan member benefit, but due to limited resources it was not possible to enroll all members.

Implementation fidelity was high. Of the 910 patients initially identified as eligible, 220 did not meet eligibility requirements indicating that eligibility linkages were successful. There was a high level of ATSM call delivery and integration in SFHP data systems, with 362 participants receiving calls from the ATSM system. Of the 298 patients completing one or more ATSM calls, 221 had at least one ATSM trigger that resulted in a coaching call back. This represented 1,980 coaching call backs with records in the project database, including 70 percent with a person contact described, and 30 percent with a note indicating that either no contact was made, a message was left, or an action was made on behalf of patient. There was a high level of variation in call backs by type of patient problem and by study language, which warrants consideration for implementing health IT interventions in diverse populations.

Among participants who were successfully contacted, coaching was extensive and the average call lasted approximately 10 minutes. Additionally, counseling was highly specific to the trigger event. An interesting aspect of the study was the impact of the patient-centered care on nonadherence coaching. Some of the nonadherence-triggered calls did not focus on nonadherence because patients were uncomfortable with the topic and turned the discussion in another direction. Because of the commitment to a patient-centered approach, coaches were instructed not to push conversations into areas where patients were not comfortable.

The SFHP staff who participated in the interviews reported an overall positive experience with the SMART-Steps program. The following protocol-fidelity barriers were identified: 1) due to high staff turnover during database development, many people contributed to the development process, which resulted in a slightly cumbersome user interface; 2) call managers reported that it was difficult to triage calls; and 3) due to the structure of the health plan, care managers were required to contact a designated "point person" in clinic if

the patient had a serious issue; however, the call managers would have preferred to communicate directly with the provider.

Target Population: Adults, Chronic Care*, Diabetes, Elderly*, Low Literacy, Low-SES/Low Income*, Medicaid, Medically Underserved, Medicare, Racial or Ethnic Minorities*: Asian Cantonese and Hispanic Latino

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

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