

Patient-Centered Informatics System to Enhance Health Care in Rural Communities

Principal Investigator:	Samore, Matthew, M.D.
Organization:	University of Utah
Mechanism:	RFA: HS07-007: Ambulatory Safety and Quality Program: Enabling Patient-Centered Care through Health Information Technology (PCC)
Grant Number:	R18 HS 017308
Project Period:	September 2007 – September 2011
AHRQ Funding Amount:	\$1,199,999

Summary: This was a demonstration project to evaluate whether integrating the functions of an electronic medical record (EMR), personal health record (PHR), and a communication system leads to more patient-centered care in rural communities in Utah. This system, the Unified Health Resource (UHR), provided disease information and decision-support tools for patient self-management of acute and chronic diseases, supported the reconciliation of medication lists, and enabled exchange of information between clinicians and patients through a series of structured, bidirectional communication channels.

The EMR and PHR function independently from each other. The UHR software developer, CaduRx, designed an interface that allows each side to view and import changes to reflect updates made by the other. Patients were able view items such as physician notes, diagnoses, and diagnostic test results in their PHR. Physicians, granted access by their patients, were able to view and import the patient’s information, including new prescriptions, symptoms, or diseases from the PHR to the EMR. In addition, there were several types of structured e-visits that patients could use to communicate with clinics and clinicians. Patients could request medication refills online as well as input results of home monitoring tests, such as blood sugar levels and blood pressure measurements, into their PHR. Through extensive usability testing, the project team ensured that the vocabulary used in the PHR was understood by patients, clinically significant to providers, linkable to International Classification of Diseases and clinical modification codes, and able to be coded for clinics’ record keeping and billing purposes.

To assess the effect of the UHR on patient-centered care, the team conducted a prospective cohort study among adult patients at one of the clinics that use the UHR. Of the patients recruited, 25 percent did not have a chronic disease diagnosis and 75 percent had one or more of the following chronic illnesses: diabetes mellitus, hypertension, chronic heart disease, and chronic obstructive pulmonary disease. Measures of patient activation, involvement in decision-making, self-management behaviors, medication management, and preventive practices were taken at baseline and follow-up. The team analyzed data abstracted from the UHR and conducted a manual review of the patients’ medical records to compare the provider assessment of patient disease management to the patient’s self report. A formative evaluation of the UHR assessed and improved usability, usefulness, and adoption.

Specific Aims:

- Recruit two rural primary care clinics that use UHR and two primary care clinics that use an alternative, non-UHR EMR system to participate in a 3-year research demonstration project. **(Achieved)**

- Apply formative evaluation methods to assess and improve usability, usefulness, and adoption of the UHR personal health system by patients. **(Achieved)**
- Enroll patients from the four participating rural clinics into a prospective cohort study to assess the impact of the UHR personal health system on patient-centered care. **(Achieved)**
- Examine patterns of use of the UHR personal health system. **(Achieved)**
- Increase awareness, confidence, and skills to use PHRs and Internet health resources among rural community residents, leveraging local libraries and health departments. **(Achieved)**

2011 Activities: The focus in 2011 was on data cleaning, analysis, and dissemination. The following analyses were conducted: 1) measurement and validation of patient activation; 2) a qualitative assessment of patients' perceptions of and experiences with the UHR; 3) usage patterns of the UHR; and 4) development of models to understand the relationship between patient characteristics and patient involvement in health care decisionmaking.

Due to additional time required for study recruitment, a 1-year no cost-extension was used, allowing the research team to complete outcome evaluation and disseminate project results. As last self-reported in the AHRQ Research Reporting System, project progress was mostly on track and project budget spending was on target. The project was completed in September 2011.

Preliminary Impact and Findings: A total of 811 participants, 62 percent female, 64 percent over the age of 45, and 7 percent non-white, participated in a survey of patient activation. Participants indicated a high level of satisfaction with their care and positive relationships with their physician. On the patient activation measures, 96 percent of respondents indicate that they are responsible for managing their own health; 98 percent take an active role in their most important health factors; and 93 percent take actions to minimize or prevent symptoms.

An analysis of patient usage and UHR perceptions identified the components of the system that were ranked most favorably and may have ultimately driven patient adoption of the system. An analysis of 6,700 UHR sessions indicated that medication refill, reconciliation functions, drug safety, and adverse event components were the most frequently accessed and most favorably reviewed. The mean number of actions per session was 15 (range 1-679). For short sessions, defined as 10 actions or less, the primary task was scheduling appointments and reviewing visit notes. For long sessions, defined as more than 20 actions, the predominant actions were completion of health history items, searching for information about medications, medication reconciliation, and health maintenance activities.

In terms of UHR adoption, the research team determined that clinical staff engagement and clinic fit-to-workflow were critical. Clinic staff, including providers, needed to understand the UHR's utility as well as its potential to increase office efficiency and improve patient outcomes. In order for clinic staff to promote the UHR to patients, it was necessary for the staff to recognize the relative advantages of patient use of the UHR for the clinic. As for patient adoption, the team discovered that patients were very interested in the idea of a PHR linked to their health care provider and clinic records. The challenge was making patients aware of how the tool was integrated with the clinic and how to use it correctly.

Target Population: Adults, Chronic Care*, Chronic Obstructive Pulmonary Disease, Diabetes, Heart Disease, Hypertension, Rural Health*

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.*