

Using a Telemedicine System to Promote Patient Care Among Underserved Individuals

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Organization:	Temple University Clinical Research Center
Mechanism:	RFA: HS07-007: Ambulatory Safety and Quality Program: Enabling Patient-Centered Care through Health Information Technology (PCC)
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Project Period:	September 2007 – August 2011, Including No Cost Extension
AHRQ Funding Amount:	\$1,198,371
Summary Status as of:	December 2010

Target Population: Adults, Chronic Care*, Hypertension, Inner City*, Medically Underserved, Racial or Ethnic Minorities*: African Americans

Summary: Hypertension affects more than 65 million people in the United States, disproportionately among African Americans. Untreated hypertension is associated with an increased risk for myocardial infarction, sudden death, stroke, and renal failure. Despite the importance of controlling hypertension and the availability of therapy, the clinical application of well-established guidelines has been sub-optimal and inadequate blood pressure control remains all too common.

A patient-provider partnership relationship is needed to advance care for chronic conditions such as hypertension. Patient empowerment must be increased through education, self-management, collaborative goal setting, and treatment planning. Patient-centered care (PCC) has been implemented for acute ambulatory settings; however, chronic disease management and prevention present unique challenges for PCC since the patient is followed through episodic office visits. Chronic disease care requires innovative strategies to support the constructs of PCC in an efficient and cost-effective manner. Telemedicine has the capacity to empower the patient, strengthen the patient-provider relationship, and support a chronic care model of PCC in a realistic and sustainable manner.

The goal of this project is to develop a patient-centered tool for managing hypertension within a primary care practice. The project builds upon a pre-existing, internally developed telemedicine system that patients access via the Internet. The system provides patient education on hypertension and serves as a tool for self-management, shared decisionmaking, and treatment planning. A cellular telephone interactive system accommodates subjects who do not have Internet access. The system incorporates: hypertension treatment guideline education modules; self-reporting modules on topics such as blood pressure, weight, exercise, diet, and smoking; and automated reminders and feedback. The project team observes patients' responses to care measures aimed at lowering their blood pressure to normal, as defined by standards of the Joint National Committee. Patients complete one of seven lessons per login after which they receive an automated reminder of the guidelines. An automatic report created from the database is sent to both the primary care physician and the patient on a monthly basis. The report describes, in both text and graphics, the patient's blood pressure over that month, the medications the patient was on, and whether the patient is at his or her goal blood pressure. Additionally, it recommends a physician visit to those that are not within the goal. The primary outcome measure of this randomized, controlled trial is the

proportion of subjects who achieve goal blood pressure. Secondary measures include the rate of self-monitoring, exercise measured as steps per day, weight, cardiovascular disease knowledge, number of patients meeting medication guidelines, and satisfaction with the practice.

Specific Aims:

- Enhance the current telemedicine system by incorporating guideline-based algorithms for hypertension treatment as well as automated reminders and feedback for both patients and health care providers. **(Achieved)**
- Determine the percentage of patients meeting guidelines for anti-hypertensive medication therapy. **(Ongoing)**
- Empower inner-city African American patients to take a more active role in their health care through self-monitoring, education, reinforcement, and feedback through telemedicine. **(Ongoing)**
- Measure telemedicine utilization. **(Ongoing)**
- Examine the impact of the telemedicine system on medical knowledge, self-efficacy, and the quality of doctor-patient interaction as compared to controls. **(Ongoing)**
- Compare blood pressure outcomes between control and telemedicine groups after 6 months of telemedicine risk management. **(Ongoing)**

2010 Activities: This study, which was granted a no-cost extension to provide additional time for participant recruitment, is in its fourth year. During 2010, recruitment was closed at the two sites, Temple University Hospital in Pennsylvania and Christiana Medical Center in Delaware. The project staff screened 536 subjects and enrolled 241 (45 percent) into the study, 117 (49 percent) of whom were randomized into the telemedicine arm. Two hundred and three subjects have completed the study, and 18 have chosen to continue using the system following completion of the 6-month study period. All patient followup is scheduled to be completed by March 2011.

As the study was implemented, the researchers found that the target population (inner city, underserved patients) frequently had limited access to the Internet, which was the initial medium for the telemedicine intervention. Early surveys, however, indicated that nearly all study participants have access to land or cellular phones. In response, the research team integrated an interactive voice response (IVR) component to their intervention to facilitate use by a broader population. IVR acts as an interface between patients and the telemedicine system and expands access to people who may benefit from use of the system.

The research team has also begun data cleaning and preliminary data analyses. The team has started evaluating usage and the clinical datasets. Additional analyses will include assessment of patient perceptions of the intervention and changes in medication resulting from the intervention. To account for potential differences between IVR and computer users, the analyses will be stratified by these two points of access. Data analysis is on track and scheduled to be completed in August 2011.

Grantee's Most Recent Self-Reported Quarterly Status (as of December 2010): Overall this project is making good progress and is on track with revised project milestones and spending.

Preliminary Impact and Findings: According to the current baseline data, the demographics of the sample are reflective of the clinics' patient populations and indicate a need for improved cardiovascular risk management. An interim analysis indicates a statistically significant improvement from baseline in both intervention and control groups across systolic blood pressure, diastolic blood pressure, total

cholesterol, low density lipoproteins, high density lipoproteins, triglycerides, and fasting blood glucose. Additionally, a statistically significant decrease in systolic blood pressure was observed between the two study arms, indicating additional improvements in blood pressure control over time in the telemedicine arm versus the control arm.

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

* *AHRQ Priority Population*