

A Longitudinal Telephone and Multiple Disease Management System to Improve Ambulatory Care

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Organization:	Boston Medical Center
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Target Population: Adults, Chronic Care*, Low SES/Low Income*, Medicaid, Medically Underserved, Safety Net, Uninsured

Summary: This study will assess the effectiveness of Telephone-Linked Care for Complex Patients (TLC-C) in the care of patients with multiple complex chronic diseases and socio-demographic vulnerabilities who experience increased health care utilization and transitions from ambulatory to emergency department (ED) and hospital care. The objective is to reduce preventable ED and hospital utilization, improve quality of life, increase satisfaction with ambulatory care, improve disease-specific metrics, and reduce net payer costs. TLC-C is a modification of the existing TLC-MultiDisease (TLC-MD) system, which targets patients with multiple chronic diseases. This modification is focused on identifying and intervening for clinical instability (i.e., the patient is at high risk for sudden, severe clinical decompensation). TLC-C uses conversational computer telephony to monitor patients' multiple diseases and clinical status between ambulatory care visits, detecting changes in clinical status that are associated with disease exacerbation and heightened risk of unscheduled hospitalizations or ED visits. The system monitors patients through virtual visits, detecting and then notifying clinicians of important clinical problems. It also promotes patient self-care management (e.g., medication regimen adherence), scheduled medical visit appointment promotion, and patient preparation for ambulatory care visits.

TLC-C utilizes information reported by patients during the virtual visits and clinical information about the patients that reside in their providers' clinical data repositories. Information in the repositories is derived from the patients' clinical encounters in clinics, laboratories, ED and hospital services, and other settings where they receive medical care. Information from the repository is transferred automatically to TLC-C daily. This information includes diagnoses, prescribed medications, scheduled primary care visits and other clinical encounters, patient's disposition, laboratory and other test results, and selected other information used by TLC-C. In addition, the investigators implemented an expert system for directing the patient user to TLC-C modules likely to be of special use and interest to the patient.

A multi-method evaluation study of the patients, the providers, and the practice will include a two-arm randomized clinical trial of TLC-C versus usual care for patients with two or more chronic diseases. The trial will evaluate the system in 440 patients followed for 6 months. The primary outcome will be acute hospital care utilization (unplanned hospitalizations and ED visits). Secondary outcomes will include

patient quality of life, satisfaction, ambulatory appointment show rate, and net payer costs. Evaluation methods will include formative and summative qualitative studies of the implementation of the system; its use and performance over time; and its impact on the patients, the providers, and the practice as a whole.

Specific Aims:

- Design, program, and lab test the system. **(Achieved)**
- Pilot test the system. **(Achieved)**
- Redesign and reprogram the system based on the pilot. **(Achieved)**
- Conduct an evaluation study. **(Ongoing)**
- Recruit patients. **(Ongoing)**
- Evaluate project. **(Upcoming)**
- Analyze study data. **(Upcoming)**
- Sustain and disseminate the system. **(Upcoming)**
- Write the final report and other manuscripts. **(Upcoming)**

2010 Activities: The team has modified TLC-MD so that it contains additional content that address the needs of patients with multiple chronic diseases who transition to ambulatory care from acute care settings (e.g., an acute care hospital inpatient stay or an ED visit) for an acute episode related to one or more of their chronic diseases. Content modifications included: 1) development and completion of a new office visit module, created to promote outpatient visit adherence and to activate patients for visits with their physicians; 2) reformulation of the medication adherence module to take less time and be easier for participants to use; 3) modifications of disease modules for coronary artery disease (CAD) and congestive heart failure to integrate information from the electronic health record with information collected by TLC for these chronic diseases. Symptomatic and asymptomatic CAD was added because of its prevalence and association with ED visits and unplanned hospitalizations; hypertension was deleted because it is not an ambulatory care sensitive condition and diabetes was removed because of its complexity.

The team engaged key members of the Boston Medical Center Information Technology group in a process of specifying exactly what data will be sent from the clinical systems to the TLC system. This will occur each night for variables that will be used to modify scripts for active TLC-MD patients. Data transferred included medications, future scheduled appointments and tests, the status of prior appointments and tests (e.g., no show, cancelled, attended), dates of unplanned utilization (e.g., urgent care, ED, hospitalization), dates of discharge from hospitalization, and allergies. The protocol was tested to ensure successful transfer of information.

By the end of 2010, the team had enrolled 29 subjects (15 in TLC-C group and 14 in the usual care control condition). Eligibility criteria were modified, with institutional review board approval, to drop the requirement that the potential subjects have any specific disease. Subjects who do not have any of the listed diseases will not get disease-specific guidance on the phone system, but will receive the remainder of the TLC-C system, including medication support and visit adherence promotion. These changes in the eligibility criteria have resulted in increases in the number of study subjects recruited without any negative effects on the study intent and design. Further, the team will be able to perform subgroup analyses that focus on the original hypotheses or sample (e.g. looking at people who have one or more disease specific interventions when compared with those that receive the general intervention).

Grantee's Most Recent Self-Reported Quarterly Status (as of December 2010): Progress is on track in some respects but not others. The budget is significantly underspent, (more than 20 percent) due to earlier delays in programming of modifications.

Preliminary Impact and Findings: There have been no findings to date because the trial has just started.

Strategic Goal: Develop and disseminate health IT evidence and evidence-based tools to support patient-centered care, the coordination of care across transitions, and the electronic exchange of health information to improve quality of care.

Business Goal: Implementation and Use

* *AHRQ Priority Population*