

The Medication Metronome Project

Principal Investigator:	Grant, Richard, M.P.H., M.D.
Organization:	Massachusetts General Hospital
Mechanism:	PAR: HS08-270: Utilizing Health Information Technology (IT) to Improve Health Care Quality (R18)
Grant Number:	R18 HS 018648
Project Period:	September 2010–July 2013
AHRQ Funding Amount:	\$383,049
Summary Status as of:	December 2010

Target Population: Chronic Care*, Diabetes, Hypertension

Summary: One goal of primary care is to reduce the morbidity and mortality of chronic diseases such as hypertension, type 2 diabetes, and hyperlipidemia. However, national and local data indicate that the U.S. health care system is falling significantly short of evidence-based goals for these three conditions, both in terms of risk-factor control and in monitoring adverse drug events. Novel uses of health information technology (IT) are needed to support more effective medication management for chronic diseases in the primary care setting.

The Medication Metronome Project is testing a model of chronic disease medication management in which specific clinical actions, such as the decision to initiate or adjust medications, are performed independently of the office visit. The study will implement a randomized controlled trial using an existing electronic health record (EHR) at Massachusetts General Hospital (MGH) to evaluate the value of an IT system that supports between-visit medication safety monitoring and dose adjustment. This “Medication Metronome” will be designed to enable providers to schedule future laboratory tests related to a specific set of medications for glycemic, cholesterol, and blood pressure management. As these lab test dates become due, the Medication Metronome system will remind patients via letter and inform providers when the tests are “missing.” The goal of this intervention is to implement an efficient, visit-independent system to ensure that patients are rapidly and safely brought to evidence-based treatment goals and to prevent delays in planned laboratory monitoring.

The goal of the intervention is to facilitate an iterative process of medication adjustments so that risk-factor control is not dependent upon face-to-face office visits. The broader goal is to foster greater patient-physician connectedness by combining independent medication management with more productive visit-based care. This research is relevant to nationwide efforts to demonstrate the most effective ways to implement new IT-based delivery models that expand care beyond the traditional clinic visit.

Specific Aims:

- Develop the Medication Metronome system. **(Ongoing)**
- Conduct a randomized controlled trial of the Medication Metronome system. **(Upcoming)**
- Evaluate the impact of the Medication Metronome visit-independent care model on both the frequency and content of office-based visits. **(Upcoming)**

2010 Activities: The project began in September 2010. The primary focus of activity during the first

quarter of the project was on administrative and personnel activities. The project team was assembled and includes health IT developers within the MGH Laboratory of Computer Science (LCS), directed by Dr. Henry Chueh, Co-Investigator and LCS Director. A kick-off meeting attended by the entire project team was conducted in November 2010 to discuss an overview of the project. A monthly newsletter, sent via e-mail, has also been initiated as a mechanism to chart progress and keep all members informed.

The health IT development process began with the presentation of the conceptual framework to the primary care external advisory board on November 19, 2010. This board represents all 12 primary care practices within the Practice-Based Research Network, which is a group of ambulatory practices devoted principally to the primary care of patients. Feedback from this meeting informed use cases, default settings, and user-interface development. In addition, the project team conducted three one-on-one meetings with clinicians to establish workflow for using the Medication Metronome interface and to identify additional use cases. The iterative process of sharing information between developers and users will continue until a final product is created.

Grantee's Most Recent Self-Reported Quarterly Status (as of December 2010): The project is completely on track to meet its aims and milestones. The project is currently under budget but expenses are expected to increase as system development continues and testing begins.

Preliminary Impact and Findings: There are no project findings at this time.

Strategic Goal: Develop and disseminate health IT evidence and evidence-based tools to improve the quality and safety of medication management via the integration and utilization of medication management systems and technologies.

Business Goal: Implementation and Use

* *AHRQ Priority Population*