

## Improving Laboratory Monitoring in Community Practices: A Randomized Trial

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<b>Organization:</b>	Harvard Pilgrim Health Care, Inc.
<b>Mechanism:</b>	RFA: HS07-006: Ambulatory Safety and Quality Program: Improving Quality Through Clinician Use of Health Information Technology (IQHIT)
<b>Grant Number:</b>	R18 HS 017201
<b>Project Period:</b>	September 2007 – August 2011, Including No-Cost Extension
<b>AHRQ Funding Amount:</b>	\$990,640
<b>Summary Status as of:</b>	December 2010

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### **Target Population:** Adults

**Summary:** Medication errors and preventable adverse drug events (ADEs) occur commonly among patients in the ambulatory setting, and constitute an important target for patient safety and quality improvement. Laboratory monitoring to ensure the safety and effectiveness of drug therapy and the timely management of abnormal results of laboratory testing have been increasingly recognized as important areas for improving patient safety in ambulatory care. Promising interventions have been developed for practices affiliated with hospitals and integrated delivery systems, but to date efforts have not adequately reached physicians practicing solo or in small community practices.

The overall aim of the project is the assessment of clinical decision support (CDS) point-of-care alerts and a results management system to address barriers to and facilitators of laboratory monitoring. The study uses eClinicalWorks, a widely used and commercially available Certification Commission for Health Information Technology (CCHIT)-certified electronic health record (EHR); therefore, findings may be generalized to other CCHIT-certified EHRs. The project includes a qualitative analysis of the barriers and facilitators of laboratory monitoring and timely followup of abnormal results among clinicians in ambulatory primary care practices. This information will be used to develop, implement, and evaluate computerized alerts to facilitate indicated laboratory monitoring of medications at initiation or continuation of therapy. The second part of the study is the evaluation of an enhanced results management system to facilitate patient management. Initially, the grantee proposed to design and implement a results management system, however, the EHR vendor developed a similar system. As a result, the grantee will evaluate the vendor results management system at two clinics where the system was recently implemented. Baseline analyses will yield information on the rates and correlates of laboratory monitoring errors, and the management of abnormal test results in community-based primary care settings. The study incorporates a dissemination plan, which includes not only publication and presentation of the results in scientific settings but also the creation of a dissemination guide that will be made freely available to other community-based ambulatory practices implementing EHRs and point-of-care alerts.

### **Specific Aims:**

- Identify barriers to and facilitators of laboratory monitoring and timely followup of abnormal results. **(Achieved)**

- Design, implement, and evaluate CDS (point-of-care alerts) for laboratory monitoring in a widely used, commercially available EHR that addresses barriers to and facilitators of laboratory monitoring. **(Ongoing)**
- Design, implement, and evaluate a results management system to efficiently handle abnormal laboratory test results in ambulatory care. **(Retired)**
- Develop a detailed dissemination guide and widely distribute it to other practices and communities interested in implementing similar interventions. **(Upcoming)**

**2010 Activities:** Dr. Simon received a no-cost extension for a fourth year of his research. Originally this project was conceived as two clustered randomized controlled trials that would be implemented consecutively—first the computerized point-of-care alerts, then the results management system. Due to delays and ultimately changing priorities of the original implementing partner, the grantee sought other collaborators. As a result, the study was changed significantly. Dr. Simon is working closely in consultation with the Agency for Healthcare Research and Quality to implement these changes.

He has established a new partnership with Take Care New York (TCNY), which is rolling out eClinical Works to primary care practices in New York City. TCNY will integrate the grantee's computerized point-of-care alerts into eClinical Works to evaluate the use of the alerts for facilitation of laboratory monitoring of medications. Based on power calculations, the grantee aims to recruit 10 to 20 practices for a six month study. Participating clinics will be randomized to the alerts intervention arm or the control arm at a one-to-one ratio. The research group has obtained institutional review board approval and enrollment is in progress.

The results management part of the grant has also experienced changes. Initially, Dr. Simon proposed to develop and implement a results management system, however, eClinical Works simultaneously developed a plan to expand its EHR to include a patient portal, which would add much of the same functionality that the grantee proposed to develop. As a result, the grantee has shifted the focus of the study to evaluation of the patient portal. The grantee is currently collaborating with two mid-sized, multi-provider clinics that were early adapters of the patient portal. The grantee will use a pre- and post- study design to evaluate the difference between the proportion of patients notified of laboratory results and the time to notification. The research team has been working with sample data to prepare logic rules to adapt pre-existing outpatient guidelines into inpatient guidelines to develop clinical consensus about the appropriate time interval to notify patients of lab results.

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**Grantee's Most Recent Self-Reported Quarterly Status (as of December 2010):** Current project plans are delayed, due to issues discussed in the summary section above. A no-cost extension year has been approved. It is expected that all funds will be used by the end of the project.

**Preliminary Impact and Findings:** Focus group participants viewed laboratory monitoring as a critical, time-consuming task integral to their practice. Most believed they commit few laboratory monitoring errors and were surprised at the error rates reported in the literature. They listed various barriers to monitoring, including not knowing which physician was responsible for ensuring the completion of laboratory monitoring, uncertainty regarding the necessity of monitoring, lack of alerts or reminders, and patient nonadherence. The primary facilitator of monitoring was ordering laboratory tests while the patient was in the office. Primary care providers felt more strongly than specialists that computerized alerts could improve laboratory monitoring. Participants wanted to individualize alerts for their practices

and warned that alerts must not interrupt workflow or require too many clicks. Physicians in community practices recognized the potential of computerized alerts to enhance their monitoring protocols for some medications. Interventions to improve laboratory monitoring should address physician workflow issues and increase patient awareness of the importance of fulfilling recommended therapeutic monitoring to prevent ADEs.

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**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 electronic exchange of health information to improve quality of care.

**Business Goal:** Knowledge Creation