

Improving Laboratory Monitoring in Community Practices: A Randomized Trial

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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 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 to address barriers to and facilitators of laboratory monitoring and a results-management system to improve timeliness of communication of laboratory results to patients. The study uses eClinicalWorks, a widely used and commercially available electronic health record (EHR). Therefore, findings may be generalized to other settings using the same EHR. The project began with 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 was used to develop, implement, and evaluate computerized alerts to facilitate indicated laboratory monitoring of medications at initiation or continuation of therapy. Originally, the study team had planned to design and implement an enhanced results management system. However, eClinicalWorks had developed a similar system so the project team decided to evaluate the system at three clinics where it had been implemented recently.

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. **(Ongoing)**

2011 Activities: This project was conceived as two clustered randomized controlled trials —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 project team partnered with other collaborators and changes were made to the project plan. Dr. Simon is working closely in consultation with the Agency for Healthcare Research and Quality (AHRQ) to implement these changes.

The research team established a partnership with Take Care New York, an organization that implemented eClinicalWorks at primary care practices in New York City. With the support of eClinicalWorks, the research team implemented the newly developed alerts to evaluate laboratory monitoring of medications. Eleven practices with 15 providers were recruited and demographic data were collected. Six clinics were randomized to the intervention arm and five to the control arm. Significant resources were invested in mapping the laboratory tests at each clinic. Focus groups were conducted with end users of eClinicalWorks. The analysis plan for the study includes a pre-implementation analysis that will look at correlates of laboratory monitoring errors before and after implementation.

As previously mentioned, Dr. Simon initially proposed to develop and implement a results-management system. However, eClinicalWorks simultaneously developed a plan to expand its EHR to include a patient portal with similar functionality to what the project team had proposed. As a result, the project shifted to the evaluation of the patient portal. The study team partnered with three mid-sized, multi-provider clinics that were early adopters of the patient portal. A pre-post study design is being used to evaluate the difference between the proportion of patients notified of laboratory results and the time to notification. Primary notification is defined as a sent letter, telephone contact, followup visit, or results sent via the patient portal. Secondary notification is defined as a followup, prescription, or referral to a specialist. The research team convened an expert panel to adapt existing inpatient guidelines for the notification of test results in an ambulatory setting. Additionally, a data extraction tool was developed to validate patient notification for a random subsample of patients at each clinic using the EHR.

As last self-reported in the AHRQ Research Reporting System, project progress and activities are mostly on track and project budget funds are slightly underspent to allocate funds for the remainder of the no-cost extension (NCE). During the 6-month NCE period, the research team will focus on data collection and analysis.

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 laboratory monitoring, uncertainty regarding the necessity of monitoring, lack of reminders, and patient non-adherence. 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. 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. At the request of the 11 study practices, eClinicalWorks intends to maintain and support the laboratory monitoring alerts beyond this project.

Target Population: Adults

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
