

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 ambulatory settings, 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 was to assess clinical decision support (CDS) point-of-care alerts and evaluate a results management system to improve timeliness of communication of laboratory results to patients. The study used eClinicalWorks, a widely used and commercially available electronic health record (EHR) that allows findings to be generalized to other settings using the same EHR. The project included a qualitative analysis of the barriers and facilitators of laboratory monitoring. This information was used to develop, implement, and evaluate computerized alerts to facilitate laboratory monitoring of medications at initiation or continuation of therapy. The study team also planned to design and implement an enhanced results management system to allow providers to communicate laboratory results to patients through a patient portal. However, eClinicalWorks developed a results management system with similar functionality so the project team implemented and evaluated it instead.

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. **(Achieved)**
- 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. **(Achieved)**

2012 Activities: The focus of the final months of the project was data collection and analysis for the evaluation of the computerized alerts to facilitate laboratory monitoring and the results management system. Data on medications, laboratory tests, and patient portal use were collected through the EHR. Analyses were conducted to measure adherence to laboratory monitoring recommendations and time to test result notification.

Due to delays resulting from the modified study plan, Dr. Simon used a 6-month no-cost extension to complete the research. As last reported in the AHRQ Research Reporting System, progress was on track in some respects, but not others, and project budget funds were underspent. However, at the end of the project, project aim milestones were achieved, with the exception of the retired aim noted above. This project was completed in February 2012.

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. Participants listed various barriers to monitoring, including not knowing which physician was responsible for laboratory monitoring, uncertainty about 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.

The team established a partnership with Take Care New York to evaluate the laboratory monitoring alerts at primary care practices in New York City. Eleven practices with 15 providers were recruited. 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. Preliminary data analysis showed that for intervention practices, appropriate monitoring of drug therapy decreased from 66.9 percent in the baseline period to 41.6 percent in the intervention period, compared to 57.6 percent and 36.9 percent, respectively, for control practices. These unexpected results led the team to continue conducting data quality checks beyond the grant period to ensure that these results were valid before proceeding with more sophisticated analyses.

The team also partnered with three mid-sized, multi-provider clinics that were early adopters of the results management patient portal. A pre-post study design was used to evaluate the difference between the proportion of patients notified of laboratory results and the time to notification. Primary notification was defined as a sent letter, telephone contact, followup visit, or results sent via the patient portal. Secondary notification was defined as a followup, prescription, or referral to a specialist. The 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. Analyses indicated that over time, the proportion of laboratory results posted to the portal decreased (56 percent to 50 percent) and the proportion of patients who logged into the system decreased as well (40 percent to 31 percent). Patients using the system accessed the laboratory results more quickly following the posting of a result (7.6 to 3.0 days).

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
