

Medication Monitoring for Vulnerable Populations via Information Technology

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Organization:	Johns Hopkins University
Mechanism:	RFA: HS07-002: Ambulatory Safety and Quality Program: Enabling Quality Measurement through Health Information Technology (EQM)
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Summary Status as of:	August 2010, Conclusion of Grant

Target Population: Adults, Chronic Care*, Diabetes, Heart Disease, Lung Disease

Summary: The Institute of Medicine report, [Preventing Medication Errors](#), offered some of the first broad insights into the risk of medication errors in ambulatory settings. Quality lapses and errors related to medications are some of the most prevalent risks across all care settings, and morbidity due to these errors is costly. Medication monitoring is the least-well understood phase of medication use as it pertains to quality and safety, especially in the ambulatory setting. Available data highlights significant potential for patient safety improvement by increasing rates of medication therapeutic monitoring. It is not known how to best identify patients in need of medication therapeutic monitoring in the ambulatory setting, but the use of electronic health records (EHRs) is promising. It is also not known, given the lack of national guidelines on laboratory monitoring, if providers fully understand how to link the process of therapeutic monitoring to differences in patient outcomes.

The overall goal of this project was a practice-based, cross-sectional demonstration of the ability of interoperable health information exchange and a Certification Commission for Health Information Technology-certified EHR to provide useful quality and safety measures for the vulnerable populations served by two Baltimore Medical System (BMS) Community Health Center (CHC) clinics. The quality and safety measures evaluated were developed for ambulatory care by the National Committee for Quality Assurance, supported by the National Quality Forum, and focused on safety monitoring for chronic medications commonly used by patients with heart disease and diabetes mellitus. The project's intervention included a monitoring bulletin provided to physicians every 2 months to inform them of patients who required therapeutic monitoring tests for one or more of the quality measures. The project also evaluated the relationship between contextual factors (teamwork and safety climate at BMS) and provider assessments of EHR quality and safety data as useful and actionable, and whether deployment of EHR quality and safety measurement efforts improved clinics' teamwork and safety climate.

An automated query that used the BMS EHR to find eligible patients for the measures was developed. Data to fulfill the measures were collected by a newly-developed, bidirectional interface and patient laboratory history back-loading capability between Johns Hopkins' Pathology Data Systems Department and the BMS EHRs.

Specific Aims:

- Develop and implement accurate quality and safety measures using EHRs that focus on medication monitoring for vulnerable BMS CHC populations. Explore factors that influence accuracy of EHR-derived measures. **(Achieved)**
- Develop and implement EHR-based quality and safety measures of medication monitoring for vulnerable BMS CHC populations that are useful to clinicians and senior leaders. **(Achieved)**
- Develop and implement EHR-based quality and safety measures of medication monitoring for vulnerable BMS CHC populations that impact patient outcomes. **(Achieved)**
- Evaluate the relationship between contextual factors (teamwork and safety climate at BMS) and provider assessments of EHR quality and safety data as useful and actionable, and evaluate whether deployment of these measurement efforts will improve teamwork and safety climate at CHC. **(Achieved)**

2010 Activities: The primary project activities for this period included analysis of qualitative and quantitative data and the preparation of manuscripts.

Grantee's Most Recent Self-Reported Quarterly Status (as of August 2010): The project was completed and all major aims achieved.

Preliminary Impact and Findings: The project found that automatic queries of EHRs to identify patients eligible for quality measures are feasible and potentially far superior to manual reviews of EHR data. Complex eligibility rules for quality measures may limit the usefulness of human EHR reviewers. The instrument that measures providers' feelings about the usefulness of the feedback bulletin may be able to measure provider responses to other quality improvement or practice management interventions. However, the instrument needs to be tested in larger samples.

The study was not able to delineate the reasons why a subset of patients does not reliably receive timely medication monitoring, but there are likely many reasons, including patient-, provider-, and system-related factors. Patient-related factors may include aversion to needle sticks, cost, or logistical barriers. Patients also may not perceive chronic medication use as risky, or assume that they would seek care if and when they developed toxicity symptoms. Provider-related factors may include a lack of awareness that medication monitoring is indicated, or skepticism about the value of medication monitoring. System-related factors may include technological inadequacies that make identification of patients in need of screening difficult or impossible. Many clinical settings do not have a fully-integrated pharmacy, laboratory, or clinical data system, which are prerequisites for approaching medication monitoring in an effective way.

Safety culture was assessed in these clinics and the staff reported that the results accurately represented their views of what it is like to work in the clinics. This study did not corroborate findings from earlier studies, which indicated that interventions to improve care quality are associated with improvements in safety culture.

Strategic Goal: Develop and disseminate health IT evidence and evidence-based tools to improve health care decisionmaking through the use of integrated data and knowledge management.

Business Goal: Synthesis and Dissemination

* *AHRQ Priority Population*