

Improving Safety and Quality with Integrated Technology

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Organization:	Oregon Health & Science University
Mechanism:	RFA: HS04-012: Demonstrating the Value of Health Information Technology (THQIT)
Grant Number:	R01 HS 015321
Project Period:	September 2004 – August 2009, Including No-Cost Extension
AHRQ Funding Amount:	\$1,461,150
Summary Status as of:	August 2009, Conclusion of Grant

Target Population: Women*: Pregnant Women

Summary: The project sought to demonstrate the value of integrating the State Obstetric and Pediatric Research Collaboration (STORC), an inpatient and outpatient electronic health record (EHR), with an electronic alert system in improving quality of health care and patient safety. Obstetrics (OB) was chosen as the health care setting because pregnant women inevitably transition between inpatient and outpatient settings in a matter of months.

Evidence-based treatment guidelines have been developed to improve the identification and treatment of Group B Streptococcus (GBS), a common and potentially life-threatening condition. The implementation includes alerts to increase the likelihood of patient screening and decrease the unnecessary prescription of antibiotics for women who are GBS-negative.

The project team evaluated the impact of the integrated system on patient safety and quality of care with a mixed-methods approach that included a work-sampling study to examine medical staff workflow, a before-and-after chart review to examine documentation of key information, and a prospective intervention study to examine the effect on GBS screening rates.

This project demonstrated that an integrated outpatient and inpatient data system can improve patient safety. The project team found that there was improvement in access to time-critical information and decision support to promote safe care practices relating to GBS screening and treatment. Additionally, the breadth of data supported a policy analysis comparing Canadian, United States, and United Kingdom screening and management policies for GBS and the costs relating to each. Such data are critical for the discussion about the safe and cost-effective redesign of the U.S. health care delivery system. The findings, though applied specifically to OB, can be applied to many areas of medicine and surgery and may inform stakeholders making decisions regarding other health information technology (IT) systems in both inpatient and outpatient settings.

Specific Aims:

- Demonstrate the value of an integrated outpatient and inpatient EHR to improve quality of care and safety for women and infants. **(Achieved)**
- Demonstrate the value of an electronic alert system to increase GBS screening in the outpatient setting. **(Achieved)**
- Perform a policy analysis comparing the costs and implications for GBS screening according to the

United States, Canadian, and United Kingdom policy to inform health care delivery and obstetric safety discussions. **(Achieved)**

2009 Activities: A policy analysis compared the costs and implications of United States, Canadian, and United Kingdom policies for GBS screening. Results informed health care delivery and obstetric safety discussions. Two decision models were created to evaluate the policies. The first model, “optimal treatment,” used Oregon Health and Science University (OHSU) data to provide probabilities for GBS +, GBS–, and unknown status, GBS risk factors, and the frequencies of different types of medications and their associated costs. The second model displays the actual treatment paths and probabilities and was created subsequently.

Grantee’s Most Recent Self-Reported Quarterly Status (as of August 2009): The project received a no-cost extension that allowed for completion of project aims and spending of budget.

Impact and Findings: Analysis found that between October 2004, when paper records were used, and March 2008, when a fully-integrated inpatient and outpatient EHR with an outpatient alert system for GBS screening was in place, the rate of patients missing GBS lab results dropped from 11 to 6 percent for Oregon Health and Science University (OHSU) patients. In addition, the proportion of the patients without GBS labs who delivered at OHSU but received prenatal care elsewhere increased from 22 to 28 percent. These findings suggest that improvements in compliance with clinical guidelines at OHSU were a significant factor in the change. Final results also found that the implementation of an integrated inpatient and outpatient EHR with outpatient alert system increased one-on-one time of clinical staff and patients.

Preliminary results from a survey evaluating the impact of the integrated EHR with outpatient alert system on clinical practice and satisfaction found that providers frequently or always felt that the nonintegrated EHR records were missing important OB information (45.9 percent nonintegrated EHR vs. 9.5 percent integrated EHR), and that use of the decision support tools was high, especially with the dating calculator (84.9 percent), guidelines (57.6 percent), and Bishop’s calculator (66.7 percent). Key features of the integrated EHR that providers would most hate to lose include data pulling forward into notes (71.4 percent) and the problem list (76.1 percent).

This study provides several results to inform both health IT and health care delivery discussions. The introduction of a clinical information system into a busy labor and delivery setting did not reduce the amount of time providers spent in direct patient care activities and, in fact, increased direct patient care activities. This study also demonstrated that the integrated system improved documentation completeness and communication of important clinical information to other providers and demonstrated the incremental gains in patient safety achieved with each level of health IT integration. Structured clinical data also inform health care policy decisionmaking by modeling the implications and costs of various countries’ GBS-related health care policies.

More detail on the project findings is included in Dr. Guise’s final report: [Guise 2009 Final Report](#).

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

Business Goal: Synthesis and Dissemination

* AHRQ Priority Population