Project Title:	Improving Safety and Quality with Integrated Technology
Principal Investigator:	Guise, Jeanne-Marie, M.D.
Organization:	Oregon Health and Science University (OHSU)
Mechanism:	RFA: HS04-012: Demonstrating the Value of Health Information Technology (THQIT)
Grant Number:	R01 HS 015321
Project Period:	09/04 – 08/09, Including No-Cost Extension
AHRQ Funding Amount:	$1,461,150
Summary Status as of:	December 2008

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

Summary: Improving Safety and Quality with Integrated Technology is a project to demonstrate the value of an integrated inpatient and outpatient electronic health record (EHR) and electronic alert system to improve quality of health care and patient safety. Obstetrics (OB) was chosen as the health care setting because pregnant women inevitably transition across inpatient and outpatient settings in a matter of months. Group B Streptococcus (GBS), a common and potentially life-threatening condition, was chosen to measure the impact of the integrated EHR. Evidence-based treatment guidelines have been developed, and the project hopes to foster both identification and treatment of GBS. The implementation includes alerts to both increase the likelihood of patient screening and decrease the unnecessary prescription of antibiotics for women who are GBS negative. Data will be collected on tests performed and on the course of treatment. These data will increase knowledge about the value of integrated health information technology (IT) systems to produce measurable improvements in safety and quality. The findings, though applied specifically for OB, can be applied to many areas of medicine and surgery and may inform stakeholders making decisions regarding other health IT systems in both inpatient and outpatient settings.

Specific Aims

- Test whether a system that transmits GBS results with inpatient alerts improves adherence to evidence-based treatment guidelines for women who are GBS positive and reduces inappropriate antibiotic use in women who are GBS negative. **(Ongoing)**
- Demonstrate the value of an integrated outpatient and inpatient EHR to improve quality of care and safety for women and infants. **(Ongoing)**
- Demonstrate the value of an electronic alert system to increase GBS screening in the outpatient setting. **(Ongoing)**

2008 Activities: In 2008, the first phase of data analysis of the impact of the integrated inpatient and outpatient EHR on clinical practice was completed, which consisted of a survey of providers to determine their satisfaction with the system. The team also completed the first phase of data analysis for the value of the outpatient alert system to increase GBS screening. In addition, we completed an assessment of the impact of the integrated EHR with outpatient alert system on workflow. The planning process began for the cost-benefit analysis to assess the economic impact of implementing the integrated EHR with outpatient alert system.

Preliminary Impact and Findings: Analysis found that from October 2004, when only paper records were used, through March 2008, when a fully integrated inpatient and outpatient EHR with an outpatient alert system for GBS screening was used, the rate of patients missing GBS lab results dropped from 11 percent to 6 percent for OHSU patients, while the proportion of the patients without GBS labs who delivered at OHSU but received prenatal care elsewhere increased from 22 percent to 28 percent over the same time period. These together 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/always felt that the non-integrated EHR records were missing important OB information (45.9 percent non-integrated EHR vs. 9.5 percent integrated EHR) and that use of the decision support tools was high, especially with regard to the frequently/always use of 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).

The study also found that the introduction of a customized OB EHR system (STORC) improved documentation completeness in a busy obstetric unit without reducing direct patient care.

Selected Outputs

Campbell EM, Li H, Mori T, et al. The Impact of Health Information Technology on Work Process and Patient Care on Labor and Delivery. Advances in Patient Safety, August 2009.

Eden KB, Messina R, Li H, et al. Examining the value of electronic health records on labor and delivery. Am J Obstet Gynecol 2008; 199: 307.e1 – 307.e9.

Guise JM, Eden K, Osterweil P, et al. Electronic health records with decision support reduce uncertainty in Group B Streptococcus status. American College of Obstetricians and Gynecologists 57th Annual Clinical Meeting (ACM); May 2009; Chicago.

Guise JM, Messina R, Li H, et al. STORC OB SAFETY INITIATIVE: Catalyzing research while promoting clinical care and safety through OB Electronic Health Records. The Annual Meeting of the Society for Maternal Fetal Medicine; February 2008.

Awarded the Blue Ribbon for Scientific Presentation at the American College of Obstetricians and Gynecologists 57th Annual Clinical Meeting (ACM) May 2009.

STORC – A Fully Integrated Electronic Health Record (EHR): STORC, the integrated inpatient and outpatient obstetric EHR, is proprietary and not open-source. STORC was developed prior to the Certification Commission for Healthcare Information Technocology (CCHIT) and is currently not CCHIT-compliant.

Grantee's Most Recent Self-Reported Quarterly Status: The project received a no-cost extension, which has impacted its progress toward milestones and its use of the budget.

Milestones: Progress is mostly on track.

Budget: Somewhat under spent, approximately 5 to 20 percent.