

## Data Flow & Clinical Outcomes in a Perinatal Continuum of Care System

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| <b>Organization:</b>           | Lehigh Valley Hospital   |
| <b>Mechanism:</b>              | PAR: HS08-270: Utilizing Health Information Technology (IT) to Improve Health Care Quality (R18) |
| <b>Grant Number:</b>           | R18 HS 018649  |
| <b>Project Period:</b>         | September 2011 – September 2014  |
| <b>AHRQ Funding Amount:</b>    | \$335,705  |

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**Summary:** Medical errors are often caused by poor communication, especially during transitions of care between the inpatient and outpatient care settings. For example, test results and clinical notes completed in one setting are often not available in the other, or discharge information and planned followup care are not communicated well between inpatient and outpatient providers. These issues are particularly striking for Obstetrician Gynecologists (OB/GYNs) who care for patients in both settings and frequently need all current clinical patient data. One solution to this problem is to integrate electronic medical record (EMR) systems in outpatient and inpatient settings to enable data exchange between systems and allow for patient data to be available in real time, regardless of the location of the provider or patient. Few EMR vendors can supply a single solution with a unified database of clinical information for the outpatient OB/GYNs and the inpatient Labor and Delivery (L&D) triage environments. Therefore, most organizations utilize separate clinical information systems.

To improve data access and completeness at all points in the perinatal continuum of care process, the Lehigh Valley Health Network (LVHN) implemented a vendor-supplied integrated ambulatory EMR system at its three outpatient OB/GYN practice groups. Additionally, a perinatal information system was implemented at the L&D unit at the network's main hospital, Lehigh Valley Hospital-Cedar Crest. The goal is to establish a real-time exchange of patient data between these systems, bridging the outpatient and inpatient settings. In theory, patient medical information from all physician offices participating in the integrated EMR system should be immediately available when a patient arrives at the L&D unit, and information from a patient's visits to the L&D unit should be available in the ambulatory care settings.

This study is evaluating the implementation of the integrated EMR system. Quantitative and qualitative data collected during the system implementation process is being used to assess the system's effect on organizational and process change in the outpatient and inpatient settings, and the system's ability to deliver accurate, complete, and timely data to providers and clinical staff at points along the perinatal continuum of care. Qualitative data is being collected by administering surveys, conducting interviews, and analyzing notes from meetings that occurred before, during, and after system implementation. The qualitative data will be used to describe the changes in organizational and workflow processes resulting from the integrated system. Quantitative data is being collected from surveys, LVHN databases, and the Pennsylvania Health Care Cost and Containment Council to assess the system on data completeness, medical outcomes, provider efficiency, and patient and provider satisfaction.

This project will map the quantitative and qualitative links between health information technology

(IT) adoption and individual patient outcomes (maternal and newborn), as well as patient and provider satisfaction. The evaluation should provide replicable lessons for other organizations attempting to integrate outpatient and inpatient data through health IT. It will also provide policymakers with an overall assessment of the costs and benefits of integrating EMR systems.

### Specific Aims:

- Develop grounded theory to describe the process of effective implementation and integration of ambulatory EMR systems with hospital information systems through qualitative analysis of technology acceptance and use and complementary organizational and process change. **(Ongoing)**
- Examine quantitatively the change in data completeness (complete and accessible data) at the hospital and the individual practices resulting from the adoption of the integrated EMR system. **(Ongoing)**
- Examine quantitatively improvements in health outcomes, staff perceptions of patient safety, and patient and medical staff satisfaction, as well as changes in the productivity of primary care and inpatient physicians. **(Ongoing)**
- Using mixed methods, triangulate the results of the quantitative and qualitative analyses to gain a deeper understanding of how to achieve benefits from an integrated EMR. **(Upcoming)**

**2011 Activities:** Data collection is in process. Stakeholder interviews and document analyses are being conducted. Two rounds of surveys have been administered to staff in the inpatient and outpatient settings to assess the availability of data. Another round of surveys will be administered later in 2012.

As last self-reported in the AHRQ Research Reporting System, project progress and activities are mostly on track, and the project budget funds are somewhat underspent due to personnel costs coming in lower than projected at the time of reporting.

**Preliminary Impact and Findings:** This project has no findings to date.

**Target Population:** Women\*: Pregnancy

**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:** Implementation and Use

*\* This target population is one of AHRQ's priority populations.*