

**Project Title:** Improving Quality through Health Information Technology: Testing the Feasibility and Assessing the Impact of Using Existing Health Information Technology Infrastructure for Better Care Delivery

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**Organization:** Health Research and Educational Trust; Northwestern University, Feinberg School of Medicine

**Contract Number:** 290-06-0022-3

**Project Period:** 09/07 – 07/09

**AHRQ Funding Amount:** \$393,457

**Summary Status as of:** July 2009, Conclusion of Contract

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**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

**Target Population:** Cancer, HIV/AIDS, Safety Net

**Summary:** This study assessed the use of health information technology (IT) to improve care delivery and outcomes for patients with HIV and/or who need cervical cancer screening by documenting and facilitating clinicians' use of laboratory orders and test results in community health centers (CHCs). The project examines how health IT tools can improve compliance, efficiency, and quality of care by reducing duplicate tests and lost results and increasing adherence to treatment followup guidelines.

The project includes two CHCs in Chicago, IL, that use the Centricity electronic health record (EHR), which is certified by the Certification Commission for Health Information Technology. The EHR has the capability for clinical decision support, evidence-based protocols, and automated feedback reports documenting organizational and provider-level performance on laboratory indicators. Semistructured interviews were conducted with IT, laboratory, clinical, and administrative staff to document the implementation process, perceived benefits and utilization of the EHR in laboratory ordering and results communication at the point of care, and any resulting workflow changes.

### Specific Aims

- Understand how health IT can improve access to and management of laboratory information for patients with HIV and patients in need of cervical cancer screening. **(Achieved)**
- Illustrate how health IT tools can improve compliance with evidence-based laboratory test guidelines and improve both the efficiency and quality of care by reducing the numbers of duplicate laboratory tests, "lost" results, and laboratory results without followup. **(Achieved)**
- Identify how health IT can aid various types of health care practitioners in laboratory-related tasks. **(Achieved)**
- Develop a set of best practices focused on how a specific set of health IT tools can be used to improve both treatment and screening (i.e., HIV treatment and cervical cancer screening and followup) that can be disseminated to other CHCs and physician practices. **(Achieved)**

**2009 Activities:** The project data analysis was completed, and several reports were developed, including the effects on adherence to treatment followup and a guide on best practices for implementation of EHRs in CHCs.

## **Impact and Findings:**

### *Adherence to guidelines*

Implementation of the EHR had limited measurable short-term impact on laboratory followup and duplicate tests. Post-implementation data showed that the rate of followup for abnormal Pap smears was very low at both centers (less than 10 percent). One reason may be that some patients receive followup care at other clinical sites, and this is not documented in their record. This finding identifies the need for better tracking of followup care at the clinical sites and tracking of patients who receive followup elsewhere. An insufficient number of records were available to compare rates of pap smears before and after EHR implementation. However, the persistently low rate of followup for abnormal Pap smears is an important finding. The EHR provides data for monitoring the low followup rate for use in quality improvement, which may indicate the need for further modification of decision support at the point of care.

The rate of duplicate viral load tests for HIV at each center was low both pre- and post-implementation of the EHR (less than 1 percent). Patients in the study who were seeking HIV care at the CHCs tended to be aware of their status and knew when laboratory tests were last performed or due, potentially reducing duplicate test ordering. Overall, these results highlight the importance of prioritizing use of health IT tools for those clinical areas that have relatively low rates of clinical adherence. Guideline compliance for HIV laboratory measures did not show statistically significant improvement at 6 or 12 months post-implementation. However, an improvement in compliance at 20 months post-implementation was evident on several measures, including CD4, lipid profile, and liver function tests. This finding indicates that the time period for improvement after implementation can be as long as 2 years.

### *Cost-effectiveness*

The lack of statistical improvement in the two quantitative outcomes of interest did not allow for a calculation of an incremental cost-effectiveness ratio. As a result, the analysis focused on the cost of implementation. The cost of implementation ranged from \$143,360 to \$168,340 for hardware, software, and personnel. Additional infrastructure and training costs were estimated between \$23,000 and \$35,000. Ongoing operational costs were estimated between \$30,000 and \$45,000 a year.

### *Qualitative component*

Qualitative interviews with staff identified the benefits of the EHR, areas needing improvement in the use of the EHR, and the impact of EHR implementation on workflow. Laboratory interface issues, such as delays in logging onto the system and printing, have a notable impact on providers' satisfaction with the system. Despite staff members' frustration, no one reported that he or she would prefer to go back to paper charts. The key benefits of the EHR reported by the staff included ease in finding charts, improved communication between different providers through "flagging," and improved communication with patients.

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## **Selected Outputs**

Yonek J. Improving health IT infrastructure for better care. Hospitals and Health Networks Digital Magazine. 2009 Dec 14.

Implementation Handbook. Improving quality through health IT: Testing the feasibility and assessing the impact of using existing health IT infrastructure for better care delivery. August 2009. Health Research and Educational Trust.