

A Partnership for Clinician Electronic Health Record Use and Quality of Care

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Summary: With the emphasis on health information technology (IT) in ambulatory care deriving from the Health Information Technology for Economic and Clinical Health Act, current use of electronic health records (EHRs) in ambulatory settings is increasing. However, after a health center makes a financial investment in an EHR, barriers—including the need to redesign workflow to incorporate use of the EHR before, during, and after a patient visit—to full and effective use of the system remain. It is especially important for clinical decision support (CDS) systems that these barriers be overcome, because if information is not available at the point-of-care and decisionmaking, health IT cannot improve the quality and outcomes of care.

The Institute for Nursing Centers and the Alliance of Chicago Community Health Services (Alliance) studied the effectiveness of a partnership that shares resources and utilizes a data-driven approach to promote full clinician use of an EHR. Three nurse-managed health centers and three community health centers participated in this effort to improve the quality of preventive care, chronic disease management, and medication management for vulnerable populations. These partners have a record of highly productive research, successful EHR implementation, commitment to data-supported high-quality health care for vulnerable populations, and a history of building and maintaining strong collaborations.

This project addressed one of the key problems in leveraging health IT to support high-quality patient care: despite its potential, CDS is often not used effectively or consistently by clinicians. The design of this project incorporated qualitative investigations and quantitative analyses at both the individual- and the center-level. The critical link between full use of EHR functionality—including CDS features, and clinical performance and quality outcomes—was examined with rigorous statistical methods. The project's EHR product was the integrated General Electric (GE) Centricity Practice Management EHR System with substantial customization of CDS in templates developed by the Alliance. The quality indicators selected were those that the Institute of Medicine has identified as priority areas for improvement and where significant disparities across racial, ethnic, and income groups exist. Qualitative methodology added to the field's understanding of health center leadership and change management required for successful use of EHR.

Specific Aims:

- Study the effectiveness of a partnership that shares resources and uses a data-driven approach to promote full use of an EHR by clinicians in settings that serve vulnerable populations to improve

the quality of care in the areas of preventive care, chronic disease management, and medication management. **(Achieved)**

- Test the links between clinician use of an EHR and quality of preventive care, chronic disease management, and medication safety. **(Achieved)**
- Examine organizational processes in the implementation and full use of an EHR in relationship to care delivery and outcomes. **(Achieved)**

2011 Activities: All study sites were live on the GE Centricity practice management and EHR systems. All sites were also connected to a laboratory interface and the GE data warehouse. A 1-year no-cost extension period was used to complete data collection at all sites. As last self-reported in the AHRQ Research Reporting System, project progress was completely on track and project budget spending was on target. The project was completed in August 2011.

Impact and Findings: Overall quality improvement was shown to occur over time following EHR implementation as measured by structure, process, and outcome metrics. Additionally, when compared to pre-implementation surveys, clinician experience and satisfaction, which dropped during implementation, rebounded after a year. Clinician expectations for EHRs were generally moderated, but overall, clinicians expected and continued to believe in the EHR's positive effect on quality and safety.

Project attempts to measure the depth and quality of EHR use by individual clinicians, and thus measure the association with quality at the clinician level, was hampered by several methodological challenges. It was not possible to track usage of chronic disease management templates directly. The project employed proxy measures that reduced accuracy. In diabetes management, the project was able to infer that the diabetes management template was used if foot exam results were recorded because this was the only place to enter that result. This raises two validity concerns: 1) clinicians not conducting or documenting foot exams may have used the form to document other things; and 2) the diabetes management use metric is indistinguishable from the quality indicator for conducting a foot exam. With regard to hypertension management, the CDS template that was measured was also used to measure cardiovascular disease management. This template did not support the clinical workflow of hypertension management and was not a fair measure of clinician CDS use. The more general metric of creating a clinical note also contains the potential for error. Nevertheless, the validity of the note use measure was supported by a significant correlation to self-reported use of EHR rather than paper.

The project did measure use of the evaluation and management coding advisor, a tool that validates coding of the complexity of the visit for billing. This metric was significantly correlated with relative value unit and full-time equivalent. This finding was expected and supports the argument that EHRs can ensure that providers document and code the complexity of office visits accurately. This feature is important for nurse-managed health centers, which are known to under-code.

The project demonstrated that careful EHR implementation using a model of sustained partnership and focused attention on quality of EHR use by clinicians has a positive impact on quality of care and experience of care by clinicians. However, the resources used to support this model were extensive and, without funding, may not be practical or realistic for most small primary care settings.

Target Population: Chronic Care*, Medically Underserved

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: Implementation and use

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