

Impact of Health IT Implementation on Diabetes Process and Outcome Measures

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Organization:	Baylor Research Institute
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Summary: Diabetes is an increasingly common chronic disease that requires long-term management. Currently, the health care provided to patients with diabetes frequently falls short of the “best care” practices established in evidence-based clinical guidelines. The primary objective of this observational study is to quantify the effects of a commercially-available ambulatory electronic health record (EHR) on quality of diabetes care, as measured by compliance with recommended processes of care and patient outcome measures. The EHR includes diabetes care prompts and a diabetes management form (DMF), a condition-specific documentation tool that integrates data review, real-time evidence-based clinical decision support, order entry, and patient education.

The study was conducted in the Baylor Health Care System HealthTexas Provider Network, which implemented an EHR in a staggered fashion across its practices between 2006 and 2008. The primary aim is to test the impact of the EHR on the quality of diabetes care, as measured by the Health Partners “Optimal Diabetes Care” composite measure with retrospective chart audit data. This composite measure includes hemoglobin A1c (HbA1c), cholesterol, blood pressure, aspirin prescription (for patients age ≥ 40 years), and smoking status. Secondary aims include testing the impact of the EHR on these included measures separately, and on compliance with recommended processes of diabetes care. This study is also investigating the prevalence of voluntary physician use of the DMF embedded within the EHR, and determining the effect of DMF use on patient outcomes.

This study will provide important information about the potential for an EHR to improve quality of diabetes care, including insight regarding the potential of and need for disease-specific EHR components to effect improvement.

Specific Aims:

- Estimate the impact of an EHR on diabetes outcomes, measured by the proportion of patients meeting the Health Partners Optimal Diabetes Care measure. **(Achieved)**
- Estimate impact of an EHR on specific patient outcomes and compliance with recommended process of care related to diabetes. **(Achieved)**
- Estimate the prevalence of physician use of the Diabetes Management Form, and the effect of the Diabetes Management Form on patient outcomes related to diabetes as measured by the Optimal Diabetes Care measure. **(Achieved)**

2012 Activities: In 2012, the research team focused on the analysis of the third aim, to examine the relationship between use of the DMF and patient process and outcome data. To complete this analysis, the research team had to link two separate datasets: 1) data generated over the prior 5 years that documents and populates pre-defined fields and measures focused on diabetes care; and 2) data from the DMF that is part of the EHR. Analysis for this aim was completed and a manuscript describing the results was developed and submitted to *Health Services Research* for an information technology-focused special issue. Preliminary results from this aim were also presented at the AHRQ Annual Meeting in September.

Dr. Ballard and his team wrote a manuscript describing the analysis of the impact of the EHR on processes and outcomes of diabetes care, [The Effectiveness of Implementing an Electronic Health Record on Diabetes Care and Outcomes](#). This manuscript was published by *Health Services Research* in August and was selected by the editorial staff as the 2012 John M. Eisenberg Article-of-the-Year, an annual award established in 2003 that recognizes excellent and original research among all articles published in the journal during the year.

As last self-reported in the AHRQ Research Reporting System, project progress and activities are completely on track, and project budget spending is on target.

Preliminary Impact and Findings: After adjusting for patient age, sex, and insulin use, patients seen in the EHR practices were significantly more likely to receive optimal care when compared with those from the non-EHR practices. Components of the optimal care bundle showing positive improvement after adjustment were systolic blood pressure <130 mmHg, diastolic blood pressure <80 mmHg, aspirin prescription, and smoking cessation. Among patients in the EHR practices, all process and outcome measures, except HbA1c and lipid control, showed significant improvement.

Target Population: Adults, Chronic Care*, Diabetes

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: Knowledge Creation

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