Impact of Health IT Implementation on Diabetes Process and Outcome Measures

Principal Investigator: Ballard, David J., Ph.D., M.D., M.S.P.H.
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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 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 is being conducted in the Baylor Health Care System HealthTexas Provider Network, which staggered implementation of the EHR in practices between 2006 and 2008. The primary aim is to test the impact of the EHR on the care of diabetes patients using the Health Partners “Optimal Diabetes Care” composite measure with retrospective chart audit data. This composite measure includes hemoglobin A1c (HbA1c), cholesterol, blood pressure, patient age, and smoking status. Secondary aims include testing the impact of the EHR on patient outcomes and compliance with recommended processes of diabetes care, estimating 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. (Ongoing)
2011 Activities: During the first 6 months of the project, funded in June 2011, Dr. Ballard and his team focused on evaluating the impact of the EHR on processes and outcomes of diabetes care (the first two aims). The analyses for these two aims were complete by the end of August, having benefitted from prior experience with the dataset. The dataset had been prepared and cleaned prior to the start of this project period for other purposes, including operational quality improvement work. The data were collected from the Baylor Health Care System HealthTexas Provider Network medical record (Centricity). The research team wrote a manuscript describing the results for these first two aims, titled The Effectiveness of Implementing an Electronic Health Record on Diabetes Care and Outcomes, and published by Health Services Research in January 2012.

During the second half of the year, the research team focused on the third aim, which included the development of a process for linking two separate datasets: 1) data generated over the past 5 years that documents (through review of paper and electronic text) and populates pre-defined fields and measures focused on diabetes care; and 2) data from the DMF that is part of the EHR. By the end of the year, the research team linked the two datasets and began to examine the relationship between use of the DMF and patient process and outcome data.

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 exposed to the EHR were significantly more likely to receive optimal care when compared with unexposed patients. Components of the optimal care bundle showing positive improvement after adjustment were systolic blood pressure <80 mmHg, diastolic blood pressure <130 mmHg, aspirin prescription, and smoking cessation. Among patients exposed to the EHR, 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.