

eHealth Records to Improve Dental Care for Patients With Chronic Illnesses

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Target Population: Chronic Care*, Chronic Obstructive Pulmonary Disease, Congestive Heart Failure, Diabetes, Xerostomia

Summary: This project is a group-randomized clinical trial with dentists on the use of simple reminders in an integrated electronic health record. The primary goal is to evaluate the effectiveness of an integrated electronic health record system that includes an electronic medical record (EMR), electronic dental record (EDR), and a personal health record (PHR) at improving the quality and safety of dental care for patients with chronic illnesses. The EMR used in this project is EPIC Hyperspace Spring 2007, developed by Epic Systems Corporation and certified by the Commission for Health Information Technology (CCHIT). The EDR, developed by General Systems Design Group, Inc., is not CCHIT certified, as a certification process for EDRs does not exist. The tethered PHR is EPIC MyChart® and is used in combination with HealthPartners' Web-based patient portal.

The study compares two interventions against a usual care control. The interventions are designed to address how and to whom special dental care needs are communicated. The interventions are: 1) a reminder to the patient delivered primarily via a PHR e-mail or, if e-mail is not available, over the phone by the dental clinic staff and/or postal mail (Group A); or 2) a point-of-care reminder to the dentist through the EDR (Group B). The patients in the sample population have special dental care needs as a result of four chronic conditions: diabetes mellitus, congestive heart failure, chronic obstructive pulmonary disease, and xerostomia (dry mouth) caused by medications or related conditions.

An EDR integrated with an EMR and PHR provides a unique opportunity to improve the dental care of patients with chronic conditions by alerting patients to their special care requirements and alerting dentists at the point of care. Furthermore, the integration of an EMR, PHR, and EDR into an integrated electronic health record system improves health information exchange, communication, and cost effectiveness of care, particularly for patients with chronic illnesses. This project demonstrates how leveraging an integrated electronic health record system can improve patient outcomes, increase awareness, and improve clinical decisionmaking by identifying problems that need remediation and providing immediate evidence-based recommendations.

Specific Aims:

- Determine the effectiveness of integrated EMR-based interventions toward changing dentist and patient behavior. **(Achieved)**

- Determine the impact of an integrated EMR-based intervention upon the use of emergency and/or restorative dental care. **(Achieved)**
- Produce and distribute a generalizable, replicable model of evidence-based care recommendations for implementing an integrated health information technology system for diabetes and other chronic illness management within dental care practices throughout the United States. **(Ongoing)**

2010 Activities: The primary focus of activity was on recruitment, data collection, and data analysis. In addition, a set of recommendations was developed on necessary action steps for dentists to meet the needs of patients. The outcome data on whether or not the guidelines were accessed was extracted and the impact of the intervention was analyzed. Outcomes were evaluated during the three phases of the study: a static period; the first 1 to 6 months of the activation period; and months 7 to 12 months of the activation period.

The primary study outcomes are:

1. Total Use: The overall frequency with which providers accessed the Web-based clinical guidelines.
2. Targeted Use: The proportion of instances in which access to the Web-based clinical guidelines was done for targeted patients (i.e., those identified as having one of the four conditions of interest).
3. Ongoing Use: The proportion of providers who accessed the Web-based clinical guidelines for all patients.

Preliminary findings were presented at several national meetings including the Agency for Healthcare Research and Quality Annual Health IT Grantee and Contractor Meeting in June. The findings are also being summarized for publication submission.

Grantee's Most Recent Self-Reported Quarterly Status (as of December 2010): The project has entered a no-cost extension period during which the findings will be reported and submitted for publication.

Preliminary Impact and Findings: The 18-month study period of the clinical decision support (CDS) alerts and personalized recommendations included 10,890 out of a total of 59,147 patients with one of the four chronic conditions, vastly surpassing an expected sample size of 2,600. The rate at which the providers accessed the clinical guidelines in response to the CDS alert was evaluated for 101 dental providers. The total use of care guidelines was found to have increased among both providers and patients. There was also a generalizable effect of increased use of guidelines by dentists for all patients ($p < 0.05$). The alert aimed at providers was shown to be more effective than a reminder that was targeted to the patient at increasing the rate at which guidelines were accessed. However, the rate at which the guidelines were accessed decreased after 6 months of the alert system being implemented ($p < 0.05$).

This project demonstrated that utilization of clinical guidelines for medically compromised patients can be improved with clinical decision support using e-dental records with provider and patient activation strategies. The clinical implication is that, as our population ages, dentists must be vigilant in adapting care for medically compromised patients to maintain safety and quality.

Strategic Goal: Develop and disseminate health IT evidence and evidence-based tools to improve health care decisionmaking through the use of

Business Goal: Implementation and Use

* AHRQ Priority Population