

Project Title: eHealth Records to Improve Dental Care for Patients with Chronic Illnesses

Principal Investigator: Friction, James, D.D.S., M.S.

Organization: HealthPartners Research Foundation

Mechanism: RFA: HS07-006: Ambulatory Safety and Quality Program: Improving Quality through Clinician Use of Health IT (IQHIT)

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Summary Status as of: December 2008

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

Summary: This project was initiated in September 2007 and has completed the first third of the grant period. The primary goal of this proposal is to conduct a randomized clinical trial to evaluate the effectiveness of an integrated electronic health record system that includes an eMedical Record (EMR), eDental Record (EDR), and a Personal eHealth Record (PHR) to improve the quality and safety of dental care for patients with chronic illnesses. The EMR is EPIC Hyperspace Spring 2007 version IU3 made by Epic Systems Corporation and is Certification Commission for Healthcare Information Technology (CCHIT) certified. The EDR is GSD Group 6.0 made by General Systems Design Group, Inc. and is not CCHIT certified since they do not have a certification process for EDRs. The tethered PHR is EPIC mychart and also a HealthPartners Web-based patient portal. An EDR integrated with an EMR and PHR provides a unique opportunity to improve the dental care of patients with chronic conditions by both alerting patients to their special care requirements as well 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, enhanced communication, and improved and cost effective care, particularly for patients with chronic illnesses.

This project is a 3-arm, 2-year prospective, group-randomized clinical trial of 47 dentists in 17 clinics to evaluate the effectiveness of 2 interventions that use simple reminders within the integrated electronic health record. The study examines two interventions versus a usual care (UC) control. The interventions are designed to address how, and to whom, special dental care needs are communicated. The interventions are: 1) a reminder to patients delivered primarily via their PHRs through e-mail or, if e-mail is not available, through phone by the dental clinic staff and/or postal mail (Group A); or 2) a point-of-care reminder to the dentist within the EDR (Group B). These reminders reflect the special dental care needs of four chronic conditions: diabetes mellitus, congestive heart failure (CHF), chronic obstructive pulmonary disease (COPD), and xerostomia (dry mouth) as caused by medications or related conditions. This project demonstrates how leveraging an integrated electronic health record system can improve patient outcomes, increase awareness, and improve clinical decisionmaking by identifying problems needing remediation and providing immediate evidence-based recommendations.

Specific Aims

- Determine the effectiveness of integrated EHR-based interventions toward changing dentist and patient behavior. Data collection is ongoing and in process. **(Ongoing)**

- Determine the impact of an integrated EHR- based interventions upon the use of emergency and/or restorative dental care. Data collection is ongoing and in process. **(Ongoing)**
- Based on the lessons learned and evaluation results, produce and distribute a generalizable, replicable model of evidence-based care recommendations for implementing an integrated health IT system for diabetes and other chronic illness management within dental care throughout the United States. **(Ongoing)**

2008 Activities: The principal investigator, co-investigators, and programmers have been successful in meeting regularly with each other and in achieving all of the goals set in the timetable. They have an overall meeting with the Proposal Administration Group, Programming Subcommittee, and an Outcomes Subcommittee to complete the project goals. In Phase 1, the research team has finalized the interventions and outcome measures in light of a thorough literature review, previous experience, and discussion with consultants at the University of Minnesota. The interventions are currently being programmed into the integrated health record system to be accessed by the EDR and PHR interventions. The interventions are simple, easily understood alert reminders of action steps that need to be taken by the dentist to meet the patient's special dental care needs as advised by consultants. The recommendations have been submitted and now approved by HealthPartners' Guidelines Committee. Outcomes have been defined to correlate with them and measured through the EDR.

During Phase 2, a beta version of the modified integrated health record system is being piloted at a sample clinic and revised accordingly. Dentists and clinics have been randomly assigned to one of the study arms. Beta testing of the system to alert dental providers has been completed and is currently being revised for final implementation. An initial period of baseline utilization is currently in process to determine how the dental providers will use the Web site without alerts from the EDR or the patients through the PHR and/or letters. Use was higher immediately after training (41 hits and 29 users) in weeks 1 and 2. In Phase 3, subjects will be followed with relevant data collected. This is expected to start in May 2009. These data will be analyzed and results presented at meetings and submitted for publication in scholarly journals during Phase 4.

Preliminary Impact and Findings: Considerable time has been spent on defining the clinical guidelines for managing dental patients with chronic medical conditions and the specific personalized recommendations for each patient. The guidelines have been reviewed by the HealthPartners Guidelines' Committee and approved. In addition, the guidelines have been modified to comply with the needs of a Web site presentation with links. The Software of Excellence EDR has been modified to accommodate the needs of the study, including an easily recognizable medical alert (MedAlert) icon that blinks and a MedAlert Link that brings the dental provider either to specific personalized recommendations in the EDR Alert and PHR Alert groups or to the general recommendation. The personal health record at HealthPartners has been implemented with this project as the first project to use it. Since the patient use has been gradually increasing, the PHR alerts will be sent to patients through both letters and e-mails.

To date, the project team has developed software that has the potential to be distributed widely through EDRs. The software presents personalized recommendations for the patients with medical conditions in the EDR and PHR arms of the study based on the patients' medical histories. It is being revised to accommodate the EDR at HealthPartners but will be open source when completed.

Selected Outputs

Web-based Clinical Guidelines: include recommendations for dentists to follow when patients have a chronic illness including COPD, CHF, xerostomia, or diabetes. The Web-based Clinical Guidelines are able to present personalized recommendations for the patients in the EDR and PHR arms of the study. The site is not yet available to outsiders but will be in the next budgeting period.

Training Protocol for Dental Providers: developed for use of the new system.

Grantee's Most Recent Self-Reported Quarterly Status: The project is completely on track with its milestones and is on time.

Milestones: Progress is completely on track.

Budget: Spending is roughly on target.