

Project Title: Automating Assessment of Asthma Care Quality
Principal Investigator: Hazlehurst, Brian, M.D.
Organization: Kaiser Foundation Research Institute
Mechanism: RFA HS07-002: Ambulatory and Safety Quality Program: Enabling Quality Measurement through Health IT (EQM)
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Project Period: 09/07 – 09/09
AHRQ Funding Amount: \$871,711
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: Knowledge Creation

Summary: This project was initiated in September 2007 and has completed the first half of the grant period. This project aims to develop, validate, apply, and evaluate a scalable method for routine and comprehensive measurement of outpatient asthma care quality. To accomplish this, the project will employ MediClass (a “Medical Classifier”), which is a proven natural language processing technology for extracting care quality data from both coded data and free-text clinical notes in the Electronic Medical Record (EMR). The project will perform retrospective analysis of EMR data from two distinct health systems: a mid-sized HMO (Kaiser Permanente Northwest [KPNW]) and a consortium of Federally Qualified Health Center clinics (OCHIN, Inc.) including a diverse sample of patients, providers, and health care practices in the Pacific Northwest. The data will be extracted from Kaiser Permanente’s Epic-based EMR HealthConnect and OCHIN’s Certification Commission for Healthcare Information Technology (CCHIT) certified Epic-based EMR EpicCare Spring 2007. Since these EMR systems reside in separate health systems, the implementation of the products generates differences in the data, which must be accommodated when these data are interpreted for quality assessments. This project is leveraging MediClass to implement methods for collecting and transforming data into common formats for quality assessment across multiple data capture, representation, and storage processes. This project leverages health IT to assess and improve quality of care for insured and the indigent, uninsured, and underinsured populations of this region.

Specific Aims

- Refine asthma care quality measures from the RAND Quality Assessment Tools Project for use as a quality measure set to evaluate ambulatory asthma care performance. **(Achieved)**
- Develop and validate an automated (generalizable and scalable) method for applying the above care quality measures using comprehensive EMR data. **(Ongoing)**
- Apply the automated method developed above to assess ambulatory asthma care quality in two distinct health plans representing diverse patient populations and care practices. **(Ongoing)**
- Evaluate the association between our automated measures of adherence to recommended asthma care processes and measures of clinical outcomes using KPNW data only. **(Upcoming)**

2008 Activities: Dr. Hazlehurst and his team successfully formulated the definitions for the Asthma Care Quality (ACQ) measure set which includes 22 distinct aspects of ambulatory care for patients with persistent asthma. Following the completion of the measure set, work on development, implementation, and validation of the ACQ measurement instrument commenced. This is the most extensive portion of the

project and entails: 1) developing a method for extracting data from specific EMR implementations, 2) developing a processing engine to identify key clinical events required by the measures from within both text and coded fields, and 3) combining the clinical events to implement the individual measures. Preparation for assessing asthma care quality is also in process. The data to be extracted has been defined, and extraction of the data from the data warehouses is in progress. The chart abstraction procedures and forms to evaluate the performance of the measures using manual abstraction of EMR records are in testing.

Preliminary Impact and Findings: Preliminary findings focus on data capture in the EMR and data flow out of the EMR. For example: 1) Many data elements required for in-depth, comprehensive, domain-specific (e.g., asthma care) quality assessment do not flow automatically to a data warehouse from the clinical information system (EMR). This flow is required for automated assessment, but will require specific configuration of the data warehousing practices at each implementation site. 2) Many diverse pathways exist for clinicians to document the care they deliver. Within progress notes of the EMR, the common use of automated templates and macros for adding content may increase documentation speed but may also make the interpretation of these loosely organized content segments difficult or ambiguous.

Selected Outputs

An abstract on the ACQ project was accepted for inclusion at the 2009 American Thoracic Society Annual Conference.

Operations Manual on the architecture and implementation details of the ACQ measurement instrument as they pertain to each site.

Grantee's Most Recent Self-Reported Quarterly Status: The project is mostly on track and meeting 80 percent of its milestones with a projected slight delay in developing and validating the automated instrument. The delay is due to the uniqueness of the EMR implementation and flow of data within each site. Validation of the measure set is somewhat delayed by limitations in personnel available for the required manual chart review that serves as a gold standard.

Milestones: Progress is mostly on track.

Budget: Spending is roughly on target.