

Using Information Technology to Improve the Quality of Cardiovascular Disease Prevention and Management

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Organization:	Kaiser Foundation Research Institute
Mechanism:	RFA: HS07-002: Ambulatory and Safety Quality Program: Enabling Quality Measurement Through Health Information Technology (EQM)
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Project Period:	November 2007 – June 2010
AHRQ Funding Amount:	\$605,862
Summary Status as of:	June 2010, Conclusion of Grant

Target Population: Adults, Chronic Care*, Heart Disease

Summary: Data from electronic medical records (EMRs) have the potential to far surpass claims data and other secondary data sources in the quality of results they make possible in nearly every area of health services research. For this promise to be fulfilled however, significant methodological advances are required that will establish new principles for defining care quality metrics, disease ascertainment, and that meet other measurement challenges inherent in working with EMR data. This study sought to use EMR data to determine the relationship between patterns of preventive and disease management care for cardiovascular disease (CVD) and the occurrence of disease events that this care is designed to prevent.

The study developed EMR-based quality indices for 11 cardiovascular primary care services. It related physicians' prior index scores to subsequent disease incidence and to care utilization in their patients. Data for the study were collected over an 11-year period by two Kaiser Permanente organizations covering approximately 750,000 persons in Hawaii and the Pacific North West of the United States, representing geographically and ethnically diverse populations. Both organizations used customized variations of Epic System's Certification Commission for Health Information Technology-certified EMR, HealthConnect.

Two index types were developed for defined annual intervals based on observations of defined populations: prevention indices (PIs) and disease management indices (DMIs). The PI is a measure of the extent to which a screening or preventive service was delivered to a defined population during a defined interval. The DMI is a measure of how effectively a disease or condition was managed in the population defined by the pertinent diagnosis during a defined interval.

This study focused on the relationship between patterns of preventive and disease management care by primary care providers (PCPs) of patients with CVD. Indices looked at for DMI included: diastolic blood pressure (BP), systolic BP, serum lipids, hemoglobin A1c, use of beta blockers, use of angiotensin converting enzyme inhibitors, and use of angiotensin receptor blocker. Indices for PI included: BP, serum lipids, hemoglobin A1c, weight, and tobacco use. The hypothesis for all combination of services and outcomes was that higher PCP-level index scores would be associated with lower rates of incident CVD and health care utilization within each patient panel.

Specific Aims:

- Identify practice-level primary care variations in preventive care, weight management, and selected chronic disease management, including drug prescription patterns aimed at reducing CVD morbidity. **(Achieved)**
- Determine the associations of quality of preventive care and disease management practices to morbidity, mortality, and costs of care. **(Achieved)**
- Improve delivery of care. **(Achieved)**

2010 Activities: In 2010, eight data specification templates were completed. Data extraction, analysis and documentation of results were the major focus of activities during this period.

Grantee's Most Recent Self-Reported Quarterly Status (as of December 2010): The project was completed with all major aims achieved.

Impact and Findings: Longitudinal and cross-sectional variation in practice patterns differed by service type and by organization. Higher DMI scores for BP were associated with lower incident disease and care utilization. The PI for lipid screening was associated with reduced annual outpatient care utilization. The study team concluded that there are many causes of failure to provide recommended care. Some are difficult for health systems to address such as inadequate resources, poor quality clinical guidelines, and inaccurate or nonspecific diagnostic tests. Other causes should be more easily addressed including organizational deficiencies, clinician failure to recommend appropriate services, and patient refusal to follow recommendations. In settings where EMR data are accessible to providers and patients, the PI and DMI evaluate care based on the same information available to the parties who are accountable for care. Quality indices based on PI and DMI information have a basic functional validity. Several of the indices developed in the project show sufficient promise to warrant additional development.

Strategic Goal: Develop and disseminate health IT evidence and evidence-based tools to improve health care decision making through the use of integrated data and knowledge management.

Business Goal: Knowledge Creation

* *AHRQ Priority Population*