

**Project Title:** Cardio-Hit Phase II  
**Principal Investigator:** Kmetik, Karen, Ph.D.  
**Organization:** American Medical Association  
**Mechanism:** RFA: HS07-002: Ambulatory Safety and Quality Program: Enabling Quality Measurement through Health IT (EQM)  
**Grant Number:** R18 HS 017160  
**Project Period:** 09/07 – 09/09  
**AHRQ Funding Amount:** \$996,166  
**Summary Status as of:** December 2008

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**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 is a 2-year, observational study of quality measure exception (or exclusion) reporting, building on Dr. Kmetik’s prior work under Cardio-HIT, a research collaborative of five electronic health record system (EHRS)-enabled independent cardiology and internal medicine group practices. These practices have integrated the American College of Cardiology (ACC)/American Heart Association (AHA)/Physician Consortium for Performance Improvement (PCPI)-developed physician clinical performance measures for Coronary Artery Disease (CAD) and Heart Failure (HF) into their EHRS.

The project is using two sources of data for the study: 1) the CAD and HF performance measure data, which are currently being collected in practice site EHRS and exported to a data warehouse by all Cardio-HIT sites, and 2) detailed data on reported exceptions, which are being collected via “manual” EHRS medical record abstraction by trained abstractors. The process of integrating the ACC/AHA/PCPI measures into the EHRS, importing de-identified data to a central warehouse, and the subsequent report development and distribution is a multi-phased approach involving each practice and the Iowa Foundation for Medical Care (IFMC), which is managing the Cardio-HIT clinical data warehouse.

The Cardio-HIT project is designed to study the feasibility and implementation of integrating the nationally recognized ACC/AHA/PCPI-developed physician performance measures for CAD and HF into five EHRS-equipped cardiology and internal medicine practices. The data to inform the work are being collected from the following vendor products: Epic Spring 2007 IU 1; NextGen® EMR 5.5.25; Cardioworks®, Touchworks by Allscripts® 10.2.3, and GE Centricity® EMR 2005. All vendors are Certification Commission for Healthcare Information Technology (CCHIT) certified with the exception of Cardioworks®. Although each installation of the products differs, the project results are likely to be generalizable to users of EHRS products.

The data generated through the Cardio-HIT project will also provide actionable feedback to physicians about the quality of care being provided by the analyses of the integrated performance measures exception reporting data. The ability to collect and analyze exception data may prove valuable in understanding variations in care. Physician access to exception data from the EHRS at the point of care is critical for clinical decisionmaking and improving patient outcomes.

## Specific Aims

- Build an empirical understanding about prevalence and patterns of exception reporting among physicians using EHRs and reporting national performance measurements. To achieve this aim, the project will use exception reporting data from the Cardio-HIT sites to quantify prevalence and patterns of exclusions for two measure sets: CAD and HF. **(Ongoing)**
- Evaluate the feasibility and accuracy of exception reporting among physicians. To achieve this aim, the project will: 1) conduct organizational evaluations to characterize and assess the ability of EHRs-enabled practices to capture data required for exception reporting, and to assess variation in this process; and 2) evaluate the accuracy and validity of automated exception reports and identify key sources of measurement error. **(Ongoing)**
- Analyze and then address stakeholder concerns on exception reporting in physician performance measurement to develop refined principles and methods regarding the use of exception reporting in performance measures. To achieve this aim, the project will convene key stakeholders in physician performance measurement, document stakeholder perspectives, and develop a consensus guideline concerning the use and operationalization of exclusions in national physician performance measures. **(Ongoing)**

**2008 Activities:** To assess the feasibility and accuracy of exception reporting, the IFMC data warehouse team developed electronic data abstraction tools for the CAD and HF measures to be used during their “manual” practice site abstraction visits. The abstractors reviewed samples of warehouse data and reported exceptions and apparent quality failures for the CAD measures from all five sites. IFMC generated preliminary sample CAD analysis tables that included: Reported exceptions, Opportunities for improvement/apparent quality failures, and Validation (agreement) rates.

These findings were reviewed and discussed by the practice sites at an in-person meeting held September 11, 2008. The results were then shared with a broad group of stakeholders at an in-person meeting held the next day to gain their varying perspectives regarding the use of exception reporting. Following the 2-day meeting, the CAD analysis tables were updated and finalized based on input received during these discussions.

To document the prevalence and patterns of exception reporting in the measures, each of the five Cardio-HIT sites continues to submit clinical performance data for both CAD and HF to the data warehouse and to receive de-identified, aggregate performance and exception reports.

**Preliminary Impact and Findings:** Statistical analyses of the CAD data revealed several preliminary key findings and the team continues to conduct further analyses with the data. Preliminary key findings from the warehouse data include: overall performance rates derived from EHRs data across the CAD measures; exception rates across measures and sites; and potential opportunities for improvement. Preliminary abstracted sample findings include: rates of agreement between the reported exception and EHRs documentation; location of exception documentation among the various EHRs products used by the five sites; and actual exception reason documented in the EHRs by measure.

A similar process will be followed to analyze exception reporting for three HF measures. A third abstraction sample will collect numerator information for the measures met for six HF measures to determine the sensitivity and specificity of the measures. A manuscript describing Cardio-HIT, Year One, Phase II is also in development.

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## Selected Outputs

Web-based EHRs data extraction tools were developed for both the CAD and HF measures and CAD data analyses results: these data analyses can be used by physicians to identify potential exception

categories to use and track patient care. Measure developers can also use these tools to aid in the development of patient focused performance measures and provide information for the possible expansion of exception categories, and vendors can use them to provide information as to why physicians may decide to “override” an exception and improve the exception location within an EHRS. EHRS modifications can be implemented to create easier adaptation of performance measure integration and exception reporting.

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**Grantee’s Most Recent Self-Reported Quarterly Status:** The project is mostly on track with its milestones and anticipates full use of the budget by the end of the project.

**Milestones:** Progress is mostly on track.

**Budget:** Somewhat under spent, approximately 5 to 20 percent.