

<b>Project Title:</b>	Can Risk Score Alerts Improve Office Care for Chest Pain?
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<b>Organization:</b>	Brigham and Women's Hospital
<b>Mechanism:</b>	RFA: HS07-006: Ambulatory Safety and Quality Program: Improving Quality through Clinician Use of Health IT (IQHIT)
<b>Grant Number:</b>	R18 HS 017075
<b>Project Period:</b>	09/07 – 08/10
<b>AHRQ Funding Amount:</b>	\$687,539
<b>Summary Status as of:</b>	December 2008

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**Strategic Goal:** Develop and disseminate health IT evidence and evidence-based tools to support patient-centered care, the coordination of care across transitions in care settings, and the use of electronic exchange of health information to improve quality of care.

**Business Goal:** Implementation and Use

**Summary:** This project was initiated in September 2007 and has completed the first third of the grant period. With a randomized, controlled study design, this study implements and evaluates an intervention to improve the treatment of primary care patients with acute chest pain in a large, integrated health care delivery system. This study implements and evaluates electronic risk alerts to risk stratify outpatients with chest pain and present this information to primary care clinicians within the context of an electronic health record (EHR). The intervention takes place within Harvard Vanguard Medical Associates (HVMA), a multispecialty integrated group practice with 140 primary care physicians caring for approximately 300,000 patients at 14 centers in eastern Massachusetts. HVMA has a long history of using advanced EHRs and other forms of health information technology (health IT) to improve ambulatory patient safety and quality. Since 1999, HVMA has integrated the Epic EMR system (Epic Hyperspace Spring 2007 IU3), a Certification Commission for Healthcare Information Technology (CCHIT) certified product, into all aspects of ambulatory care within the organization, including point-of-care services such as electronic order entry and reminders, as well as centralized functions such as patient scheduling.

This study has important implications for determining how the treatment of outpatients with chest pain syndromes can be optimized through the innovative use of electronic decision support, while documenting the cost implications of such a strategy. This work will also provide a model for how ambulatory practices across the country can use EHRs to present real-time patient risk information to clinicians with the goal of improving patient safety and quality, which has important implications for both acute and chronic care.

### Specific Aims

- Identify predictors of risk-appropriate evaluation and treatment of patients presenting to primary care offices with acute chest pain, including race and sex. **(Ongoing)**
- Determine whether rates of appropriate evaluation and treatment of patients with acute chest pain can be improved through the use of point-of-care electronic risk alerts that provide individual patient cardiac risk profiles and tailored evaluation and treatment recommendations to primary care clinicians. **(Ongoing)**
- Perform a cost analysis for the provision of electronic decision support for patients with acute chest pain. **(Upcoming)**

**2008 Activities:** The databases for the primary study endpoints (performance of electrocardiogram (EKG), administration of aspirin, performance of exercise stress tests), as well as all secondary endpoints have all been prepared, and project staff are training research team staff to conduct the necessary chart reviews. More importantly, the project team has created several automated reporting mechanisms that will record vital information for the study, including Framingham Risk Score data at the time of the office visit. These reports were programmed into the EHR to facilitate data collection for the study.

In October 2008, project staff completed randomization of 276 clinicians (102 nurse practitioners, 174 primary care physicians) with blocking according to training background (doctor of medicine (MD) versus nurse practitioner (NP)), clinical site, and volume of patients evaluated with chest pain in the prior 12 months. In addition, the project definition of eligible patients has been updated to exclude any patient visits that represent: 1) follow-up for a recent emergency department visit or hospitalization for evaluation of chest pain within 30 days prior to the office, and 2) routine annual exams. Based on preliminary data collection over the past 6 months, the project team has updated the power calculations and estimate that 15 months (rather than 12 months) will be required to achieve reasonable power, based on the updated data and eligibility requirements. Project staff have updated ClinicalTrials.gov to represent these changes.

The project intervention went live on October 27, 2008, and will run for 15 consecutive months. Project staff will continue to monitor the intervention via regular data extracts to ensure that the alert is firing during appropriate office visits for patients with chest pain. They will be analyzing the association between clinician risk thresholds and treatment/triage strategies for patients with chest pain using the Jackson Personality Index (JPI) and have completed the baseline survey process among all clinicians in the intervention, achieving a high response rate of 85 percent using a three-step process of paper mailing, reminder e-mail, and follow-up paper mailing.

A key component for the successful delivery of the intervention is the training of medical assistants to accurately identify patients presenting to primary care physicians with chest pain, and enter into the electronic record a coded "chief complaint" of chest pain. This code will then be used as the electronic trigger for the delivery of the decision support tool. Training has been completed for over 150 medical assistants across all of the health care centers, focusing on the identification of patients with chest pain and use of the electronic chief complaint codes within the EHR. Project staff plan to conduct regular site visits during the 15-month intervention period to refresh the medical assistant training.

The core of this intervention involves the delivery of electronic decision support to clinicians within the context of evaluating patients presenting to the office with chest pain. The decision support will be provided in the form of an electronic alert ("pop up") within the EMR system. The project has contracted with Epic Systems to build this decision support tool for this project. This involved creation of specifications regarding calculation of cardiac risk scores (Framingham Risk Score), as well as the design of the interface with the electronic record. A prototype of this tool has been completed and tested by study staff in a test environment within Epic. The project has subsequently migrated the electronic tool into the active clinical production environment within Epic and completed testing.

**Preliminary Impact and Findings:** The first project year has been focused entirely on obtaining human subjects approval, engaging the clinical leadership, training medical assistants and physicians, conducting physician surveys, and programming the electronic decision support tool. Key study findings are not yet available.

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## **Selected Outputs**

**Electronic Decision Support Tool:** the tool has completed initial development and was successfully tested by clinicians at the pilot site. The tool uses routinely available data fields within the EHR (patient age, gender, blood pressure, cholesterol, and smoking status) to calculate the Framingham Risk Score.

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**Grantee's Most Recent Self-Reported Quarterly Status:** The project has increased the project management effort to support the ongoing training of medical assistants to identify patients with acute chest pain. These extended efforts are crucial to the success of the overall project. In addition, given the need to extend the length of the randomized trial, the project will also use additional funds to provide increased support for the project team through Project Year 3.

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

**Budget:** Significantly under spent, more than 20 percent.