

## Using Electronic Data to Improve Care of Patients With Known or Suspected Cancer

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<b>Organization:</b>	Baylor College of Medicine
<b>Mechanism:</b>	RFA: HS08-002: Ambulatory Safety and Quality Program: Improving Management of Individuals with Complex Healthcare Needs Through Health Information Technology (MCP)
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**Summary:** Patients with known or suspected cancers transition through several ambulatory care settings to receive timely diagnosis and treatment. The survival benefits conferred by early diagnosis and treatment depend on well-coordinated care. This project tests the use of health information technology (IT) to identify patients for whom the diagnosis of specific cancers (prostate, lung, or colon) has been delayed.

This project is using data from two electronic health record (EHR) systems (the Veterans Administration's [VA's] Computerized Patient Record System and Veterans Health Information Systems and Technology Architecture, and EMRx, the EHR at the Scott and White Health system, a large private integrated health care delivery system in central Texas) to develop, test, and refine queries to mine a clinical data warehouse for triggers that might signal diagnosis delays. Providers in the intervention group of the randomized controlled trial (RCT) receive electronic communication and surveillance if potential delays in their patients' diagnostic work-up are identified by the triggers. Outcome measures, obtained through chart reviews, consist of time intervals between several key steps in the optimal pathway of diagnosis.

### Specific Aims:

- Identify patients with cancer-related diagnostic delays using trigger-based data mining of an EHR repository. **(Ongoing)**
- Determine the effectiveness of a health IT-based intervention to facilitate cancer diagnosis as compared with usual care. **(Ongoing)**

**2011 Activities:** During 2011, Dr. Singh and his team continued to develop cancer triggers based on the colorectal cancer triggers they developed in 2010. By the end of 2011, the colorectal and prostate cancer triggers were developed, and the data collection, validation, and analysis of the triggers for identifying patients with cancer-related diagnostic delays were complete at both the VA and non-VA site. An abstract based on preliminary findings of the colon and prostate cancer triggers at the VA site was presented at the 2011 VA Health Services Research and Development Service Annual Meeting in Washington, D.C. in February 2011, and at the Society of General Internal Medicine 34th Annual Meeting in Phoenix, Arizona in May 2011. The team also completed a manuscript describing the results of both the colorectal and prostate EHR triggers to detect delays in cancer diagnosis. This manuscript is under review for publication.

Each trigger required mining more than 200,000 medical records. A team comprised of clinical providers

and a programmer met weekly to define the appropriate clinical criteria and determine how to implement them, taking into account the limitations of the health information systems at the sites. Each trigger is composed of several clinical rules (e.g. criteria). Each rule required multiple record review sessions, during which providers tested the triggers by identifying the documented clinical evidence that supported or contradicted the triggers' rules. Validation included a medical chart review to determine whether the identified patients were truly at risk for delayed cancer diagnosis.

The RCT is underway to test the intervention of delivering information about trigger-identified potential delays in the care of colorectal or prostate cancer to their respective primary care providers. The intervention consisted of data mining to facilitate cancer diagnosis using triggers developed for the first aim, followed by targeted electronic communication and surveillance, as compared with usual care. Recruitment for the RCT began in March 2011 and has been completed at both the VA and non-VA sites. Sixty-three providers have consented to participate in the study, and demographics have been collected from each provider via an electronic survey. A total of 25 rounds of data have been extracted for 13 months, and intervention group providers are being contacted for positive triggers. A preliminary analysis of the data collected thus far is underway.

As last self-reported in the AHRQ Research Reporting System, project progress and activities are mostly on track and project budget spending is on target. Due to initial project delays in 2009 and the unanticipated amount of time needed to develop the initial triggers, the project team is using a 1-year no-cost extension to ensure adequate time for the RCT and subsequent analysis and manuscript preparation.

**Preliminary Impact and Findings:** A total of 292,587 and 291,773 patient records were evaluated by the triggers for prostate and colorectal cancer, respectively. Overall, the triggers identified 1,564 patients with potential delays in care (426 for prostate and 1,138 for colorectal cancer triggers). Chart reviews performed on all 426 prostate and 258 randomly-selected colorectal cancer trigger-positive records revealed that 299 (70.2 percent) and 166 (64.3 percent) were correctly identified as having delayed care. Additionally, reviews identified that 11.6 percent of patients with delayed care were subsequently diagnosed with cancerous or precancerous lesions.

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**Target Population:** Adults, Cancer: Colon, Lung, and Prostate, Veterans

**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

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