

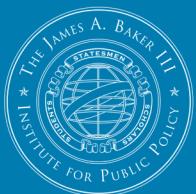
Hardeep Singh, M.D., M.P.H., is chief of the Health Policy and Quality Program at the Houston VA Health Services Research & Development Center of Excellence.

He is the co-author of a number of studies on outpatient safety, including:

Singh, H., E. Thomas, et al. 2010. "Notification of Abnormal Lab Test Results in an Electronic Medical Record: Do Any Safety Concerns Remain?" *American Journal of Medicine* 123: 238-244.

Singh, H., E. Thomas, et al. 2009. "Timely Follow-Up of Abnormal Diagnostic Imaging Test Results in an Outpatient Setting: Are Electronic Medical Records Achieving Their Potential?" *Archives of Internal Medicine* 169: 1578-1586.

Singh, H. and S. Weingart. 2009b. "Diagnostic Errors in Ambulatory Care: Dimensions and Preventative Strategies." *Advances in Health Sciences Education* 14: 57-61.



# HEALTH POLICY research

James A. Baker III Institute for Public Policy-Baylor College of Medicine  
Joint Program in Health Policy Research

## Have We Made Progress in Improving the Safety of Outpatient Care?

Yes, says Hardeep Singh, M.D., M.P.H. However, outpatient safety is an emerging field, and we are still learning how to identify and prevent errors in ambulatory settings.

To date, the majority of patient safety research has focused on inpatient settings (such as hospitals), although experts suggest that errors in outpatient settings (such as physician offices and ambulatory surgery centers) may occur more frequently. Research on outpatient safety is challenging in part because the intermittent, long-term nature of care makes certain types of errors more difficult to discover (e.g., a missed or delayed diagnosis of cancer).

These and other challenges were recently highlighted in the American Medical Association (AMA) report "Research on Ambulatory Patient Safety 2000-2010: A 10-year Review," which heavily cited the research of a team led by Singh at the Michael E. DeBakey Veterans Affairs Medical Center in Houston.

Singh's team has focused on the causes of missed or delayed diagnoses, and ways to reduce their occurrence; in addition, it has examined the repercussions of communication breakdowns in health care systems that rely on electronic health records (EHRs).

The AMA report also assessed the limited outpatient studies that exist on medication safety, risks associated with office-based procedures, patient factors and communication errors. Despite important gains in knowledge, research on ambulatory patient safety has only now started to offer practical insights.

Interventions currently in place include the use of information technology to prevent or alert clinicians to errors. Because of the complexity of outpatient health care, however, the results have been modest, mixed and sometimes unexpected. Singh and his colleagues, for instance, found that

one EHR's "dual notification" feature — designed to ensure patient follow-up by sending abnormal test results to multiple involved providers — actually increased the likelihood of care delays. This likely occurred because each provider thought the other was responsible for taking action. Similarly, EHR reminders and alerts can be helpful at times but unnecessary at others, creating a distraction for clinicians. Singh's research team is presently investigating information overload (e.g., getting more alerts than clinicians can effectively handle) as a possible safety vulnerability in primary care settings that use EHRs.

Although progress has been slow, several promising directions for identifying and targeting major outpatient safety hazards have been developed in the past decade. For instance, medication data — now widely available in electronic form — allows investigators to identify high-risk medications that may be the focus of preventative interventions. Several researchers, including Singh, have developed "trigger" methods in which electronic databases detect unusual patterns of care that may signal adverse events. Similar strategies can be used to identify patients who could be at risk of missed or delayed diagnoses due to irregular surveillance or follow-up.

These methods could help overcome some of the difficulties associated with identifying safety hazards and harmful events. Because previous research has been largely based on highly biased sources (e.g., self-reports of error, malpractice claim databases and single-site samples), methods to detect and measure errors at the system level are a necessary first step toward strengthening the case for safer practices in outpatient care.

Lorincz C.Y., E. Drazen, P.E. Sokol, et al. 2011. "Research in Ambulatory Patient Safety 2000–2010: A 10-year review." *American Medical Association*.

**HEALTH POLICY** research presents a summary of findings on current health policy issues. It is provided by Vivian Ho, Ph.D., James A. Baker III Institute Chair in Health Economics at the James A. Baker III Institute for Public Policy, in collaboration with Laura Petersen, M.D., M.P.H., chief of the Section of Health Services Research in the Department of Medicine at Baylor College of Medicine.

This publication aims to make research results accessible to regional and national health policymakers. The views expressed herein are those of the study authors and do not necessarily represent those of the Baker Institute or of Baylor College of Medicine.

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