

## Cognitive errors in clinical decision-making: A cognitive autopsy



Summary of a presentation by Dr. Pat Croskerry, MD, PhD, Dalhousie University, at the Quality Healthcare Network, Spring Forum, May 24- 26, 2004 Ottawa

The recent Norton Baker study on adverse events (AEs) in Canadian hospitals [[See BOX 1](#)] estimated that more than 70,000 of these were preventable annually at a potential saving to the healthcare system of more than \$300 million. Dr. Pat Croskerry, a clinical consultant in patient safety and professor in the medical faculty at Dalhousie University, focuses on the role of human error in AEs. He suggests that following the 1999 Institute of Medicine report entitled "To Err is Human," "there was a stampede away from the individual towards the system..." until we have almost thrown out any focus on the individual. While Dr. Croskerry acknowledges the systemic factors involved in AEs, including the impact on practitioners of shift work and sleep deprivation, he has nevertheless identified 30 types of human "cognitive errors," or failures of thinking, that contribute directly to adverse events. His premise is that if medical professionals are taught explicit thinking skills as part of their training, they will be able to recognize these patterns of error and reduce their occurrence. He suggests that one way to learn from past mistakes is to conduct what he calls a "cognitive autopsy" on AEs using the 30 categories. Other ways of gaining insight into and learning from mistakes are root cause analysis, clinical incident investigation and analysis, and process mapping. Citing a December 2003 report to the US Senate Committee on Appropriations by the Agency for Healthcare Research and Quality (AHRQ) that identified the most common root causes of medical error, Dr. Croskerry noted that "communication problems" headed the list [[See BOX 2](#)]

While Dr. Croskerry did not explicitly mention health literacy, it is hard to overlook the role played by communication in medical errors and adverse events. If these reports are not making the connection explicit, then researchers inside the health literacy fields have an obligation to connect the dots.

### BOX 1

#### Adverse events in Canadian hospitals – May 2004

**Background:** Research into adverse events (AEs) has highlighted the need to improve patient safety. AEs are unintended injuries or complications resulting in death, disability or prolonged hospital stay that arise from health care management. We estimated the incidence of AEs among patients in Canadian acute care hospitals.

**Methods:** We randomly selected 1 teaching, 1 large community and 2 small community hospitals in each of 5 provinces (British Columbia, Alberta, Ontario, Quebec and Nova Scotia) and reviewed a random sample of charts for nonpsychiatric, non-obstetric adult patients in each hospital for the fiscal year 2000. Trained reviewers screened all eligible charts, and physicians reviewed the positively screened charts to identify AEs and determine their preventability.

**Results:** At least 1 screening criterion was identified in 1527 (40.8%) of 3745 charts. The physician reviewers identified AEs in 255 of the charts. After adjustment for the sampling strategy, the AE rate was 7.5 per 100 hospital admissions (95% confidence interval [CI] 5.7– 9.3). Among the patients with AEs, events judged to be preventable occurred in 36.9% (95% CI 32.0%–41.8%) and death in 20.8% (95% CI 7.8%–33.8%). Physician reviewers estimated that 1521 additional hospital days were associated with AEs. Although men and women experienced equal rates of AEs, patients who had AEs were significantly older than those who did not (mean age [and standard deviation] 64.9 [16.7] v. 62.0 [18.4] years;  $p = 0.016$ ).

**Interpretation:** The overall incidence rate of AEs of 7.5% in our study suggests that, of the almost 2.5 million annual hospital admissions in Canada similar to the type studied, about 185,000 are associated with an AE and close to 70,000 of these are potentially preventable. Patient safety is receiving growing attention in Canada. Numerous legal cases and media stories have highlighted the consequences of unintended adverse events (AEs). In 2002 the Canadian government budgeted \$50 million over 5 years for the creation of the Canadian Patient Safety Institute, and many health care organizations have initiated efforts to improve patient safety.

Abstract from *The Canadian Adverse Events Study* by Ross Baker PhD, Department of Health Policy, Management and Evaluation, University of Toronto, & Peter Norton MD, CCFP, FCFP, Department of Family Medicine, University of Calgary & 15 coauthors, published in May 2004.

Source: <http://www.cmaj.ca/cgi/content/full/170/11/1678>

## BOX 2

### Most common root causes of medical errors

**1. Communication problems** represent the most common cause of medical errors noted by the error reporting evaluation grantees. Communication problems can cause many different types of medical errors and can involve all members of a health care team. Communication failures (verbal or written) can take many forms, including miscommunication within an office practice as well as miscommunication between different components of the health care system or health care providers working different shifts. These problems can occur between health care providers such as primary care physicians and emergency room personnel, attending physicians and ancillary services, and nursing homes and patient services in hospitals. Communication problems can result in poorly documented or lost information on laboratory results, diagnostic testing, or medication information, and can occur at any point along the communication chain. Communication problems can also occur within a health care team in one location, between providers at different locations, between health care teams and other non-clinician providers (such as labs or imaging centers), and between health care providers and patients.

*Patient Safety Initiative*, Agency for Healthcare Research and Quality (AHRQ) Interim Report to the Senate Committee on Appropriations, December 2003. Source: [www.ahrq.gov/qual/pscongrpt/psini2.htm#RootCauses](http://www.ahrq.gov/qual/pscongrpt/psini2.htm#RootCauses)

