Canadian Society of Hospital Pharmacists

Canadian Adverse Events Study Summary

May 25, 2004
CIHI / CIHR Canadian Adverse Events Study

Background
The Canadian Adverse Events Study, funded by the Canadian Institute of Health Information (CIHI) and the Canadian Institutes of Health Research (CIHR), was released in the Canadian Medical Association Journal on May 24, 2004. Dr. Ross Baker and Dr. Peter Norton were the lead investigators, and their media release, their comments and study highlights are available at http://secure.cihi.ca/cihiweb/dispPage.jsp?cw_page=media_24may2004_e. The following is intended only as a briefing summary for CSHIP members. For more complete information, the entire study can be viewed at the Canadian Medical Association Journal website (http://www.cmaj.ca/cgi/content/full/170/11/1678).

Adverse Event Definition
This study measured adverse events and not errors. Not all adverse events are the outcomes of errors; not all errors result in adverse events. The study used a common working definition for adverse events requiring that the following conditions be met:

- Patient experiences an unintended injury or complication
- The injury results either in:
  - death
  - disability at discharge
  - or prolonged length of hospital stay
- The injury is caused by health care management, which includes the individuals providing care as well as the systems and processes of care.

Methods
The study measured 3,745 hospital admissions (patient charts) for the fiscal year 2000 across five provinces, British Columbia, Alberta, Ontario, Quebec and Nova Scotia. The hospitals were randomly selected in each province and included one teaching hospital, one large community hospital, and two small community hospitals. Only adult patients in acute care settings were included, and obstetrical or mental health patients were excluded. The review started with a screening process that identified specific criteria known to be indicators of potential adverse events. A more in-depth review was then conducted on those charts positive for at least one of the screening criteria to determine the occurrence of an adverse event, as defined previously.

Results
Study Highlights
The overall incidence of adverse events in 2000 was 7.5 [95%CI 5.7-9.3] per 100 acute care admissions. Of the total patients who experienced an adverse event, the investigators estimated that the events were preventable in 36.9% [95%CI 32-41.8%] and that death ensued in 20.8% [95%CI 7.8-33.8%]. Patients with adverse events were statistically older than those without one (64.9 vs. 62.0 years of age, p = 0.016). The adverse events were equally distributed between male and female patients. Most adverse events resulted in no physical impairment (35.6%), or minimal impairment or recovery within 1 month (20.1%). However, 5% of adverse events resulted in permanent disability. The top two types of procedures or events deemed responsible for the adverse events were surgical (34.2%) and drug- or fluid-related (23.6%). Patients who experienced an adverse event had a length of hospital stay which was 6 days longer on average than that of those without an adverse event.

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When analyzed by hospital type, the frequency of preventable adverse events was not statistically different between the three groups. The overall incidence of adverse events was higher in the teaching hospital group (10.9% teaching, 6.4% large community, 5.8% small community). The authors offered several potential reasons for this difference, including complexity of care, admission of patients at different points in the care process, and differences in documentation. Since the preventable rate was similar across all groups, it was felt unlikely that the difference was attributable to lower standards of care.

The Canadian Context

The authors extrapolated their results to the total Canadian acute health care system in the fiscal year 2000. Applying these data to the 2.5 million medical and surgical admissions, the authors estimated that 185,000 admissions were associated with an adverse event, and 70,000 of these were preventable. The results also suggest that between 9,250 and 23,750 deaths from adverse events (0.66% of admissions – 95%CI 0.37%–0.95%) could have been prevented. The wide range is due to the small sample size.

Summary

This study is the important public policy benchmark for future study and improvement initiatives. While results mirror those of other industrialized countries, health care providers, patients, and legislators cannot be satisfied with the findings of this study. We can do better. This study measures of metrics different than those currently used by most hospitals, so the information collected at individual hospitals cannot be compared with this study.

This study deals with hospital care only; however, adverse event generation at discharge and in community care are important determinants of quality and hospital utilization. In a recent Canadian study, 61% of adverse events occurred prior to hospitalization (Forster et al, CMAJ 2004;170(3):345-9).

The fact that drug- and fluid-related events constituted 23.6% of the adverse events provides an important opportunity to heighten awareness of the role of the hospital pharmacist in assuring safe patient care. While no direct data was provided linking these drug-related events to more serious outcomes, the fact that these events were the second leading cause of adverse events illustrates the need for improvement in this area of practice. Hospital pharmacists, as proven in multiple studies, can enhance patient safety related to medication use in hospitals.

CSHP, as the voice of hospital pharmacists, is committed to working collaboratively with health care leaders and organizations across Canada to improve patient safety. CSHP has a long-standing reputation for innovative leadership in advancing pharmacy practices and in working to improve medication use and patient outcomes. Consult CSHP’s background paper, Impact of Hospital Pharmacists on Patient Safety, and the press release sent on May 25, 2004 at www.cshp.ca/advocacy/advocacy.html

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