

lished by Hepler and Strand<sup>2</sup> and practised by many clinical pharmacists in the hospital setting, adverse drug reactions represent only 1 of 8 possible drug-related problems that might constitute an AE. Other drug-related problems, such as administering too much or too little of an indicated drug, administering the wrong drug and drug interactions, would not have been captured by the initial screening in the study by Baker and associates. As a result, the records of patients who experienced AEs secondary to medications but for reasons other than an adverse drug reaction would not have been reviewed in stage 2, and these data would not have been captured in the final analysis.

Second, AEs occurring in the emergency department were not evaluated in this study, despite the substantial impact of drug-related emergency visits.<sup>3</sup> In a well-designed prospective trial, Tafreshi and colleagues<sup>4</sup> estimated that 28% of all visits to the emergency department were drug-related, of which 70% were preventable. Omission from the Canadian Adverse Events Study of emergency patients — a heterogeneous patient population with acute medical problems — would also contribute to an underestimation of AEs. Given the issues of emergency department overcrowding and longer wait times in our country, AEs in this setting need further evaluation.<sup>5</sup>

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#### References

1. Baker GR, Norton PG, Flintoft V, Blais R, Brown A, Cox J, et al. The Canadian Adverse Events Study: the incidence of adverse events among hospital patients in Canada. *CMAJ* 2004;170(11):1678-86.
2. Hepler CD, Strand LM. Opportunities and responsibilities in pharmaceutical care. *Am J Hosp Pharm* 1990;47:533-43.
3. Patel P, Zed PJ. Drug-related visits to the emergency department: How big is the problem? *Pharmacotherapy* 2002;22:915-23.
4. Tafreshi MJ, Melby MJ, Kaback KR, Nord TC. Medication-related visits to the emergency department: a prospective study. *Ann Pharmacother* 1999;33:1252-7.
5. Canadian Association of Emergency Physicians,

National Emergency Nurses Affiliation. Joint position statement on emergency department overcrowding. *Can J Emerg Med* 2001;3:82-4.

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To limit unnecessary anxiety among patients, careful attention should be given to certain details of the Canadian Adverse Events Study<sup>1</sup> that might be missed by someone reading the article quickly.

For example, AEs were reported for 7.5% of admissions, but nearly one-third of these occurred in the 12 months preceding the index admission. If these AEs are excluded, the risk of experiencing an AE in association with the hospital stay is closer to 5.2%.

For each identified AE, a single chart reviewer was asked to judge, on a 6-point scale, the likelihood that the event had been caused by health care management. The number of AEs reported was based not on the events for which management causation was considered “virtually certain” or even on those for which evidence of causation was “moderate to strong,” but rather on all events for which causation by management was judged more than 50% probable. This number must have included events about which the chart reviewer had considerable doubts.

Death, disability (temporary and permanent) and prolongation of hospital stay were pooled as a single outcome, which prevents readers from distinguishing between serious and more trivial events. For “most of the patients” who experienced an AE “their AEs contributed to longer stays in hospital or temporary disability,” but we are not told whether the extensions of hospital stay were a matter of hours, days or months.

For most health care professionals, who are already well aware that all procedures are associated with some risk, the outcome of greatest interest in this study is the rate of preventable AEs, estimated at 2.8% (or about 1.9% if the one-third of events that took place before the hospital stay are excluded). Using a chart review to determine which events were attributable to management and then

which of these were preventable must have been difficult in many cases. It is not surprising that for the 10% of charts that were reviewed by 2 physicians, there was “only moderate agreement . . . in assessing injury, preventability and the contribution of health care management to AEs” (kappa scores of 0.47, 0.69 and 0.45, respectively).

To help readers make up their own minds a brief description of the clinical details of each AE is available as an online appendix to the article.<sup>2</sup> However, perusal of this information raises more doubts. Thirty-nine events were judged to be “highly preventable” (meaning not that they were easy to prevent but that the evidence of preventability was considered “virtually certain”). However, in 11 cases, only the mismanagement is recorded, without mention of any resulting event. In 9 others the evidence of preventability is at least arguable, for example, in case 32, “hepatitis caused by lipid-lowering drugs in patient with chronic pancreatitis and familial hypercholesterolemia.” Even if this were an example of a lipid-lowering drug causing hepatitis, how else should a patient with familial hypercholesterolemia be treated? An AE following appropriate use of a necessary drug is surely not “preventable.”

This study should stimulate further efforts to diminish the frequency of preventable AEs associated with hospital stays, but careful reading of the methods and results is necessary to avoid overestimating the risk.

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#### References

1. Baker GR, Norton PG, Flintoft V, Blais R, Brown A, Cox J, et al. The Canadian Adverse Events Study: the incidence of adverse events among hospital patients in Canada. *CMAJ* 2004;170(11):1678-88.
2. Baker GR, Norton PG, Flintoft V, Blais R, Brown A, Cox J, et al. e-Appendix 3: Brief description of clinical details of adverse events occurring in 255 patients, by corresponding maximum degree of preventability. *CMAJ* 2004;170(11). Available: [www.cmaj.ca/cgi/data/170/11/1678/DC3/1](http://www.cmaj.ca/cgi/data/170/11/1678/DC3/1) (accessed 2004 Jul 5).

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