The Institute for Safe Medication Practices Canada (ISMP Canada) is an independent national nonprofit agency established for the collection and analysis of medication error reports and the development of recommendations for the enhancement of patient safety.

The Healthcare Insurance Reciprocal of Canada (HIROC) is a member-owned expert provider of professional and general liability coverage and risk management support.

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Top 10 Drugs Reported as Causing Harm through Medication Error

ISMP Canada is collaborating with the Canadian Institute for Health Information (CIHI) and Health Canada to establish and implement the Canadian Medication Incident Reporting and Prevention System (CMIRPS). Strategies to prevent harm from medication incidents are based on systems analysis and rely on the collection and sharing of information about medication incidents. The term "medication incident" is widely used to represent the preventable subset of potential and actual adverse drug events. It is also recognized as an alternative term for "medication error". [i] When implemented, CMIRPS will accept incident reports from both individual practitioners (ISMP Canada's lead role) and health service organizations (CIHI's lead role). Of interest are reports of potential and actual incidents, both critical and noncritical, related to any medication, and occurring at any stage of the medication use system.

Although CMIRPS is still in the development stage, individual practitioners are already submitting incident reports through the ISMP Canada voluntary practitioner reporting program component. This service offers confidential (or anonymous, if preferred) reporting of incidents and does not collect identifying information about individual patients. Reports are accepted from anyone working within the health care system, including health care professionals, such as physicians, nurses, pharmacists, technicians, and paramedics, as well as risk managers and staff of regulatory colleges, coroners' offices, and insurance providers. A variety of reporting channels is available, including telephone, electronic submission through a web portal, and mail.

ISMP Canada's reporting program has been in place since 2001. A total of 10,791 incident reports (including reports of near misses[i]) have been collected since the program's inception. Of these, 465 were reported to have resulted in harm to patients, and 10 drugs accounted for 199 or 43% of these harmful incidents (Table 1).

It is impossible to infer or project the probability of specific incidents on the basis of the voluntary reports received by ISMP Canada, but the association between such a large percentage of harmful errors and such a small number of drugs clearly warrants additional investigation and discussion. Further analysis and comparison with data from other countries will be conducted, and the findings of these investigations will be presented in future ISMP Canada bulletins.

ISMP Canada's mandate includes analysis of medication incident reports and identification and promotion of strategies to prevent patient injuries induced by medication errors. ISMP Canada performs these functions both through analysis of aggregate reports (as in the "top 10" drug list below) and through in-depth investigation of individual incidents. As noted in recent draft guidelines published by the World Health Organization: "Narrative reports provide the opportunity to capture the rich context and storyline that allow the conditions that contributed to the error to be explored and understood. Indeed, some believe that only narrative reports are capable of providing information that provides meaningful insight into the nature of the underlying systems defects that caused the incident."[ii]

Table 1. Top 10 drugs most frequently reported as causing harm as a consequence of medication error†

Generic Drug Name	Number of Reports
Insulin	54
Morphine	43
Hydromorphone	32
Heparin (unfractionated)	19
Fentanyl	11
Warfarin	10
Furosemide	9
Dalteparin‡	7
Metoprolol‡	7
Ramipril‡	7

† These 10 drugs accounted for 199 of 465 harmful medication incidents that were voluntarily reported to ISMP Canada over a 5-year period (2001 to 2005). A total of 10,791 incidents, including near misses, were reported, but most did not cause harm to patients.

‡ Similar drugs in these classes (low-molecular-weight heparins, beta-blockers, and angiotensin-converting enzyme inhibitors) were also associated with harmful incidents.

A medication incident involving morphine, described briefly here, illustrates the profound insight that can be gained from a single incident.

An elderly resident living in a nursing home was receiving palliative care, which included morphine 1 to 2 mg subcutaneously q3-4h prn for analgesia. According to provincial reimbursement schedules, the only injectable morphine product available to the nursing home was 15 mg/mL ampoules. The patient received correct volumes of 0.07 mL (1 mg) or 0.13 mL (2 mg) subcutaneously for 2 days. On the third day, however, a 0.7 mL volume (10 mg) was administered in error by a registered practical nurse who was working as a temporary staff member at the nursing home. The attending physician and the patient's family were notified of the incident. The patient subsequently died. The cause of death was determined to be congestive heart failure.

A number of factors contributing to this medication incident were identified:

- The lowest concentration of morphine approved for reimbursement to nursing homes through the provincial drug plan is 15 mg/mL.
- The need to use a high-concentration morphine product, 15 mg/mL, for administration of a low dose (1 to 2 mg) increased the likelihood of a calculation error.
- The use of a 1 mL syringe to withdraw a volume of less than 0.1 mL increased the likelihood of error.
- Lack of an independent double check when administering selected high-alert medications increased the likelihood of the error reaching the patient. (Independent double checks have the potential to increase visibility of errors.)

Recommendations:

1. Undertake risk assessments of narcotic supplies in patient care areas, with a view to eliminating high-dose or high-concentration items. (Ideally the staff conducting such a review would include a nurse, a pharmacist, and a physician.)
2. Include consideration of patient safety issues when formulary decisions for provincial drug plans are made. (ISMP Canada has begun discussions with the provincial ministry of health, as well as with manufacturers of morphine, recommending that the provincial drug plans list and provide reimbursement for lower-concentration products of injectable morphine in the formularies.)
3. Establish independent double checks as part of the procedures for administration of selected high-alert drugs in nursing homes.

ISMP Canada has recently undertaken collaborative projects dealing with narcotic (opioid) safety in two Canadian provinces (Ontario and Alberta). Safety strategies developed in these projects were helpful in formulating recommendations to address the system weaknesses identified in the case reported above.

We encourage those working in the health care system to continue submitting reports to ISMP Canada, in confidence, for shared learning. ISMP Canada is in turn committed to working with practitioners and organizations to help identify factors that have contributed to incidents and to facilitate the sharing of this important information through safety bulletins.

Report a medication incident through the ISMP Canada website at www.ismp-canada.org, or by telephoning 1-866-54-ISMPC. Additional information about the CMIRPS individual practitioner reporting component is available at http://www.ismp-canada.org/cmirps.htm; e-mail: cmirps@ismp-canada.org.

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i. Definitions of terms are available at http://www.ismp-canada.org/definitions.htm.

ii. World Alliance for Patient Safety. WHO draft guidelines for adverse event reporting and learning systems. Geneva (Switzerland): World Health Organization; 2005. Available at: www.who.int/patientsafety/events/05/Reporting_Guidelines.pdf; accessed 2006 February 22.

Manufacturer Recall of Octreotide Acetate Omega 500 µg/mL — Labelling Error

Health Canada recently issued a warning relating to the recall of Octreotide Acetate Omega 500 µg/mL from lot #5J970. Some vials from this lot may mistakenly contain fluphenazine, an antipsychotic drug. For more information, visit http://www.hc-sc.gc.ca/ahc-asc/media/advisories-avis/2006/2006_03_e.html.