MOHLTC – ISMP Canada's Medication Safety Support Service (MSSS) Initiatives for 2007/2008

Medication Safety Support Service Projects

Funded by the Ontario Ministry of Health and Long-Term Care

Outline

- MOHLTC Deliverables
- National projects
- International projects

MOHLTC Deliverables

- Ontario Medication Incident Database
- Anticoagulants
- Operating Room Safety
- MSSA for Hospitals
- MSSA for LTC
- Medication Reconciliation in Community Pharmacy
- Medication Safety Learning Forums

MOHLTC Deliverables

- ISMP Newsletters and Safety Bulletins
- ISMP Canada Fellowship
- LHIN's
- Safe Use of Insulin
- Collaborate with Ontario Poison Information Centre

Ontario Medication Incident Database

- Goal – to facilitate provincial surveillance of medication incidents and further develop the Ontario reporting and learning system
  - Increase reporting incidents and institutions
  - Compare to previous year
  - Comprehensive data analysis

Why Report?

"External reporting allows lessons to be shared so others can avoid the same mishaps".

- "First, alerts about new hazards can be generated from even a few reports"
- "Second, information about the experience of individual hospitals in using new methods to prevent errors can be disseminated".

Lucien Leape; Reporting of Adverse Events: NEJM 2002;347:1633-1638

& WHO Draft Guidelines for Adverse Event Reporting and Learning Systems

Analysis of Reports by ISMP Canada

- Individual Report Analysis (High Priority Reports)

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.

Volume 7, Issue 2 **ISMP Canada Safety Bulletin** May 18, 2007

Risk of Mix-ups between Ephedrine and Epinephrine

As a vasoconstrictor, epinephrine is 100 to 1,000 times more potent than ephedrine.[1] Mix-ups between these two drugs have resulted in serious patient harm. The Closed Claims Project of the American Society of Anesthesiologists found that errors involving epinephrine are particularly dangerous.[2] Among the 205 medication incidents in this review, epinephrine was identified as a drug of top concern: 11 of the 17 incidents with epinephrine resulted in death or major morbidity.[2] Six of these 17 cases involved mix-ups between epinephrine and the intended drug, and two of these involved ephedrine (the other mix-ups involved oxytocin or hydralazine). This bulletin highlights a report received by ISMP Canada involving a critical incident with a mix-up between ephedrine and epinephrine.

The drug names "ephedrine" and "epinephrine" look-alike. The problem of look-alike names is compounded by the fact that both names start with the letter "e" and the drugs are therefore likely to be stored in close proximity in medication storage areas that are arranged in alphabetical order by generic name. Even in storage areas where drugs are organized by pharmacological class or action, these two drugs may be stored near one another because both are vasopressors (i.e., vasoconstricting agents). The products may also be similarly packaged (in 1 mL ampoules) (Figure 1).

Figure 1. Examples of ephedrine and epinephrine packaging (all are 1 mL ampoules). From left to right: ephedrine 50 mg/mL, epinephrine 1 mg/mL, (one manufacturer) and epinephrine 1 mg/mL (another manufacturer).

A Canadian hospital reported the following incident to ISMP Canada, along with lessons learned, in an effort to help other facilities to prevent similar events:

> A patient in labour (full-term pregnancy) was admitted to a labour and delivery unit. Epidural anesthesia with fentanyl and bupivacaine was initiated. The patient experienced a feeling of weakness and became hypotensive shortly after the epidural infusion was started. Oxygen and a plain intravenous fluid bolus were ordered by the anesthesiologist. The patient's blood pressure remained low, and the anesthesiologist was called. The anesthesiologist provided a telephone order to stop the epidural infusion and administer one dose of ephedrine 5 mg IV. The nurse drew up 5 mL of epinephrine 1 mg/mL (a total of 5 mg) instead of ephedrine. As the nurse began to administer what she thought was ephedrine by direct IV injection, the patient experienced severe hypertension (blood pressure approximately 190/130 mm Hg), tachycardia (heart rate approximately 135 beats per minute), and nausea. The nurse stopped administration of the drug, and the anesthesiologist and obstetrician were called stat. When the anesthesiologist arrived a few minutes later, the patient was vomiting and was experiencing blurred vision. It was discovered that a total of 1.3 mg of epinephrine had been administered instead of ephedrine.
>
> After delivery, the infant was examined by the pediatrician, who determined that the newborn was healthy. The mother was transferred to the intensive care unit for continued close monitoring and observation. Approximately one day later, she was transferred to the postpartum unit. Both the mother and the infant were discharged home several days later. A cardiology follow-up indicated that the mother had probably experienced a subendocardial myocardial infarction.

The hospital identified a number of factors contributing to this incident, including the following:

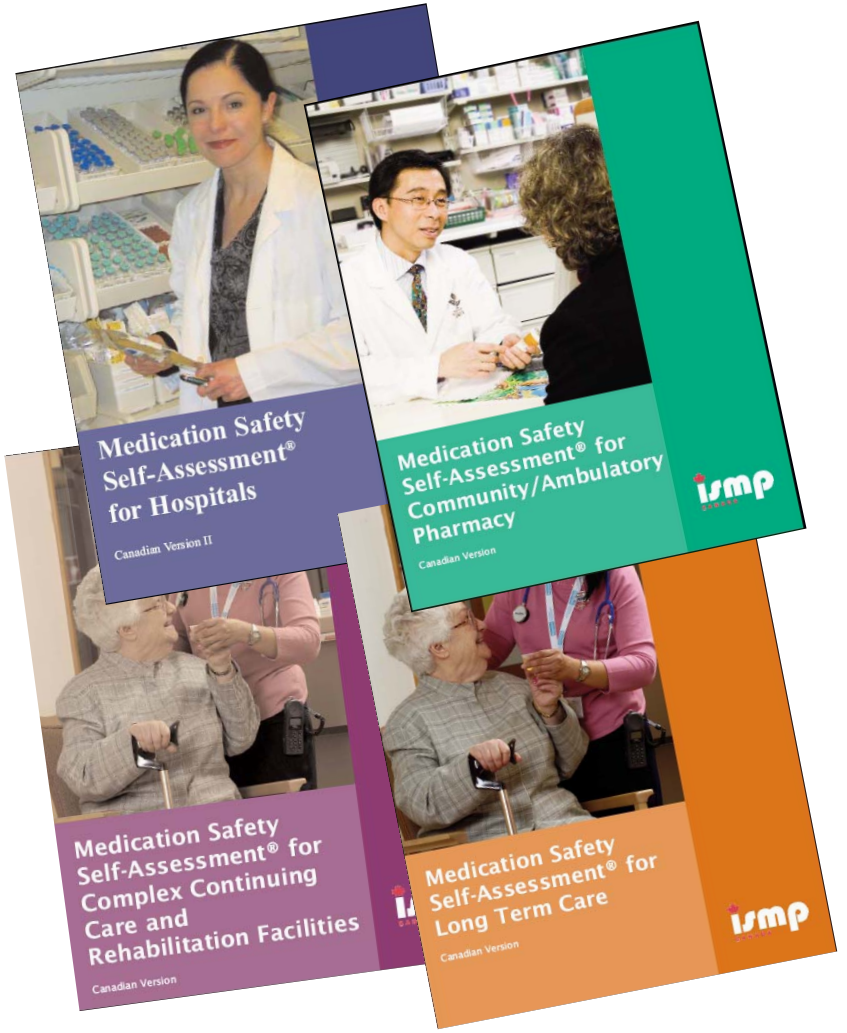
- The nurse believed that epinephrine was another name for ephedrine.
- Ephedrine 50 mg/mL and epinephrine 1 mg/mL ampoules were stored side by side on the epidural cart.
- Because of the perceived urgency of the situation, drug information was not checked before administration.

A number of recommendations and actions were taken by the hospital to reduce the likelihood of a similar event, including the following:

- Re-evaluate the need to have both products stocked in patient care areas (i.e., ensure that each item is available only where needed).
- Physically separate ephedrine and epinephrine.
- Implement TALLman lettering on labels used in the drug storage area.

Analysis of Reports by ISMP Canada

- Aggregate Report Analysis (Intermediate Priority Reports)



Highest Number of Incident Reports and Highest Association with Harm

Four drug classes account for 55% of all incidents associated with harm and death:

- **Opiate Agonists**
- **Anticoagulants**
- **Insulin**
- **Chemotherapy**

Incident Reporting

- Close to 20,000 incidents reported to Ontario database
- 94 healthcare facilities have used / currently using Analyze-ERR®

To Enhance the Incident Reporting Process…

- Incident submission process not as straightforward for you as we would like to be, therefore:
  - ISMP Canada support staff readily accessible for questions or concerns
  - Support for exporting medication incident data from other incident reporting systems

Support from ISMP Canada

- ISMP Canada staff members will be happy to contact you to further discuss how to facilitate the data submission process.
- For further questions:
  - Lina Furgiuele:
    - Tel: (416) 480-4099
    - e-mail: lfurgiuele@ismp-canada.org
  - Roger Cheng:
    - Tel: (416) 733-3131 ext: 229
    - e-mail: rcheng@ismp-canada.org

Anticoagulation Strategies

Enhance VTE prophylaxis

- "Errors of omission"

Enhance Heparin storage and administration

- "Errors of commission"

MOHLTC 2007/8 Deliverables

Anticoagulant Drug Safety – Stream 1

- To increase compliance with clinical practice guidelines for thromboprophylaxis for inpatients
  - Implement a knowledge translation toolkit in 8 regional hospitals

Anticoagulant Drug Safety – Stream 2

- Collaborate with Ontario hospitals to remove highly concentrated anticoagulant products from patient care areas

Why Anticoagulant Safety?

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

Volume 6, Issue 1 **ISMP Canada Safety Bulletin** February 24, 2006

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

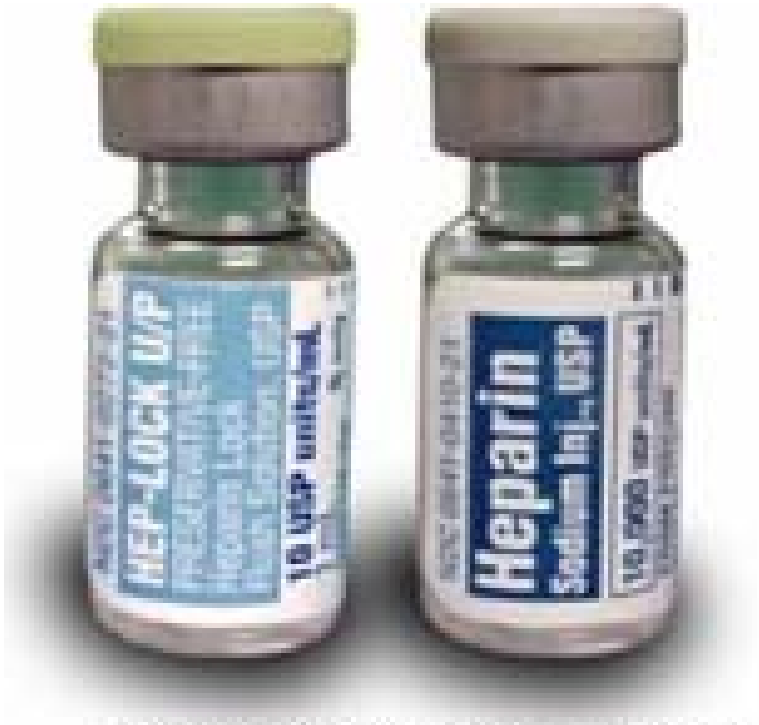
Table 1. Top 10 drugs most frequently reported as causing harm as a consequence of medication error†

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.

Heparin Storage – A Patient Safety Priority



Vials similar to those confused.

Heparin Storage – A Patient Safety Priority

ISMP Canada Safety Bulletin, Vol 4, Issue 10, October, 2004

A Need to "Flush" Out High Concentration Heparin Products

Figure 1: From left to right: Heparin Lock Flush 100 units/mL (green); Hepalean-Lok® 10 units/mL (pink); Heparin injection 1,000 units/mL - 10mL and 1mL (black); and Heparin 10,000 units/mL - 5mL and 1mL (red).

Addressing Anticoagulant Safety

Enhance storage and administration of heparin.

ANTICOAGULANT SAFETY INITIATIVE 2007-2008

SUMMARY OF RECOMMENDATIONS TO MINIMIZE RISK OF HARM WITH UNFRACTIONATED HEPARIN

1. *Complete an audit of heparin storage areas throughout the hospital (including the pharmacy department) to identify high-risk situations*:*
   - Review products and quantities stored;
   - Assess intended use for each heparin product stored;
   - Identify unnecessary products to be removed; and
   - Identify appropriate quantities to be stored.

2. *Assess current utilization of heparin and compare with best practices:*
   - Review use of unfractionated heparin to ensure alignment with the evidence-based guidelines, e.g. The Seventh ACCP Conference on Antithrombotic and Thrombolytic Therapy: Evidence-Based Guidelines;
   - Where possible, use alternative products/procedures for flushing/locking of access lines to limit exposure to heparin; and
   - Consider the use of low molecular weight heparins as an alternative to unfractionated heparin where indicated.

3. *Reduce the number of potential high-risk situations associated with heparin storage:*

   A) In patient care areas
   - Remove formats of high dose heparin products from stock in patient care areas:
     i. 50,000 units/5 mL
     ii. 50,000 units/2 mL
   - Review and reduce, where possible, availability of the following products in patient care areas:
     iii. 10,000 units/1 mL
     iv. 10,000 units/10 mL
   - Simplify and standardize product selection according to use:
     i. Define protocols and standardize products for heparin flush, subcutaneous and intravenous use to minimize the number of concentrations in a patient care area.
     ii. Select optimal product format appropriate for use. Examples include:
       - Use premixed solutions of heparin for continuous IV infusions. Select one standardized concentration for hospital-wide use;
       - Utilize single use dose formats such as 5,000 unit pre-filled syringes or ampoules for subcutaneous administration.
       - If using heparin to flush a central venous access device, use appropriate concentrations (e.g., 10 units/mL, 100 units/mL).

     iii. When heparin flushes, subcutaneous and intravenous doses must be stocked in the same patient care area, maximize differentiation using geographic separation, labelling, product format and other techniques.

   B) In pharmacy
   - Review storage areas to ensure adequate safeguards to prevent selection errors.

* Presence of Heparin 50,000 unit products (total drug quantity); or heparin 10,000 unit products (total drug quantity); combination of any flush product with either IV Bolus or SC doses of heparin on any one patient care area.

Anticoagulant Therapy - Stream 3

- Complete an environmental scan to identify best practices to reduce harm with warfarin use in the community

Operating Room Checklist

- Baseline assessment of strengths and vulnerabilities in Ontario operating rooms based on 20 hospitals participating in the pilot project
- Development of an operational version of the OR checklist

Medication Safety Self Assessment®

(MSSA) Acute Care, Community/Ambulatory Pharmacy, Complex Continuing Care and Long Term Care

Goals

- to enhance risk assessment of the medication use system by Ontario hospitals
- > 50 hospitals to complete MSSA in 2007/8
- Analysis to develop strategies
- Encourage all healthcare facilities to complete a MSSA

Medication Reconciliation

Goal

- Complete a pilot project for medication reconciliation in the community to reduce medication discrepancies at transitions of care between hospitals and community pharmacies

Medication Safety Learning Programs

- Deliver 2 Medication Safety Learning Forums to inform healthcare providers
  - May 8, 2007 – Long Term Care and Community Pharmacy
  - June 3 or 9, 2007 – Acute Care
- Survey participants through evaluation forms to assess planned actions and further needs

ISMP Newsletters and Bulletins

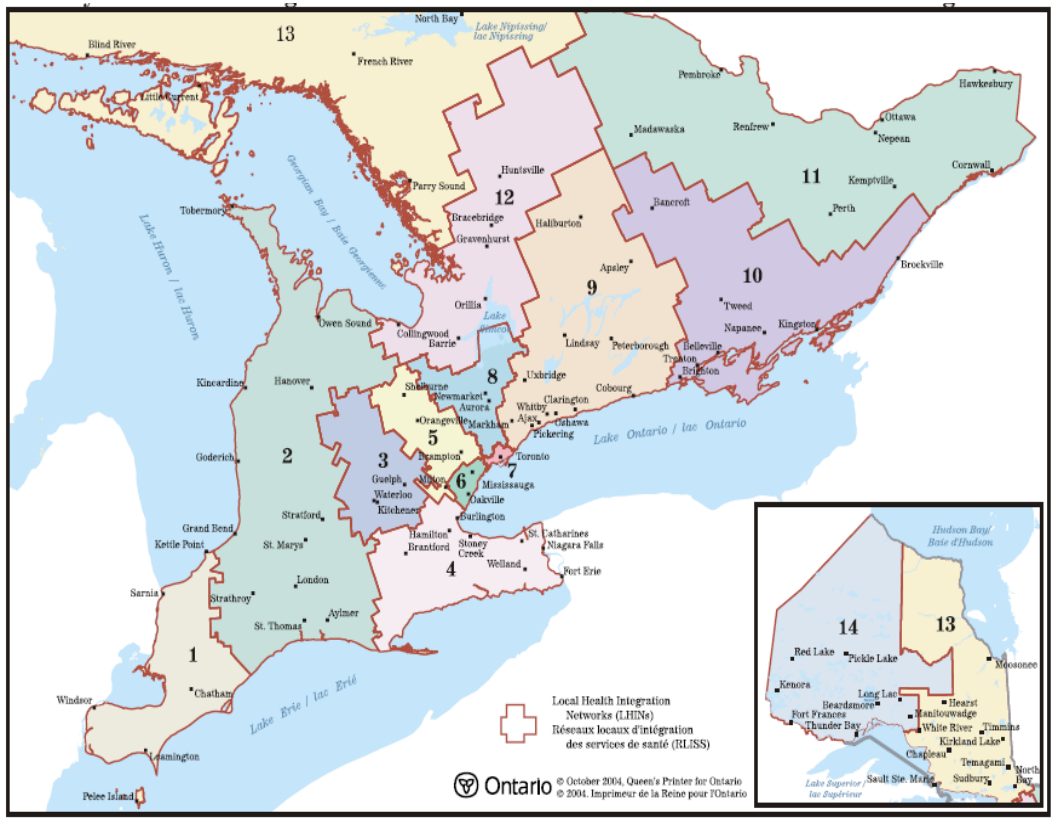
- Increase number of facilities receiving safety alerts
- Assessment of reach
- Assessment of perceived value

ISMP Canada Fellowship

- Goal – to provide Ontario with future patient safety leaders
  - Training and development over 12 months for one individual

LHIN's

- Goal – Engage with LHIN leadership to increase awareness of safety initiatives affecting healthcare in their region
  - Target 10/14 LHIN's



Safe Use of Insulin

- Environmental scan:
  - Literature search
  - Key informant interviews
- Recommend next steps to develop strategies for Ontario to address identified issues with insulin

Collaborate with Ontario Poison Info Centre

- **Goal**:
  - Collaborate with the Ontario Poison Information Centre to analyze data associated with medication errors

- Identify priority areas for intervention

National Projects

safer healthcare now!

Safer Healthcare Now!

- **Adverse drug events in long-term care** – implement medication reconciliation to prevent adverse drug events (ADEs) in long-term care settings.

  Lead: ISMP Canada.

- **Venous thromboembolism (VTE)** – implement a series of protocols to ensure that general surgery and hip fracture surgery patients receive the appropriate thromboprophylaxis to prevent complications such as deep vein thrombosis (DVT) and pulmonary embolus.

  Lead: Dr. William Geerts, Sunnybrook Health Sciences Centre

International Projects

International medication safety group

- Conference in Ireland November 4-9, 2007
  - Labelling and packaging – supported by WHO
  - Top ten drugs in different countries

High Fives

Six countries meet on WHO's "High 5s" Project to improve patient safety in hospitals

In a unique display of international patient safety collaboration, **the top health leaders from Canada**, Germany, the Netherlands, New Zealand, the United Kingdom and the United States met on November 1 in Washington, D.C. to sign a letter of intent to support efforts to advance the global patient safety agenda through engagement in a special World Health Organization (WHO) Action on Patient Safety Initiative. The collaborative initiative, known familiarly as the High 5s Project, seeks to improve the safety of patients around the world. The Project is being coordinated by the WHO Collaborating Centre, which is led by The Joint Commission and Joint Commission International, in partnership with the WHO World Alliance for Patient Safety and the Commonwealth Fund. The centerpiece of the High 5s Project involves the development and implementation of standardized operating protocols (SOPs) to address five widespread patient safety problems in the participating countries and elsewhere. The SOPs will seek to:

- Promote effective management of concentrated injectable medicines.
- Assure medication accuracy at transitions in care.
- Improve communications during patient care handovers.
- Assure performance of the correct procedure at the correct body site.
- Promote improved hand hygiene to prevent healthcare-associated infections.

Four of the five SOPs have been finalized and approved by the participating countries. The fifth will be finalized within the next month. Once in place, the SOPs are expected to have broad impacts in preventing avoidable deaths and serious injuries in hospitals. The Project also involves the elaboration of a sophisticated impact evaluation strategy that will assess not only the degree to which patient safety vulnerabilities have been eliminated but also the economic and cultural impacts of the SOPs at the hospital level. Project implementation is targeted for late summer of 2008, with the expectation that its impacts will be assessed over a five-year period. Volunteer hospitals will be invited to share their experiences and lessons learned with each other over time through an electronic learning community. It is anticipated that the learning experience will lead to continuing refinements to the SOPs over the project period. More information about the High 5s project is at http://www.jcipatientsafety.org/. See the complete news release.

ISMP Contact Information

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- Medication Reconciliation – medrec@ismp-canada.org
- RCA workshops – rca@ismp-canada.org
- FMEA workshops – fmea@ismp-canada.org
- Incident reporting – analyze-err@ismp-canada.org
- Questions – info@ismp-canada.org

We appreciate your support!!!