High-Alert Medications and System Safety

Portuguese Society of Hospital Pharmacists

Cascais, Portugal

October 28, 2018

Sylvia Hyland

Institute for Safe Medication Practices Canada

Objectives

1. Define High-Alert Medications
2. Describe the rank order of medication error reduction strategies
3. Provide examples of incidents and initiatives in Canada
4. Highlight the importance of sharing, and sustaining learning through collaboration

Medication Incident Reporting Programs

Practitioners

Healthcare Professional - (e.g., nurse, pharmacist, physician)

General Public

Preventing harm from medication incidents is a responsibility of health professionals. **Consumers like you** can also play a vital role.

CPhIR - Community Pharmacy Incident Reporting Program

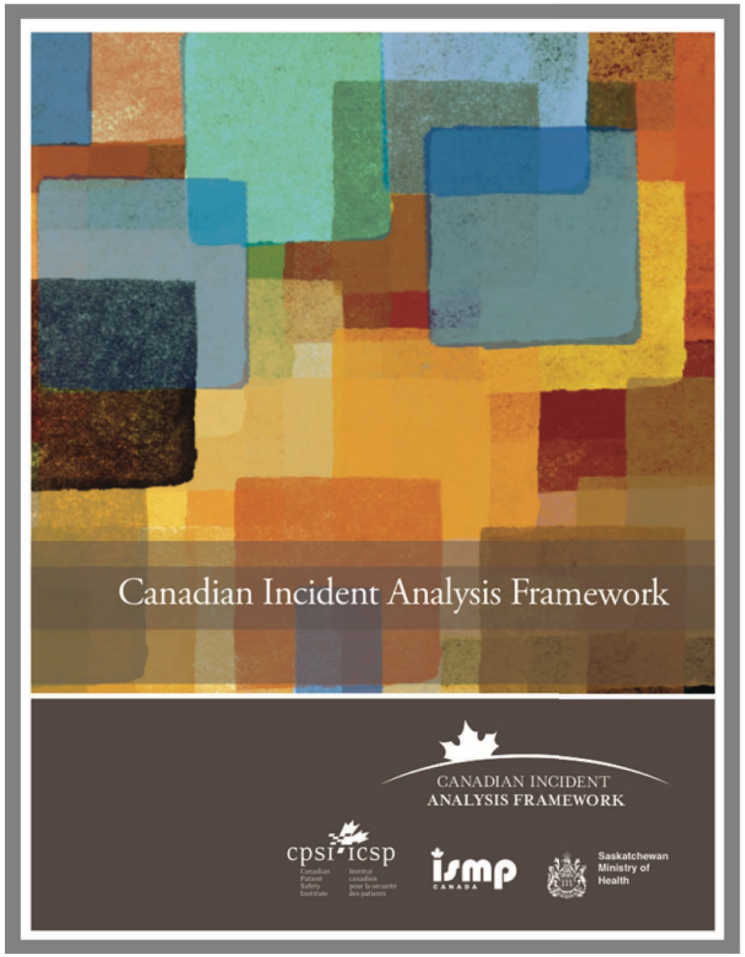
For participating community pharmacies.

http://www.ismp-canada.org/err_index.htm

Reporting Systems Important Functions

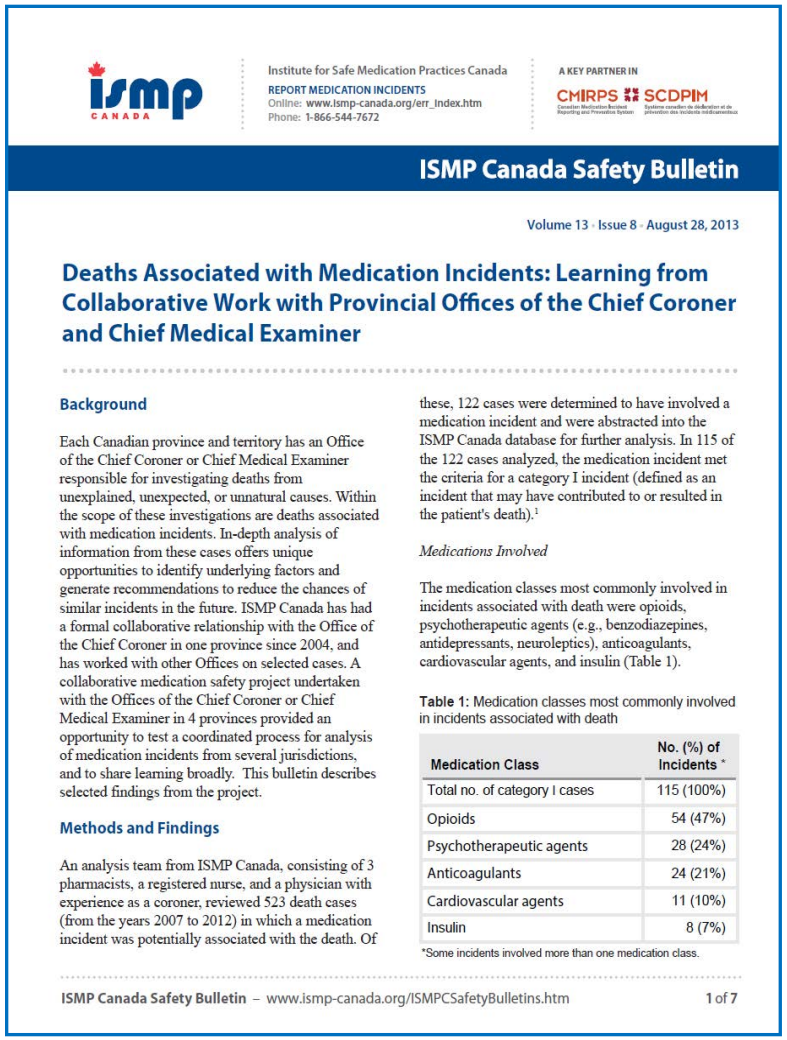
- Use the results of analysis to develop and disseminate recommendations for system improvements.
- Produce a visible, useful response to stimulate improvement and continued reporting.

Incident Analysis Techniques



www.patientsafetyinstitute.ca/en/toolsResources/IncidentAnalysis/Documents

Analysis Outputs: Safety Bulletins



Institute for Safe Medication Practices Canada
REPORT MEDICATION INCIDENTS
Online: www.ismp-canada.org/err_Index.htm
Phone: 1-866-544-7672

A KEY PARTNER IN CMIRPS SCDPIM

ISMP Canada Safety Bulletin

Volume 13 · Issue 8 · August 28, 2013

Deaths Associated with Medication Incidents: Learning from Collaborative Work with Provincial Offices of the Chief Coroner and Chief Medical Examiner

Background

Each Canadian province and territory has an Office of the Chief Coroner or Chief Medical Examiner responsible for investigating deaths from unexplained, unexpected, or unnatural causes. Within the scope of these investigations are deaths associated with medication incidents. In-depth analysis of information from these cases offers unique opportunities to identify underlying factors and generate recommendations to reduce the chances of similar incidents in the future. ISMP Canada has had a formal collaborative relationship with the Office of the Chief Coroner in one province since 2004, and has worked with other Offices on selected cases. A collaborative medication safety project undertaken with the Offices of the Chief Coroner or Chief Medical Examiner in 4 provinces provided an opportunity to test a coordinated process for analysis of medication incidents from several jurisdictions, and to share learning broadly. This bulletin describes selected findings from the project.

Methods and Findings

An analysis team from ISMP Canada, consisting of 3 pharmacists, a registered nurse, and a physician with experience as a coroner, reviewed 523 death cases (from the years 2007 to 2012) in which a medication incident was potentially associated with the death. Of these, 122 cases were determined to have involved a medication incident and were abstracted into the ISMP Canada database for further analysis. In 115 of the 122 cases analyzed, the medication incident met the criteria for a category I incident (defined as an incident that may have contributed to or resulted in the patient's death).[1]

Medications Involved

The medication classes most commonly involved in incidents associated with death were opioids, psychotherapeutic agents (e.g., benzodiazepines, antidepressants, neuroleptics), anticoagulants, cardiovascular agents, and insulin (Table 1).

Table 1: Medication classes most commonly involved in incidents associated with death

Medication Class	No. (%) of Incidents *
Total no. of category I cases	115 (100%)
Opioids	54 (47%)
Psychotherapeutic agents	28 (24%)
Anticoagulants	24 (21%)
Cardiovascular agents	11 (10%)
Insulin	8 (7%)

*Some incidents involved more than one medication class.

ISMP Canada Safety Bulletin – www.ismp-canada.org/ISMPCSafetyBulletins.htm 1 of 7

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Consumers Can Help Prevent Harmful Medication Incidents

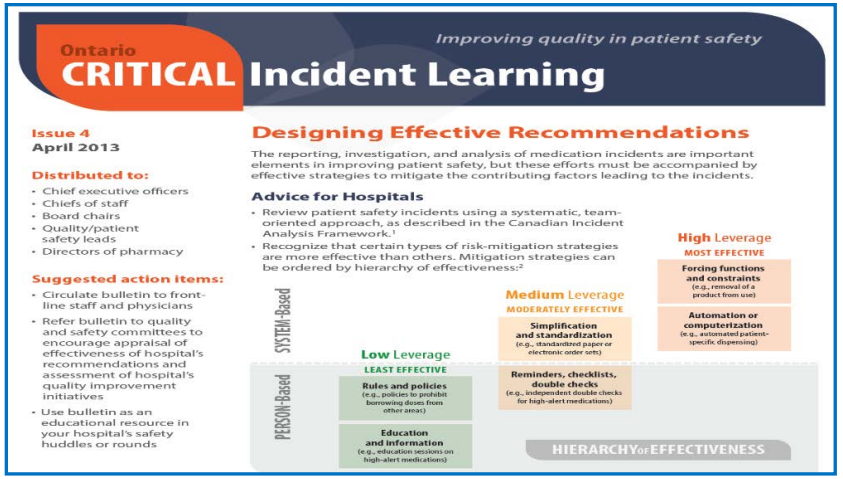
SafeMedicationUse.ca Newsletter

Volume 4 • Issue 6 • September 13, 2013

Reminder - Check Your Prescription!

Has your pharmacy ever made a mistake with your medicine? If so, you're not alone. Mistakes with medicines can happen even when healthcare professionals have tried their best to prevent them. SafeMedicationUse.ca has received many reports from consumers who received the wrong medicine or the wrong dose of a medicine from a pharmacy.

Here is one example: A consumer had been taking trazodone 25 mg (one half of a 50 mg tablet) at bedtime. One day, when the consumer picked up a new supply of trazodone at the pharmacy, she received white tablets with "100" printed on one side and "Novo" on the other. The consumer knew that her tablets were usually peach in colour, but did not notice the difference until after her pharmacy had closed. Thinking that the appearance of the medicine might have changed because she had been given a different brand of trazodone, she decided to take half of one of the new tablets at bedtime. The next day, she called the pharmacist and was told that a mistake had been made. The consumer returned the medicine to the pharmacy and was given the correct strength of trazodone. The person who reported the mistake to SafeMedicationUse.ca stated that the white tablets contained 100 mg of trazodone. Fortunately, the consumer experienced no harm from taking one incorrect dose.



Ontario CRITICAL Incident Learning

Improving quality in patient safety

Issue 4
April 2013

Distributed to:
- Chief executive officers
- Chiefs of staff
- Board chairs
- Quality/patient safety leads
- Directors of pharmacy

Suggested action items:
- Circulate bulletin to front-line staff and physicians
- Refer bulletin to quality and safety committees to encourage appraisal of effectiveness of hospital's recommendations and assessment of hospital's quality improvement initiatives
- Use bulletin as an educational resource in your hospital's safety huddles or rounds

Designing Effective Recommendations

The reporting, investigation, and analysis of medication incidents are important elements in improving patient safety, but these efforts must be accompanied by effective strategies to mitigate the contributing factors leading to the incidents.

Advice for Hospitals

- Review patient safety incidents using a systematic, team-oriented approach, as described in the Canadian Incident Analysis Framework.[1]
- Recognize that certain types of risk-mitigation strategies are more effective than others. Mitigation strategies can be ordered by hierarchy of effectiveness:[2]

SYSTEM-Based / PERSON-Based

High Leverage — MOST EFFECTIVE
- Forcing functions and constraints (e.g., removal of a product from use)
- Automation or computerization (e.g., automated patient-specific dispensing)

Medium Leverage — MODERATELY EFFECTIVE
- Simplification and standardization (e.g., standardized paper or electronic order sets)
- Reminders, checklists, double checks (e.g., independent double checks for high-alert medications)

Low Leverage — LEAST EFFECTIVE
- Rules and policies (e.g., policies to prohibit borrowing doses from other areas)
- Education and information (e.g., education sessions on high-alert medications)

HIERARCHY OF EFFECTIVENESS

http://www.ismp-canada.org/ISMPCSafetyBulletins.htm

Medication Incident Analysis Findings

Analysis of reports found an association between a large percentage of harmful errors and a small number of drugs - warranting additional investigation.

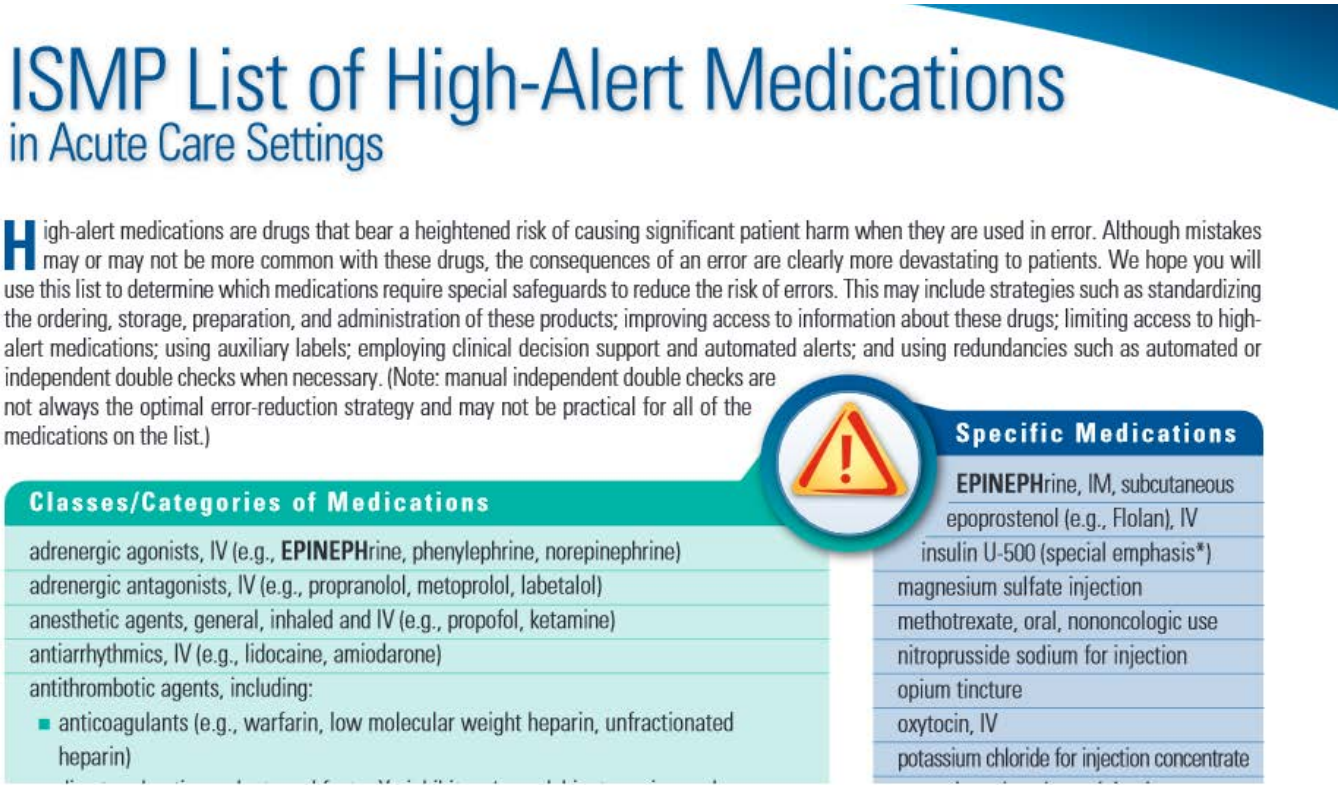
High-Alert Medications

Definition:

High-alert medications are medications that bear a heightened risk of causing significant patient harm when they are used in error.

Although mistakes may not be more common in the use of these medications, when errors do occur, the impact on the patient can be significant (ISMP, 2011).

High-Alert Medications in Acute Care



ISMP List of High-Alert Medications in Acute Care Settings

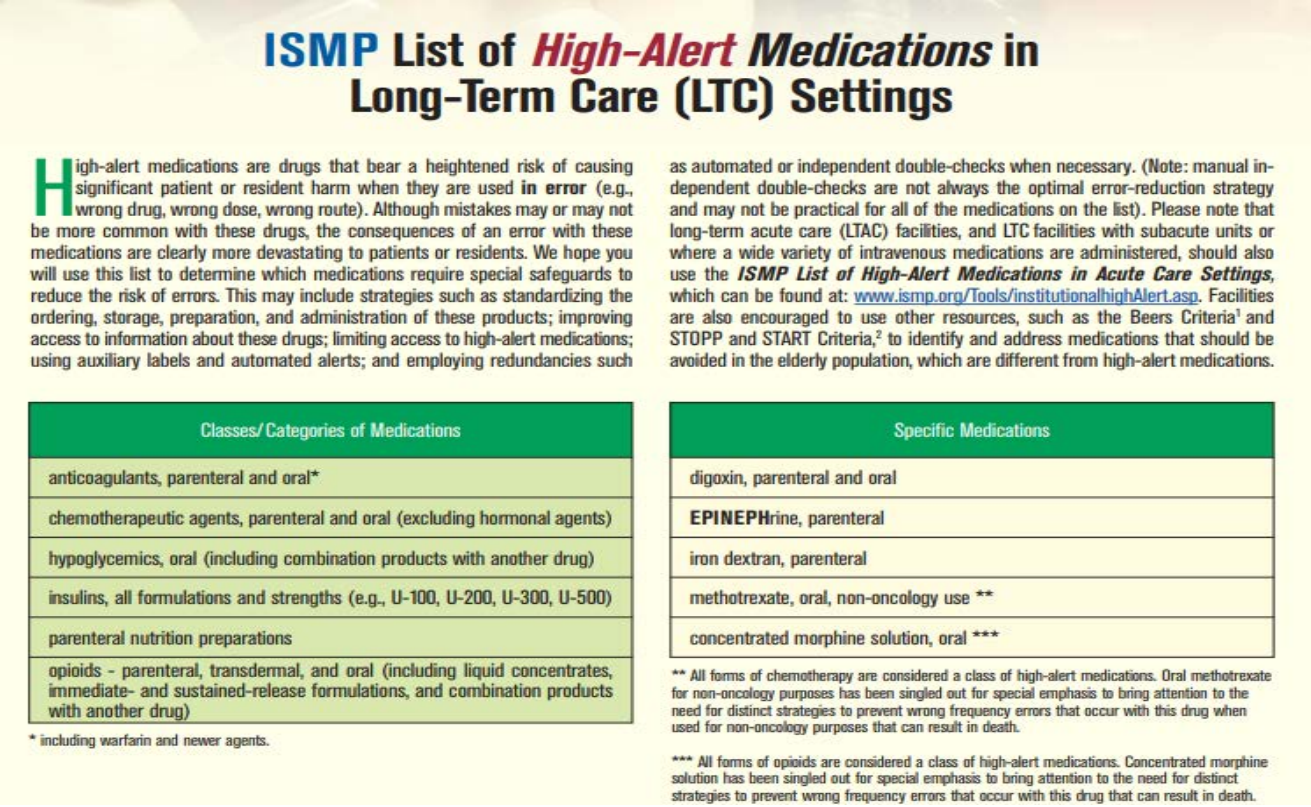
High-alert medications are drugs that bear a heightened risk of causing significant patient harm when they are used in error. Although mistakes may or may not be more common with these drugs, the consequences of an error are clearly more devastating to patients. We hope you will use this list to determine which medications require special safeguards to reduce the risk of errors. This may include strategies such as standardizing the ordering, storage, preparation, and administration of these products; improving access to information about these drugs; limiting access to high-alert medications; using auxiliary labels; employing clinical decision support and automated alerts; and using redundancies such as automated or independent double checks when necessary. (Note: manual independent double checks are not always the optimal error-reduction strategy and may not be practical for all of the medications on the list.)

Classes/Categories of Medications
adrenergic agonists, IV (e.g., **EPINEPH**rine, phenylephrine, norepinephrine)
adrenergic antagonists, IV (e.g., propranolol, metoprolol, labetalol)
anesthetic agents, general, inhaled and IV (e.g., propofol, ketamine)
antiarrhythmics, IV (e.g., lidocaine, amiodarone)
antithrombotic agents, including:
■ anticoagulants (e.g., warfarin, low molecular weight heparin, unfractionated heparin)

Specific Medications
EPINEPHrine, IM, subcutaneous
epoprostenol (e.g., Flolan), IV
insulin U-500 (special emphasis*)
magnesium sulfate injection
methotrexate, oral, nononcologic use
nitroprusside sodium for injection
opium tincture
oxytocin, IV
potassium chloride for injection concentrate

https://www.ismp.org/recommendations/high-alert-medications-acute-list

High-Alert Medications in Long-Term Care



ISMP List of *High-Alert Medications* in Long-Term Care (LTC) Settings

High-alert medications are drugs that bear a heightened risk of causing significant patient or resident harm when they are used **in error** (e.g., wrong drug, wrong dose, wrong route). Although mistakes may or may not be more common with these drugs, the consequences of an error with these medications are clearly more devastating to patients or residents. We hope you will use this list to determine which medications require special safeguards to reduce the risk of errors. This may include strategies such as standardizing the ordering, storage, preparation, and administration of these products; improving access to information about these drugs; limiting access to high-alert medications; using auxiliary labels and automated alerts; and employing redundancies such as automated or independent double-checks when necessary. (Note: manual independent double-checks are not always the optimal error-reduction strategy and may not be practical for all of the medications on the list). Please note that long-term acute care (LTAC) facilities, and LTC facilities with subacute units or where a wide variety of intravenous medications are administered, should also use the ***ISMP List of High-Alert Medications in Acute Care Settings***, which can be found at: www.ismp.org/Tools/institutionalhighAlert.asp. Facilities are also encouraged to use other resources, such as the Beers Criteria[1] and STOPP and START Criteria,[2] to identify and address medications that should be avoided in the elderly population, which are different from high-alert medications.

Classes/Categories of Medications
anticoagulants, parenteral and oral*
chemotherapeutic agents, parenteral and oral (excluding hormonal agents)
hypoglycemics, oral (including combination products with another drug)
insulins, all formulations and strengths (e.g., U-100, U-200, U-300, U-500)
parenteral nutrition preparations
opioids - parenteral, transdermal, and oral (including liquid concentrates, immediate- and sustained-release formulations, and combination products with another drug)

* including warfarin and newer agents.

Specific Medications
digoxin, parenteral and oral
EPINEPHrine, parenteral
iron dextran, parenteral
methotrexate, oral, non-oncology use **
concentrated morphine solution, oral ***

** All forms of chemotherapy are considered a class of high-alert medications. Oral methotrexate for non-oncology purposes has been singled out for special emphasis to bring attention to the need for distinct strategies to prevent wrong frequency errors that occur with this drug when used for non-oncology purposes that can result in death.

*** All forms of opioids are considered a class of high-alert medications. Concentrated morphine solution has been singled out for special emphasis to bring attention to the need for distinct strategies to prevent wrong frequency errors that occur with this drug that can result in death.

https://www.ismp.org/recommendations/high-alert-medications-long-term-care-list

High-Alert Medications in Community Care

ISMP List of *High-Alert Medications* in Community/Ambulatory Healthcare

High-alert medications are drugs that bear a heightened risk of causing significant patient harm when they are used in error. Although mistakes may or may not be more common with these drugs, the consequences of an error are clearly more devastating to patients. We hope you will use this list to determine which medications require special safeguards to reduce the risk of errors and minimize harm.

This may include strategies like providing mandatory patient education; improving access to information about these drugs; using auxiliary labels and automated alerts; employing automated or independent double checks when necessary; and standardizing the prescribing, storage, dispensing, and administration of these products.

Classes/Categories of Medications	Specific Medications
antiretroviral agents (e.g., efavirenz, lami**VUD**ine, raltegravir, ritonavir, combination antiretroviral products)	car**BAM**azepine
chemotherapeutic agents, oral (excluding hormonal agents) (e.g., cyclophosphamide, mercaptopurine, temozolomide)	chloral hydrate liquid, for sedation of children
hypoglycemic agents, oral	heparin, including unfractionated and low molecular weight heparin
immunosuppressant agents (e.g., aza**THIO**prine, cyclo**SPORINE**, tacrolimus)	met**FORMIN**
insulin, all formulations	methotrexate, non-oncologic use
opioids, all formulations	midazolam liquid, for sedation of children
pediatric liquid medications that require measurement	propylthiouracil
pregnancy category X drugs (e.g., bosentan, **ISO**tretinoin)	warfarin

https://www.ismp.org/recommendations/high-alert-medications-community-ambulatory-list

Designing Effective Recommendations

1. Consider the rank order of risk reduction strategies.
2. Include a consultation and review process.

Rank Order of Error Reduction Strategies

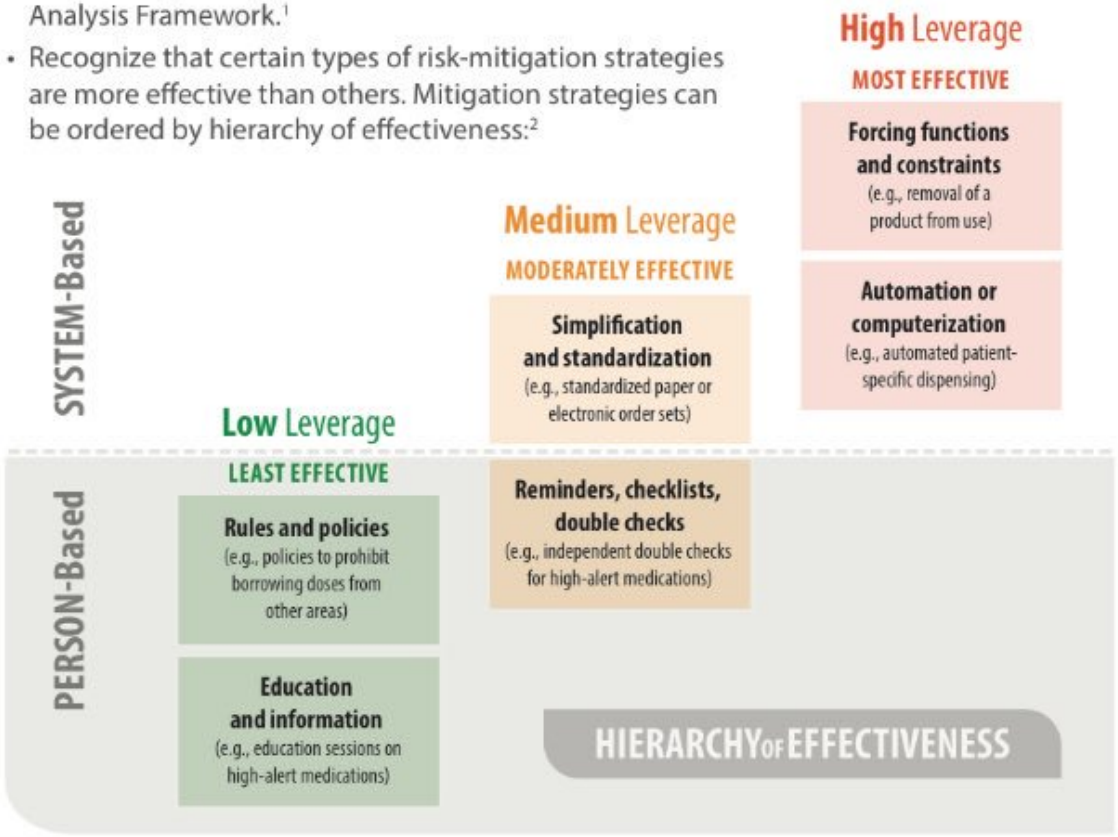
Error-Reduction Strategy	Power (leverage)
Fail-safes and constraints	*High*
Forcing functions	
Automation and computerization	
Standardization	
Redundancies	
Reminders and checklists	
Rules and policies	
Education and information	
Suggestions to be more careful or vigilant	*Low*

Table 1. Rank order of error-reduction strategies

Hierarchy of Effectiveness

Advice for Hospitals

- Review patient safety incidents using a systematic, team-oriented approach, as described in the Canadian Incident Analysis Framework.[1]
- Recognize that certain types of risk-mitigation strategies are more effective than others. Mitigation strategies can be ordered by hierarchy of effectiveness:[2]



https://www.ismp-canada.org/download/ocil/ISMPCONCIL2013-4_EffectiveRecommendations.pdf

Safety Journey

Wrong injection causes death

BY GRAEME SMITH

A drug used to execute death-row prisoners was mistakenly injected into an elderly woman, whose death in a Peterborough, Ont., hospital will be examined in a coroner's inquest.

Bonita Porter, Ontario's deputy chief coroner of inquests, announced yesterday that a jury will look at why Frances Marie Tanner, 84, died at the Peterborough Regional Health Centre on Jan. 21.

The cause of Ms. Tanner's death is already known: Somebody injected a dose of potassium chloride into her vein. Small quantities of the drug can cure potassium deficiencies, but larger amounts are poisonous.

At least three other Canadians have died after receiving the same drug, sometimes from nurses who thought it was a different medicine.

Some doctors blame these accidents on manufacturers who sell potassium chloride in plastic ampoules and vials that closely resemble containers of sterile water, saline solution, and other harmless solutions.

Others say hospitals need stricter controls over potentially deadly substances. Ontario's chief coroner sent a memo to hospitals last year specifically warning them that potassium chloride has been wrongly administered in the past.

After the latest death, however, the coroner's office decided it was time to emphasize the danger.

"It was felt that an inquest might be the best way to get the information out," Dr. Porter said.

The medical community knows surprisingly little about its own errors. A newsletter published last month by the Institute for Safe Medication Practices Canada recorded five cases in which patients were accidentally given potassium chloride; three died, and two were considered "near misses."

More cases could exist, said the institute's president, physician David U. While many hospitals have removed potassium chloride from nursing stations, he said, some doctors still demand to have it on hand, particularly in intensive-care units. And the drug manufacturers have a financial interest in maintaining their products' uniform packaging.

"The companies have just one assembly line, so they all look the same," he said. "It's an accident waiting to happen."

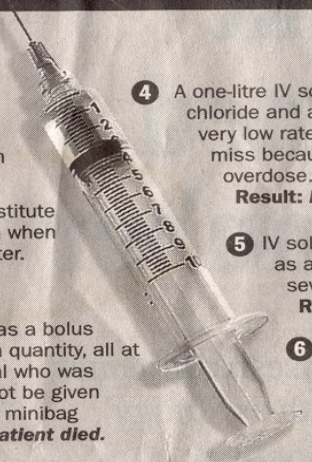
Researchers have suggested that perhaps 5,000 to 10,000 Canadians die because of medical error in hospitals every year.

The estimate is extrapolated from just one American study, however. A Canadian study was launched last month.

Litany of errors

Incidents involving potassium chloride in Canada:

1. Potassium chloride (KCl) was administered via direct IV when the intended action was to flush an intravenous line with diluted sodium chloride. **Result: *Patient died.***
2. KCl concentrate was used to reconstitute a drug for parenteral administration when the intended diluent was sterile water. **Result: *Error was noted before administration.***
3. KCl concentrate was administered as a bolus injection – an injection given in high quantity, all at once – by a health-care professional who was unaware that KCl concentrate cannot be given as a bolus but must be diluted in a minibag and given as an infusion. **Result: *Patient died.***
4. A one-litre IV solution was prepared with potassium chloride and although it was administered at a very low rate, the incident was felt to be a near miss because of the potential for accidental overdose. **Result: *Error was noted during administration.***
5. IV solutions containing KCl were administered as a fluid replacement in a patient requiring several litres of fluid in a short time frame. **Result: *Hyperkalemia, patient died.***
6. Frances Marie Tanner, 84, received an intravenous injection of potassium chloride at the Peterborough Regional Health Centre on Jan. 21, 2002. **Result: *Patient died.***



SOURCE: INSTITUTE FOR SAFE MEDICATION PRACTICES REPORT, MAY, 2002 IMAGE: PHOTODISC

THE GLOBE AND MAIL

Globe & Mail – June 12, 2002

Incidents associated with administration of Concentrated KCl:

- Administered direct IV (intended action was to flush an IV line with 0.9% NaCl)
- Used to reconstitute a drug for parenteral administration (intended diluent was sterile water)
- Used as an additive to a renal dialysis fluid for Continuous Renal Replacement Therapy (CRRT) (intended additive was 23.4% NaCl for injection)
- Administered as a bolus (provider unaware that concentrated KCl should not be given as a bolus)

ISMP Canada (2002a)

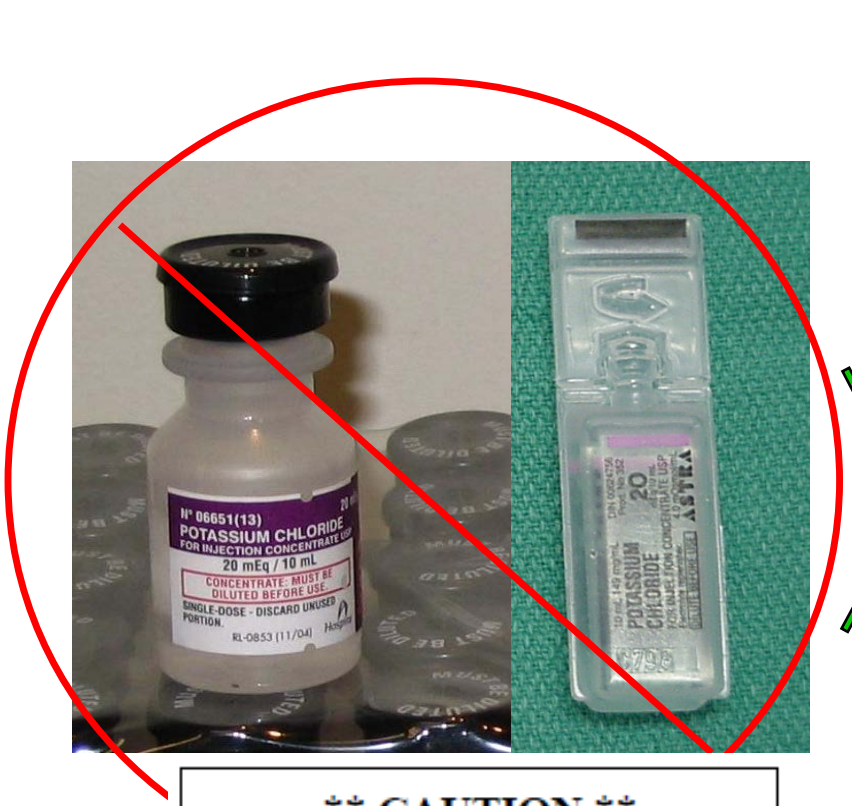
Initiative to eliminate concentrated potassium chloride from patient care areas was supported by the Ontario Ministry of Health and Long-Term Care

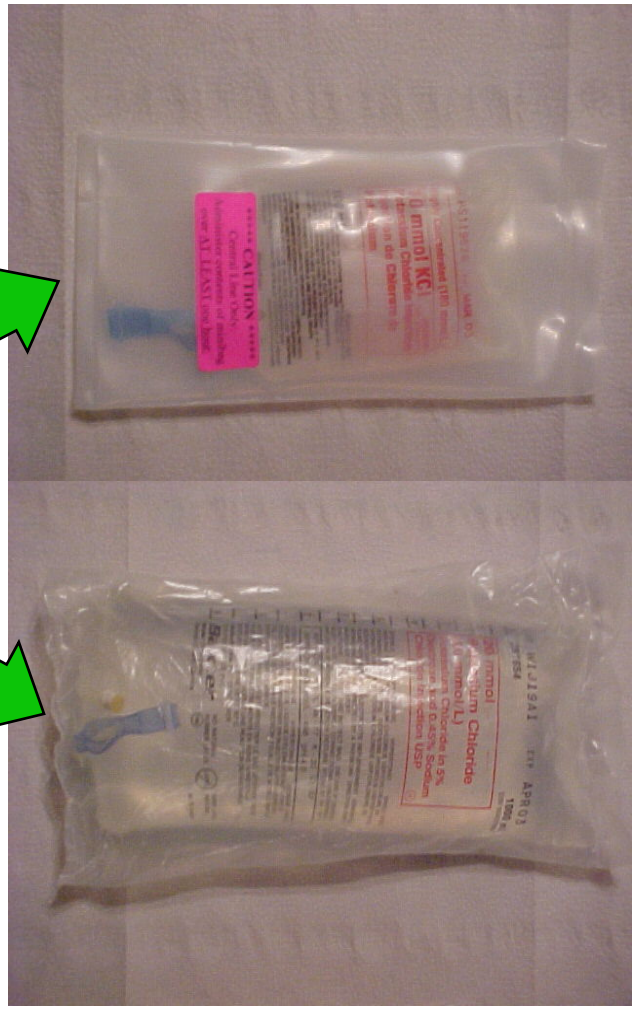
Similar packaging and storage contributed to fatal errors

Provincial Advisory Committee

- Ontario Ministry of Health and Long-Term Care
- Ontario Hospital Association
- Registered Nurses Association of Ontario
- Registered Practical Nurses of Ontario
- Ontario Medical Association
- Ontario Pharmacists' Association
- Quality Health Network
- College of Nurses of Ontario
- Canadian Society of Hospital Pharmacists – Ontario Branch
- College of Physicians and Surgeons of Ontario
- Ontario College of Pharmacists
- Institute for Safe Medication Practices Canada

Province-wide effort





**** CAUTION ****
Concentrated KCl
Fatal if Injected Undiluted
DILUTE before use

Prevention Strategies

Simple, but not easy.

To remove concentrated KCl products from patient care areas:

- Purchase pre-mixed/commercial IV solutions containing KCl
  - Collaboration with Manufacturers for additional products
- Prescribe standardized product solutions
- Create order sets, update guidelines and electronic order systems to reflect standardized product solutions
- Educate and train and inform so that everyone understands "why" these changes are being implemented

Prominence of Critical Information

Global Impact

Original Carton Label

Canadian Initiated Over-label (April '04)

New Global Carton Label

Reports involving Neuromuscular Blocking Agents

Result: Package and Label Changes

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 6, Issue 2

ISMP Canada Safety Bulletin

April 25, 2006

Neuromuscular Blocking Agent Labelling and Packaging Initiative

A collaborative meeting of representatives of pharmaceutical manufacturers of neuromuscular blocking agents was convened by ISMP Canada in Toronto on February 27th, 2006. The foremost outcome was agreement among the attending stakeholders on the "ideal features" for packaging and labeling of neuromuscular blocking agents:

1. Red cap with white lettering: "Paralyzing agent" or "Warning: Paralyzing Agent"
2. Red ferrule with white lettering: "Paralyzing agent"
3. Red lettering on the product label: "Paralyzing agent" or "Warning: Paralyzing Agent"
4. Peel-off label, using the colour scheme and content information recognized by the ASA/CAS recommended standards, for application to a prepared syringe (ASA = American Society of Anesthesiologists (www.asahq.org); CAS = Canadian Anesthesiologists' Society (www.cas.ca)
5. Space on the product label for bar code application
6. Development of a universal symbol for neuromuscular blocking agents and proposal for global use: placement of this symbol (e.g., on the label), to be determined
7. Review of potential benefit of using TALL-man lettering for generic names of neuromuscular blocking agents

Participating manufacturers (Sandoz Inc, Hospira, Organon, and Abbott) are evaluating the feasibility of incorporating some or all of these features.

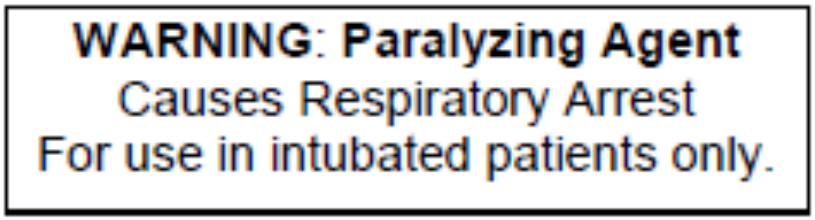
Interim Situation

All manufacturer's now include a warning:

Inadvertent injection of neuromuscular blocking agents

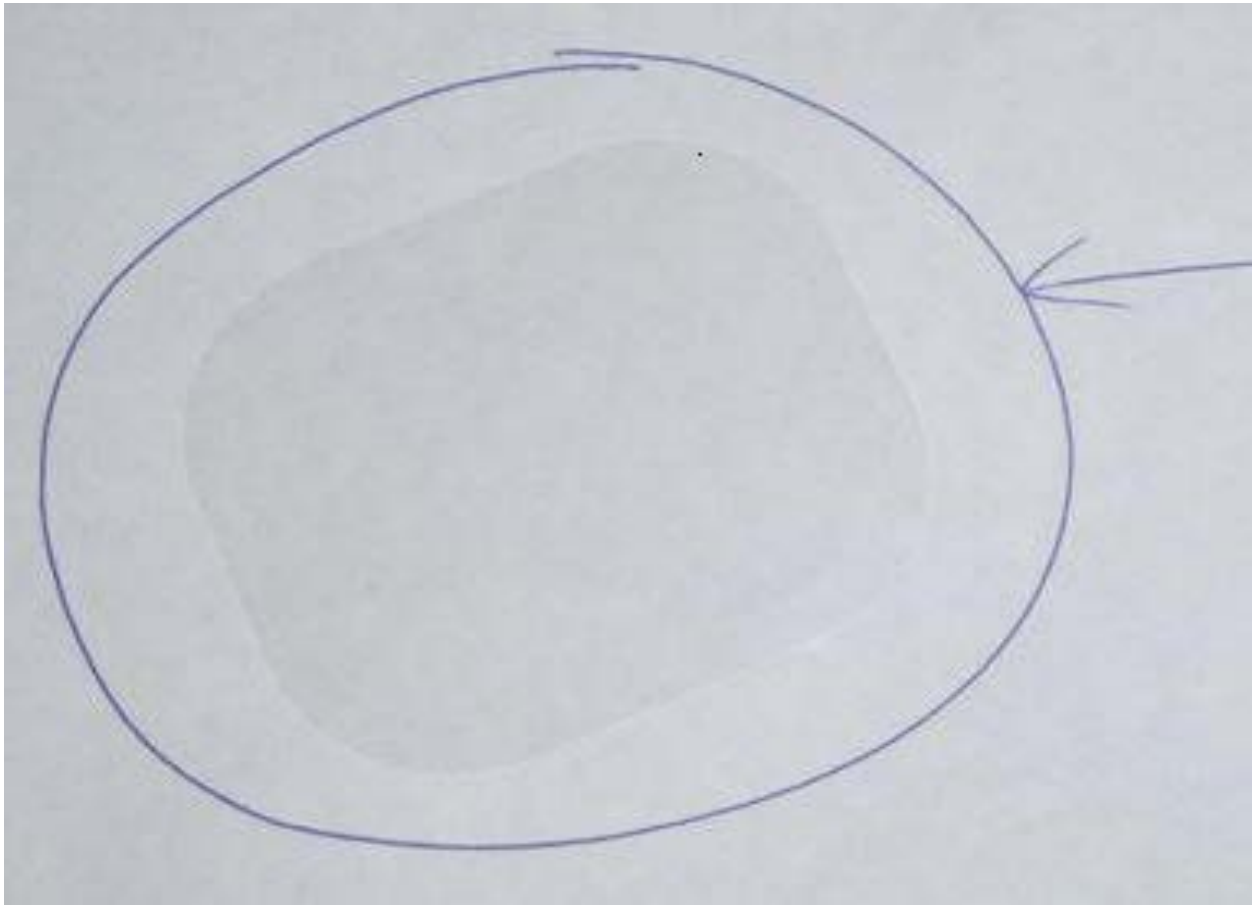
Prevention strategies:

- Not stored in patient care areas unless necessary
- Store with a warning label

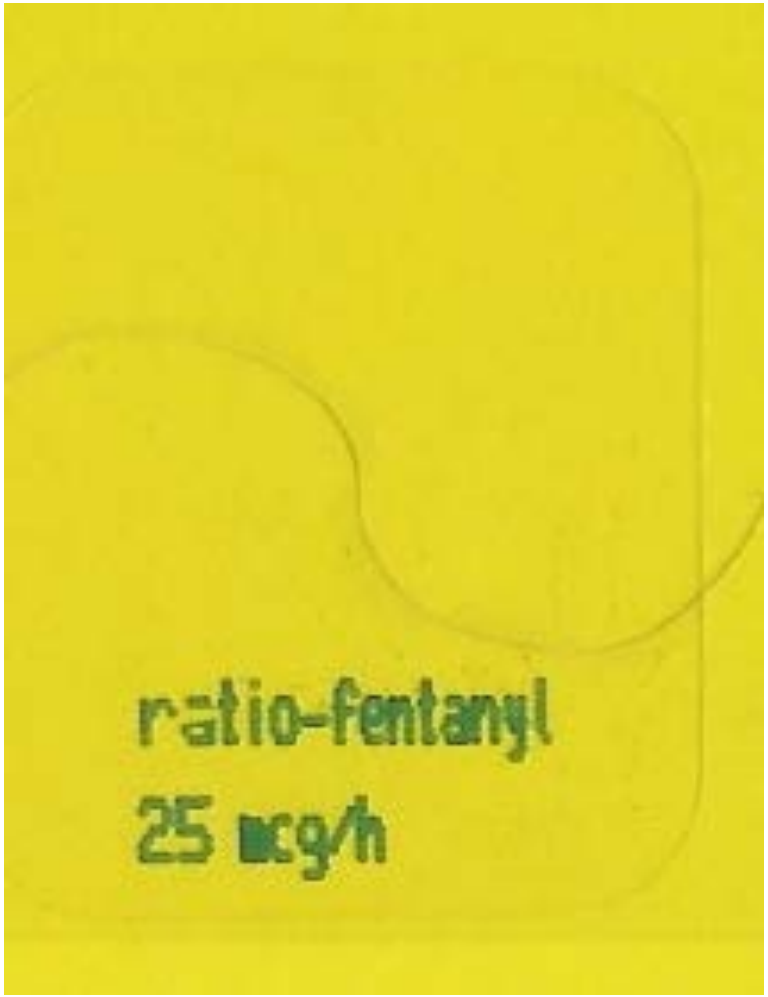


- Limit the selection available on the hospital formulary to enhance familiarity and expertise with products

Report: Transdermal Fentanyl Patch Not Visible after Application

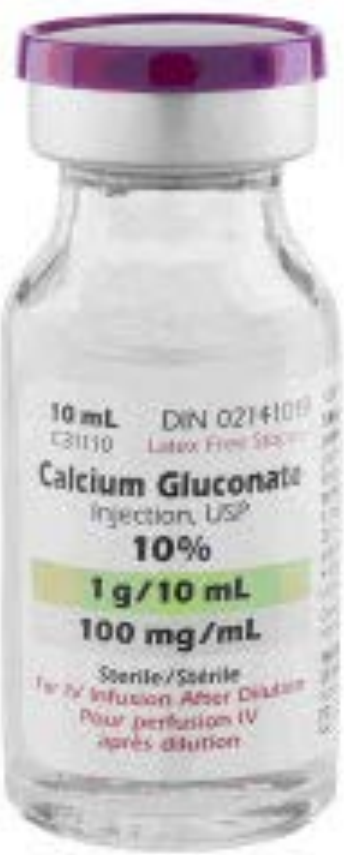


Result: Product Change Implemented



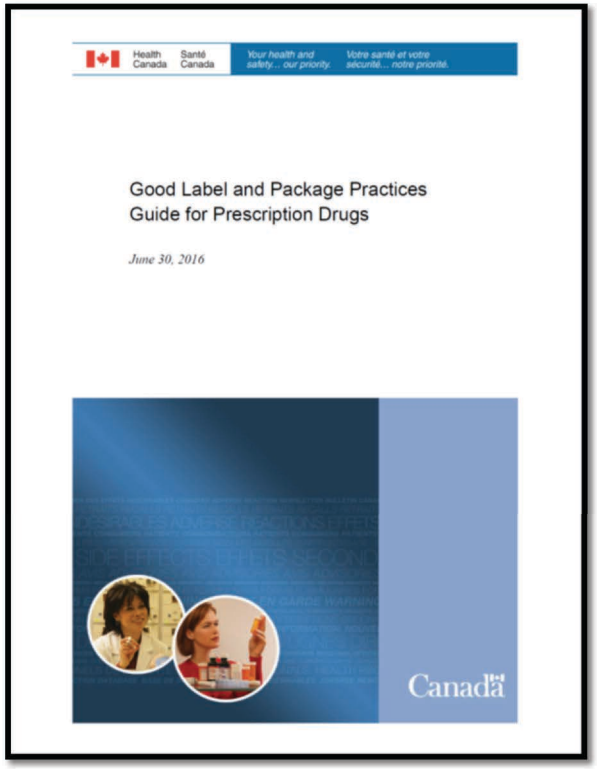
Report: Dose Calculation Difficulty

Result: Label Change Implemented



- Concentration now expressed in g per total volume, and mg per mL
- Manufacturer logo removed to give prominence to critical information
- CEO called to express appreciation for improvement recommendation

Sustaining the Learning



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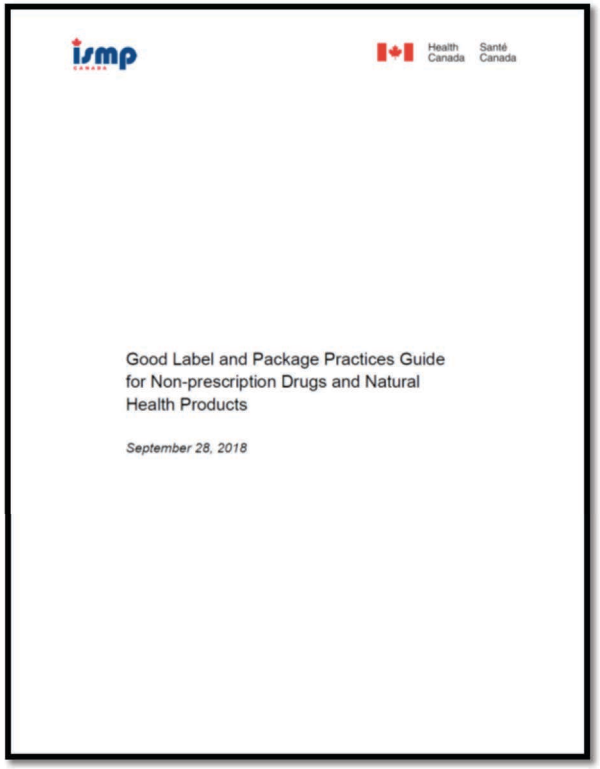
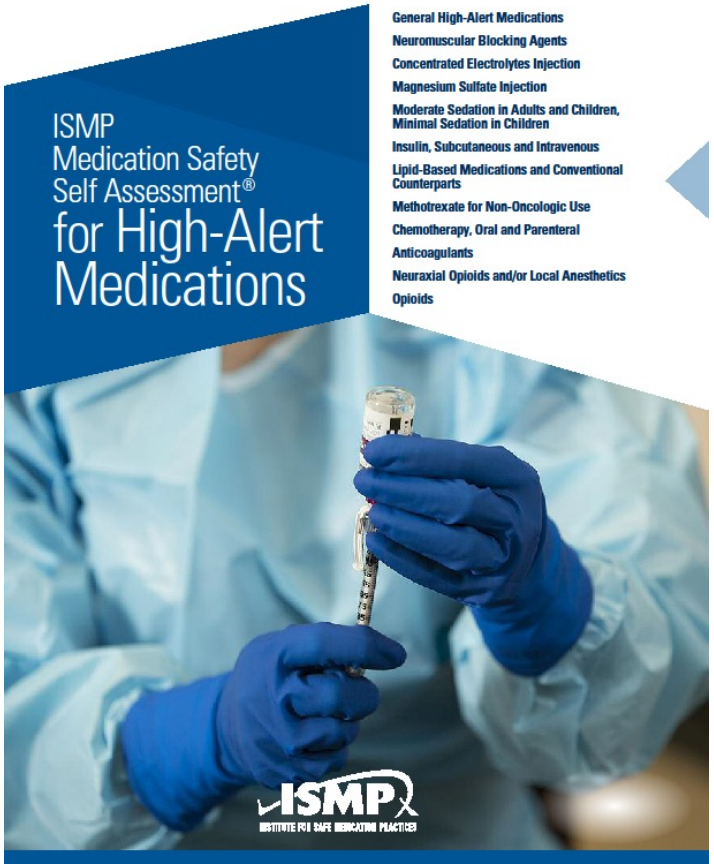


https://www.canada.ca/en/health-canada/services/drugs-health-products/reports-publications/medeffect-canada/good-label-package-practices-guide-non-prescription-drugs-natural-health-products.html

ISMP MSSA for High-Alert Medications 2017



https://www.ismp.org/assessments/high-alert-medications

Includes:

- **Known safe practices**
- **Considerations with use of technology (e.g., computerized order entry, smart infusion pumps, bar coding, ADCs);**
- **Safeguards that can be incorporated into protocols, labelling, patient education**

ISMP MSSA for High-Alert Medications

https://www.ismp.org/assessments/high-alert-medications

Sharing the Learning

Hospital Harm Improvement

Resource Guide

ISMP MSSA is referenced

http://www.patientsafetyinstitute.ca/en/toolsResources/Hospital-Harm-Measure/Improvement-Resources

High Alert Medication Safety Processes

- Develop order sets, and clinical pathways or protocols to establish a standardized approach to treating patients with similar problems, disease states, or needs.
  - Consider computerized order entry defaults for safety
- Minimize variability by standardizing concentrations and dose strengths to the minimum needed to provide safe care.
- Include information and reminders about monitoring parameters in the order sets, protocols, and flow sheets.
- Consider protocols for vulnerable populations such as elderly, and pediatrics.

http://www.patientsafetyinstitute.ca/en/toolsResources/Hospital-Harm-Measure/Improvement-Resources

Methods to identify errors and harm

- Ensure that critical lab information is available to those who need the information and can take action.
- Implement independent double-checks where appropriate.
- Instruct patients on symptoms that indicate side effects and when to contact a health care provider for assistance.

http://www.patientsafetyinstitute.ca/en/toolsResources/Hospital-Harm-Measure/Improvement-Resources

Methods to Mitigate Harm

- Have rescue protocols available
- Allow for the administration of reversal agents without having to contact the physician.
- Ensure that antidotes and reversal agents are readily available.

http://www.patientsafetyinstitute.ca/en/toolsResources/Hospital-Harm-Measure/Improvement-Resources

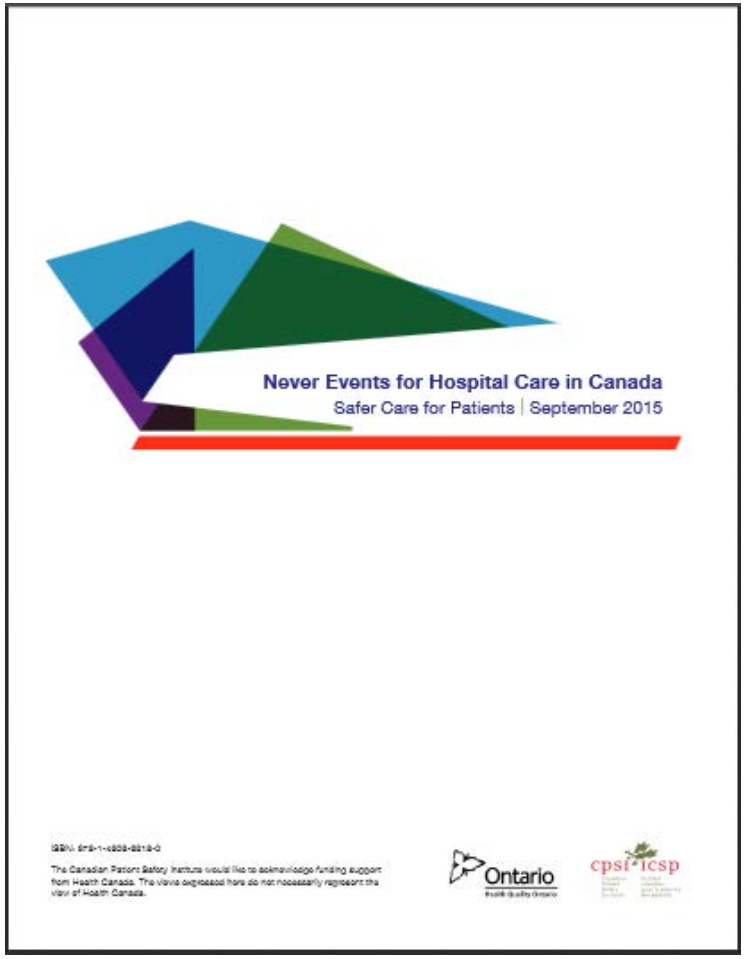
Sustaining the learning

Medication Management Standards and Required Organizational Practices

- *High-Alert Medications*: Organizations are required to implement a comprehensive strategy to manage high-alert medications, based on the ISMP list of high-alert medications.

http://www.patientsafetyinstitute.ca/en/toolsResources/Hospital-Harm-Measure/Improvement-Resources

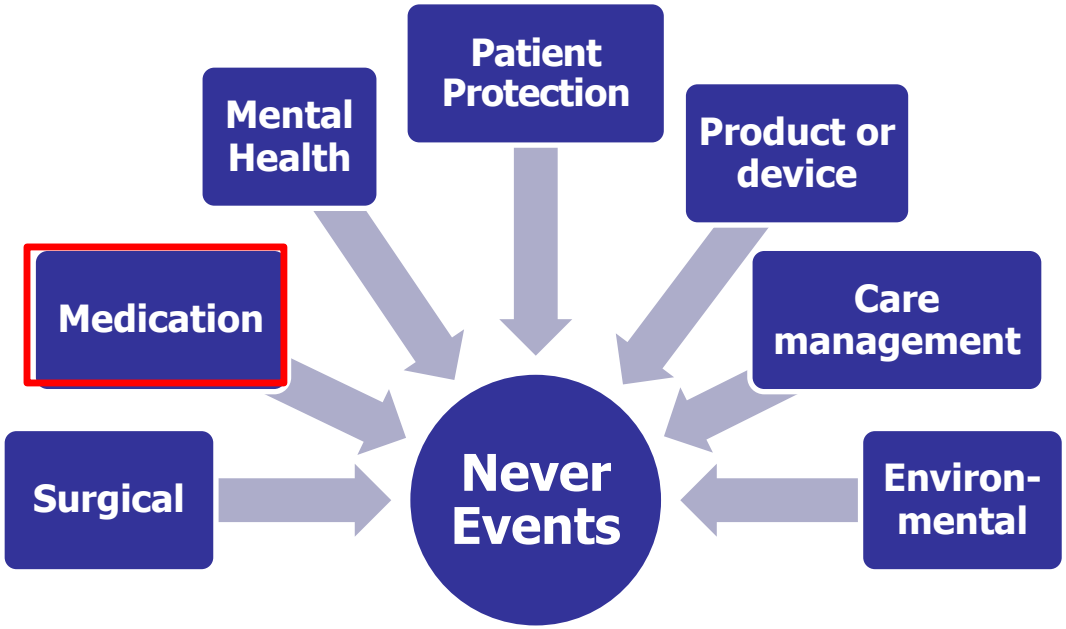
Never Events in Hospital Care in Canada



http://www.patientsafetyinstitute.ca/en/toolsResources/NeverEvents/

Never Event Definition

Patient safety incidents in a healthcare facility that result in serious harm or death, and are preventable using organizational checks and balances.



Never Event Criteria

Serious:

- High risk that the event would cause significant patient harm or death

Recurrence:

- Available evidence of a past occurrence (e.g. incident reports)
- Risk of the event happening to another patient if it is not addressed

Identifiable:

- The event is easily recognized, clearly defined, and not attributable to other possible causes

Preventable:

- Appropriate organizational barriers, (guidance and safety recommendations) when implemented, can prevent the event from occurring

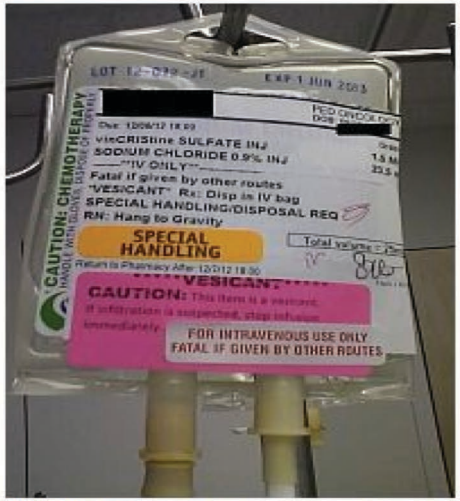
5 Pharmaceutical Never Events

1. Wrong route administration of chemotherapy agents (e.g. incidents with **vincristine)**
2. Intravenous administration of undiluted/ concentrated potassium solutions (e.g. **potassium chloride**)
3. Inadvertent injection of **epinephrine** intended for topical use
4. Inadvertent overdose of **hydromorphone** by administering a higher concentration solution than intended
5. **Neuromuscular blockade** without sedation, airway control, and ventilation capability

Wrong route administration of chemotherapy agents (e.g. vincristine incidents)

Prevention Strategies:

- Remove vincristine from areas where intrathecal medications are prepared, administered, or stored
- Prepare and dispense vincristine (and other vinca alkaloids) in small-volume IV minibags (not syringes)
  - less likely to result in a 'mix-up' in route of administration
- Employ unique and non-interchangeable connections
- Include warnings



ISMP strongly recommends dispensing and administering intravenous Vincristine in a minibag.

http://www.who.int/medicines/publications/drugalerts/Alert_115_vincristine.pdf

Inadvertent Injection of Epinephrine intended for Topical Use

- Multiple, similar open basins holding different solutions (topical and injectable) were present in the sterile field
- The practice of withdrawing a medication intended for topical use into a parenteral syringe poses a risk of substitution error and inadvertent injection

Figure 1a. An example of an open glass container commonly used in sterile fields for holding topical or injectable solutions. The recent error report described using two glass containers, each labelled, one containing a topical solution and the other an injectable solution.

Figure 1b. An example of an open metal container commonly used in sterile fields for holding topical or injectable solutions.

http://www.ismp-canada.org/download/safetyBulletins/ISMPCSB2004-12.pdf
https://www.ismp-canada.org/download/safetyBulletins/ISMPCSB2009-2-InadvertentInjectionofEpinephrineIntendedforTopicaUse.pdf

Inadvertent Injection of Epinephrine intended for Topical Use

Prevention Strategies:

- **Topical** (concentrated) epinephrine should not be in a parenteral syringe
- Products should be designed for intended use.
- **Injectable products** should be kept in original vial, not in an open solution bowl

Overdose of HYDROmorphone by administration of higher-than-intended concentration solution

2 mg/mL

10 mg/mL

20 mg/mL

50 mg/mL

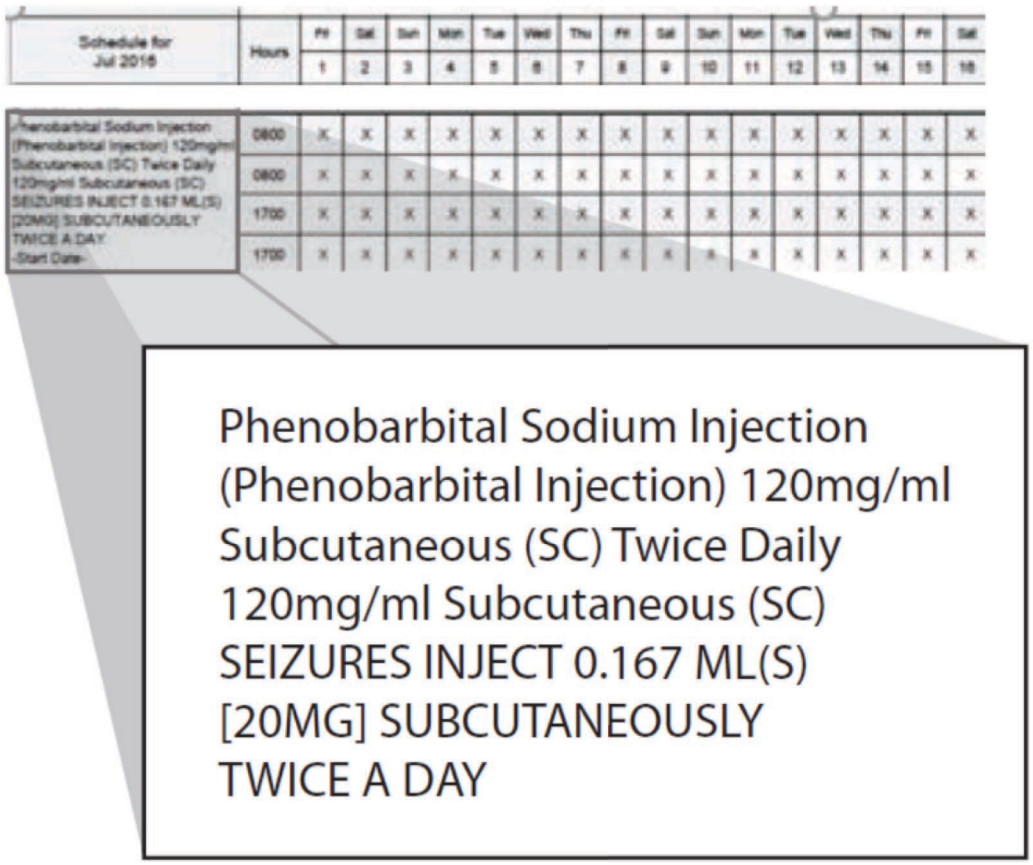
100 mg/mL

Overdose of HYDROmorphone by administration of higher-than-intended concentration solution

Prevention strategies:

- Eliminate high-concentration items (e.g. hydromorphone injectable products with concentration over 2 mg/mL) from patient care area stock
- In circumstances where high-concentration hydromorphone cannot be eliminated (e.g. in palliative care), ensure that it is segregated and requires an independent check
- Ensure electronic systems and labels are designed with end-users in mind to help prevent calculation errors or misunderstandings with directions
  - Consider a cognitive walk-through (proactive risk assessment) for designs
- Eliminate dangerous dose designations such as a 'trailing zero'
- Use prefilled, ready to use syringes

Design Electronic Systems with End-User in Mind



Fatal Incident
Contributing factor:
eMAR design

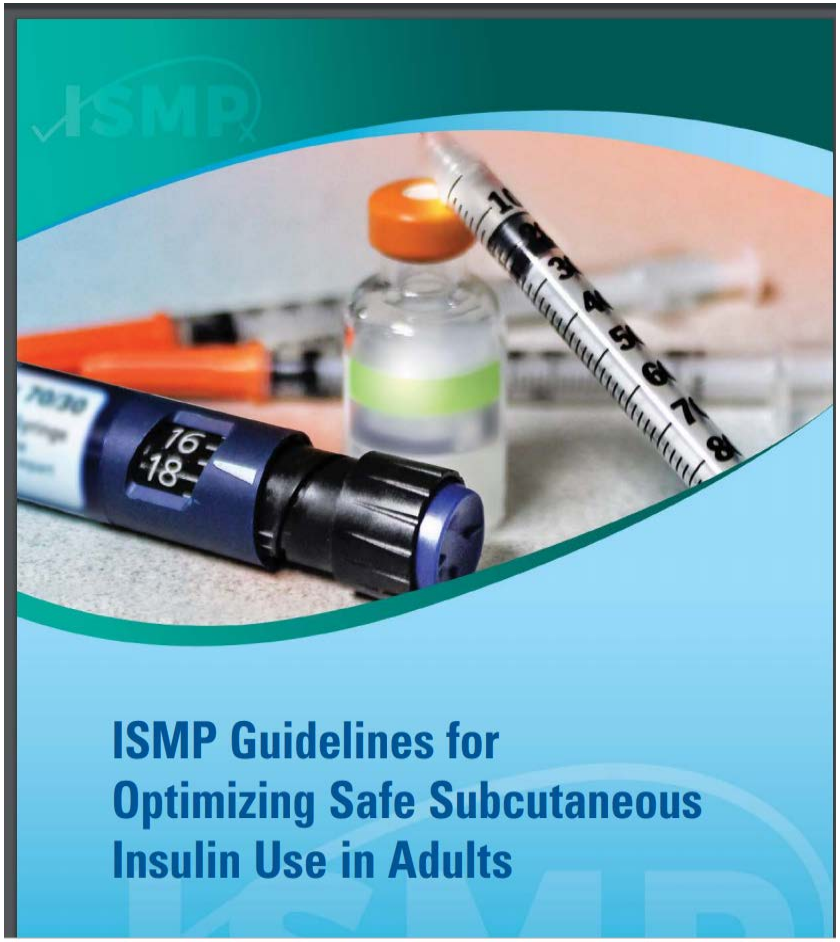
https://www.ismp-canada.org/download/safetyBulletins/2018/ISMPCSB2018-i8-eMAR.pdf

Design Electronic Systems with End-User in Mind

Schedule for Sep 2018	Hours	Sat	Sun	Mon	Tue	Wed	Thu	Fri
		1	2	3	4	5	6	7
PHENobarbital Sodium Solution 120 MG/ML Inject 20 mg subcutaneously two times a day for Seizures amount to be administered 0.167 ml -Start Date- 09/21/2018 1700	0600	X	X	X	X	X	X	X
	1700	X	X	X	X	X	X	X

Soft ware developer was required for changes

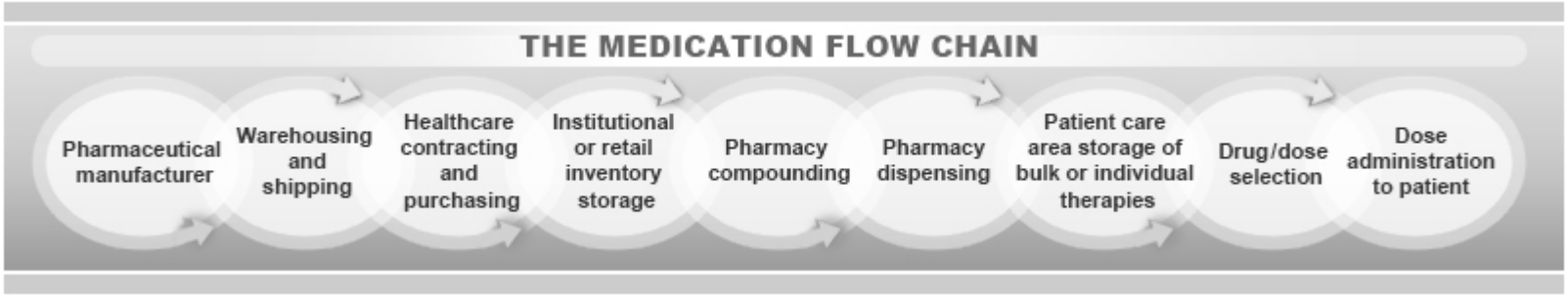
Insulin safety



https://www.ismp.org/guidelines/subcutaneous-insulin

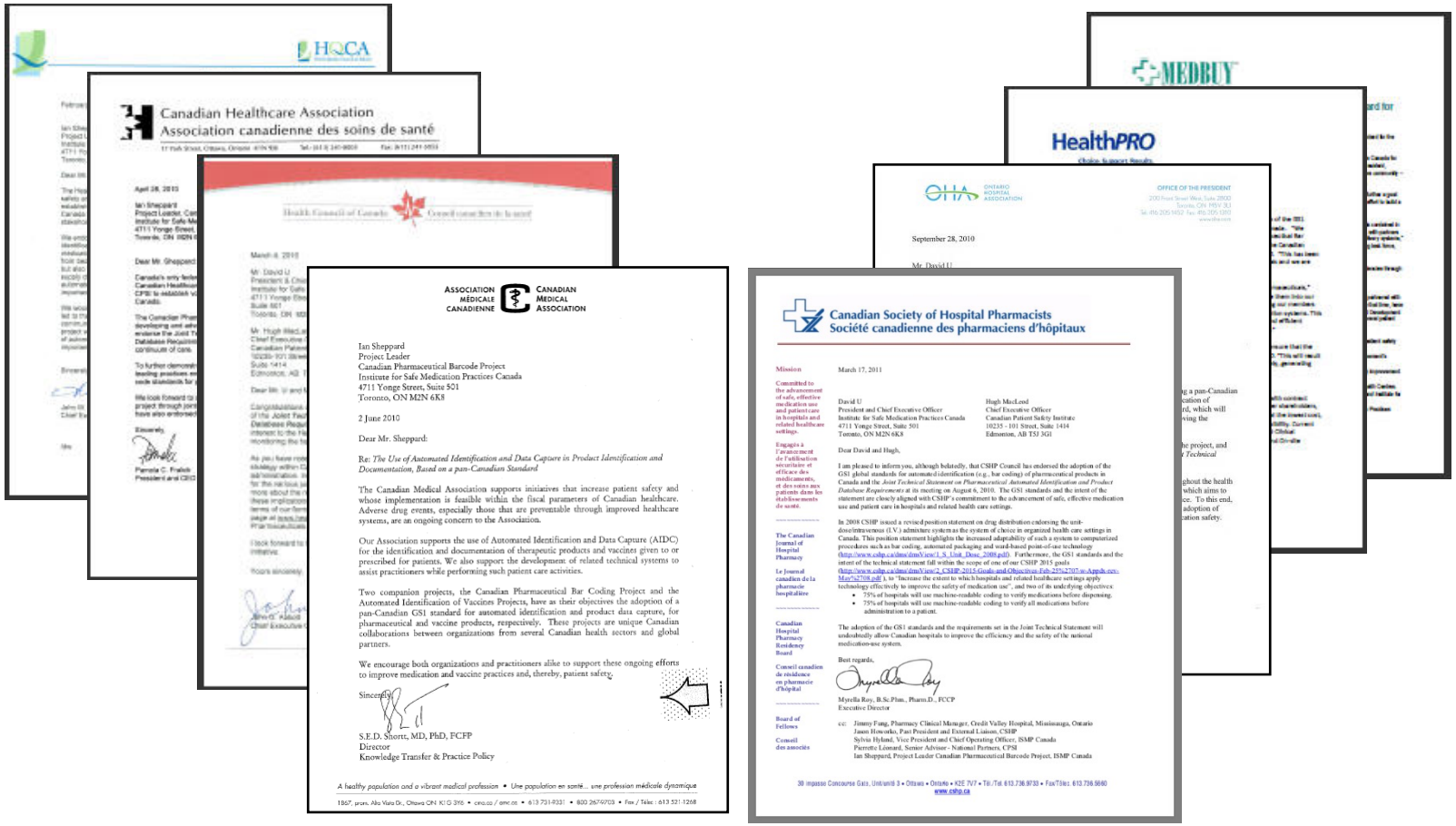
Pharmaceutical Bar Coding Project Resource Guide

To create a national environment for automated identification at each point of the medication chain.



https://www.ismp-canada.org/barcoding/

Collaboration



5 Questions to Ask About Your Medications

22 languages

"The **'most powerful'** strategy for **improving safety** and achieving desired clinical results, may be motivating providers and organizations to support the

FULL ENGAGEMENT of patients and their guardians

in improving the safety and effectiveness of medication use."

Lyle Bootman, Co-chair, Committee on
Identifying and Preventing Medication Errors,
Institute of Medicine, July 2006

Our Aim

Empower patients and families with 'questions to ask' to improve knowledge about medications and prevention of harm.

Co-Designed with Patients

- Environmental scan
- Working group consisted of patients, nurses, doctors and pharmacists
- Draft developed
- Iterative improvements following surveys and user-testing and feedback

YOUR LOGO HERE

Endorsed by:

ACCREDITATION CANADA

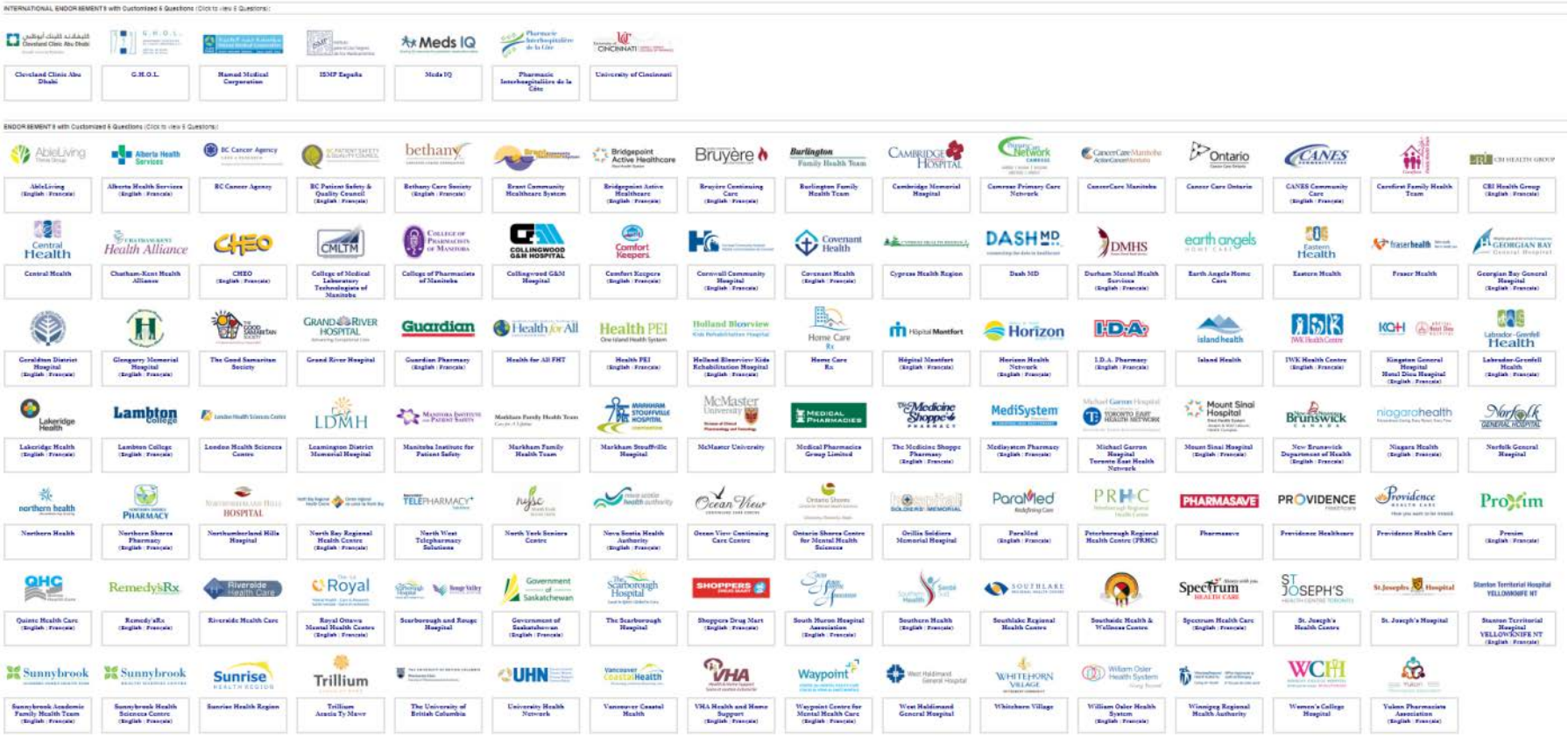
CANADIAN NURSES ASSOCIATION
ASSOCIATION DES INFIRMIÈRES ET INFIRMIERS DU CANADA

MANITOBA INSTITUTE FOR PATIENT SAFETY

COLLEGE OF PHARMACISTS OF MANITOBA

https://www.ismp-canada.org/medrec/5questions.htm#l=tab2

200 Endorsements at national, provincial and local levels



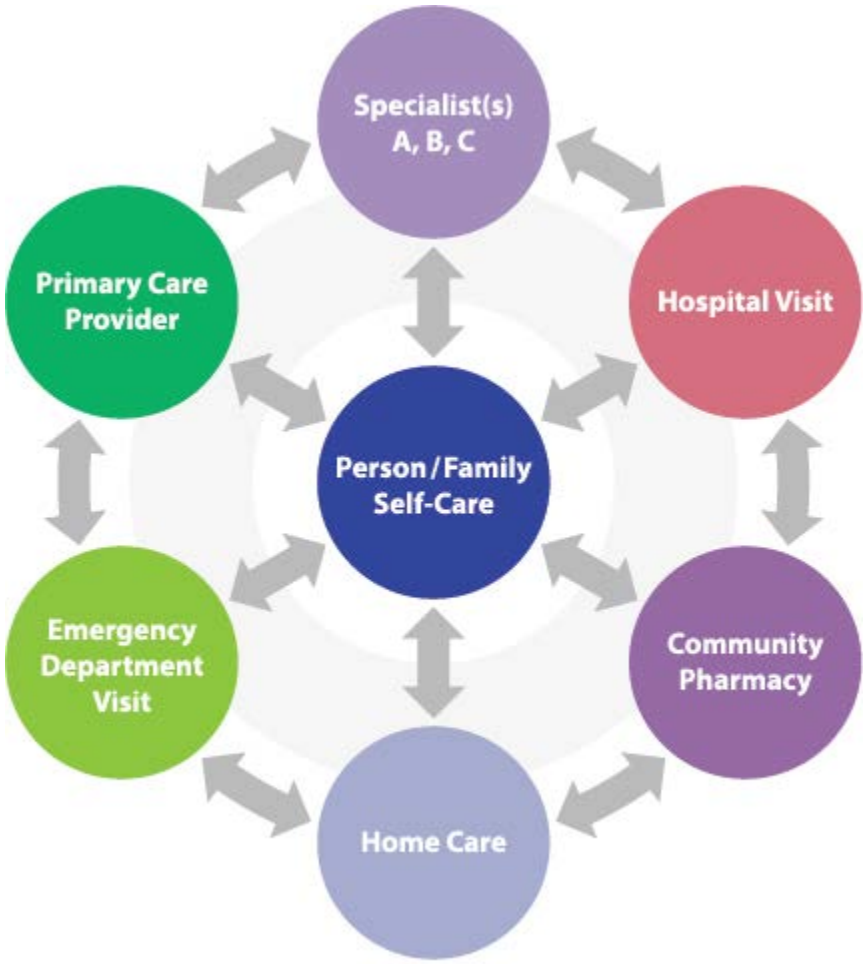
How it can be used

Patients

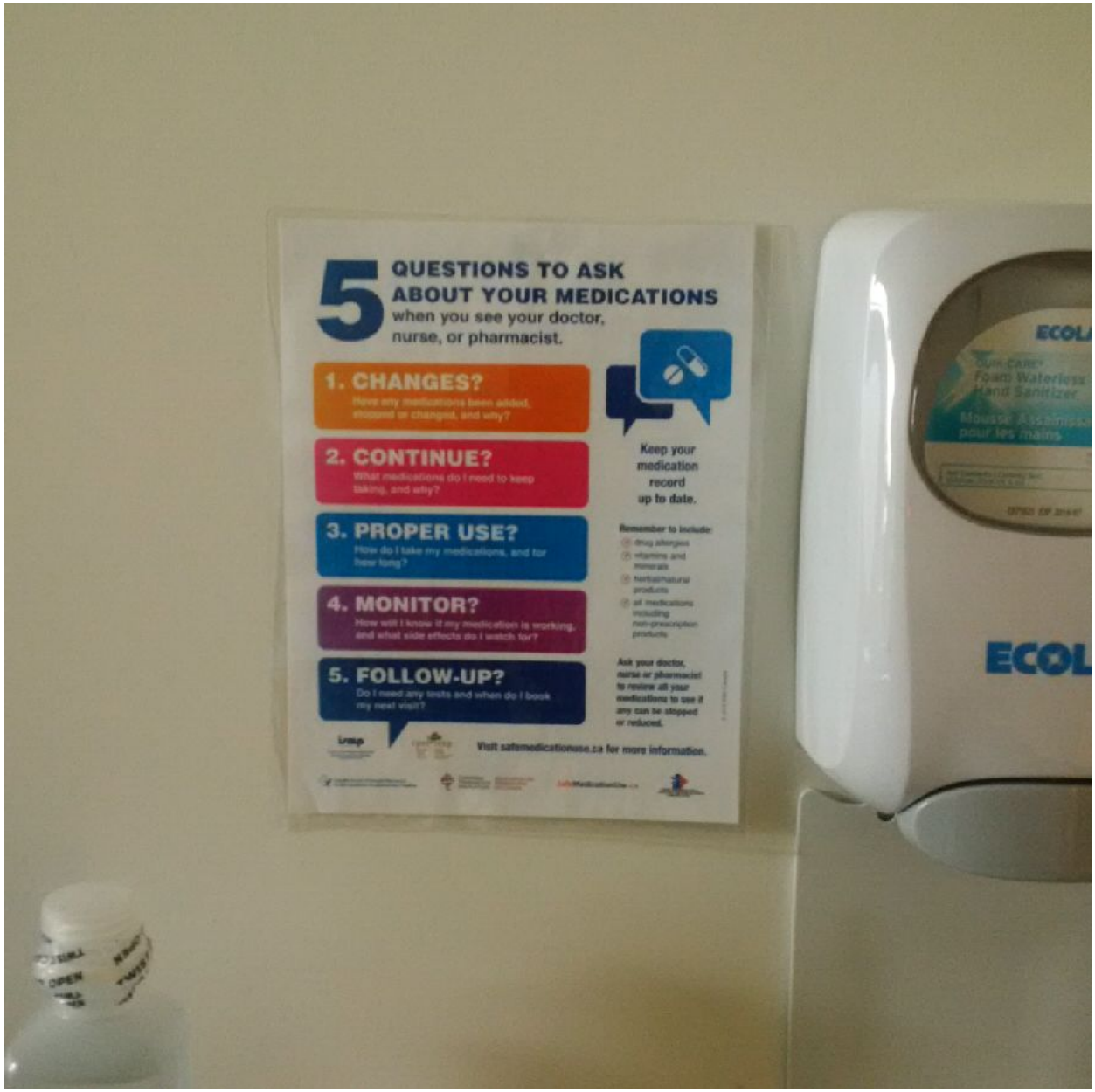
- Before leaving the hospital
- At every appointment

Healthcare providers

- Guide discussion
- Guide 'teachback'



Adapted from Medication Reconciliation in Home Care Getting Started Kit, January 2011



National Action Plan Evaluation: Collective Impact Model

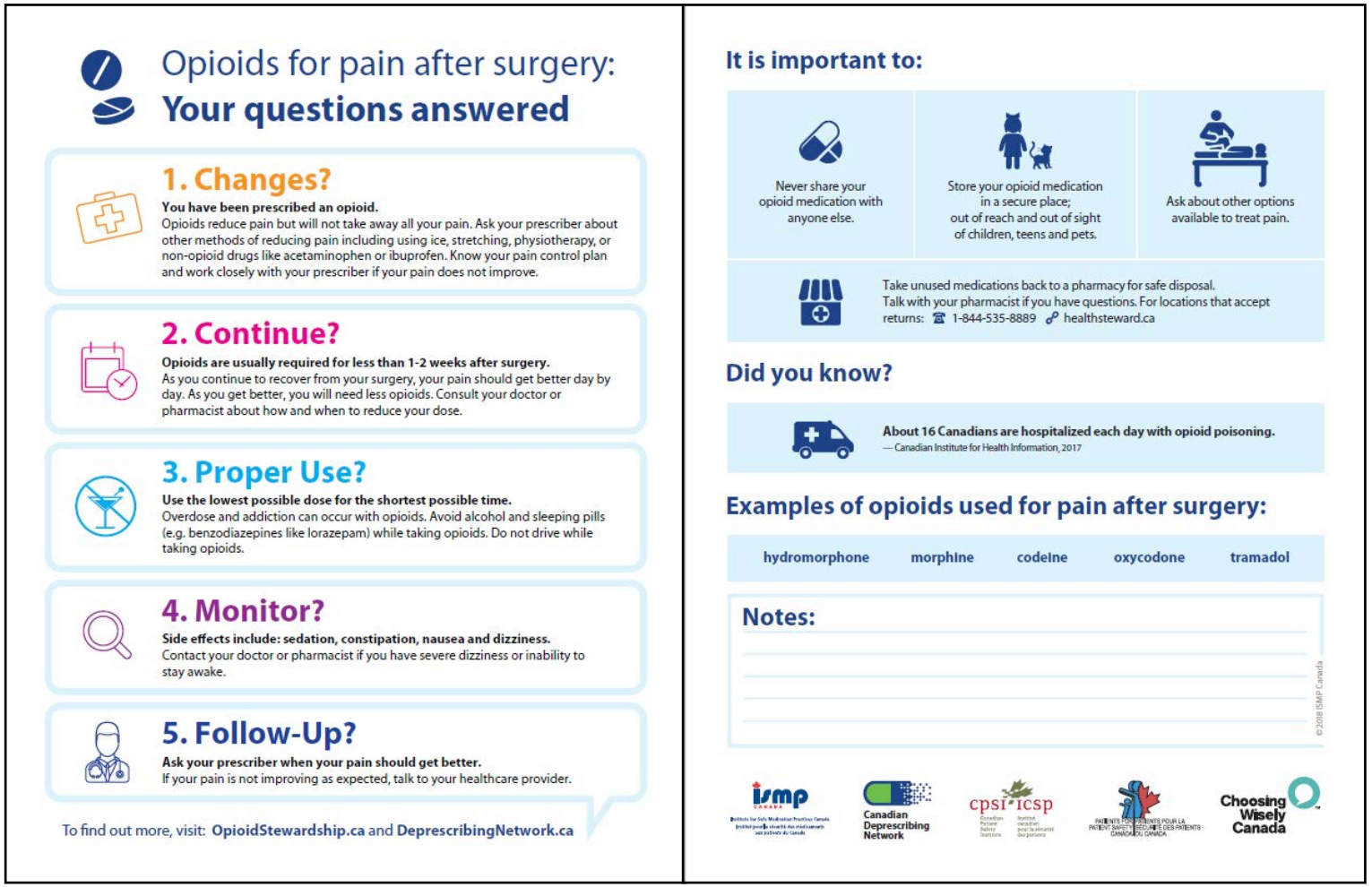
Results showed:

- The '5 questions to ask' received one of the highest 'usefulness' ratings.

- '5 questions to ask' was ranked as the top output with which survey respondents improved patient safety.

http://www.patientsafetyinstitute.ca/en/toolsResources/Evaluation-National-Patient-Safety-Consortium/Documents/

Opioids for pain after surgery: Your questions answered



Opioids for pain after surgery: Your questions answered

1. Changes?

You have been prescribed an opioid.
Opioids reduce pain but will not take away all your pain. Ask your prescriber about other methods of reducing pain including using ice, stretching, physiotherapy, or non-opioid drugs like acetaminophen or ibuprofen. Know your pain control plan and work closely with your prescriber if your pain does not improve.

2. Continue?

Opioids are usually required for less than 1-2 weeks after surgery.
As you continue to recover from your surgery, your pain should get better day by day. As you get better, you will need less opioids. Consult your doctor or pharmacist about how and when to reduce your dose.

3. Proper Use?

Use the lowest possible dose for the shortest possible time.
Overdose and addiction can occur with opioids. Avoid alcohol and sleeping pills (e.g. benzodiazepines like lorazepam) while taking opioids. Do not drive while taking opioids.

4. Monitor?

Side effects include: sedation, constipation, nausea and dizziness.
Contact your doctor or pharmacist if you have severe dizziness or inability to stay awake.

5. Follow-Up?

Ask your prescriber when your pain should get better.
If your pain is not improving as expected, talk to your healthcare provider.

To find out more, visit: **OpioidStewardship.ca** and **DeprescribingNetwork.ca**

It is important to:

Never share your opioid medication with anyone else.

Store your opioid medication in a secure place; out of reach and out of sight of children, teens and pets.

Ask about other options available to treat pain.

Take unused medications back to a pharmacy for safe disposal.
Talk with your pharmacist if you have questions. For locations that accept returns: ☎ 1-844-535-8889 healthsteward.ca

Did you know?

About 16 Canadians are hospitalized each day with opioid poisoning.
— Canadian Institute for Health Information, 2017

Examples of opioids used for pain after surgery:

hydromorphone | morphine | codeine | oxycodone | tramadol

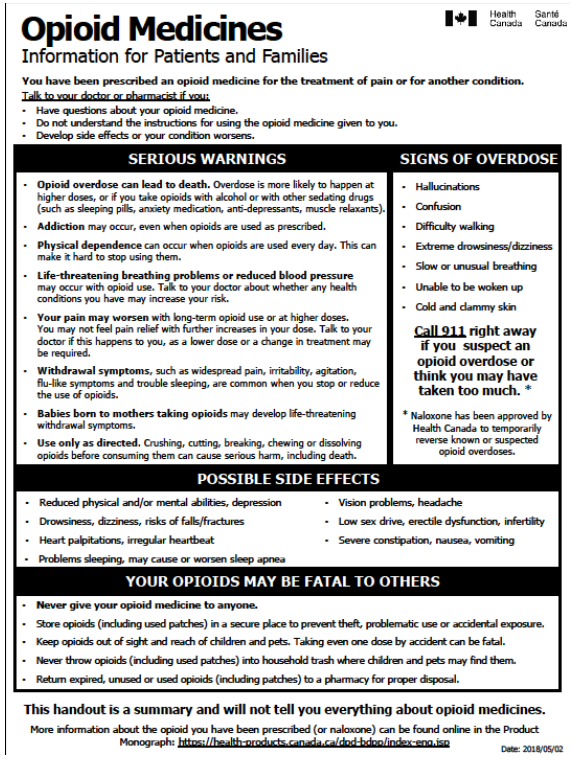
Notes:

ismp CANADA | Canadian Deprescribing Network | cpsi icsp | Choosing Wisely Canada

www.ismp-canada.org/opioid_stewardship/

Opioid Safety

Health Canada requires Community Pharmacies to add a Warning Sticker and provide a Patient Information Handout with opioid prescriptions



Opioid Medicines

Information for Patients and Families

Health Canada / Santé Canada

You have been prescribed an opioid medicine for the treatment of pain or for another condition.

Talk to your doctor or pharmacist if you:

- Have questions about your opioid medicine.
- Do not understand the instructions for using the opioid medicine given to you.
- Develop side effects or your condition worsens.

SERIOUS WARNINGS

- **Opioid overdose can lead to death.** Overdose is more likely to happen at higher doses, or if you take opioids with alcohol or with other sedating drugs (such as sleeping pills, anxiety medication, anti-depressants, muscle relaxants).
- **Addiction** may occur, even when opioids are used as prescribed.
- **Physical dependence** can occur when opioids are used every day. This can make it hard to stop using them.
- **Life-threatening breathing problems or reduced blood pressure** may occur with opioid use. Talk to your doctor about whether any health conditions you have may increase your risk.
- **Your pain may worsen** with long-term opioid use or at higher doses. You may not feel pain relief with further increases in your dose. Talk to your doctor if this happens to you, as a lower dose or a change in treatment may be required.
- **Withdrawal symptoms**, such as widespread pain, irritability, agitation, flu-like symptoms and trouble sleeping, are common when you stop or reduce the use of opioids.
- **Babies born to mothers taking opioids** may develop life-threatening withdrawal symptoms.
- **Use only as directed.** Crushing, cutting, breaking, chewing or dissolving opioids before consuming them can cause serious harm, including death.

SIGNS OF OVERDOSE

- Hallucinations
- Confusion
- Difficulty walking
- Extreme drowsiness/dizziness
- Slow or unusual breathing
- Unable to be woken up
- Cold and clammy skin

Call 911 right away if you suspect an opioid overdose or think you may have taken too much. *

* Naloxone has been approved by Health Canada to temporarily reverse known or suspected opioid overdoses.

POSSIBLE SIDE EFFECTS

- Reduced physical and/or mental abilities, depression
- Drowsiness, dizziness, risks of falls/fractures
- Heart palpitations, irregular heartbeat
- Problems sleeping, may cause or worsen sleep apnea
- Vision problems, headache
- Low sex drive, erectile dysfunction, infertility
- Severe constipation, nausea, vomiting

YOUR OPIOIDS MAY BE FATAL TO OTHERS

- **Never give your opioid medicine to anyone.**
- Store opioids (including used patches) in a secure place to prevent theft, problematic use or accidental exposure.
- Keep opioids out of sight and reach of children and pets. Taking even one dose by accident can be fatal.
- Never throw opioids (including used patches) into household trash where children and pets may find them.
- Return expired, unused or used opioids (including patches) to a pharmacy for proper disposal.

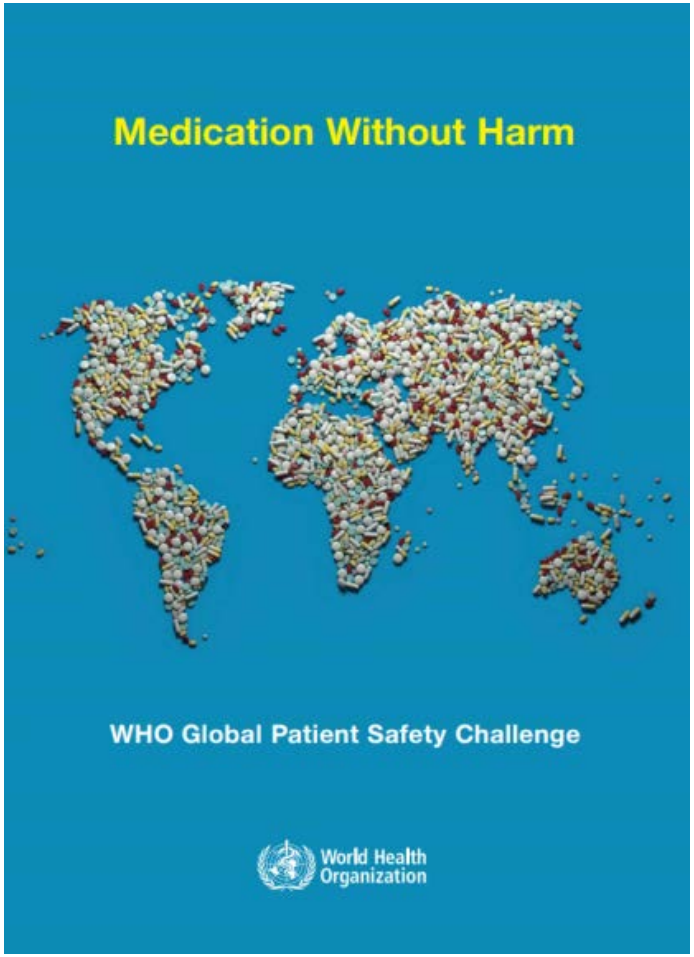
This handout is a summary and will not tell you everything about opioid medicines.

More information about the opioid you have been prescribed (or naloxone) can be found online in the Product Monograph: https://health-products.canada.ca/dpd-bdpp/index-eng.jsp

Date: 2018/05/02

https://www.canada.ca/en/health-canada/services/drugs-health-products/drug-products/applications-submissions/policies/warning-sticker-opioid-patient-information-handout.html

Sustain and Improve Impact



Global collaboration:

Key action area of focus is High Risk Situations

Preventing harm from high-alert medications is a key opportunity.

Thank You

Sylvia Hyland: Sylvia.Hyland@ismpcanada.ca

General Inquiries: info@ismpcanada.ca

There are no commercial financial affiliations related to the content of the presentation.