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SCDPIM Système canadien de déclaration et de prévention des incidents médicamenteux

ISMP Canada Safety Bulletin

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Do Not Use a Syringe for a Topical Product – A Focus on Chlorhexidine Disinfectant Solutions

To prevent inadvertent injection of topical solutions, hospitals should:

- *Ensure topical solutions are available in ready-to-use labelled formats.*
  - *For topical chlorhexidine, chlorhexidine-impregnated swabs are an ideal choice; an alternative is a visually distinct tinted solution.*
- *Develop separate, easily differentiated processes for the storage, preparation, and handling of medications intended for topical application and those intended for parenteral injection.*

The practice of drawing a medication intended for topical use into a syringe is unacceptable. Most syringes are intended for parenteral administration and pose a risk for a substitution error and/or inadvertent injection.[1] This practice has resulted in potentially deadly and preventable medication safety incidents.[2] Continuing concerns related to inadvertent injection of chlorhexidine solution intended for topical application serve as a reminder of the need to review practices in patient care areas such as the operating room, where both topical and injectable solutions are used.[3] ISMP Canada has previously made specific recommendations concerning the use of topical epinephrine in the operating room, and these recommendations have informed subsequent standards[4] and the Never Events for Hospital Care in Canada.[5]

The risk for inadvertent wrong route injection exists for any topical solution that is used in an environment where syringes are present.

The literature contains reports of medication incidents from several countries, some fatal, involving the inadvertent parenteral injection of chlorhexidine disinfectant solution intended for topical application.[6-9] In some incidents, both the chlorhexidine disinfectant solution and the solution intended for injection (e.g., a local anesthetic, an injectable medical dye) had been poured into open, unlabelled bowls in the operating room; the incorrect solution was then drawn up into a syringe and administered parenterally. Previous recommendations from ISMP Canada have warned against the use of open containers to hold medications intended for injection.[2]

Practitioners and hospitals are urged to proactively review the management of solutions intended for topical application. ISMP Canada has shared its concerns with the Medication Management Technical Committee of the Health Standards Organization (HSO), a global standard-setting organization. Other standard-setting organizations are encouraged to consider ISMP Canada's recommendations to prevent harm or death due to inadvertent injection of topical products.

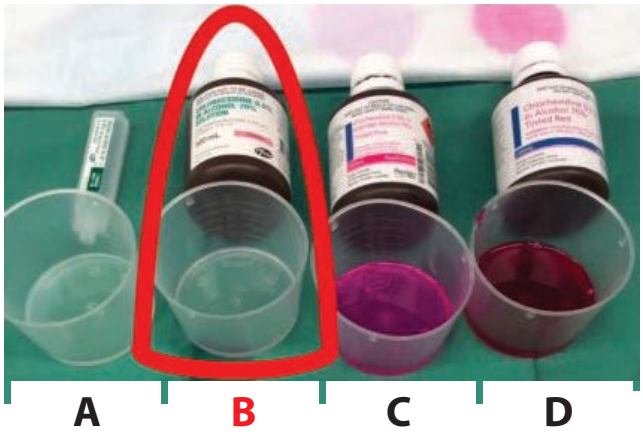
RECOMMENDATIONS

Hospital Procurement

By implementing the following recommended system safety enhancements, organizations can reduce preventable inadvertent injection of topical chlorhexidine products:

- Ensure that products are in ready-to-use formats. Chlorhexidine-impregnated swabs should be the only form of chlorhexidine available for skin disinfection in the procedure area, where available.[10]
- If chlorhexidine solution must be used (e.g., because swabs are unavailable), only procure formulations that are tinted with a visually distinct dye (Figure 1), to provide a visual cue that the liquid is not to be injected.[10] Avoid supplying a clear chlorhexidine solution that could be mistaken for a product intended for parenteral administration.
  - Note: Use of a tinted product should be accompanied by a check that the patient is not allergic to the dye used in the product.

Figure 1. Examples of topical chlorhexidine products found outside of Canada, including formulations that are visually distinct from products intended for injection (reprinted with permission from The PatientSafe Network[3]).



A - Saline (colourless solution)
B - 0.5% chlorhexidine & alcohol (this indistinct solution has been mistaken for colourless solutions leading to deaths and severe patient harm)
C - 0.5% chlorhexidine & alcohol (distinct colouring & does not stain skin)
D - 0.5% chlorhexidine & alcohol (distinct colouring & does stain skin)

Clinical Management and Staff

System interventions should be designed to segregate use of products for distinct purposes. Until optimal product designs for safety are in place (e.g., availability of products in ready-to-use formats, use of unique connectors for different routes of administration), the following strategies can help mitigate the risk of inadvertent injection of topical products:

- Do not use a syringe to draw up, hold, or apply a solution intended for topical use.
  - Note: Although a small selection of topical syringes may be available, topical medications should only be administered with a distinct topical applicator.
- Develop separate, easily differentiated processes for the storage, preparation, and handling of medications intended for topical application and those intended for parenteral injection.
  - Ensure that the word "TOPICAL" appears on the label of any container used to hold a solution intended for topical application.[1,2,11]
  - Perform skin preparation before introducing equipment and injectable solutions to the sterile procedure area.[10] This ensures that skin preparation solutions, such as chlorhexidine, can be removed and kept separate from injectable solutions used during procedures.
  - Label every syringe and container with its contents.[11] Sterile preprinted labels are available to facilitate labelling in sterile areas, including operating rooms. Discard any unlabelled syringes and containers.[12]

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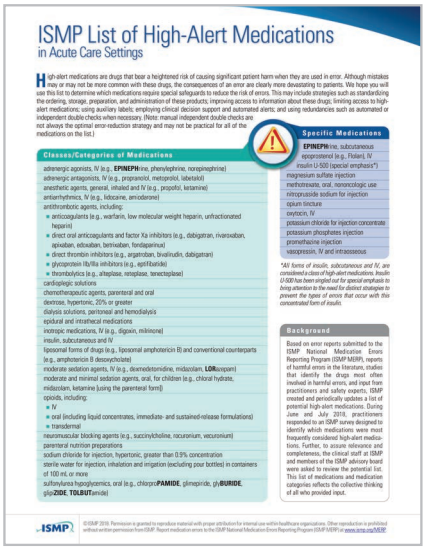
ISMP List of High-Alert Medications
in Acute Care Settings

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., EPINEPHrine, 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)
  - direct oral anticoagulants and factor Xa inhibitors (e.g., dabigatran, rivaroxaban, apixaban, edoxaban, betrixaban, fondaparinux)
  - direct thrombin inhibitors (e.g., argatroban, bivalirudin, dabigatran)
  - glycoprotein IIb/IIIa inhibitors (e.g., eptifibatide)
  - thrombolytics (e.g., alteplase, reteplase, tenecteplase)
- cardioplegic solutions
- chemotherapeutic agents, parenteral and oral
- dextrose, hypertonic, 20% or greater
- dialysis solutions, peritoneal and hemodialysis
- epidural and intrathecal medications
- inotropic medications, IV (e.g., digoxin, milrinone)
- insulin, subcutaneous and IV
- liposomal forms of drugs (e.g., liposomal amphotericin B) and conventional counterparts (e.g., amphotericin B desoxycholate)
- moderate sedation agents, IV (e.g., dexmedetomidine, midazolam, LORazepam)
- moderate and minimal sedation agents, oral, for children (e.g., chloral hydrate, midazolam, ketamine [using the parenteral form])
- opioids, including:
  - IV
  - oral (including liquid concentrates, immediate- and sustained-release formulations)
  - transdermal
- neuromuscular blocking agents (e.g., succinylcholine, rocuronium, vecuronium)
- parenteral nutrition preparations
- sodium chloride for injection, hypertonic, greater than 0.9% concentration
- sterile water for injection, inhalation and irrigation (excluding pour bottles) in containers of 100 mL or more
- sulfonylurea hypoglycemics, oral (e.g., chlorproPAMIDE, glimepiride, glyBURIDE, glipiZIDE, TOLBUTamide)

Specific Medications

- EPINEPHrine, 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
- potassium phosphates injection
- promethazine injection
- vasopressin, IV and intraosseous

*All forms of insulin, subcutaneous and IV, are considered a class of high-alert medications. Insulin U-500 has been singled out for special emphasis to bring attention to the need for distinct strategies to prevent the types of errors that occur with this concentrated form of insulin.

Background

Based on error reports submitted to the ISMP National Medication Errors Reporting Program (ISMP MERP), reports of harmful errors in the literature, studies that identify the drugs most often involved in harmful errors, and input from practitioners and safety experts, ISMP created and periodically updates a list of potential high-alert medications. During June and July 2018, practitioners responded to an ISMP survey designed to identify which medications were most frequently considered high-alert medications. Further, to assure relevance and completeness, the clinical staff at ISMP and members of the ISMP advisory board were asked to review the potential list. This list of medications and medication categories reflects the collective thinking of all who provided input.

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Updated: ISMP (US) List of High-Alert Medications in Acute Care Settings

ISMP (US) recently updated its List of High-Alert Medications in Acute Care Settings. The list is based on error reports that the organization has received, reports of harmful incidents and studies in the literature, and input from practitioners and safety experts in acute care. ISMP (US) has similar lists for community/ambulatory and long-term care settings.

ISMP (US) List of High-Alert Medications

In Acute Care Settings
https://www.ismp.org/recommendations/high-alert-medications-acute-list

In Community/Ambulatory Settings
https://www.ismp.org/recommendations/high-alert-medications-community-ambulatory-list

In Long-Term Care Settings
https://www.ismp.org/recommendations/high-alert-medications-long-term-care-list

Opportunity to Pilot a Novel MSSA with a Focus on "Never Events"

ISMP Canada and the Canadian Patient Safety Institute are calling for teams from hospitals, ambulatory care centres and long-term care homes to pilot a novel Medication Safety Self-Assessment (MSSA) during the months of December 2018 and January 2019.

This new assessment program highlights the five pharmaceutical "never events" included in the Never Events for Hospitals in Canada Report[1] as well as safety strategies to prevent other critical incidents with high-alert medications. Feedback from the pilot will inform the final version, which will be launched in April 2019. The pilot version is available in English only; the final version will also be available in French.

Details and registration are available from: https://mssa.ismp-canada.org/never-events. There is no cost associated with participating in the pilot.

[1] Health Quality Ontario and Canadian Patient Safety Institute. Never Events for Hospitals in Canada, September 2015. Available from: http://www.patientsafetyinstitute.ca/en/toolsResources/NeverEvents/Documents/Never%20Events%20for%20Hospital%20Care%20in%20Canada.pdf.

This segment of the bulletin describes a recent SafeMedicationUse.ca publication from ISMP Canada's Consumer Program.

SafeMedicationUse.ca

August 2018 - Newsletter:

You Asked Us: "Should I Change My Pharmacy after a Mistake?"

Mistakes can be made by anyone—even people who are well trained, experienced, and doing their professional best. SafeMedicationUse.ca shares information about medication-related mistakes (also known as medication incidents), including ones that occur in pharmacies, as each such occurrence is an opportunity for improvement. Even so, a consumer may wish to switch pharmacies if there has been a mistake.

SafeMedicationUse.ca suggests that consumers think about the following points before deciding to switch:

- Prescriptions are best filled at a pharmacy where the staff members are familiar with you and your medication history. This familiarity reduces the chances for drug interactions.
- A responsible pharmacy, one that you may want to stay with and trust, will follow the steps outlined in the newsletter What to Expect if the Pharmacy Makes a Mistake.

Tips for Practitioners

- Maintain a good relationship with your patients by acknowledging any medication errors that occur and offering an apology. In cases of error, empathize with the patient's situation, and focus on the person's best interests. Being open and honest about a medication error will help the patient to maintain trust in you and your pharmacy. The Canadian Disclosure Guidelines can help with this type of communication.
- Improve transparency by letting the patient know what you have learned and what has changed as a result of any complaints. This information will convey to the patient that your pharmacy has a good process for continuous quality improvement.
- If a patient chooses to change pharmacies, be sure to provide a detailed record of the medication history for the person to keep and to share with the new pharmacy team.

For more information, read the full newsletter: https://www.safemedicationuse.ca/newsletter/trust.html

Med Safety Exchange – Webinar Series

- Safety Considerations for Sterile Compounding in Oncology
- Over-reliance on Technology

Wednesday, November 28, 2018

Join your colleagues across Canada for complimentary bi-monthly 50 minute webinars to share, learn and discuss incident reports, trends and emerging issues in medication safety!

For more information, visit
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CMIRPS SCDPIM
Canadian Medication Incident Reporting and Prevention System
Système canadien de déclaration et de prévention des incidents médicamenteux

The Canadian Medication Incident Reporting and Prevention System (CMIRPS) is a collaborative pan-Canadian program of Health Canada, the Canadian Institute for Health Information (CIHI), the Institute for Safe Medication Practices Canada (ISMP Canada) and the Canadian Patient Safety Institute (CPSI). The goal of CMIRPS is to reduce and prevent harmful medication incidents in Canada.

HIROC

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

ISMP CANADA

The Institute for Safe Medication Practices Canada (ISMP Canada) is an independent national not-for-profit organization committed to the advancement of medication safety in all healthcare settings. ISMP Canada's mandate includes analyzing medication incidents, making recommendations for the prevention of harmful medication incidents, and facilitating quality improvement initiatives.

Report Medication Incidents

(Including near misses)

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