Institute for Safe Medication Practices Canada
REPORT MEDICATION INCIDENTS
Online: www.ismpcanada.ca/report/
Phone: 1-866-544-7672

A KEY PARTNER IN
CMIRPS Canadian Medication Incident Reporting and Prevention System
SCDPIM Système canadien de déclaration et de prévention des incidents médicamenteux

ISMP Canada Safety Bulletin

Volume 23 • Issue 12 • December 19, 2023

Pre-pouring Medications: A Risky Approach

Well-intentioned healthcare providers will sometimes use workarounds that are perceived to be more efficient than expected practice, often because an existing procedure does not fit the workflow. Pre-pouring is a type of workaround, described as a delay between preparation and administration of a medication or the preparation of multiple medications for different clients.[1] Previous safety publications have identified risks for error with the practice of pre-pouring. An analysis of a cluster of incidents recently reported identified that pre-pouring continues to be a contributing factor and risk to patient safety. This bulletin describes examples from the cluster of incidents and shares recommendations to reduce the need for this practice.

INCIDENT EXAMPLES

The following reported incidents describe different examples of pre-pouring.

Incident 1: *A medication cup containing opioid tablets was left at the bedside to provide pain control for a patient recovering from surgery. The patient was instructed to take the medications when experiencing pain and then to notify the nurse.*

Opioids were continuously provided and replenished, without assessing the patient for efficacy of analgesia taken, altered level of consciousness and early warning signs of a significant change in the patient's condition. After taking several doses, the patient experienced significant hypotension, attributed to the opioids, which led to unconsciousness and required fluid resuscitation.

Incident 2: *A patient in an intensive care unit was intubated and ventilated. When the patient became agitated, an IV push dose of propofol was ordered because maintaining the airway was a concern. A syringe of propofol prepared on the previous shift by a different nurse was readily available at the bedside, and used to administer the dose. Shortly after administration the patient became oversedated. The patient was monitored, and did not require any further interventions. It was later determined that a ten-fold error had occurred; the syringe was labelled with the incorrect dose.*

Incident 3: *In a long-term care home, an antipsychotic medication was mixed into a cup of milk for a resident. The cup was placed on a tray which was inadvertently given to another resident. Fortunately, there was no reported harm to the resident who drank the milk.*

DISCUSSION

Several Canadian provincial nursing regulatory bodies, in their medication administration standards, make specific mention of pre-pouring as a practice to be avoided.[1-7] Most provincial regulatory authorities expect their members to prepare medications just prior to the time of intended administration.

Box 1 describes reasons to avoid pre-pouring medications.

BOX 1. Reasons to Avoid Pre-pouring Medications.

Pre-pouring is a behaviour that puts patients at risk and is not recommended for the following reasons:

- often involves removal of the medication from packaging that identifies the medication and/or the intended recipient
- often prevents confirmation of the medication/dose to be administered against the medication administration record (MAR) just before the patient receives the medication
- adds risk when pre-poured medications are available at the bedside for self-administration without a clear protocol
- may lead to delayed and/or inaccurate documentation
- clouds accountability for safe medication administration between the nurse preparing the medication and the one administering it to the patient[5]
- creates possible added risk for contamination (e.g., with pre-drawn syringes)
- enables diversion in some care settings

RECOMMENDATIONS

Healthcare Organizations

- Develop or review a policy that describes acceptable situations in which more than one nurse is involved in the preparation and administration of a medication: for example, in the event of a cardiac arrest.[5]
- Consider regular pre-pouring of medications as an opportunity to identify the underlying issues leading to this workaround. A proactive approach, such as a cognitive walkthrough,[8] can help to identify risks and assess solutions to improve medication administration.

Nurses

- At the end of a nursing shift, dispose of any medications that have been prepared in a syringe. Additionally, at the beginning of a nursing shift, any medications that have been prepared on a previous shift should be discarded.
- Prepare medications just prior to administration, to support a check against the original product and MAR, patient identification and timely documentation.
- Prepare and administer medications for one patient at a time to minimize the risk of wrong patient errors.
- For emergency situations when more than one nurse is involved in the preparation and administration of a medication, one nurse prepares and labels the medication while the other nurse administers it after an independent double check. Some regulatory nursing bodies require both nurses to document in the patient's health care record.[5]

CONCLUSION

The recent analysis of a cluster of incidents has identified the continued practice of pre-pouring medications. Workarounds, such as pre-pouring, can contribute to harmful incidents and they leave system-based problems unsolved.[9,10] In order to support safe medication practices, health care teams are encouraged to identify at-risk behaviours such as pre-pouring and collaboratively develop and evaluate system solutions for added safety.[11]

ACKNOWLEDGEMENTS

ISMP Canada gratefully acknowledges the consumers, health care providers, and organizations that report medication incidents for analysis and learning. The expert review of this bulletin by the following individuals (in alphabetical order) is also recognized and appreciated:

Joanne Gallant RN BScN, Clinical Leader of Development, IWK Health, Halifax, NS; Renée Létourneau inf. M Sc., Conseillère cadre clinicienne à la Direction des soins infirmiers, Centre intégré universitaire de santé et de services sociaux – Centre hospitalier universitaire de Sherbrooke (CIUSSS de l'Estrie-CHUS); Beth Linseman RN BScN, CNCC(C), Clinical Educator, Critical Care Unit, Sunnybrook Health Sciences Centre

REFERENCES

1. Medication management standards. Edmonton (AB): College of Registered Nurses of Alberta. 2021 Mar [cited 2023 Sept 18]. Available from: https://nurses.ab.ca/media/3lfhdrrq/medication-management-standards-mar-2021.pdf
2. Medication. Vancouver (BC): British Columbia College of Nurses & Midwives. 2023 [cited 2023 Sept 18]. Available from: https://www.bccnm.ca/RN/learning/medication/Pages/Default.aspx
3. Unsafe medication practices. Regina (SK): College of Registered Nurses of Saskatchewan. 2023 [cited 2023 Sept 18]. Available from: https://www.crns.ca/nursing-practice/nursing-practice-resources/resource-toolkits/rn-manager-tool/unsafe-medication-practices/
4. Frequently asked questions (FAQ)-medication management. Fredericton (NB): Nurses Association of New Brunswick. 2020 Jun [amended 2023 Jun; cited 2023 Sept 18]. Available from: https://www.nanb.nb.ca/wp-content/uploads/2022/08/NANB-FAQ-MedicationManagement-Oct20-E.pdf
5. Medication guidelines for nurses. Nova Scotia College of Nursing. 2020 Feb [revised 2023 Feb; cited 2023 Sept 18]. Available from: https://cdn1.nscn.ca/sites/default/files/documents/resources/MedicationGuidelines.pdf
6. Norme d'exercice : administration sécuritaire des médicaments. Montréal (QC): Ordre des infirmières et infirmiers du Québec. [cited 2023 Oct 5]. Available from: https://www.oiiq.org/pratique-professionnelle/encadrement-de-la-pratique/normes-exercices/administration-securitaire-medicaments
7. Medication management. Mount Pearl (NL): College of Nurses of Newfoundland & Labrador. 2019 [cited 2023 Oct 5]. Available from: https://crnnl.ca/site/uploads/2022/03/medication-management.pdf
8. Include cognitive walkthrough in proactive risk assessments. ISMP Can Saf Bull. 2012 [cited 2023 Nov 15];12(1):1-3. Available from: https://ismpcanada.ca/wp-content/uploads/ISMPCSB2012-01-Cognitive_Walkthrough.pdf
9. Bianchi M, Ghirotto L. Nurses' perspectives on workarounds in clinical practice: A phenomenological analysis. J Clin Nurs. 2022 Oct;31(19-20):2850-2859.
10. Analysis of harmful medication incidents involving psychotropic medications. ISMP Can Saf Bull. 2012 [cited 2023 Nov 22];12(2):1-4. Available from: https://ismpcanada.ca/wp-content/uploads/ISMPCSB2012-02_Analysis_of_Harmful_Med_Incidents_Involving_Psychotropic_Meds.pdf
11. Medication [Practice Standard]. Toronto (ON): College of Nurses of Ontario. 2022 [cited 2023 Nov 22]. Available from: https://www.cno.org/globalassets/docs/prac/41007_medication.pdf

Sick Days: Medications and Dehydration

A recent SafeMedicationUse.ca newsletter for consumers described an individual who died after experiencing euglycemic diabetic ketoacidosis. The person became dehydrated while ill but continued to take their empagliflozin, an antidiabetic agent from the sodium-glucose cotransporter-2 (SGLT2) inhibitor class. This class of medications is included in the so-called SADMANS group of medications that should be paused if patients become dehydrated for any reason. In the setting of dehydration, the SADMANS drugs can have deleterious effects on the kidneys, as well as other serious adverse effects.[1,2]

- **S** Sulfonylureas
- **A** ACE inhibitors
- **D** Diuretics
- **M** Metformin
- **A** Angiotensin receptor blockers
- **N** Nonsteroidal anti-inflammatory drugs
- **S** SGLT2 Inhibitors

Tips for Practitioners

- Help patients to develop a "sick day" management plan for patients who are taking medications in the SADMANS group. Specify which medications to pause during illness, when to resume them, and how to maintain hydration.
- Encourage patients to share the "sick day" management plan with other members of the patient's care team.

Tips for Organizations and Facilities

- Consider creation of or updates to organizational patient management protocols (e.g., for diabetes) to reflect the need to review and potentially hold medications in the SADMANS group.
- Consider the use of decision supports for SADMANS medications in prescriber order entry and/or pharmacy systems to alert practitioners to the risks associated with these medications in at-risk patient groups.

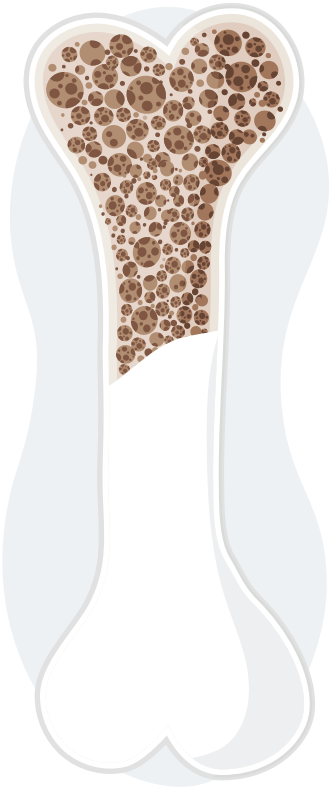
Consumer newsletter to share with your patients/clients/residents:
https://safemedicationuse.ca/newsletter/downloads/202305NewsletterV14N04-Meds-Dehydration.pdf

References

1. Type 2 diabetes and sick days: medications to pause. Saskatoon (SK): University of Saskatchewan, Pharmacy and Nutrition, Rx Files Academic Detailing; 2023 [cited 2023 Jan 11]. Available from: https://www.rxfiles.ca/rxfiles/uploads/documents/SADMANS-Rx.pdf
2. Medicines and dehydration: patient information (version 2). Edinburgh (Scotland): Healthcare Improvement Scotland, Scottish Patient Safety Programme; 2018 [cited 2023 Nov 9]. Available from: https://ihub.scot/media/1401/20180424-web-medicine-sick-day-rules-patient-leaflet-web-v20.pdf

Keeping Track of Your Medications to Prevent or Treat Osteoporosis

A recent SafeMedicationUse.ca newsletter described an error with an osteoporosis medication that was administered too frequently, which resulted in serious adverse effects. A family member shared that their parent received their first injection of denosumab (Prolia) in the community before transitioning to a long-term care home. At the home, the patient received an additional 3 doses at monthly intervals over the next 3 months, even though denosumab should only be administered every 6 months.



Two contributing factors identified in a review of the incident were a poor medication reconciliation process upon admission to the home and availability of a larger-than-needed quantity of the medication in the care area of the home.

Recommendations for Practitioners in the Community and in Care Facilities

- Review new osteoporosis medication in detail with your patient and/or their care partners.
  - Emphasize atypical dosing frequencies (e.g., every 6 months) and discuss any special administration instructions (e.g., take on an empty stomach and remain upright for 30-60 min for oral bisphosphonates).
- Help patients to update their medication lists and encourage them to share their lists with other health care providers involved in their care.
- Encourage patients to document administration dates for medications that are administered infrequently (e.g., monthly or at longer intervals) using a paper calendar or the calendar app on their phone. This information helps patients to identify the correct date for their injection, and to book future appointments at appropriate intervals.
- Before administering a dose of any medication, confirm that an appropriate interval has elapsed since the previous dose. Speak with the patient and/or their care partner and check any previous administration or dispensing records (e.g., family doctor's instructions, patient notes, community pharmacy records).
- For osteoporosis medications that are given infrequently, consider obtaining single doses to be dispensed from the pharmacy on a "just-in-time" basis.


SafeMedicationUse.ca

SafeMedicationUse.ca Newsletter

Keeping Track of Your Medications to Prevent or Treat Osteoporosis

Consumer newsletter to share with your patients/clients/residents:
https://safemedicationuse.ca/newsletter/downloads/202304NewsletterV14N03-osteoporosis.pdf

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 Healthcare Excellence Canada (HEC). 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)

Online: www.ismpcanada.ca/report/
Phone: 1-866-544-7672

ISMP Canada strives to ensure confidentiality and security of information received, and respects the wishes of the reporter as to the level of detail to be included in publications.

Stay Informed

To receive ISMP Canada Safety Bulletins and Newsletters visit:

www.ismpcanada.ca/safety-bulletins/#footer

This bulletin shares information about safe medication practices, is noncommercial, and is therefore exempt from Canadian anti-spam legislation.

Contact Us

Email: cmirps@ismpcanada.ca
Phone: 1-866-544-7672