Ontario
CRITICAL Incident Learning
Improving quality in patient safety

Issue 2
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Distributed to:

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

Suggested action items:

- Refer bulletin to pharmacy and therapeutics committee for evaluation of pharmacy practices and for comment to the medical advisory committee
- Refer bulletin to nursing leadership committees for evaluation of nursing practices and for comment to senior administration
- Refer bulletin to quality/patient safety committees for evaluation of hospital practices
- Circulate bulletin to physicians and other front-line staff
- Use bulletin as an educational resource in your hospital safety huddles or rounds

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HYDROmorphone remains a high-alert drug

The following report shares learning from a fatal HYDROmorphone incident that occurred in an Ontario hospital.

Background

- HYDROmorphone 0.2 to 0.4 mg subcutaneously every hour as needed for pain was prescribed for a patient.
- A 10-fold dosing error occurred, whereby HYDROmorphone 4 mg was administered instead of the 0.4 mg ordered.
- The dose had been drawn from a high-concentration (10 mg/mL) vial of HYDROmorphone.
- Although the facility did not maintain high-concentration HYDROmorphone as floor stock, it was not uncommon for nurses to borrow HYDROmorphone from patient-specific stock.
- The patient was found without vital signs shortly after administration of the HYDROmorphone.

Learning from Analysis

- Consistent with other reported HYDROmorphone administration errors, the availability of a high-concentration HYDROmorphone product played a significant role in the incident.[1]
- The practice of borrowing opioids from patient-specific stock, which sometimes occurred in this facility, may have introduced the risk of misidentifying the drug or the intended patient.
- An independent double-check,[2] which might have uncovered the error before administration, was not mandated by the facility's drug-administration procedures and was not performed in this case.

Call to Action for Hospitals

- Remove HYDROmorphone vials containing a total dose greater than 2 mg from floor stock, in accordance with Accreditation Canada's Required Organizational Practices[3] and ISMP Canada recommendations,[4] and audit compliance with this policy frequently.
- If high-concentration HYDROmorphone must be dispensed for a specific patient, create a mechanism for the prompt and secure return to the pharmacy of unused doses (e.g., after the patient is discharged or transferred to another care area).
- Develop drug access mechanisms specifically designed to reduce the need to borrow medications from other patients or other care areas.
- Design a standard chart for typical facility doses of HYDROmorphone with instructions for proper preparation of low doses.
- Require independent double checks before administration of high-alert medications.
- Consider having pharmacy repackage injectable HYDROmorphone into low-dose syringes or patient-specific doses.

Discussion

From October 1, 2011, to December 31, 2012, a total of 35 Ontario incidents involving HYDROmorphone were reported to the National System for Incident Reporting.[5,6] HYDROmorphone continues to be 1 of the top 3 medications involved in incidents associated with harm or death that are voluntarily reported to ISMP Canada.[7,8] Provincial ministries of health, Accreditation Canada, various offices of the chief coroner or medical examiner, and other organizations have supported initiatives such as removal of high-concentration HYDROmorphone from patient care areas, use of TALLman lettering, implementation of independent double checks, and development of commercial low-dose products by Canadian manufacturers.

In the case presented above, the availability of high-concentration HYDROmorphone in the patient care unit, the lack of a standardized independent double-check process, the practice of borrowing doses of medication from other units or from patient-specific stock, and frequent distractions in the work area were all identified as factors contributing to the error. In its report, the facility also identified other aspects of the medication-use process where improvements in medication safety could be realized, including segregation of morphine from HYDROmorphone in storage areas, increased automation and computerization, improvements in warnings on medication labels and medication administration records, routine audits of opioid storage areas, staff education, and policy review.

Conclusion

HYDROmorphone is a high-alert drug with substantial potential for harmful consequences if involved in medication incidents. ISMP Canada recommends high-leverage, system-focused safety strategies. In this case, removal of the high-concentration preparation of HYDROmorphone from the care unit would have made a 10-fold dosing error unlikely; in addition, a standardized, independent double-check procedure might have prevented the error from reaching the patient. The ideal scenario would be availability of a dosage form in the prescribed dose (e.g., as a prefilled syringe), prepared and administered with the support of an independent double-check process. Individual practitioners and administrators in Ontario healthcare facilities are encouraged to closely examine the processes for use of HYDROmorphone in their organizations and to take steps to improve patient safety.

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We gratefully acknowledge the review of this bulletin by the facility where the incident described took place.

[1] Report to the Attorney General – Public inquiry into the death of Lucy Lecavalier. Edmonton (AB): Alberta Justice and Solicitor General; 2012 [cited 2013 Jan 31]. Available from: http://justice.alberta.ca/programs_services/fatality/Publications_Sudden_death_investigation/Report-Lecavalier.aspx/DispForm.aspx?ID=150

[2] Lowering the risk of medication errors: independent double checks. ISMP Can Saf Bull. 2005 [cited 2013 Feb 25];5(1):1-2. Available from: https://www.ismp-canada.org/download/safetyBulletins/ISMPCSB2005-01.pdf

[3] Required organizational practices 2012. Ottawa (ON): Accreditation Canada; 2012 [cited 2013 Feb 4]. Available from: http://www.accreditation.ca/uploadedFiles/ROP%20Handbook.pdf

[4] Priority recommendations for Ontario hospital narcotic (opioid) project. Toronto (ON): Institute for Safe Medication Practices Canada; 2005 [cited 2013 Feb 4]. Available from: https://www.ismp-canada.org/download/Narcotic_Priority_Recommendations.pdf

[5] National System for Incident Reporting. Ottawa (ON): Canadian Institute for Health Information. Analysis generated on 2013 Jan 7.

[6] Minimum data set. In: National System for Incident Reporting. Ottawa (ON): Canadian Institute for Health Information; 2012.

[7] Top 10 drugs reported as causing harm through medication error. ISMP Can Saf Bull. 2006 [cited 2013 Feb 4];6(1):1-2. Available from: http://www.ismp-canada.org/download/safetyBulletins/ISMPCSB2006-01Top10.pdf

[8] Shared learning – reported incidents involving hydromorphone. ISMP Can Saf Bull. 2006 [cited 2013 Feb 4];6(9):1-3. Available from: https://www.ismp-canada.org/download/safetyBulletins/ISMPCSB2006-09Hydromorphone.pdf

Collaborating parties of the Ontario Critical Incident Reporting program

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