Issue 15, January 2016

Suggested Action Items

- Refer bulletin to pharmacy and therapeutics committee, with recommendation to review processes for prescribing, preparing, and administering high-alert medications.
- Create a list of high-alert medications that are in use in your facility.
- Refer bulletin to nursing leadership to heighten awareness about the importance of recognizing high-alert medications and ensure that the associated safety procedures are in place and being performed consistently.
- Circulate bulletin to all staff involved in the medication use process to ensure they are aware of their roles and responsibilities in the safe use of high-alert medications.
- Use bulletin as an educational resource in your hospital safety huddles or rounds.

Distributed to:

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

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High-Alert Medications Need Multiple Safeguards

High-alert medications (e.g., opioids, insulin, and anticoagulants) may not be inherently more likely to be involved in medication errors, but they carry an elevated risk of more serious harm to patients if an error occurs with their use. The potential consequences of these errors necessitate multiple enhanced safeguards designed to prevent errors from occurring along the medication-use process continuum, from prescribing and dispensing through to administration and monitoring. Since a single type of intervention is insufficient to ensure the safe use of high-alert medications, a multimodal approach is needed, including higher-leverage, system-based strategies such as constraints, automation, standardization and simplification along with lower-leverage strategies such as education, checklists and double checks.[1,2] The application of different safety strategies along the medication-use continuum creates multiple points where errors can be detected and corrected. For example, limiting access to high-alert medications in floor stock and ensuring pharmacist review of orders for such medications before administration of the first dose increases the likelihood that an unsafe dose or medication combination will be detected before administration. Facilities are encouraged to review their processes for high-alert medications to ensure that the necessary safeguards are in place and they are being performed consistently.

Advice for Hospitals

Make drug safety a strategic priority:

- Create a list of high-alert medications that are in use in your facility; a list of high-alert medications is available from: www.ismp.org/Tools/highalertmedications.pdf (This is an Accreditation Canada Required Organizational Practice.)
- Develop medication safety policies and procedures that enhance the ability of healthcare workers to use these medications safely.

Make systems-based changes to enhance safety:

- Review processes associated with each high-alert drug class and identify areas of vulnerability.
- Consider instituting safeguards that employ a variety of safety interventions at multiple points in the medication-use process.

Sustain high-quality practice:

- Review local medication incident data to identify vulnerabilities with high-alert medications.
- Regularly review the safety literature about medication safety strategies for high-alert medications.
- Routinely audit and solicit feedback about safety practices for high-alert medications.

Background

A patient receiving a therapeutic daily dose of dalteparin in the community was admitted to the intensive care unit (ICU) via the emergency department (ED). Admission orders written by the ED physician included continuation of dalteparin. A heparin infusion protocol was also ordered by means of a preprinted order form that included stop orders for

low-molecular-weight heparin, showing dalteparin as an example. The orders were then co-signed by a second physician, according to facility policy. There was a delay in transferring the patient to the ICU, so a nurse in the ED started the heparin infusion protocol at 1410 and then also administered dalteparin 18,000 units. The patient was transferred to the ICU at 1700, and the written orders were transcribed to the medication administration record and checked by 2 nurses. A few hours later, the patient died. Death was determined to be due to a subdural bleed.

Learning from Analysis

Multiple contributing factors were identified by the facility where this incident occurred. The ordering physician experienced several interruptions, and the presence in the ED of at least 2 other patients who were on dalteparin may have contributed to the drug being ordered for the patient, despite intentions not to do so. Familiarity and trust among the physicians led to co-signing of the orders without a thorough review, and although an independent double check (IDC) process was in place, an IDC was not completed before administration. The automated dispensing cabinet did display a high-risk medication alert when heparin and dalteparin were selected, but system functionality in place at the time of the incident did not alert staff members to the potential for duplication in therapy. It was determined that ED staff members did not question the duplicate therapy because they had previously observed heparin being given to patients who had been receiving dalteparin at home. Similarly, therapeutic duplication was not detected when orders were transcribed in the ICU. At the time of admission to ICU, a pharmacist was not readily available to review the orders.

Since the incident, the facility has implemented a multimodal approach to decrease the risk of recurrence of similar errors. The following higher-leverage changes have been instituted: medication reconciliation at the point of admission; and improvement of patient flow strategies to decrease the length of stay in ED for admitted patients, in particular for critically ill patients. Lower-leverage changes that have been put in place included creation of a quiet area to decrease distractions for physicians who are completing orders; review of independent double check policy with ED staff; and provision of education about the risks of therapeutic duplication, in particular with regard to high-risk medications.

Conclusion

This case illustrates how several vulnerabilities can converge to cause patient harm and highlights the need for safeguards at multiple steps in the medication-use process. Since errors can slip through individual intervention points or safety strategies, multiple safeguards are needed to reduce the risk of patient harm, including high-leverage strategies.

Individual practitioners and administrators in Ontario healthcare facilities are encouraged to closely examine the safety processes and interventions for high-alert medications that are already in place and continue efforts to promote safe and effective care in their respective organizations.

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

[1] Grissinger M. Medication error-prevention "toolbox". P T. 2003 May [cited 2015 Nov 2];28(5):298. Available from: http://wdtg.ptcommunity.com/journal/article/archives/2003/5/298/medication-error-prevention-toolbox
[2] Designing effective recommendations. Ont Crit Incid Learn. 2013 [cited 2015 Nov 3];(4):1-2. Available from: http://ismp-canada.org/download/ocil/ISMPCONCIL2013-4_EffectiveRecommendations.pdf

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