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

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Students Have a Key Role in a Culture of Safety:
A Multi-Incident Analysis of Student-Associated Medication Incidents

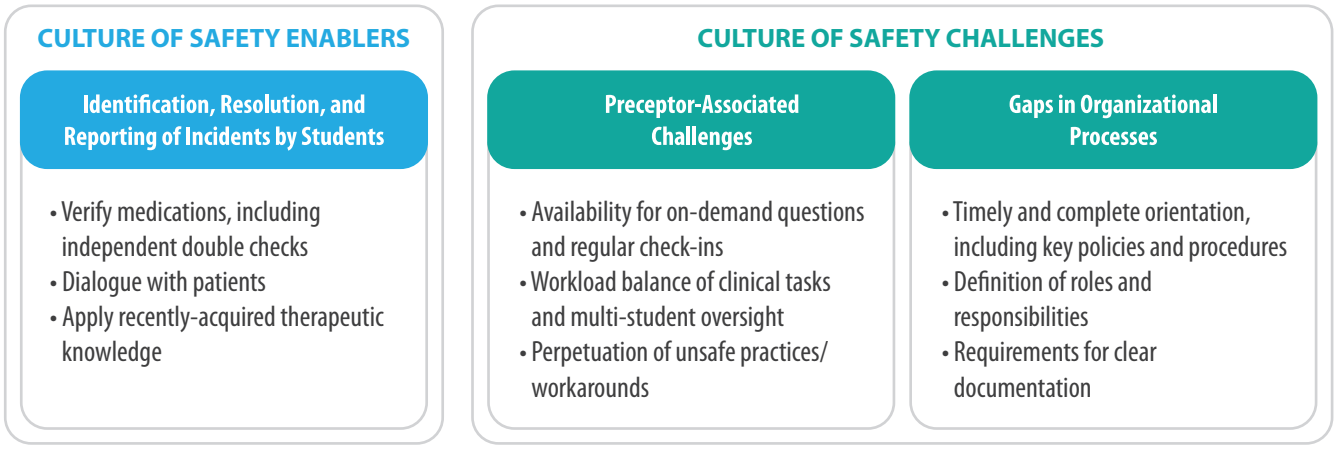
Undergraduate and postgraduate students in healthcare fields are future practitioners who are developing the skills and experience required to deliver safe and effective patient care. As part of their training, most students are exposed to a variety of practice environments, also known as experiential learning, to help prepare them for their eventual careers. A lack of Canadian literature describing the impact of healthcare students on medication safety prompted ISMP Canada to undertake a multi-incident analysis of student-associated medication incidents. This bulletin describes the main themes identified, along with selected subthemes and examples to illustrate students' role in a culture of safety.

Methodology

Student-associated medication incidents were extracted from voluntary reports* submitted to 3 ISMP Canada medication incident reporting databases (Individual Practitioner Reporting, Consumer Reporting, and Community Pharmacy Incident Reporting) and the National System for Incident Reporting† (NSIR) from April 2013 to March 2017.

The search was conducted using the keywords "student", "intern", "fellow", "grad", "apprentice", "clerk", and "resident". Initially, a total of

Figure 1. Main themes and subthemes



* It is recognized that it is not possible to infer or project the probability of incidents on the basis of voluntary reporting systems.
† The NSIR, provided by the Canadian Institute for Health Information, is a component of the Canadian Medication Incident Reporting and Prevention System (CMIRPS) program. More information about the NSIR is available from: http://www.cmirps-scdpim.ca/?p=12

1049 incidents were extracted and reviewed for relevancy; of these, 433 incidents were excluded because of irrelevancy and/or inadequate detail, which left 616 incidents for analysis. The analysis was conducted according to the methodology for multi-incident analysis outlined in the Canadian Incident Analysis Framework.[1]

Qualitative Findings

Student-associated medication incidents involved trainees in multiple disciplines, and occurred in a wide variety of healthcare settings. Analysis revealed 3 main themes, each with multiple subthemes (see Figure 1 on page 1), presented as culture of safety enablers or challenges.

CULTURE OF SAFETY ENABLERS

THEME: Identification, Resolution, and Reporting of Incidents by Students

Errors identified by students accounted for 263 (43%) of the analyzed reports. Students were active in recognizing, resolving, and reporting medication incidents made by other members of the team. The current practice of teaching medication safety principles to healthcare students supports a culture of safety, which may have provided a basis for students to identify and report incidents.

Two key processes that supported students to identify incidents were participation in medication verification and dialogue with patients.

Incident Example:
Depo-Medrol (methylprednisolone acetate) labelled as "Not for IV Use", was mistakenly provided instead of Solu-Medrol (methylprednisolone sodium succinate) intended for IV administration. Following the correct procedure for medication checks, a nursing student in the emergency department recognized the error and brought the discrepancy to the preceptor's attention.

Incident Example:
A prescription for Valtrex (valacyclovir) 500 mg twice daily for 6 days was received and processed at a community pharmacy. During patient counselling, the pharmacy student learned that the medication had been prescribed to treat a cold sore. The recommended regimen for this indication (Valtrex 2000 mg twice daily for 1 day) was suggested to and accepted by the prescriber.

PRACTICE TIP #1: Students bring a new perspective to the medication-use system, and should be encouraged to identify and report errors/gaps.

CULTURE OF SAFETY CHALLENGES

THEME: Preceptor-Associated Challenges

The value of oversight by and support from preceptors during students' rotations cannot be overstated. The availability of preceptors for both on-demand questions and regular check-ins is a critical component of a safe training environment. Factors contributing to inadequate oversight include high preceptor workload (e.g., preceptorship of multiple students, preceptorship of students in multiple separate locations, concurrent clinical demands) and lack of engagement on the part of the preceptor. Lack of oversight has previously been cited as a cause of errors,[2] and the need for appropriate supervision was reported in a recent US study on medication errors involving healthcare students.[3]

Incident Example:
A nursing student contacted the instructor to observe measurement and administration of insulin. They realized that only 2 units of insulin remained in the vial, which was not enough for the patient's dose. The instructor asked the student to find another vial, then left to help other students. The instructor did not return. The student eventually had to ask other nursing staff for assistance, and the insulin was administered late.

PRACTICE TIP #2: Be sure that the preceptor's workload accounts for the level of supervision each student needs to optimize his/her learning in a safe environment.

THEME: Gaps in Organizational Processes

Incident reports highlighted situations in which tasks were delegated to students before they were adequately oriented and prepared to perform them. Error-prone processes such as simultaneous preparation of medications for multiple patients and inconsistent use of the medication administration record contributed to several of the incidents in this analysis.[4]

Other reports described students not following organizational policies and procedures, noting that the students may not have been aware of them.

Incident Example:
A healthcare practitioner asked a medical student to hand over a syringe filled with midazolam, for an epidural injection, while pointing to the supply area where the syringe was lying. The student handed the practitioner a syringe containing rocuronium (a neuromuscular blocker) instead. The drug was administered, and the patient became partially paralyzed and required intubation.

Incident Example:
A pharmacy student was asked to refill the metformin bin in an automated dispensing machine, a process which involved selecting and scanning the bottle label prior to pouring the tablets into the machine. The student picked up 4 bottles of medication, but scanned the label of only 1 bottle 4 times instead of scanning each individually, with the aim of improving efficiency. The scanned bottle contained metformin but 1 of the other bottles selected contained Tylenol #3 tablets; both products are round, white tablets. As a result, 2 different medications were added to the same compartment of the automated dispensing machine.

PRACTICE TIP #3: Review organizational challenges impacting students at your facility to identify opportunities to improve the culture of safety.

Conclusion

The themes identified in this multi-incident analysis illustrate the positive contribution that students can make to medication safety; the importance of preceptor oversight; and the need for robust organizational processes for orienting new students.

The inexperience of students has been described as a factor contributing to medication incidents,[3] yet there are also positive aspects to having students in real-world healthcare settings. For example, they bring a unique perspective and may question processes that could allow opportunities for error.

It is paramount that future practitioners are trained in environments that support safe medication use and that allow them to utilize their knowledge to reduce opportunities for errors. Students have a key role in a culture of safety—organizational processes and appropriate training can focus on optimizing that role.

References

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Substitution Error in a Naloxone Kit

In the News

A recent news report described provision of an incorrectly prepared naloxone kit to a patient. Naloxone is intended to temporarily reverse the effects of an opioid overdose, but the patient discovered that an opioid had been mistakenly substituted for the naloxone in the kit.

ISMP Canada has learned that pharmacies procure, store, assemble, and dispense naloxone kits differently. Some pharmacies purchase commercially available kits, whereas others obtain individual components for in-house assembly of kits.

Pharmacies that choose to assemble naloxone kits on site should be aware that this process is prone to errors and may result in incidents such as the one described above. If kits are prepared on site, ensure there is an independent check process in place to verify the components. Where possible, use of commercially available kits is recommended.

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

December 2017 SafeMedicationUse.ca Newsletter:

Save a Life—Get a Naloxone Kit to Treat an Opioid Overdose

SafeMedicationUse.ca

In this newsletter, patients were cautioned that the risk of overdose is greater for individuals taking high opioid doses, for people with certain medical conditions, and for those who drink alcohol or take sedatives while on opioids.

Tips for Practitioners:

- When prescribing or dispensing opioid medications, talk to your patients about the signs of opioid overdose and the merits of having a naloxone kit at home.
- Tell patients how and where they can obtain a naloxone kit in your province/territory, and let them know whether such kits are available free of charge.
- Offer a naloxone kit to any patient who may be at risk of opioid overdose and to the person's family or caregiver.
- Use the "show and tell" technique when counselling a patient or family member about administering naloxone.
- Remind patients and family members that the effects of naloxone are short-lived and that anyone who has experienced an overdose will need to receive care at the hospital, even if a dose of naloxone has been given. In this regard, stress the importance of calling 911 right away.

Patients were directed to the following resources for additional tips to prevent harm from opioids:

- Opioid Pain Medicines: Information for Patients and Families
  www.ismp-canada.org/download/OpioidStewardship/opioid-handout-bw.pdf
- Informed Consumers Can Help Prevent Harm from Opioid Use!
  www.safemedicationuse.ca/newsletter/newsletter_PreventHarmFromOpioids.html
- Opioids - Be an Informed Consumer
  www.safemedicationuse.ca/newsletter/question-opioids.html

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.

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