

Medication Safety—A Global Health Priority

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As pharmacists, we know that medications constitute the most common intervention in health care. Because of this widespread use, however, drug-related problems (DRPs) are common. Although DRPs have been researched and categorized for the past few decades, no true consensus on a classification system or definition exists.¹ In 1999, the working conference of the Pharmaceutical Care Network Europe (PCNE) developed a classification scheme for DRPs. Version 7, released in 2016, incorporated a drastic change, whereby the “Problems” section of the tool was reduced to just 3 domains: (1) treatment effectiveness—“There is a (potential) problem with the (lack of) effect of the pharmacotherapy”; (2) treatment safety—“Patient suffers, or could suffer, from an adverse drug event”; and (3) other. These domains remain in today’s version of the tool (version 9, released in 2019).²

After reading much of the medication safety literature, I have concluded that there are really only 2 DRPs: “It doesn’t work” and “It hurts”. This summary is very much in line with the PCNE definitions quoted above.² Often, the thing we consider to be the problem is actually the *antecedent* to the negative outcome. For example, instances of “dose too high” and “price too high” are causes, or potential causes, of DRPs.¹

These concepts are important because they are at the heart of medication safety. The actual DRPs or negative outcomes of “It doesn’t work” or “It hurts” often result from both individual and system failures. Understanding why these DRPs do or may occur is important for preventing medication safety issues in the future. As health care professionals and researchers, we need to continually strive to uncover the causes underlying DRPs and to monitor changes when implementing interventions. However, despite our best efforts in producing standards, evidence-based guidelines, and practice tools, we are still a long way from having systems that will prevent DRPs on a global or even local level.

The statistics about medication-related harm are alarming. The World Health Organization (WHO) notes that unsafe

medication practices and medication errors are the leading cause of avoidable harm around the world, with the costs of medication errors reaching US\$42 billion annually.³

In response to these numbers, the WHO announced its third global patient safety challenge in 2017, known as “Medication without Harm”.³ This and previous WHO patient safety challenges aim for improvement and risk reduction and “blend evidence-based interventions with multi-modal implementation strategies. They [also] seek to achieve widespread engagement and commitment.”³

Individual countries are helping to improve the safe use of medicines. Canada’s medication safety initiatives are undertaken by organizations such as the Canadian Patient Safety Institute (CPSI) and the Institute for Safe Medication Practices Canada. In 2018, the CPSI reported that it would lead the Canadian arm of the WHO’s “Medication without Harm” campaign. Strategies include medication review, the “5 Questions to Ask About Your Medications” program, and opioid stewardship initiatives to improve opioid safety and appropriate treatment of pain.⁴

In my own country, the Pharmaceutical Society of Australia (PSA) and the Society of Hospital Pharmacists of Australia have been lobbying the government to take note of medication-related issues. An estimated AU\$1.4 billion (about Can\$1.25 billion) is spent annually on medication-related problems.⁵ Furthermore, medication problems result in an estimated 250 000 hospital admissions annually and an additional 400 000 presentations to the emergency department.⁵ The most worrisome estimate is that 50% of these costs and associated harms are preventable.⁵



In response, the Australian government recently announced that it would make medication safety a national health priority.⁶ In a statement released in late 2019, the PSA president stated that “Pharmacists are medicines experts. They must be supported to spend more time ... reviewing patients’ medications, providing advice to members of the health care team, and educating consumers about medicine safety.”⁶ It is apparent that to improve medication safety all over the world, pharmacists need to go anywhere that medications are used, rather than being limited to traditional roles in the community and in hospitals. In addition, we must have a workforce sufficient to provide appropriate services to all. We must also seek to understand the causes of DRPs through research and audit, and we must be open to uncovering system-based issues so that improvements can be trialled.

The broad topic of medication safety is interwoven throughout the *Canadian Journal of Hospital Pharmacy (CJHP)*, with the current issue featuring particularly strong themes related to pain management and pediatrics, two areas where medication safety issues are often reported. Pain is complex and difficult to treat, and many analgesic agents have narrow therapeutic margins. In addition, pain can be difficult to measure. The pharmacist’s role in pain management is expanding, as evidenced by the study on opioid controls reported by Videau and others,⁷ the comparison of topical amitriptyline formulas to improve clinical efficacy in neuropathic pain reported by Shakshuki and others,⁸ and the investigation of methadone stability by Friciu and others.⁹ These papers all provide evidence on how to improve the safety and efficacy of pain medicines, and they all reflect work to ensure that medicines do their work without hurting the patient.

Children are perhaps even more vulnerable to medication safety issues, because of complexities such as a lack of clinical trials and safety data leading to off-label and unlicensed use¹⁰ and the need to manipulate doses before administration.¹¹ This issue also includes research into medication use in the pediatric setting. Caldwell and others¹² report their observational study describing the use of sedative medication in critically ill children. Vaillancourt and others¹³ describe their audit of cannabis use in a pediatric hospital. The previously mentioned study by Friciu and others⁹ is also of relevance to pediatric medication safety, as this formulation of methadone is used for acute and cancer pain in children. Audits are important for seeing patterns of medication use and informing future research and interventions, and the investigation of issues such as medication stability is also vital to ensure patient safety.

These articles highlight the role that all pharmacists can play in improving medication safety, given that medication safety is our core business. We should encourage one another to start locally, and we should share our work globally. Disseminating our efforts through various media is important, and shows that we are contributing to this safety challenge. The *CJHP* will continue to report the medication safety research of our authors.

I encourage each of you to reflect on your own role as a pharmacist, your importance in making medication safety a global health priority, and your ability to ensure that unnecessary harm is diminished. Let’s work together to reduce or even eliminate patients’ experience of medication that “hurts” or “doesn’t work”.

References

1. Bager BJ, Moles RJ, Chen TF. Development of an aggregated system for classifying causes of drug-related problems. *Ann Pharmacother.* 2015;49(4):405-18.
2. *Classification for drug related problems.* V9.00. Pharmaceutical Care Network Europe; © 2010–2020 [cited 2020 Feb 14]. Available from: https://www.pcne.org/upload/files/334_PCNE_classification_V9-0.pdf
3. *The third WHO global patient safety challenge: medication without harm.* World Health Organization; 2017 [cited 2020 Feb 14]. Available from: <https://www.who.int/patientsafety/medication-safety/en/>
4. Medication without harm – Canada’s contribution to a global effort to reduce medication errors [news release]. Canadian Patient Safety Institute; 2018 Sep 14 [cited 2020 Feb 14]. Available from: <https://www.patientsafetyinstitute.ca/en/newsalerts/news/pages/medication-without-harm-2018-09-14.aspx>
5. Lin R, Semple S, Kalisch Ellett L, Roughead L. *Medicine safety: take care.* Pharmaceutical Society of Australia; 2019.
6. Medicine safety to be the 10th national health priority area [blog post]. Pharmaceutical Society of Australia; 2019 Nov 1 [cited 2020 Feb 14]. Available from: <https://www.psa.org.au/medicine-safety-to-be-the-10th-national-health-priority-area/>
7. Videau M, Thibault M, Lebel D, Atkinson S, Bussi eres JF. Surveillance des substances contr ol ees en  tablissements de sant  : une contribution   la gestion de la crise des opio ides au Canada. *Can J Hosp Pharm.* 2020; 73(2):116-24.
8. Shakshuki A, Yeung P, Agu RU. Compounded topical amitriptyline for neuropathic pain: in vitro release from compounding bases and potential correlation with clinical efficacy. *Can J Hosp Pharm.* 2020;73(2):133-40.
9. Friciu MM, Alarie H, Beauchemin M, Forest JM, Leclair G. Stability of methadone hydrochloride for injection in saline solution. *Can J Hosp Pharm.* 2020;73(2):141-4.
10. Corny J, Bailey B, Lebel D, Bussi eres JF. Unlicensed and off-label drug use in paediatrics in a mother-child tertiary care hospital. *Paediatr Child Health.* 2016;21(2):83-7.
11. Richey RH, Shah UU, Peak M, Craig JV, Ford JL, Barker CE, et al. Manipulation of drugs to achieve the required dose is intrinsic to paediatric practice but is not supported by guidelines or evidence. *BMC Pediatr.* 2013;13(1):81.
12. Caldwell D, Wong J, Duffett M. Sedative medications for critically ill children during and after mechanical ventilation: a retrospective observational study. *Can J Hosp Pharm.* 2020;73(2):125-32.
13. Vaillancourt R, Moreno M, Pouliot A, Sell E. Cannabis use for therapeutic purposes by children and youth at a tertiary teaching hospital in Canada: a retrospective chart review. *Can J Hosp Pharm.* 2020;73(2):105-15.

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Competing interests: None declared.

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