

Ontario

CRITICAL Incident Learning

Issue 10
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Distributed to:

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

Suggested action items:

- Refer bulletin to pharmacy and therapeutics committee with a recommendation to evaluate naloxone availability and usage as well as existing naloxone protocols
- Refer bulletin to nursing leadership and practice committees suggesting review of opioid monitoring practices to ensure that appropriate triggers are identified for naloxone use
- Refer bulletin to inter-disciplinary safety committee with a recommendation to review the types of incidents where naloxone is used
- Use bulletin as an educational resource in your hospital's safety huddles or rounds



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Naloxone Saves Lives

Opioids constitute a class of high-alert medications whose toxic effects can cause sedation, confusion, and respiratory compromise and can lead to death. Fortunately, an effective and life-saving reversal agent—naloxone—is available. Naloxone temporarily replaces the opioid at the site of action of the drug, counteracting the toxic effects. With appropriate monitoring, patients known or suspected to be experiencing toxicity can be identified and rescued from the effects of opioid overdose with timely administration of naloxone and the initiation of other medical interventions.

Naloxone has a shorter duration of effect than some opioids, and once it has been metabolized by the body, there is a risk that the pharmacological effects of the opioid will re-emerge, causing harm to recur.¹ Therefore, patients receiving naloxone must be monitored closely for a prolonged period to ensure that any re-emergence of toxic effects is immediately addressed. Further administration of naloxone along with a higher level of care and medical intervention may be required.

Naloxone also antagonizes the opioid's analgesic benefits, potentially inciting severe pain or withdrawal effects. Health care providers must be aware of these attributes and must manage these variables to safely mitigate the toxicity of opioids while maintaining their desired effects.¹ Predefined naloxone protocols can help practitioners to balance conflicting clinical priorities and address the potential for unfamiliarity with appropriate dosing of naloxone because of infrequent use. Such protocols are an important tool for safe opioid management.

Call to Action for Hospitals

Make medication safety a strategic priority:

- Review the availability of specific antidotes and rescue agents within the facility generally and in each clinical area.
- Ensure that naloxone, along with appropriate medical directives and protocols for its use, are available to practitioners in all care areas.

Make systems-based changes to enhance safety:

- Ensure that opioid-related protocols have appropriate monitoring parameters to enhance the identification of opioid toxic effects and include medical directives for the immediate use of naloxone by all front-line practitioners that administer opioids.
- Create rescue protocols for the use of naloxone in cases of opioid overdose or toxicity. These rescue protocols should take into account the pharmacological properties of different opioids and the relatively shorter duration of effect of naloxone.

Sustain high-quality practice:

- Conduct mock overdose sessions to test the use of naloxone protocols.
- Solicit feedback from users of the medical directives and protocols.
- Analyze each episode of naloxone use to evaluate the opioid use that led to the incident.

Case Summaries

In one case, a patient inadvertently received a large dose of intravenous morphine through an infusion pump. Fortunately, the care team recognized that the patient was experiencing opioid toxicity. Repeated doses of naloxone were needed to rescue the patient.

In a second case, a patient undergoing care in the emergency department received intravenous morphine and HYDROmorphine. Shortly thereafter, a family member noted that the patient was unresponsive and not breathing. Naloxone was required to counteract the overdose. The patient continued to have pain after the episode, and a smaller amount of HYDROmorphine was given. Unfortunately, the patient again experienced significant sedation, and a second rescue dose of naloxone was required.

Learning from Analysis

Key to the use of naloxone is identification of patients at risk of impending harm. These cases highlighted the need for appropriate monitoring standards for patients taking opioids for pain. Clinical signs, such as respiratory rate and sedation level, are important clues to the onset of toxic effects. It is critical that specific parameters be identified as triggers for initiation of naloxone or other clinical responses and that these triggers be included in pain management order sets or protocols.

At the time of these two incidents, there was no naloxone protocol in place in either care area. To increase the likelihood of successful identification and rescue of patients experiencing the toxic effects of an opioid, the need to create opioid rescue directives/protocols supported by further education of healthcare practitioners was recognized. Ideal rescue guidelines include prudent and systematic monitoring procedures and assessment parameters to prompt healthcare workers about the need for further naloxone doses or infusions.

Each use of naloxone represents an opportunity to review the opioid management leading up to the need for rescue and should be analyzed to determine the underlying contributing factors.

Conclusion

Naloxone is a life-saving rescue agent that must be readily available and appropriately used. Monitoring protocols to help practitioners recognize patients at risk coupled with rescue directives and protocols to manage the dangerous effects of opioids must be created and implemented. Such protocols are essential to mitigating the hazards associated with opioid use.

Individual practitioners and administrators in Ontario healthcare facilities are strongly encouraged to closely examine their processes, directives, and protocols involving opioids and naloxone to support safe and effective use of these agents in their organizations.

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¹ Boyer EW. Management of opioid analgesic overdose. *N Engl J Med.* 2012;367(2):146-55.

Collaborating parties of the Ontario Critical Incident Reporting program

