

Multidose Nitroglycerin Bottles Associated With 25-Fold Overdose Errors

Strategies for safe dispensing and administration of nitroglycerin tablets to prevent an unintended overdose



Keywords: medication error, medication safety, overdose error, patient safety, nitroglycerin, Nitrostat

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Disclosure: The author declares that they have no relevant or material financial interests.

Submitted

October 22, 2024

Accepted

October 23, 2024

Published

November 15, 2024

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This article was previously distributed in an November 6, 2024, newsletter of the Patient Safety Authority, available at <https://contagroup.org/3NN5sEC>.

Ro M. Multidose Nitroglycerin Bottles Associated With 25-Fold Overdose Errors. *Patient Safety*. 2024;6(1):125483. doi:10.33940/001c.125483

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The Patient Safety Authority has received multiple reports to the Pennsylvania Patient Safety Reporting System (PA-PSRS) describing erroneous dispensing and administration of whole bottle contents (up to 25 tablets) of sublingual nitroglycerin instead of a single tablet. As a result of these events, patients have required resuscitative measures and/or transfer to a higher level of care.

Sublingual nitroglycerin (Nitrostat) is a nitrate vasodilator used to treat episodes of chest pain in patients who have coronary artery disease.¹ The tablets are supplied in small, amber bottles that are tightly capped to keep out light, moisture, and air.² The loss of potency from environmental exposure² often prevents repackaging of the tablets from a multidose bottle into single doses. Therefore, without single doses repackaged ahead of time and proper safeguards to warn against the multidose bottle, an overdose of up to 25 times the intended dose can occur.

Following are summaries of some of these events reported to PA-PSRS.

Patient was ordered sublingual nitroglycerin for chest discomfort, and one bottle of sublingual nitroglycerin was retrieved from the ADC [automated dispensing cabinet]. The nurse scanned the barcodes on patient's ID band and the medication bottle and administered all tablets in the bottle. A few minutes later, the patient called the nurses' station and reported feeling sick. He was found to be hypotensive and diaphoretic, ultimately requiring resuscitation and transfer for increased monitoring.

PRN [i.e., prescribed "as needed"] sublingual nitroglycerin was ordered for a patient experiencing chest pain. After scanning the patient's wristband and the bottle, the nurse administered the full bottle to the patient. The patient vomited and became hypotensive. A rapid response was called, fluids were administered, and the patient was transferred to a higher level of care.

Nitroglycerin 0.4 mg sublingual tablet was ordered PRN for chest pain. Patient received nitroglycerin 10 mg (entire 25 bottle dose) at one time. Patient's blood pressure immediately dropped, and patient became lethargic requiring pressors and transfer to ICU [intensive care unit].

For safe dispensing and administration of sublingual nitroglycerin tablets, please consider the following safety strategies:

- Create an alert in the automated dispensing cabinet (ADC)³ with instructions to dispense individual tablet(s) from the multidose bottle (e.g., "Warning: this is a multidose bottle. 1 tablet = 0.4 mg").
- Minimize distractions and multitasking during the medication selection and removal process from the ADC.³ Examine environmental factors such as lighting, noise level, and telephone interruptions.⁴
- Instruct nurses to monitor patients for desired therapeutic effects and potential adverse effects following medication administration,⁴ and for the need to administer additional PRN doses.¹
- Explore various targeted opportunities that fit the needs and workflow of the facility to educate healthcare providers about safe dispensing and administration of sublingual nitroglycerin tablets.

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