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Improving Anesthesia Trainee Medication Dispensing with an Automated System

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Introduction

Medication use in the OR is vulnerable to error, contamination, and diversion when anesthesia providers access medications through the Pyxis Medication dispensing system. Medication error rates in an OR remain persistent at **7.3-12%**. Despite national safety guidelines, intraoperative practice remains inconsistent for medication handling. We developed a brief **Canvas-based “Pyxis Medication Etiquette”** curriculum for CA-1 anesthesia residents to standardize local expectations and improve knowledge of key medication-safety behaviors.

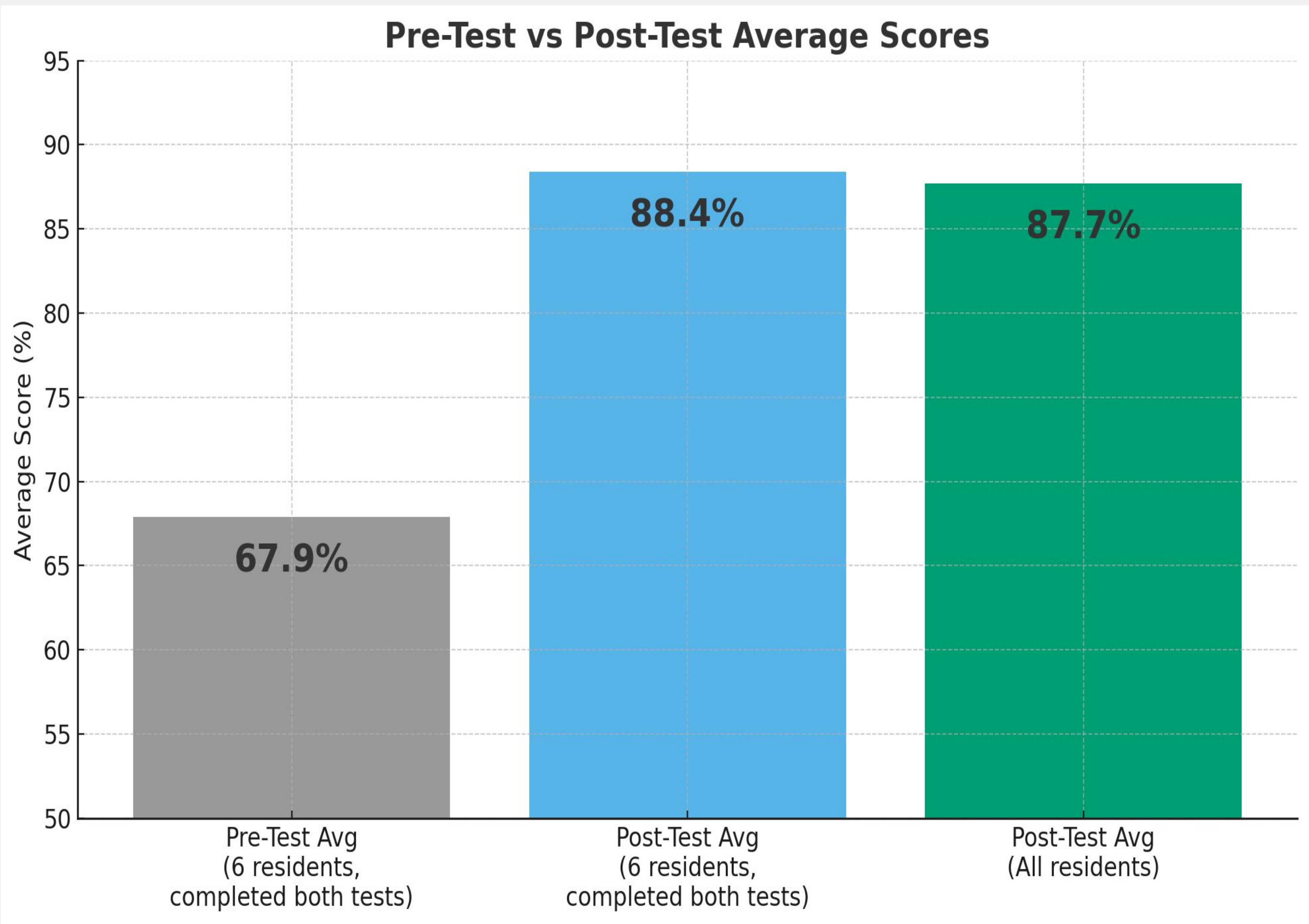
Methods

- Created Canvas course on Pyxis medication etiquette.
- The **11 course modules**:
 - Topics: **Hand Hygiene, Clean Vial, Label Injectables, Administration Window, Scrub Hub, Single Use, Syringe Handling, Proper Disposal, Chain of Custody, Locking Medications, Flushing IV Lines**
 - Based on: APSF, WHO, JCO, UptoDate, and peer reviewed journals.
- A 56-item multiple-choice test was administered immediately before and after the course.
 - Canvas analytics captured time in course, module completion, and performance on the tests.

Results

Twelve first year residents were eligible:

- Nine (75%) accessed the Canvas course
- Six (50%) completed both the pre- and post-test
- The mean pre-test score was **67.9%** (38/56 correct)
- The mean post-test score was **88.4%** (49.5/56 correct)
 - An average score improvement of **21.5%** or approximately 11 additional correct responses.



Discussion

This pilot suggests:

- A structured Pyxis curriculum can be integrated into anesthesia resident education.
- Residents completed the modules in roughly one hour.
- The average improvement in score highlights that the course was beneficial in gaining knowledge.
- Concise, guideline-based content can reinforce key knowledge in perioperative medication safety.
- The curriculum offers a practical framework for standardizing Pyxis training to ensure compliance and to ensure patient safety.

Next steps:

- The second part of the study is an observational check of knowledge transfer using hands-on competency testing.
- We will have senior residents take the post test to compare results.

References

- The Joint Commission. (2014). Sentinel Event Alert Issue 52: Preventing infection from the misuse of vials. *Sentinel Event Alert*. <https://digitalassets.jointcommission.org/api/public/content/99bde5ccd61f488d80e18cac1f7c8f9d?v=78d19f7e>
- Kwiecień-Jaguś, K., Mędrzycka-Dąbrowska, W., & Kopeć, M. (2025). Understanding Medication Errors in Intensive Care Settings and Operating Rooms—A Systematic Review. *Medicina*, 61(3), 369. <https://doi.org/10.3390/medicina61030369>