

It's Getting Hot in Here: A Malignant Hyperthermia Escape Room Simulation

Ashley Garcia MSN, RN, CPAN¹ and Benjamin Neustein MAT, Paramedic, CHSOS²

¹Perioperative Services and ²Center for Critical Care and Trauma Education

BACKGROUND

- Malignant Hyperthermia (MH) is an uncommon "genetic disease that causes a life-threatening reaction to certain anesthesia medications."
- MH causes tachycardia, hypercapnia, tachypnea, muscle rigidity, and dangerous temperature levels.^{1,2}
- While nursing schools equip nurses with general knowledge and skills, on-the-job education to prepare nurses for unit specific concerns, such as managing MH in the Post Anesthesia Care Unit (PACU), is required.
- Simulation-based learning has been shown to be a more effective method of learning.³
- There is evidence that escape room-based simulation lowers anxiety during participation without loss of efficacy.^{4,5,6}
- There is also evidence that it addresses the "post-traumatic stress" feeling nursing students commonly report after participating in nursing school simulations.^{4,5,6}

PURPOSE

The goal of this project was to help Post Anesthesia Care Unit (PACU) nurses become more adept at recognizing and managing the treatment of MH using simulation.

STRATEGY

- An MH simulation was created with an added twist of a Zombie-themed escape room.
- The escape room included assessment of the patient, identification of an MH event, calculation, mixing, and administering the correct dose of Ryanodex.
- The act of mixing Ryanodex was included due to staff not typically mixing and administering the dose in other simulations for MH and is an uncommon occurrence on the unit yielding minimal practice.

IMPLEMENTATION

Groups of participants were given 15 minutes to complete the MH scenario.

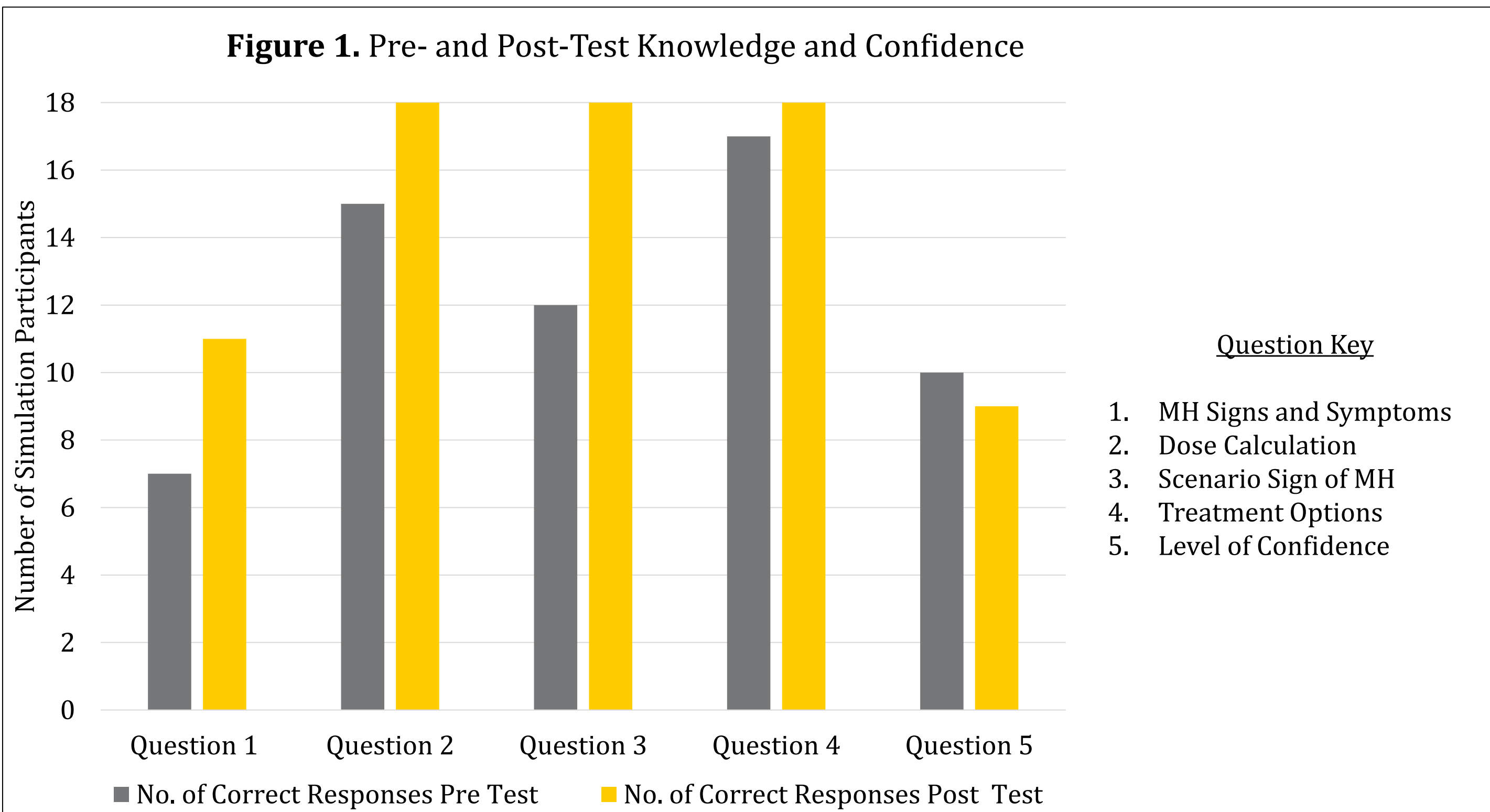


Escape Room Simulation Plan



EVALUATION & OUTCOMES

- Simulation success was measured by:
 1. Completing the scenario objectives which were addressed in a debrief immediately afterwards.
 2. Improvement in knowledge based on the MH scenario (assessed on the pre/posttest).
- 35 out of 39 groups completed the scenario with an average time of 11:46 minutes; fastest 6:21 minutes.
- Nursing knowledge and confidence improved by 25% on average across all survey questions (Figure 1).
 - The biggest increases were for questions related to identifying MH and drug calculations (1-3).
- Comments from nurses included, "It was absolutely great. Interactive SIMS and presentation was fun and informative" and "Not a waste of my time!"



IMPLICATIONS FOR PRACTICE

- Aligned with prior research³, we found simulation-based learning yielded improved outcomes for our learners.
- Participants in our simulation performed better on recognizing MH and calculating doses of Ryanodex after putting their skills and knowledge into practice during the simulation.
- We recommend further use of high-fidelity simulation as well as an escape room format to bridge the gap between knowledge and practice.

NEXT STEPS

- Staff requested additional escape room scenarios, which will be incorporated into annual education, beginning in 2025.

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