

# Optimizing the Management of Malignant Hyperthermia through Quality Improvement Initiatives

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## Background

### Identification of the problem:

During the Malignant Hyperthermia (MH) simulations in 2024, a gap was identified amongst the MH carts. The clinical educators recognized the need to standardize the MH carts across the six-campus system and revise the policy to reflect these changes. Additionally, it was identified that the existing policy did not address the need for early recognition and prompt treatment of MH in the inpatient settings.

### Gaps within the MH Cart:

- Content Variance
  - Variations in cart supplies created gaps that slowed down the delivery of timely patient care
- Layout inconsistencies
  - Drawer order and labeling were inconsistent, increasing the time staff needed to navigate the MH cart and find supplies
- Lack of emergency treatment guidance
  - Dosing guide for Dantrolene (Ryanodex)
  - MH algorithm visual aids

### UPDATED CART

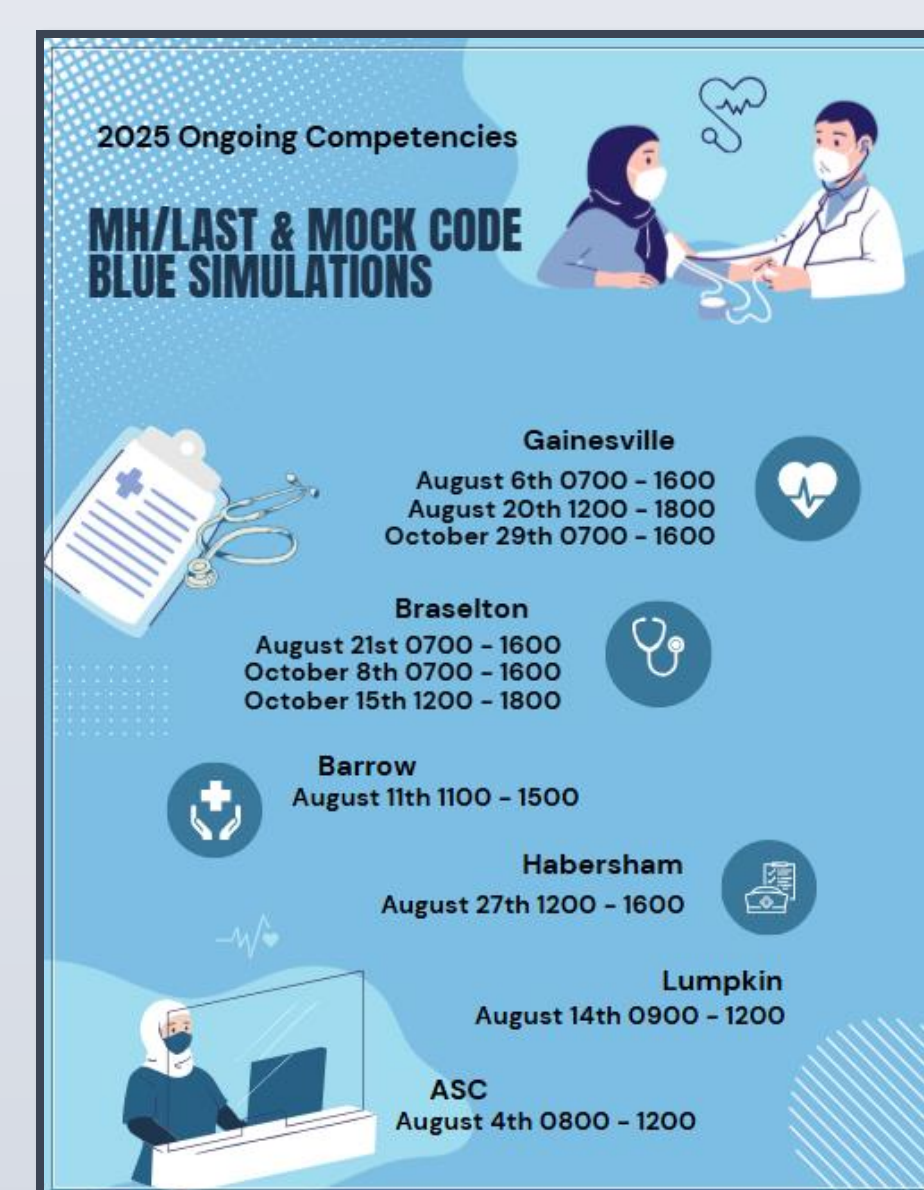
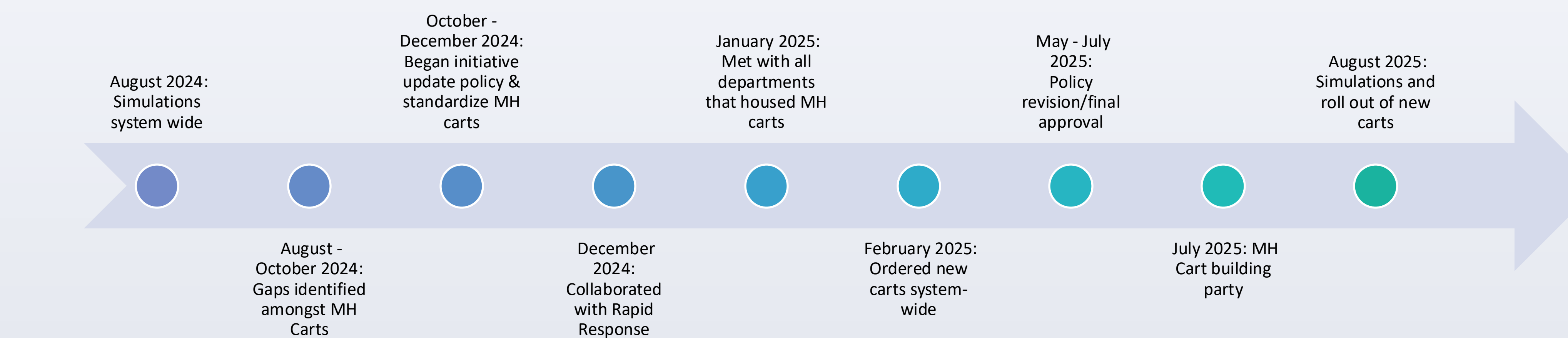


This project aimed to evaluate the impact of updated protocols, standardized MH carts, enhanced educational resources, and simulation-based training on staff knowledge, preparedness, and confidence in managing MH emergencies.

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## Methods



Department	Simulation Date	Simulation Time	Simulation Location
Endoscopy	August 6th	0700 - 1600	Gainessville
Operating Room (OR)	August 20th	1200 - 1800	Gainessville
Labor and Delivery (L&D)	October 29th	0700 - 1600	Gainessville
Endoscopy	August 21st	0700 - 1600	Braselton
Operating Room (OR)	August 20th	1200 - 1800	Braselton
Labor and Delivery (L&D)	October 19th	1200 - 1800	Braselton
Post Anesthesia Care Unit (PACU)	August 18th	1100 - 1500	Barrow
Operating Room (OR)	August 27th	1200 - 1600	Habersham
Operating Room (OR)	August 14th	0900 - 1200	Lumpkin
Operating Room (OR)	August 4th	0800 - 1200	ASC

### Root Causes

- Lack of standardization across MH Carts
- Absence of clear emergency treatment guidelines
- Policy outdated and was not consistent with best practice
- Limited staff familiarity with equipment and workflow
- Variability in department practices
- Lack of coordinated collaboration across the system

### Policy Revision:

- Simplified the policy language
- Updated content logs to ensure accuracy and standardization
- Outlined where the MH cart are found
- Identified where Dantrolene (Ryanodex) kits are found
- Incorporated Rapid Response for early identification and treatment within the inpatient units

### Standardized MH cart implementation:

- Ordered new carts
- Cart building party
- Education developed and rolled out during simulations

### Training and Simulation:

- Offered 10 MH simulation dates across six campuses
- Rolled out of new MH carts at the 2025 simulations



MH carts are available in the following departments:  
 a) NGMC Gainesville  
 i) Operating Room (OR)  
 ii) Labor and Delivery (L&D)  
 iii) Endoscopy  
 iv) Interventional Radiology Prep & Recovery  
 b) NGMC Braselton  
 i) Operating Room (OR)  
 ii) Labor and Delivery (L&D)  
 c) NGMC Barrow  
 i) Post Anesthesia Care Unit (PACU)  
 d) NGMC Habersham  
 i) PACU  
 e) NGMC Lumpkin  
 i) Operating Room (OR)

### CART CONTENT

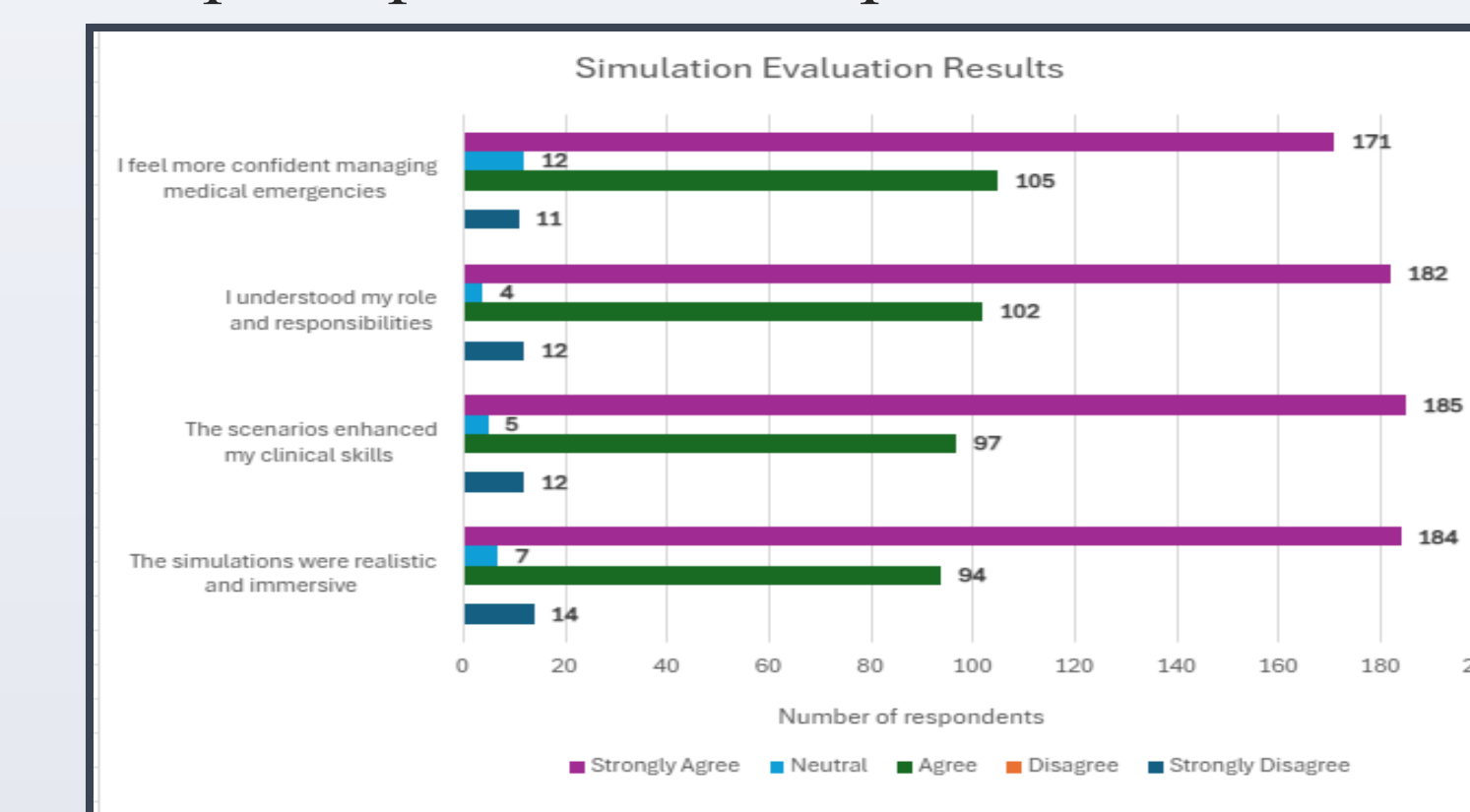


## References

- Malignant Hyperthermia Association of the United States (MHAUS) Guidelines (2025). Retrieved from <http://www.mhaus.org/healthcare-professionals>
- Passig, T. (2019). A Competency-Based Orientation Program for the Registered Nurse in the Perianesthesia Setting. Chapter 19: Malignant Hyperthermia

## Results

In 2025, 422 licensed and unlicensed staff members across multiple departments took part in MH simulations.

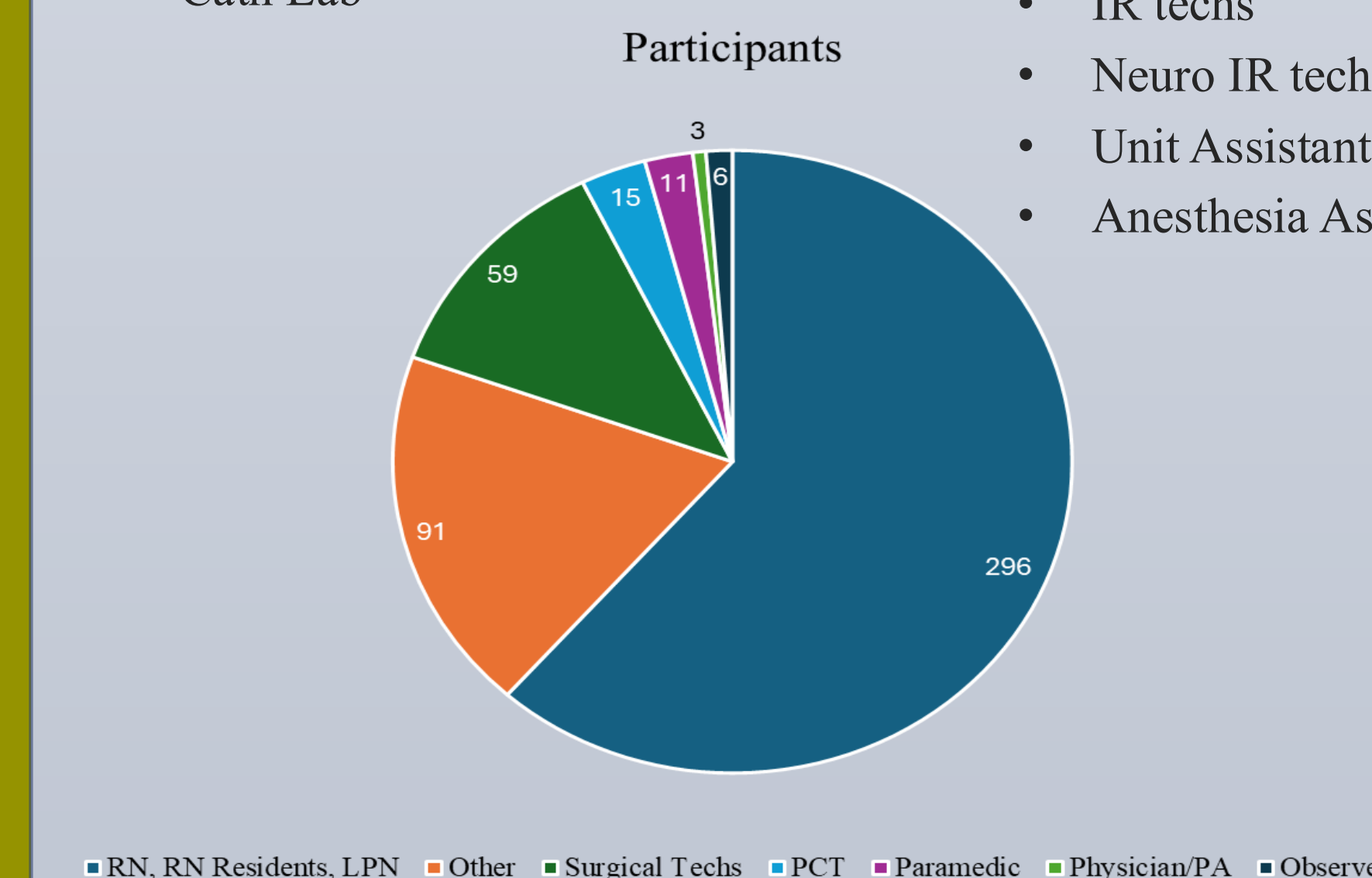


### What Aspects of the Simulations Felt Most Helpful?

- Hands-On, Realistic Experience**  
 Participants overwhelmingly reported that physically performing skills—such as engaging with the simulation mannequin and completing real-time actions—greatly enhanced their learning.
- Clear Instruction and Step-by-Step Guidance**  
 Learners emphasized the value of instructor explanation, structured walk-throughs, opportunities to ask questions, and supportive feedback throughout the scenarios.
- Familiarity With Emergency Equipment & Carts**  
 Exploring MH cart and Code cart, reviewing medications, and handling critical equipment such as monitors and defibrillators with greater confidence and practical readiness.

## Department Collaboration

- | Departments                      | Staff                       |
|----------------------------------|-----------------------------|
| • Pre-op                         | • Physicians                |
| • PACU                           | • Physician assistants      |
| • Operating Room                 | • Nurse Practitioners       |
| • Interventional Radiology       | • Registered Nurse          |
| • Rapid Response                 | • Licensed Practical Nurse  |
| • Endoscopy                      | • Patient Care Technicians  |
| • Emergency Room                 | • Certified Scrub Tech      |
| • Neuro Interventional Radiology | • Scrub Techs               |
| • Endovascular OR                | • Operating Room Assistants |
| • Cardiovascular OR              | • Equipment Techs           |
| • Cath Lab                       | • Paramedics                |
|                                  | • IR techs                  |
|                                  | • Neuro IR techs            |
|                                  | • Unit Assistants           |
|                                  | • Anesthesia Assistants     |



## Conclusion

This QI project successfully improved staff readiness for MH emergencies. Structured simulations and standardized resources increased confidence and competency across departments. Progress was strengthened by teamwork among clinical and support areas. However, limited classroom space and staffing constraints affected the number of participants who could be trained at one time. Continued improvement will rely on regularly reviewing staff feedback and adjusting processes to address these ongoing limitations.