

BACKGROUND

Malignant Hyperthermia (MH) is a rare but rapidly progressive hypermetabolic crisis triggered by certain anesthetic agents. Because true MH events are infrequent, perioperative teams benefit from regular mock code simulations to reinforce early recognition and coordinated intervention. Using structured role cards provides clarity on responsibilities, reduces hesitation, and improves team communication during high-acuity events. Simulation-based MH drills also support adherence to American Heart Association (AHA) guidelines, emphasizing rapid assessment, high-quality CPR when indicated, and effective closed-loop communication. Practicing these skills in a controlled environment increases team confidence, promotes consistent use of evidence-based protocols, and enhances overall readiness for managing an actual MH crisis.

PURPOSE

- Using structured role cards to highlight team member responsibilities
- Recognize early MH symptoms and initiate treatment
- Differentiate MH crisis with cardiac arrest
- Promote active participation during simulation
- Reduce role uncertainty among team members
- Improve team dynamics and efficiency

METHODS

Prepare Healthcare Team For MH Crisis Through Simulation Using Role Cards

- Met with education team to review MH policy, current caregiver roles, and what they can perform within their scope of practice
- Met with simulation team to discuss findings of caregiver confusion with what to do during an MH crisis
- Role cards developed in alignment with policy, scope of practice, MHAUS and AORN guidelines

Pre-Brief

- Team members are educated about MH, its triggers, clinical signs and importance of rapid intervention
- Reviewed differences in early recognition signs for MH versus cardiac arrest
- Distribution of malignant hyperthermia role cards to team members involved in patient care to clarify each person's responsibilities
- Every participant reviews their assigned role card aloud prior to simulation, so they are familiar with their specific duties and actions

Simulation patient develops MH symptoms during anesthetic surgery procedure

- Participants used role cards to guide step-by-step interventions
- After crisis, collected role cards and debriefed as a team to discuss what went well and identified areas of improvement for future MH emergency response simulations

SURGEON <ul style="list-style-type: none"> • FINISH/CLOSE CASE ASAP • INTRA-OP DISCUSSION BETWEEN SURGEON AND ANESTHESIOLOGIST REGARDING SURGICAL PLAN • ASSIST WITH COOLING OF PATIENT • BY LAVAGING OPEN BODY CAVITIES • HELP PREPARE PT FOR TRANSPORT TO ICU 	ANESTHESIA TEAM <ul style="list-style-type: none"> • RECOGNIZE AND DIAGNOSE MH • INFORM RN CIRCULATOR TO INITIATE MH PROTOCOL • SHUTDOWN TRIGGERS (SHUT OFF VOLATILE GASES AND BAG PATIENT?) • PACK PATIENT AND ANESTHESIA CIRCUIT ON 100%/A/E • CONVERT IV FLUIDS TO NORMAL SALINE • ADMINISTER MH (OR DESIGNATE) • MONITOR CASE CONDITION WITH RYANODEX • TREAT CONDITIONS AS THEY ARISE (ELEVATED BLOOD SUGAR, INCREASE IN CPK, INCREASE IN BLOOD SUGAR, ARRHYTHMIAS) 	CIRCULATOR <ul style="list-style-type: none"> • INITIATE MH PROTOCOL • CALL FOR HELP • GET MH CART AND CRASH CART • DELEGATE DUTIES/TASKS • ASSIST ANESTHESIA & DOCUMENTATION
RN #2 (MED NURSE) <ul style="list-style-type: none"> • MIX AND ADMINISTER RYANODEX • DILUTE 5 ML STERILE WATER TO EACH 250MG VIAL OF RYANODEX • SHAKE VIAL UNTIL MIXED THOROUGHLY (APPROX 10 SEC) • FOLLOW DOSING CHART BASED ON PATIENT WEIGHT FOR ADMINISTRATION 	SCRUB <ul style="list-style-type: none"> • PRESERVE STERILITY OF BACK TABLE • COOLING PATIENT • CLOSURE OF THE WOUND • DRESSING APPLICATION 	RN #1 <ul style="list-style-type: none"> • CALL MHAUS • (1-800-644-9737?) • PUT ON SPEAKER PHONE
CONTROL DESK PERSONNEL <ul style="list-style-type: none"> • Call for ICU Bed • Call Pharmacy • Perform duties of the runner, as needed 	ANCILLARY RN <ul style="list-style-type: none"> • OBTAIN ICE • ADDITIONAL PERSONNEL NEEDED FOR CODE SHEET, DEBRILLATOR • MEDICATIONS (ACLS PROTOCOL) • DELIVER SPECIMENS TO LABORATORY 	RN #3 (RECORDER) <ul style="list-style-type: none"> • DOCUMENT THE ENTIRE RESUSCITATION PROCESS • REMIND TEAM EVERY 2 MINUTES FOR COMPRESSOR SWITCH AND LAST • DOSE OF ADMINISTERED MED
		ANCILLARY <ul style="list-style-type: none"> • OBTAIN ANY OTHER NEEDED SUPPLIES AS DIRECTED BY THE TEAM • CHEST COMPRESSIONS, IF NEEDED

OUTCOMES

What went well utilizing the role cards (observed in the drill)

- Early recognition of hallmark MH indicators (rising ETCO₂, tachycardia, muscle rigidity)
- Retrieval of MH and code cart immediately after identification
- Ryanodex initial dose reconstituted and properly given
- Cooling measures initiated promptly
- High-quality CPR within AHA benchmark (<2min)
- Caregivers verbalized less hesitation in actions needed to take within assigned roles, reduction in task duplication and a better understanding of their role with a team

Needs improvement (targets for subsequent simulations)

- Consistent Ryanodex dose administration as symptoms persist
- Closed loop communication: critical orders repeated back and confirmed
- Recorder documenting medications, coding, cooling, labs in real time
- Continued use of role cards to improve performance by reducing uncertainty and support safe, effective care;

CONCLUSION

- Mock code simulations using role cards are a dynamic and impactful training method designed to enhance the performance of healthcare teams in managing medical emergencies
- This approach involves creating realistic, scenario-based exercises where participants assume specific roles within a simulated emergency, guided by role cards that provide clear instructions and responsibilities for each team member
- These cards ensure that everyone understands their function and contribution within the team fostering collaboration and coordination among healthcare providers
- Participants learn to work cohesively under pressure relying on each other's expertise and structured communication to address the complexities of emergency situations
- Accurate and efficient communication is emphasized to minimize errors and delays during high-stakes events.
- Practicing in a controlled, low-risk environment allows teams to refine their skills, identify areas for improvement, and build confidence in their ability to handle real-life scenarios
- Ultimately, this training approach equips healthcare professionals to manage malignant hyperthermia emergencies with greater competence and assurance, improving teamwork, communication, and clinical decision-making. By doing so, malignant hyperthermia code simulations contribute to better patient outcomes, reduce the risk of adverse events, and enhance the overall quality of care provided during critical situations

REFERENCES

Association of perioperative Registered Nurses (2026). Emergencies at a Glance: Malignant Hyperthermia (MH). <https://aornguidelines.org/glance/content?qbosid=557491>

Malignant Hyperthermia Association of the United States. (2026). *Healthcare professionals*. <https://www.mhaus.org/healthcare-professionals/>

Ruta, F., Della Monica, A., Dal Mas, F., Bolgeio, T., Notarnicola, I., Procacci, C., Ferrara, P., Masini, A., Mancini, S., Cangelosi, G., Parozzi, M., & Sacchini, F. (2025). Peri-Operative Nursing of Patients with Malignant Hyperthermia: A Narrative Literature Review. *Surgeries*, 6(3), 78. <https://doi.org/10.3390/surgeries6030078>

Slide 1

SK1 In your Purpose section: Add a bullet point about use of the role cards

Knauss, Sharon, 2026-02-17T20:45:50.166

SK2 Your font size is 20. Is that large enough for people to read on a poster? Did AORN have any specific guidelines for this?

Knauss, Sharon, 2026-02-17T20:54:21.085

SK3 Outcomes boxes are off-center; how did the role cards factor into the outcomes? You have one bullet point addressing this. Is there anything else that can be added? I.e. "They reduce uncertainty and support safe, effective care by ensuring you and your team consistently follow established protocols, minimizing the risk of overstepping professional limits or missing critical interventions."

Knauss, Sharon, 2026-02-17T20:59:35.984

SK4 First two references need adjusting. Should include AORN, Topic, year, etc. Same with MHAUS site

Knauss, Sharon, 2026-02-17T21:01:00.009

SK5 Nicely done!

Knauss, Sharon, 2026-02-17T21:01:18.306