



# Does Mandatory Nursing Education on Malignant Hyperthermia Enhance Nursing Knowledge and Lead to Positive Patient Outcomes?

Debbie Fracassi, MS, RN-BC, Perioperative Service Educator



## OBJECTIVES

Provide Nursing staff with the knowledge and skills to respond collaboratively and efficiently when managing a patient experiencing a Malignant Hyperthermia (MH) crisis.



## BACKGROUND

- Malignant Hyperthermia is a rare, potentially lethal metabolic emergency precipitated by the administration of depolarizing muscle relaxants or volatile inhalation anesthetic agents used for general anesthesia.
- Incidence is ~1: 50,000-100,000 surgeries in adults and 1:15,000-30,000 surgeries for children.
- Immediate treatment with Dantrolene is required to prevent the high risk of patient death.
- Without treatment the mortality rate for MH is 80% versus 5-10% with treatment with Dantrolene.
- Staff education and preparation for this rare event is essential for optimal patient outcomes.

**MHAUS Malignant Hyperthermia Association of the United States. National MH experts since 1981.**

## SETTING/PARTICIPANTS

- Education and simulation drills for this crisis have occurred yearly in the perioperative arena but not necessarily in all other procedural areas within the institution.
- The Nursing Educational Council (NEC) recognized that education should occur for all nurses that care for patients in areas that administer the triggering anesthetic agents.
- A sub-committee from NEC was formed consisting of service educators from pediatrics, critical care, psychiatry, emergency, and perioperative areas to develop education.

**MHAUS website: [www.mhaus.org](http://www.mhaus.org)  
Hotline for consultation: 1-800-MH-HYPER or 1-800-644-9737**

## METHODS OF IMPLEMENTATION

- A Self Learning Education Module was developed by the sub-council members and placed on our Learning Management System (LMS).
- Education strategies included a PowerPoint presentation, a "How to Mix Dantrolene" video and a news clip of a teenage girl who died from MH because of an inadequate supply of Dantrolene.
- Education was mandatory for all procedural areas that administer any of the triggering anesthesia agents.
- Contact hours were awarded for education completion. The course was available for a 14 month period.

## EVALUATION OF EDUCATION

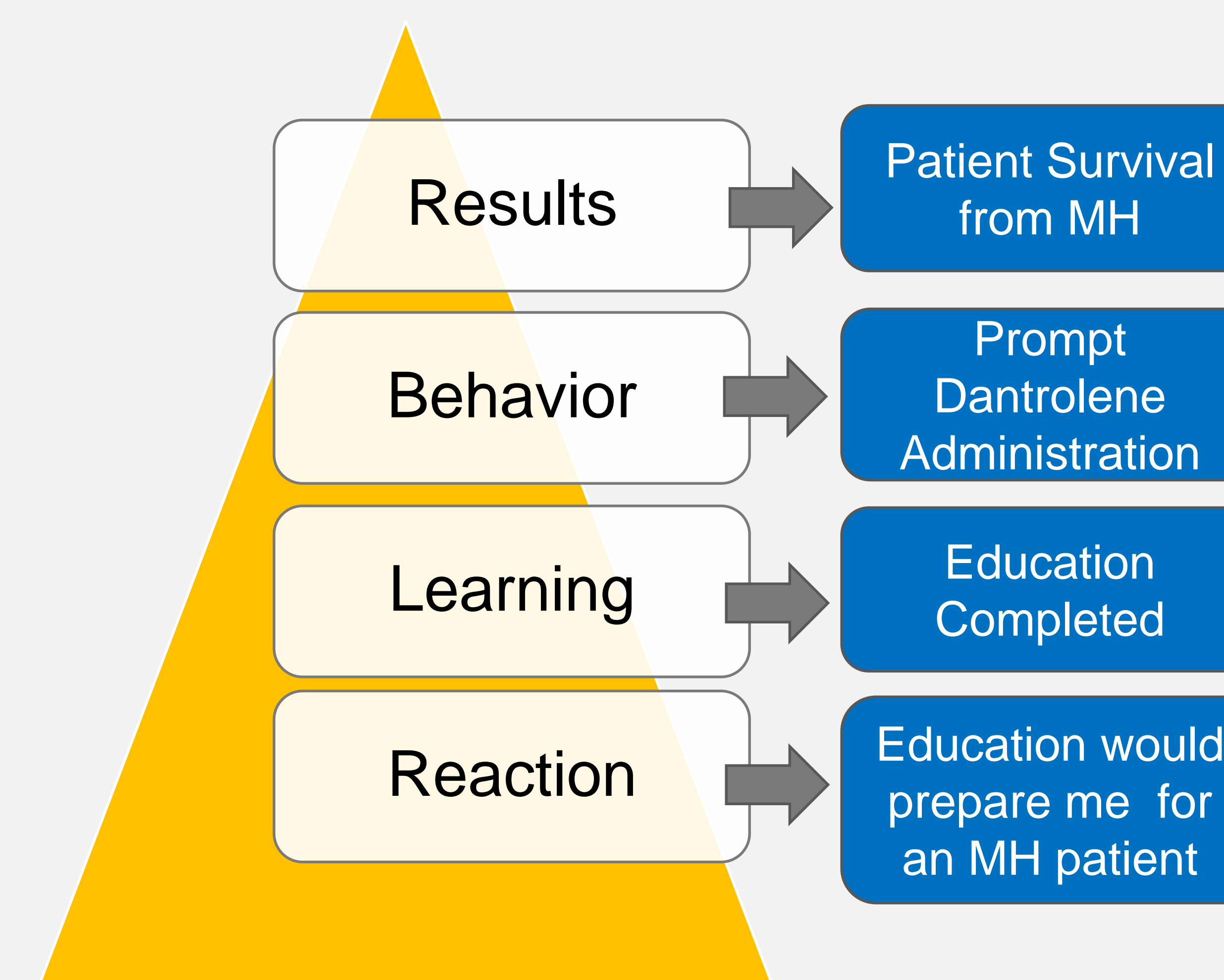
Area of Measurement	Time Frame 10/2014 to 12/2014	Time Frame 1/2015 to 6/2015	Time Frame 7/2015 to 12/2015
Number of Participants Completing Education	866	333	117
Participants who rated achievement of education as good or excellent	92%	92%	93%
Participants who rated effectiveness of education as good or excellent	91%	93%	91%

## ADVANCING PERIANESTHESIA NURSING PRACTICE

New Knowledge and Skills:  
Translation of MH Education to Clinical Practice

## OUTCOMES

### Kirkpatrick's Model of Evaluation of Outcomes



## DISCUSSION OF SUCCESSFUL PRACTICE

- Shortly after the rollout of the MH education there was a 16 year old patient that was diagnosed and treated for MH in an ambulatory surgery setting, transferred to the Emergency Department and then to the Pediatric ICU.
- The patient was successfully discharged to home after 48 hours.
- Positive comments from nursing staff followed that the education prepared them for caring for this MH patient in crisis.
- Interdisciplinary debriefing occurred at multiple levels after the event to review patient care, enhance learning and make process improvements.

## ACKNOWLEDGMENTS

URMC Anesthesia, OR and Perianesthesia staff.  
URMC Pediatric Emergency Department and ICU staff.  
Nancy Freeland, MS, RN, CCRN, Critical Care.  
Julie Gottfried, DNP, RN, MS, CCRN, CPNP-PC, Pediatrics  
Heather O'Brien, MS, RN, CNS, Psychiatry.  
Monica Seaman, MS, RN, CPAN, Emergency Department