Malignant Hyperthermia (MH)

This practice algorithm has been specifically developed for MD Anderson using a multidisciplinary approach and taking into consideration circumstances particular to MD Anderson, including the following: MD Anderson’s specific patient population; MD Anderson’s services and structure; and MD Anderson’s clinical information. Moreover, this algorithm is not intended to replace the independent medical or professional judgment of physicians or other health care providers. This algorithm should not be used to treat pregnant women.

INITIAL EVALUATION

Assess signs and symptoms of MH:

**Early signs and symptoms:**
1. Tachycardia/Tachypnea
2. Abrupt increase in ETCO2
3. Masseter muscle rigidity
4. Hyperthermia (temperature greater than 38.8°C)
5. Metabolic-respiratory acidosis
6. Hyperkalemia
7. Hypotension
8. Rhabdomyolysis/muscle pain
9. Cardiac arrhythmias
10. Hypoxia
11. Profuse sweating
12. Mottling of the skin
13. Unstable arterial pressure

**Late signs and symptoms:**
- Acute renal/circulatory failure
- Dark colored urine due to myoglobinuria
- Disseminated intravascular coagulation
- Elevated blood creatinine phosphokinase levels/blood myoglobin levels
- Rhabdomyolysis/muscle pain
- Hyperkalemia
- Hyperthermia (temperature greater than 38.8°C)
- Hypotension
- Cardiac arrhythmias

ACUTE PHASE

MH team lead (anesthesia) assembles crisis team
- Assigns MH roles
- Assists with drawing arterial blood gases (ABG) as needed

- If MH suspected, page Anesthesia and call/alert Pharmacy STAT
- Bring MH cart to bedside

- Monitor in current location and make arrangements for patient to transfer to higher level of care, if needed.
- Notify ICU/PICS regarding possible transfer

MH confirmed?

- Yes
- No

Cooling team member
- Start cooling process only if patient’s temperature exceeds 39°C (102.2°F)
- Brings cold saline and ice, packs saline IV bags in ice for infusion
- Prepares ice packs
- **Surface cooling measures:**
  - Ice packs to body surfaces
  - Cooling blankets, sets temperature at 32°C if available
- **Internal cooling measures:**
  - Nasogastric tube for cold saline stomach lavage
  - Indwelling Foley catheter for cold saline irrigation
  - Continuously monitors patient’s temperature
  - Discontinue cooling measures when temperature decreases to 38°C (100°F)

Dantrolene team member
- Calculate patient’s weight in kg
- Administers dantrolene 2.5 mg/kg IV; continuously repeat dose until symptoms subside or a cumulative dose of 10 mg/kg is reached

Medication team member
- Assist with mixing dantrolene
- Administers dantrolene 2.5 mg/kg
- Mix and administer other medications
- Repeat until signs of MH are reversed as requested per anesthesia

Primary care nurse
- Maintain documentation of all drugs given, procedures done, and patient continued assessment
- Infuse cold intravenously saline
- Insert NG tube for iced saline lavage
- Assist MH team leader
- Labs; blood gases, electrolytes, creatine kinase, myoglobin, coagulation studies, additional labs

Anesthesia
- **Anesthesia control room**
  - 713-792-2524 (M-F 6 am - 9 pm)
- **Anesthesia airway pager**
  - 713-404-1515 (after hours and weekends)
- **ACB Anesthesia**
  - 713-834-6520

MH cart locations:
- **Main building**
  - Main OR
  - G5 PACU
  - P3.3028
- **Mays building**
  - ACB PACU room ACB 4.1951
  - Anesthesia storage room ACB 4.2517
- **Proton center**
  - PTCB.2075 (kit above crash cart)

- **Transfer patient to higher level of care**
- **Notify ICU/PICS regarding possible transfer**
- **Follow up with safety intelligence (SI) report**
- **Report to Malignant Hyperthermia Association of the United States (MHAUS)**
- **MH hotline 800-644-9737**
- Patient education regarding MH and future precautions.
- Ongoing evaluation for signs and symptoms of MH (see box A)

Department of Clinical Effectiveness V1
Approved by the Executive Committee of the Medical Staff on 08/30/2016

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### SUGGESTED READINGS


This practice consensus algorithm is based on majority expert opinion of Malignant Hyperthermia work group at the University of Texas MD Anderson Cancer Center. It was developed using a multidisciplinary approach that included input from the following:

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