

I'm not robot!

Malignant Hyperthermia

Who is at Risk

- ❖ MH is an autosomal dominant inherited disorder. The child of a MH parent has a 50% risk of also being MH susceptible.
- ❖ Males develop reactions more frequently than females
- ❖ People under 18 years of age have the highest incidence of MH.
- ❖ MH is associated with neuromuscular disorders such as: Central Core Disease, Duchenne muscular dystrophy, myopathies, periodic paralysis, and episodes of heat exhaustion

Fact: Wisconsin, Nebraska, West Virginia, and Michigan have higher reported MH incidences than other states.

PREPARATION OF DANTROLENE	
This task requires 45-60 minutes to perform.	
Person 1	Preparation of syringes containing Dantrolene for Injection (DNI) <ul style="list-style-type: none">Requires 50ml syringes (or 60ml bottles/100ml bottles/150ml bottles) with needles.Fill syringe with 50ml of air and attach needle.Place top of each 100ml bottle using needle.Insert bottle and inject air into bottle. Do not remove needle.With needle below water surface, withdraw syringe till syringe with 50ml water.Hold full syringe with needle to Person 2 and begin again with new syringe.
Person 2	Mixing water and dantrolene. <ul style="list-style-type: none">Requires 50ml water syringe with needle (Dantrolene bottles (50mg))Remove cap and place dantrolene bottle with needle (attached to syringe).Inject as much water as able into dantrolene bottle.With needle tip above water allow syringe plunger to withdraw. Do not remove needle from syringe or bottle.Shake bottle/head/syringe to encourage mixing.Hold bottle/head/syringe to Person 1 and begin again with new syringe.
Person 3	Preparation and delivery of dantrolene syringe for administration. <ul style="list-style-type: none">Take bottle/head/syringe from Person 2.Shake to encourage mixing.When all dantrolene powder suspended in water, insert the bottle/head/syringe.Inject syringe contents into dantrolene bottle. With needle tip underwater draw the contents into the syringe.Remove and dispose of the needle.Immediately deliver the dantrolene to the anaesthetic team and begin again.
The above process should take less than three minutes for each syringe. A single mixing requires more than a syringe. PLEASE KEEP GOING UNTIL TOLD TO STOP BY ANAESTHETIC TEAM. Dantrolene/WH/2008	



What causes it?

- Mutations on the ryanodine receptors (RYR1) on the sarcoplasmic reticulum in skeletal muscle cells respond adversely to triggering agents
- Triggering agents include: inhaled general anaesthetics, desflurane, enflurane, ether, halothane, isoflurane, methoxyflurane, sevoflurane, and succinylcholine



(MHAUS, 2014)



Management of a Patient with Suspected Anaphylaxis During Anaesthesia SAFETY DRILL

Revised 2016

Immediate management

- Use the ABC approach (Airway, Breathing, and Circulation). Team-working enables several tasks to be completed simultaneously.
- Remove all potential causative agents and maintain anaesthesia, if necessary, with an inhalational agent.
- CALL FOR HELP and note the time.
- Maintain the airway and administer oxygen 100%. Intubate the trachea if necessary and ventilate the lungs with oxygen.
- Elevate the patient's legs if there is hypotension.
- If appropriate, start cardiopulmonary resuscitation immediately according to Advanced Life Support Guidelines.
- Give adrenaline i.v.
 - Adult dose: 50 µg (0.5 ml of 1:10 000 solution).
 - Child dose: 1.0 µg/kg (0.1 ml/kg of 1:10 000 solution).
- Several doses may be required if there is severe hypotension or bronchospasm. If several doses of adrenaline are required, consider starting an intravenous infusion of adrenaline.
- Give saline 0.9% or lactated Ringer's solution at a high rate via an intravenous cannula of an appropriate gauge (large volumes may be required).
 - Adult: 500 - 1000 ml
 - Child: 20 ml/kg
- Plan transfer of the patient to an appropriate Critical Care area.

CONTINUED OVERLEAF

Malignant Hyperthermia Triggering Agents

- ❖ Succinylcholine
 - A depolarizing muscle relaxant with no reversal
- ❖ Anaesthesia Gases
 - Halothane
 - Isoflurane
 - Enflurane
 - Sevoflurane
 - Desflurane



Malignant hyperthermia drill requirements. How to run a malignant hyperthermia drill.

Availability of dantrolene for the management of malignant hyperthermia crises: European Malignant Hyperthermia Group guidelines. Glahn KPE, Bendixen D, Girard T, Hopkins PM, Johannsen S, Ruffert H, Snoeck MM, Urwyler A: European Malignant Hyperthermia Group. Glahn KPE, et al. Br J Anaesth. 2020 Aug;125(2):133-140. doi: 10.1016/j.bja.2020.04.089. Epub 2020 Jun 24. Br J Anaesth. 2020. PMID: 32591088 MHANZ(1) (Malignant Hyperthermia Group of Australia and New Zealand) and the MH Resource Kit MHANZ was officially formed in November 2004 as a fundraising group for malignant hyperthermia (MH) research and testing throughout Australia and New Zealand. The group collaborates in many areas of research and meets once a year to review the latest clinical and diagnostic advances in this specialised field. All members are directly involved in research and in-vitro contracture testing for MH. Anaesthetic members of MHANZ include Robyn Gillies (Vic), Brad Hockey (Vic), Amit Surah (Vic), Elaine Langton (NZ), Philip Nelson (WA), Teresa Bulger (NZ), Margaret Perry (NSW), Neil Street (NSW). MHANZ has developed the MH Resource kit with the help of expert opinion, literature review and international guidelines. The crisis task cards for the kit were the original idea of the Southern Health Simulation and Skills centre and have been modified after simulation testing by the MHANZ. The Australian and New Zealand College of anaesthetists endorsed the latest resource kit in 2018. The Resource kit is designed as a guide and a practical memory aid and it has been prepared for a typical MH case. It is still the responsibility of the practitioner to look at the circumstances of each case and whether the application of all or some of the advice in the kit is appropriate. The Resource kit can be downloaded from our website here or from the college website www.anzca.edu.au (search term - malignant hyperthermia) 1. Address for correspondence: MHANZ Group, C/o Dr Robyn Gillies, Department of Anaesthesia and Pain Management, Royal Melbourne Hospital, Grattan Street, Parkville 3050. Phone: 03 9342 7540 robyn.gillies(at)mh.org.au www.malignanthyperthermia.org.au 08/11/2021 Access to the NMSGC Obstetrics & Gynaecology Clinical Guidelines is now password free. In order to maintain password-only access to the Junior Doctor's Handbook, Contacts Directory and Junior Doctor Induction areas the website and app has been re-organised. Users of the app version may have to reload content back on to their device to maintain access.

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