

## TREATMENT

The best treatment is prevention. If an abnormal reaction does occur, the person is rapidly cooled with ice and cold fluids. Dantrolene is given through a drip as soon as possible. Dantrolene is a special drug which can switch off the abnormal reaction in the muscle cells. The sooner it is used, the less severe the reaction. Once stabilised, the patient needs to remain in Intensive Care until everything is normal again.

## WHAT TO DO?

If someone in your family is MHS, you may be too. Tell your doctor and midwife. You need to see a Specialist Anaesthetist at Antenatal Clinic to discuss the management of your labour and delivery.

When you come into Delivery Suite, tell the midwife that you are at risk of MH. She must contact the Specialist Anaesthetist on duty, so that he/she can come and see you. The anaesthetist will plan the best management for you and your baby. He/she will also make sure an operating theatre is properly prepared in case of emergency.

If you need a caesarean section, a regional anaesthetic (epidural or spinal) will usually be used. In an emergency special general anaesthetics can be used, but a regional anaesthetic is safer for you and your baby. You will usually be kept extra time in the recovery ward for close monitoring.

## IF YOUR PARTNER IS MHS

If you are "normal" but the father of your baby is MH susceptible, the baby has a 50% chance of carrying MH. You need to be cared for in labour to reduce the stress to baby, and baby will be monitored after delivery. You should see an anaesthetist in Antenatal Clinic. The anaesthetist should be notified when you arrive in labour.

A general anaesthetic may affect your baby, so an epidural in labour is recommended, and a spinal or epidural will be used if caesarean section is required.

## DNA TESTING

Baby's cord blood can be taken for DNA testing. This will help to decide if baby is at risk of MH. It is the best time to do the test as more blood is required than can be taken from a baby. You will be asked to sign special consent forms before DNA tests can be done, and you can discuss this with the anaesthetist in Antenatal Clinic.

## CONCLUSION

**The best treatment is prevention. Make sure the people caring for you know that you and baby are at risk of MH. Close monitoring in a base hospital is the safest management.**



# MH

---

# MALIGNANT HYPERTHERMIA & CHILDBIRTH

MALIGNANT = OUT OF CONTROL

HYPER = VERY HIGH

THERMIA = TEMPERATURE, HEAT

Palmerston North Hospital

## WHAT IS MALIGNANT HYPERTHERMIA (MH)?

Malignant hyperthermia is a reaction triggered by certain commonly used anaesthetic agents. It occurs in otherwise normal people, who have a genetically different muscle cell. If not managed properly, an MH reaction can lead to death.

## WHO?

Usually affected people have a close relative (mother, father, brother, sister, cousin) affected with this condition. Medically, it is said to have autosomal dominant inheritance. This means that children of an affected parent have a 50% chance of carrying the gene which causes the abnormal reaction. If both parents are affected, the chances increase to 75%. Occasionally it occurs unexpectedly in families not known to carry this trait.

## TESTING

At present, the only way to test for the condition is by muscle biopsy. A small sample of muscle is taken from the thigh under a safe anaesthetic. The muscle is immediately tested in a laboratory. Palmerston North is the national centre in New Zealand for carrying out muscle biopsy tests. Muscle biopsy cannot be undertaken in children.

Research is underway to develop a DNA test for detecting MH. The DNA abnormality is different in different families. A positive DNA test means the person is at risk of MH. A negative test means a muscle biopsy is still required.

## RESULTS

If the muscle biopsy is negative, normal anaesthetics can safely be given, and no special precautions need to be taken. The children of a person with a negative biopsy are not at risk of MH.

If the muscle biopsy test is positive, the person is said to be Malignant Hyperthermia Susceptible (MHS). Special precautions need to be taken if anaesthesia is required, or if anaesthesia **may** be required (as in labour). The children of an affected person (including unborn babies) are treated as MHS.

## EFFECTS

Special care must be taken of MHS women in labour or having operations. If these people are given certain anaesthetic drugs, the muscle cells are triggered into a hyperactive state. This results in muscle spasm, rigidity, and excessive production of heat, carbon dioxide and other waste products. The result is rapidly rising temperature and acidosis of the body. This goes on to rapid pulse, high blood pressure, irregular heart beats, inadequate oxygen, loss of consciousness, and if untreated, death.

## ANAESTHESIA

The safest anaesthetic is a regional block, that is local anaesthesia, spinal, or epidural. If general anaesthesia is required a special anaesthetic machine is used and only safe drugs are given. The patient is closely monitored so that the signs of MH will be detected early, and treatment started immediately. Prevention is the best treatment.

## LABOUR

For the woman in labour, emergency anaesthesia may be required for caesarean section or retained placenta. It is therefore important that the baby should be born in a large base hospital. A large hospital will have the emergency equipment required to cope. The woman and baby should be closely monitored in labour so that any problem is detected early. It is recommended that an epidural be used for pain relief in labour as this reduces the stress of labour for both mother and baby. Epidural can also be used for caesarean section if this is needed. A spinal anaesthetic will be used if there is no epidural in place in labour.

During labour regular temperature, pulse and blood pressure tests are carried out as well as extra blood tests. After delivery, both mother and baby are closely watched for four hours.