Safety Information 001/12

Antenatal magnesium sulphate infusion prior to preterm birth for neuroprotection of the foetus infant and child

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Distributed to:

- Chief Executives
- Directors of Clinical Governance
- Directors of Clinical Operations
- Directors of Nursing and Midwifery
- Directors of Obstetrics
- Midwifery Unit Managers
- Clinical Midwifery Consultants
- Obstetricians
- GP Obstetricians
- Midwives

Expert Reference Group

Content reviewed by:

- Maternity Children's and Young People's Branch
- Obstetric Advisor, NSW Health

NSW Ministry of Health
Tel. 02 9391 9200
Fax. 02 93919556
Email
quality@doh.health.nsw.gov.au

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This safety information is designed to highlight safety concerns associated with the use of magnesium sulphate infusions for neuroprotection of the foetus, infant and child.

Background

In November 2010 the National Health and Medical Research Council (NHMRC) approved guidelines developed by the Australian Research Centre for Health of Women and Babies (ARCH) on the use of '*Antenatal magnesium sulphate prior to preterm birth for neuroprotection of the foetus, infant and child*'. The Guidelines have highlighted a number of important safety issues. This Safety Information provides further clarification in relation to magnesium sulphate preparations and additional direction on some aspects of its use.

Steps to minimise risk

1. The gestational age must be < 30 weeks with early preterm birth planned (planned birth) or definitely expected within 24 hours. Therefore :
   The use of antenatal magnesium sulphate infusion prior to preterm birth for neuroprotection should generally be restricted to tertiary obstetric units.
2. Resuscitation and ventilatory support should be immediately available during magnesium sulphate infusion administration**.** Therefore:
   Magnesium sulphate infusion must not be used during maternal transfer.
3. Magnesium sulphate infusion is not indicated where urgent delivery is necessary because of actual or imminent maternal or foetal compromise. Therefore:
   Magnesium sulphate must only be used where the maternal and foetal conditions are stable and where the birth of the baby is not time critical.
4. Magnesium sulphate has a number of important drug interactions. Therefore:
   Carefully consider potential drug interactions prior to and during its use.
5. The use of magnesium sulphate requires a high level of supervision. Therefore:
   Only use magnesium sulphate if staffing ratios permit (e.g. birthing/ high dependency units).

Dosage and administration

Commercially available *Magnesium Sulphate Heptahydrate* preparations are concentrated solutions containing 2 mmol/mL of Magnesium Sulphate. The preferred delivery method is by intravenous infusion.

Pre-mixed solutions for infusion pump use are preferred to avoid mixing errors.

Care and observations during infusion

Minimum routine observations:

- 1-2 hourly recording of maternal BP, respiratory and heart rate and urine output. (Cease if respiratory rate is < 10 per minute or if urine output is < 80mls over four hours);
- Patellar reflexes at completion of loading dose and then 2 hourly. (Cease infusion if unable to elicit reflexes.);
- Foetal heart rate monitoring as clinically indicated;
- Serum magnesium levels 60 minutes after commencing the infusion and thereafter as clinically indicated. Normal therapeutic levels are 1.5-3.5 mmol/l. (Blood for serum levels should not be collected from the limb receiving the infusion.)

Where patient condition is unstable, the frequency of observation will need to be increased.

References

1. National Clinical Practice Guidelines – Antenatal magnesium sulphate for neuroprotection http://www.nhmrc.gov.au/_files_nhmrc/file/publications/synopses/cp128_mag_sulphate_child.pdf Policy Directive PD 2011_064 Maternity – Management of Hypertensive Disorders of Pregnancy http://www.health.nsw.gov.au/policies/pd/2011/pdf/PD2011_020.pdf

Recommended actions by Local Health Districts

1. Ensure this information is incorporated into clinical practice guidelines and operational policies relating to magnesium sulphate infusion for neuroprotection of the foetus, infant and child.
2. Ensure all staff members are aware of the steps required to minimise the associated risk.