

## Antenatal magnesium sulphate prior to preterm birth for neuroprotection of the fetus, infant and child

**\*\*\* This set of clinical recommendations needs to be considered as a whole – recommendations *should not* be applied in isolation**

### Recommendation 1 What gestational age and when?

*Grading of recommendation: A*

In women at risk of early preterm<sup>1</sup> imminent<sup>2</sup> birth, use magnesium sulphate (MgSO<sub>4</sub>) for neuroprotection of the fetus, infant and child.

<sup>1</sup> when gestational age is < 30 weeks

<sup>2</sup> when early preterm birth is planned or definitely expected within 24 hours. (When birth is planned, commence MgSO<sub>4</sub> as close to four hours before birth as possible)

### Good Practice Point

#### Timing

If birth before 30 weeks is planned or expected to occur sooner than four hours (e.g. scheduled caesarean or late presentation to hospital), administer MgSO<sub>4</sub> to women at risk of preterm birth, as there is likely still advantage within this time.

#### Urgent delivery

In situations where urgent delivery is necessary because of actual or imminent maternal or fetal compromise (e.g. severe fetal distress or antepartum haemorrhage), then birth should not be delayed to administer MgSO<sub>4</sub>.

### Recommendation 2 What to give?

*Grading of recommendation: C*

MgSO<sub>4</sub> intravenously with a 4 gram loading dose (slowly over 20-30 minutes) and 1 gram/hour maintenance dose via IV route, with no immediate repeat doses.

Continue regimen until birth or for 24 hours, whichever comes first.

### Good Practice Point

#### Repeat doses

If birth does not occur after giving MgSO<sub>4</sub> for neuroprotection of the infant, and preterm birth (< 30 weeks' gestation) again appears imminent (planned or definitely expected with 24 hours), a repeat dose of MgSO<sub>4</sub> may be considered at the discretion of the attending health professional.

### Recommendations 3-7 Who to give MgSO<sub>4</sub> to?

*Grading of recommendation: B*

Give regardless of:

- plurality (number of babies *in utero*)
- reason woman (at < 30 weeks' gestation) considered at risk of preterm birth
- parity (number of previous births for the woman)
- anticipated mode of birth
- whether or not antenatal corticosteroids have been given

### Good Practice Point

#### Locations of administration of antenatal MgSO<sub>4</sub>

Locations of administration of antenatal MgSO<sub>4</sub> intravenously (IV) to women should be determined by each individual maternity facility.

#### Monitoring

While administering MgSO<sub>4</sub> intravenously, women should be regularly assessed as detailed in individual obstetric unit protocols.

Resuscitation and ventilatory support should be immediately available while administering MgSO<sub>4</sub>. Should hypotension or respiratory depression occur prompt medical review is recommended. This may include stopping MgSO<sub>4</sub>.

#### Loading infusion

A minimum assessment should include checking:

- pulse
- blood pressure
- respiratory rate
- patellar reflexes

*before* loading dose, 10 minutes *after* loading dose infusion starts and at the *end* of loading dose infusion (20-30 minutes)

The infusion should be stopped if:

- respiratory rate decreases more than 4 breaths/min below baseline
- respiratory rate is < 12 breaths/min
- diastolic blood pressure decreases more than 15 mm Hg below baseline

## Maintenance

While the maintenance infusion is running observe for any adverse effects.

The minimum assessments should include checking 4 hourly:

- pulse
- blood pressure
- respiratory rate
- patellar reflexes
- urine output

Stop infusion if:

- respiratory rate < 12 breaths/min
- patellar reflexes are absent
- hypotension occurs (diastolic BP < 15 mm Hg below baseline)
- urine output < 100 mL over 4 hours

## Toxicity

Magnesium toxicity is unlikely with the regimens recommended in these guidelines and serum magnesium concentrations do not need to be routinely measured. In women with renal compromise, serum magnesium monitoring is recommended.

Calcium gluconate (1 g (10 mL of 10% solution) slowly via IV route over 10 minutes) can be given if there is clinical concern over respiratory depression.

## Potential interactions

There is a potential theoretical interaction between  $MgSO_4$  and nifedipine of hypotension and neuromuscular blockade effects, although this is seldom reported in clinical practice.

Regular monitoring of the mother is recommended as detailed in individual obstetric unit protocols. If hypotension occurs, nifedipine and  $MgSO_4$  administration should cease and the woman be reviewed by a medical practitioner.

## NHMRC grading of recommendations

<b>A</b>	Body of evidence can be trusted to guide practice
<b>B</b>	Body of evidence can be trusted to guide practice in most situations
<b>C</b>	Body of evidence provides some support for recommendation(s) but care should be taken in its application
<b>D</b>	Body of evidence is weak and recommendation must be applied with caution

## For further information

Antenatal Magnesium Sulphate Prior to Preterm Birth for Neuroprotection of the Fetus, Infant and Child National Clinical Practice Guidelines, <http://www.nhmrc.gov.au/publications/synopses/cp128syn.htm>

Disclaimer: This summary is for general guidance only and is subject to a clinician's expert judgement. The summary should not be relied upon as a substitute for clinical advice. The Antenatal Magnesium Sulphate for Neuroprotection Guideline Development Panel Antenatal Magnesium Sulphate prior to preterm birth for neuroprotection of the fetus, infant and child. First edition. © The Australian Research Centre for Health of Women and Babies, The University of Adelaide 2010.

# ANTENATAL MAGNESIUM SULPHATE PRIOR TO PRETERM BIRTH FOR NEUROPROTECTION OF THE FETUS, INFANT AND CHILD



## Summary of Clinical Recommendations and Good Practice Points