


<b>THE TWEED/BYRON HEALTH SERVICE GROUP</b>	<b>EMERGENCY DEPARTMENT ADULT DRUG GUIDELINES</b>		<b>Policy Number:</b> NC-TWE-CLP-868
	Date Issued: April 2001      Last Review Date: 15/11/2017 Next Review: 15/11/2021 Authority: Dr Robert Davies Network Director Emergency Medicine		<b>Authority Initial:</b> 

## MAGNESIUM SULFATE (MgSO<sub>4</sub>) in PRE-ECLAMPSIA OR ECLAMPSIA

### WARNING

*This protocol should only be used in consultation with specialists who are familiar with the management of pre-eclampsia and eclampsia.*

### INDICATIONS

- Seizure prophylaxis in a woman who has already had an eclamptic seizure
- Seizure prophylaxis in a woman with severe pre-eclampsia who is at risk of eclampsia (although the efficacy for this is uncertain)

### PRESENTATION

#### AMPOULE:

5mL of 49.3% solution MgSO<sub>4</sub>  
= 2.47g MgSO<sub>4</sub>  
= 10mmol magnesium

#### PRE-MIXED BAG:

8g MgSO<sub>4</sub> in 100mL water for injection (available at BCH ED).  
40g MgSO<sub>4</sub> in 500mL water for injection (available from TTH Women's Care).  
Each 100mL contains 32mmol magnesium  
**12.5mL=1g MgSO<sub>4</sub>**

### MIXING INSTRUCTIONS

- From 500mL bag of 0.9% sodium chloride remove 50mL.
- Add 50mL of 49.3% MgSO<sub>4</sub> (10 amps).
- The resulting solution will have the following: **20mL = 1g MgSO<sub>4</sub>**

- No further mixing is required.

- 12.5mL=1g MgSO<sub>4</sub>**

### LOADING DOSE

- Infuse 4g (80mL) prepared MgSO<sub>4</sub> over 15 to 30 minutes through Baxter Pump.

- Infuse 4g (50mL) premixed MgSO<sub>4</sub> over 15 to 30 minutes through Baxter Pump.

### MAINTENANCE INFUSION

- Infuse 1g (20mL) prepared MgSO<sub>4</sub>/hour.
- If convulsion occurs, give another loading dose (4g=80mL) over 15 to 30 minutes.
- Run the maintenance infusion for at least 24 hours after the last convulsion or delivery.


- Infuse 1g (12.5mL) premixed MgSO<sub>4</sub>/hour.
- If convulsion occurs, give another loading dose (4g=50mL) over 15 to 30 minutes.
- Run the maintenance infusion for at least 24 hours after the last convulsion or delivery.

### NOTES

- Monitor for signs of hypermagnesaemia (see page 2).
- Maintenance infusion can be titrated between 0.5 to 2g/hr to achieve therapeutic levels.
- If the infusion is running above 1g/hr it needs to be lowered by 0.5g/hr until a maintenance dose of 1g/hr is reached prior to ceasing the infusion.
- Total MgSO<sub>4</sub> dosage should not exceed 30 - 40g over 24 hours.
- Rapid infusion may cause hypotension and cardiac arrhythmia
- Infusion concentrations less than 0.2g/mL recommended.
- Maximum infusion rate recommended 0.15g/min (=9g/hr).
- Rate and duration of infusion determine clinically or by magnitude of magnesium deficiency.

### ANTIDOTE for MAGNESIUM TOXICITY

Calcium chloride or calcium gluconate (10mL of 10% solution) by slow IV injection over 3 minutes.

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## MAGNESIUM SULFATE (MgSO<sub>4</sub>) in PRE-ECLAMPSIA OR ECLAMPSIA

### CONTRAINDICATIONS for magnesium sulfate

**Magnesium sulfate can be extremely hazardous in the following circumstances:-**

- Renal failure, severe renal compromise or if oliguria is present (magnesium concentration can reach toxic levels as elimination is predominantly renal).
- **Half dose MgSO<sub>4</sub> should be considered if there is renal compromise.**
- In association with hypocalcaemic states.
- Myasthenia gravis.
- Cardiac conditions, in particular conduction problems or myocardial damage.

### OTHER CONSIDERATIONS for magnesium sulfate

Magnesium Sulfate:-

- May lower blood pressure (secondary to vasodilation). Dose of any current antihypertensive medication may require adjustment.
- May have some tocolytic effect.
- May decrease foetal heart rate variability.
- May cause loss of reflexes (patellar reflexes will be absent well before toxic serum levels of magnesium are reached.
- Should be used with caution in the presence of calcium antagonists or other respiratory depressants (e.g. diazepam).

### Common Maternal Side Effects of magnesium sulfate

- Sensation of pain and warmth in arm.
- Flushing of hands, face and neck.
- Nausea.

### Signs of Maternal Toxicity of magnesium sulfate

- Loss of patellar reflexes.
- Respiratory rate <10.
- Slurred speech, weakness, feeling extremely sleepy, double vision.
- Muscle paralysis.
- Respiratory/cardiac arrest.

### CARE AND OBSERVATIONS DURING INFUSION of magnesium sulfate

- Close observation and assessment (maternal and fetal) is required for the duration of the infusion.
- Where patient condition is unstable, the frequency of observation will need to be increased.

**Routine observations:-**

- 1-2 hourly recording of maternal blood pressure, respiratory rate, heart rate and urine output. (Cease infusion if respiratory rate is <10 per minute or if urine output is <80mL over 4 hours)
- Patellar reflexes at completion of loading dose and then 2 hourly. (Cease infusion if unable to elicit reflexes and ED MO must be notified). Use arm reflexes in patients with an epidural.
- Fetal heart rate monitoring as clinically indicated.
- Serum magnesium levels may be measured 60 minutes after commencing the infusion and thereafter as clinically indicated. Normal therapeutic levels are 1.5 to 3.5 mmol/L. (Blood for serum levels SHOULD NOT be collected from the limb receiving the infusion).

### Reference:

PD2011\_064 NSW Health Management of Hypertensive Disorders of Pregnancy.