South Australian Neonatal Medication Guidelines

magnesium sulfate

2.465g/5mL or 2.5g/5mL injection*

Note

This guideline provides advice of a general nature. This statewide guideline has been prepared to promote and facilitate standardisation and consistency of practice, using a multidisciplinary approach. The guideline is based on a review of published evidence and expert opinion.

Information in this statewide guideline is current at the time of publication.

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Health practitioners in the South Australian public health sector are expected to review specific details of each patient and professionally assess the applicability of the relevant guideline to that clinical situation.

If for good clinical reasons, a decision is made to depart from the guideline, the responsible clinician must document in the patient's medical record, the decision made, by whom, and detailed reasons for the departure from the guideline.

This statewide guideline does not address all the elements of clinical practice and assumes that the individual clinicians are responsible for discussing care with consumers in an environment that is culturally appropriate and which enables respectful confidential discussion. This includes:

- The use of interpreter services where necessary,
- Advising consumers of their choice and ensuring informed consent is obtained,
- Providing care within scope of practice, meeting all legislative requirements and maintaining standards of professional conduct, and
- Documenting all care in accordance with mandatory and local requirements

Dose and Indications

* There are two preparations available:

  2.465g/5mL (49.3%) magnesium sulfate contains 10mmol magnesium

  2.5g/5mL (50%) magnesium sulfate heptahydrate contains 10.3mmol magnesium

In dosing with neonates, the difference becomes immeasurable and for the purpose of these guidelines, they each contain elemental magnesium 10mmol/5mL or 2mmol/mL

All doses must be written as millimoles of elemental magnesium

Hypomagnesaemia

Intravenous, Intramuscular

0.2 to 0.4mmol/kg/dose every 12 hours as required

Pulmonary Hypertension

Intravenous

Loading dose 0.8mmol/kg then if clinical response continue

Maintenance dose 0.1 to 0.3mmol/kg/hr for 2 to 5 days

Torsades de pointes (Prolonged QT syndrome due to hypomagnesaemia)

Intravenous

0.1 to 0.2mmol/kg/dose

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Preparation and Administration

Intravenous

Dilute 2mL of either product (2mmol/mL of elemental magnesium) with 3mL of compatible fluid (to give a total volume of 5mL). The resulting solution contains 0.8mmol/mL magnesium.

Dose	0.2mmol	0.4mmol	0.6mmol	0.8mmol	1mmol	1.2mmol
Volume	0.25mL	0.5mL	0.75mL	1mL	1.25mL	1.5mL

Further dilute with a compatible fluid.

Low doses can be given over 20 minutes.

Doses greater than 0.8mmol/kg should be given at a maximum recommended rate of 0.04mmol/kg/minute.

Intramuscular

Dilute 2mL of either product (2mmol/mL of elemental magnesium) with 3mL of compatible fluid (to give a total volume of 5mL). The resulting solution contains 0.8mmol/mL magnesium.

Dose	0.2mmol	0.4mmol	0.6mmol	0.8mmol	1mmol	1.2mmol
Volume	0.25mL	0.5mL	0.75mL	1mL	1.25mL	1.5mL

Intramuscular is painful and sometimes causes haematomas.

Compatible Fluids

Glucose 5%, glucose/sodium solutions, sodium chloride 0.9%

Adverse Effects

Common

Flushing, vomiting

Other adverse effects are often related to the development of hypermagnesaemia: important signs are loss of deep tendon reflexes and respiratory depression. More serious effects are hypotension, bradycardia, CNS depression, coma, circulatory collapse, cardiac arrest.

Monitoring

- Magnesium levels regularly; usual blood level 0.75 to 1mmol/L however if treating pulmonary hypertension aim for levels between 3.5 to 5.5mmol/L
- Renal function
- Urine output
- Electrolytes
- Blood pressure, heart rate, respiratory rate, oxygen saturation, urine output, reflexes and other sign of toxicity regularly during treatment is recommended.

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Practice Points

- All doses must be written as elemental magnesium
- Anticipate changes in calcium and phosphorus balance
- Calcium gluconate 10% injection should be available in case of hypermagnesaemia
- Use CAUTIOUSLY in patients with renal impairment and/or electrolyte imbalance
- DO NOT USE in patients with heart block or myocardial damage
- When treating pulmonary hypertension consider other agents (nitric oxide and sildenfil) before using magnesium sulphate.

Version control and change history

PDS reference: OCE use only

Version	Date from	Date to	Amendment
1.0	November 2012	current	Original version

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