South Australian Neonatal Medication Guidelines

magnesium sulfate

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

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Endorsed by: South Australian Maternal & Neonatal Clinical Network
Contact: South Australian Neonatal Medication Guidelines Workgroup at:
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Government of South Australia
SA Health

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

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.

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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.

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.

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1.0	November 2012	current	Original version

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