



## GUIDELINE

### Magnesium Sulphate - Administration

<b>Scope (Staff):</b>	All Emergency Department Clinicians
<b>Scope (Area):</b>	Emergency Department

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<http://kidshealthwa.com/about/disclaimer/>

# Magnesium Sulphate - Administration

## Medication

### Indications

- Used in treatment of severe asthma
- Used in the treatment of magnesium deficiency
- Can be used to treat arrhythmias, particularly Torsades de pointes resulting from magnesium deficiency
- Has anti-convulsant properties if the seizures are as a result of acute uraemia, hypothyroidism or eclampsia

### Adverse

- Excessive administration may result in hypermagnesaemia which leads to flushing, thirst, hypotension due to vasodilatation, drowsiness, confusion, loss of tendon reflexes, muscle weakness, respiratory depression, cardiac arrhythmia, coma and cardiac arrest
- Treatment for hypermagnesaemia is ceasing the magnesium, administration of calcium gluconate, fluid resuscitation and in severe cases, dialysis

### Administration

#### IV Administration:

- Use 49.3% Magnesium Sulphate (= 2mmol/ml)

<b>Asthma:</b> <ul style="list-style-type: none"> <li>◦ 0.2mmol/kg (0.1ml/kg), <b>max</b> 8 mmols (4 mls)</li> <li>◦ Add to 50ml bag 0.9% saline</li> <li>◦ Give over 20 minutes</li> </ul>
<b>In Emergency/ Polymorphic VT or VT caused by Hypomagnesaemia:</b> <ul style="list-style-type: none"> <li>◦ 0.1-0.2mmol/kg IV (0.05-0.1ml/kg)</li> <li>◦ Dilute with 2.5 times the volume of 0.9% saline</li> </ul> eg. 2mls of MgSO <sub>4</sub> added to 5ml of 0.9% saline <ul style="list-style-type: none"> <li>◦ Give as slow IV push over 3 – 5 minutes</li> </ul>
<b>For Mg deficiency:</b> <ul style="list-style-type: none"> <li>◦ IV: 0.4mmol/kg/dose (0.2ml/kg/dose), <b>max</b> 20mmol (=10mls) 12 hourly</li> <li>◦ Can give over 20 minutes but preferably over 1 – 4 hours</li> </ul>
<b>Digoxin tachycardia, Pulmonary hypertension:</b> <ul style="list-style-type: none"> <li>◦ IV – 0.2mmol/kg (0.1ml/kg)</li> <li>◦ Give over 20 – 30 minutes</li> </ul>
<b>If infusion required (after stat dose given):</b> <ul style="list-style-type: none"> <li>◦ 0.12mmol/kg/hour (0.06ml/kg/hour)</li> <li>◦ Volume of MgSO<sub>4</sub> = 0.06ml x pt wt kg x hrs infusion</li> <li>◦ Usually 4 – 6hrs, may be 24 hrs for myocardial infarction</li> <li>◦ Dilute with Normal Saline – 2.5mls to each 1ml MgSO<sub>4</sub></li> <li>◦ Keep serum Mg 1.5-2.5mmol/L for digoxin tachycardia</li> <li>◦ Keep serum Mg 3-4mmol/L for pulmonary hypertension</li> </ul>

## Special

- **Must have cardiac monitoring**
- **Rapid administration may cause hypotension; if this occurs reduce rate**
- Administer with caution to patients with known renal impairment.; patients in severe renal failure should NOT be given magnesium
- Parental administration may enhance effects of neuromuscular blocking agents
- Careful monitoring of magnesium levels

## Compatible with:

- 5% glucose, Hartmann's, normal saline, saline/glucose solutions
- Aciclovir, amikacin, ampicillin, caspofungin, cefotaxime, cefoxitin, cephalothin, cephazolin, chloramphenicol sodium succinate, dexmedetomidine, erythromycin lactobionate, esmolol, gentamicin, heparin sodium, hydrocortisone sodium succinate, isoprenaline, labetalol, lignocaine, linezolid, metaraminol, metoclopramide, metronidazole, milrinone, morphine sulfate, noradrenaline, ondansetron, piperacillin, piperacillin-tazobactam, potassium chloride, sodium nitroprusside, trimethoprim-sulfamethoxazole, vancomycin, verapamil

**Incompatible with:**

- Fat emulsion, soluble phosphates, alkali hydroxides and carbonates
- Amiodarone, **aminophylline**, amphotericin B, azathioprine, calcium chloride, calcium gluconate, cefepime, ceftriaxone, chlorpromazine, ciprofloxacin, clindamycin, cyclosporin, dicloxacillin, dexamethasone sodium phosphate, diazepam, **ketamine**, **methylprednisolone** sodium succinate, pantoprazole, phenytoin, phosphate salts, **salbutamol**, sodium bicarbonate

**Tags**

arrhythmia, asthma, electrolytes, magnesium, vt

**References**

PMH ED Guideline – Magnesium Sulphate: Last updated September 2014  
 PICU Drug File Reviewed February 2013  
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