REGIONAL ADULT PARENTERAL DRUG MONOGRAPH

GENERIC NAME

magnesium sulphate (electrolyte replacement)

Effective Date: Dec 2011 **Revised Date:** Dec 2022	*CLASSIFICATION* **Electrolyte Anticonvulsant**	*OTHER NAMES* **$MgSO_4$**	*PAGE* 1 of 2

ADMINISTRATION POLICY:

NOTE: ***For use in gestation, refer to magnesium sulfate (gestational hypertension monograph)***

IV Infusion – May be administered by a nurse
IV Intermittent – May be administered by a nurse
Intraosseous – May be administered by a nurse
IM Injection – Not recommended

RECONSTITUTION/DILUTION/ADMINISTRATION:

Available as: 200 mg/mL – 10 mL single use vial

Intermittent/Infusion: Dilute each gram (5 mL) in a minimum 25 mL normal saline and infuse at a maximum rate of 1 gram/hour

2-gram dose: Add 2 grams (10 mL of 200 mg/mL) to 100 mL normal saline.
Final Volume: 110 mL Final Concentration: 18.1818 mg/mL
Administer at 55 mL/hour

4-gram dose: Add 4 grams (20 mL of 200 mg/mL) to 100 mL normal saline.
Final Volume: 120 mL Final Concentration: 33.3333 mg/mL
Administer at 30 mL/hour

IV Infusion: Pump Library:

Magnesium Sulphate 2

Drug Library	Dose Rate	Short Name	Care Unit
Yes	mL/h	magsul2	Critical Care & General

Magnesium Sulphate 4

Drug Library	Dose Rate	Short Name	Care Unit
Yes	mL/h	magsul4	Critical Care & General

DOSAGE:

NOTE: ***1 g = 1000 mg***

IV intermittent/Infusion: 1 to 20 grams in divided doses (highly variable)

Hypomagnesemia: 1 to 8 gram/hour for 3 to 6 hours then 0.5 to 1 gram/hour as needed

Torsades de Pointes (not in cardiac arrest): 1 to 2 gram in 50 to 100 mL of normal saline over 5 to 60 minutes followed by IV infusion of 0.5 to 1 g/hour titrated to effect

Pulseless (cardiac arrest): 1 to 2 gram in 10 mL of normal saline over 5 to 20 minutes

Asthma (acute severe exacerbation): IV intermittent: 2 g as a single dose over 20 minutes; recommended as adjunctive therapy for severe life-threatening exacerbations and for exacerbations that remain severe after 1 hour of intensive conventional therapy

Maximum single dose: 8 grams
Maximum daily dose: 30 to 40 grams/day

Maximum rate: Emergency situations: 150 mg/minute
Non-emergent situations: 1 gram/hour

Maximum concentration: 200 mg/mL (emergency situations)

STABILITY/COMPATIBILITY:

Stability of Final Admixture: 24 hours at room temperature

Compatibility: Compatible in D5W, normal saline, combination dextrose-saline solutions, Lactated Ringer

PRECAUTIONS, POTENTIAL ADVERSE REACTIONS:

- Cardiovascular: Contraindicated in patients with heart block. Hypotension, flushing, sweating, hypothermia.
- Central Nervous System: CNS depression, decreased deep tendon reflexes.
- Respiratory: respiratory depression

ADDITIONAL NOTES AND NURSING CONSIDERATIONS:

- 1 g of magnesium sulphate contains 4 mmol or 8 mEq of magnesium
- Continuous cardiac monitoring in emergency situations with physician availability
- Monitor blood pressure at baseline and repeat in 15 minutes after start of the IV infusion. Monitor serum magnesium, calcium and creatinine every day and baseline.
- May be administered undiluted by IM injection. Very painful and involves multiple injection sites and should only be used when IV access is impossible.
- Decrease dose in renal insufficiency as accumulation may lead to magnesium toxicity.
- Kidney threshold for magnesium is approximately 8 mEq/hour (1 gram/hour), so rates greater than 1 gram/hour may lead to magnesium wasting in individuals with normal renal function.
- In situations where potassium and magnesium replacement are simultaneously required, some sites add 2 to 4 grams magnesium sulfate to 20 mmol/100 mL potassium chloride minibag for central venous administration over a 4 hour infusion period.
- **ANTIDOTE** for magnesium toxicity: Calcium gluconate 10 mL of 10% solution IV push over 3 minutes