

RX

Drug Name: Magnesium Sulfate
Trade Name: Mag, Mag Sulfate, MgSO₄, Mg⁺⁺
REVISED: November 1, 2017

Class:

- Antidysrhythmic
- Anticonvulsant
- CNS Depressant

Mechanism of Action:

- Anticonvulsant properties—reduces striated muscle contractions and blocks peripheral neuromuscular transmission by reducing acetylcholine release at the myoneural junction
- Antidysrhythmic properties—Physiological calcium channel blocker. Reduces SA node impulse formation, prolongs conduction time in myocardium

Indications:

- ***The 2000 ECC/AHA guidelines conclude that IV magnesium during cardiopulmonary resuscitation has shown effectiveness only for the treatment of patients with hypomagnesemia states or polymorphic ventricular tachycardia (torsade de pointes)***
- Refractory VF, VT (with or without a pulse) (*if hypomagnesemia is suspected*)
- Refractory ventricular ectopy (*if hypomagnesemia is suspected*)
- TDP (*treatment of choice*)
- Seizure prevention and control in preeclampsia and eclampsia (*treatment of choice*)
- Suspected hypomagnesemia
- Status asthmaticus not responsive to β agonists or anticholinergics.

Contraindications:

- Heart block
- MI
- Hypermagnesemia

Precautions:

Renal insufficiency

Dosage:

Adults:

Preeclampsia, — IV/IO: 4 g over 20 minutes, repeat as needed.

Do not give faster than 1 g/minute.

To Mix: 4 g /250 ml using a 15 gtt set. Run at equivalent of 750 ml/hour. Titrate for effect. Max 8 grams.

If seizures occur, run at eclampsia dosing.

Maintenance Infusion: 5 g/250ml NS, run at 100 ml/hr (2 g/hr)

Eclampsia (active seizures) — IV/IO: 4 g over 5 minutes, repeat as needed.

Do not give faster than 1 g/minute.

To Mix: 4 g /250 ml using a 15 gtt set. Run at equivalent of 3000 ml/hour. Titrate for effect. Max 8 grams.

Maintenance Infusion: 5 g/250ml NS, run at 100 ml/hr (2 g/hr)

Refractory Broncheospasm — IV/IO: 2 g over 5 minutes, repeat as needed. Do not give faster than 1 g/minute.

To Mix: 2 g /250 ml using a 15 gtt set. Run at equivalent of 3000 ml/hour. Titrate for effect. Max 4 grams.

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This document is for **reference only**. Please refer to SWO's for specific indications, dosages, and applications

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Refractory VT, VF, TDP,: IV/IO: 2 g every 5 minutes, 1st line for Torsades or refractory V-Fib/Pulseless V-Tach. **To Mix:** 2 g (4ml), dilute to a total of 20 ml to make 10% solution. Do not give faster than 1 g/minute

Pediatrics:

Refractory VT, VF, TDP, Refractory Bronchospasm — IV/IO: 25-50 mg/kg in 100 ml Buretrol over 2-5 minutes, MAX 2 GM

Onset:

IV—Immediate
IM--3-4 hours

Duration:

IV—30-60 minutes
IM--3-4 hours

Side Effects:

Flushing/Sweating	Cardiac arrest
Itching/Rash	Circulatory collapse
Hypothermia	Complete heart block
Drowsiness	Flaccid paralysis
Respiratory depression	Absence of knee jerk
Respiratory failure	Hypotension, Diaphoresis
Bradycardia/AV block	

Interactions:

Incompatible--alcohol, salicylates, sodium bicarbonate
Additive effects can occur with other CNS depressants
Concurrent use with nifedepine in the treatment of maternal hypertension can cause increased hypotension or pronounced muscle weakness & may harm the fetus
Can cause cardiac conduction abnormalities when used in conjunction with cardiac glycosides

PEARLS

In some case of *Torsades de Pointes* 5-9 g have been required. As a smooth muscle relaxant, it is also a potentially effective 2nd line intervention in cases of severe, refractory bronchospasm secondary to Asthma.
Use aggressively in the setting of eclampsia. If eclamptic seizures are refractory to Mag Sulfate, then proceed to benzodiazepines if not already administered.