

Medication: Magnesium Sulfate	PDN: 6951.04	Last Updated: January 7 2022	PMD: Andrew Travers*	PDC: Tanya Fraser	Page 1 of 2
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MAGNESIUM SULFATE

1.0 Classification

- Electrolyte
- Antiarrhythmic
- Smooth muscle relaxant
- Mast cell stabilizer

2.0 Mechanism of Action

- Acts as a calcium channel blocker, depressing neuromuscular activation of smooth, cardiac, and skeletal muscle by decreasing acetylcholine secretion in the synaptic cleft.

3.0 Indications

- Cardiac arrest with polymorphic VT (torsades de pointes) or due to suspected long QT
- Torsades de pointes with a pulse
- Severe acute asthma as an adjunct to bronchodilators
- Pregnant patient in the third trimester with seizures (eclampsia)

4.0 Contraindications

- Heart block
- Shock
- Hypocalcemia

5.0 Precautions

- Must be used with caution in patients with impaired renal function or who are taking digitalis.

6.0 Route

- May be given IV/IO

7.0 Dosage

Adult

- For cardiac arrest (torsades de pointes): 2 g IV/IO push, given once.
- For torsades de pointes (with a pulse): 2 g IV/IO diluted in 100 mL normal saline and administered over 5 minutes, given once.
- For severe asthma: 2 g IV/IO diluted in 100 mL normal saline and administered over 5 minutes, given once.
- For eclampsia: 4 g IV diluted in 100 mL normal saline and administered over 30 minutes, given once.

Pediatric

- For cardiac arrest (torsades de pointes): 50 mg/kg (maximum 2 g) IV/IO push, given once.
- For torsades de pointes (with a pulse): 50 mg/kg (maximum 2 g) IV/IO diluted in 100 mL normal saline and administered over 10 minutes, given once.
- For severe asthma: 50 mg/kg (maximum 2 g) IV/IO diluted in 100 mL normal saline and administered over 15 minutes, given once.

8.0 Supplied

- 2 g in 10 mL (20%) vial

9.0 May Be Given By

- ACP/CCP

10.0 Adverse Effects

- Hypotension
- Heart block
- Drowsiness
- Respiratory depression
- Arrhythmia
- Flushing (not harmful; self-resolves)

11.0 Special Notes

- Unless patient is in cardiac arrest, appropriate dose of magnesium sulfate should be injected into 100 mL normal saline bag and administered over period of time as indicated in dosage section.
- If a pregnant patient in the third trimester is complaining of severe headache and/or increased blood pressure (i.e., signs of pre-eclampsia), contact the M CCP to discuss possible treatment options.
- Calcium chloride should be readily available as an antidote for magnesium sulfate in case of respiratory depression (decreased diaphragm neuromuscular action); 1 g over 3 minutes for adults; 10 mg/kg (maximum of 1 g) over 15 minutes for pediatrics.
- Magnesium sulfate is not effective in the setting of COPD.
- Pregnancy category A [the drug is safe to use in pregnant women]

12.0 References

- Cardiac Arrest Adult Clinical Practice Guideline
- Adult Cardiac Arrhythmia Clinical Practice Guideline
- Adult Respiratory Distress Clinical Practice Guideline
- Obstetrical Emergencies Clinical Practice Guideline
- Compendium of Pharmaceuticals and Specialties (CPS)

*Electronically Signed

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