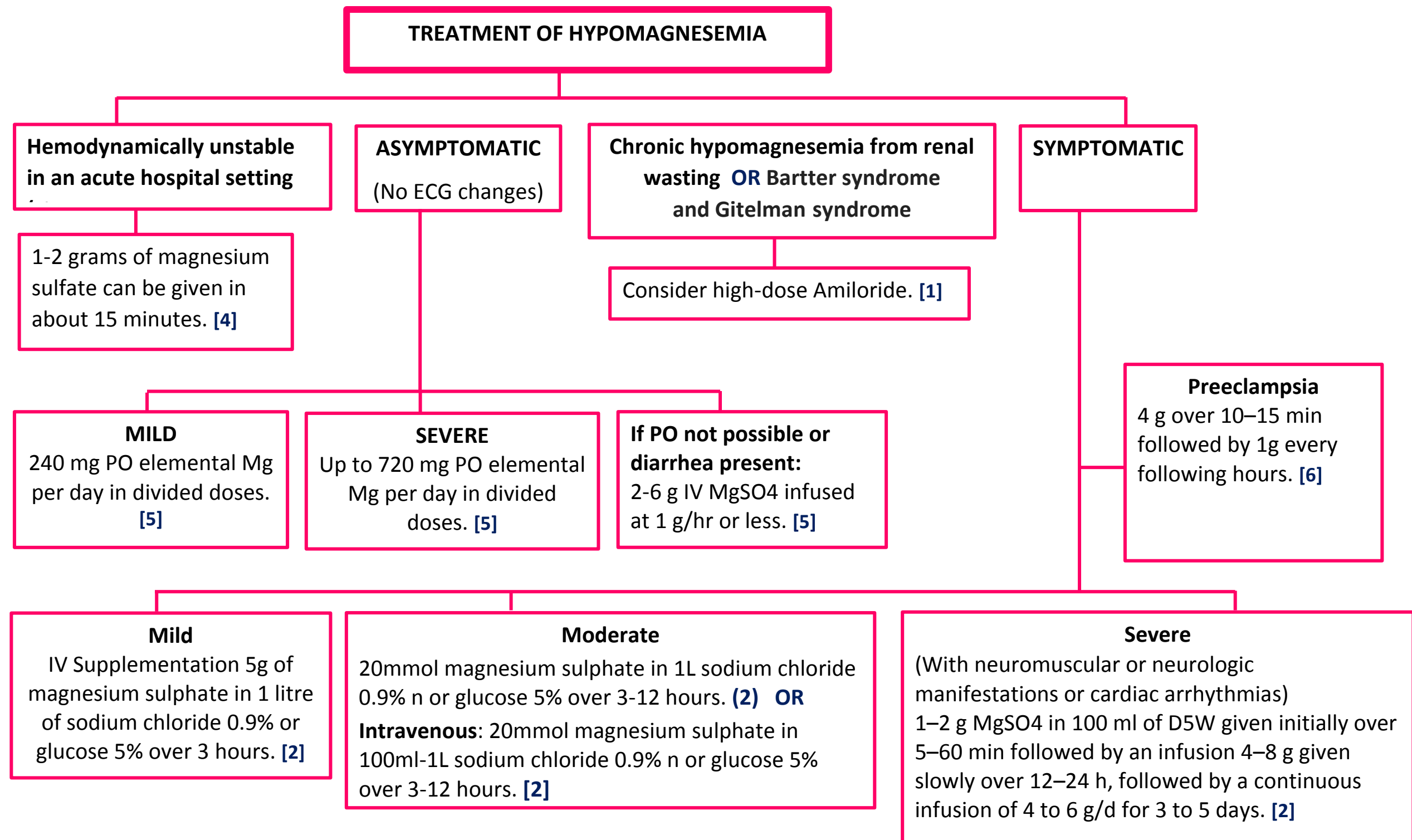


\* Mg plasma levels should be monitored Check deep tendon reflexes often to detect developing hypermagnesemia; an overdose could cause oliguria, diminished level of consciousness and areflexia.



## HYPERMAGNESEMIA

### Endogenous sources:

- Diabetic ketoacidosis
- Tumor lysis syndrome
- Theophylline intoxication
- Adrenal insufficiency
- Primary hyperparathyroidism. **(1)**

### Exogenous Administration:

- Antacids and Magnesium-containing laxatives in renal failure
- Over-aggressive IV magnesium administration (treatment of preeclampsia). **1**

**Mild:** 2.3-3.6 mg/dl  
**Moderate:** 3.6-4.8 mg/dl  
**Serious:** 4.8-7.2 mg/dl  
**Severe:** 7.2-12 mg/dl **(8)**

### Symptoms

#### Above 4 mg/dl

Hyporeflexia, elimination of osteotendinous reflexes, bradycardia and hypotension, articulation disorders and ataxia

#### Above 15 mg/dl

Respiratory depression, Muscular paralysis

#### Over 20 mg/dl

Cardiac asystole **(8)**

## Treatment

### Moderate

(Mg <10 mg/dL, no cardiac or respiratory symptoms)

- Volume resuscitation
- Treatment of underlying cause
- Furosemide may be considered to enhanced magnesium excretion, but make sure to replace excreted volume to avoid hypovolemia. **8**

### Severe

(Cardiac and/or respiratory consequences)

- IV calcium may stabilize myocardium
  - Two grams of calcium gluconate IV over 5-10 minutes (or one gram of calcium chloride).
  - May need to repeat or, in extreme cases, give as a continuous infusion.
- Elimination
  - Not oliguric: forced diuresis with furosemide plus saline (with close monitoring of volume status and other electrolyte levels).
  - Oliguric: emergent dialysis. **7**

1. The Washington Manual of Critical Care 2<sup>nd</sup> Edition
2. <https://emedicine.medscape.com/article/2038394-overview#a5>
3. <http://nssg.oxford-haematology.org.uk/oxford/clinical-care/H-95-guidelines-for-management-of-hypomagnesaemia-in-adult-clinical-haematology.pdf>
4. <https://www.ncbi.nlm.nih.gov/books/NBK500003/>
5. <http://www2.worcsacute.nhs.uk/EasysiteWeb/getresource.axd?AssetID=11260&type=full&servicetype=Attachment>
6. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5872533/>
7. <https://emcrit.org/ibcc/hypermagnesemia/>
8. <https://www.ncbi.nlm.nih.gov/books/NBK549811/>