

## Causes

- **Renal dysfunction** (most common cause)
- **↓ Mg<sup>+</sup> excretion**
  - ↓ renal fx & aging
  - Renal failure
  - Addison's disease
  - Adrenocortical insufficiency
  - Untreated DKA
- **↑ Mg<sup>+</sup> intake**
  - Mg<sup>+</sup> containing antacids or laxatives
  - Hemodialysis & Mg<sup>+</sup> rich dialysate
  - TPN solutions & too much
  - Continuous infusion of magnesium sulfate to tx seizures, pregnancy-induced HTN, preterm labor

## Labs/Diagnostics

- **Serum Mg<sup>+</sup> > 2.5**
- **EKG changes**
  - Prolonged PR intervals
  - Widened QRS complexes
  - Tall T waves

## S/S

- 3 mEq/L**
  - Feelings of warmth, Flushed
  - Mild hypotension, N, V
- 4 mEq/L**
  - Facial paresthesia
  - ↓ Deep tendon reflexes
  - Muscle weakness
- 5 mEq/L**
  - Drowsiness
  - EKG changes, Bradycardia
  - Worsening hypotension
- 7 mEq/L**
  - Loss of deep tendon reflexes
- 8 mEq/L**
  - Respiratory compromise
- 12 mEq/L**
  - Heart Block, Coma
- 15 mEq/L**
  - Respiratory arrest
- 20 mEq/L**
  - Cardiac arrest

## **Hypermagnesemia**

**> 2.5 mEq/L**  
**Uncommon – usually the kidneys can rapidly reduce excess Mg<sup>+</sup>**

## Associated Drugs

- **Antacids** (Di-Gel, Gaviscon, Maalox)
- **Laxatives** (Milk of Magnesia, Haley's M-O, magnesium citrate)
- **Mg<sup>+</sup> supplements** (magnesium oxide, magnesium sulfate)
- **Rectal enemas**

## Tx

- **Oral intake** (& normal renal fx)
- **Loop diuretic**
- **Calcium gluconate** (Mg<sup>+</sup> antagonist – give 10-20mL 10%)