

## Hypomagnesemia & Hypermagnesemia

Normal magnesium lab level = **1.3-2.1 mEq/L**

Magnesium is a mineral that is mostly (~60%) stored in the bone and cartilage.

Magnesium is regulated by the kidneys and intestines.

Magnesium is a membrane stabilizer and has an important role in the following:

- Skeletal muscle contraction
- Blood coagulation
- Carbohydrate metabolism
- Cell growth

Hypomagnesemia	Hypermagnesemia
Lab value= <1.3 mEq/L	Lab value= >2.1 mEq/L
<b>Causes:</b> <ul style="list-style-type: none"> <li>- Malnutrition/Dietary</li> <li>- Intestinal disease-Celiac, Crohn's</li> <li>- Alcoholism</li> </ul>	<b>Causes:</b> <ul style="list-style-type: none"> <li>- Dietary (too much magnesium intake-antacids)</li> <li>- IV magnesium infusion</li> <li>- Kidney disease</li> </ul>
<b>Signs/symptoms:</b> <ul style="list-style-type: none"> <li>- Hyperactive DTRs, painful muscle contractions, tetany</li> <li>- Chvostek's and Trousseau's sign</li> <li>- Seizures</li> <li>- Psychological alterations</li> <li>- Paresthesia</li> <li>- Decreased intestinal peristalsis, constipation</li> </ul>	<b>Signs/symptoms:</b> <ul style="list-style-type: none"> <li>- Hypoactive or absent DTRs, muscle weakness</li> <li>- Bradycardia, vasodilation, hypotension</li> <li>- Drowsy/lethargic</li> <li>- ECG changes- prolonged PR interval, widened QRS complexes</li> <li>- Decreased respiratory rate</li> </ul>
<b>Treatment:</b> <ul style="list-style-type: none"> <li>- IV magnesium (MgSO<sub>4</sub>)</li> <li>- Oral magnesium</li> </ul>	<b>Treatment:</b> <ul style="list-style-type: none"> <li>- IV fluids</li> <li>- Loop diuretics- Lasix</li> <li>- IVP calcium gluconate</li> <li>- Dialysis</li> </ul>

## Nursing Considerations:

Implement seizure precautions for patients with hypomagnesemia

- Quiet room with dim lights, keep noise to a minimum
- Oxygen and suction at bedside
- IV access
- Bed in lowest position, mattress on floor beside the bed

Assess kidney function of a patient receiving IV magnesium. If the patient has a decreased in urinary output during the infusion, the infusion should be stopped; severe hypermagnesemia could occur if the infusion continues running.

Assess DTRs hourly in a patient who is receiving IV magnesium to ensure that hypermagnesemia does not result. If DTRs become weakened or absent stop the infusion and notify the physician.

Monitor cardiac function closely of a patient with hypermagnesemia. **HIGH** risk for cardiac arrest if severe levels. Ensure cardiac monitoring has been initiated.

Administer IVP calcium gluconate **slowly (5-10 minutes)** depending on the dose).