

# Hypophosphatemia & Hyperphosphatemia

Normal phosphorus level= 3-4.5 mg/dL

Phosphorous is important in the following functions

- Activating vitamins and enzymes
- Forming ATP for energy supplies
- Cell growth and metabolism
- Calcium homeostasis

Phosphorus and calcium have an inverse relationship

Hypophosphatemia	Hyperphosphatemia
Lab value= <3 mg/dL	Lab value= >4.5 mg/dL
<b>Causes:</b> <ul style="list-style-type: none"> <li>- Malnutrition</li> <li>- Hyperparathyroidism</li> <li>- Hypercalcemia</li> <li>- Malignancy</li> <li>- Alcohol abuse</li> </ul>	<b>Causes:</b> <ul style="list-style-type: none"> <li>- Dietary</li> <li>- Hypoparathyroidism</li> <li>- Tumor lysis syndrome</li> <li>- Kidney disease</li> </ul>
<b>Signs/symptoms:</b> <ul style="list-style-type: none"> <li>- Decreased cardiac output, decreased stroke volume</li> <li>- Generalized weakness</li> <li>- Decreased respiratory effort</li> <li>- Emotional irritability</li> <li>- Seizures, coma (severe)</li> <li>- Decreased bone density</li> </ul>	<b>Signs/Symptoms:</b> <b>*Refer to hypocalcemia information*</b> Most dangerous symptoms associated with hyperphosphatemia are related to the effects of hypocalcemia
<b>Treatment:</b> <ul style="list-style-type: none"> <li>- Oral phosphorous with vitamin D supplementation</li> <li>- Dietary- phosphorous rich foods such as animal sources (fish, beef, chicken, pork) and nuts</li> <li>- IV phosphorous (if severe)</li> </ul>	<b>Treatment:</b> <b>*Refer to hypocalcemia information*</b> Managing hyperphosphatemia involves management of hypocalcemia

## **Nursing Considerations:**

Safety precautions should be put into place for individuals with hypophosphatemia as they are at an increased risk of experiencing a fracture.

Educate patients on foods that are high in phosphorous. Phosphorous rich foods include fish, beef, chicken, pork, and nuts. Individuals with hypophosphatemia should be encouraged to consume these foods, while patients with hyperphosphatemia should be taught to avoid such foods.

**\*See nursing considerations for hypocalcemia\***