

Hypocalcemia

Quiz & Mnemonics

CA⁺ Hypocalcemia

Hypo: low (<8.4 mg/dL)

Calc: pre-fix is calcium

Emia: blood

Meaning of hypocalcemia: **Low calcium in the blood**

Normal calcium level: **8.4 mg/dL to 11.0**

Role of Calcium: plays a huge role in bone and teeth health along with muscle/nerve function, cell, and blood clotting. Calcium is absorbed in the GI system and stored in the bones and then excreted by the kidneys.

Vitamin D helps play a role in calcium absorption.

In addition, **phosphorus and calcium affect each other in the opposite way**. For instance, if phosphorus levels are high in the blood, calcium will decrease and vice versa. They are always doing the opposite (remember this because it is important for the causes of hypocalcemia).

Causes of Hypocalcemia

Remember “**Low Calcium**”

Low parathyroid hormone due. This is due to the destruction or removal parathyroid gland (any surgeries of the neck ex: thyroidectomy you want to check the calcium level) Professors love to ask this on an exam.

Oral intake inadequate (alcoholism, bulimia etc.)

Wound drainage (especially GI System because this is where calcium is absorbed)

Celiac’s & Crohn’s Disease cause malabsorption of calcium in the GI track

Acute Pancreatitis

Low Vitamin D levels (allows for calcium to be reabsorbed)

Chronic kidney issues (excessive excretion of calcium by the kidneys)

Increased phosphorus levels in the blood (phosphorus and calcium do the opposite of each other)

Using medications such as magnesium supplements, laxatives, loop diuretics, calcium binder drugs

Mobility issues

Signs & Symptoms of Hypocalcemia

Remember “CRAMPS”

Confusion

Reflexes hyperactive

Arrhythmias (**prolonged QT interval** and ST interval) Note: definitely remember prolonged QT interval...another major test question

Muscle spasms in calves or feet, tetany, seizures

Positive Trousseau's! You will see this before Chvostek's sign or before tetany. This sign may be positive before other manifestations of hypocalcemia such as hyperactive reflexes.

(KNOW How to elicit a positive Trousseau's. You do this by using a blood pressure cuff and place it around the upper arm and inflate it to a pressure greater than the systolic blood pressure and hold it in place for 3 minutes. If it is positive the hand of the arm where the blood pressure is being taken will start to contract involuntarily (see the teaching tutorial on a demonstration).

Signs of Chvostek's (nerve hyperexcitability of the facial nerves. To elicit this response you would tap at the angle of the jaw via the masseter muscle and the facial muscles on the same side of the face will contract momentarily (the lips or nose will twitch).

Nursing Interventions for Hypocalcemia

- Safety (prevent falls because patient is at risk for bone fractures, seizures precautions, and watch for laryngeal spasms)
- Administer IV calcium as ordered (ex: 10% calcium gluconate)...give slowly as ordered (be on cardiac monitor and watch for cardiac dysrhythmias). Assess for infiltration or phlebitis because it can cause tissue sloughing (best to give via a central line). Also, watch if patient is on Digoxin cause this can cause Digoxin toxicity.

- Administer oral calcium with Vitamin D supplements (given after meals or at bedtime with a full glass of water)
- If phosphorus level is high (remember phosphorus and calcium do the opposite) the doctor may order aluminum hydroxide antacids (Tums) to decrease phosphorus level which in turn would increase calcium levels.
- Encourage intake of foods high in calcium:

Young Sally's calcium serum continues to randomly mess-up.

- Yogurt
- Sardines
- Cheese
- Spinach
- Collard greens
- Tofu
- Rhubarb
- Milk