Electrolyte Imbalance

For Providers

**Myth: Volume depletion and electrolyte imbalance are interchangeable terms.**

**Fact:** While we often use these terms interchangeably, they are actually different conditions and require different treatment. Volume depletion is the loss of salt and water. Residents with volume depletion may show changes to the BUN and creatinine or present with new orthostatic hypotension. Treatment of volume depletion requires replacement of both sodium and water, usually with normal saline. Electrolyte imbalance is loss of water only. In true dehydration, the sodium is always elevated. Treatment of residents with electrolyte imbalance requires replacement of water deficit with oral water (mild electrolyte imbalance) or with intravenous fluids. **Giving a patient with true electrolyte imbalance (hypernatremia) normal saline is likely to worsen their condition.**

**Myth: Electrolyte imbalance can be diagnosed by physical exam.**

**Fact:** While there are some signs on physical exam that may lead you to think about electrolyte imbalance such as dry tongue or dry axilla, these are nonspecific. The diagnosis of electrolyte imbalance is a laboratory diagnosis. You need to get at least a BMP. Dehydration is diagnosed by hypernatremia (deficit of free water). Volume depletion is diagnosed by changes to the BUN and creatinine.

**Myth: If a patient has a G-tube, then I don’t need to place an IV to hydrate them.**

**Fact:** For residents with mild to moderate electrolyte imbalance, you may be able to hydrate them through their g-tube. However, for severe electrolyte imbalance or volume depletion, you likely still need to place an IV as the ability of the gut to absorb fluids will limit your ability to replenish fluids quickly enough for these residents.

**Myth: It doesn’t matter what IV fluids are used as all will help treat fluid/electrolyte disorders.**

**Fact:** The type of IV fluids chosen to treat fluid/electrolyte disorders is very important. Residents with volume depletion require treatment with isotonic fluids to replace both sodium and water and replenish the intravascular space. Residents with hypernatremia/electrolyte imbalance need treatment with free water (typical D5W) to replenish their total body water. This requires a calculation of their total body water deficits and close monitoring to ensure that sodium is not corrected faster than 10mEq/L per 24 hours. Correcting sodium more quickly than 10mEq/L in 24 hours increases the risk of permanent and potentially fatal change to the brain. Giving these patient’s 0.9% saline or even 0.45% saline will most likely worsen their water deficits and therefore worsen electrolyte imbalance.
**Fact:** There are multiple causes for hyponatremia. Residents may be volume depleted but they may also have a normal volume status as is seen in conditions such as SIADH (syndrome of inappropriate antidiuretic hormone). Residents may also experience volume excess in conditions such as heart failure or cirrhosis. It is essential to assess volume status in the setting of hyponatremia as treatment will differ depending on the clinical setting. As with hypernatremia, residents with moderate to severe hyponatremia must be monitored closely to avoid correcting their sodium by more than 10mEq/L per 24 hours.

For more information, visit the OPTIMISTIC website to see the OPTIMISTIC electrolyte disorders clinical protocol or listen to your podcast on electrolyte disorders.

**Additional Resources:**

- Feinsod, Fred M, et.al. Electrolyte imbalance in Frail, Older Residents in Long-Term Care Facilities. JAMDA 2004; S36-S41.