SERUM OSMOLARITY/ OSMOLALITY
Osmolality is the number of particles per kilogram of water (mOsm/kg). It is determined by the number of particles in solution and not by particle size or valence. Example: glucose and albumen equal 1 mOsm/ mmol of particles salt (NaCl) equals 2 mOsm/mmol

OR the easy way: 2 X the sodium level as long as the glucose level is within normal limits.

Fluid overload ←---- 275 -------- 295 -----→Dehydrated

Normal Body Osmolarity

OSMOSIS
Water moves across a semi-permeable membrane towards a region of higher concentration. Water will shift between the extracellular compartment and the intracellular compartment to maintain equal concentrations in both compartments. Thus any condition that alters the concentration or osmolarity in either compartment will result in the redistribution of water between compartments.

PARENTERAL SOLUTIONS

HYPOTONIC SOLUTIONS (.45% saline, 2.5% Dextrose, .33% saline)
- Decreases intravascular osmolarity
- Results in intracellular expansion/hydration
- Used for cellular dehydration
- Complications: shock and increased intracranial pressure
- Contraindications: anasarca, cerebral edema, hypotension

HYPERTONIC SOLUTIONS (D5% ½ saline, D5% NS, D5%RL)
- Increases intravascular osmolarity
- Results in intracellular & interstitial dehydration
- Used for intravascular expansion by shifting intracellular and interstitial fluids
- Complications: circulatory overload
- Contraindications: intracellular dehydration, hyperosmolar states

ISOTONIC SOLUTIONS (NS, Ringers Lactate, D5%W)
- Does not change osmolarity
- Results in TBW expansion
- Used to increase intravascular space
- Complications: circulatory overload
- Contraindications: circulatory overload, (RL in alkalosis & liver disease)