Osmosis: continuously moving water from one area to another based on the concentration of dissolved solids. Water will move from the tissues (cells) to the bloodstream and back again based on how concentrated one area is compared to another. The whole point of moving water from one area to another is to maintain an ideal concentration of solutes in the body.

IV Solutions

HYPOTONIC SOLUTIONS (0.45% saline, 2.5% dextrose, 0.33% saline)
Think of Hypotonic as “Watered Down” The extra water in this solution is going to enter the bloodstream and be sucked into the tissues to compensate for its watering down the blood. It will continue to suck water into the tissues until the solution in the bloodstream is isotonic to the blood itself.

HYPERTONIC SOLUTIONS (D5 ½ NS, 1.8% Saline, Dextrose 10%)
Think of Hypertonic as being “Concentrated”. This solution enters the bloodstream and the tissues sense the solution as being concentrated and will pull water out of the tissues and into the bloodstream to try and dilute it down. The tissues will continue to do this until the solution in the bloodstream is isotonic to the blood itself.

ISOTONIC SOLUTIONS (Normal Saline 0.9%, D5%, Lactated Ringers)
This stuff is as close to the same concentration as human blood as we can possibly make it. Think of tasting your tears when you cry.... Now think of what saline tastes like.... It tastes like TEARS! That is because the fluid that makes up 90% of our body weight is 0.9% saline. The same thing with Lactated Ringers. Now D5% is a different story.... YES, D5% is isotonic in the IV bag but once it enters your bloodstream, your cells eat up some of the sugar and it becomes hypotonic. Just something to keep in mind. We will elaborate on that in a later class.