

Osmolarity for IV Vitamin Infusions

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Osmolarity refers to the amount of particles in a given volume of solution per liter of fluid. Normal osmolarity for human blood is approximately 290 mOsm per liter.

Hypoosmolarity (less than 290 mOsm per liter)

Hypoosmolar refers to levels below that which is found in normal blood. Hypoosmolar solutions cause movement of fluid into red blood cells to a point that can cause the cells to "lyse" or break apart. This can create muscle pain, kidney damage and other complications. Hypoosmolar solutions should not be used for intravenous vitamin therapy.

Hyperosmolarity (greater than 290 mOsm per liter)

Increasing the amount of particles per liter beyond 290 is normally well tolerated. It can cause burning in the veins especially if a smaller vein is used. It can cause a shift in fluid from extracellular space into the vascular space. This shift is well tolerated but it can cause increased renal filtration with subsequent increase in the need for urination. It can also stimulate thirst. The IV vitamin therapy recipes in the Intellectual Medicine University Courses are based upon our research and experience at Intellectual Medicine. In general, we limit the osmolarity to 990. On occasion with boosters we will exceed that level up to approximately 1200. These levels are well tolerated particularly when monitoring for the side effects noted above.

Changing fluid volume

All of the recipes listed in the IV vitamin therapy course are safe to infuse regardless of the volume of normal saline utilized. The difference depends on the availability of the product, and the need for the patient to be hydrated. In most cases the saline is simply the vehicle to deliver the vitamins. Using 250 mL bags of fluid shortens the duration of the infusion. Increasing the amount of fluid can enhance hydration, and lower the osmolarity. Increasing volume up to 1 L can be utilized safely without adjusting the vitamin recipe.

Recipe safety

Since all of the recipes have had their osmolarity calculated, and have years of clinical field experience, they are safe to utilize as written. There is no need to calculate exact osmolarity so long as these recipes are adhered to.

Whenever creating your own infusion recipes it's important to calculate the osmolarity to ensure that it is at least at 290. It is generally recommended to keep the osmolarity below 1200. Lowering the osmolarity is a strategy to implement if patients experience burning in the vein, excessive thirst, or any other symptoms that may be related to fluid shifting. Remember to always encourage your clients to arrive well hydrated. It is safe for them to drink as much water as they like during the Infusions.



Vitamin C Osmolarity

Blood: 309

Normal Saline (NS): 308

Lactated Ringers (LR): 275

Sterile Water (SW): 0

Vit C Dose	Mixed in	mL	OSM
10 g	LR	500	491
10 g	NS	250	724
10 g	NS	500	525
10g	½ NS	250	580
10g	½ NS	500	376
10 g	SW	250	437
10 g	SW	500	226
25 g	LR	500	786
25 g	NS	500	818
25 g	NS	1000	576
25 g	½ NS	250	1112
25 g	½ NS	500	677
25 g	½ NS	1000	428
25 g	SW	500	536
25 g	SW	250	983
50 g	LR	500	1212
50 g	NS	500	1281
50 g	NS	1000	818
50 g	½ NS	500	1112
50 g	½ NS	1000	677
50 g	SW	500	983
50 g	SW	1000	536
75 g	LR	1000	1008
75 g	NS	1000	1039
75 g	SW	500	1361
75 g	SW	1000	769
100 g	LR	1000	1241
100 g	NS	1000	1212
100 g	SW	1000	983

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