

Crystalloids and Colloids

Crystalloid	Action/Use	Nursing Considerations
Hypotonic: less than 250 mOsm/L 0.25% NS 0.45% NS 5% D5W	Shifts fluid out of vessels into cells D5W spares protein: provides calories and free water: treats hyperkalemia: is a diluent for IV drugs.	May worsen hypotension Can increase edema May cause hyponatremia D5W may also irritate veins
Isotonic: greater than 250 mOsm/L 0.9% NS Lactated Ringer's	No fluid shift Vascular expansion Electrolyte replacement	May cause fluid overload Generalized edema Dilutes hemoglobin May cause hyperchloremic acidosis May cause electrolyte imbalance Proinflammatory in large doses
Hypertonic: greater than 375 mOsm/L D5 0.45%NS D5 0.9% Hypertonic saline (HS) 3% or 5%	Shifts fluid back into circulation Vascular expansion Replaces electrolytes	Irritation to veins May cause fluid overload May cause hypernatremia May cause hyperchloremia HS slows inflammation and increases capillary permeability
Colloid		
Albumin (plasma proteins) 5% or 25%	Keeps fluid in vessels Maintains volume Used to replace protein and treat shock and erythroblastosis fetalis	May cause anaphylaxis (watch for hives, fever, chills, headache) May cause fluid overload and pulmonary edema
Dextran (polysaccharide) 40 kDa or 70 kDa	Shifts fluids into vessels Vascular expansion Prolongs hemodynamic response when given with HS	May cause fluid overload and hypersensitivity Increased risk of bleeding Contraindicated in bleeding disorders, CHF, and renal failure
Hetastarch (HES) (synthetic starch) 6% or 100 %	Shifts fluid into vessels Vascular expansion	May cause fluid overload and hypersensitivity Increased risk of bleeding Contraindicated in bleeding disorders, CHF, and renal failure
Mannitol (alcohol sugar) 5% or 25%	Oliguric diuresis Reduces cerebral edema Eliminates toxins	May cause fluid overload May cause electrolyte imbalances Cellular dehydration Extravasation can cause tissue necrosis