

# GUIDE TO CRYSTALLOIDS AND COLLOIDS

Crystalloid	Action / Use	Nursing Considerations
Hypotonic: <250 mOsm/L 0.25% normal saline (NS) 0.33% NS 0.45% NS 5% dextrose in water (D <sub>5</sub> W)-hypotonic once administered	<ul style="list-style-type: none"> <li>Shifts fluid out of vessels into cells</li> <li>Hydrates cells</li> <li>D<sub>5</sub>W spares protein, provides calories and free water, treats hyperkalemia, is a diluent for IV drugs</li> </ul>	<ul style="list-style-type: none"> <li>May worsen hypotension</li> <li>Can increase edema</li> <li>May cause hyponatremia</li> <li>D<sub>5</sub>W may also irritate veins</li> <li>Do not give to those at risk for increased intracranial pressure: stroke, head trauma or neurosurgery</li> </ul>
Isotonic: >250 mOsm/L 0.9% NS Lactated Ringer's (LR) Ringer's Normosol Plasma-Lyte	<ul style="list-style-type: none"> <li>No fluid shift</li> <li>Vascular expansion</li> <li>Electrolyte replacement</li> </ul>	<ul style="list-style-type: none"> <li>May cause fluid overload, especially with hypertension and heart failure</li> <li>Generalized edema,</li> <li>Dilutes hemoglobin</li> <li>May cause electrolyte imbalance</li> </ul>
Hypertonic: >375 mOsm/L D <sub>5</sub> 0.45% NS D <sub>5</sub> 0.9% NS D <sub>5</sub> LR Hypertonic saline (HS) 3% or 5%	<ul style="list-style-type: none"> <li>Shifts fluid back into circulation</li> <li>Vascular expansion</li> <li>Replaces electrolytes</li> </ul>	<ul style="list-style-type: none"> <li>Irritating to veins</li> <li>May cause fluid overload</li> <li>May cause hypernatremia</li> <li>May cause hyperchloremia</li> <li>HS slows inflammation and increases capillary permeability</li> </ul>

Colloid	Action / Use	Nursing Considerations
Albumin (plasma protein) 5% or 25%	<ul style="list-style-type: none"> <li>Keeps fluid in vessels</li> <li>Maintains volume</li> <li>Used to replace protein and treat shock and erythroblastosis fetalis</li> </ul>	<ul style="list-style-type: none"> <li>May cause anaphylaxis (watch for hives, fever, chills, headache).</li> <li>May cause fluid overload and pulmonary edema</li> </ul>
Hetastarch (HES) (synthetic starch) 6% or 10%	<ul style="list-style-type: none"> <li>Shifts fluid into vessels</li> <li>Vascular expansion</li> <li>Prolongs hemodynamic response when given with hypertonic saline</li> </ul>	<ul style="list-style-type: none"> <li>May cause fluid overload and hypersensitivity</li> <li>Increased risk of bleeding contraindicated in bleeding disorders, CHF, and renal failure</li> </ul>
Dextran (polysaccharide) 40 kDa or 70 kDa	<ul style="list-style-type: none"> <li>Shifts fluids into vessels</li> <li>Vascular expansion</li> <li>Prolongs hemodynamic response when given with hypertonic saline</li> </ul>	<ul style="list-style-type: none"> <li>May cause fluid overload and hypersensitivity</li> <li>Contraindicated in bleeding disorders, CHF, and renal failure</li> </ul>