

# 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>