

HEMATOLOGY AND SHOCK MEDICATIONS

Primary Care Paramedicine

Module: 15

Section: 03



Prescription Medications Used to Treat Anemia

Medication	Notes and concerns
Parenteral irons	Can cause anaphylaxis
PO irons	<ul style="list-style-type: none"> • Black stools that mimic melena • Constipation
Vitamin B12	Takes several years to deplete B12 stores
Folate	Folate deficiency seen in alcoholics and pregnant women
Erythropoietin analogs (Epoetin alfa & Darbepoetin alfa)	<ul style="list-style-type: none"> • Used to treat anemia of chronic disease • Stimulates RBC production • Injections • Risk of HTN and thromboembolic events • Thrombocytopenia/hemorrhage

Crystalloids

- Normal saline and lactated ringers the most commonly used
- 3x volume of crystalloid needed to replace 1 unit of blood
- Low oncotic pressure results in fluids leaving extravascular space

Colloid

- Theoretically should be superior in volume loss
 - Large molecules in solution pulled fluid intravascularly
 - Hetastarch, pentaspan
 - Concern over immunological reaction
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- No convincing data that colloid superior
 - Due to cost, ease of storage crystalloids preferred in fluid resuscitation of shock patients

- Vasopressors
 - Vasoconstrict, increase SVR, increase BP
 - Beta agonist effects increase chronotropic and inotropic force of heart

Emergency Medications Used to Treat Shock

Drug	Dose Range	Receptor Activation	Cardiovascular Effects	Use
Dopamine	2–20 micrograms/kg/min	Dose dependent <5 micrograms/kg/min: DA ₁ , DA ₂ 5–10 micrograms/kg/min: β ₁ >10 micrograms/kg/min: α ₁	*↑HR, BP, CO, SVR	Cardiogenic shock, vasodilatory shock
Epinephrine	2–10 micrograms/min or 0.05–0.5 micrograms/kg/min	α ₁ , β ₁ , β ₂	↑HR, BP, MAP, SV, SVR, CO	Cardiogenic shock, vasodilatory shock, ACLS
Norepinephrine	2–50 micrograms/min or 0.02–2 micrograms/kg/min	α ₁ , β ₁	↑BP, MAP, SVR, CO	Cardiogenic shock, vasodilatory shock
Phenylephrine	50–300 micrograms/min or 0.02–2 micrograms/kg/min	α ₁	↑BP, MAP, SVR	Vasodilatory shock, obstructive shock
Vasopressin	0.01–0.04 units/min	V ₁	↑BP, SVR	Cardiogenic shock, vasodilatory shock, ACLS
Dobutamine	2–20 micrograms/kg/min	β ₁ , β ₂	↑HR, BP, MAP, CO; ↓SVR	ADHF, cardiogenic shock, vasodilatory shock
Milrinone	50 micrograms/kg bolus (optional); 0.25–0.75 micrograms/kg/min [†]	N/A	↑HR, BP, MAP, CO; ↓SVR	ADHF

- First line
 - Cardiogenic
 - Dopamine, norepinephrine
 - Neurogenic
 - Bradycardia treated with atropine/pacing
 - Norepinephrine, dopamine, epinephrine
 - Septic
 - Norepinephrine