Vasopressors and Inotropes

Alpha 1: affects arteries, ↑ vascular tone, ↑ BP (ex: Phenylephrine)
Beta 1: heart stimulation, ↑ HR, ↑ contractility, ↑ arrhythmias (ex: Dopamine)

**Neosynephrine = Alpha 1 agonist**
- Powerful drug! Used when no beta stimulation is wanted or needed
- Causes vasoconstriction, bradycardia
- ↑ BP, ↑ SVR, ↑ PVR, ↑ afterload
- Coronary vasoconstriction
- May need to add dopamine to keep HR up
- Used a lot in neuro d/t the disruption of alpha system in neuro shock
- Dosing: start at 100-180 mcg/min, then 40-60
- Titrate: 5mcg q 15-minutes

**Norepinephrine = Alpha 1 & 2 agonist**
- Endogenous catecholamine; has powerful inotrophic and peripheral vasoconstriction effects
- Arterial and venous constriction
- ↑ BP, HR may slow, CO unchanged or ↓ d/t increased afterload
- ↑ SVR and PVR
- Dosing: 2-10 mcg/min

**Dobutamine = Beta 1 agonist**
- A synthetic catecholamine
- Used for + inotropic properties when vasoconstriction undesirable, reduces preload and afterload
- Commonly used with another catecholamine or vasodilator
- ↑ contractility, ↑ CO, ↑ BP, ↑ myocardial O2 demands, ↑ HR
- If pt is dry, it may drop the BP
- Dosing: 2.5 - 20 mcg/kg/min
- Titrate: 1-2 mcg/kg/min q 5-10 min

**Dopamine = Beta 1 & Alpha 1 agonist**
- First line agent for many shock states
- Naturally-occurring catecholamine
- Precursor to norepinephrine
- 1-3 mcg/kg/min → renal, coronary, cerebral vasodilation (not renal protective!) ↑ UO
- 3-10 mcg/kg/min → Beta 1 stimulation with positive inotropic effect, ↑ HR, ↑ BP
- > 10 mcg/kg/min → Alpha 1 stimulation with potent vasoconstriction, ↑ BP, ↑ SVR

**Epinephrine = Beta 1 & Alpha 1 agonist**
- Endogenous catecholamine
- POWERFUL inotropic and peripheral and global vasoconstriction
- Not first line treatment....too potent!
- ↑ contractility and ↑ heart O2 demands
- ↑ HR, ↑ MAP, ↑ CO, ↑ SVR and PVR
- Causes arrhythmias :-(
- Dosing: 1-4 mcg/min

**Vasopressin = Vasopressin 1 agonist**
- Anti-diuretic hormone
- Used in ACLS for pulseless VT and VF
- Smooth muscle constriction (including bronchioles)
- Less constriction at coronary and renal beds
- Vasodilates cerebral vasculature
- May enhance platelet aggregation in septic shock
- ↑ BP, ↑ MAP, ↑ SVR, ↑ UO
- Dosing usually .03 or .04 units/min

**Milrinone = PDE inhibitor**
- Positive inotrope and vasodilator
- Cleared by the liver
- Increases cAMP → more Ca into cells → improves myocardial contractility while inhibiting vasoconstriction.
- ↑ CO, ↓ CVP, ↓ SVR
- Loading dose: 50 mcg/kg over 10 min
- Maintenance dose: 0.375-0.75 mcg/kg/min

* Milrinone can ONLY be mixed with NS!