Pressors, Inotropes and Anti-hypertensives

**CO = HR x SV**

**SV determined by: Preload, Afterload and Contractility**

Adrenergic Receptors:

****vascoconstriction of blood vessels in skin, viscera and mucous membranes; reflex bradycardia

****+ inotrope, chronotrope, dromotrope

****mixed effects on vascular smooth muscles but mostly relaxes; myocardial relaxation, decreased norepi release in CNS, increase glucagon release and decrease insulin release

**** bronchodilation, increase rennin release, increase insulin release, increased blood flow to skeletal muscle, decreased GI motility

Pressors: Help to increase CO by increasing afterload

1. **Norepinephrine** (Levophed): 0.01-1 mcg/kg/min



1. **Epinephrine**: 0 .01-0.1 mcg/kg/min



1. **Phenylephrine**: 0.5-3 mcg/kg/min



1. **Dopamine**: 2-20 mcg/kg/min (2-5 = DA, 5-10 = 1, 10-20 = 1)

DA >

1. **Vasopressin**: 0.01-.1 units/min (physiologic dose 0.04)
   1. Vascular smooth muscle contraction (V1 )
   2. Increase water reabsorption at collecting ducts (V2)
2. **Midodrine:** 10mg po q8-q6hrs



Inotropes: Increase cardiac output by increasing contractility

1. **Dobutamine**: 2-20 mcg/kg/min



1. **Isoproterenol**: 2-10 mcg/min

= 

1. **Milrinone**: 0.375-0.75 mcg/kg/min

Phosphodiesterase inhibitor

Other

2 agonists: Clonidine, Dexmedetomidine

1 blockers: doxazosin, tamsulosin, prazosin, phentolamine, TCA’s

2 agonists: albuterol, salmeterol, terbutaline

 blockers

1Selective

- atenolol ,esmolol, metoprolol

Nonselective

* propranolol
* carvedilol (has 1 blocking)
* labetolol (has 1 blocking)

Antihypertensives

1. **Calcium Channel Blockers:** decrease afterloadand negative inotrope
   1. Nicardipine: 5-15mg/hr
   2. Diltiazem: 0.25-0.35mg/kg bolus then run at 5-15mg/hr
2. **Beta Blockers:** decrease contractility and afterload
   1. Esmolol: 50-300 mcg/kg/ min

Good for hypertension with tachydysrhythmia

* 1. Labetolol: 20mg IV then may repeat at 80mg in 10 min intervals to 300mg

Oral dosing 100mg daily (divided) to max 2400nmg/day

1. **Nitrates:** decrease preload more than afterload
   1. Nitroglycerine: 0.1-3 mcg/kg/min
      1. Venous and arterial vasodilator
      2. Good for HTN with pulmonary edema and chest pain
2. **ACE Inhibitors**: decrease preload and afterload
   1. Enalaprilat (vasotec): 0.625-1.25mg/dose

Good for patients with hypertension and bradycardia

Avoid in patients with renal dysfunction

1. **Other**
   1. Hydralazine: 10-20mg IV q4-6 hrs; max 40mg/dose
      1. Peripheral vasodilator and causes Na+ reabsorption by increased renin secretion: decreases afterload
      2. Can cause cerebral vasodilation 🡪 increased ICP