HEMODYNAMIC PHARMACOLOGY

NAME / CLASS	MECHANISM	NEED TO KNOW	WHAT IT DOES
norepinephrine *Levophed* vasopressor	alpha 1 agonist beta 1 agonist	Endogenous catecholamine that acts on smooth muscle and cardiac muscle to increase BP and CO May see reflex bradycardia when first initiating Can cause arrhythmias Has powerful inotropic and peripheral vasoconstriction effects	arterial constriction venous constriction ↑BP, HR may decrease ↑SVR, ↑PVR ↑CO
phenylephrine *Neo-synephrine* vasopressor	alpha 1 agonist	Used when no beta stimulation is wanted or needed Can cause bradycardia, so may need dopamine to keep HR up Used frequently in neurogenic shock due to disruption of the alpha system	↑BP, ↑SVR, ↑PVR ↑afterload coronary vasoconstriction
epinephrine vasopressor	alpha 1 agonist beta 1 agonist	Endogenous catecholamine and very powerful drug with strong inotropic and vasoconstricting effects Used in cardiac arrest as an IVP; used in shock as a continuous IV infusion Can cause arrhythmias	↑↑HR, ↑↑BP, ↑↑SVR ↑CO and ↑contractility ↑myocardial O2 demands
dopamine *Intropin* inotrope	alpha 1 agonist beta 1 agonist	Endogenous catecholamine; the precursor to norepinephrine Low dose: renal, coronary and cerebral vasodilation Mid-range dose: beta 1 stimulation with positive inotropic effect High dose: alpha 1 stimulation with potent vasoconstriction *main use is as beta 1 agonist in heart failure or cardiogenic shock	low dose: ↑urine output mid dose: ↑HR, ↑BP high dose: ↑BP, ↑SVR
dobutamine *Dobutrex* inotrope	beta 1 agonist	Synthetic catecholamine used for inotropic effect when elevated heart rate and/or vasoconstriction not wanted Reduces preload and afterload Often used in conjunction with another catecholamine or a vasodilator	↑contractility, ↑CO, ↑BP ↑myocardial O2 demands ↑HR

"About Giapreza." GIAPREZA (Angiotensin II) Injection for Intravenous Infusion, La Jolla Pharmaceutical, www.giapreza.com/. Accessed June 2018
Holland, L. N., & Adams, M. (2007). Core concepts in pharmacology (2nd ed.). Upper Saddle River, NJ: Pearson Prentice Hall.
"PDR Search." Prescribers Digital Reference, PDR, LLC, m.pdr.net/. Accessed June 2018
Rauen, Carol A. CCRN & PCCN Review Course. 2013.
White, Kathleen M. Fast Facts for Critical Care. Kathy White Learning Systems, 2013.

HEMODYNAMIC PHARMACOLOGY

NAME / CLASS	MECHANISM	NEED TO KNOW	WHAT IT DOES
vasopressin *Pitressin* hormone	anti-diuretic	Causes renal tubules to hold onto fluid (anti-diuretic properties) Also used to treat diabetes insipidus At very high doses, has non-adrenergic vasoconstriction properties	↑BP ↑SVR ↑UO
milrinone *Primacor* inotrope	enzyme inhibition	Synthetic noncatecholamine that inhibits phosphodiesterase III Has inotropic and vasodilatory effects Reduces preload and afterload; may cause hypotension	↑CO ↓afterload, ↓SVR, ↓CVP. ↓PAOP ↑vasodilation
angiotensin II *Giapreza* hormone	RAAS system	Stimulates vasoconstriction and increases aldosterone release Used in distributive shock, namely septic shock Dosage is in nanograms (1 nanogram is equal to 0.02 micrograms) Concurrent use of ACE-inhibitors can potentiate effects Concurrent use of ARBs can decrease effects	↑BP

AUTONOMIC RECEPTOR REVIEW

alpha 1	blood vessels	enhances vascular tone leading to vasoconstriction
	liver	increased glucose
	GI tract	decreased motility
	bladder	sphinctor contraction
beta 1	heart	increased contractility leading to improved CO
	kidney	excretion of renin; stimulates renin-angiotensin II pathway
beta 2	blood vessels	dilation
	lungs	bronchial dilation
	skeletal muscle	increased contractility
	GI tract	decreased motility
	liver	increased glucose