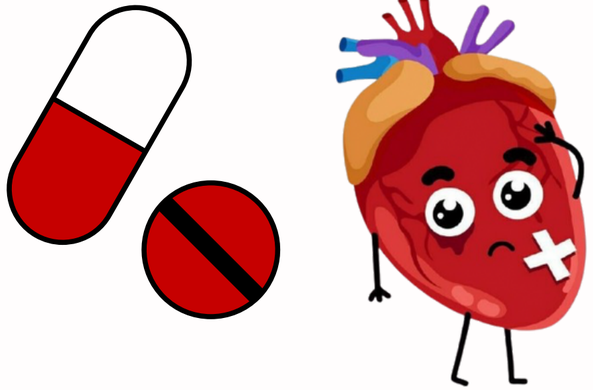
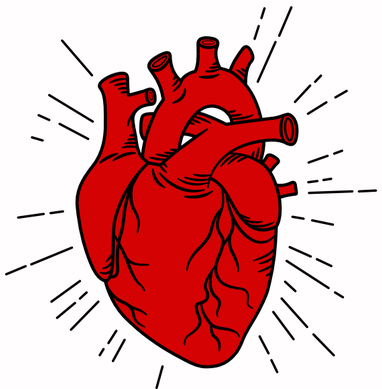


HEART FAILURE DRUGS

DONE BY : ZEINA YASSIN & NOOR MARZOOQ



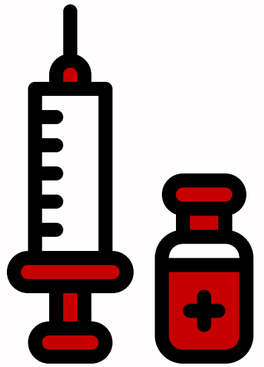
Before we start:

This file **doesn’t** include all the study material !
It’s just a simple summary with the drug names, their main mechanisms, side effects, and a few important notes. It’s meant to make the information easier to memorize or review, and to help you organize the topic more clearly.

Good luck!❤️

Drug Treatment of Ischemic Heart Disease:

- ACE inhibitors
- β-adrenergic blocking agents
- diuretics
- inotropic agents
- direct vasodilators
- aldosterone antagonist



ACE INHIBITORS

Effects	Side effects	Notes	Contraindications
-Decreases vascular resistance and blood pressure, increase in the cardiac output. -Decreases adrenaline and aldesterone - Decrease in the mortality and morbidity. - May be considered as a single-agent therapy in patients who have mild dyspnea on exertion. - Early use of these ACE Inhibitors Indicated in patient with all stages of left ventricular failure, with or without symptoms. -Prevent cardiac and vascular hypertrophy or the remodeling	-Dry irritating persistent cough –Hyperkalemia –Angioedema	Patients with heart failure due to left ventricular systolic dysfunction who are still symptomatic despite therapy with an angiotensin converting enzyme (ACE) inhibitor and a beta blocker may benefit from the addition of candesartan (ARB) following specialist advice.	–Fetal toxicity(contraindicated in pregnancy) .

BETA-BLOCKERS

Drug Name	Effect	Notes	Contraindications
Bisoprolol, metoprolol carvedilol nebivolol	- Negative inotropic activity, several clinical studies have clearly demonstrated improve systolic functioning and reverse cardiac remodeling .	- first choice for the treatment of patients with chronic heart failure due to left ventricular systolic dysfunction. -produce benefit in the medium to long term . -In the short term they can produce decompensation with worsening of heart failure and hypotension . - They should be initiated at low dose and only gradually increased with monitoring up to the target dose .	-Asthma - Second or third degree atrioventricular heart block -Symptomatic hypotension -Should be used with caution in those with low initial blood pressure (ie systolic BP <90 mm Hg.)

DIURETICS

Drug Name	MOA	Side effects	Notes
Thiazide diuretics	---	-Loop diuretics and thiazides cause hypokalemia. - If a patient develops significant hypokalemia switching to a potassium-sparing diuretic .	-mild cases only and are not recommended in patients with a creatinine clearance below 50 mL/min
Loop diuretics	---		-Like furosemide and bumetanide are the most effective and commonly used.
potassium-sparing spironolactone	-Direct antagonist of aldesterone - prevents sodium retention, myocardial hypertrophy, and hypokalemia	-CNS effects, such as lethargy, confusion -endocrine abnormalities: gynecomastia, decreased libido, menstrual irregularities, and impotenc --gastric disturbances like peptic ulcer, gastritis .	-moderate to severe heart failure due to LVSD. -Eplerenone can be substituted for spironolactone in patients who develop gynecomastia

INOTROPIC DRUGS(DIGITALIS)

Drug name	Action	Side effects	Notes
Digoxin	-Positive Inotropic Effect. - Vascular Muscle Contraction. - Vagal Stimulation. - Effects on Electrical Properties of Cardiac Tissues.	-G.I.T.(Anorexia, nausea, intestinal cramping, diarrhea) - Visual (Xanthopsia,abnormalities in color vision) -Neurologic(Malaise, confusion, depression, vertigo) -Cardiac(bradycardia, Palpitations, syncope, arrhythmias, AV node block, ventricular tachycardia)	- CHF with supraventricular arrhythmia - indicated with severe left-ventricular systolic failure after initiation of ACE inhibitors, diuretics, and β Blockers. -Patient with mild to moderate HF will usually respond to ACE inhibitors and diuretics, and do not need digoxin. -No good oral inotropic agents exist other than digoxin. -Dobutamine (another inotropic agent) can be given intravenously in hospitals -rapid onset of action -Quinidine, varapamil, Macrolide, tetracycline and amiodarone can cause digoxin intoxication. -traconazole (antifungal drug) ,Ibuprofen , Indomethacin , Diazepam may increase digoxin level

B-ADRENERGIC AGONISTS:

Drug Name	MOA	Notes
NE	a ctivate adenylyl cyclase → ↑ intracellular cAMP → activates Protein Kinase A (PKA)→ PKA phosphorylates L-type Ca^{2+} channels→ ↑ intracellular calcium→ stronger cardiac contraction (positive inotropy)	Was used in cardiogenic shock, but caused severe vasospasm and gangrene
Ep		Still used in cardiac arrest, by intracardiac injection
Dopamine		-Widely used in cardiogenic shock. - Low doses: stimulate DA1 receptors leading to renal vasodilation and improved renal function. -Intermediate doses: work on β1 receptors leading to positive inotropic actions. -High doses: stimulate α receptors leading to vasoconstriction and elevation of blood pressure . -Can cause arrhythmias and ischemic changes.
Dobutamine		-The drug of choice for the treatment of cardiogenic shock -Selective β1 agonist, used intermittently (IV) in CCHF. -Produces mild vasodilation. - Has more inotropic than chronotropic actions.

PHOSPHODIESTERASE INHIBITORS

Drug Name	MOA	Side effects	Notes
Inamrinone (PDE-3) Milrinone (PDE-3) Vesanirone (PDE-3) Sildenafil (PDE-5)	PDE inhibition leads to accumulation of cAMP and cGMP leading to positive inotropic activity and peripheral vasodilation	-Arrhythmias - Thrombocytopenia	-Short acting, so reserved for parenteral therapy of acute heart failure.

VASODILATORS

Drug Name	MOA	Notes
BNP-Niseritide	-BNP binds to receptors in the vasculature, kidney, and other organs, producing potent vasodilation with rapid onset and offset of action by increasing levels of cGMP.	-secreted constitutively by ventricular myocytes in response to stretch. -Niseritide is a recombinant human BNP approved for treatment of acute decompensated CHF . -educes systemic and pulmonary vascular resistances, causing an indirect increase in cardiac output and diuresis . -Effective in HF because of reduction in preload and afterload. - Hypotension is the main side effect.
Hydralazine-Isosorbide dinitrate combination	---	-decrease mortality, maybe by reducing remodeling of the heart.

ENTRESTO

IT IS A COMBINATION OF:

Drug Name	MOA	USES	Notes
Entresto	Neprilysin inhibitor	educe the risk of cardiovascular events in patients with chronic heart failure.	-breaks down angiotensin I and II, endothelin-1 and peptide amyloid betaprotein.
valsartan	ARB		----

May your heart always find comfort, balance, and beautiful outcomes <3

If you found this helpful, we'd be grateful for your prayers.

With our warmest regards and best wishes!❤️