Coronary Heart Disease Drugs

Angina

Type	Names	Indications	AEs	Interactions/Notes	MOA
NTGs (SL)*		-**Acute** angina or proph.	-OH -H/A (it's working!) -Reflex tachy → ↓ dose or w/ B-block	-Rapid onset. -Little art effect b/c atheroma. -Effect last 1 hour. -High 1st pass. -Contra w/ liver/renal disease.	-Venodilation → ↓ preload → ↓ wkload → ↓ O_2 demand *NTG is a nitrate.
Nitrates		-**Acute** + **Stable** -NTGs ineff; **tolerance**.		-Provide sustained release. -Provides drug free period to avoid **tolerance.** -Make sched; don't take at night. -Taper if D/C.	
ß-Blockrs		-**Stable** Angina (non-spastic)		-↑ time is diastole.	Neg intotrope (vent's), Neg chrono (SA), Neg dromo (AV) → ↓ O_2 demand I-V C-S D-A **I'Ve** **C**ould **S**ave **D**iseased **A**dults.
Ca^{2+} Blockrs	Verapamil Diltiazem Nifedipine	-Stable + **Vasospastic** Angina			-Arterial vasodilaton -↓ HR (via AV+SA) - Neg intotrope (vent's), →↓ O_2 demand

AMI

Type	Names	Indic	AEs	Interactions	Admin	MOA
Nitro (IV)		ACS	-H/A (Rx w/ acetom.) -Severe OH (bed!) -Contra: ↑ ICP/cerebral hem. Dil worsens.	-Heparin (↓ effect) -Lithium (toxicity) -Fentanyl (sev OH → ↑ fluids). Analgesic.	-Short dur of act →IV -Titrate to need. -BP & HR monitor. -Use **glass** IV bottle. -Tolerance → ↑ dose.	-Venodilation → ↓ preload → ↓ wkload
Anti-platelet	Aspirin Clopidorel	*Refer to previous lectures*.		-Contra: bleeders, CVA (w/in 2 yrs) GI/GU bleed (w/in 6 wks), Thrombocytopenia (low pltlt), aneurysm, IC neoplasm. -AE: Bleeding–IC, retroperioneal, hematemesis. -Labs: PT/INR, PTT		↓ Platelet aggreg → prevent thromb form
	Abciximab (RePro ®)	Inhibits II-IIIb. Onset 2 hrs, dur = 48 hrs, infuse w/ filter.				
Anti-coagulant	Heparin Warfarin	*Refer to previous lectures*.				↓ Fibrin prod → suppress clotting
B-Blocks	All post Mis should be on it. ASAP.					

Cardiac Dysrhythmia Drugs

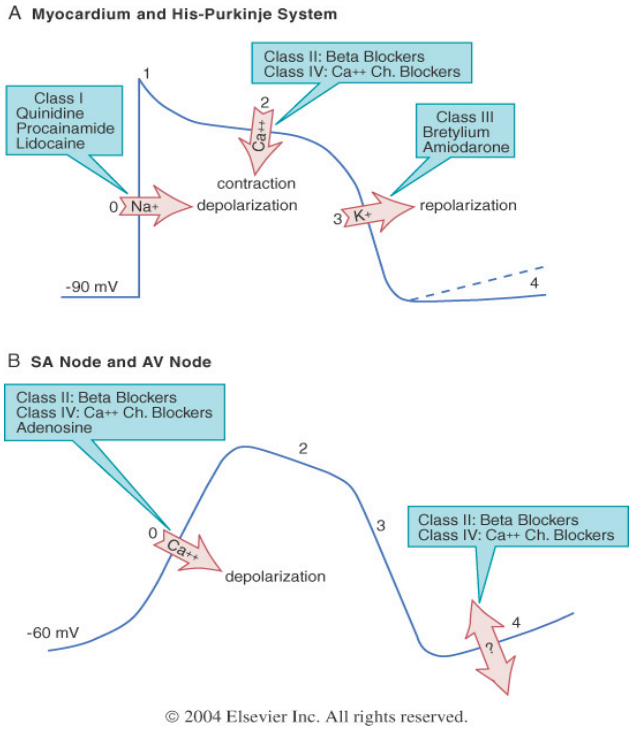
Many worsen situation or cause new ones! Not used if asymtp.

A – Myocardium and Bundle of His System. **B** – SA & AV Node

Drug	Indications	MOA	Admin	Results/AEs/Contras/Education/Interactions
Class I – Slow P1 depol in vents by ⊗ Na ψ				
A – Rarely used				
B – **Lidocaine**	Ventricle Dysrhythmias	Slows conduction all over Accelerates repol; shortens AP.	-**IV** loading dose – 25 mg/min, then 1-4mg/min. -Dilute in D5W. -Short term only	Contra: liver disease. AEs: CNS effects (drowsiness, parasthesia,..). Seizures if toxic.
Class II – Depress P4 depol by β-1 receptors (slow rate in nodal tissue)				
β ⊗s*				
Nonselective-Carvedilol, Propranolol	Dysrhythmias from ↑ SNS activity: Supraventricular tachycardia (SVT),Paroxysmal atrial tachycardia	β-1 & β-2 ⊗s	⊗s β-1 in cond syst & vent muscles → ↓ Ca ψ activity → ↓ speed, HR, cond.	Results: Prolonged PR; bradycardia AEs: Heart failure, brady, AV block, Sinus arrest, bronchospasm, rebound tachy if D/C. Educ: No ETOH, taper, activity intolerance, sexual dysfuntion, disturbed sleep, monitor HR.
Cardioselective – Metropolol, Esmolol		β-1 ⊗s		
Class III – Delays P3 repol by ⊗ K ψ				
<u>Amiodarone</u>	At & Vent Dysrhythmias (approved 4 V). VT, VF, (AF & SVT too if PO)		IV (glass or PVC) – loading dose. PO (1-3 wk onset. $T_{1/2}$ up to **100 days**). Loading dose ↓ nausea	Results: SA firing (if PO), AV node. Prolongs AP, PR (QT & QRS too if PO) intervals. Used chronically, ⊗s Ca, Na and β rec's. AEs: See slide Interactions: Anticoag's (bleed), β ⊗s (hypoTN), Digoxin (tox), Ca ⊗s (AV block hypoTN). Avoid Grapefruit (**P_{450}** ⊗s) b/c meta by **liver**. Contras: 2nd-3rd heart block, brady, sinus node dysf, **preg, infants**. Precautions: kids, **thyroid** dysf, e- imbal, heart failure, **resp** probs, Other: photosensitivity. skin discoloration, regular eye exams.
Class IV – Depress P4 depol, slow rise rate of P0 by ⊗ Ca ψ. Also prolongs P2.				
Verapamil, Diltazem	SVT, Atrial Fib/Flutter.	⊗ Ca influx. Prolongs P1 &	PO or IV (SLOW)	Results: slow SA → ↓ **HR** Delay AV → **prolong PR**

	NOT eff for vent dysrhythmias!	P2.		↓ Contract → ↓ **CO**. **SAME AS β ⊗s!** AEs: brady, AV block, ↓ myocardial cont →↓ CO. Dizzy, face-flush, H/A, Periph edema, ↓ GI motility. Interactions: β ⊗s (↓ AV cond), Anti-HTNs, Digoxin, Grapefruit juice (↑ bld levels → HypoTN)
Adenosine	SVT (first line)		**IV only** - $T_{1/2}$ 10 sec.	Results: Slows SA → ↓ **HR**, Slows AV → **prolong PR** AEs: brady, dyspnea (bronchoconst), hytoTN (vasodil) Interactions: caffeine, aminophylline, theophylline block adenosine receptors → ↑ dose.
Digoxin (glycoside)	Atr Fib/Flutter			Slows AV node → slows vent rate

⊗ = block/inhibits
ψ = channel
*β ⊗s used for HTN, Angina Pect, Cardiac Dys, MI, Migraine Proph, Stage Fright, Heart Failure (not all approved for each, of course)



Alpha 1	**Beta 1**	**Beta 2**	**Dopamine**
Vasoconstrict	**Cardiac stimulation**	**Bronchodilate**	**Renal artery dil**
Epinephrine			
Norepinephrine			
Phenylephrine			
	Dobutamine		
Dopamine			Dopamine

Heart Failure Drugs					
Type	Drugs	Indications/Uses	Admin	MOA	
Diuretics	Furosemide (Lasix ®)		PO: I hr, IV: 5 min.	Prevent Na + Cl reabsorption → H20 reabsorption. → ↓ **symptoms of HF**	
ACEIs	Captopril Lisinopril Enalipril			Prevents vasocontstriction → ↓ afterload + ↓ Aldosterone →↓ preload. → **↓ resist to vent eject + ↓ cardiac wkld + ↓ myocardial remodeling**!!	
β ⊗s	Metoprolol (β) Bisopolol (β) Carvedilol (both)	-Cardioselective are best for HF; improves morb & mort. -Use selectively b/c inotropic effect.		See earlier	
<u>Digoxin</u>		-HF & Atrial fib/flutter	-Tabs, **elixir** & caps. -Meta @ renal. -$T_{1/2}$ = 1.5 days. -PO or IV (mcg's not mg's) -Contra: 2nd & 3rd heart block, V fib/tacy. -Sinus syndrome -Precautions: Acute MI, renal insuff, hypoK -**Nurse: MONITOR K & Dig levels.**	-⊗ Na/K APTase; more intracellular Ca avail → positive inotrope. -Enhances vagal influence → neg chrono/dromotrope. -**SLOWS HR & ↑ contract.**	AEs: -Very narrow thera range → **monitor!** -If poisoned (>2.0 ng/ml) → D/C & admin FAB (antidote). -Dysrhyth's, brady, AV Block, Vent flutter/fib. -Anorexia, N/V -Drowsy, weak, vision: blur, halos -Monitor K (Diuretics, ARBs & ACEIs can affect levels & drug effectiveness) -Interacts w/ Ca ⊗s b/c both slow conduction. (interact w/ B's too) -**MANY** drug interactions.
Ald Rec ⊗s	Spironolactone	Adv HF		-Reduces remodeling -↓SNS activation	

Shock Management				
Method	Drug	Admin	AEs	MOA
Restore Intravascular Vol.				
Restore Intravascular Vol.	-Crystalloid Infusion Isotonic Fluids: Saline, Plasmalyte, Ringers Lactate -Colloid Infusion: Albumin, Hetastacrch.			
Stop Intravascular Loss	Blood products: Platlets, FFP			

Restore Oxygen Carrying Capacity	-PRBC -Erythropoietin			
Enhance Contractibility **Correct Hypocol first!**	Epinephrine: **First line** (cardiac arrest & anaphyl.)	-To ↑ Cont: **Infusion pump**; central venous catheter route (CVC) -For C.Arrest: **IV push** or Intracardia (long needle)	Dysrhythmias, angina, hyperglycemia if diab, necrosis → **GIVE via CVC**	Adren agon (**non-selective**) → ↑ Contract, HR, vasoconst, bronchodil.
	Dobutamine: First line (↑ CO)	-2.5-10 mcg/kg/min -CVC	Dysrhythmias	B-1 selective → ↑ contractibility ↑ CO + ↑ HR
	Dopamine			Adren agon (**non-selective**). Low dose: Renal/mesenteric vasodil Mid: Contractibility High: Vasoconstriction
Afterload Manipulation				
Arterial Vasodilator	Nitroprusside (Nipride) *For this and mitral regurg + HTN crisis*.	-Eliminated in kidneys.	See earlier for AEs (OH, poisoning)	-↓ resistance to LV eject. -Improves forward flow -↓Backward pressure in pulm -↓ Pulm congestion
Restore Perfusion	A-1 Agons: Epi, Dop, NE, Phenykephrine	-Nurse: pt must be **normovolumic** -Infuse via pump at CVC -Monitor BP		