

Pharmacokinetics	Pharmacodynamics
Refers to how drug is:	Refers to:
Absorbed, delivered, metabolized & excreted	Drug's specific action Clinical effects
Distribution routes	
Parenteral: Injection, IV, sub-cutaneous, inhalational, transdermal	
Enteral: (GI system - most common) oral, rectal, sublingual	

ANTIARRHYTHMICS
CLASS I: Na CHANNEL BLOCKERS
Lidocaine (Xylocaine)
Use: Acute PVC's, Ventricular arrhythmias after MI
Action: Slows myocardial conduction (↓ refractory period)
Adverse effects: Dizziness, CNS disturbances, nausea
Propafenone (Rhythmol)
Use: Acute PVC's & V Tach (VT)
Action: Slows repolarization
Adverse effects: Arrhythmogenic during exercise (bradycardia-type issues), defibrillation problems

CLASS II: BETA BLOCKERS (most common cardiac med)
Characteristics:
β1 receptors: Affinity for epinephrine & norepinephrine
Non-selective Beta Blockers (Block β1 & β2 receptors)
Propranolol, Inderol, Carvedilol
Use: Angina, HTN, arrhythmias
Action: Slow down conduction through myocardium & cause smooth muscle relaxation
Adverse effects: ↓ Q, bradycardic dysrhythmias, bronchospasm, cold extremities, masking of hypoglycemia
Selective Beta Blockers
Metoprolol (Lopressor), Atenolol, Bisoprolol, Acebutolol
Use: Same as non-selective beta blockers
Action: Same as non-selective beta blockers
Adverse effects: Same as non-selective, but fewer peripheral side effects because only active at β1 receptors

CLASS III: ANTIARRHYTHMICS (more potent)
* Used almost exclusively for ventricular arrhythmias *
β1 receptors: Affinity for epinephrine & norepinephrine
Amiodarone (Cardarone, Pacerone), Sotalol
* Used in ICU when pt codes, etc. (not on for long term) *
Use: Ventricular arrhythmias
Action: Prolongs repolarization so it slows down HR
Adverse effects: Pulmonary toxicity, liver damage

NITRATES	
Sublingual nitroglycerine, Nitrolingual spray	
Use: Acute chest pain/rescue	
Action: Smooth muscle relaxation	
Adverse effects: Ischemic headache, hypotension, may induce bronchospasm in some due to vasodilation	
* Nitro patches & ointments are for prevention of angina, not for rescue*	
PATCHES:	
• Transderm Nitro	• Nitroderm
• Nitrodisc	• Minitan
OINTMENTS:	
Nitrol	Nitro-bid
Use: Prevention of chest pain/angina	
Action: Same as sublingual nitro	
Adverse effects: Hypotension, drug tolerance	

CARDIAC GLYCOSIDES
Creates a sympathetic response
+ve inotropic effect = ↑ myocardial contractile force
Dromotropic effect = ↓ conduction velocity @ AV node & therefore leads to ↑ filling time
Digitalis, Digitoxin, Digoxin
Use: CHF, atrial arrhythmias, a-fib 2° to AV node delay
Action: Improve myocardial contractility by ↑ [Ca] ²⁺ , ↓ end diastolic pressure, ↓ AV node conduction leading to ↑ filling time
Adverse effects: Digitalis toxicity, GI disturbances, CNS disturbances, fatigue, ST segment depression, arrhythmia, PVC's, VT, bradycardia

DIURETICS
Furosemide (Lasix, Natrecor)
Use: CHF (due to fluid overload), HTN & peripheral edema
Action: ↑ renal excretion of fluid & electrolytes
Adverse effects: Hypokalemia & fluid depletion that may cause ectopic arrhythmias, hypotension, gastric disturbances & cramping/spasm

SYMPATHETIC STIMULATORS
Dobutamine, Dopamine, Norepinephrine
Use: Post cardiac event
Dopamine:
↑ Q & BP. Good for CHF w/ resultant hypotension
Dobutamine:
↑ Ca ²⁺ in cell, leads to ↑ SA node firing, AV node conduction & contractility
Use: Prolong effect of sympathetic action, leading to ↑ myocardial contraction & BP
Adverse effects: Chest pain, feelings of dyspnea. CAUTION: Try to wean pt's off ASAP as can cause receptor desensitization

DIAGNOSTIC TESTS
1 EKG (12 lead) (specific arrhythmias, MI, disease progression/regression)
2 Holter Monitor (24 hr) (used after syncope or repeated arrhythmias)
3 Echocardiography (US of heart, shows valve function, ventricular size, etc.)
4 Coronary angiography (AKA Angiogram) (via radial or femoral artery)
5 Thallium Stress Test (detects myocardial perfusion) (looks @ ischemia)

THROMBOLYTIC AGENTS
Streptokinase
Use: Acute MI to re-establish coronary blood flow
Action: Facilitate dissociation/break up blood clot
Adverse effects: Hemorrhage
Recombinant tPA, Reteplase
Use: Acute MI (same as streptokinase)
Action: Same as streptokinase
Adverse effects: Hemorrhage

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Heparin (used short-term via IV or subcutaneous shot)
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Action: Inhibit clot formation
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Warfarin (Coumadin) (long-term version of Heparin)
Use: Same as Heparin
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PT/PTT/INR (tests)
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Normal value: 12 - 15 seconds
(Measures extrinsic pathway & means of clotting)
PTT Partial Prothromboplastin Time
Normal value: 30-70 seconds
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INR International Normalized Ratio
Normal value: 2-3 ng/L for prophylactic treatment
Measures difference between PTT and PT
Low Molecular Weight Heparin (Lovenox)
Use: Prevent & treat thromboembolism
Action: De-activates thrombin to prevent fibrin clot
Adverse effects: Small chance of hemorrhage (doesn't affect clotting time, so PT & INR not needed)
Aspirin (ASA), Plavix, Effient, ReoPro
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DIAGNOSTIC TESTS
6 PET (Positron Emission Topography) (3-D bloodflow view)
7 Trans Esophageal Echocardiogram (TEE) (see posterior wall)
8 MUGA (Multigated Acquisition Imaging or Gated Pool Imaging)
9 Graded Exercise Stress Test (Bruce, Naughton-Balke & more)
<i>Friendly reminder: Grind hard! You've got this!!</i>

HYPERLIPIDEMIA CLINICAL Dx
Triglycerides: > 185 mg/dL
Cholesterol: > 240 mg/dL
HDL's: < 35 mg/dL
Ratio: Ratio = Total cholesterol/HDL (A ratio > 4.5 = hyperlipidemia)

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