Drugs to Treat Cardiovascular Conditions

Coronary Heart disease

* ischemia - insufficient blood flow to the myocardium to meet the hearts oxygen consumption needs
* major causes; atherosclerosis or arteriosclerosis (blockage of an artery or hardening of an artery)
* Angina pectoris is an episodic, reversible oxygen insufficiency caused by reduced blood flow
* results from fatty deposits or clots in coronary arteries or arterial spasm (constriction)
* Drug treatment aimed at dilating coronary blood vessels
* organonitrates,
* beta blockers
* calcium channel blockers

nitroglycerin -

* older drug, fast acting and inexpensive. directly relaxes and dilates blood vessels
* sublingual acts rapidly and lasts about an hour for acute angina pain
* transdermal patches - wear only 10-12 hours per day to prevent tolerance
* adverse effects = hypotension marked by dizziness or lightheadedness.

beta blockers

* reduce oxygen demand of heart by decreasing HR and force of contraction.
* Propanolol(Inderal)
* adverse effect = bronchospasm
* may also produce insomnia, bizarre dreams and depression

calcium channel blockers

* example verapamil
* Bepridil(Vascor)
* contraction of heart and vessels depends on movement of calcium from extracellular to intracellular through calcium channels.
* slow heart rate and cause vasodilation

Myocardial Infarct (heart attack)

* part of the myocardium experiences sever and prolonged lack of oxygenated blood.
* 40% of patients die before reaching a health care facility
* goal of treatment = limit damage to the myocardium
* need to reduce cardiac work
* nitroglycerin increases blood supply
* aspirin and thrombolytic drugs given within minutes up to few hours
* morphine to reduce pain
* beta blockers
* calcium channel blockers
* oxygen
* IV fluids

Dysrhythmia (arrhythmia)

* atrial tachycardia = an area in the atria takes over from the normal SA node pacemaker in right atrium
* low risk of sudden death
* ventricular tachycardia has higher risk of sudden death
* Caused by heart disease or sometimes chronic drug therapy
* Can even be caused by antidysrhythmia drugs because these drugs act by altering heart electrical impulses.
* Drug selection involves trial and error.
* 4 classes of drugs
* I. sodium channel blockers
* depress the conduction system
* slow heart rate
* II. Beta blockers
* reduce heart rate
* III. potassium channel blockers
* reduce potassium outflow through potassium channels.
* slow down repolarization of myocardium, inhibits ability of muscle to initiate a second contraction
* IV calcium channel blockers
* block calcium inflow, decrease rate of SA node and conduction velocity

Know these drugs: (read the orange FOCUS ON in the text)

Nitroglycerin

Quinidine- Class I used for atrial fibrillation

Propanolol – Class II non-selective Beta blocker

Amiodorone – Class III antidysthrymthmic

Verapamil – first calcium channel blocker approved by FDA