

N102-Cardiac Medications

- **Organize by categories-as a general rule classes of drugs have the same last names**
 - Think generics not brand/trade name
 - **Prils**-ACE Inhibitors
 - **Sartans**-ARBs
 - **OLOLs**-Beta Blockers
 - **Dipines**-Calcium Channel Blockers
 - **Statins**-HMG CO-A reductase inhibitors
- **ACE Inhibitors**
 - Examples
 - Captopril (Capoten)
 - Enalapril (Vasotec)
 - Lisinopril (Prinivil or Zestril)
 - Benazepril (Lotensin)
 - Quinapril (Accupril)
 - Ramipril (Altace)
 - Action
 - Blocks angiotensin-converting enzyme by preventing the conversions of angiotensin I to II (potent vasoconstrictor), dilates blood vessels & lowers B/P
 - Functions/Indications
 - Anti-hypertensive agents via vasodilation & inhibition of aldosterone
 - Treatment of heart failure by inhibiting the RAAS system
 - Decreases growth of tissue or remodeling in heart failure & post MI patients
 - Decreases risk of MI
 - Recurrent Stroke prevention
 - Prevention of diabetic neuropathy
 - Chronic Kidney Disease (CKD)
 - Side Effects
 - Hypotension (orthostatic on first dose or new higher dose)
 - Hypoglycemia
 - Chronic Dry Cough
 - Angioedema (especially African Americans)
 - Hyperkalemia
 - Warnings/Contraindications
 - Pregnancy
 - Caution in renal artery stenosis
 - Patients should not use potassium supplements or salt substitutes without MD
 - Nursing Considerations
 - Blood Pressure, BUN, Creatinine & Potassium

- More effective when combined with a thiazide diuretic or other antihypertensive
- **ARBs (Angiotensin Receptor Blockers)**
 - Examples
 - Losartan (Cozaar)
 - Valsartan (Diovan)-*recalled*
 - Candesartan (Atacand)
 - Olmesartan (Benicar)
 - Telmisartan (Micardis)
 - Action
 - Blocks the vasoconstriction action of angiotensin & aldosterone resulting in lowering blood pressure
 - Functions/Indications
 - Hypertension & Cardiovascular risk reduction
 - Blocking tissue receptors (bypass ACE)
 - Less side effects may substitute for ACE
 - Side Effects
 - Cough (less than with Ace Inhibitors)
 - Hypotension
 - Dizziness
 - Warnings/Contraindications
 - Do not use with prils as additive effect (ACE Inhibitors)
 - Avoid in pregnant women
 - Caution in in renal artery stenosis
 - Nursing Considerations
 - Monitor blood pressure, serum potassium & creatinine, & dizziness
 - Can be taken without regard to food
- **Beta Blockers**
 - **Beta 1-Selective**
 - Examples
 - Atenolol (Tenormin)
 - Betaxolol (Kerlone)
 - Metoprolol Tartrate (Lopressor)
 - Metoprolol Succinate (Toprol XL)
 - Action
 - Drugs with beta-1 selectivity decrease blood pressure and heart rate by preferentially affecting cardiac tissue.
 - This poses an advantage because it does not block receptors in airways (minimizing risk to bronchospasm) or in blood vessels (minimizing risk for hypotension).

- However, these selective effects are lost as the dose of the medication increases within the usual dosage range.
 - Drug Administration
 - Atenolol and betaxolol can be taken without regard to meals
 - Metoprolol tartrate and succinate should be taken with or immediately following meals.
- **Beta- Non Selective Beta-1 & Beta-2 Blockers**
 - Examples
 - Nadolol (Coregard)
 - Propranolol (Inderal)
 - Timolol Maleate
 - Action
 - Non-selective beta-blockers affect beta-1 and beta-2 receptors on cardiac tissue and blood vessels to reduce blood pressure.
 - Meta-analyses of clinical trials suggest beta-blockers may not be as effective as other drug classes for first-line treatment of hypertension.
 - Drug Administration
 - Nadolol and timolol can be taken without regard to meals
 - Propranolol immediate-release tablets should be given before meals or at bedtime.
- **Beta Blockers- Non-Selective & Alpha-Blockers**
 - Examples
 - Carvedilol (Coreg)
 - Labetalol (Trandate)
 - Nebivolol (Bystolic)
 - Action
 - Non-selective beta-blockers (beta-1 and beta-2) and alpha blockers affect cardiac tissue and blood vessels to reduce blood pressure and cause vasodilation.
 - Drug Administration
 - Carvedilol should be administered with food
 - Nebivolol can be taken without regard to meals.
- **Beta Blockers-Selective with Intrinsic Sympathomimetic Activity**
 - Examples
 - Acebutolol (Sectral)
 - Action
 - At the lower end of the dosage range, selective beta-blockers decrease heart rate and treat hypertension by blocking beta-1 adrenergic receptors in cardiac tissue.

- This poses an advantage because it does not block receptors in airways (minimizing risk to bronchospasm), or in blood vessels (minimizing risk for hypotension).
 - However, these selective effects are lost as the dose of the medication increases within the usual dosage range.
 - Drugs with intrinsic sympathomimetic activity have properties that blunt the heart rate lowering actions and blunt the negative inotropic actions on cardiac contractility.
- o Functions/Indications for All Types
 - Used for blood pressure control, situational anxiety, hyperthyroidism
 - Decrease myocardial contractility
 - BETA BLOCKERS INCREASE BLOOD SUPPLY BY DECREASING O₂ CONSUMPTION, DECREASING B/P
 - Caution against sudden stopping/ can develop intense angina
 - DECREASE B/P, HR, CHEST PAIN GOOD OUTCOME, ability to perform ADLs
 - Decrease essential tremors, PTSD, & portal pressure in patients with Cirrhosis & Varices
 - May not be as effective as other drug classes for first line treatment of hypertension.
 - o Side Effects for All Types
 - Hypotension, Orthostatic hypotension, and bradycardia
 - GI complaints, may complain of weight gain
 - Depression, dizziness, fatigue, wheezing, cold extremities
 - Decreased sexual function
 - o Warnings/Contraindications for All Types
 - Should not be used in uncontrolled or acute heart failure, heart block or cardiogenic shock
 - Use cautiously in individuals with asthma or chronic obstructive pulmonary disease to avoid bronchospasm
 - May decrease blood flow to extremities in individuals with peripheral artery disease
 - Use cautiously in individuals with diabetes mellitus since beta-blockers mask the symptoms of hypoglycemia
 - Abruptly stopping beta-blockers can cause withdrawal and rebound hypertension
 - o Nursing Considerations for All Types
 - Monitor blood pressure & heart rate
 - Monitor for hypotension, orthostatic hypotension, bradycardia, dizziness, fatigue, depression, wheezing, cold extremities, sexual function
- **Calcium Channel Blockers**
 - o **Calcium Channel blockers-Dihydropyridines**

- Examples
 - Amlodipine (Norvasc)
 - Felodipine (Plendil)
 - Nicardipine (Cardena)
 - Nifedipine (Procardia)
- Action
 - Works on smooth muscle by dilating arteries and lowering blood pressure.
- Functions/Indications
 - Hypertension and Angina
- Nursing Considerations/Administration
 - Can be taken without regard to food
 - Monitor blood pressure and heart rate
- Side Effects
 - Peripheral edema, Hypotension, Flushing
 - Weight gain, Constipation, Edema, Tachycardia
 - Esophageal reflux
- Warnings/Contraindications
 - Peripheral edema may occur soon after starting therapy; angina may be precipitated shortly after starting or increasing the dose, especially in those who are not receiving a rate control medication.
- o **Calcium Channel blockers-Non-Dihydropyridines**
 - Examples
 - Diltiazem (Cardizem)
 - Verapamil (Calan)
 - Action
 - Blocks calcium channels to relax the smooth muscle, resulting in the lowering of blood pressure and angina relief
 - Functions/Indications
 - Angina, Chronic A-fib, hypertension, SVT
 - Nursing Considerations/Administration
 - Do not crush or chew sustained or extended release products; certain products can be opened and sprinkled on food.
 - Warnings/Contraindications
 - Can cause asystole and, therefore, not a primary agent for angina
 - Concurrent use of beta-blockers can lower heart rate and cause heart block
 - Alert patients to make positional changes slowly to avoid orthostatic hypotension.
 - When started with other anti-hypertensive drugs, initiate at low doses and gradually titrate the dose upward while monitoring for orthostatic hypotension.

- o Functions in general for Calcium Channel Blockers
 - Block calcium channels primarily on coronary vessels and AV node
 - Increases blood flow to heart and decreases impulses thru the AV node
 - Used for hypertension
 - Used for Prinzmetals Angina, Raynaud's, and cocaine induced vasospasms
 - Three Effects- systemic vasodilation decreased SVR, decreased myocardial contractility, and coronary vasodilation. Decrease B/P
 - Calcium channel blockers prevent calcium entry into vascular smooth muscle cells and myocytes (cardiac cells), cause smooth muscle relaxation and relative vasodilation of coronary and systemic arteries, thus increasing blood flow.
 - Should monitor serum digoxin levels as potentiates action of Digoxin, should check levels during first week of therapy.
 - ***-Increase coronary blood flow thru vasodilation & reduction in myocardial O2 demand thru decrease HR & afterload***
- **Statins**
 - o Examples
 - Lovastatin (mevacor)
 - Fluvastatin (lescol)
 - Pravastatin (pravachol)
 - The Stronger Statins
 - Simvastatin (Zocor)
 - Atorvastatin (lipitor)
 - Rosuvastatin (Crestor)
 - o Function
 - Reduce total cholesterol levels including LDL
 - Stabilize plaques and prevent rupture
 - Anti-inflammatory effects
 - Decrease CAD, PVD, CVD risk and increase survival rates
 - o Side Effects
 - Myalgias, Myositis, Muscle pain or weakness
 - o Warnings/Contraindications
 - Severe muscle pain, liver damage-check LFTs, increased blood glucose
 - Neurological –memory loss or confusion
 - Avoid alcohol
 - o Administration/Nursing Considerations
 - Give dose in evening (cholesterol is biosynthesized in early am)
 - Grapefruit interferes with body's ability to break down some statins can cause increase in blood level