

### Diuretics (-zide, -mide)

Thiazide diuretics	LOOP diuretics	K+ Sparing
⚡ <b>MOA</b>	i.e. Lasix (furosemide)	i.e. spironolactone, triamterene

Inhibits reabsorption of Na, K, Cl resulting in osmotic water loss

Relaxes arterioles (decrease afterload)

⚡ <b>Indication</b>	Reduced BP	⚡ <b>Indications</b>
HTN (first line)	Reduced SVR (afterload), reduced CVP (preload), reduced LVEDP	HF

Edematous state d/t HF, liver cirrhosis

⚡ <b>Contraindications</b>	Edema (rt sided HF)	⚡ <b>Contraindications</b>
		Allergy, hyperkalemia, kidney failure, anuria

### Diuretics (-zide, -mide) (cont)

Drug	Fluid	⚡ <b>Adverse Effects</b>
allergy, hepatic coma, anuria, kidney failure	accumulation d/t liver/kidney disease	

⚡ **Adverse Effects**

HTN

Spironolactone-gynecomastia, amenorrhea, irregular menses, etc.

Electrolyte disturbances (decrease K, elevated Ca, lipids, glucose, uric acid)	Pulmonary edema (lt sided HF)	Triamterene-kidney stone d/t reduced folic acid
Dizziness	Crackles/low O2 sats	

GI disturbance

⚡ **Contraindications**

Thrombocytopenia

allergy, hepatic coma, severe electrolyte loss (Na & K), pregnancy/BF, gout

Pancreatitis

⚡ **Adverse Effects**

### Diuretics (-zide, -mide) (cont)

Cholecystitis

Electrolyte loss/dehydration

Headache

Furosemide-ototoxicity/photosensitivity

Impotence

Orthostatic hypotension

Hyperglycemia, hyperuricemia

\*Thiazide diuretics work on distal tubule

\*Loop diuretics work on ascending loop of Henle

\*K sparing works on collecting duct

### Beta Blockers (-olol)

i.e. atenolol, metoprolol, bisoprolol, timolol (eye drops), labetalol (IV)

⚡ **MOA**

- blocks SNS stimulation of Beta 1
- Reduced renin and aldosterone release and fluid balance
- Vasodilation of arterioles= Decreased PVR and BP
- Decreased myocardial stimulation
- Decreased HR
- Decreased conduction through AV node
- Prolonged SA node recovery
- Decreases myocardial O2 demand and contractility

### Beta Blockers (-olol) (cont)

\*reduces the work of the heart

⚡ **Indications**

- HTN, angina, dysrhythmias

⚡ **Contraindications**

- Allergy
- Uncompensated HF
- Cardiogenic shock
- Heart block
- Bradycardia
- Pregnancy
- Severe pulmonary disease (B2)
- Raynaud's disease

⚡ **Adverse Effects**

- Can worsen angina or cause MI if stopped quickly
- Symptoms of HF (coughing, SOB, Edema, fatigue)
- Can mask signs of hypoglycemia
- CV: AV block, bradycardia, HF, PV insufficiency, hypotension
- Resp: bronchospasm, bronchoconstriction
- CNS: dizziness, depression, lethargy
- GI: nausea, dry mouth, vomiting, constipation, diarrhea
- Hema: thrombocytopenia

\*\* Watch for diabetic pts

\*\* Monitor closely if given with calcium channel blocker



### ARBs (-sartan)

i.e. losartan, eprosartan, valsartan, irbesartan, telmisartan

#### ⚡ MOA

- blocks binding of angiotensin II to receptors
- Affects smooth muscle and adrenal gland
- Blocks vasoconstriction and secretion of aldosterone

#### ⚡ Indications

- HTN, HF (decrease preload/afterload), decreased mortality after MI

#### ⚡ Contraindications

- allergy, pregnancy/BF, kidney dysfunction (caution), older adults

#### ⚡ Adverse Effects

- URI, headache, hypotension, tachycardia, S/S of toxicity

#### ⚡ Interactions

- Cimetidine, phenobarbital, rifampin, K+ supplements

\*\*once daily medication

### Calcium Channel Blockers (-pine, -amil)

i.e. Amlodipine (dihydropyridines), Diltiazem (benzothiazepines), Verapamil (phenylalkylamines)

#### ⚡ MOA

- Blocks Ca access to cells causing:
  - decreased contractility
  - decreased conductivity of the heart

### Calcium Channel Blockers (-pine, -amil) (cont)

- decreased demand for O<sub>2</sub>
- dilation of coronary arteries (decreased afterload, increased oxygen supply)

\*\*decreases work of the heart

#### ⚡ Indications

- Angina
- HTN
- SVT
- Atrial fib/flutter
- Migraines
- Intracranial aneurysm rupture

#### ⚡ Contraindications

- allergy, acute MI, 2 or 3<sup>rd</sup> heart block, hypotension

#### ⚡ Adverse Effects

- Hypotension
- Palpitations
- Tachycardia or bradycardia
- HF
- Constipation
- Nausea
- Dermatitis
- Dyspnea
- Rash/flushing
- Peripheral edema

#### ⚡ Interactions

- beta blocker, digoxin, h<sub>2</sub> blockers, cyclosporin
- grapefruit

\*\*avoid grapefruit

\*\*do not take diltiazem with cyclosporin

\*\* check liver and renal fx

\*\* Weight- check for peripheral edema

### Nitrates (nitroglycerin)

#### ⚡ MOA

- dilation of blood vessels (relaxation of smooth muscle) esp coronary vessels
- decreased afterload and preload

#### ⚡ Indications

- Angina (stable, unstable, vasospastic)

#### ⚡ Contraindications

- allergy, anemia, closed-angle glaucoma, hypotension, head injury

#### ⚡ Adverse Effects

- headache, tachycardia, postural hypotension, reflex tachycardia, tolerance

#### ⚡ Interactions

- alcohol, beta blockers, CCB, antipsychotics, erectile dysfunction medications

\*\*light sensitive

\*\*check expiration date

\*\*comes in many forms- sublingual, chewable, oral tabs, capsules, ointments, patches, translingual spray, IV

\*\*ensure pt is not on erectile dysfunction medication

\*\*always date and time nitro patches upon application

\*\* administer while seated, take BP measure pain, then wait 5 mins and repeat up to 3x

### ACE inhibitors (-pril)

i.e. ramipril, fosinopril sodium, lisinopril, enalapril, perindopril, captopril

#### ⚡ MOA

### ACE inhibitors (-pril) (cont)

- Suppresses formation of angiotensin II from the RAAS system

- Reduces PVR
- Increases CO

#### ⚡ Indications

- HTN (decreased afterload, prevents formation of ACE II)
- HF (prevents Na and water resorption, causes diuresis, decreases preload)
- Protective effects on kidney (decreases GFR)

#### ⚡ Contraindications

- History of angioedema, renal artery stenosis, K<sup>+</sup> >5mmol/L

#### ⚡ Adverse Effects

- Hyperkalemia
- Fatigue, mood changes, dizziness, headache
- Dry, non-productive cough\*\*
- Hypotension
- Angioedema

- Rash, thrombocytosis, loss of taste, proteinuria, pruritis, anemia, neutropenia

#### ⚡ Interactions

- NSAIDS
- Potassium sparing diuretics
- Lithium and ACE inhibitors

\*\*Do not use during pregnancy/BF