

DT 4th

Course Title: General pharmacology II

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Discuss various drugs classes used for hypertension and Cardiac heart failure

Drugs For Hypertension:

Many blood pressure medications, known as antihypertensives, are available by prescription to lower high blood pressure (HBP or hypertension). There are a variety of classes of high blood pressure medications and they include a number of different drugs.

The classes of blood pressure medications include:

- Diuretics
- Beta-blockers
- ACE inhibitors
- Angiotensin II receptor blockers
- Calcium channel blockers
- Alpha blockers
- Alpha-2 Receptor Agonists
- Combined alpha and beta-blockers
- Central agonists
- Peripheral adrenergic inhibitors
- Vasodilators

1. Diuretics

Diuretics help the body get rid of excess sodium (salt) and water and help control blood pressure. They are often used in combination with additional prescription therapies.

| Generic name | Common brand names |
|--------------|--------------------|
|--------------|--------------------|

Thiazide diuretics

| | |
|----------------|----------|
| chlorthalidone | Hygroton |
|----------------|----------|

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|----------------|--------|
| chlorothiazide | Diuril |
|----------------|--------|

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|---------------------|------------------------------------|
| hydrochlorothiazide | Esidrix, Hydrodiuril, Microzide |
|---------------------|------------------------------------|

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|------------|-------|
| indapamide | Lozol |
|------------|-------|

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|------------|--------------------|
| metolazone | Mykrox*, Zaroxolyn |
|------------|--------------------|

Potassium-sparing diuretics

| | |
|-------------------------|---------|
| amiloride hydrochloride | Midamar |
|-------------------------|---------|

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|----------------|-----------|
| spironolactone | Aldactone |
|----------------|-----------|

| | |
|-------------|----------|
| triamterene | Dyrenium |
|-------------|----------|

Loop diuretic

| | |
|------------|-------|
| furosemide | Lasix |
|------------|-------|

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|------------|-------|
| bumetanide | Bumex |
|------------|-------|

Combination diuretics

| | |
|--|-----------|
| amiloride hydrochloride + hydrochlorothiazide | Moduretic |
|--|-----------|

| | |
|---|-------------|
| spironolactone + hydrochlorothiazide | Aldactazide |
|---|-------------|

| | |
|--------------------------------------|---------------------|
| triamterene + hydrochlorothiazide | Dyazide, Maxzide |
|--------------------------------------|---------------------|

2. Beta-blockers

Beta-blockers reduce the heart rate, the heart's workload and the heart's output of blood, which lowers blood pressure.

| | |
|--------------|--------------------|
| Generic name | Common brand names |
|--------------|--------------------|

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|------------|---------|
| acebutolol | Sectral |
|------------|---------|

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|----------|----------|
| atenolol | Tenormin |
|----------|----------|

| | |
|-----------|---------|
| betaxolol | Kerlone |
|-----------|---------|

3. ACE inhibitors

Angiotensin is a chemical that causes the arteries to become narrow, especially in the kidneys but also throughout the body. ACE stands for Angiotensin-converting enzyme.

ACE inhibitors help the body produce less angiotensin, which helps the blood vessels relax and open up, which, in turn, lowers blood pressure.

| Generic name | Common brand names |
|--------------------------|--------------------|
| benazepril hydrochloride | Lotensin |
| captopril | Capoten |
| enalapril maleate | Vasotec* |

4. Alpha blockers

These drugs reduce the arteries' resistance, relaxing the muscle tone of the vascular walls.

| Generic name | Common brand names |
|------------------------|--------------------|
| doxazosin mesylate | Cardura* |
| prazosin hydrochloride | Minipress* |

5. Central agonists

Central agonists also help decrease the blood vessels' ability to tense up or contract. The central agonists follow a different nerve pathway than the alpha and beta-blockers, but accomplish the same goal of blood pressure reduction.

| Generic name | Common brand names |
|-------------------------|--------------------|
| alpha methyldopa | Aldomet |
| clonidine hydrochloride | Catapres |
| guanabenz acetate | Wytensin |

6. Peripheral adrenergic inhibitors

These medications reduce blood pressure by blocking neurotransmitters in the brain. This blocks the smooth muscles from getting the "message" to constrict. These drugs are rarely used unless other medications don't help.

| Generic name | Common brand names |
|--------------------------|--------------------|
| guanadrel | Hylorel |
| guanethidine monosulfate | Ismelin |
| reserpine | Serpasil |

7. Blood vessel dilators (vasodilators)

Blood vessel dilators, or vasodilators, can cause the muscle in the walls of the blood vessels (especially the arterioles) to relax, allowing the vessel to dilate (widen). This allows blood to flow through better.

| Generic name | Common brand names |
|---------------------------|--------------------|
| hydralazine hydrochloride | Apresoline |
| minoxidil | Loniten |

Medications Used to Treat Heart Failure

Heart failure patients may need multiple medications. Each one treats a different symptom or contributing factor and comes with its own instructions and rules.

Angiotensin-Converting Enzyme (ACE) Inhibitors

Commonly prescribed include:

- Captopril (Capoten)
- Enalapril (Vasotec)
- Fosinopril (Monopril)
- Lisinopril (Prinivil, Zestril)
- Perindopril (Aceon)
- Quinapril (Accupril)
- Ramipril (Altace)
- Trandolapril (Mavik)

Angiotensin II Receptor Blockers (or Inhibitors)

(Also known as ARBs or Angiotensin-2 Receptor Antagonists)

Commonly prescribed include:

- Candesartan (Atacand)
- Losartan (Cozaar)
- Valsartan (Diovan)

Angiotensin-Receptor Neprilysin Inhibitors (ARNIs)

ARNIs are a new drug combination of a neprilysin inhibitor and an ARB.

- Sacubitril/valsartan

I_f Channel Blocker (or inhibitor)

This drug class reduces the heart rate, similar to another class of drugs called beta blockers.

- Ivabradine (Corlanor)

Beta Blockers (Also known as Beta-Adrenergic Blocking Agents)

Commonly prescribed include:

- Bisoprolol (Zebeta)
- Metoprolol succinate (Toprol XL)
- Carvedilol (Coreg)
- Carvedilol CR (Coreg CR)Toprol XL

Aldosterone Antagonists

Commonly prescribed include:

- Spironolactone (Aldactone)
- Eplerenone (Inspra)

Hydralazine and isosorbide dinitrate (specifically benefits African-Americans with heart failure)

Commonly prescribed:

- Hydralazine and isosorbide dinitrate (combination drug) - (Bidil)

Diuretics (Also known as water pills)

Commonly prescribed include:

- Furosemide (Lasix)
- Bumetanide (Bumex)
- Torsemide (Demadex)
- Chlorothiazide (Diuril)

- Amiloride (Midamor) Chlorthalidone (Hygroton)
- Hydrochlorothiazide or HCTZ (Esidrix, Hydrodiuril)
- Indapamide (Lozol)
- Metolazone (Zaroxolyn)
- Triamterene (Dyrenium)