**Drugs of cardiovascular system**

Diseases and conditions that affect the heart include:

**Angina Pectoris**: a type of chest pain that occurs due to decreased blood flow into the heart

**Coronary artery disease**: which affects the arteries that feed the heart

muscle.

**Arrhythmia**: an irregular heartbeat or heart rhythm

**Congenital heart disease**: in which a problem with heart function or

structure is present from birth.

**Heart attack**: sudden blockage to the heart’s blood flow and oxygen supply.

**Heart failure**: where the heart cannot contract or relax normally.

**Drugs for Angina:**

1. **Antiplatelet Drugs**
* **Aspirin**

Prevents platelet aggregation by irreversible cyclooxygenase inhibition with subsequent suppression of thromboxane A2.

* **Clopidogrel**

Selectively inhibits ADP binding to platelet receptor and thereby inhibiting platelet aggregation. Consider in patients with contraindication to aspirin.

**2.** **Beta-adrenergic Blockers**

Work by competing with endogenous catecholamines for beta-adrenergic receptors to reduce myocardial oxygen consumption via decreasing heart rate and reducing myocardial contractility. Classified as nonselective, beta-1 selective, and having intrinsic sympathomimetic effects.

**Metoprolol and Atenolol: Selective beta 1 blockers**

**Propranolol and carvedilol :Nonselective beta-blockers**

**3. Calcium channel blockers**

Reduce transmembrane influx of calcium via calcium channels. Cause smooth muscle relaxation and vasodilation. Indicated when beta-blockers are ineffective or contraindicated.

**Amlodipine, nifedipine** and **felodipine** acts on blood vessels

**whereas verapamil** and **diltiazem** acts on heart muscle.

**4. Nitrates**

Suitable for immediate relief of angina. Causes relaxation of vascular smooth muscle by stimulating intracellular cyclic GMP production. Result is decrease in BP.

**Glyceryl trinitrate** (**nitroglycerin**) is short acting nitrate whereas **isosorbide mononitrate** and **isosorbide dinitrate** are long acting.

**5. Angiotensin-converting enzyme (ACE) inhibitors**

ACE Inhibitors prevents conversion of angiotensin I to angiotensin II, a potent vasoconstrictor, resulting in lower aldosterone secretion and have been shown to reduce rates of death, MI, stroke, and need for revascularization procedures in patients with angina or other cardiovascular disease.

**Captopril, lisinopril and ramipril** are examples of these drugs.

**Drugs for Heart Failure**

The various classes of pharmacological agents that are currently used for treatment of CHF include:

* **ACE inhibitors (captopril and lisinopril)**
* **Angiotensin receptor blockers (ARBs) (losartan, valsartan and telmisartan)**
* **Aldosterone antagonists (spironolctone and eplerenone)**
* **Beta-blockers (carvidolol, metoprolol and labetolol)**
* **Calcium channel blockers (CCBs) ( diltiazem and verapamil)**
* **Digitalis drugs (digoxin , digitoxin).**
* **Loop diuretics (frusemide, bumetanide and torsemide)**
* **Nitrates (Glyceryl trinitrate, isosorbide mononitrate, isosorbide dionitrate**
* **Inotropic agents (dopamine, and dobutamine)**
* **Vasodilators (** **hydralazine).**

**Antiarrhythmic drug classes:**

Antiarrhythmic drugs are used to prevent recurrent arrhythmias

 and restore normal rhythm and conduction.

* **Class I - Sodium-channel blockers ( quinidine, lidocaine and phenytoin.**
* **Class II - Beta-blockers ( propranolol, atenolol, timolol, esmolol).**
* **Class III - Potassium-channel blockers (Amiodarone, dronedarone and sotalol ).**
* **Class IV - Calcium-channel blockers (nifedipine, diltiazem and verapamil) .**
* **Miscellaneous -**[**adenosine**](https://www.cvpharmacology.com/antiarrhy/adenosine) **-**[**electrolyte supplement**](https://www.cvpharmacology.com/antiarrhy/electrolyte)**s (magnesium and potassium salts).
- cardiac glycosides (digoxin and digitoxin)
-**[**atropine**](https://www.cvpharmacology.com/antiarrhy/atropine)**(muscarinic receptor antagonist).**