

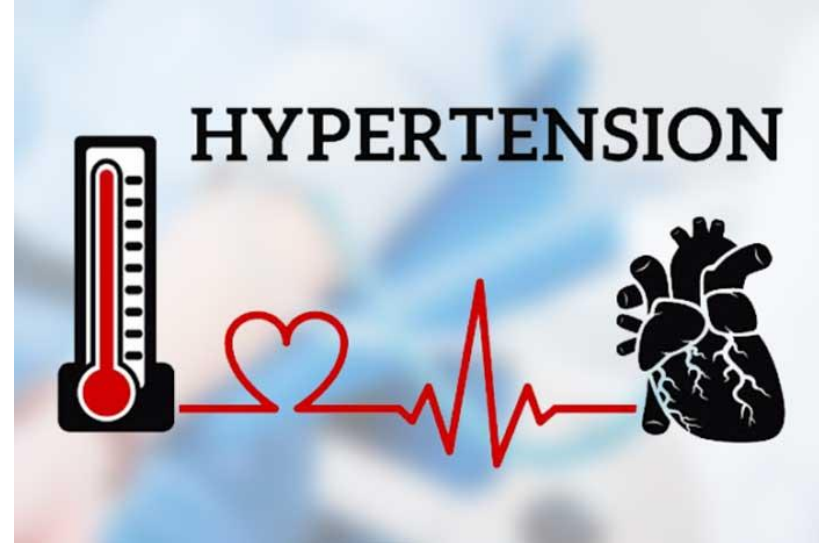
Antihypertensives

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2018**

What is hypertension?

Hypertension is a sustained systolic blood pressure of greater than 140 mm Hg or a sustained diastolic blood pressure of greater than 90 mm Hg.



	Systolic mm Hg		Diastolic mm Hg
Normal	<120	and	<80
Prehyper- tension	120– 139	or	80–89
Stage I	140– 159	or	90–99
Stage II	≥160	or	≥100

Figure 17.2

Classification of blood pressure.

Causes of Hypertension



Stress



Too Much Salt



Age



Hereditary

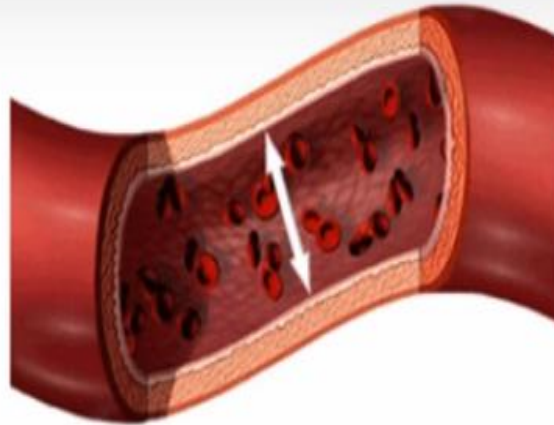


Obesity

ETIOLOGY OF HYPERTENSION

1. **primary or essential** hypertension: most cases (90%), unknown etiology
2. **secondary**: 20% of cases of hypertension are due to “secondary” factors that can be clearly defined and corrected. (Factors: pheochromocytoma, coarctation of the aorta, renal vascular disease, adrenal cortical tumors,

MECHANISMS FOR CONTROLLING BLOOD PRESSURE

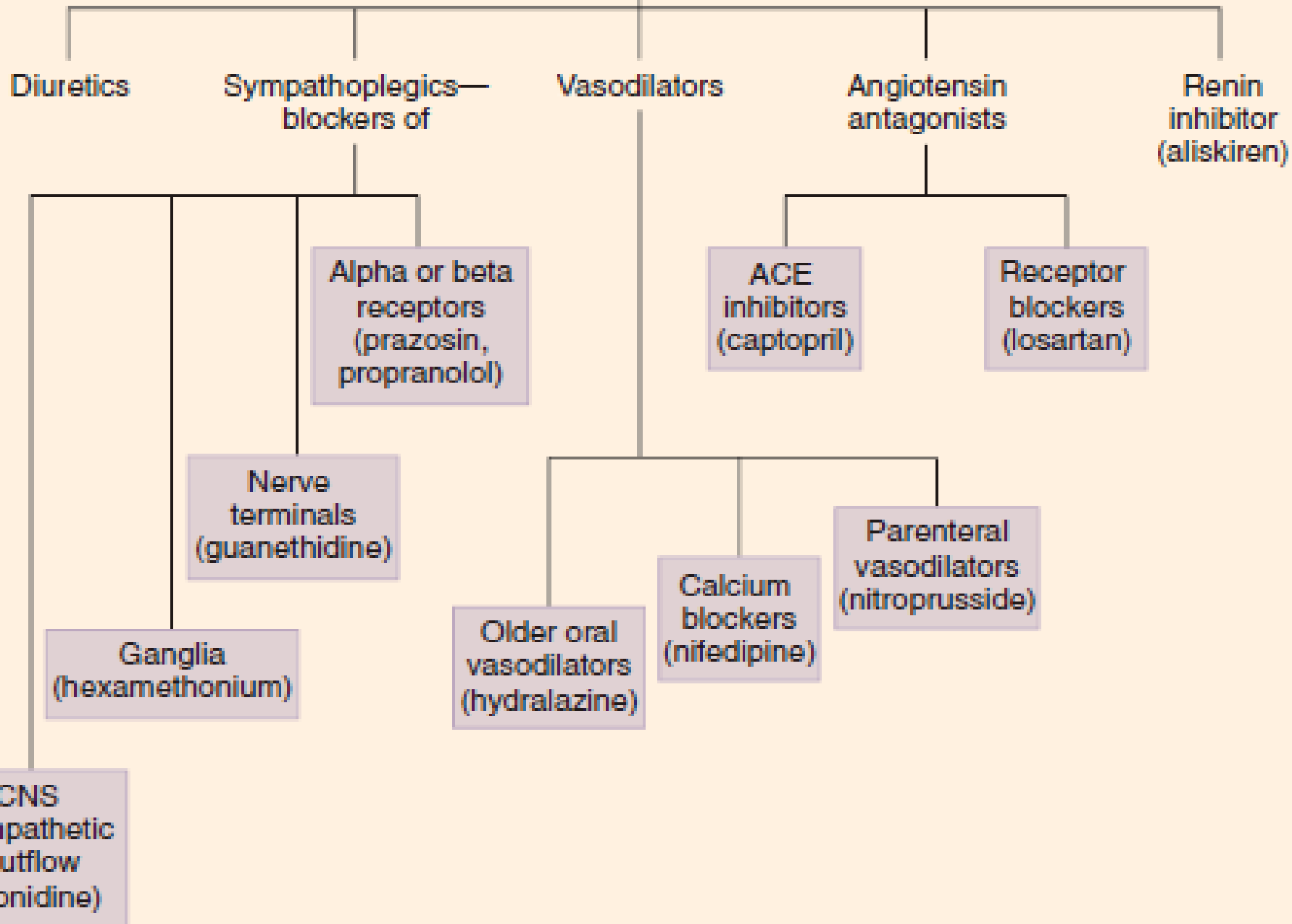


Blood Pressure (BP) = Cardiac Output (CO) X Systemic Vascular Resistance (SVR)

TREATMENT STRATEGIES

- The goal of antihypertensive therapy is to reduce cardiovascular and renal **morbidity** and **mortality**.
- Mild hypertension can sometimes be controlled with monotherapy.

Drugs used in hypertension



β-ADRENOCEPTOR–BLOCKING AGENTS

β-Blockers are a treatment option for hypertensive patients with concomitant heart disease or stable mild-moderate heart failure.

ACE INHIBITORS

- Enalapril and lisinopril are first-line treatment of hypertension in patients with a high coronary disease, risk or history of diabetes, stroke, heart failure, myocardial infarction, or chronic kidney disease.

ANGIOTENSIN II RECEPTOR BLOCKERS ARBs

- losartan and irbesartan, are alternatives to the ACE inhibitors.
- These drugs block the AT1 receptors, decreasing the activation of AT1 receptors by angiotensin II.

RENIN INHIBITOR (aliskiren)

- Aliskiren directly inhibits renin, acts earlier in the renin–angiotensin–aldosterone system than ACE inhibitors or ARBs.
- It lowers blood pressure as effectively as ARBs, ACE inhibitors, and thiazides.

CALCIUM CHANNEL BLOCKERS

- Calcium channel blockers are a recommended treatment option in hypertensive patients with diabetes or angina.

Classes of calcium channel blockers

- 1. Dihydropyridines**
- 2. Non Dihydropyridines**

α -ADRENOCEPTOR-BLOCKING AGENTS

- Prazosin, doxazosin, and terazosin produce a competitive block of α 1-adrenoceptors.
- They decrease peripheral vascular resistance and lower arterial blood pressure by causing relaxation of both arterial and venous smooth muscle.

α -/ β -ADRENOCEPTOR-BLOCKING AGENTS

- Labetalol and carvedilol block α_1 , β_1 , and β_2 receptors.
- Carvedilol, metoprolol, and bisoprolol reduce morbidity and mortality associated with heart failure.

CENTRALLY ACTING ADRENERGIC DRUGS

A. Clonidine

B. Methyldopa

VASODILATORS

- The direct-acting smooth muscle relaxants, such as **hydralazine** and **minoxidil**, are not used as primary drugs to treat hypertension.