

DRUGS		MECHANISM OF ACTION	CLINICAL INDICATIONS	SIDE EFFECTS
Diuretics	THIAZIDE DIURETICS Hydrochlorothiazide	↓ Blood volume ↓↓ ↓ Cardiac output ↓↓ ↓ Blood pressure	Mild or moderate hypertension with normal renal and cardiac functions	Hypocalemia
	LOOP DIURETICS Furosemide		Sever hypertension (the most potent diuretic) with renal insufficiency or cardiac failure	
	POTASSIUM-SPARING DIURETICS Spironolactone	↓ Total peripheral resistance ↓↓ ↓ Blood pressure	Compensate for excessive potassium depletion	
Centrally acting α-2 agonists	Clonidine	Stimulate central α-2 receptors ↓↓ Reduce sympathetic outflow ↓↓ ↓ Cardiac output + ↓ Total peripheral resistance ↓↓ ↓ Blood pressure		Sudden withdrawal leads to life threatening hypotensive crisis Sedation Dry mouth
	Methyldopa	Methyldopa ↓↓ α-Methylnorepinephrine ↓↓ Stimulate central α-2 receptors ↓↓ Reduce sympathetic outflow ↓↓ ↓ Cardiac output + ↓ Total peripheral resistance ↓↓ ↓ Blood pressure		Sedation Dry mouth Extrapyramidal signs Hyperprolactinemia
α-1 antagonists	Prazosine	Dilate resistance and capacitance vessels ↓↓ ↓ Blood pressure	Started as a small dose at bedtime	Postural hypotension and syncope after the first dose Dizziness Palpitations Headache
Adrenergic neurone-blocking agents	Reserpine	Prevent uptake of the biogenic amines by blocking the vesicular monoamine transporter (VMAT) ↓↓ Depletion of Noradrenaline, Dopamine and Serotonin in both central and peripheral neurons ↓↓ Parasympathetic system will dominate ↓↓ ↓ Blood pressure		Postural hypotension Diarrhoea Git cramps Increase gastric acid* Sedation Depression
	Guanithidine	Inhibits the release of Noradrenaline from sympathetic nerve endings + It replaces Noradrenaline in the transmitter vesicles ↓↓ Gradual depletion of Noradrenaline stores in the nerve endings ↓↓ Parasympathetic system will dominate ↓↓ ↓ Blood pressure		Postural hypotension Diarrhoea **
Arteriovenous vasodilators	Sodium Nitroprusside	Activates guanylyl cyclase ↓↓ ↑ cGMP ↓↓ Smooth muscle relaxation ↓↓ ↓ Systemic vascular resistance ↓↓ ↓ Blood pressure	Hypertensive emergencies Parenteral Cyanide accumulation is treated by Sodium Thiosulphate	<u>Accumulation of cyanide</u> ↓ Metabolic acidosis Arrhythmias Excessive hypotension Death
Arterial vasodilators	Hydralazine	Dilate arterioles ↓↓ ↓ Systemic vascular resistance ↓↓ ↓ Blood pressure	Metabolised in part by acetylation Rapid acetylators will have: Greater first pass metabolism Less bioavailability Less antihypertensive benefit	Flushing Reflex tachycardia <u>SLE-like syndrome</u> <u>Peripheral neuropathy</u>
	Diazoxide	Opens potassium channels ↓↓ Prevent smooth muscle contraction ↓↓ ↓ Systemic vascular resistance ↓↓ ↓ Blood pressure	Long acting arterial dilator Parenteral	Hypotension Reflex tachycardia <u>Hyperglycaemia</u> Salt and water retention
	Minoxidil	↓ Systemic vascular resistance ↓↓ ↓ Blood pressure	Oral	Reflex tachycardia (use a beta-blocker) Edema (use a diuretics) Palpitations Headache <u>Hypertrichosis</u>
β-1 blockers	Labetalol	↓ Myocardial contractility → ↓ cardiac output ↓ Secretion of renin → ↓ Angiotensin II Block α1-adrenoceptors → ↓ Peripheral resistance		
Calcium channel blockers	Verapamil Nifedipine	Inhibit calcium influx into arterial smooth muscle cells ↓↓ Dilatation of peripheral arterioles ↓↓ ↓ Systemic vascular resistance ↓↓ ↓ Blood pressure	Verapamil is mainly cardiac depressant Nifedipine is mainly vasodilator	
Angiotensin converting enzyme inhibitors (ACEI)	Captopril Enalapril	Inhibit ACE and inactivate Bradykinin ↓↓ ↓ Angiotensin II ↓↓ ↓ Peripheral resistance ↓↓ ↓ Blood pressure	Do not cause reflect tachycardia Use them for patients with IHD Contraindicated in pregnancy!	<u>Hyperkalemia</u> Cough <u>Angioedema</u> Severe hypotension after initial doses in hypovolemic patients (due to diuretics) Acute renal failure in patients with bilateral renal artery stenosis
	Losartan	Inhibit ACE only ↓↓ ↓ Angiotensin II ↓↓ ↓ Peripheral resistance ↓↓ ↓ Blood pressure	Contraindicated in pregnancy!	<u>Hyperkalemia</u> Severe hypotension after initial doses in hypovolemic patients (due to diuretics) Acute renal failure in patients with bilateral renal artery stenosis

*that's why Reserpine is contraindicated for patients with peptic ulcer

**no CNS side effects because Guanithidine doesn't cross BBB