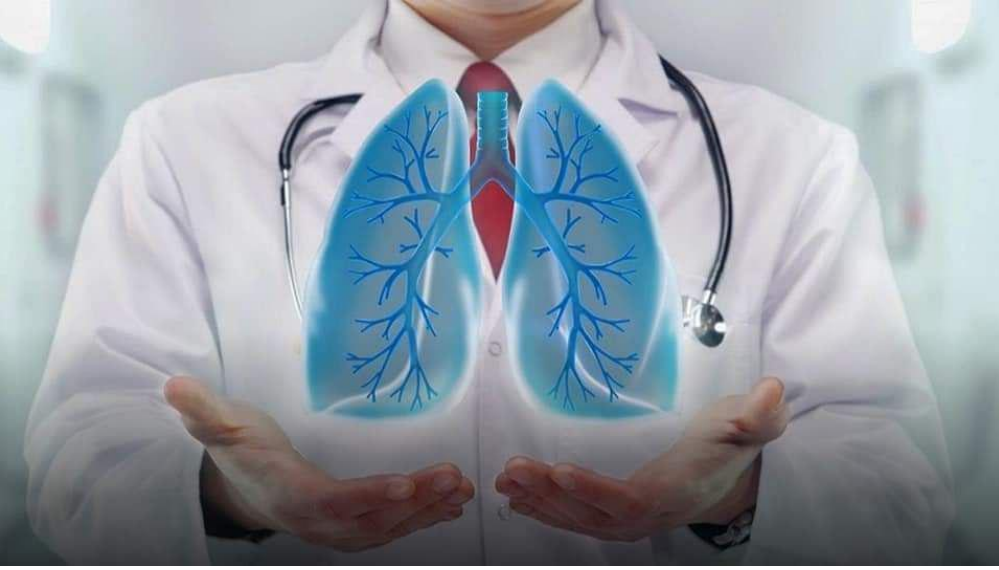




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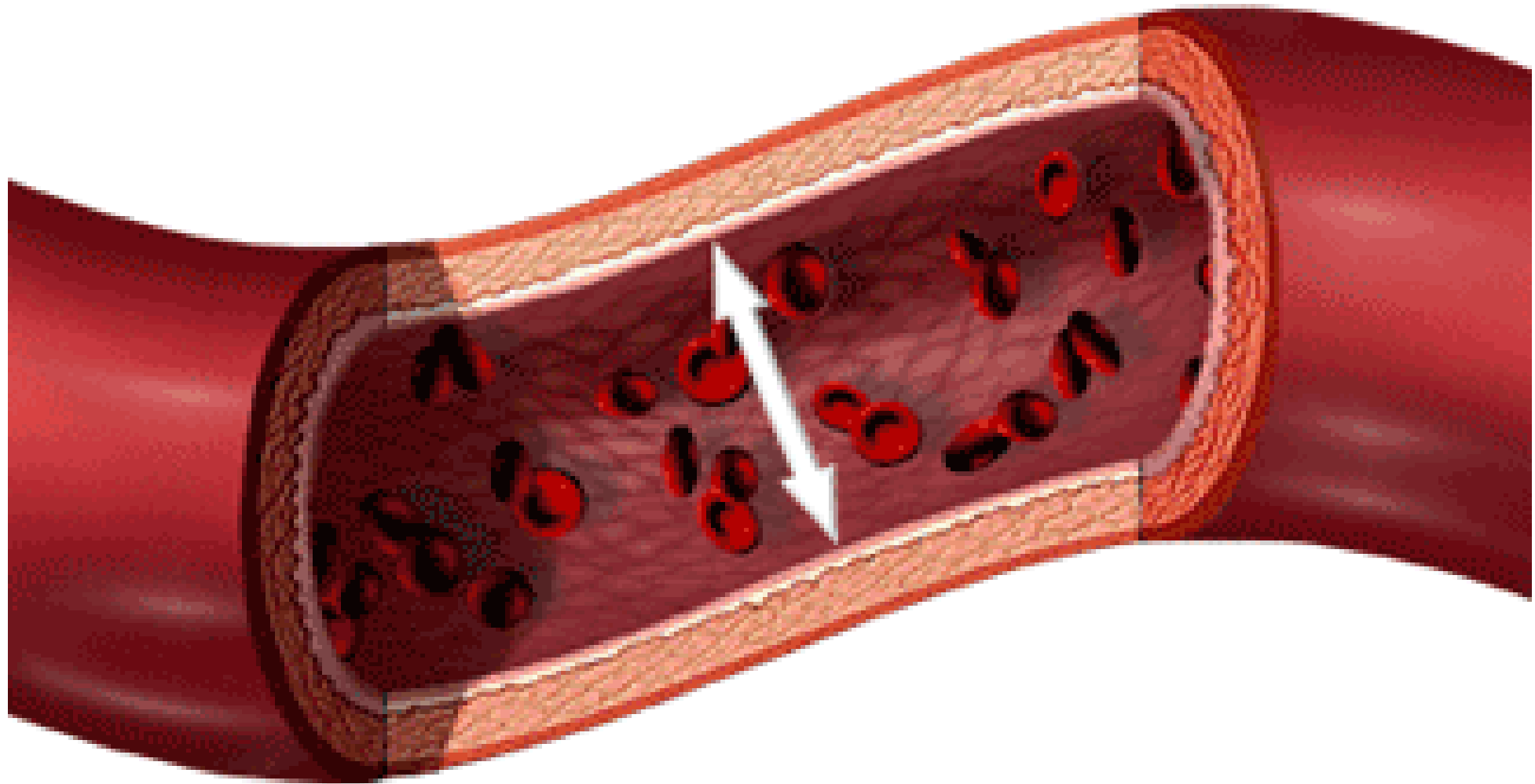
المحاضرة الثامنة – المرحلة الثانية  
الطب الباطني – تقنيات التخدير

Hypertension and hyperlipidemia

# Hypertension

- Definition : The force of circulating blood on the walls of the arteries.
- Blood pressure is taken using two measurements:
  - systolic (measured when the heart beats, when blood pressure is at its highest) and
  - diastolic (measured between heart beats, when blood pressure is at its lowest). Blood pressure is written with the systolic blood pressure first, followed by the diastolic blood pressure (for example 120/80).

Blood pressure is the measurement of force applied to artery walls



## 16.64 Definition of hypertension

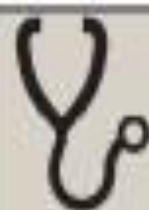
Category	Systolic blood pressure (mmHg)	Diastolic blood pressure (mmHg)
<b>Blood pressure</b>		
Optimal	<120	<80
Normal	<130	85
High normal	130–139	85–89
<b>Hypertension</b>		
Grade 1 (mild)	140–159	90–99
Grade 2 (moderate)	160–179	100–109
Grade 3 (severe)	≥180	>110
<b>Isolated systolic hypertension</b>		
Grade 1	140–159	<90
Grade 2	≥160	<90

# Clinical features

Hypertension is usually asymptomatic until the diagnosis is made at a routine •  
physical examination or when a complication arises.

Reflecting this fact, a BP check is advisable every 5 years in adults over 40 years of •  
age to pick up occult hypertension.





## 16.67 How to measure blood pressure

- Use a machine that has been validated, well maintained and properly calibrated
- Measure sitting BP routinely, with additional standing BP in elderly and diabetic patients and those with possible postural hypotension; rest the patient for 2 minutes
- Remove tight clothing from the arm
- Support the arm at the level of the heart
- Use a cuff of appropriate size (the bladder must encompass more than two-thirds of the arm)
- Lower the pressure slowly (2 mmHg per second)
- Read the BP to the nearest 2 mmHg
- Use phase V (disappearance of sounds) to measure diastolic BP
- Take two measurements at each visit

**i**

## 16.71 Optimal target blood pressures

Age	Clinic BP (mmHg)	Ambulatory or home BP (mmHg) <sup>2</sup>
<80 years	<140/90	<135/85
≥80 years	<150/90	<140/85

<sup>1</sup>Both systolic and diastolic values should be attained. <sup>2</sup>Average BP during waking hours.



# Antihypertensive drugs

- 1- **thiazides** : More potent loop diuretics, such as furosemide (40 mg daily) or • bumetanide (1 mg daily)
- 2- **ACE inhibitors**: enalapril 20 mg daily, ramipril 5–10 mg daily or lisinopril 10– • 40 mg daily) are effective and usually well tolerated
- 3- **Angiotensin receptor blockers ARBs** (irbesartan 150–300 mg daily, valsartan 40–160 mg daily) have similar efficacy to ACE inhibitors but they do not cause cough and are better tolerated
- 4- **Calcium channel antagonists** Amlodipine (5–10 mg daily) and nifedipine (30–90 mg daily) are effective and usually well-tolerated antihypertensive drugs that are particularly useful in older people. Side-effects include flushing, palpitations and fluid retention. The rate-limiting calcium channel antagonists (diltiazem 200–300 mg daily, verapamil 240 mg daily) can be useful when hypertension coexists with angina but may cause bradycardia. The main side-effect of verapamil is constipation

5- **beta-blockers** : Metoprolol (100–200 mg daily), atenolol (50–100 mg daily) •  
and bisoprolol (5–10 mg daily)

**Aspirin** Antiplatelet therapy is a powerful means of reducing cardiovascular risk •  
but may cause bleeding, particularly intracerebral haemorrhage, in a small  
number of patients. The benefits are thought to outweigh the risks in  
hypertensive patients aged 50 years or over who have well-controlled BP and  
either target organ damage or diabetes or a 10-year CAD risk of at least 15% (or  
10-year cardiovascular disease risk of at least 20%).

# Choice of antihypertensive drug

Trials that have compared thiazides, calcium antagonists, ACE inhibitors • and ARBs have not shown consistent differences in outcome, efficacy, side-effects or quality of life.

Beta-blockers, which previously featured as first-line therapy in guidelines, • have a weaker evidence base.

The choice of antihypertensive therapy is initially dictated by the patient's • age and ethnic background, although cost and convenience will influence the exact drug and preparation used. Response to initial therapy and side-effects guide subsequent treatment.

Comorbid conditions also have an influence on initial drug selection for • example, a  $\beta$ -blocker might be the most appropriate treatment for a patient with angina. Thiazide diuretics and dihydropyridine calcium channel antagonists are the most suitable drugs for treatment in older people.

# High blood pressure: you can prevent it.



Reduce salt  
to less than 5g daily



Eat fruits and vegetables  
regularly



Avoid saturated fats  
and trans fats



Avoid tobacco



Reduce alcohol



Be physically  
active every day



# Uncontrolled hypertension causes premature death.



**It increases the risk of:**



**Heart attack**



**Stroke**



**Kidney failure**



**Blindness**



**Other complications**



## 16.70 Hypertension in old age

- **Prevalence:** hypertension affects more than half of all people over the age of 60 years (including isolated systolic hypertension).
- **Risks:** hypertension is the most important risk factor for myocardial infarction, heart failure and stroke in older people.
- **Benefit of treatment:** absolute benefit from therapy is greatest in older people (at least up to age 80 years).
- **Target blood pressure:** targets be relaxed in older people to 150/90 mmHg.
- **Tolerance of treatment:** antihypertensives are tolerated as well as in younger patients.
- **Drug of choice:** low-dose thiazides but, in the presence of coexistent disease such as gout or diabetes, other agents may be more appropriate.

# Refractory hypertension

Refractory hypertension refers to the situation where multiple drug • treatments do not give adequate control of BP. Although this may be due to genuine resistance to therapy in some cases, a more common cause of treatment failure is non-adherence to drug therapy. Resistant hypertension can also be caused by failure to recognise an underlying cause, such as renal artery stenosis or phaeochromocytoma.

There is no easy solution to problems with adherence but **simple • treatment regimens**, attempts to improve rapport with the patient and careful supervision can all help.

Spironolactone is a particularly useful addition in patients with • treatment-resistant hypertension



# Hyperlipidemia

Hyperlipidemia is a medical condition characterised by an increase in one • or more of the plasma lipids, including triglycerides, cholesterol, cholesterol esters, phospholipids and or plasma lipoproteins including very low-density lipoprotein and low-density lipoprotein along with reduced high-density lipoprotein levels. This elevation of plasma lipids is among the leading risk factors associated with cardiovascular diseases.

Hypercholesterolemia and hypertriglyceridemia are the main cause of • atherosclerosis which is strongly related to ischemic heart disease (IHD)

# Symptoms of hyperlipidemia

Generally hyperlipidemia does not have any obvious symptoms but they •  
are usually discovered during routine examination or until it reaches the  
danger stage of a stroke or heart attack.

## Complications of hyperlipidemia •

1- atherosclerosis •

2- Coronary artery disease •

3- MI •

4- ischemic stroke •

# Drug therapy for hyperlipidemia

Drugs	Effects on lipids
<p><i>Statins:</i></p> <p>Lovastatin (10-80 mg)</p> <p>Simvastatin (5-40 mg)</p> <p>Atorvastatin (10-80 mg)</p> <p>Rosuvastatin (5- 20 mg)</p>	<p>Decrease TG</p> <p>Decrease LDL</p> <p>Increase HDL</p>

Good luck