

# Hypertension

Dr Sarah Wintle MBCChB

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# Aims and Objectives

- What is hypertension?
- Epidemiology of hypertension
- Aetiology/Risk Factors
- Assessment
- Investigations
- Complications
- Management
- Malignant hypertension

# Definition

- Sustained high blood pressure

	<b>Systolic</b>	<b>Diastolic</b>
<b>Normal</b>	<130	<85
<b>High Normal</b>	130-139	85-89
<b>Grade 1 Hypertension (mild)</b>	140-159	90-99
<b>Grade 2 Hypertension (moderate)</b>	160-179	100-109
<b>Grade 3 Hypertension (severe)</b>	>180	>100



# Epidemiology

- Global problem
- Very common
- Often undetected
- Prevalence rates higher:
  - With age
  - In urban settings
  - In Black population

# Pathophysiology

- Blood Pressure = Cardiac Output x Peripheral Vascular Resistance
  - Cardiac Output = Stroke volume x Heart Rate
- Regulatory systems:
  - Autonomic nervous system
  - Capillary fluid shift mechanism
  - Hormonal mechanism
  - Kidney and fluid balance

# Aetiology/Risk Factors

## ■ Primary

- Raised BMI (obesity)
- Alcohol consumption
- Increased salt intake
- Lack of exercise
- Positive family history
- Diabetes

## ■ Secondary

- Catecholamine secretion (phaeochromocytoma)
- Aldosterone (renal artery stenosis, Conn's syndrome)
- Glucocorticoid (Cushing's syndrome, steroid therapy)
- Vascular diseases (coarctation of the aorta)
- Neurogenic (raised intracranial pressure)

# Complications

- Why?
  - Thickening of artery walls
  - Acceleration of atherosclerosis
  - Left heart hypertrophy

# Complications

## ■ What?

- Cardiac disease
  - Left Ventricular Hypertrophy (can lead to LVF)
  - Ischaemic Heart Disease
  - Atrial Fibrillation
- Cerebrovascular disease
  - Ischaemic stroke
  - Haemorrhagic stroke
  - Subarachnoid haemorrhage
- Renal disease
- Retinal disease
- Aortic aneurysm



# Assessment

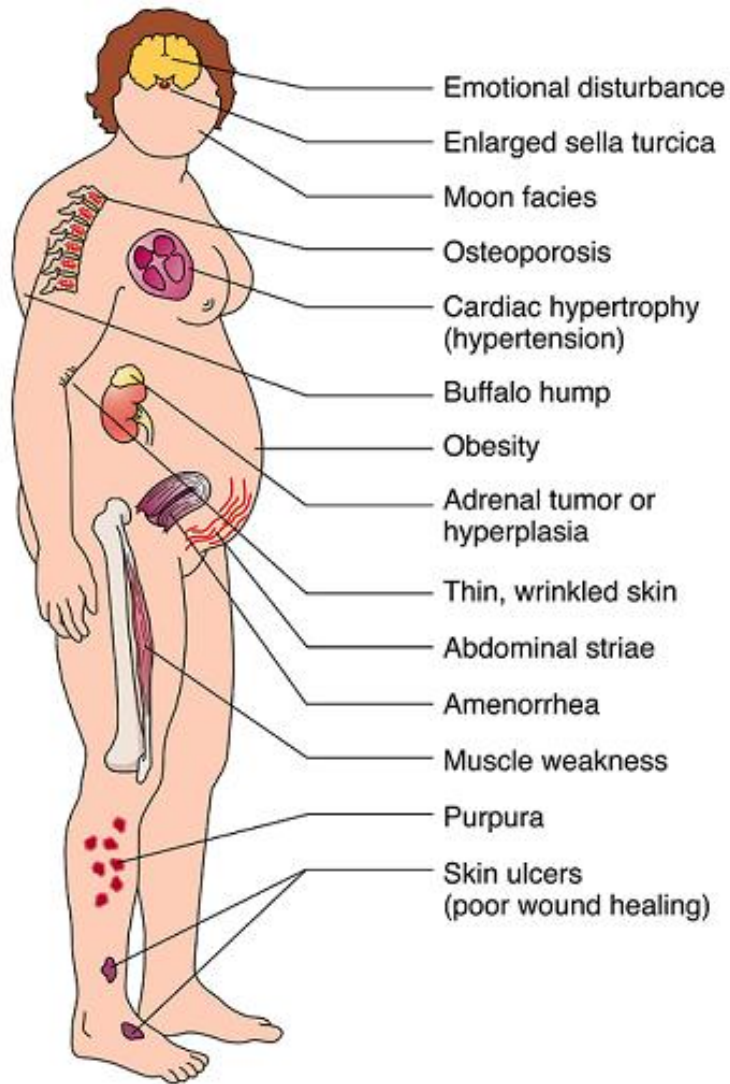
- Measure BP accurately!
- Monitor over time
- History: 1) Why is it high?
  - 2) Is there target organ damage?
  - 3) How high is the CVD risk?

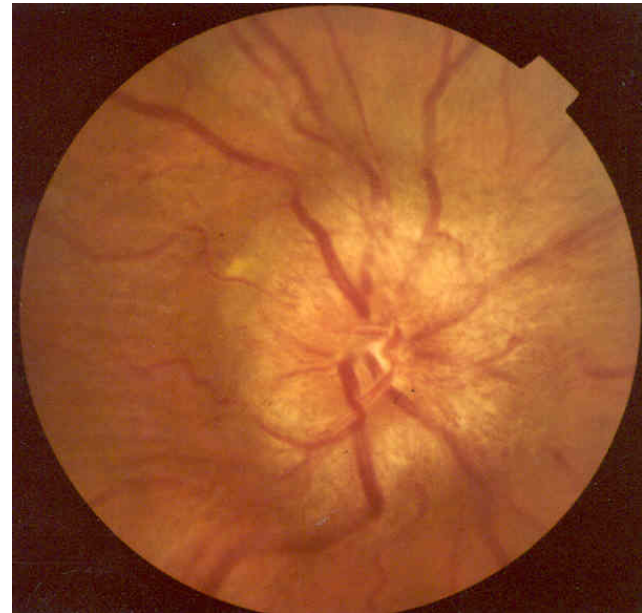
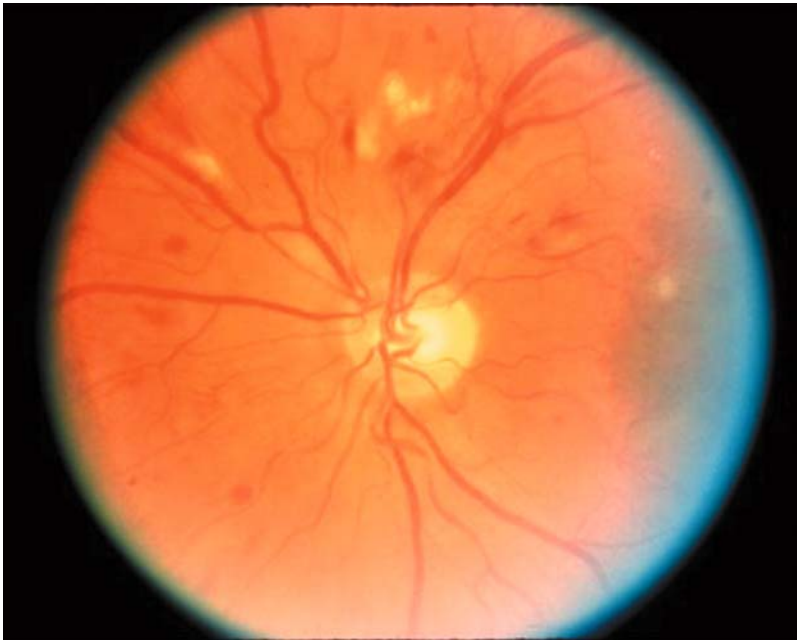
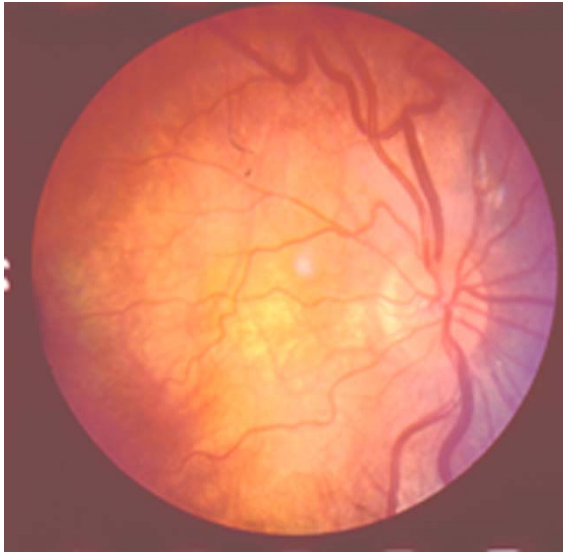
# Cardiovascular Disease Risk

- Risk of developing IHD, stroke, PVD, CCF
- Calculated using:
  - Age
  - Sex
  - BP
  - Cholesterol (incl.ratio)
  - Triglycerides
  - Smoking status
  - Glucose
  - LVH
  - Central obesity
  - Family history

# More assessment...

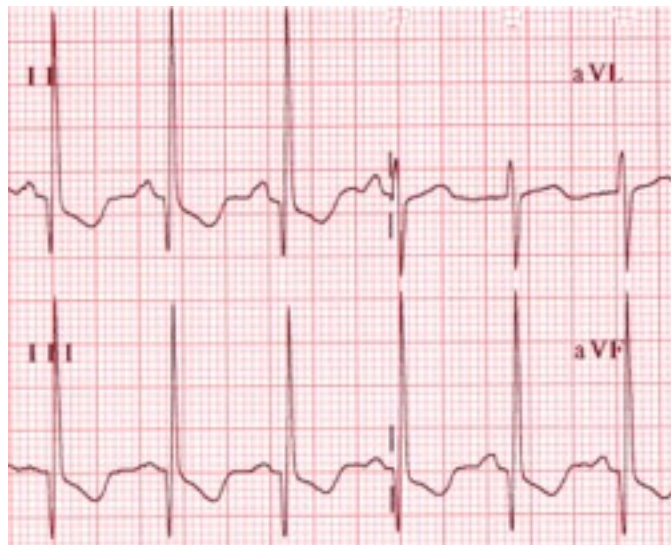
- Examination: same questions!
  - 1) Why is it high?
  - 2) Is there target organ damage?
  - 3) How high is the CVD?
- Systematic:
  - General appearance
  - Retina
  - Cardiac
  - Renal
  - Peripheral vascular system





# Investigations

- Ambulatory BP measurement
- Mandatory:
  - Urine dipstick
  - Serum Creatinine and Electrolytes
  - Blood glucose
  - Serum cholesterol
  - ECG
- Optional:
  - Chest Xray
  - Renal ultrasound
  - Fasting glucose and lipids





# Management

- Lifestyle advice:
  - Aim for 'ideal' body weight
  - Increase fruit and vegetable consumption
  - Increase low fat dairy consumption
  - Moderate alcohol consumption
  - Reduce salt intake
  - Regular exercise
  - PLUS general advice to reduce CVD risk (e.g. stopping smoking)

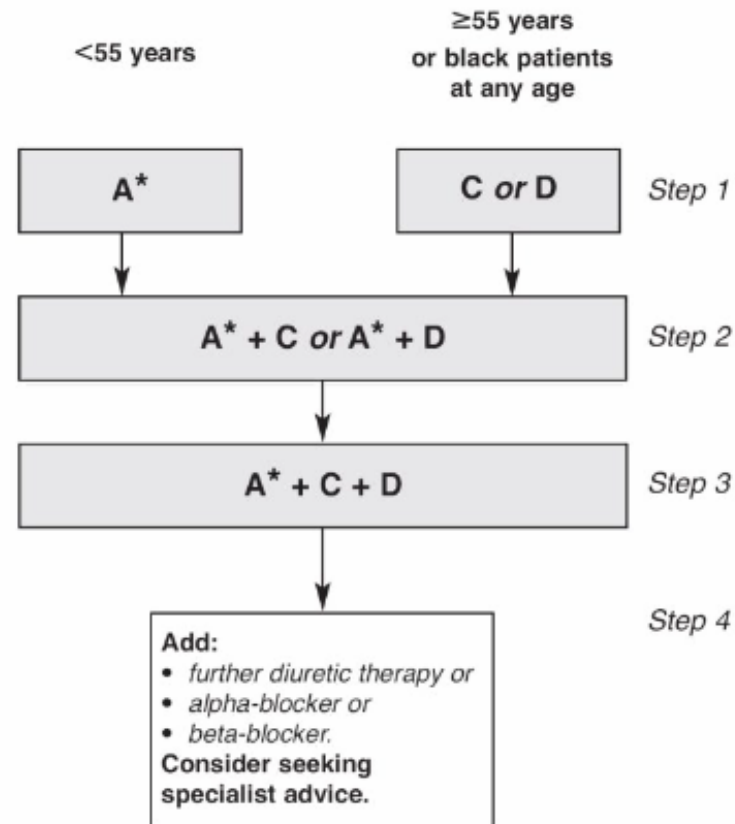


# Management

## ■ Pharmacological

## ■ Reduction of CVD

- Statins
- Aspirin
- Diabetes manageme





# Malignant Hypertension

- AKA accelerated hypertension
- Emergency!
- Very elevated BP ( $>200/140$ )
- End organ damage
- Patient likely to be symptomatic
- Treat rapidly!



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Thank you!

Any questions?