

## Upper and lower limb arterial examination

### Intro (WIIPPPPE)

- **W**ash your hands
- **I**ntroduce yourself
- **I**dentify of patient (confirm)
- **P**ermission (consent and explain examination)
- **P**ain?
- **P**osition at 45°
- **P**rivacy
- **E**xpose upper limbs and chest initially

### General Inspection

- Surroundings
  - Monitoring:
    - Pulse oximeter
    - ECG monitoring
  - Treatments:
    - Oxygen therapy (method of delivery and rate)
    - GTN spray
    - Insulin pen
    - IV infusions
  - Paraphernalia:
    - Wheelchair or walking aids
    - Food and drink
    - Cigarettes/ nicotine patches/ gum
- Patient
  - Well or unwell?
  - Comfortable at rest or in pain?
  - Body habitus: cachectic or obese?
  - Smoker's facies or smell of cigarettes?
  - Colour: Peripheral cyanosis? Mottled?
  - Signs of peripheral arterial disease (ulcers, gangrenous toes, amputations)
  - Scars? (CABG, graft harvesting, groin scars from angiography)

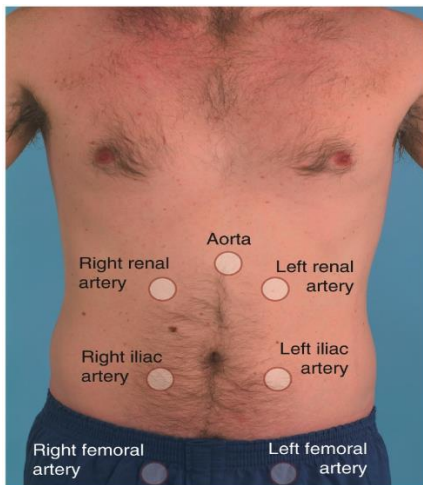
### Systemic examination

- **Upper limbs**
  - Inspect
    - Colour (peripheral cyanosis/ mottled discolouration)
    - Cigarette tar staining (not nicotine!)
    - Blood glucose testing on fingertips
    - Tendon xanthomata (hyperlipidaemia)
    - Scars (radial artery harvest for CABG, wrist scars from angiography/ interventional radiology)
    - Subclavian artery aneurysm
  - Palpate
    - Temperature
    - Gross sensation (distal to proximal)
    - Capillary refill (at level of heart, both limbs, normal <2s)
    - Radial pulse (rate, rhythm)
    - Radio-radial delay
      - Aortic dissection

- Aortic coarctation (delayed on left depending on level of coarctation)
- Subclavian artery stenosis
- Radio-femoral delay
  - Aortic coarctation
- Brachial pulse
- Ask for blood pressure in both arms. Unequal BPs suggest:
  - Aortic dissection (BP reduced on left depending on level of coarctation)
  - Subclavian artery stenosis (BP reduced on side of stenosis)
  - Aortic coarctation (BP reduced on left depending on level of coarctation)
- Carotid pulse
- Auscultate
  - Carotid bruits

- **Abdomen**

- Inspect (at level of patient)
  - Scars: midline laparotomy or T shaped scar (suggests emergency AAA repair)
  - Pulsatile aorta
- Palpate
  - Aorta (above umbilicus): Pulsatile AND expansile? Approximate diameter?
    - The aorta should be pulsatile but should not be expansile.
- Auscultate
  - Aortic bruit (above umbilicus)
  - Renal bruits



- **Lower limbs**

- Inspect
  - Colour (peripheral cyanosis/ mottled discolouration)
  - Skin: shiny, hairless
  - Scars (long saphenous vein harvesting for CABG, groin scars from angiography/ interventional radiology/ EVAR/ angioplasty/catheter-directed thrombolysis)
  - Ulcers
    - Arterial ulcer sites: dorsum of foot, between toes, tips of toes
    - Diabetic ulcer sites: pressure points (heel, metatarsal heads)
- Palpate
  - Temperature
  - Gross sensation (distal to proximal)
  - Capillary refill
  - Femoral pulses: mid-inguinal point, halfway between ASIS and pubic symphysis

- Radio-femoral delay (if not already done)
- Popliteal pulses
  - 10% of patients with popliteal aneurysm have an AAA
  - 30% of patients with AAA have a popliteal aneurysm
- Dorsalis pedis (lateral to tendon of extensor hallucis longus)
  - Absent in 10% of normal people
- Posterior tibial pulses (2cm below and behind medial malleolus)
- Auscultate
  - Femoral bruits

### Closure

- Thank patient, ensure they're comfortable and ask if they need any help in getting dressed
- Wash hands

Turn to examiner, hands behind back, holding stethoscope, before saying:

- **"To complete my examination, I would like to..."**
- Further examinations:
  - Perform a full cardiovascular examination
  - Perform neurological and venous examination of the upper and lower limb
  - Special test: perform Buerger's test if indicated
- Bedside investigations:
  - Ankle-Brachial Pressure Index (ABPI)
  - Measure claudication distance and total walking distance
  - 12-lead ECG
  - Capillary blood glucose
  - Fundoscopy (for hypertensive and diabetic retinopathy)
- Further investigations:
  - Bloods (FBC, U&Es, lipids, ESR/CRP, glucose and HbA1c, thrombophilia screen if indicated)
  - Arterial duplex
  - Angiography