Prepare patient

- Introduction
- Position semi-recumbent at 45°
- Whole chest exposed

General Inspection

General signs:

- Cachexia, dyspnoea, cyanosis

Syndromes:

- Down (AVSD), Marfan's (Ao), Turner's (PS)

Other relevant diseases:

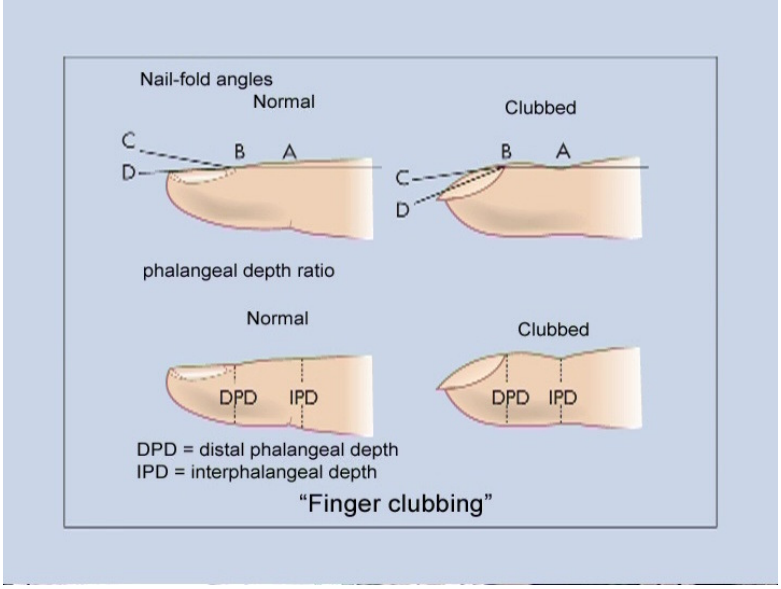
- Acromegaly, ankylosing spondylitis (AR)

Hands

Peripheral cyanosis

Clubbing (many causes including):

- Cyanotic congenital heart disease
- Infective endocarditis
- Atrial myxoma
- Lung Ca
- Chronic lung suppuration
  - Lung abscess or empyema
  - Bronchiectasis or CF
- Idiopathic pulmonary fibrosis
- Pleural mesothelioma
- Asbestosis
- IBD
- Cirrhosis
- Coeliac disease
- SB lymphoma
- Thyrotoxicosis (acropachy)
- Idiopathic/familial
- Rarely:
  - Pregnancy
  - 2° Hyperparathyroidism



Stigmata of endocarditis

- Splinter haemorrhages
- Osler (painful) nodes & Janeway (painless) lesions

Xanthomata

Arm

Radial Pulse

- Rate & rhythm. Compare left with right. Also feel for radio-femoral delay (coarctation).

Brachial BP

- Pulsus paradoxus – exaggerated drop (≤10mmHg) in sysBP (& ↑HR) on inspiration. Measured as BP diff between return of first intermittent sounds (K1 expiration 'thuds') & regular K1 'thuds' (expiration & inspiration). E.g. asthma, pericarditis, pericardial effusion.

Face

Malar flush (MS, PS)

Eyes

- Sclerae/Conjunctivae – comparative pallor (anaemia), jaundice
- Xanthelasma
- Argyll Robertson pupils (AR - small accommodating but not light reactive pupils, syphilis.)

Mouth

- Cyanosis
- High arched palate (Marfan's)
- Dentition (risk of endocarditis)

Neck

JVP

- CVP vertical height (norm≤3cm) above sternal angle (~5cm above R atrium when at 45°)
- Wave form e.g. cannon a waves (3°HB) , giant a waves (TS), large v waves (TR)
- Abdominojugular reflex – a sustained JVP rise during 10s mid-abdo pressure → RVF/LVF

Carotids

- Bruits: carotid, thyroid, AS
- Pulse character & volume
    - AS (small vol, slow rising, anacrotic)
    - AR/PDA/hyperdynamic (collapsing),
    - HOCM (jerky)

Praecordium

Inspect

- Scars
- Pacemakers
- Deformity – pectus excavatum (Marfan's)
- Visible pulsations

Palpate

- Apex beat – not palpable in 50%. NB May be on R in dextrocardia.
    - Position (usually 5ics 1cm medial to mcl, felt over area of 20c coin)
    - Character – heaving (pressure loaded, AS or HT), thrusting (volume loaded, MR), dyskinetic, double impulse (HOCM), tapping (of 1st HS - MS or rarely TS)
- Abnormal pulsations
    - LSE: parasternal heave (RV or LA enlargement)
    - Horizontally at base of heart for thrill (palpable murmur)

Auscultate

Heart sounds - Listen with bell & diaphragm, starting at apex/mitral area

- Loud S1: MS, tachycardia, short A-V conduction time
- Soft S1: MR, 1°HB, LBBB
- Loud S2: HT, congenital AS, pulm HT
- Soft S2: Calcified AV, AR
- Splitting of S2:
    - Increased: inspiration & RV emptying (RBBB, PS, VSD, MR)
    - Fixed: ASD
    - Reversed: delayed LV emptying (LBBB, AS, coarc, large PDA)

- S3: Mid-diastolic gallop rhythm. Rapid diastolic filling. Maybe normal in children/young adults. Louder LSE (RVF) or apex (LVF)
- S4: Late diastolic gallop rhythm. ↓Ventricular compliance. LV S4 (AS, MR, HT, IHD, elderly), RV S4 (pulm HT, PS)
- Opening snap: MV in MS soon after S2 in diastole before murmur
- Systolic ejection click: Early systole in congenital AS or PS before murmur
- Non-ejection systolic clicks: MVP, ASD, Ebstein's anomaly
- Prosthetic valve sounds

Murmurs – Grade 1 to 6

- 4icsmcl (MV), 2icsRSE (AV), 2icsLSE (PV), 5icsLSE (TV)
- If systolic murmur ?radiates above clavicle to carotid
- If diastolic murmur ?radiates to axilla
- Pansystolic: MR, TR, VSD, aortopulmonary shunt
- Ejection systolic: AS, PS, HOCM, coarc, pulm flow murmur of ASD
- Late systolic: MVP, papillary muscle dysfunction (IHD, HOCM)
- Early diastolic: AR, PR
- Mid-diastolic: MS, TS, atrial myxoma, Austin Flint of AR
- Continuous: PDA, venous hum, aortopulmonary shunt

Other sounds

- Pericardial rub, mediastinal crunch (Hamman's sign)

Reposition patient

- Left lateral position – ?tapping apex beat palpable or mid-late diastolic murmur of MS
- Sitting forward
    - Recheck for thrill
    - Consider dynamic auscultation
        - Respiratory phases – R side murmurs louder on inspiration, L on expiration.
        - Held deep expiration - enhances AR murmur & pericardial rub
        - Valsalva – murmurs of HOCM louder & MVP longer
        - Isometric exercise – most murmurs louder except AS & HOCM
        - Squatting - AS & MR louder

Posterior chest/Lungs

Inspect

- Scars, deformity

Palpate

- Sacral oedema

Percuss

- Pleural effusion (stoney dullness)

Auscultate

- LVF (bilateral inspiratory creps)

Abdomen

Position

- Lie flat

Palpate

- Liver - ?pulsatile (TR), spleen (IE), AAA

Percuss

- Ascites

Ausculate

- Renal arteries

Legs

- Palpate & auscultate femoral arteries
- Feel peripheral pulses – DP & PT
- Cyanosis
- Oedema – press for 5-15s: ?pitting
- Toe clubbing
- Signs of PVD - cold extremities, trophic changes, ulceration, Buerger's test
- Xanthomata – Achilles tendon
- Calf tenderness - ?DVT
- Varicose veins:
    - Trendelenburg test: elevate leg of supine patient, pressure over femoro-saphenofemoral junction, stand patient. If veins don't fill then only SFJ incompetence. If veins fill despite pressure then thigh or calf veins are incompetent and perform Perthes' test.
    - Perthes' test: Rpt Trendelenburg test but let just a little blood into veins. Then get patient to stand up & down on tip-toe a few times. If calf veins competent then muscle pump will reduce venous filling.

Other:

Fundi & Urine (IE)
Recent CXR

Killip Class for (left) heart failure based on examination:

- I: No evidence of heart failure
- II: Mild. Basal crackles & sysBP≥90mmHg
- III: Pulmonary oedema, creps>1/3 of chest & sysBP≥90mmHg
- IV: Cardiogenic shock, creps>1/3 of chest & sysBP<90mmHg