Cardiovascular System Examination

1. **Introduction** and orientation; name, role and consent.

2. Develop **rapport** (and wash hands?).

3. Ask patient if they have any **pain** or tenderness anywhere.

4. Appropriately **expose** the patient and sit them at 45°.

5. **General inspection;**
   a. **Surroundings** – GTN, O₂, cigarettes, ECG.
   b. General **appearance** – colour, pain, oedema, dyspnoea, body mass, syndromes.
   c. Level of **consciousness**

6. Examination of the **hands**;
   a. **Peripheral cyanosis** (colour, temperature and sweat).
   b. **Clubbing** (cyanotic congenital heart disease, infective endocarditis, atrial myxoma).
   c. **Splinter haemorrhages** (5+ on one hand is significant. Check occupation. May suggest infective endocarditis).
   d. **Capillary refill time** (press for 5secs).
   e. **Tendon xanthomata** (fatty deposits in tendons - hyperlipidaemia).
   f. **Anaemia** (check palmar creases for colour).
   g. **Osler’s nodes** (painful swellings on tips of fingers, suggestive of infective endocarditis).
   h. **Janeaway lesions** (small red pimpls on pulps of hands. Differentiated from Osler’s by; being painless and blanching on compression).
   i. **Tar stains** (white fatty deposits on palms).
   j. **Rheumatoid signs** (ulnar deviation, swan neck and suggestive of multi-system disease).

7. Examination of the **radial pulse**;
   a. **Rate and rhythm** (norm. rate is 60-100bpm. Irregularly irregular suggests AF. Regularly irregular suggests second degree heart block).
   b. **Radio-radial delay** (delay of L radial compared to R – coarctation of the aorta proximal to the L subclavian artery).
   c. Say would check **radio-femoral delay** (coarctation of the aorta).
   d. **Collapsing pulse** (water-hammer – aortic regurgitation, patent ductus arteriosum).

8. Examination of the **brachial artery**;
   a. Say would take **blood pressure**:
      i. Both **sitting and standing** (>15 / 20 ?mmHg difference – orthostatic / postural hypotension).
      ii. In **right and left** arm (>10 ?mmHg difference is a sign of aortic dissection or coarctation of the aorta. Make a note to always use the arm that gives the higher reading).
9. Examination of the **carotid artery**;
   a. Assess **character and volume**.
   b. Low volume, plateau pulse and slow rising (aortic stenosis).
   c. Rapid upstroke and downstroke (aortic regurgitation).
   d. **Auscultate** for bruits, moving the diaphragm up the artery (atherosclerosis, aortic stenosis).

10. Examination of **JVP** (jugular venous pressure);
    a. Measure **vertical height** (cm) from sternal angle to top of jugular venous pulsation. Norm. is 7mmHg, –no more than 4cm above s.a..
    b. If difficulty finding JVP, apply abdominal pressure for 5-10secs (**hepatojugular reflux**) to amplify its presence.
    c. Can be distinguished from the carotid pulse commonly by its double-peaked wave form (right atrial contraction & atrial filling during ventricular systole) and also by palpation.
    d. Elevated JVP in **R-sided HF**, PE, pericardial effusion / constriction and sup. vena caval obstruction. Altered wave pulsation in – AF, tricuspid stenosis / regurgitation, complete heart block. (NB. Can also be elevated in pregnancy, fluid overload hypertension, Kassmauls sign – cardiac tamponade)

11. Examine the **face**;
    a. **General**;
       i. **Colour, temperature, sweat**.
       ii. **Malar flush** (cheeks – mitral stenosis).
       iii. **Syndromes** – Marfan’s, Down’s.
    b. **Eyes**;
       i. **Corneal arcus** (cholesterol crystals in periphery of cornea. In young associated with hypercholesterolaemia, association weakens with age –arcus senilis).
       ii. **Xanthelasma** (hyperlipidaemia).
       iii. **Anaemia** (bottom eyelid).
       iv. **Jaundice** (sclera).
    c. **Tongue**;
       i. **Central cyanosis** (under tongue).
       ii. **Dentition** (infective endocarditis).

12. Examine the **chest**; **(NB. Dextrocardia possible!)**
    a. **Inspection**;
       i. **Scars** (sternotomy, valvotomy) or dilated veins.
       ii. Visible **pulsation / heaves**.
       iii. **Pectus excavatum** (Marfan’s syndrome).
    b. **Palpation**;
       i. Feel for **apex beat**. (5th intercostals space, midclavicular line, not position and character).
       ii. Feel for **heaves** (flat of hand over sternum –R-HF, mitral stenosis, pulmonary hypertension).
       iii. Feel for **thrills** (side of hand horizontal under left clavicle –aortic / pulmonary stenosis).
    c. **Auscultation**;
       i. **First screen**; whilst palpating CA, listen in all 4 regions with both bell and diaphragm, noting no. of heart sounds (s3 norm. in most cases, s4 always abnorm.) and any additional sounds.
       ii. 4 Regions – Aortic (2nd ICS, RSE), Pulmonary (2nd ICS, LSE), Tricuspid (4th ICS, LSE, pt leaning forward, breath held in exp.).
Mitral (4th ICS, MCL). Also Mitral regurg. (pt on L side, listen medial to axillary line), apex (5th ICS, MCL).

iii. If suspected murmur, go back and check.

iv. Describe as;
   1. systolic / diastolic.
   2. ejection / pan-systolic.
   3. high / low.
   4. grade 1-4.
   5. influence of respiration (L sided murmurs are increased on expiration and R sided decreased).
   6. radiation (carotids in aortic stenosis, axilla in mitral regurg.).
   7. influence of rolling on L side (mitral stenosis at the apex).
   8. on sitting forward in expiration (aortic regurg. and stenosis).

13. End pieces;
   a. Auscultate lung bases (crackles, pleural effusion).
   b. Fundoscopy (hypertensive retinopathy, diabetic retinopathy).
   c. Examine for pitting oedema peripherally (sacral and ankle oedema), ascites.
   d. Examine peripheral pulses (femoral, pedal) and perfusion.
   e. Palpate for signs of hepatomegaly and splenomegaly (R-HF).

14. Wash hands.

15. Write up findings in the notes and discuss findings / next step with patient.

Note
These notes were written by Idunn Morris, as a medical student in 2008. They are presented in good faith and every effort has been taken to ensure their accuracy. Nevertheless, medical practice changes over time and it is always important to check the information with your clinical teachers and with other reliable sources. Disclaimer: no responsibility can be taken by either the author or publisher for any loss, damage or injury occasioned to any person acting or refraining from action as a result of this information.