**CARDIOVASCULAR EXAMINATION**

1. **INTORDUCTION AND CONSENT**

* Might be to parents depending on age of the child
* Ask child’s name and age

1. **ADEQUATE EXPOSURE**

* Correct exposure may be difficult especially if the child is in the parent’s arm
* DO NOT take the child from the parent in the case of a small child
* Best to exam small children in the position that you find them (<7)
* Sitting up is actually ideal
* Tell the patient what you are going to do. Don’t ask patient to ‘do’, you do!
* >7 years can place in anatomical position

1. **INSPECTION**

* Observe from the foot of the bed
* Affect and state of wellness
* **Supportive therapy** – O2 (how many litres) via facemask, nasal cannula, O2 tanks, IV, wheelchair
* **Nutritional status** – skin and hair changes, muscle (wasting) and fat
  + Must ask for patient’s age, weight, height
  + Appears small for age
* Degree of **Cardio-Respiratory Distress**
  + RR, Flaring Alae Nasi, Subcostal Recession, Intercostal Recession, Use of accessory muscles, Tracheal Tugging
  + Normal respiratory Rates:
    - Neonates <60
    - 1-12 months <50
    - 1-5 years <40
    - 6-8 years<30
    - > 8 years <20
* Comment on noisy respiration if present
  + Wheeze (could suggest cardiac failure)
* Must stoop at the foot of the bed and look for an active precordium
* **Type and pattern of breathing** (thoracic, thoracoabdominal or abdominal-mainly)
* Look for splinting especially in Sicklers
* Physique- Deformities and proportions and Scars
  + Chest wall abnormalities
  + Posture- squatting position in children with Tetralogy of Fallot
  + Dysmorphic features (know these!)
* Head Shape, Back, Skin-striae (long term corticosteroid use), Tanner Stage, Abnormal movements, Gait, Posture, Wasting, Puffy face (oedema), Joints (MS)
* Look for any swelling of the legs
* Irritability may be a sign of cardiac failure

1. **PALPATION**

* Start with peripheries: **Hands** (warm or not)
  + Pallor/Plethora/Pink – capillary refill RED
  + Cyanosis - peripheral cyanosis WHITE
  + Icterus (Jaundice) YELLOW
* Clubbing: loss of the nail bed angle and fluctuance
* Janeway lesions, Tender Osler nodes and Splinter haemorrhages under nails (IE)
* Hands warm and sweaty (autonomic stimulation), clammy and cold (hypotension and shock)

**You are given the BP and Pulse Rate in the exam. ASK!**

* Comment on Rhythm, volume and character of pulse
* Start with Brachial pulse
* Radial and Radioradial synchrony
* Assess Femoral pulses
* Femoral and Radiofemoral delay
* Collapsing pulse- release fingers until you can just feel the pulse, elevate patient’s arm and if you feel the pulse hitting against your finger as you are coming back, then it is a collapsing pulse
* Narrow vs. Wide Pulse pressure
* **JVP**- can differ just make sure you say it!
  + Measure from sternal angle to point of pulsation (>4cm Abnormal or >8cm)
* Leave eyes, mouth and trachea till last if necessary (may need to do auscultation first with patient in parent’s arms – make use of crying to listen and palpate). If child is cooperative palpate first!
  + **Eyes:** Mucous membranes, pallor, hydration, Jaundice (Icterus)
  + **Mouth:** Central Cyanosis, Hydration, Dental Caries (can predispose to IE)
* **Lymph Nodes**
  + Don’t forget epitrochlear, axillary (can leave for last, ensure you say it to consultant)
  + Examine anterior nodes from the back, Posterior nodes from the front
* **Trachea (Suprasternal notch)**
  + Check for centrality (deep palpation) 🡪 do not cause undue discomfort to patient
  + If there is a thrill = Aortic Stenosis
* **Precordium**

1. **Apex Beat**
   1. Tapping. Thrusting, Heaving, Normal
   2. Normally in left 5th ICS in MCL, attained by age 8 years (starts at age 5 years)
   3. Displaced: Cardiomegaly, scoliosis, depression of sternum
2. **Thrills = Murmur (atleast Grade 4)**
   1. Palpate at Apex, Upper Left Parasternal Edge, Across)
   2. If present- systolic or diastolic (palpate carotid, with carotid pulse = systolic, after pulse = diastolic)
   3. Whereever you best feel the thrill is likely where the murmur is loudest
3. **Left Parasternal Heave**
   1. Right Ventricle or Left Atrium
   2. ASD, RVH, Pulmonary Stenosis
4. **Palpate P2**
5. Palpate in 2nd LICS
6. Pulmonary HTN
7. **AUSCULTATION**

* Listen over entire precordium
* Remember to keep your finger on the carotid pulse to time the murmur
* Start at the Apex, then LLSE, ULSE
* Remember to listen at the axilla and ask patient to turn on the side
* Ask patient to sit up and lean forward, listen at URSE (2nd intercostal space), then over to the ULSE – Ask patient to take a deep breath in
* Auscultate lung bases
  + Basal crepitations (LV failure) and pleural effusion
* Listen for Bruits over the carotids

**Sacral oedema**

**May do lymph nodes here with patient already sitting up, just dependent on patient**

**Abdomen**

* Palpate liver and percuss
* Measure liver
* Pulsatile liver
* Palpate spleen

**Legs**

* Check toes for clubbing, pallor, capillary refill
* Dorsalis pedis bilaterally
* Pedal Oedema

**Cover and thank the Patient**