

Revision Notes on Cardiovascular Examination:

1. On approaching a child:
Around room Oxygen tank (pulm HT); Saturation monitor
View from Distance
 - Nutritional status: 'I would like to plot his height and weight on a growth chart'
 - Work of breathing: Respiratory rate, recessions
 - Cyanosis
 - Dysmorphism – top 3 syndromes: Down's Williams, Digeorge
Other possible syndromes related to CVS: Turner's, Noonan's

2. Finger: Clubbing
Peripheral cyanosis
Splinter haemorrhages
Capillary refill

Hands: Janeway lesion
Osler nodes
Tuberous and tendon xanthomas of familial hypercholesterolaemia

Bony abnormalities: Absent Radii (VACTERYL Syndrome)
Absent Thumb (Holt-Oram Syndrome)

Pulse- Radial and brachial
HR (Count, rhythm, character) – count over 6 sec X10
Blood pressure
Radio-radial delay
Radio-femoral delay

Note: if cannot feel pulses – say '*pulses are difficult to feel*'

3. Face:
Eyes: Sclera – Jaundice (Congestive cardiac failure → Hepatic congestion)
Conjunctive – Pallor (Anaemia)

Face: Mitral flush / malar flush
Polycythaemia (Cyanotic heart disease → Increased haematocrit)

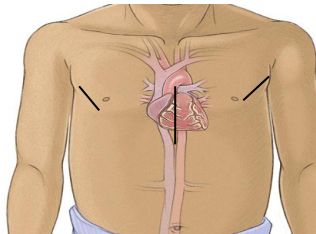
Tongue: Central cyanosis (Right to left shunt/ Inadequate oxygenation in lungs)
Lips/oral mucosa: Pallor
Teeth: Dental Caries
Palate: High arch palate (Marfan's)
Conjunctival injection and gum hypertrophy = chronic cyanosis

4. Neck:
JVP : Only in older children: Right heart failure, fluid overload)
Suprasternal notch : thrill in aortic stenosis

5. Praecordium

Inspection:

1. Scars: Back scars
Front scars
 - See notes in blue for more information on scars
2. Visible pulsations (hyperdynamic apex beat)
3. Chest wall deformity
 - Anterior bulge chest (cardiomegaly)
 - Harrison sulcus (Increased pulmonary blood flow / asthma)
 - Asymmetry
4. Respiratory rate



Right thoracotomy scar

A. Cardiac causes

1. BT shunt
2. PA banding

B. Noncardiac causes

1. Thoracotomy
2. Lobectomy
3. Oesophageal surgery (tracheoesophageal fistula repair)
4. Congenital diaphragmatic hernia repair (scar may migrate up)

Left thoracotomy scar

A. Cardiac

1. BT shunt (old fashioned - no pulse on ipsilateral side; new fashioned: pulse present)
2. PA banding
3. PDA ligation
4. Coarctation of aorta repair

B. Non cardiac

1. Thoracotomy
2. Lobectomy

Midline sternotomy scar

- Complex cardiac surgery
- Any bypass surgery
- PA banding

Chest drain scars

Mediastinal drains

Chest wall pacemaker

Messy median sternotomy scars If no murmurs: differential includes hypoplastic left heart syndrome due to Norwood 1, 2, 3.

Scars for Tetralogy of Fallot

Left or right thoracotomy scars in association with pulse on corresponding side

If bilateral thoracotomy scars -- failure of one shunt and the need for second shunt procedure

Central sternotomy scar indicates definitive repair carried out - Child may not be cyanosed, but may still have right ventricular outflow stenosis

Notes on Cardiac Procedures

1. Repair: VSD, ASD, Tetralogy of Fallot repair
2. Palliative:

A. Temporary:

BT shunt (to allow for pulmonary blood flow, encourage deviation of pulmonary tree)

PA banding (prevent overloading of the pulmonary circulation pending repair of large VSD)

Atrial septostomy (transposition of great arteries)

Palpation

1. Apex Beat (Use both hands to feel both sides)

a) Site

Displaced to left: Cardiomegaly, pectus excavatum, scoliosis

Displaced to right: Congenital dextrocardia (feel for liver- Kartagener syndrome),
Left diaphragmatic hernia,
Collapsed lung on right,
Left pleural effusion,
Left pneumothorax

b) Character: Sustained

Forceful (LVH)

Thrusting : Volume overload (Large stroke volume ventricle in mitral/aortic incompetence, or left to right shunt)

2. Left parasternal heave → Right IVH / RV outflow tract obstruction

3. Thrills:

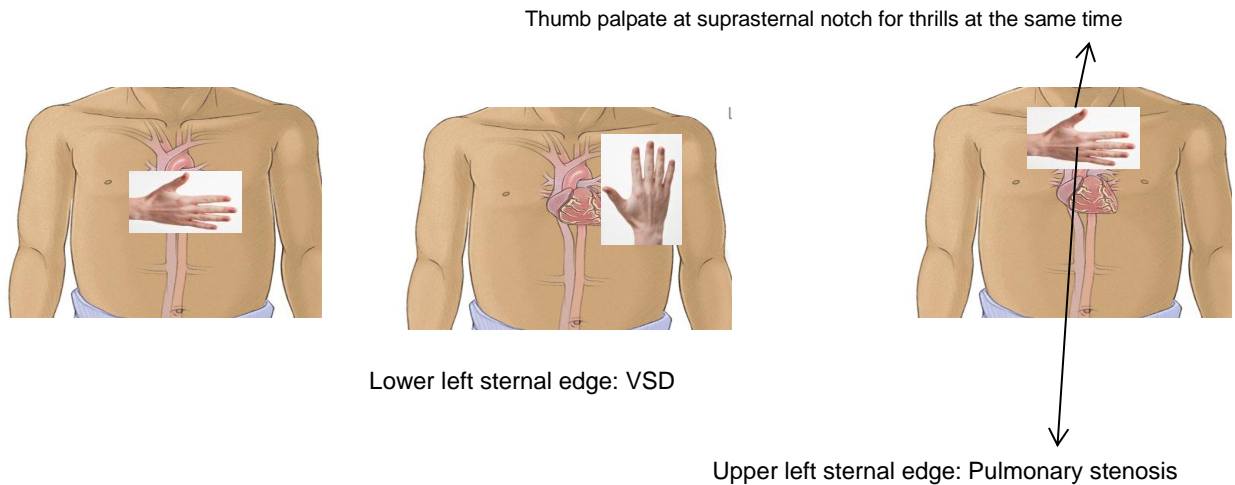


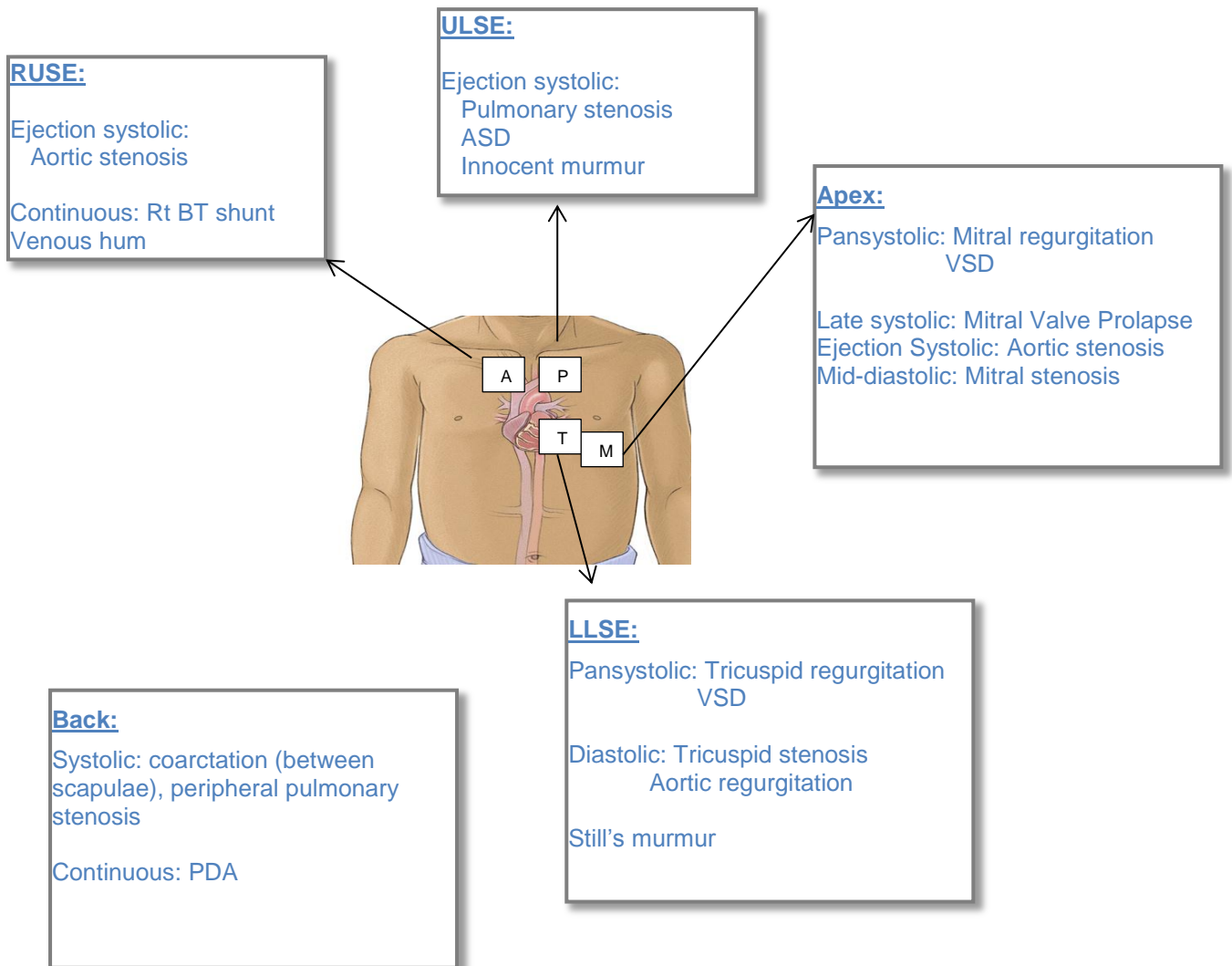
Image source: <http://www.childrenshospital.org/health-topics/procedures/heart-transplant>

<http://en.wikipedia.org/wiki/Hand>

Auscultation:

Auscultate areas:

1. Mitral area (Apex area) → Tricuspid area (LLSE) → Pulmonary area (LUSE) → Aortic area (RUSE)
2. Also auscultate- Axillary area (if there is murmur at Apex or LUSE)
 - Back (if there is murmur at LUSE)
 - Neck (if there is murmur at RUSE)
3. Base of lungs for inspiratory crepitation in cardiac failure



5 types of normal murmur:

1. Still's murmur (LLSE)
2. Pulmonary flow murmur
3. Venous hum
4. Supraclavicular/ carotid bruit
5. Neonatal physiological peripheral artery stenosis murmur

Innocent murmur do not radiate

Pulmonary stenosis murmur radiate to the back and axilla

Mitral regurgitation radiates to left axilla

To differentiate aortic stenosis from pulmonary stenosis:

Murmurs louds in expiration → Left heart disease → Aortic stenosis

Murmurs loudest in inspiration → Right heart disease → Pulmonary stenosis

Anything else?

I would like to complete my cardiovascular examination by:

1. Feeling for hepatomegaly
2. Feeling for femoral pulses and looking for scars on inguinal area for cardiac catheterisation/ arterial lines
3. Measure blood pressure and oxygen saturation (if not mentioned earlier)
4. Measure height and weight and plot on growth chart appropriate for age and size
5. Feeling for peripheral and sacral oedema
6. Auscultate lung bases (if not done earlier)

Conclusions:

Don't panic. Speak sense

When you present: Rather than describing your entire examination in detail, please present the salient points:

1. Cyanosis/Pink
2. Stable/not in respiratory distress
3. Clubbing
4. Scars
5. Heart sounds I + II + murmur (grade)

Example of presentation:

I examined Peter, a 7-year-old boy who looks well-grown for his age and I would like to plot his height and weight on a growth chart.

He is pink and not in respiratory distress. There are no dysmorphic features or finger clubbing. There are no scars on his chest. There is a palpable thrill at his suprasternal notch. He has a grade 3/6 ejection systolic murmur at right upper sternal edge radiating to carotid area.

He has left ventricular outflow obstruction such as aortic stenosis.