

## Paediatric Heart Murmurs

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### Background:

- Amongst newborns the prevalence of heart murmurs is 0.6% to 4.2%
- Heightened precaution must be taken, as of the 1% of newborns that present with an asymptomatic murmur, 25% may demonstrate structural heart disease
- An estimated 90% of infants and children are thought to have a murmur at some point within their childhood
- However, among such paediatric cardiac murmurs, less than 1% are driven by congenital heart disease
- The association of murmurs with heart disease is higher in infants, decreasing with age

### Assessment

#### History

The following are recognised associations with congenital heart disease, as age appropriate, should be explored:

- **Antenatal:** prematurity, multiple pregnancies, intrauterine infections, concerns on foetal echocardiography
- **Maternal Diseases:** Diabetes Mellitus, SLE, assisted fertility
- **Cardiology:** syncope, chest pain, cyanosis
- **Respiratory:** shortness of breath, chronic cough, asthma like symptoms, poor feeding in infants
- **General Status:** poor feeding in infants with failure to thrive, exercise intolerance, excessive sweating while feeding
- **Past History:** e.g. Rheumatic fever, Marfan's syndrome
- **Syndromes:** e.g. Downs syndrome, Marfan's syndrome, Edwards syndrome
- **Family History:** e.g. congenital heart disease, sudden death, hypertrophic cardiomyopathy
- **Maternal drugs:** e.g. warfarin, alcohol, anti-convulsants and retinoic acid

### Physical examination

- Consider patient age and timing of onset
- Growth failure (Red book)
- Observations: HR, RR, O<sub>2</sub> saturations (In neonates – preductal sats on right hand and post ductal sats on a leg), blood pressure (4 limb BP in newborns)
- Inspection: cyanosis, respiratory distress, sweating, dysmorphic features, visible apical/parasternal impulse
- Peripheral pulses: bilateral check of radial, brachial and femoral pulses (rate, rhythm, delay, weakness)
- Praecordium: murmur – systolic/diastolic, site, duration, intensity, radiation, presence of heaves or thrills, displaced apical impulse
- Respiratory – basal crackles
- Abdomen – hepatosplenomegaly
- Extra-cardiac abnormalities: congenital skeletal anomalies of limbs or vertebrae and renal anomalies

### Features of innocent murmurs

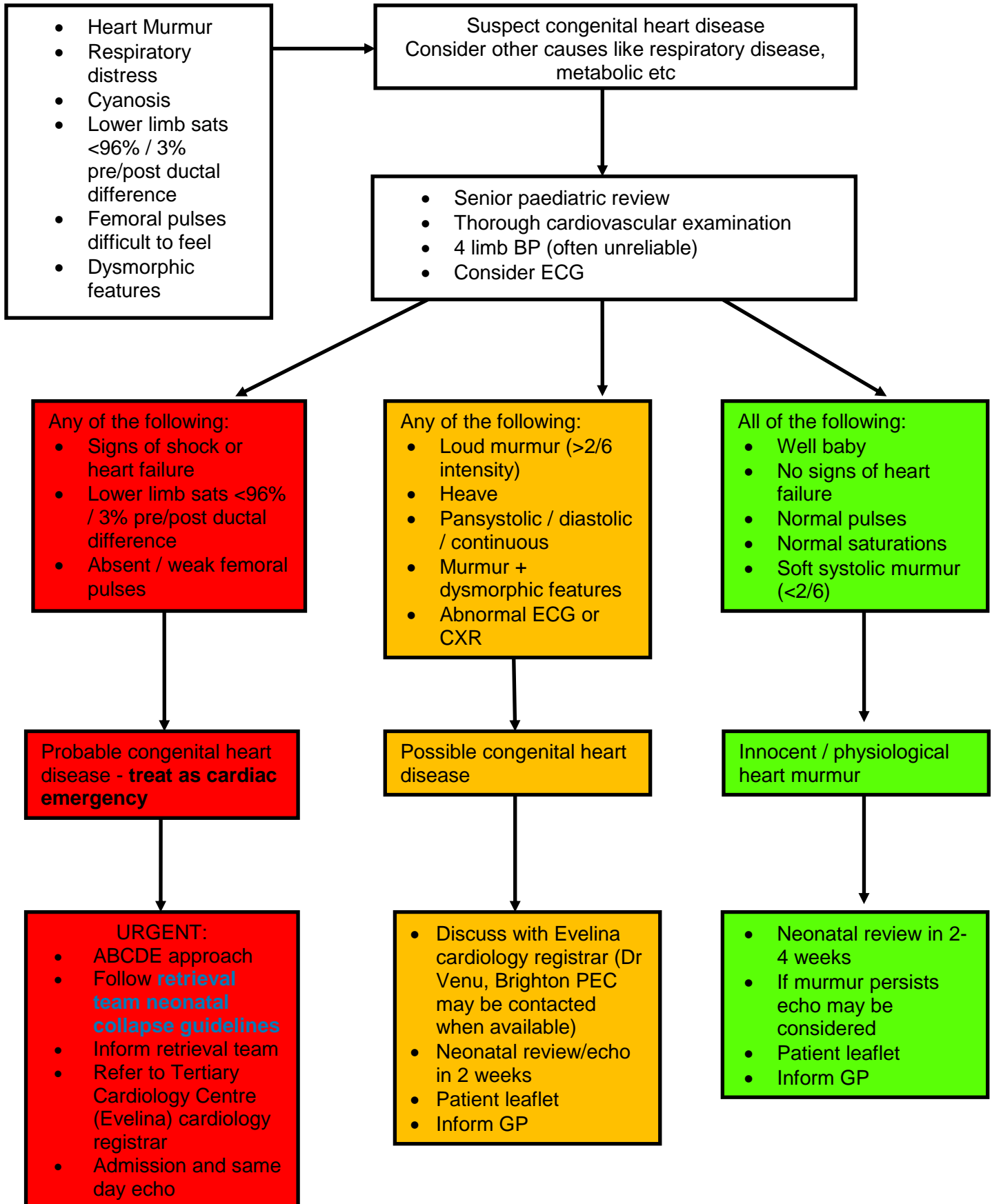
- Sensitive – alters with child's position
- Short duration – not holosystolic
- Single – no associated clicks/gallops/rub
- Small – murmur confined to small area, does not radiate
- Soft – low amplitude, grade 1/2/3
- Sweet – not harsh sounding
- Systolic – occurs during and is limited to systole
- Normal vitals, pulses and oximetry

### Investigations:

- **ECG** – in trisomy 21 the ECG helps to diagnose ASVD. In other children, its role is minimal, but often routinely performed. It is a key component of cardiac evaluation for symptomatic heart murmur/disease patients.
- **Echocardiography**: the gold standard investigation to diagnose heart disease. Its immediate or routine outpatient use depends on the clinical status of the patient and availability of a competent ultrasonographer.
- **CXR**: there is no evidence for routine use of CXR in asymptomatic heart murmurs. May be useful in differentiating cardiac (CXR findings: cardiomegaly, pulmonary oedema and vascular congestion) from pulmonary disease in symptomatic patients.



ALGORITHM IN NEONATES





ALGORITHM IN CHILDREN

