**Approach to Heart Murmurs**

### History
- FTT, FHx
- Dyspnea, palpitations
- Exercise intolerance
- Dizziness, syncope
- Chest pain on exertion

### Physical Exam
- Vital signs
- Cyanosis
- Clubbing
- Weak/absent femoral pulses
- Pulses and capillary refill
- ↑ precordial activity
- Dysmorphic features
- Hepatomegaly

### Auscultation

#### Innocent
- Physiologic, no heart disease
- Systolic — timing —
- Soft/vibratory — quality —
- Grade II or less — intensity —
- Exercise, anemia, fever — louder with —
- NO extra sounds — other sounds —
- Normal S2 (physiologic split on inspiration)

Must have **ALL** features to be an innocent murmur

**Pathologic**
- Underlying heart disease
- Diastolic, holosystolic
- Harsh
- Grade III or higher (possible thrill)
- Usually NO change with position
- Click or opening snap, S3, S4
- Fixed split S2

**Refer to a pediatric cardiologist when there is...**

- Suspected **pathologic** cause or lingering **uncertainty**
- FHx of **congenital heart disease** in 1st degree relative
- FHx of **Marfan** syndrome or **unexplained/sudden cardiac death** in young person
- Known/suspected **chromosomal/genetic** conditions (ex. Trisomy 21)
- **Request** from parents within good reason

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EXAMPLES OF INNOCENT AND PATHOLOGIC MURMURS

**Carotid Bruit**
- 2+ y/o, ≤ ≥
- Short, mid systolic
- Over carotid arteries
- No change w/position

**Cervical Venous Hum**
- 2-7 y/o, R > L side
- Continuous rumbling at sternoclavicular junction
- ↑ w/turning head away from murmur + lift chin
- ↓ w/pressing over jugular vein or supine

**Patent Ductus Arteriosus**
- Any age
- Continuous, “machinery-like”
- Underneath L clavicle
- No change w/position

**Aortic Valve Stenosis**
- Any age
- Harsh, ≤ ≥
- Ejection click
- May radiate to carotid vessels
- No change w/respiration

**Pulmonary Flow murmur**
- Older children/adolescents
- Blowing,
- Early-mid systole
- Low-med pitched
- I, II, or III; ≤ ≥
- Radiates to lung
- ↑ w/supine and inspiration

**Peripheral Pulmonary Stenosis**
- 0-6 mths, common in premature
- Blowing, short
- Mid systolic
- High pitched
- In LUSB, axilla, lung
- No change w/ position

**Atrial Septal Defect**
- Any age
- Radiates to lung
- Med-low pitched
- I, II, or III; ≤ ≥
- Wide fixed splitting of 2nd heart sound
- No change w/position

**Ventricular Septal Defect**
- Any age
- Harsh
- Pansystolic or early-mid systole
- Low-high pitched
- II, III, or IV
- Other cardiac Sx

**Still’s murmur**
- 2-7 y/o
- Vibratory/musical
- Early-mid systole
- Med-low pitched
- I, II, or III
- Louder supine>sitting
- ↓ w/Valsalva

**Pulmonary valve stenosis**
- Any age, ≤ ≥
- Radiates to lung
- Variable early systolic ejection click w/expiration only

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