



Tips in Patient History and Physical Examination

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Cardiac pathology should be suspected in infants with a history of poor feeding, failure to thrive, unexplained respiratory symptoms or cyanosis.



History (cont)

- ▶ **Past medical history**

- ▶ ***Prenatal:***

- ▶ Infection? radiation drugs
antenatal care and ultrasound

- ▶ ***Natal:***

- ▶ Where? When? apgar score

- ▶ ***Post-natal:***

- ▶ when discharged home? why?
first visit when? and who?

History (cont)

- ▶ ***Previous admissions and illnesses***
- ▶ **Medications:**
- ▶ Cardiac non-cardiac
- ▶ who give it
- ▶ **Allergies**
- ▶ Drugs environment
- ▶ **Immunization:**

- ▶ **Nutrition:**

History (cont)

- ▶ **Growth and development:**
- ▶ **Social history:**
- ▶ Income transport home
situation
- ▶ help to mom
- ▶ School
- ▶ **Family history:**
- ▶ Pedigree similar case Cardiac
diseases
- ▶ Impact on the family

Examination

- ▶ **General appearance:**
- ▶ higher functions
- ▶ distress cyanosis pallor clubbing
 dysmorphic features activity monitors lines
- ▶ reaction parents attitude....
- ▶ **Growth chart:**



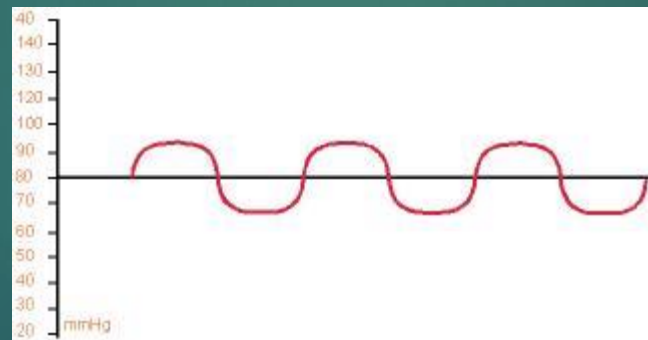
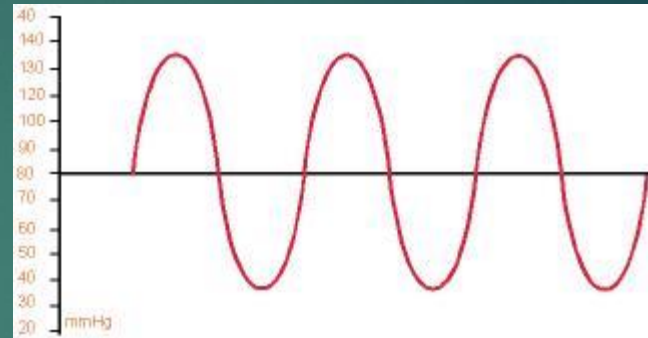
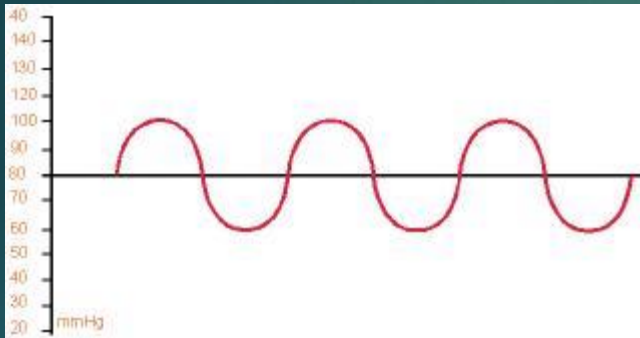
Examination (cont)

- ▶ Vital signs:
 - ▶ Pulse all four limbs:
 - ▶ Blood pressure all four limbs:
 - ▶ Pulse Oxymetry:



Pulses:

Pulses are the result of difference between systolic and diastolic status of the vasculature. Increase in the difference between systole and diastole results in a more pronounced pulse.



Cyanosis:

This is best determined by examining the patient in sunlight. Artificial light may alter patient color.



Clubbing:

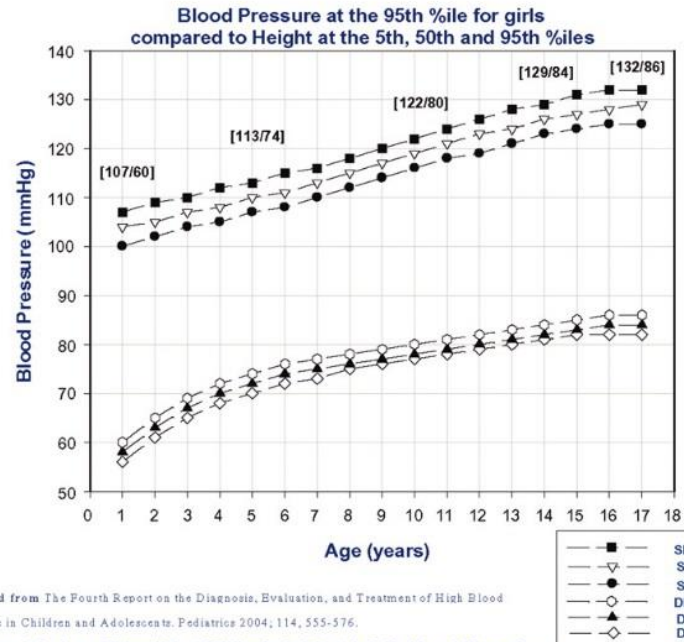
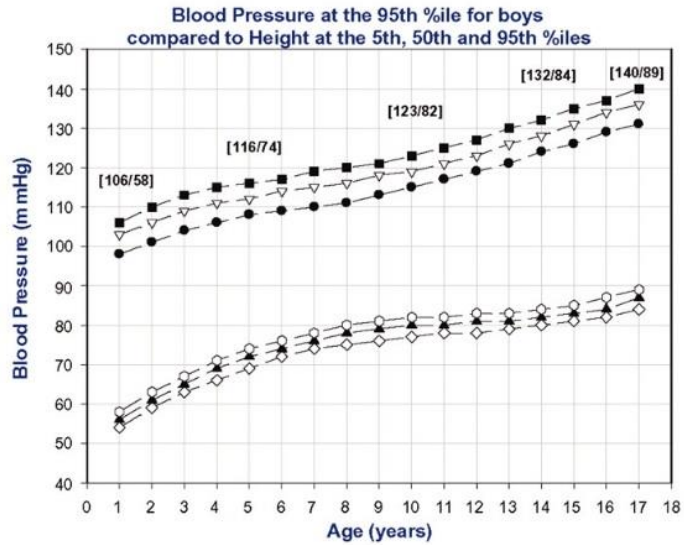
This is enlargement of the tips of digits caused by hypoxia to peripheral tissue due to poor cardiac output and/or cyanosis. Peripheral tissue compensate by forming more capillaries to improve oxygenation, this results in swelling of the peripheries of digits.



Formulas and General Rules Children over 1 year old

Rough Approximations

- ▶ Pulse or Heart Rate HR
 - ▶ Infant Pulse: 160
 - ▶ Preschool Pulse: 120
 - ▶ Adolescent Pulse: 100
- ▶ Systolic Blood Pressure) SBP
 - ▶ Infant SBP: 80
 - ▶ Preschool SBP: 90
 - ▶ Adolescent SBP: 100
- ▶ Respiratory Rate RR
 - ▶ Infant RR: 40
 - ▶ Preschool RR: 30
 - ▶ Adolescent RR: 20



Adapted from The Fourth Report on the Diagnosis, Evaluation, and Treatment of High Blood Pressure in Children and Adolescents, Pediatrics 2004; 114, 555-576.

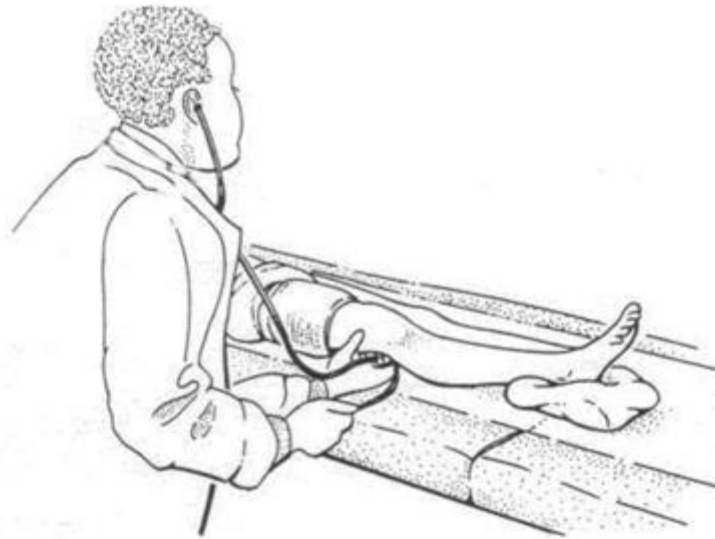
Numbers in [] are BP (mmHg) at 95th %iles for height at 1, 5, 10, 14, and 17 yrs of age

- SBP HT 95th %ile
- △— SBP HT 50th %ile
- SBP HT 5th %ile
- ◇— DBP HT 95th %ile
- △— DBP HT 50th %ile
- ◇— DBP HT 5th %ile

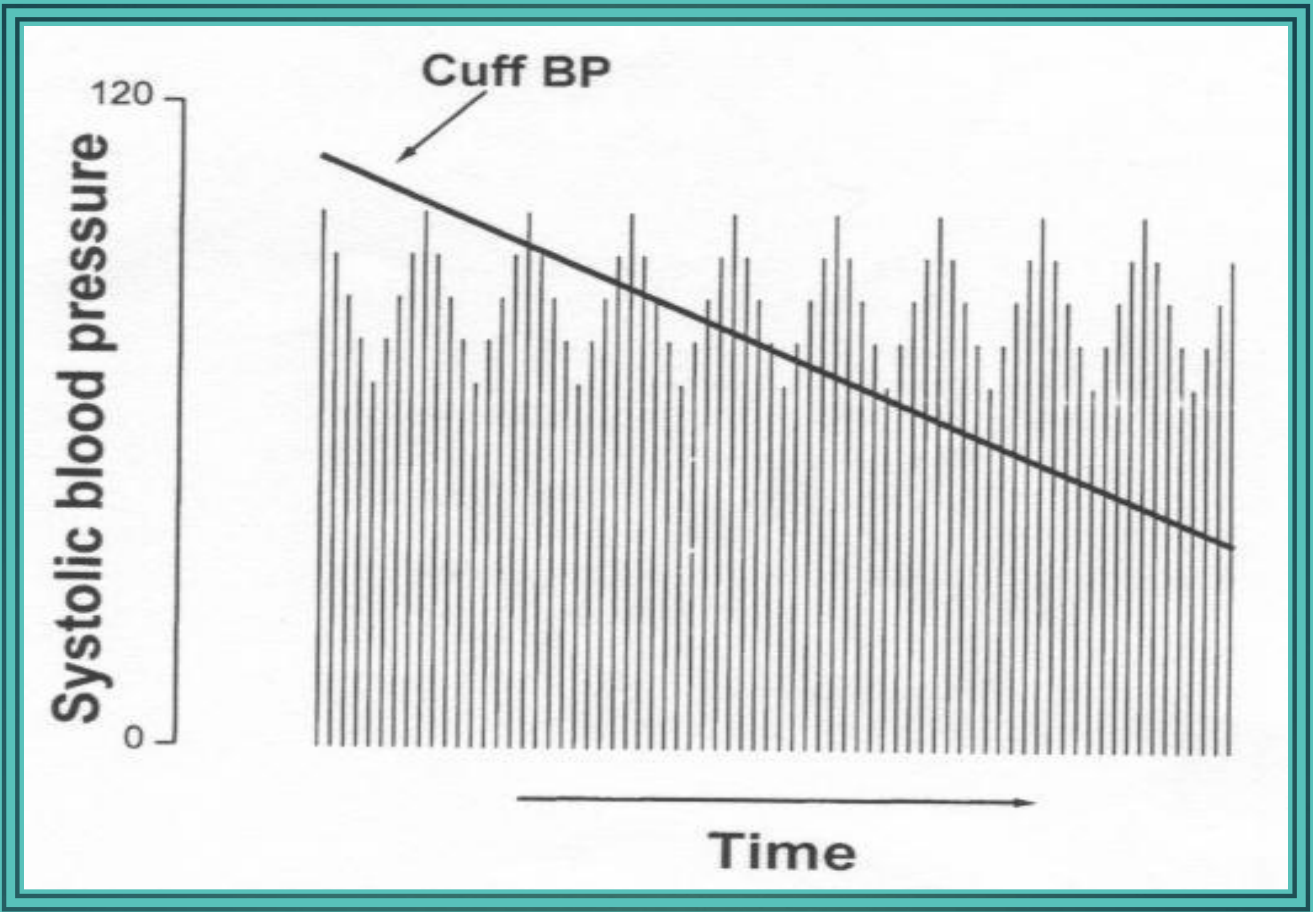




A



B





Examination (cont)

- ▶ **Cardiovascular:**
 - ▶ **Inspection:**
 - ▶ **Palpation:**
 - ▶ **Percussion?**
 - ▶ **auscultation**
 - ▶ 1st and 2nd heart sounds
 - ▶ 3rd (gallop) and 4th
 - ▶ **murmur: site, phase, duration, radiation, intensity, grade**
 - ▶ **clicks**
 - ▶ **bruit: liver, renal, brain**



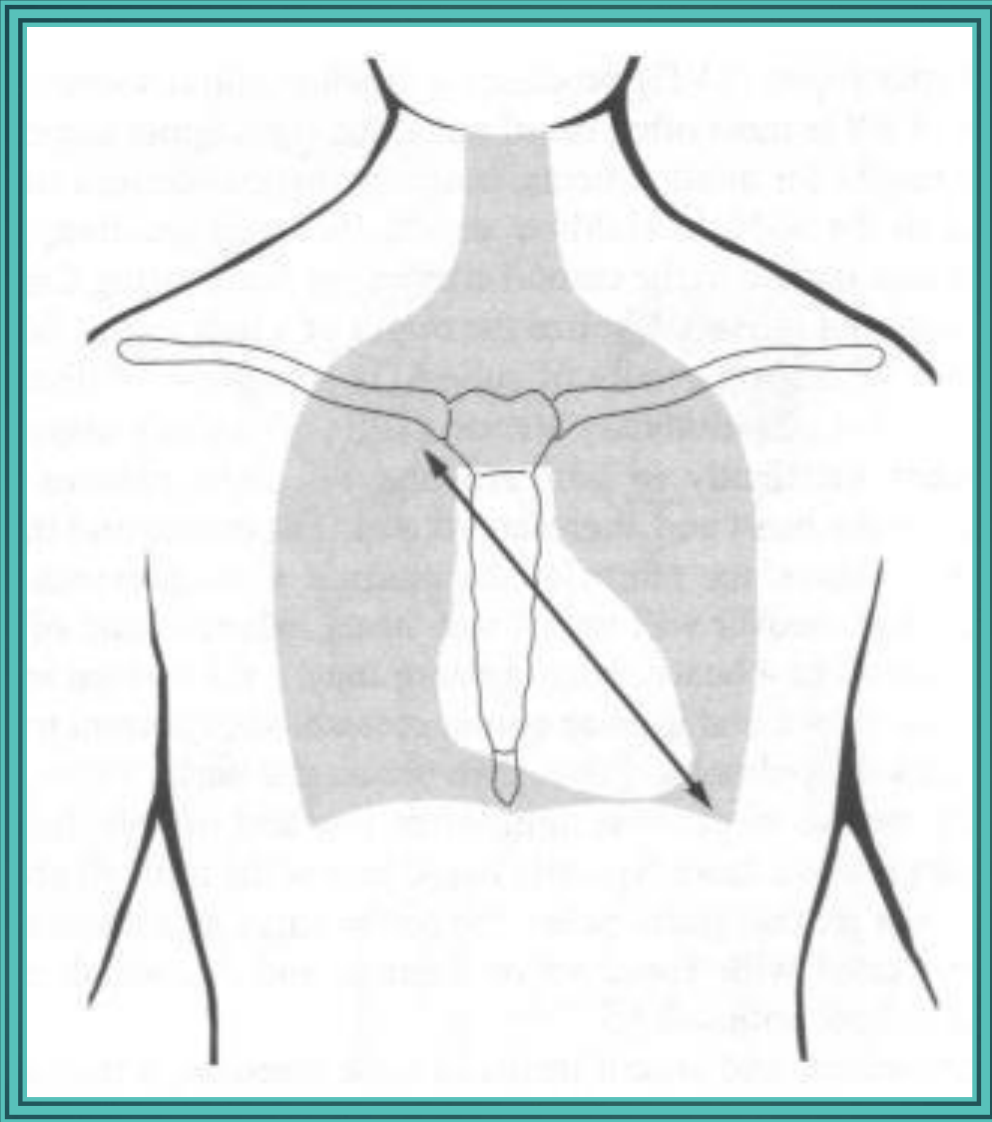


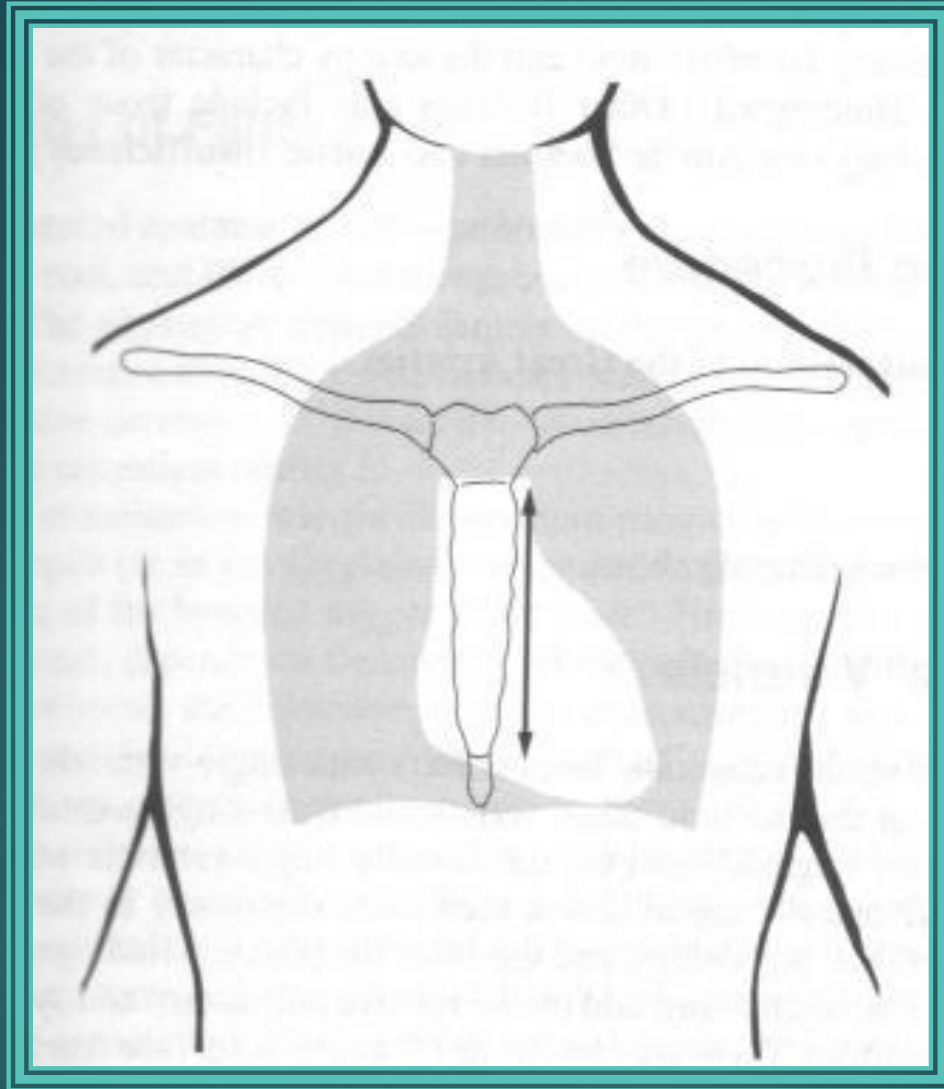
The sounds of a venous hum should disappear when the child is in the supine position, when light pressure is applied over the child's jugular vein or when the child's head is turned.











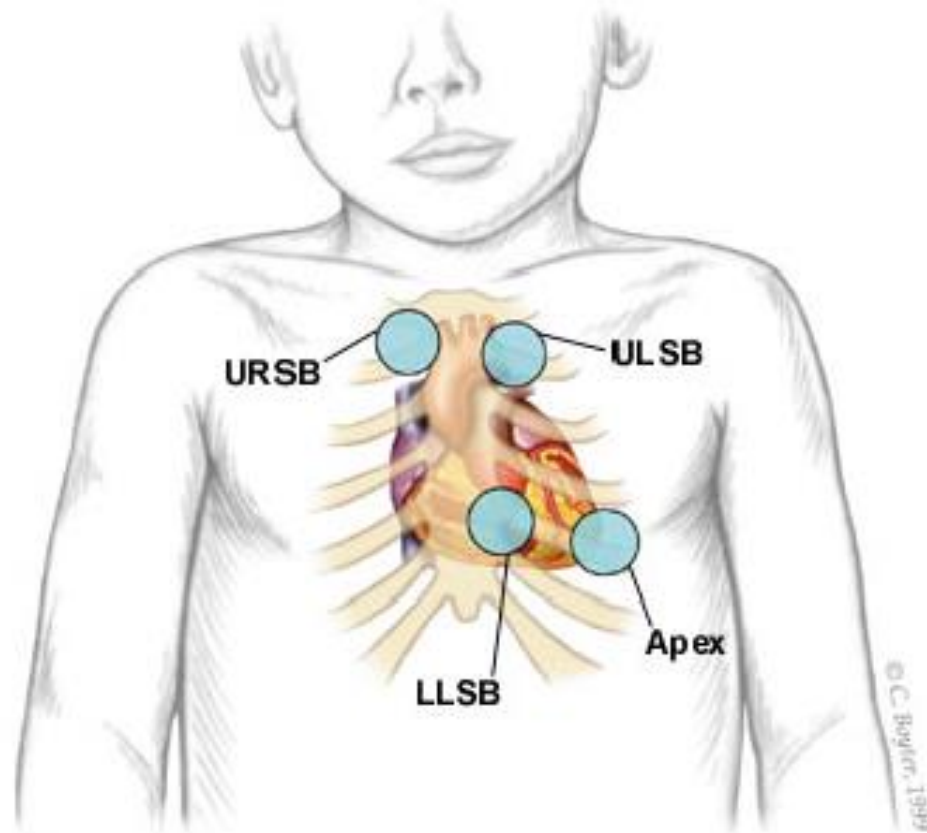


FIGURE 1. Listening areas for clicks: upper right sternal border (URSB) for aortic valve clicks; upper left sternal border (ULSB) for pulmonary valve clicks; lower left sternal border (LLSB), or the tricuspid area, for ventricular septal defects; apex for aortic or mitral valve clicks.

Maneuvers with auscultation

- ▶ **Supine, sitting and standing:**
 - ▶ Increase pre-load in supine.....exaggerating flow murmurs
- ▶ **Valsalva maneuver:**
 - ▶ Increase intensity of MVP
 - ▶ Decrease intensity of innocent heart murmurs
- ▶ **Respiratory cycle**
 - ▶ Inspiration.....increase blood flow to right heart
 - ▶ Expiration.....increase blood flow to left heart

Epidemiology

- ▶ Overall Murmur Prevalence:
 - ▶ 50% of all children
- ▶ Innocent murmurs more common than pathologic 10:1
- ▶ Age of murmur onset related to pathology
 - ▶ Murmur onset at 24 hours of life: 8% pathologic
 - ▶ Murmur onset at 6 months of life: 14% pathologic
 - ▶ Murmur onset at 12 months of life: 2% pathologic

Innocent Murmurs

- ▶ Still's Murmur (Aortic Vibratory Systolic)
 - ▶ Most common innocent murmur
- ▶ Venous Hum of late infancy and early childhood
 - ▶ Second most common innocent murmur
- ▶ Septal hypertrophy due to myocardial fat deposition
 - ▶ Resolves over six months
- ▶ Pulmonary Flow Murmur
 - ▶ Neonatal Pulmonary branch murmur
- ▶ Physiologic PPS
 - ▶ Supraclavicular murmur

▶ Still's Murmur

▶ First described by Dr. George Still (1909)

▶ **Epidemiology**

▶ Common in children ages 2 to 8 years old

▶ **Signs**

▶ Low to medium frequency, mid-Systolic Murmur

▶ Intensity: Grade II-III of VI (variable)

▶ Location: near apex

▶ Character

▶ Vibratory, harmonic, musical, twanging, groaning

▶ Provocative conditions and positions (increased murmur)

▶ Supine position

▶ Fever

▶ Anemia

▶ **Differential Diagnosis**

▶ Ventricular Septal Defect

▶ Left ventricular outflow obstruction

▶ Hypertrophic Cardiomyopathy

▶ **Course**

▶ Innocent murmur

Pathologic Murmurs

- ▶ Ventricular Septal Defect (VSD) 38%
- ▶ Atrial Septal Defect (ASD) 18%
- ▶ Pulmonary Valve Stenosis 13%
- ▶ Pulmonary Artery Stenosis 7%
- ▶ Aortic Valve Stenosis 4%
- ▶ Patent Ductus Arteriosus (PDA) 4%
- ▶ Mitral Valve Prolapse 4%
- ▶ Others 4%

TABLE 3
Features That Increase the
Likelihood of Cardiac Pathology

Symptoms such as chest pain

Family history of Marfan syndrome or sudden
death in young family members

Malformation syndrome (e.g., Down syndrome)

Increased precordial activity

Decreased femoral pulses

Abnormal second heart sound

Clicks

Loud or harsh murmur

Increased intensity of murmur when patient stands

Examination (cont)

- ▶ **The back**
 - ▶ Deformities thrill murmur
- ▶ **Neck:**
- ▶ JVP , visible pulsation and thrill,
- ▶ web neck short
- ▶ **Liver and spleen:**
- ▶ **Respiratory:**
- ▶ Air entry asymmetry wheezes
- ▶ basal crepetations

Examination (cont)

- ▶ **Abdomen:**

- ▶ masses scars ..etc

- ▶ **Skin:**

- ▶ rashes neurofibromatosis
 hemangiomas depigmentations
 ..etc

- ▶ **CNS:**

- ▶ Cranial nerves

- ▶ motor sensory

- ▶ cerebellar function

Examination (cont)

- ▶ **Muscle-skeletal:**
- ▶ Muscular dystrophy Joints deformity swellings pains
- ▶ **HEENT:**
- ▶ microcephaly, shunts....
- ▶ Eyes: squint, cataract...
- ▶ Ears: deafness, deformities, tags
throat obstruction, adenoids,
tracheostomy

Provisional Diagnosis

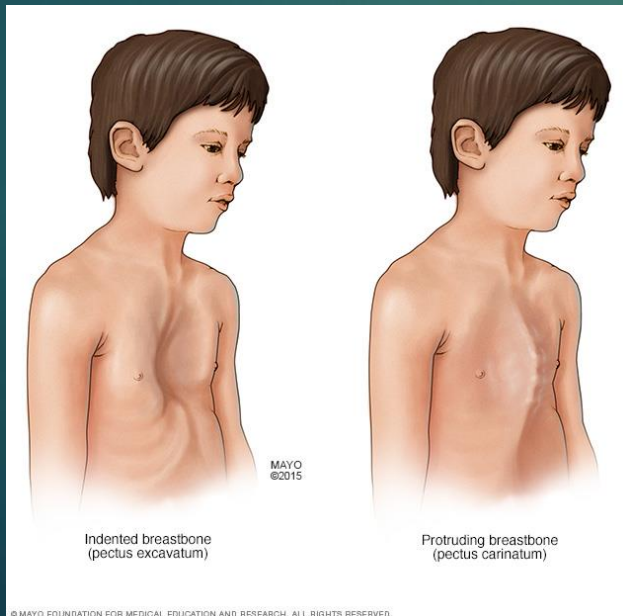
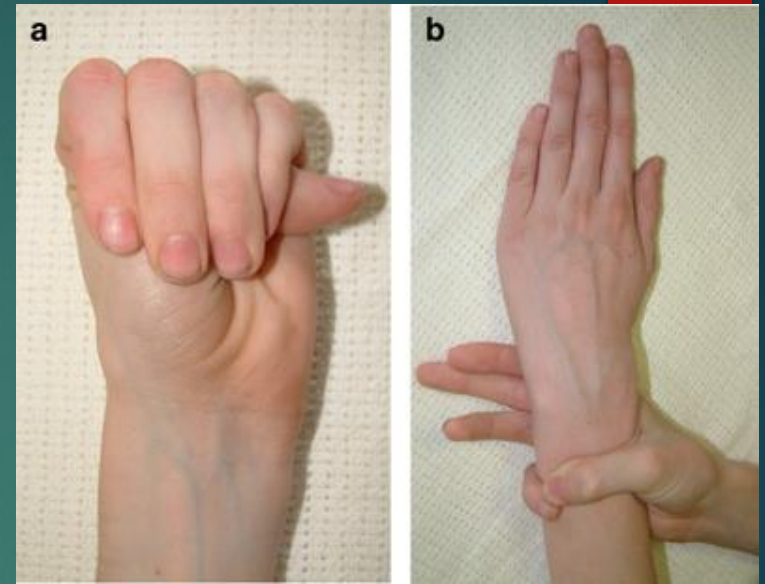
- ▶ after history 1,2,3...
- ▶ limit it after examination to 1,2,3

- ▶ Your differential diagnosis:
 - ▶ 1-.....
 - ▶ 2-.....
 - ▶ 3-.....

Ehlar danlos



Marfan



RH Fever



Rheumatic fever-diagnosis



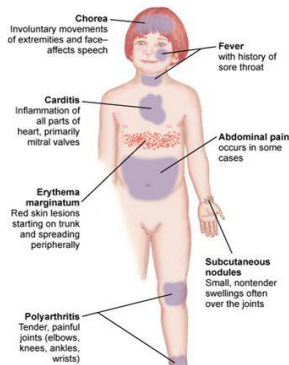
Subcutaneous nodules
(nodules of rheumatoid arthritis are larger)



Rheumatic Fever - Assessment

Major

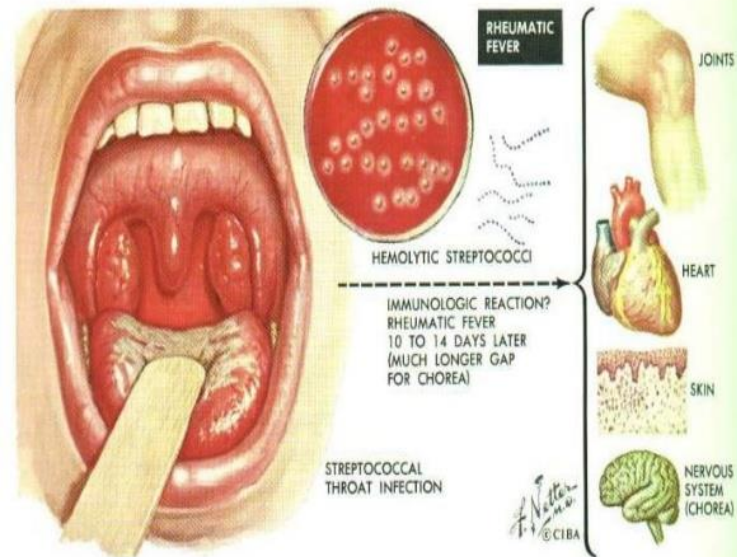
- Carditis
- Polyarthrits
- Chorea
- Erythema marginatum
- Subcutaneous nodules



Jones Criteria

Minor

- Arthralgia
- Fever
- Laboratory Findings:
 - ↑ Erythrocyte sedimentation rate
 - ↑ C-reactive protein
- Prolonged PR interval



Splinter hemorrhage



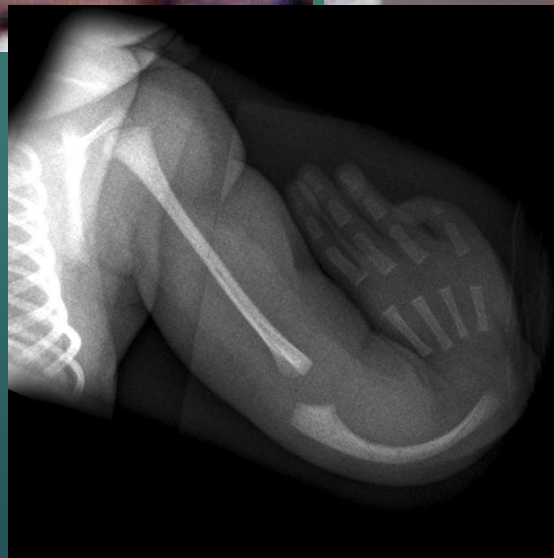


Williams Syndrome

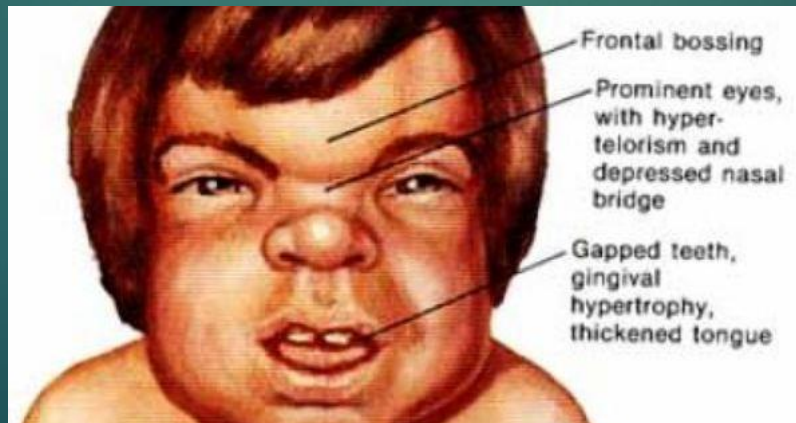
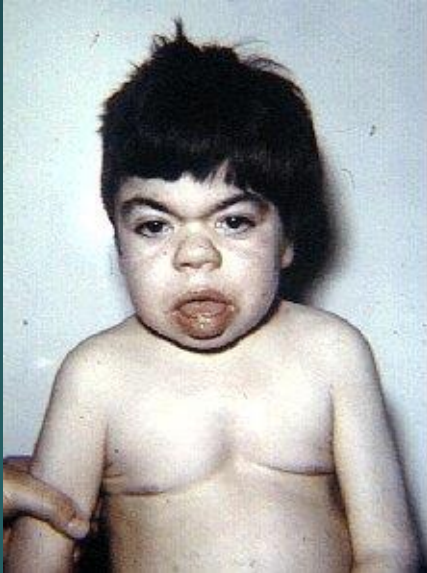
- Rare genetic condition. The clinical manifestations include a distinct facial appearance, cardiovascular anomalies that may be present at birth or may develop later in life, idiopathic hypercalcemia
- Defect in the elastin synthesis
- low nasal bridge
- developmental delay
- coupled with strong language skills
- supravalvular aortic stenosis



Holt Oram



MPS (Hurler's)



Investigation

- ▶ Plan what investigation will help you:
- ▶ ECG,
- ▶ CXR,
- ▶ ECHO,
- ▶ CATH
- ▶ Others.
- ▶ Explain to the child and his family
what is going on

