Care of a Child with a Cardiovascular Disorder

CHAPTER 26

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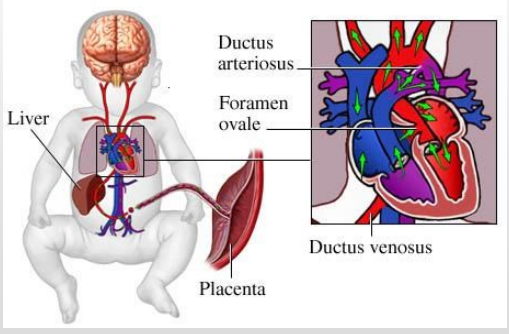
Fetal Circulation

- Develops 3rd and 8th week gestation
- Foramen ovale: diverts most blood from right atrium directly to the left atrium bypassing lungs
- Ductus arterious: diverts most blood from pulmonary artery into the aorta
- Ductus venosus: diverts some blood away from the liver as it returns from the placenta



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Signs Related to Suspected Cardiac Pathology

- FTT or poor weight gain
- Cyanosis, pallor
- Visually observed pulsations in the neck veins
- Tachypnea, dyspnea
- Irregular pulse rate
  - S1 and S2 are normal, S3 and S4 are abnormal
- Clubbing of fingers
  - Chronic hypoxia
- Fatigue during feeding or activity
- Excessive perspiration, especially over forehead

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Congenital Heart Disease

<u>Causes (of Congenital Heart Disease):</u>

Prenatal rubella in 1st trimester

Maternal alcoholism

Maternal irradiation

Ingestion of certain drugs during pregnancy

Maternal diabetes

Advanced maternal age

Maternal malnutrition

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Types of Heart Defects in Childhood

- Increase Pulmonary Blood Flow (ASD, VSD, PDA). left to right shunting
- Obstructive Defects (Coarctation of Aorta)
- Decrease Pulmonary Blood Flow (Tetralogy of Fallot).
- Acquired Heart Disease (CHF, Kawasaki's, Hypertension, Rheumatic Fever)

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Atrial Septal Defect (ASD) (Increase Pulmonary Blood Flow)

- **Usually mild and may not be detected**
- Signs: Murmur heard on routine PE
- Treatment: Surgery to close opening with suture or patch. Will be followed by Cardiology for approx. a year
- Prognosis: Excellent

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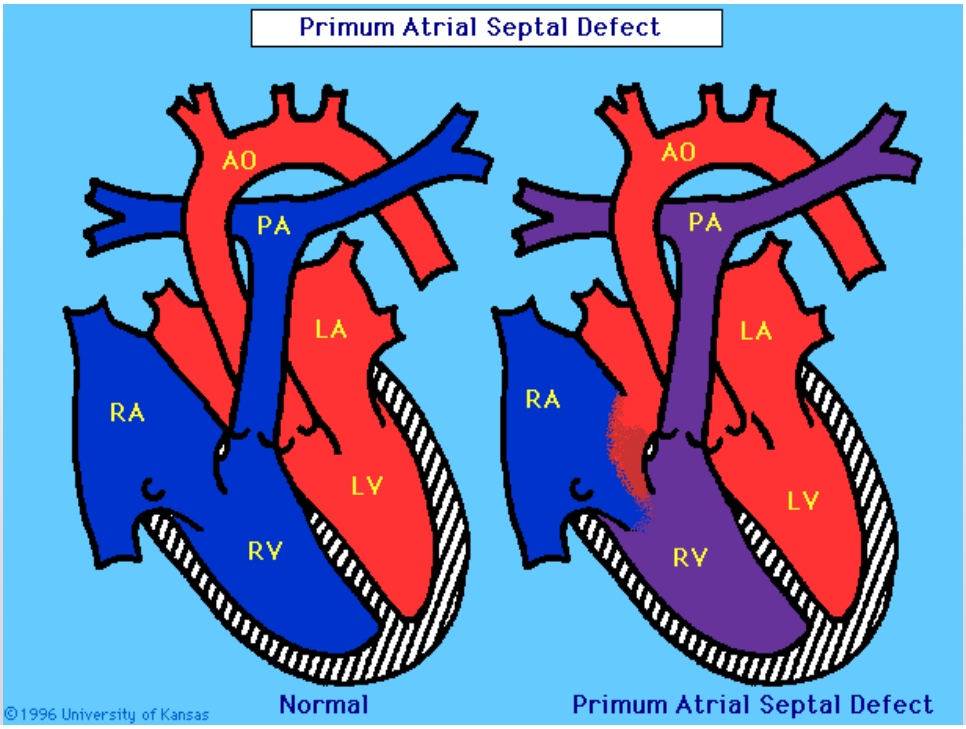

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Ventricular Septal Defect

(Increase Pulmonary Blood Flow)

Most common heart anomaly in children

Can be mild to severe

Signs: loud, harsh systolic murmur, failure to thrive, poor feeder, fatigues easily

Treatment: May close spontaneously

- Mild– observation, monitor, antibiotic with dental care
- Severe– Surgery to patch hole

Prognosis: Excellent (after surgery)

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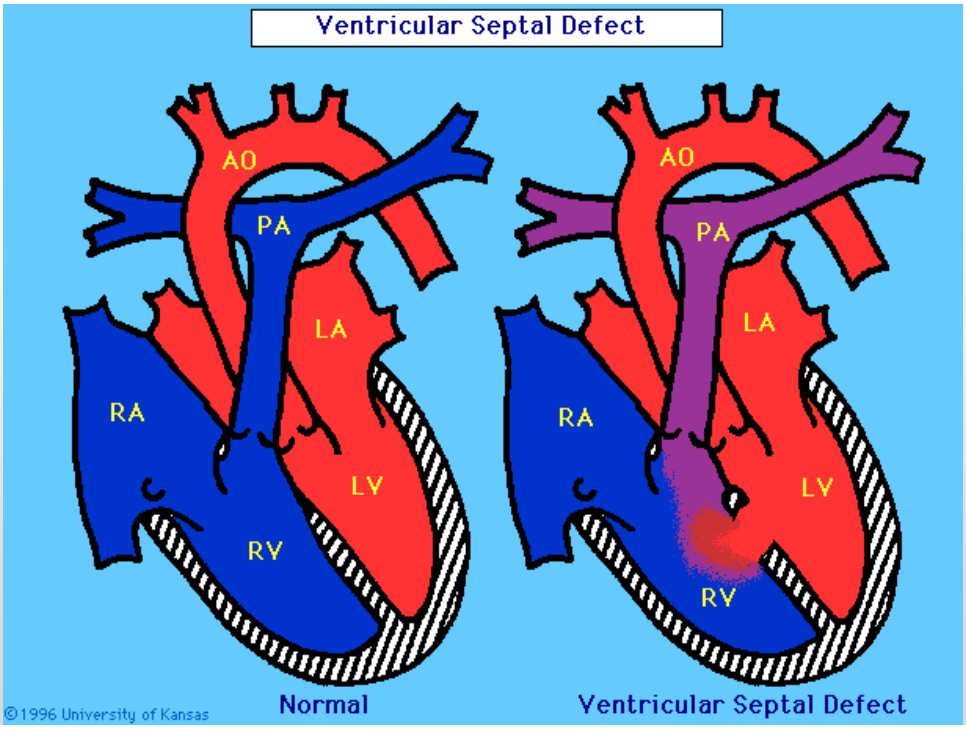

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Patent Ductus Arteriosus

(Increase Pulmonary Blood Flow)

Oxygenated blood recycles to lungs causing pulmonary circulatory congestion

Signs: None (early), dyspnea (later), radial pulse full and bounding, wide pulse pressure, machinery-type murmur

Treatment: Indocin (preemies), Surgery to ligate (full-term newborns)

Prognosis: Excellent

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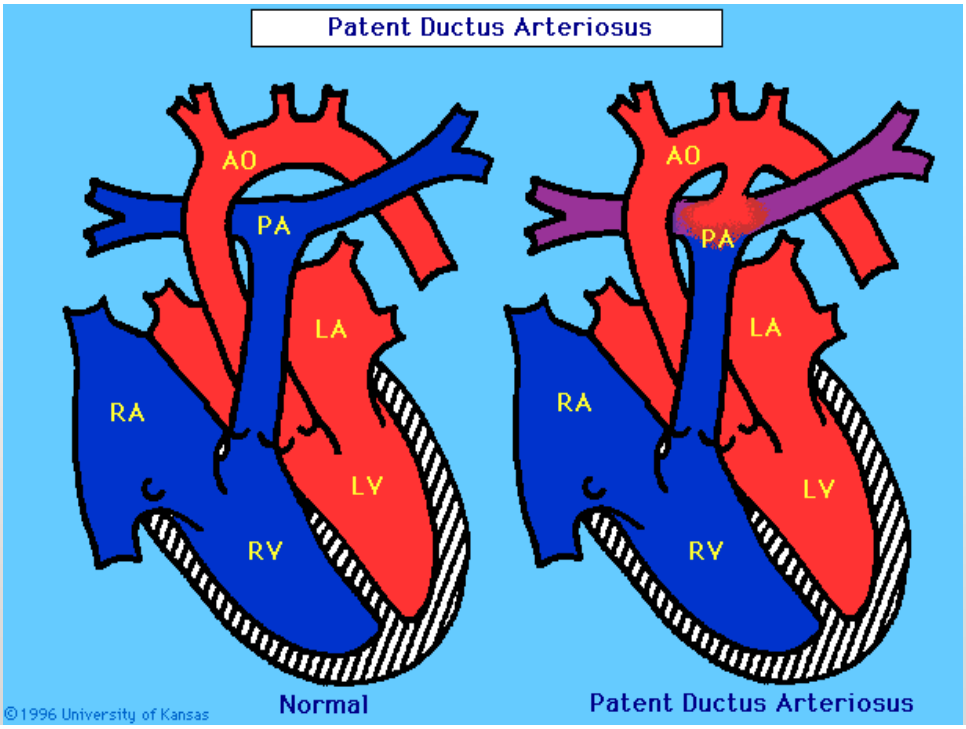

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Coarctation of the Aorta

(Obstructive Defect)

Narrowing of the aortic arch OR the descending aorta

Signs: *None (early)*, marked difference in B/P and pulses of upper extremities and lower extremities, systolic murmur.

Treatment: Surgery – remove narrowed area and reconnect ends (between ages 2 and 4) or percutaneous balloon angioplasty for older children

Prognosis: Good (after surgery)

If untreated, can lead to HTN, CHF

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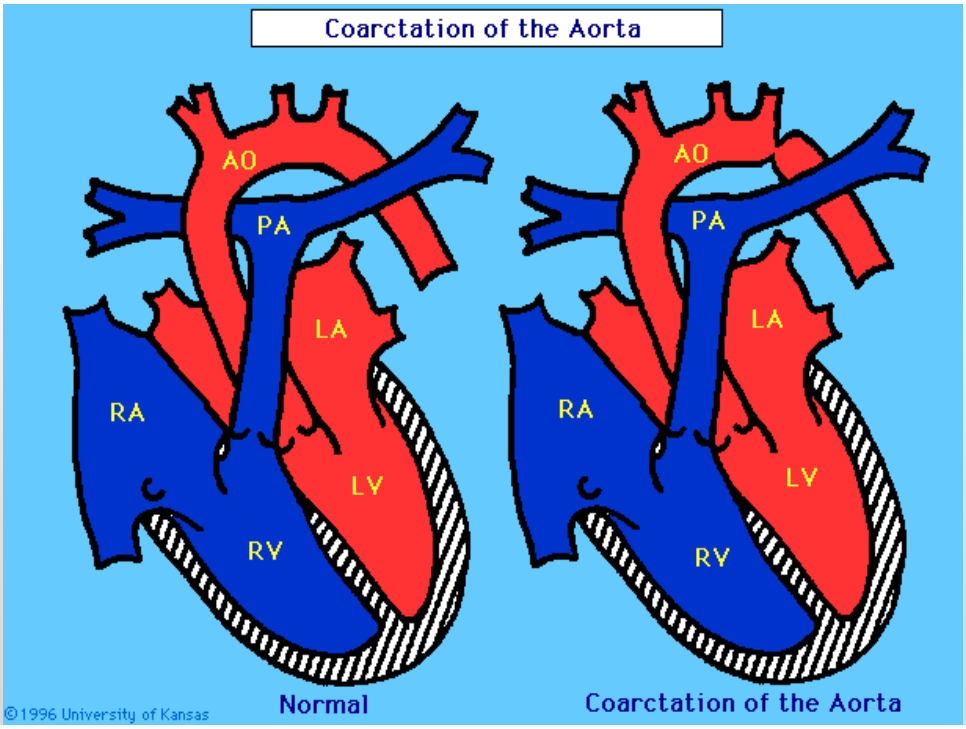

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Tetralogy of Fallot

(Decrease Pulmonary Blood Flow)

Four defects

1. Stenosis of the pulmonary artery
2. Hypertrophy of the right ventricle
3. Overriding aorta
4. Ventricular Septal Defect (VSD)

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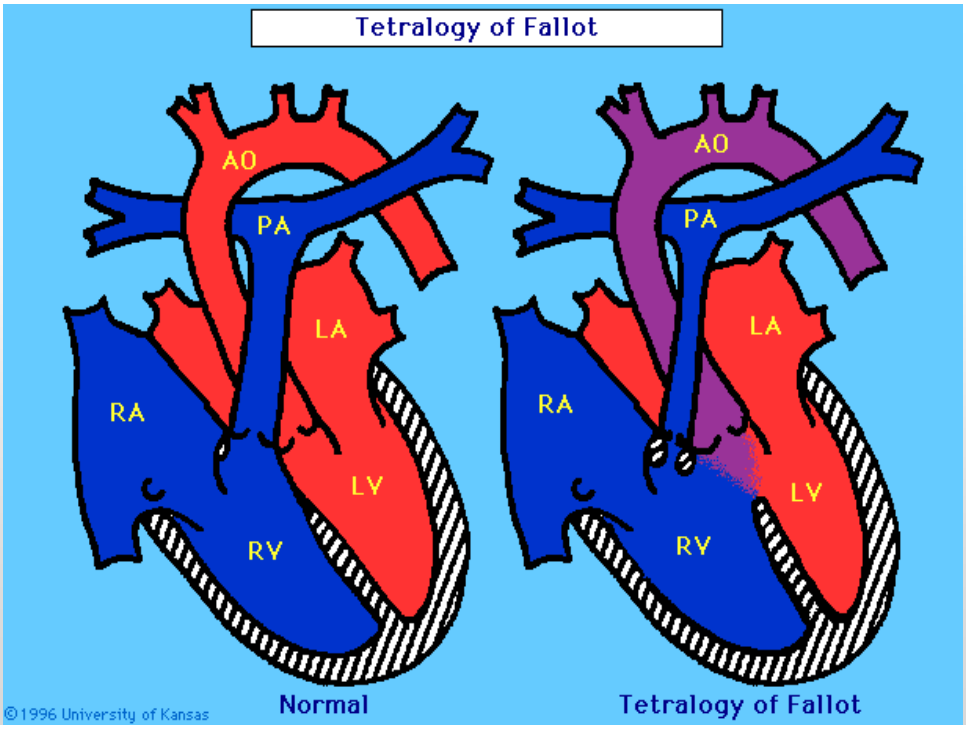

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Tetralogy of Fallot

Signs: Cyanosis, clubbing of fingers due to chronic hypoxia, feeding problems, growth retardation, polycythemia, "tet" spells (increase the return of venous blood back to the heart), chronic respiratory infections, "boot-shaped" heart on X-ray

Treatment: Surgery to correct defects

- Must take antibiotics prophylactically before procedures

Prognosis: Good (after surgery)

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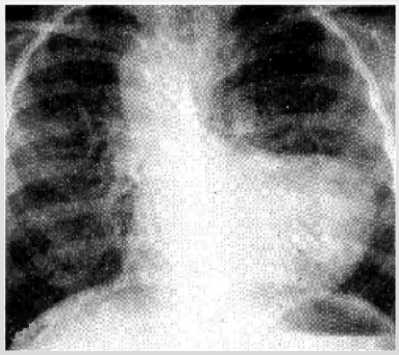
Children with Tetralogy of Fallot exhibit bluish skin during episodes of crying or feeding.
"Tet spell"
A.D.A.M.



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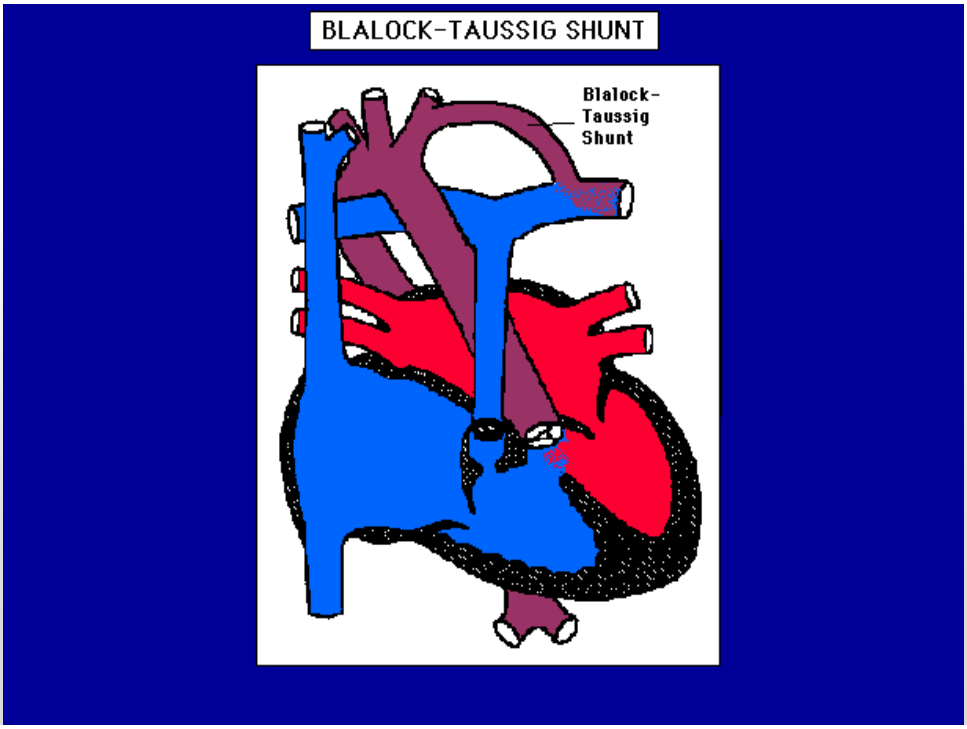
BLALOCK-TAUSSIG SHUNT
Blalock-
Taussig
Shunt

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Hypoplastic Left Heart

- **Underdevelopment of left side of heart**
- If baby does have PDA and patent foramen ovale, chances of survival is small.
- Symptoms: Grayish-blue skin, dyspnea, weak pulses, murmur
- Treatment: possible ventilator, prostaglandin E1 to keep DA open, and heart transplant
- Transplant is needed within 1 month of age
- Prognosis: Fatal if left untreated

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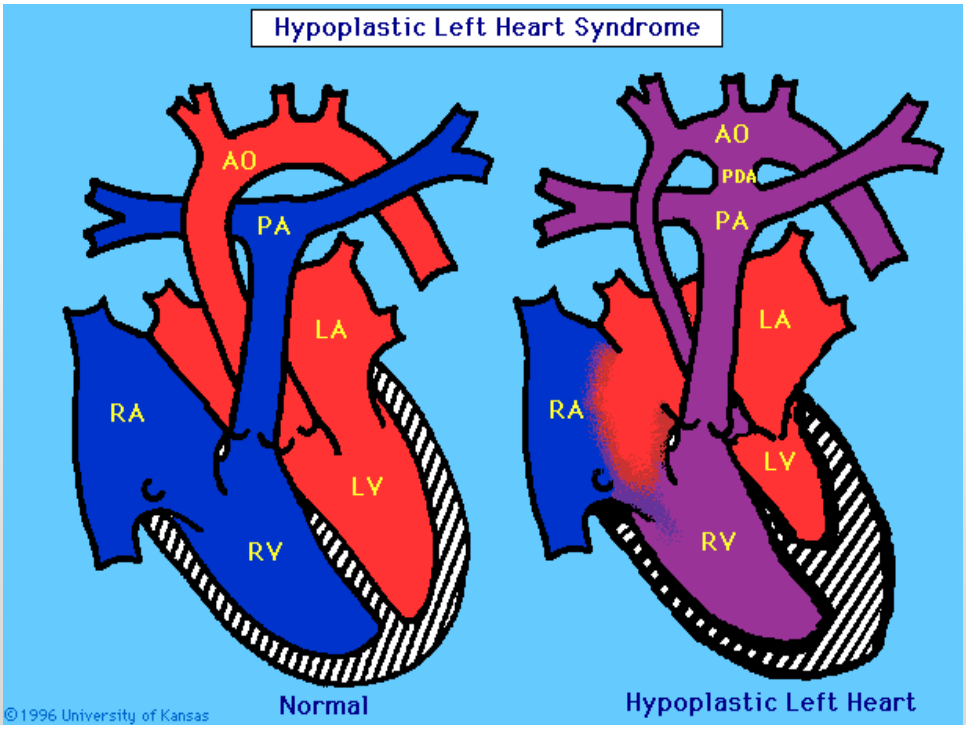

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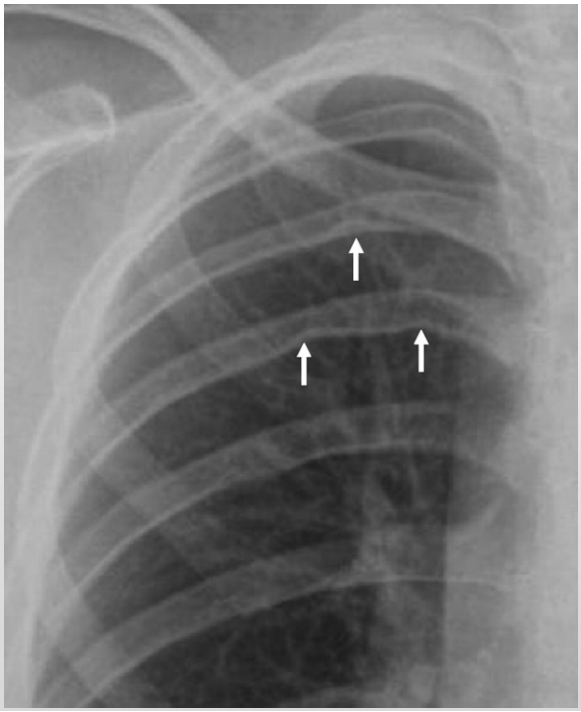

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Parenting Concerns

- Return to normalcy as soon as possible
- Do not over indulge
- Hold immunizations, if heart transplant
- Dental care

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Acquired Heart Disease

- Occurs after birth
- May be a complication of a congenital heart disease or a response to respiratory infection, sepsis, hypertension, or severe anemia
- Heart failure is a decrease in cardiac output necessary to meet the metabolic needs of the body

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Congestive Heart Failure (Acquired Heart Disease)

May be caused by respiratory infections, sepsis, HTN, severe anemia

Signs: Cyanosis, pallor, tachypnea, tachycardia, feeding difficulties, FTT, edema, respiratory infections

Treatment: Oxygen, Lanoxin, Diuretics, organize care to provide rest, small & frequent feedings

Nursing Care: Strict I/O's, recognize dig. toxicity, s/s dehydration, teaching of family

Digoxin: In infants and children, if the pulse rate is below 100 hold the medication and notify MD

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Rheumatic Fever (Acquired Heart Disease)

Reaction to a group A beta-hemolytic infection of the throat

Systemic collagen disease affecting joints, heart, CNS, skin, subcutaneous tissues

Signs: migratory polyarthritis, skin eruptions, Sydenham's Chorea, Rheumatic carditis (often mitral valve), abdominal pain, fever, pallor, fatigue

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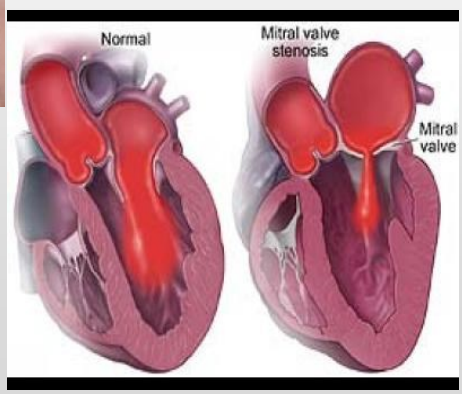
Erythema marginatum

Mitral valve stenosis (narrowing)



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Rheumatic Fever

Diagnosis: Jones criteria (2 major or 1 major and 2 minor), Chest X-Ray, throat culture

Treatment: Penicillin or EES x 10 days, then Penicillin monthly for 5 years, aspirin, rest, small frequent feedings

Prognosis: Depending on diagnosis and treatment

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Systemic Hypertension (Acquired Heart Disease)

Being seen more in childhood and adolescence

Primary – unknown

Secondary – related to other diseases

Signs: (None), headaches, vision problems, dizziness (recognized on physical exam)

Treatment: Nutrition counseling, low sodium diet, lose weight, aerobic exercise program, discuss risk factors

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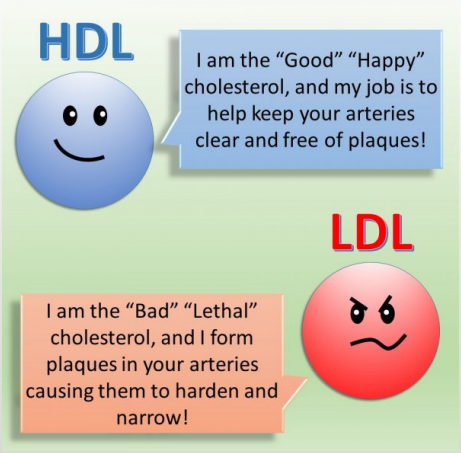
Hyperlipidemia

- The good vs the bad cholesterol
  - LDL
  - HDL
- Family history
- Health promotion – Page 635



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Kawasaki Disease (Acquired Heart Disease)

Mucocutaneous Lymph node Syndrome

Signs: Abrupt onset of high fever that – with no response to antipyretics, "strawberry tongue", enlarged non-tender lymph nodes, rash, swollen hands, peeling of palms/soles.

Treatment: IV gamma globulin given early in illness, aspirin, Coumadin

Prognosis: Good if treated and followed up.

Nursing care: Supportive, teach family

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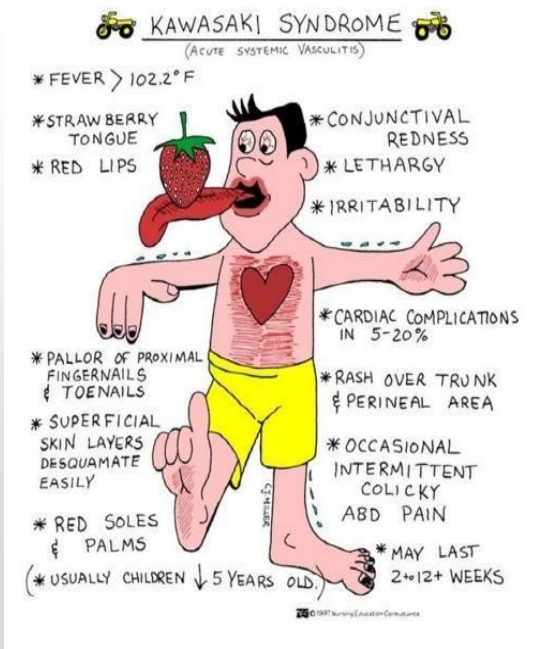
KAWASAKI SYNDROME
(ACUTE SYSTEMIC VASCULITIS)
* FEVER > 102.2° F
* STRAWBERRY TONGUE
* RED LIPS
* CONJUNCTIVAL REDNESS
* LETHARGY
* IRRITABILITY
* CARDIAC COMPLICATIONS IN 5-20%
* PALLOR OF PROXIMAL FINGERNAILS & TOENAILS
* RASH OVER TRUNK & PERINEAL AREA
* SUPERFICIAL SKIN LAYERS DESQUAMATE EASILY
* OCCASIONAL INTERMITTENT COLICKY ABD PAIN
* RED SOLES & PALMS
* MAY LAST 2+12+ WEEKS
(* USUALLY CHILDREN ↓ 5 YEARS OLD.)

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