L..(2)

1. Congenital Heart Disease: (CHD) occurs in approximately 8 in 1000 live births. Although divided into cyanotic and a cyanotic.

1. Ventricular Septal Defect.(VSD)
2. Atrial Septal Defect. (ASD)
3. The Patent Ductus Arteriosus.
4. Tetralogy of Fallot (TOF) . (is made up of the following four defects of the heart and its blood vessels: A hole in the wall between the ventricles. A narrowing of the pulmonary valve and main pulmonary artery)

Valvular heart disease describes an abnormality or dysfunction of any of the heart's four valves: the mitral and aortic valves (left side) and the tricuspid and pulmonic valves (right side). Valvular heart disease can have **Congenital or Acquired causes.**

Congenital valvular Heart Disease can affect all four valves and cause either stenosis or insufficiency.

1. Stenosis – Narrowed opening that impedes blood moving forward.
2. Insufficiency – Improper closure – some blood flows backward.

a) Mitral Stenosis.
b) Mitral Insufficiency.
c) Aortic Stenosis.
d) Aortic Insufficiency.
e) Pulmonary Stenosis.

Acquired valvular heart disease is classified as one of three types:

1. Degenerative Disease.
2. Rheumatic Disease.
3. Infective Endocarditis.

2. Angina or (Angina Pectoris): it is a narrowing of blood vessels to the coronary artery, results in inadequate blood flow through blood vessels of the heart muscle, causing chest pain. Pain can occur at rest or after exertion, or exposure to cold—due to increased oxygen demands or vasospasm. Usually relieved by rest.

Types of angina:

1. Stable angina; occurs with exercise or emotional stress and is relieved by rest or nitroglycerin.

2. Unstable angina; occurs with exercise or emotional stress, but it increases in occurrence, severity, and duration over time.
3. Variant angina ; is due to a coronary artery spasm, often occurring during periods of rest.

Causes of angina

1. Atherosclerosis.
2. Vasospasm.
3. Aortic stenosis.
4. Activity or disease that increases metabolic demands.

Signs and Symptoms

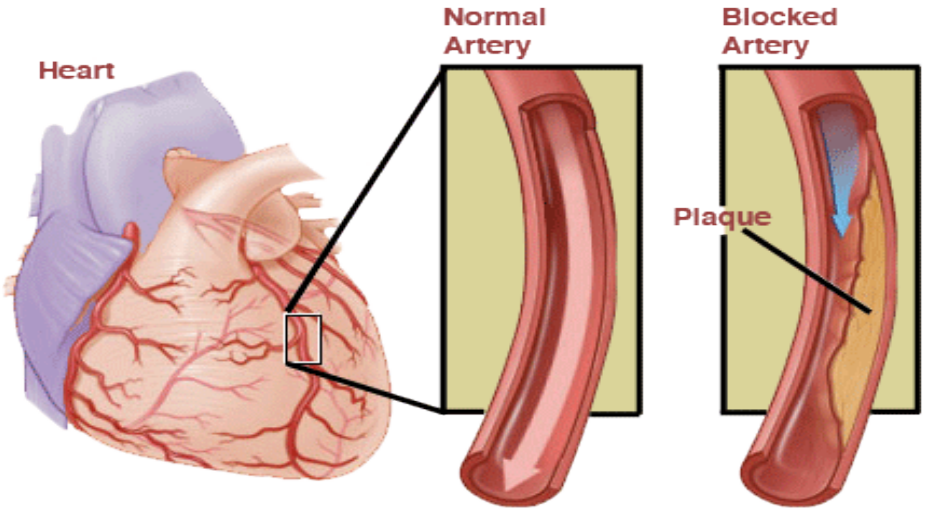
1. Pain may radiate to other parts of the body such as the jaw, back, or arms.
2. Difficulty breathing, shortness of breath (dyspnea).
3. Sweating.
4. Tachycardia.
5. A feeling of weakness or numbness in the arms, wrists, and hands.

Treatment

The goal of treatment is to deliver sufficient oxygen to the heart muscle to meet its need. When suspecting chest pain, always give oxygen as the first line of defense, Vasodilators (Nitroglycerin)—sublingual tablets, Aspirin, Analgesic.

Nursing Care

1. Maintain the patient's diet
2. Administer oxygen and medications, as prescribed
3. Assess cardiovascular status, Assess chest pain.
4. Monitor vital signs, intake and output, and laboratory studies.
5. Encourage the patient to express anxiety, fears, or concerns.
6. Educate patient and family about prescribed treatment plan.
7. Advise the patient to rest if pain begins
8. Obtain an ECG reading during an acute attack
9. Keep the patient in semi-Fowler's position



3. Myocardial Infarction (MI): a death of a portion of the myocardial muscle cells caused by a lack of oxygen from inadequate perfusion.

Causes of (MI)

1. Atherosclerosis.
2. Decrease perfusion.
3. Embolism or thrombus.
4. Coronary artery spasm.

Signs and Symptoms

1. Chest pain that is unrelieved by rest or nitroglycerin, unlike angina. Pain that radiates to arms, jaw, back and/or neck.
2. Nausea or vomiting possible, Restlessness, Pale, sweating, elevated temperature.
3. Shortness of breath, Heart rate >100 (tachycardia), Variable blood pressure.
4. Sudden death due to arrhythmia usually occurs within first hour.
5. Maybe asymptomatic, known as a Silent MI, which is more common in diabetic patients.

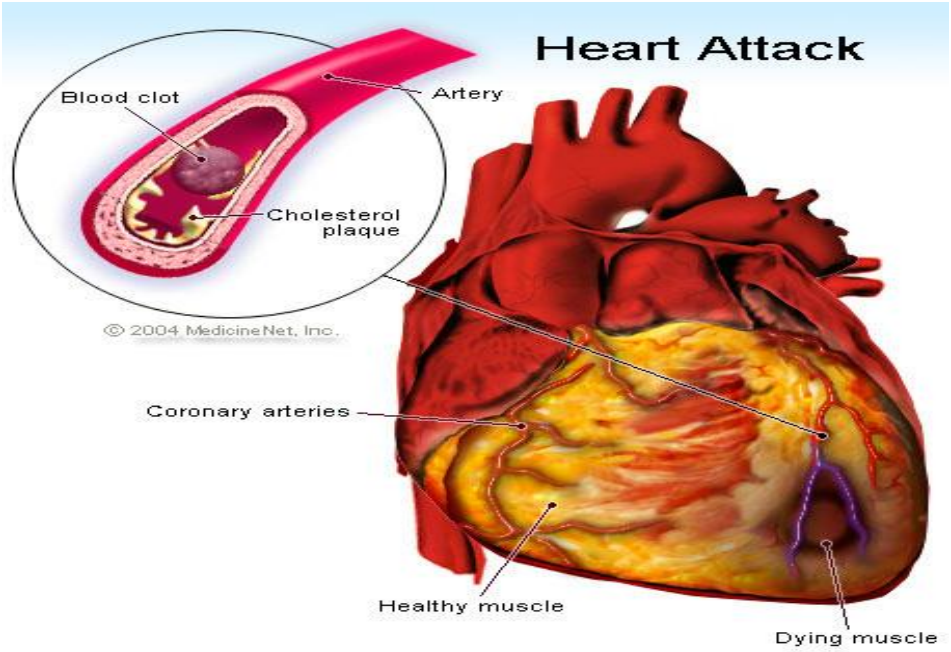
Nursing Care

1. Monitor vital signs every 15 min until stable, then every hour, ECG, intake and output, and laboratory studies.
2. Administer oxygen and medications, as prescribed
3. Vasodilators (Nitroglycerin), Analgesics (Morphine), Antidysrhythmic and Antihypertensive (Lopressor), Thrombolytic agents (Streptokinase), Antiplatelet agents (Aspirin), Anticoagulants (Heparin)
4. Teach patient about, Smoking cessation, Limit activities, Stress reduction, Diet changes.

5. Assess cardiovascular status, Assess chest pain.
6. Encourage the patient to express anxiety, fears, or concerns.
7. Advise the patient to rest if pain begins
8. Obtain an ECG reading during an acute attack
9. Keep the patient in semi-Fowler's position

Comparison between the Angina and Myocardial Infarction

ANGINA	MYOCARDIAL INFARCTION
› Precipitated by exertion or stress	› Can occur without cause, often in the morning after rest
› Relieved by rest or nitroglycerin	› Relieved only by opioids
› Symptoms last less than 15 min	› Symptoms last more than 30 min
› Not associated with nausea, epigastric distress, dyspnea, anxiety, diaphoresis	› Associated with nausea, epigastric distress, dyspnea, anxiety, diaphoresis



liver: is the second largest organ (after the skin) in the human body and the largest gland (weighing an average of 1500 g). It lies under the diaphragm in the right upper abdomen and midabdomen and extends to the left upper abdomen. The liver has the general shape of a prism or wedge, with its base to the right and its apex to the left. It is pinkish brown in color, with a soft consistency, and is highly vascular and easily friable.

Function of the liver

1. The liver makes proteins important for blood clotting and other functions
2. The liver is considered a gland— an organ that secretes chemicals—because it produces bile, a substance needed to digest fats. Bile's salts break up fat into smaller pieces so it can be absorbed more easily in the small intestine
3. Detoxifies the blood to rid it of harmful substances such as alcohol and drugs
4. Stores some vitamins and iron
5. Stores the sugar glucose
6. Converts stored sugar to functional sugar when the body's sugar (glucose) levels fall below normal
7. Converts ammonia to urea, which is vital in metabolism
8. Destroys old red blood cells (called RBC's)

liver diseases

Hepatitis: is an inflammation of the liver cells. This is most commonly due to a viral cause which may be either an acute illness or become chronic. The disease may also be due to exposure to drugs or toxins.

There are five major categories of viral hepatitis:

1. Hepatitis A virus (HAV)
2. Hepatitis B virus (HBV)
3. Hepatitis C virus (HCV)
4. Hepatitis D virus (HDV)
5. Hepatitis E virus (HEV)

TYPE	ROUTE OF TRANSMISSION	RISK FACTORS
Hepatitis A (HAV)	› Fecal-oral route	› Ingestion of contaminated food or water › Close personal contact with an infected individual
Hepatitis B (HBV)	› Blood	› Unprotected sex with infected individual › Infants born to infected mothers › Contact with infected blood › Injection drug users
Hepatitis C (HCV)	› Blood	› Drug abuse › Sexual contact
Hepatitis D (HDV)	› Coinfection with HBV	› Injection drug users › Unprotected sex with infected individual
Hepatitis E (HEV)	› Fecal-oral route	› Ingestion of contaminated food or water

Signs and Symptoms

Acute Hepatitis:

1. Malaise
2. Nausea and vomiting
3. Diarrhea or constipation
4. Low-grade fever
5. Dark urine due to change in liver function
6. Jaundice due to liver compromise
7. Tenderness in right upper quadrant of abdomen
8. Hepatomegaly
9. Arthritis, glomerulonephritis

Chronic Hepatitis:

1. Asymptomatic with elevated liver enzymes.
2. Symptoms as acute hepatitis.
3. Cirrhosis due to altered liver function.
4. Ascites due to decrease in liver function, increased portal hypertension.
5. Bleeding from esophageal.
6. Encephalopathy due to diminished liver function.
7. Bleeding due to clotting disorders.
8. Enlargement of spleen.

Complications

1. Chronic hepatitis

2. Fulminating hepatitis
3. Cirrhosis of the liver
4. Liver cancer
5. Liver failure

Treatment

1. Avoid medications metabolized in the liver and avoid alcohol.
2. Remove or discontinue causative agent if drug-induced or toxic hepatitis.
3. IV fluids if vomiting during acute hepatitis.
4. High-calorie diet; breakfast is usually the best tolerated meal.
5. Liver transplantation may be necessary if chronic hepatitis B causes severe liver damage that leads to liver failure.

Nursing Care

1. Monitor vital signs.
2. Rest for patient in acute phase.
3. Monitor fluid and electrolyte balance.
4. Administer the medications as described .
5. Monitor dietary intake and caloric count. Suggest several small feedings and offer "largest" meal at breakfast.
6. Recommend eating in upright position.
7. Assess mental status for changes due to encephalopathy.
8. Lifestyle education about prevention and protection :
   A. Avoid alcohol and illicit drugs.
   B. Avoid exposure to dirty needles.
   C. Avoid contact with bodily fluids such as semen, blood, stool and vomit.
   D. Encourage vaccines for high risk patients and their families.
   E. Avoid smoking areas—intolerance to smoking.
   F. Encourage about mouth care.

Cirrhosis: is a chronic disease characterized by replacement of normal liver tissue with diffuse fibrosis that disrupts the structure and function of the liver.

There are three types Cirrhosis

1. **Alcoholic,** most frequently due to chronic alcoholism and the most common type of cirrhosis;
2. **Postnecrotic,** a late result of a previous acute viral hepatitis
3. **Piliary,** a result of chronic biliary obstruction and infection (least common type of cirrhosis).

The most common causes of cirrhosis include:

1. Long-term hepatitis infections (chronic).
2. Chronic alcoholism.
3. Non-alcoholic fatty liver (or steatohepatitis):
4. Autoimmune liver disease.
5. Primary biliary cholangitis (formerly known as primary biliary cirrhosis).
6. Toxic substances and infections.
7. Inherited (genetic) disorders:.
8. Cardiac cirrhosis.

Signs And Symptoms

1. Fatigue.
2. Weight loss, abdominal pain, distention.
3. Pruritus (severe itching of skin).
4. Confusion or difficulty thinking.
5. Personality changes and sometimes depression.
6. Ascites.
7. Jaundice.

Lab. Tests and Diagnosis

1. Liver function tests (AST, ALT, Bilirubin) elevated.
2. Ultrasound scanning
3. CT scan
4. MRI
5. Radioisotope liver scans

Medical Management

1. Treatment includes antacids, vitamins and nutritional supplements, balanced diet; diuretics (for ascites); avoidance of alcohol.
2. Colchicine may increase the length of survival in patients with mild to moderate cirrhosis.

Nursing Care

1. Weigh patient daily.
2. Monitor vital signs.
3. Monitor fluid and electrolyte balance.
4. Administer the medications as described .
5. Assess peripheral edema.
6. Assess heart and lung sounds for excess fluid.
7. Elevate head of bed 30 degrees or greater to ease breathing.
8. Elevate feet to decrease peripheral edema.
9. Monitor for signs of bleeding or bruising.
10. Monitor level of consciousness, orientation, recent and remote memory, behavior, mood, and affect.

Other Types of liver diseases include:

Liver cancer: The most common type of liver cancer, hepatocellular carcinoma, almost always occurs after cirrhosis is present.

Liver failure: Liver failure has many causes including infection, genetic diseases, and excessive alcohol.

Ascites: As cirrhosis results, the liver leaks fluid (ascites) into the belly, which becomes distended and heavy.

Gallstones: If a gallstone becomes stuck in the bile duct draining the liver, hepatitis and bile duct infection (cholangitis) can result.

Hemochromatosis: Hemochromatosis allows iron to deposit in the liver, damaging it. The iron also deposits throughout the body, causing multiple other health problems.

Heart Failure

Heart Failure: is a syndrome that occurs as a result of the progressive inability of the heart to pump enough blood to meet the body's oxygen and nutrient needs. It can cause decreased tissue perfusion, fatigue, fluid volume overload in the intravascular and interstitial spaces, and reduced quality and length of life.

Causes of Heart Failure	
Left Side Failure	**Right-Sided failure**
1. **Hypertension.** 2. **Myocardial Infarction (IM).** 3. **Cardiomyopathy.** 4. **Aortic Stenosis.** 5. **Mitral Regurgitation.**	1. **Pulmonary hypertension.** 2. **Cor pulmonale .** disease of the heart characterized by hypertrophy and dilatation of the right ventricle and secondary to disease of the lungs or their blood vessels 3. **Pulmonary Stenosis.** 4. **Atrial Septal Defect** (ASD)
Signs and Symptoms of Heart Failure	
Left Side Failure	**Right-Sided failure**
1. Dyspnea. 2. Dry cough. 3. Crackles, wheezing. 4. Orthopnea. 5. Paroxysmal nocturnal dyspnea. 6. Cyanosis. 7. Fatigue, weakness. 8. Tachycardia. 9. Nocturia.	1. Jugular vein distension. 2. Dependent peripheral edema. 3. Ascites. 4. Weight gain . 5. Splenomegaly. 6. Hepatomegaly. 7. GI discomfort. 8. Fatigue, weakness. 9. Tachycardia. 10. Nocturia.

Diagnostic Tests:-

- History and physical examination.
- A chest x-ray examination shows the size, shape, and enlargement of the heart and congestion in the pulmonary vessels.
- Electrocardiogram (ECG)
- Exercise stress testing and nuclear imaging studies.

- Echocardiography: measures the size of the heart chambers to detect enlargement and assess valvular function and motion of the ventricles.
- Cardiac Catheterization and angiography.
- Hemodynamic monitoring: measures the blood pressure inside the veins, heart, and arteries. It also measures blood flow and how much oxygen is in the blood.
- **Serum laboratory tests**

Medical Treatment:-

The medical treatment divided to two parts:

— **Part one: Non Invasive**

1-Oxygen Therapy.

2-Activity: Activity tolerance depends on the severity of heart failure.

3-Nutrition: Dietary sodium is often restricted to decrease fluid retention. Restricting sodium is challenging.

4-Drug Therapy: The major classifications of oral drugs used to treat heart failure are listed:

A. Diuretic
B. Beta blockers
C. Inotropic agents
D. Aldosterone antagonist
E. Anticoagulants
F. Antidysrhythmic agents

Part two: Invasive

1. Synchronizing pacemaker
2. Intra-aortic balloon pump.
3. Left ventricular assist device.
4. Surgery:
    - Cardiomyoplasty.
    - Cardiac transplant.

Complications

1. Cardiac arrhythmias.
2. Myocardial failure and cardiac arrest.
3. Digoxin toxicity.
4. Pulmonary infarction, pneumonia, and emboli.
5. Liver and spleen enlarge .

Nursing Diagnoses:

- Activity intolerance (or risk for activity intolerance) related to imbalance between oxygen supply and demand because of decreased CO_2.
- Excess fluid volume related to excess fluid or sodium intake and retention of fluid because of HF .
- Anxiety related to breathlessness and restlessness from inadequate Oxygenation.

Nursing Interventions:

1. **Promoting Activity Tolerance**
   A. The nurse and patient can collaborate to develop a schedule that promotes pacing and prioritization of activities.
   B. Because some patients may be severely debilitated, they may need to perform physical activities only 3 to 5 minutes at a time, one to four times per day.
   C. Small, frequent meals decrease the amount of energy needed for digestion while providing adequate nutrition.
   D. The patient's response to activities needs to be monitored.
   E. If the patient is at home, the degree of fatigue felt after the activity can be used as assessment of the response..
2. **Managing Fluid Volume**

A. Patients with severe HF may receive intravenous diuretic therapy, but patients with less severe symptoms may receive oral diuretic medication. Oral diuretics should be administered early in the morning so that diuresis does not interfere with the patient's nighttime rest.

B. Discussing the timing of medication administration is especially important for patients, such as elderly people, who may have urinary urgency or incontinence.

C. The nurse monitors the patient's fluid status closely— auscultating the lungs, monitoring daily body weights, and assisting the patient to adhere to a low-sodium diet by reading food labels and avoiding high-sodium foods such as canned, processed, and convenience foods.

D. If the diet includes fluid restriction, the nurse can assist the patient to plan the fluid intake throughout the day while respecting the patient's dietary preferences.

E. The nurse positions the patient or teaches the patient how to assume a position that shifts fluid away from the heart. The number of pillows may be increased, the head of the bed may be elevated.

F. The patient who can breathe only in the upright position may sit on the side of the bed with the feet supported on a chair, the head and arms resting on an overbed table, and the lumbosacral spine supported by a pillow.

3. **Controlling Anxiety**

1- When the patient exhibits anxiety, the nurse takes steps to promote physical comfort and psychological support. In many cases, a family member's presence provides reassurance.

2- To help decrease the patient's anxiety, the nurse should speak in a slow, calm, and confident manner and maintain eye contact. When necessary, the nurse should also state specific, brief directions for an activity.

3- After the patient is comfortable, the nurse can begin teaching ways to control anxiety and to avoid anxiety-provoking situations.

Peptic Ulcer

Definition: Mucosal defects of the GI mucosa of the stomach or duodenum. Men and women are at equal risk. The prevalence of PUD is higher in regions where the infection rates of H.Pylori are higher such as in sub-Saharan Africa.

Pathophysiology:

Normally they gastric acid is suppressed by a negative feedback loop. Meal gastrin mediated acid secretion release of somatostatin inhibition of further gastric acid. In PUD there is too much gastric acid. In addition there is disruption of the protective mucosal barrier. H. pylori and NSAIDs both can disrupt the mucosal layer. H. pylori also decreases somatostatin secretion.

Signs/Symptoms

- **Wide range of presentation from asymptomatic iron deficient anemia to perforation**
- **Epigastric abdominal pain: relieved with food (duodenal) or worsened with food (gastric)**
- **Usually dull pain, but may be sharp or burning. Can be associated with nausea/vomiting.**
- **Gastric outlet obstruction can occur with duodenal ulcers**
- **Can present with upper GI bleed if ulcer is actively bleeding**
- **NSAID ulcers can present has painless bleeding**

Etiology

1-H.Pylori infection: 90% duodenal ulcers, 70% gastric ulcers, 2-NSAID use, 3-Gastrinoma (Zollinger-Ellison), 4-alcohol, 5-malignancy, 6-Stress related (ICU patients, stroke, ventilator dependence, immunocompromised) .

Diagnosis

History and physical are helpful. Ask about NSAID, asa, alcohol use, history of Hpylori infection and weight loss. Full blood panel will evaluate for iron deficiency anemia. Upper endoscopy is the preferred method for diagnosing peptic ulcer disease, can also get tissue sampling to evaluate for malignancy and Hpylori. Hpylori can also be detected by urea breath testing and serology. Hpylori stool antigen is useful in detecting eradication after antibiotic therapy.

Treatment :

- **stop NSAID or aspirin use for at least 3-4 weeks**
- **start acid suppression with PPI (proton pump inhibitors) such as omeprazole, intial dose can be 20 mg once a day and can be increased to 40 mg twice day for bleeding ulcers**
- **acid suppression can also be done with H2 blocker (ranitidine)**
- **sulcrafate acts by coating mucosal surface without blocking acid secrtion and can be used with PPI**
- **Hpylori: can treat with omeprazole, amoxicillin or clarithromycin, and metronidzole for 14 days.**
- **lifestyle changes: stop alcohol and tobacco use**
- **critically ill patients in ICU should get acid suppression therapy prophylaxis to prevent stress ulcers: usually ranitidine 150 mg BD**

Complications
GI bleeding, gastric outlet obstruction, perforation, pancreatitis.

Nursing Management of Peptic Ulcer

1. Assessment:

1. The nurse asks the patient to describe the pain.
2. The nurse asks about history of vomiting or blood in vomiting.
3. Has the patient noted any bloody stools?
4. The nurse assess life style as drinking coffee , alcohol, and smoking. Any anxiety or stress?
5. The nurse records vital signs and reports any tachycardia and hypotension. Is there any tenderness of abdomen?

2. Nursing diagnoses:

1. Acute pain related to the effect of gastric acid secretion on damaged tissue
2. Anxiety related to coping with an acute disease.
3. Imbalanced nutrition related to changes in diet.
4. Deficient knowledge about prevention of symptoms and management.

Asthma

Asthma is a chronic inflammatory disease of the airways characterized by secretions production, bronchospasm.

Signs and Symptoms

1. Wheezing
2. Difficulty breathing (dyspnea)
3. Respiration greater than 20 breaths per minute (tachypnea)
4. Tightness in the chest
5. Cough
6. Tachycardia

Treatment

1. Oxygen
2. Bronchodilator with nebulizer
3. Steroids to decrease inflammation (Hydrocortisone)
4. Aminophylline
5. Antibiotics

Nursing Care

1. Monitor respiration: rate, skin color, breath sounds.
2. Place patient in high Fowler's position (90°) to ease respirations.
3. Monitor vital signs, look for changes in BP, tachycardia, tachypnea.
4. Explain to the patient:

a) How to use the inhaler
b) Avoid exposure to allergen.
c) How to recognize the early signs of asthma

Acute Bronchitis

Its caused by infection and airborne irritants that block the airway, blockage of the airways is reversible, generally self-limited and with eventual complete healing and return of function,. most prevalent in winter, is generally part of an acute URI.

Signs and Symptoms

1. Malaise
2. Chilliness
3. Slight Fever
4. Back and Muscle Pain
5. Sore Throat
6. Dry Non-productive Cough

Treatment

1. The patient should rest until fever subsides.
2. Oral fluids
3. An antipyretic analgesic
4. Antibiotics
5. Oxygen and Nebulizer using

Chronic Bronchitis

The presence of cough and sputum production for at least 3 months in each of two consecutive years lead to block the airway, where blockage is not reversible.

Signs and Symptoms

1. Cough
2. Shortness of breath
3. Fever
4. Productive
5. Weight gain due to edema
6. Wheezing

Medical Management

1. Smoking cessation.
2. Bronchodilators
3. Corticosteroids
4. Antibiotic
5. Mucolytic, Antitussive Agents
6. Oxygen Therapy

Nursing care

1. Monitor respirations looking at rate, skin color; listen to breath sounds.
2. Weigh the patient daily.
3. assessing the dyspnea and making sure that it has lessened.
4. Encourage patient to eliminate or reduce all pulmonary irritants, particularly cigarette smoking.
5. Instruct patient to avoid extremes of heat and cold and air pollutants

Assess patient for complications.

Respiratory failure

The lungs are unable to adequately exchange oxygen and carbon dioxide because of insufficient ventilation.

Causes

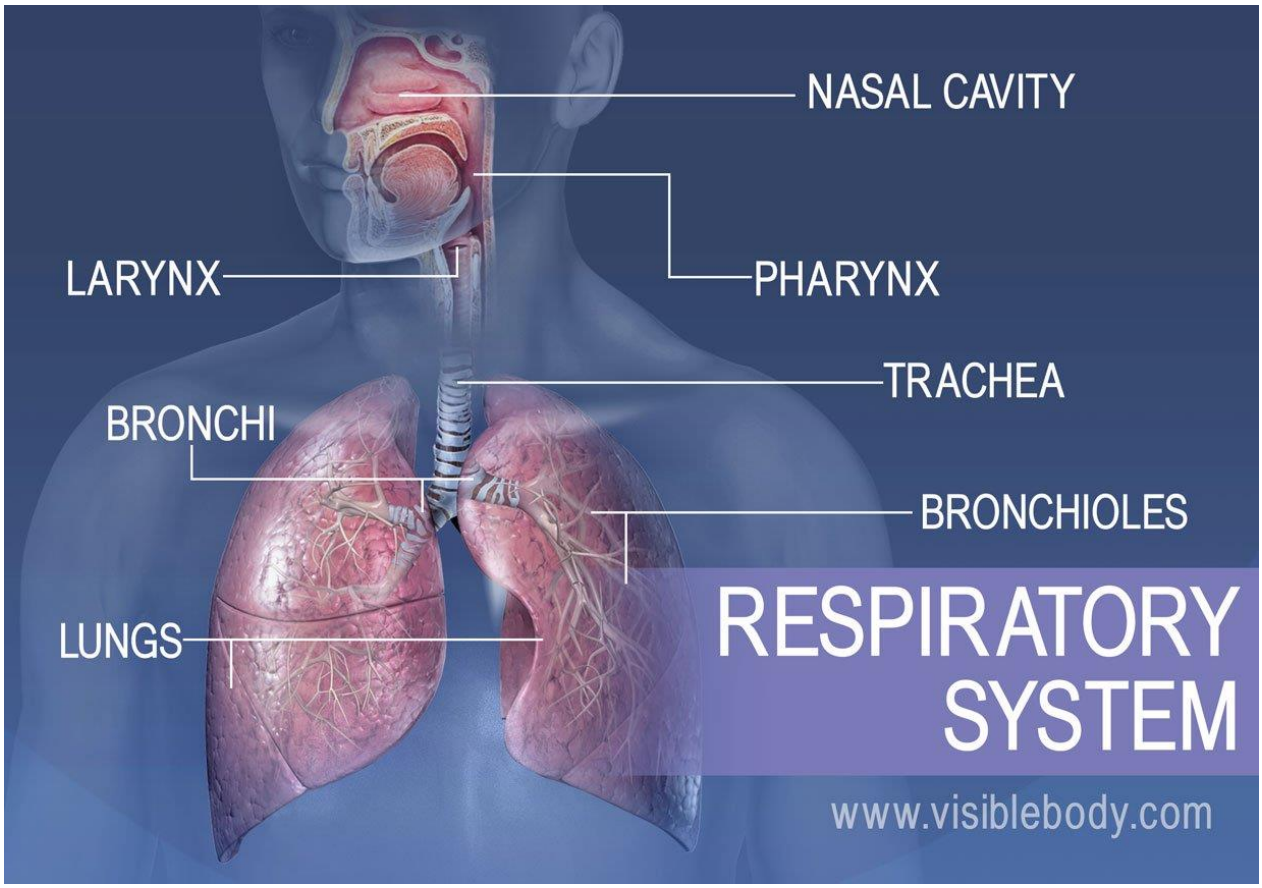
1. CNS depression - head trauma or injudicious use of sedatives, narcotics.
2. Cardiovascular disorders - MI, heart failure.
3. Airway irritants - smoke or fumes.
4. Endocrine and metabolic disorders.
5. Thoracic abnormalities - chest trauma.

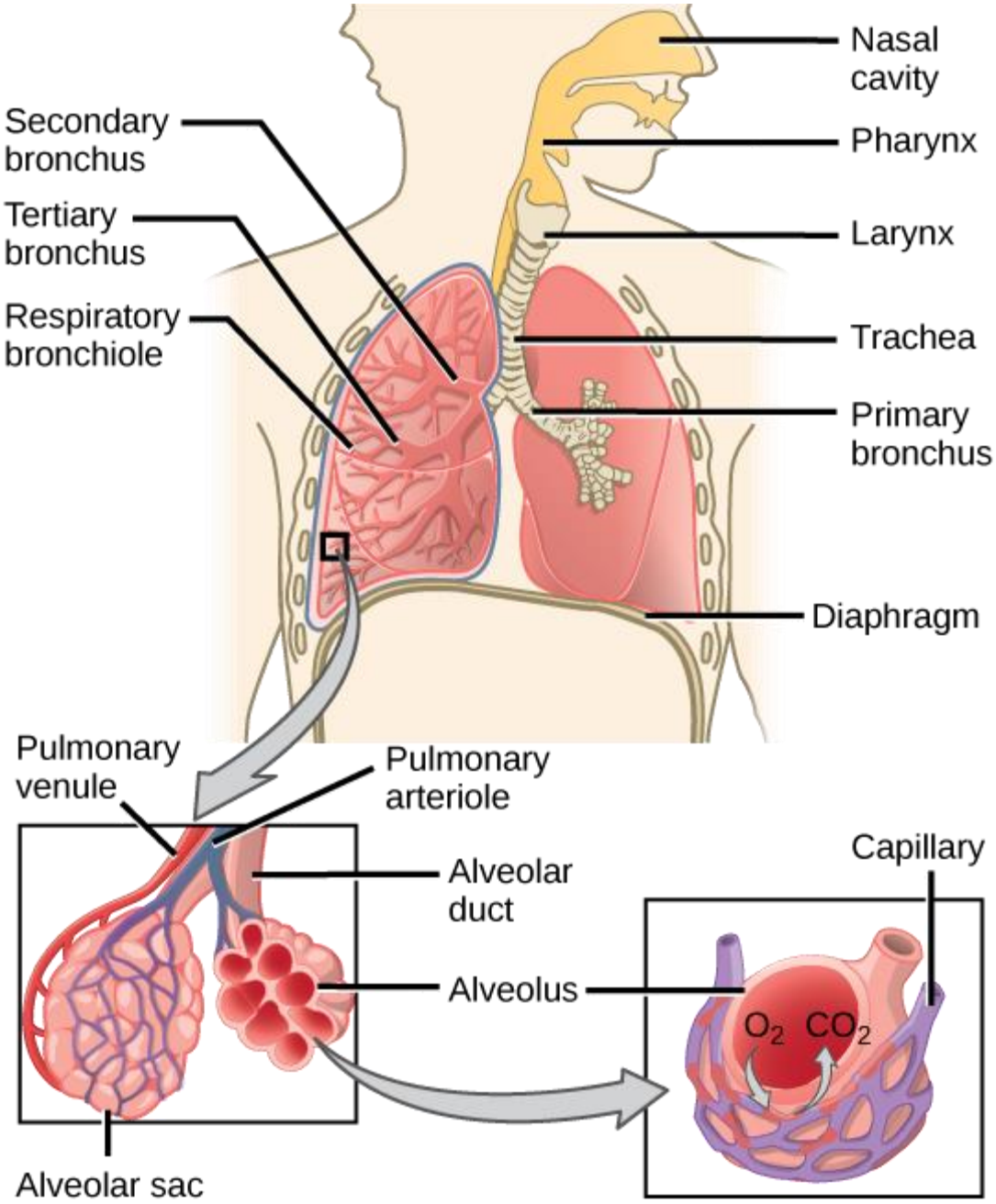
Signs and Symptoms

1. Difficulty breathing, coughing
2. Fatigue, sweating
3. Respiration greater than 20 breaths per minute
4. Cyanosis
5. Anxiety due to air hunger and lack of oxygenation

Nursing Care

1. Observe the patient closely for respiratory arrest.
2. In an intubated patient, suction the airways as required
3. Maintain a patent airway.
4. Closely monitor airway patency and oxygen supply.
5. Administer oxygen at appropriate concentrations




Nasal cavity
Pharynx
Larynx
Trachea
Primary bronchus
Diaphragm
Secondary bronchus
Tertiary bronchus
Respiratory bronchiole
Pulmonary venule
Pulmonary arteriole
Alveolar duct
Alveolus
Alveolar sac
Capillary
O_2
CO_2

Urinary Tract Infection (UTI):

- **Upper urinary tract Infections: Pyelonephritis**
- **Lower urinary tract infections : Cystitis ("traditional" UTI), Urethritis (often sexually-transmitted), Prostatitis.**

Risk Factors (causes) :

1. Aging:

a. **Increased incidence of diabetes mellitus**
b. **Increased risk of urinary stasis**
c. **Impaired immune response**

2. Females: short urethra, use of contraceptives that alter normal bacteria flora of vagina; with age increased incidence of rectocele (incomplete emptying).

3.Males: prostatic hypertrophy, bacterial prostatitis, anal intercourse
4.Urinary tract obstruction: tumor or calculi, strictures
5.Impaired bladder innervation.

Clinical features of UTI :

- **Dysuria**
- **Increased frequency**
- **Hematuria**
- **Fever**
- **Nausea/Vomiting (pyelonephritis)**
- **Flank pain (pyelonephritis).**

Diagnosis :

- **Physical Exam:**
  - **Tenderness (pyelonephritis)**
  - **Urethral discharge (urethritis)**
  - **Tender prostate on DRE (prostatitis)**
- **Labs:**
- **Urinalysis(+ leukocyte esterase, +nitrites,More likely gram-negative rods, + WBCs, + RBCs).**
- **Positive Urine Culture = >10*5* CFU/mL**
- **Most common pathogen for cystitis, prostatitis, pyelonephritis: *(Escherichia coli, Staphylococcus saprophyticus, Proteus mirabilis, Klebsiella, Enterococcus).***
- **Most common pathogen for urethritis(*Chlamydia trachomatis* ,*Neisseria Gonorrhea*).**

Lower Urinary Tract Infection – Cystitis :

Uncomplicated Cystitis :

- **Healthy adult woman (over age 12)**
- **Non-pregnant**
- **No fever, nausea, vomiting, flank pain**

Diagnosis: Dipstick urinalysis (no culture or lab tests needed).

Treatment

- **Trimethroprim/Sulfamethoxazole for 3 days**
- **May use fluoroquinolone (ciprofoxacin or levofloxacin) in patient with sulfa allergy, areas with high rates of bactrim-resistance**

- **Risk factors: Sexual intercourse.**

<u>Treatment of complicated Cystitis :</u>

- **Fluoroquinolone (or other broad spectrum antibiotic)**
- **7-14 days of treatment (depending on severity)**
- **May treat even longer (2-4 weeks) in males with UTI.**

<u>Treatment of Pyelonephritis :</u>

A) 2-weeks of Trimethroprim/sulfamethoxazole or fluoroquinolone
B) Hospitalization and IV antibiotics if patient unable to take orally.

- **Complications:**
  - **Perinephric/Renal abscess:**
  - **Nephrolithiasis with UTI**
    - **Suspect in patient with severe flank pain.**
    - **Need urology consult for treatment of kidney stone.**

<u>Prostatitis :</u>

- **Symptoms: Pain in the perineum, lower abdomen, testicles, penis, and with ejaculation, bladder irritation, bladder outlet obstruction, and sometimes blood in the semen**
- **Diagnosis:**
  - **Typical clinical history (fevers, chills, dysuria, malaise, myalgias, pelvic/perineal pain, cloudy urine)**
  - **The finding of an edematous and tender prostate on physical examination**
  - **Urinalysis, urine culture.**
- **Treatment:**
  - **Trimethoprim/sulfamethoxazole, fluroquinolone or other broad spectrum antibiotic for 4-6 weeks of treatment.**
- **Risk Factors:**
  - **Trauma**
  - **Sexual abstinence**
  - **Dehydration.**

<u>Urethritis :</u> It is caused by *Chlamydia trachomatis* or *Neisseria gonorrhoeae*.

<u>Symptoms :</u> Frequently asymptomatic in females, but can present with dysuria, discharge or pelvic inflammatory disease.
<u>Diagnosis</u> : Urine culture.
<u>Treatment :</u>
For Clamydia : Azithromycin, Doxycycline.
For Neisseria : ceftriaxone, ciprofloxacin.

Atherosclerosis

Atherosclerosis also known as Arteriosclerotic Vascular Disease or (ASVD):the condition in which an artery wall thickens as the result of a build-up of fatty materials such as cholesterol .

Causes

- High blood pressure
- High cholesterol
- An irritant, such as nicotine
- Certain diseases, such as diabetes and hypertensive

Symptoms

1. Atherosclerosis develops gradually, typically begins in early adolescence, and is usually found in most major arteries.

2. There are usually no atherosclerosis symptoms until an artery is so narrowed or clogged that it can't supply adequate blood to your organs and tissues.
Sometimes a blood clot completely obstructs blood flow, or even breaks apart and causes blood clots that can trigger a heart attack or stroke.

3. Atherosclerosis symptoms depend on which arteries are affected. For example:

- **Atherosclerosis in heart arteries**, have symptoms similar to those of a heart attack, such as chest pain (angina).
- **Atherosclerosis in the arteries leading to brain**, symptoms such as sudden numbness or weakness in arms or legs, difficulty speaking or slurred peech, or drooping muscles in your face.
- **Atherosclerosis in the arteries in arms and legs,** produces decreased blood flow is called peripheral artery occlusive disease (PAOD).have symptoms such as leg pain when walking

4. Sometimes atherosclerosis causes erectile dysfunction in men.

Risk factors for atherosclerosis

- Diabetes or Impaired glucose tolerance (IGT)
- Dyslipoproteinemia (unhealthy patterns of serum proteins carrying fats & cholesterol):

- Smoking.
- High blood pressure.
- Elevated serum C-reactive protein concentrations
- Advanced age
- Male sex
- Close relatives who have had some complications of atherosclerosis (eg. coronary heart disease or stroke)
- Genetic abnormalities, e.g. familial hypercholesterolemia.

Tests and diagnosis

1. **Physical examination** . These include:

- A weak or absent pulse below the narrowed area of the artery.
- Decreased blood pressure in an affected limb.
- Whooshing sounds (bruits) over the arteries, Signs of a pulsating bulge (aneurysm) in the abdomen or behind knee.
- Evidence of poor wound healing in the area .

2. **Blood tests.**
3. **Doppler ultrasound**
4. **Ankle-brachial index.**
5. **Other imaging tests.**
6. **Angiogram.**
7. **Electrocardiogram (ECG).**
8. **Other imaging tests**. may use **ultrasound**, a computerized tomography **(CT) scan** or a magnetic resonance angiogram **(MRA**)

Treatments

1. Lifestyle changes: such as eating a healthy diet and exercising, are often the first line of defense in treating atherosclerosis.

2. **Cholesterol medications**

- **Anti-platelet medications.** such as aspirin, to reduce the likelihood that platelets will clump in narrowed arteries, form a blood clot and cause further blockage.

- **Anticoagulants.** such as heparin or warfarin (Coumadin), can help thin blood to prevent clots from forming.
- **Blood pressure medications.** such as beta blockers, angioten-sinconverting enzyme (ACE) inhibitors and calcium channel blockers

3. Angioplasty

In this procedure inserts a long, thin tube (**catheter**) into the blocked or narrowed part of artery. A wire with a deflated balloon is passed through the catheter to the narrowed area.

The **balloon** is then inflated, compressing the deposits against artery walls. A **mesh tube (stent)** is usually left in the artery to help keep the artery open. Angioplasty may also be done with laser technology.

4. Endarterectomy

In some cases, fatty deposits must be surgically removed from the walls of a narrowed artery. When the procedure is done on arteries in the neck (the carotid arteries), it's known as carotid Endarterectomy.

5. Thrombolytic therapy. If artery that's blocked by a blood clot, insert a clot-dissolving drug into artery at the point of the clot to break it up.

6. Bypass surgery: create a graft bypass using a vessel from another part of your body or a tube made of synthetic fabric

Complications

The complications depend on the location of the blocked arteries.

1• Coronary artery diseases: ex. (Angina) or (Heart attack).

2 • Carotid artery diseases: ex. (Transient Ischemic Attack) (TIA) or (Stroke).

3. Peripheral artery disease: ex. (Gangrene).

4. Aneurysms : a serious complication is a bulge in the wall of artery.

DIABETES MELITUS

Diabetes(WHO) is a chronic disease, which occurs when the pancreas does not produce enough insulin, or when the body cannot effectively use the insulin it produces. This leads to an increased concentration of glucose in the blood (hyperglycaemia).

TYPES OF DIABETES

1) Type one diabetes

Is called insulin-dependent diabetes mellitus and occurs at a younger age or childhood. In these patients there is complete lack of the hormone insulin that mandates external administration of the hormone regularly as treatment.

2)Type two diabetes :

Around 75% of people with diabetes have this type . This was earlier termed non-insulin dependent diabetes mellitus (NIDDM). In type 2 diabetes, not enough insulin is produced or the insulin that is made by the body is insufficient to meet the needs of the body.

3) Gestational diabetes

Occurs in pregnant women who have never had diabetes before but who have high blood sugar levels during pregnancy. Gestational diabetes affects about 4% of all pregnant women

RISK FACTORS FOR DIABETES

- Age more than 45 years
- History of gestational diabetes mellitus
- Impaired glucose tolerance
- Excess body weight
- Sedentary lifestyle
- Family history of diabetes
- Dyslipidemia
- Hypertension (blood pressure ≥140/90 mmHg)
- Clinical cardiovascular diseases (myocardiainfarction, aging and stroke) or peripheral vascular diseases.

CAUSES OF DIABETES MELLITUS

	Type 1		**Type 2**
1.	Genetic susceptibility .	**1.**	Genetic susceptibility .
2.	Autoimmune destruction of Beta cells .	**2.**	Obesity .
3.	Environmental factors	**3.**	Physical inactivity .
4.	Sugary Food consumption	**4.**	Insulin resistance .
5.	Viruses and infections .	**5.**	Abnormal glucose production by the liver .

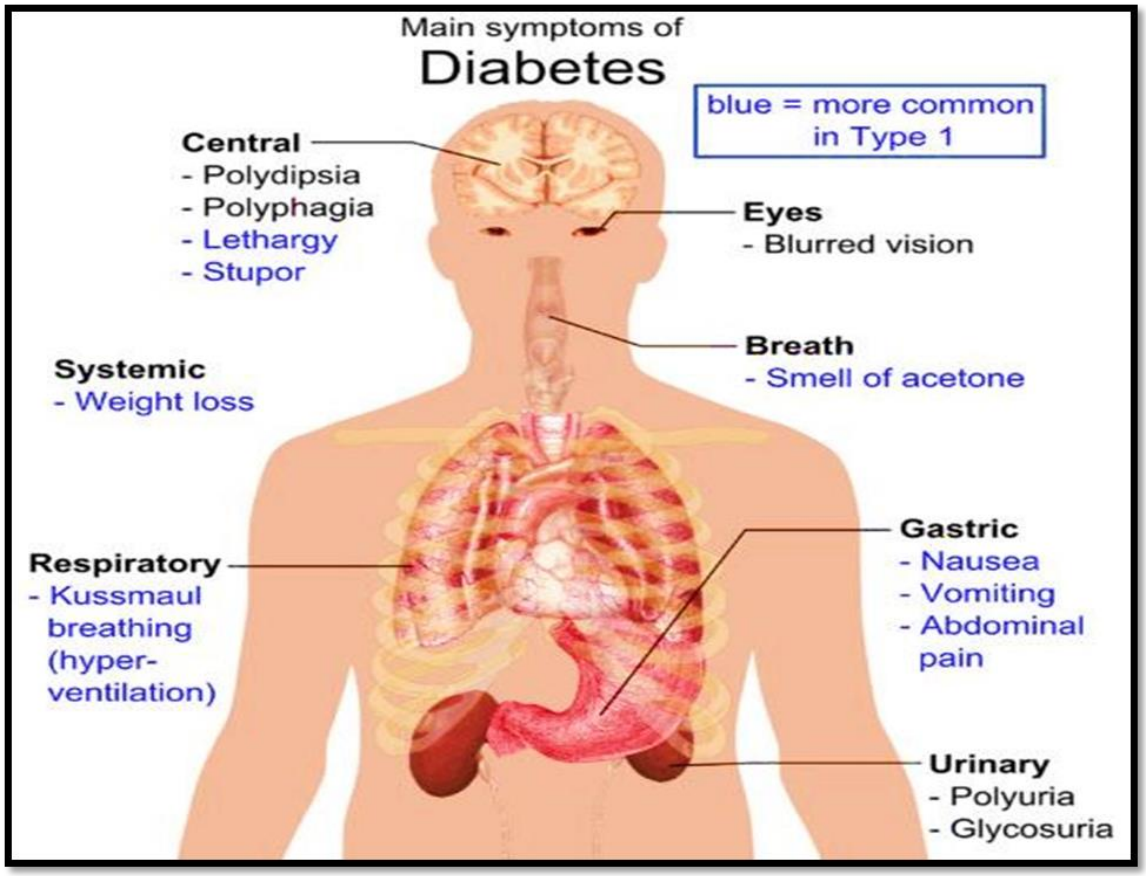
Main symptoms of diabetes

There are three cardinal features of high blood sugar and diabetes. These include:

Polydipsia – increased thirst

Polyphagia – increased hunger

Polyuria – increased frequency of urination particularly at night.



The diagnosis of diabetes

- The diagnosis of diabetes can be made in one of the following three methods but each must be confirmed on a subsequent day:

- ❑ Presence of symptoms of diabetes and a random blood glucose value of ≥200 mg/dL

- ❑ Fasting plasma glucose ≥126 mg/dL

- ❑ Two-hour plasma glucose ≥200 mg/dL during an oral glucose tolerance test (OGTT)

Acute complications

- Diabetic ketoacidosis (DKA) :
  There is complete lack of insulin & reliance on fatty acids for energy, results in formation of ketone bodies .
- Hyperosmolar coma :
  There is extreme rise of blood sugar and no enough insulin to suppress ketone synthesis .
- Infections : because there is defects in the mobilization of inflammatory cells and impairment of WBC in the process of phagocytosis .
- Hypoglycemicepisodes :

This is due to abnormally low blood glucose & it is an acute and life threatening condition

Chronic or Long-term complications

- Angiopathy:
  Atherosclerosis, hypertension,
  Cardio vascular disease .
- Diabetic retinopathy :
  Blureed vision, glaucoma,
  Cataracts, & blindness .
- Nephropathy :
  Mild proteinurea, nephrosis, And ESRD.
- Neuropathy :
  Gastroparesis, demntia ,
  sexual impotency .
- Diabetic foot .
- Skin changes:
  Diabetic dermopathy , trauma
  Lesions .
- Weight loss .

Poor wound healing

Management of diabetes

The five aspects of diabetes management make up the complete program for good control

Principles of patient education

The Main principles of patient education are :

- Principle 1: Identify People with Undiagnosed Diabetes
- Principle 2: Manage Prediabetes to Prevent or Delay the Onset of Type 2 Diabetes and Its Complications
- Principle 3: Provide Ongoing Self-Management Education and Support for People with Diabetes
- Principle 4: Provide Comprehensive Patient-Centered Care to Prevent or Delay the Onset of Diabetes Complications and to Treat Diabetes and Existing Complications
- Principle 5: Consider the Needs of Special Populations — Children, Women of Childbearing Age, Older Adults, and High-Risk Racial and Ethnic Groups

Hypertension (HTN):

HTN is simply defined as a persistently abnormal elevation in blood pressuremore than 140/90mmHg. HTN is not diagnosed unless BP is elevated on multiple occasions (at least 2-3) or if the patient is complications of HTN (as with patients admitted with hypertensive emergency). We treat HTN because it is a major risk factor for stroke, MI, CCF, CKD, retinopathy and peripheral vascular disease.

Types of HTN:

Essential (Primary) HTN – most common (95%) and due to a combination of genetic, environmental factors (salt intake, weight, exercise etc) and age. Usually develops after the age of 30 but can develop earlier.

Secondary HTN – HTN due to other causes. All patients < 30yo with HTN and those with HTN no sufficiently controlled on 3 drugs should be assessed for these conditions.

- **Renal – most common; can be related to CKD or renal artery stenosis**
- **Cushing's syndrome – hypercortisolemia**
- **Conn's syndrome - hyperaldosteronemia**
- **Coarctation of the Aorta**
- **Pheochromocytoma – catecholamine producing tumor**
- **Hyperthyroidism or hypothyroidism.**

Degrees of HTN :

- **Mild (Grade 1) = 140-160/90-99mmHg**
- **Moderate (Grade 2) = 160-180/100-109mmHg**
- **Severe (Grade 3) = > 180/110mmHg**
- **Hypertensive Urgency – severe HTN but no end organ damage**
- **Hypertensive Emergency – severe HTN with end organ damage**

Diagnosis

HTN is diagnosed if BP is elevated on 3 separate occasions. Once the diagnosis of HTN has been made the following steps tests should be ordered:

- **Cr, electrolytes, RBG, cholesterol, ECG, fundoscopy in all patients**
- **TSH**
- **Renal US (with dopplers), urinary catecholamines/VMA/cortisol**
- **serum renin/aldosterone**
- **CXR**
- **Echo if looking for cause of secondary HTN**

Complications of Hypertension :

- **Hypertensive Encephalopathy (confusion, headache)**
- **Acute retinal hemorrhage**
- **Myocardial ischemia or infarction**

□ Pulmonary Edema

□ Acute Kidney Injury (recent onset of oliguria or anuria, elevated creatinine, blood on UA)

Treatment :

1- **Treatment of the cause (DM, renal disease,…).**
2- **Salt restriction, decrease weight, exercise, relaxation.**
3- **Drugs (ACE inhibitors, B blockers, Ca blockers, Diuretics,…..).**

Rheumatoid arthritis (RA) :

It is a chronic ,inflammatory disease affecting the joints. It is an autoimmune disease *(immune reaction against joint tissues - synovial membrane*).
It causes pain, swelling, stiffness, loss of function in the joints ,generally occurs in a symmetrical pattern and may also attack tissue in the skin, lungs, eyes, and blood vessels . small joints of hands and feet affected first, larger joints later and occurs more in woman (3:1).

Predisposing Factors:

- **No specific agent is known. infectious agents, such as viruses and bacteria, may trigger RA in people with an inherited tendency to develop the disease**

Clinical Features:
Around the joints

- **warmth**
- **redness**
- **swelling**
- **pain**
- **limitations in joint motion**

General

- **sickness**
- **tiredness**
- **fever**

Diagnosis:

- **Patient history**
- **MRI, arthrography, arthroscopy**
- **Blood test (RF, CRP)**

RF→ Waaler- Rose test
1:32=normal
1:64≤ pathological.

Treatment:

- **relieve pain**
- **reduce swelling**
- **slow down or help prevent joint damage**
- **increase ability to function**
- **improve sense of well-being**

- **exercise**
- **medication**
- **stress reduction**
- **DMARDs (disease-modifying anti-rheumatic drugs): methotrexate, leflunomide, sulfasalazine, cyclosporine**
- **corticosteroids : cortisone, hydrocortisone, prednisolone.**

- **in some cases - surgery (joint replacement and tendon reconstruction).**

Treatment and Nursing Care of RF:

- Bed rest during acute phase with fever to decrease workload of the heart. Provide child with quiet diversional activity in bed.
- NSAIDs (Motrin)for arthritic pain
- Steroids for severe, life-threatening Carditis only, since they do not reduce valular damage. Teach parents that steroids, ex. Prednisone cannot be discontinued suddenly, must be tapered down slowly.
- Penicillin to eradicate strep, erythromycin for penicillin allergy
- Penicillin prophylaxis is essential part of treatment: Bicillin 1.2 million unit's IM q28 days, or monthly, for 10 years. Drastically reduces permanent damage to Mitral and aortic valves.