



Critical Care Nursing

Prepared by

Ehab Mohammed shaker

Assistant Lecturer

**NORTHERN TECHNICAL UNIVERSITY
TECHNICAL INSTITUTE OF MOSUL
NURSING TECHNICAL DEPARTMENT**

Ambulance branch

Nursing Process

The **nursing process** is a systematic method for providing care to clients.

The nursing process is dynamic and requires creativity in its application. The steps are the same for each client situation, but the correlation and results will be different. The nursing process is used with clients of all ages and in any care setting. See figure (1) below:

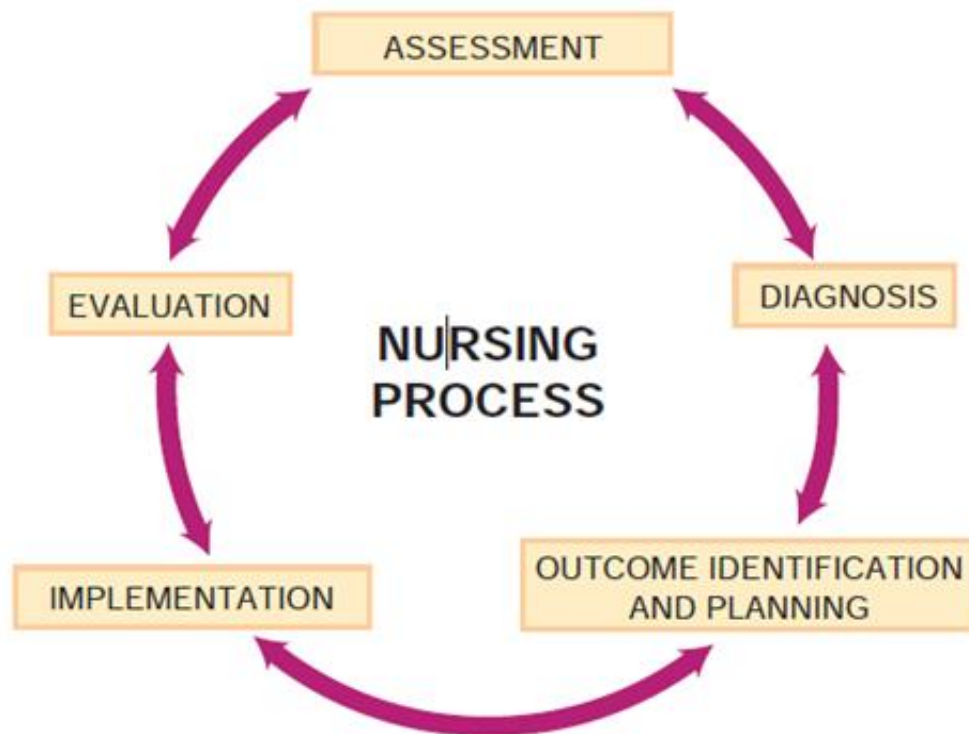


Figure (1) Components of Nursing Process

Nursing Assessment

The first step in the nursing process includes systematic collection, verification, organization, interpretation, and documentation of data. The completeness and correctness of this data relate directly to the accuracy of the steps that follow.

Assessment involves the following steps:

- Data collection from a variety of sources
- Data organization
- Data documentation

Purpose of Assessment

The purpose of assessment is to:

1. Organize a database regarding a client's physical, psychosocial, and emotional health problems can be identified.
2. Identifying the client's strengths gives the nurse information about the abilities, behaviors, and skills the client can use during the treatment and recovery process.
3. During assessment, the client can discuss health care concerns and goals with the nurse.

Types of Assessment

1. **Comprehensive Assessment:** provides baseline client data including a complete health history and current needs assessment. It is usually completed upon admission to a health care agency.

2. **Focused Assessment:** is limited to potential health care risks, a particular need, or health care concern. Used when short stays are anticipated (e.g., outpatient surgery centers and emergency departments).
3. **Ongoing Assessment:** When problems are identified during a comprehensive or focused assessment, follow-up is required. An ongoing assessment includes systematic monitoring of specific problems.

Collecting Data

Data collection is the process of gathering information about a client's health status.

Components of a Nursing Health History

1. **Biographic Data:** Client's name, address, age, sex, marital status, occupation, religious preference.
2. **Chief Complaint or Reason for Visit:** The answer given to the question "Can you tell me the reason you came to the hospital or clinic today?"
3. **History of Present Illness:**

When the symptoms started

- Whether the onset of symptoms was sudden or gradual
- How often the problem occurs
- Character of the complaint (e.g., intensity of pain or quality of sputum, emesis, or discharge)
- Activity in which the client was involved when the problem occurred
- Phenomena or symptoms associated with the chief complaint
- Factors that aggravate or alleviate the problem

4. Past History

- **Childhood illnesses**, such as chickenpox, mumps, measles, rubella (German measles), scarlet fever, rheumatic fever, and other significant illnesses
- **Childhood immunizations** and the date of the last tetanus shot
- **Allergies** to drugs, animals, insects, or other environmental agents, the type of reaction that occurs, and how the reaction is treated
- **Accidents and injuries**: how, when, and where the incident occurred, type of injury, treatment received, and any complications.
- **Hospitalization** for serious illnesses: reasons for the hospitalization, dates, surgery performed, course of recovery, and any complications.
- **Medications**: all currently used prescription and over-the-counter medications, such as aspirin, nasal spray, vitamins, or laxatives.

5. **Family History of Illness**: such as heart disease, cancer, diabetes, hypertension, obesity, allergies, arthritis, tuberculosis, bleeding, alcoholism, and any mental health disorders.

6. Lifestyle

- **Personal habits**: The amount, frequency, and duration of substance use (tobacco, alcohol, coffee, cola, tea, and illicit or recreational drugs)
- **Diet**: description of a typical diet on a normal day or any special diet, number of meals and snacks per day
- **Sleep/rest patterns**: usual daily sleep/wake times, difficulties sleeping, and remedies used for difficulties
- **Activities of daily living (ADL)**
Instrumental activities of daily living: any difficulties experienced in food preparation, shopping, transportation.

7. Social Data

- **Family relationships/friendships:** The client's support system in times of stress (who helps in time of need?), what effect the client's illness has on the family, and whether any family problems are affecting the client.
- **Educational history:** Data about the client's highest level of education attained and any past difficulties with learning,
- **Occupational history:** Current employment status, the number of days missed from work because of illness, any history of accidents on the job.

8. Psychological Data

- Major stressors experienced and the client's perception of them

Sources of Data

Although data are collected from a variety of sources, the client is considered the **primary source** of data (the major provider of information about a client).

Sources of data other than the client are considered **secondary sources** and include family members, other health care providers, and medical records.

Types of Data

Two types of information are collected through assessment: subjective and objective.

- **Subjective data** (also called symptoms): are data from the client's (sometimes family's) point of view and include perceptions, feelings, and concerns. The primary method of collecting subjective data is the interview.

- **Objective data** (also called signs): are observable and measurable data that are obtained through both standard assessment techniques performed during the physical examination and the results of laboratory and diagnostic testing.

Nursing Diagnosis

The second step in the nursing process, a **nursing diagnosis** is a clinical judgment about individual, family, or community responses to actual or potential health problems/life processes. A nursing diagnosis provides the basis for selection of nursing interventions to achieve outcomes for which the nurse is accountable.

Table (1) Compares Selected Nursing and Medical Diagnoses.

NURSING DIAGNOSIS	MEDICAL DIAGNOSIS
Decreased Cardiac Output Ineffective Breathing Pattern Risk for Imbalanced Fluid Volume	Congestive heart
Ineffective Airway Clearance	Chronic obstructive
Ineffective Breathing Pattern	pulmonary disease

Nursing Planning and Outcome Identification

Planning and outcome identification are the third step of the nursing process and include both establishing guidelines for the proposed course of nursing action to resolve the nursing diagnoses and developing the client's plan of care.

Nursing Implementation

The fourth step in the nursing process is implementation, the performance of the nursing interventions identified during the planning phase.

Requirements for Effective Implementation

Implementation involves many skills, including assessing the client's condition before, during, and after each nursing intervention.

Psychomotor, interpersonal, and cognitive skills are also needed to perform the planned nursing interventions.

- **Psychomotor skills:** are used when handling medical equipment and performing skills such as changing dressings, giving injections, and helping a client perform range-of-motion (ROM) exercises.
- **Interpersonal skills:** are used when collecting data, providing information in teaching sessions, and offering support in times of grief.
- **Cognitive skills:** enable the nurse to make appropriate observations, understand the rationale for the activities performed, ask appropriate questions, and make decisions about those things that need to be done.

Nursing Evaluation

Evaluation, the fifth step in the nursing process, determines whether client goals have been met, partially met, or not met.

REVIEW OF SYSTEMS

Purposes:

- (1) To evaluate the past and present health state of each body system.
- (2) To double-check in case any significant data were omitted in the Present Illness section.
- (3) To evaluate health promotion practices.

General Overall Health State: Present weight (gain or loss, period of time, by diet or other factors), fatigue, weakness or malaise, fever, chills, sweats or night sweats.

1. **Skin:** History of skin disease (eczema, psoriasis, hives), pigment or color change, change in mole, excessive dryness or moisture, pruritus, excessive bruising, rash, or lesion.

2. **Hair:** Recent loss, change in texture.

3. **Nails:** Change in shape, color, or brittleness.

Health Promotion: Amount of sun exposure, method of self-care for skin and hair.

4. **Head:** Any unusually frequent or severe headache, any head injury, dizziness (syncope), or vertigo.

5. **Eyes:** Difficulty with vision (decreased acuity, blurring, blind spots) eye pain, diplopia (double vision), redness or swelling, watering or discharge, glaucoma or cataracts.

Health Promotion: Wears glasses or contacts; last vision check or glaucoma test; how coping with loss of vision if any.

6. **Ears:** Earaches, infections, discharge and its characteristics, tinnitus, or vertigo.

Health Promotion: Hearing loss, hearing aid use, how loss affects daily life, any exposure to environmental noise, method of cleaning ears.

7. **Nose and Sinuses:** Discharge and its characteristics, any unusually frequent or severe colds, sinus pain, nasal obstruction, nosebleeds, allergies or hay fever, or change in sense of smell.

8. Mouth and Throat: Mouth pain, frequent sore throat, bleeding gums, toothache, lesion in mouth or tongue, dysphagia, hoarseness or voice change, tonsillectomy, altered taste.

Health Promotion: Pattern of daily dental care, use of prostheses, (dentures, bridge), and last dental checkups.

9. Neck: Pain, limitation of motion, lumps or swelling, enlarged or tender nodes, goiter.

10. Breast: Pain, lump, nipple discharge, rash, history of breast disease, any surgery on breasts.

Axilla: Tenderness, lump or swelling, rash.

Health Promotion: Performs breast self-examination, including its frequency and method used, last mammogram and results.

11. Respiratory System: History of lung disease (asthma, emphysema, bronchitis, pneumonia, tuberculosis), chest pain with breathing, wheezing or noisy breathing, shortness of breath, how much activity produces shortness of breath, cough, sputum (color, amount), hemoptysis, toxin or pollution exposure.

Health Promotion: Last chest x-ray examination.

12. Cardiovascular System: Precordial or retrosternal pain, palpitation, cyanosis, dyspnea on exertion (specify amount of exertion it takes to produce dyspnea), orthopnea, paroxysmal nocturnal dyspnea, edema, hypertension, coronary artery disease, anemia.

Health Promotion: Date of last ECG or other heart tests and results.

13. Peripheral Vascular System: Coldness, numbness and tingling, swelling of legs (time of day, activity), discoloration in hands or feet (bluish red, pallor, mottling, associated with position, especially around feet and ankles), varicose veins or complications, intermittent claudication, thrombophlebitis ulcers.

Health Promotion: If work involves long-term sitting or standing, avoid crossing legs at the knees, wear support hose.

14. **Gastrointestinal System**: Appetite, food intolerance, dysphagia, heartburn, indigestion, pain, (associated with eating), other abdominal pain, nausea and vomiting (character), vomiting blood, history of abdominal disease (ulcer, liver or gallbladder, jaundice, appendicitis, colitis), flatulence, frequency of bowel movement, any recent change, stool characteristics, constipation or diarrhea, black stools, rectal bleeding, rectal conditions, hemorrhoids, fistula).

Health Promotion: Use of antacids or laxatives.

15. **Urinary System**: Frequency, urgency, nocturia (the number of times the person awakens at night to urinate, recent change), dysuria, polyuria or oliguria, urine color (cloudy or presence of hematuria), incontinence, history of urinary disease (kidney disease, kidney stones, urinary tract infections, prostrate); pain in flank, groin, or low back.

Health Promotion: Measures to avoid or treat urinary tract infections.

16. **Male Genital System**: Penis or testicular pain, sores or lesions, penile discharge, lumps, hernia.

Health Promotion: Perform testicular self-examination? How frequently?

17. **Female Genital System**: Menstrual history (age at menarche, last menstrual period, cycle and duration, any amenorrhea or menorrhagia, premenstrual pain or dysmenorrhea, inter-menstrual spotting), vaginal itching, discharge and its characteristics, age at menopause.

Health Promotion: Last gynecologic checkup, last Pap smear and results.

18. **Sexual Health**: Presently in a relationship involving intercourse? Are aspects of sex satisfactory to you and partner, any dyspareunia (for female), any changes in erection or ejaculation (for male), and use of contraceptives, is contraceptive method satisfactory? Use of condoms, how frequently? Aware of any contact with partner who has sexually transmitted infection (gonorrhea, herpes, chlamydia, venereal warts, HIV/AIDS, syphilis)?

Health Promotion: Prevention of STI's? STI checkup as needed?

19. **Musculoskeletal System**: History of arthritis or gout. In the joints: pain, stiffness, swelling (location, migratory nature), deformity, limitation of motion. In the muscles: any pain, cramps, weakness, gait problems or problems with coordinated activities. In the back: any pain (location and radiation to extremities), stiffness, limitation of motion, or history of back pain or disk disease.

Health Promotion: How much walking per day? What is the effect of limited range of motion on daily activities, such as on grooming, feeding, toileting, dressing? Any mobility aids used?

20. **Neurologic System**: History of seizure disorder, stroke, fainting, blackouts. In motor function: weakness, tic or tremor, paralysis, coordination problems. In sensory function: numbness and tingling (paresthesia). In cognitive function: memory disorder (recent or distant, disorientation).

21. **Hematologic System**: Bleeding tendency of skin or mucous membranes, excessive bruising, lymph node swelling, exposure to toxic agents or radiation, blood transfusion and reactions.

22. **Endocrine System**: History of diabetes or diabetic symptoms (polyuria, polydipsia, and polyphagia), history of thyroid disease, intolerance to heat or cold, change in skin pigmentation or texture, excessive sweating, abnormal hair distribution, nervousness, tremors.

PREPARING FOR THE EXAMINATION

Preparing the Physical Setting

The physical examination may take place in a variety of physical settings such as a hospital room, outpatient clinic, physician's office, or a client's home. It is important that the nurse strive to ensure that the examination setting meets the following conditions:

- Comfortable, warm room temperature—Provide a warm blanket if the room temperature cannot be adjusted.
- Private area free of interruptions from others— Close the door or pull the curtains if possible.

- Quiet area free of distractions—Turn off the radio, television, or other noisy equipment.
- Adequate lighting, it is best to use sunlight (when available). However, good overhead lighting is sufficient.
- A bedside table/tray to hold the equipment needed for the examination

Use Standard Precautions, or the equivalent, for the care of all patients:

A. Hand Hygiene

B. Gloves

C. Mask, Eye Protection, Face Shield

D. Gown

E. Patient Care Equipment

F. Environmental Control

G. Patient Placement:

- Sitting Position
- Supine Position
- Dorsal Recumbent Position
- SIMS' Position
- Standing Position
- Prone Position
- Knee-Chest Position
- Lithotomy Position

PHYSICAL EXAMINATION TECHNIQUES:

Four basic techniques must be mastered before you can perform a thorough and complete assessment of the client. These techniques are inspection, palpation, percussion, and auscultation

Inspection:

Inspection involves using the senses of **vision, smell, and hearing** to observe and detect any normal or abnormal findings. This technique is used from the moment that you meet the client and continues throughout the examination.

Use the following guidelines as you practice the technique of inspection:

- Make sure the room is a comfortable temperature.
- Use good lighting, preferably sunlight.
- Look and observe before touching.
- Completely expose the body part you are inspecting while draping the rest of the client as appropriate.

- Note the following characteristics while inspecting the client: color, patterns, size, location, consistency, symmetry, movement, behavior, odors, or sounds.
- Compare the appearance of symmetric body parts (e.g., eyes, ears, arms, hands) or both sides of any individual body part.

Palpation:

Palpation consists of using parts of the **hand to touch and feel** for the following characteristics: texture (rough/ smooth), temperature (warm/cold), moisture (dry/wet), mobility (fixed/movable/still/vibrating), consistency (soft/hard/fluid filled), strength of pulses (strong/weak/thread/ bounding), size (small /medium/large), shape (well defined/ irregular), and degree of tenderness. Three different parts of the hand—the finger pads, ulnar/palmar surface, and dorsal surface—are used during palpation.

Several types of palpation can be used to perform an assessment; they include light, deep, and bimanual palpation.

- **Light palpation:** To perform light palpation, place your dominant hand lightly on the surface of the structure. There should be very little or no depression (less than 1 cm). Feel the surface structure using a circular motion. Use this technique to feel for pulses, tenderness, surface skin texture, temperature, and moisture.
- **Deep palpation:** Place your dominant hand on the skin surface and your non-dominant hand on top of your dominant hand to apply pressure. This should result in a surface depression between 2.5 and 5 cm. This allows you to feel very deep organs or structures that are covered by thick muscle.
- **Bimanual palpation:** Use two hands, placing one on each side of the body part (e.g., uterus, breasts, spleen) being palpated. Use one hand to apply pressure and the other hand to feel the structure. Note the size, shape, consistency, and mobility of the structures you palpate.

Percussion:

Percussion involves tapping body parts to produce sound waves. These sound waves or vibrations enable the examiner to assess underlying structures. Percussion has several different assessment uses, including:

Direct percussion: is the direct tapping of a body part with one or two fingertips to elicit possible tenderness (e.g., tenderness over the sinuses).

Blunt percussion: is used to detect tenderness over organs (e.g. Kidneys) by placing one hand flat on the body surface and using the fist of the other hand to strike the back of the hand flat on the body surface.

Indirect or mediate percussion: is the most commonly used method of percussion.

The following techniques help to develop proficiency in the technique of indirect percussion:

- Place the middle finger of your non dominant hand on the body part you are going to percuss.
- Keep your other fingers off the body part being percussed because they will damp the tone you elicit .
- Use the pad of your middle finger of the other hand (ensure that this fingernail is short) to strike the middle finger of your non dominant hand that is placed on the body part.
- Deliver two quick taps and listen carefully to the tone.
- Use quick, sharp taps by quickly flexing your wrist.

Auscultation is a type of assessment technique that requires the use of a stethoscope to listen for heart sounds, movement of blood through the cardiovascular system, movement of the bowel, and movement of air through the respiratory tract. A **stethoscope** is used because these body sounds are not audible to the human ear. The sounds detected using auscultation are classified according to the intensity (loud or soft), pitch (high or low), duration (length), and quality (musical, crackling, raspy) of the sound.

The following guidelines should be followed as you practice the technique of auscultation:

- **Competing** noises from the environment (e.g., radio, television, machinery).
- **Expose** the body part you are going to auscultate. Do not auscultate through the client's clothing or gown.
- **Use** the diaphragm of the stethoscope to listen for high-pitched sounds, such as normal heart sounds, breath sounds, and bowel sounds, and press the diaphragm firmly on the body part being auscultated.

Use the bell of the stethoscope to listen for low pitched sounds such as abnormal heart sounds (abnormal loud, blowing, or murmuring sounds heard during auscultation). Hold the bell lightly on the body part being auscultated.

Fluid and electrolyte balance

Amount and Composition of Body Fluids

Approximately 60% of the weight of a typical adult consists of fluid (water and electrolytes).

Body fluid is located in two fluid compartments:

1. The intracellular space (fluid in the cells) (ICF) Approximately two thirds of body fluid is in the intracellular fluid compartment and is located primarily in the skeletal muscle mass.

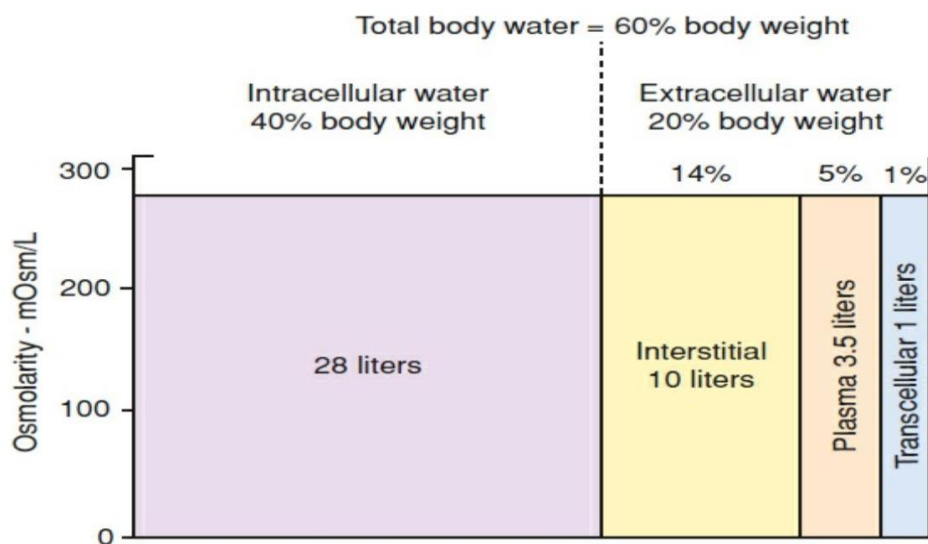
2. The extracellular space (fluid outside the cells) (ECF) Approximately one third is in the extracellular fluid compartment

ECF compartment is further divided into:

A. The intravascular: (the fluid within the blood vessels) contains plasma, the effective circulating volume. Approximately 3 L of the average 6 L of blood volume is made up of plasma. The remaining 3 L is made up of erythrocytes, leukocytes, and thrombocytes.

B. The interstitial: The interstitial space contains the fluid that surrounds the cell and totals about 11 to 12 L in an adult. Lymph is an interstitial fluid.

C. the Trans cellular fluid spaces: The trans cellular space is the smallest division of the ECF compartment and contains approximately 1 L. Examples of trans cellular fluids include cerebrospinal, pericardial, synovial, intraocular, and pleural fluids; sweat; and digestive secretions.



Electrolytes

Electrolytes in body fluids are active chemicals:

1. Cations that carry positive charges. The major cations in body fluid are sodium, potassium, calcium, magnesium, and hydrogen ions.
2. Anions that carry negative charges. The major anions are chloride, bicarbonate, phosphate, and sulfate.

Systemic Routes of Gains and Losses

Table 14-2 AVERAGE DAILY INTAKE AND OUTPUT IN AN ADULT

Intake (mL)		Output (mL)	
Oral liquids	1300	Urine	1500
Water in food	1000	Stool	200
Water produced by metabolism	300	Insensible	
		Lungs	300
		Skin	600
Total gain*	2600	Total loss*	2600

Kidneys

the usual daily urine volume in the adult is 1 to 2 L. A general rule is that the output is approximately 1 mL of urine per kilogram of body weight per hour (1 mL/kg/h) in all age groups.

Skin

Sensible perspiration refers to visible water and electrolyte loss through the skin (sweating). The chief solutes in sweat are sodium, chloride, and potassium. Actual sweat losses can vary from 0 to 1000 mL or more every hour, depending on factors such as the environmental temperature. Continuous water loss by evaporation (approximately 600 mL/day)

Lungs

The lungs normally eliminate water vapor (insensible loss) at a rate of approximately 300 mL every day. The loss is much greater with increased respiratory rate or depth, or in a dry climate.

Gastrointestinal Tract

The usual loss through the GI tract is 100 to 200 mL daily, even though approximately 8 L of fluid circulates through the GI system every 24 hours.

Laboratory Tests for Evaluating Fluid Status

1. Urine specific gravity measures the kidneys' ability to excrete or conserve water. The normal range of urine specific gravity is 1.010 to 1.025 mmol/L. Specific gravity varies inversely with urine volume.
2. Blood Urea Nitrogen (BUN) is made up of urea, The normal BUN is 10 to 20 mg/dL (3.6 to 7.2 mmol/L).

* **Factors that increase BUN** include: decreased renal function, GI bleeding, dehydration, increased protein intake, fever, and sepsis.

* **Factors that decrease BUN** include: end-stage liver disease, a low-protein diet, and any condition that results in expanded fluid volume (eg, pregnancy).

3. Creatinine is the end product of muscle metabolism. It is a better indicator of renal function than BUN because it does not vary with protein intake and metabolic state. The normal serum creatinine is approximately 0.7 to 1.4 mg/dL (62 to 124 mmol/L).

FLUID VOLUME DISTURBANCES

Hypovolemia: is the term used for loss of fluid.

Hypervolemia: is the term used when a patient has fluid overload.

There are a number of factors that will cause fluid loss and gain

Loss

- Diarrhea;
- Vomiting;
- Sweating/fever;
- Hemorrhage;
- Diuretics;
- Excessive urination.

Gain

- Congestive cardiac failure;
- Renal failure;
- High sodium intake;
- Cirrhosis of the liver;
- Over infusion of intravenous fluids.

Fluid Volume Disturbances

Imbalance	Contributing Factors	Signs/Symptoms and Laboratory Findings
Fluid volume deficit (hypovolemia)	Loss of water and electrolytes, as in vomiting, diarrhea, fistulas, fever, excess sweating, burns, blood loss, gastrointestinal suction, and third-space fluid shifts; and decreased intake, as in anorexia, nausea, and inability to gain access to fluid. Diabetes insipidus and uncontrolled diabetes both contribute to a depletion of extracellular fluid volume.	Acute weight loss, ↓ skin turgor, oliguria, concentrated urine, capillary filling time prolonged, low CVP, ↓ BP, flattened neck veins, dizziness, weakness, thirst and confusion, ↑ pulse, muscle cramps, sunken eyes, nausea, increased temperature; cool, clammy, pale skin <i>Labs indicate:</i> ↑ hemoglobin and hematocrit, ↑ serum and urine osmolality and specific gravity, ↓ urine sodium, ↑ BUN and creatinine, ↑ urine specific gravity and osmolality
Fluid volume excess (hypervolemia)	Compromised regulatory mechanisms, such as kidney injury, heart failure, and cirrhosis; overzealous administration of sodium-containing fluids; and fluid shifts (i.e., treatment of burns). Prolonged corticosteroid therapy, severe stress, and hyperaldosteronism augment fluid volume excess.	Acute weight gain, peripheral edema and ascites, distended jugular veins, crackles, elevated CVP, shortness of breath, ↑ BP, bounding pulse and cough, ↑ respiratory rate, ↑ urine output <i>Labs indicate:</i> ↓ hemoglobin and hematocrit, ↓ serum and urine osmolality, ↓ urine sodium and specific gravity

Nursing Management

1. The nurse monitors and measures fluid I&O at least every 8 hours, and sometimes hourly.
2. Daily body weights are monitored.
3. The nurse observes for a weak, rapid pulse and orthostatic hypotension.
4. Skin turgor are monitored on a regular.
5. The degree of oral mucous membrane moisture is also assessed.
6. Urine concentration is monitored by measuring the urine specific Gravity.

A CORONARY ARTERY DISEASE

Atherosclerosis, an abnormal accumulation of lipid, or fatty substances, and fibrous tissue in the lining of arterial blood vessel walls. These substances block and narrow the coronary vessels in a way that reduces blood flow to the myocardium.

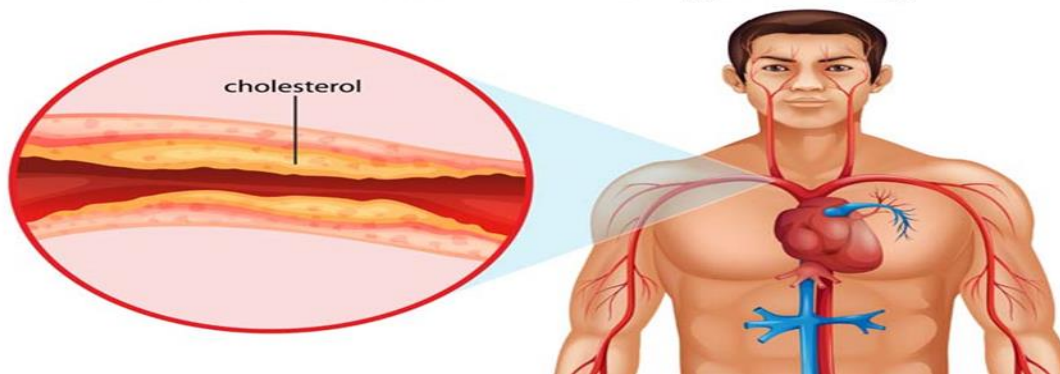
Angina pectoris:

Angina pectoris is a clinical syndrome usually characterized by episodes or paroxysms of pain or pressure in the anterior chest. The cause is insufficient coronary blood flow, resulting in a decreased oxygen supply when there is increased myocardial demand for oxygen in response to physical exertion or emotional stress.

Causes:

Angina is usually caused by atherosclerotic disease. Almost invariably, angina is associated with a significant obstruction of at least one major coronary artery

Cholesterol Blocking Artery



Types of Angina:

- **Stable angina:** predictable and consistent pain that occurs on exertion and is relieved by rest and/or nitroglycerin
- **Unstable angina** (also called pre infarction angina): symptoms increase in frequency and severity; may not be relieved with rest or nitroglycerin
- **Intractable or refractory angina:** severe incapacitating chest pain
- **Variant angina** (also called Prinzmetal's angina): pain at rest with reversible ST-segment elevation; thought to be caused by coronary artery vasospasm
- **Silent ischemia:** objective evidence of ischemia (such as electrocardiographic changes with a stress test), but patient reports no pain

Clinical Manifestations

1. Pain

The pain is often felt deep in the chest behind the sternum (retrosternal area).

2. Mild indigestion and heavy sensation in the upper chest

3. Severe apprehension and a feeling of impending death.

4. A feeling of weakness or numbness in the arms, wrists, and hands

5. Shortness of breath, pallor.

6. Dizziness or lightheadedness

7. Nausea and vomiting may accompany the pain. Anxiety may occur with angina.

Diagnosis

- **Electrocardiogram (ECG):** Records electrical activity of the heart and can detect when the heart is starved of oxygen.
- **Stress test:** Blood pressure readings and an ECG while the patient is increasing physical activity.
- **Chest X-ray:** This enables the doctor to see structures inside the chest.
- **Coronary angiography:** Dye and special X-rays to show the inside of coronary arteries.
- **Blood tests:** These check fat, cholesterol, sugar, and protein levels.

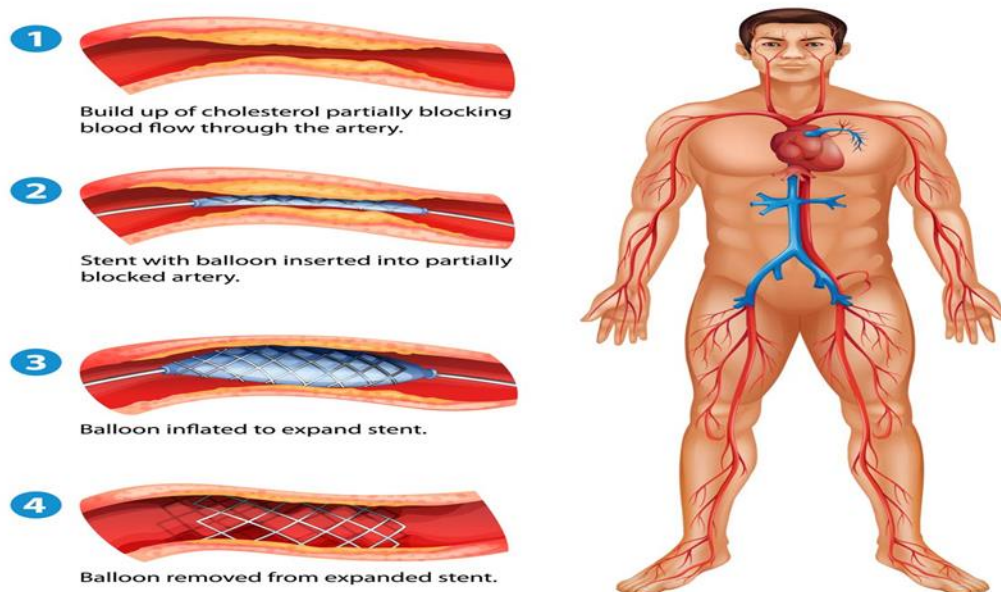
Risk factors:

- Unhealthy cholesterol levels
- High blood pressure
- Tobacco smoking
- Diabetes
- Being overweight or obese

- Metabolic syndrome
- Sedentary lifestyle
- Being over 45 years of age for men and over 55 years of age for women
- Family history of heart disease

Management:

Stent with Balloon Angioplasty



Lifestyle changes recommended to treat angina include:

- Stopping smoking
- Controlling weight
- Regularly checking cholesterol levels
- Avoiding large meals

- Avoid stress
- Eating fruits, vegetables, whole grains, low-fat or no-fat dairy products, and lean meat and fish
- Nitrates, such as nitroglycerin, are most often prescribed for angina.
Other medicines may be used such as:

- Anticoagulants.

Nursing Intervention

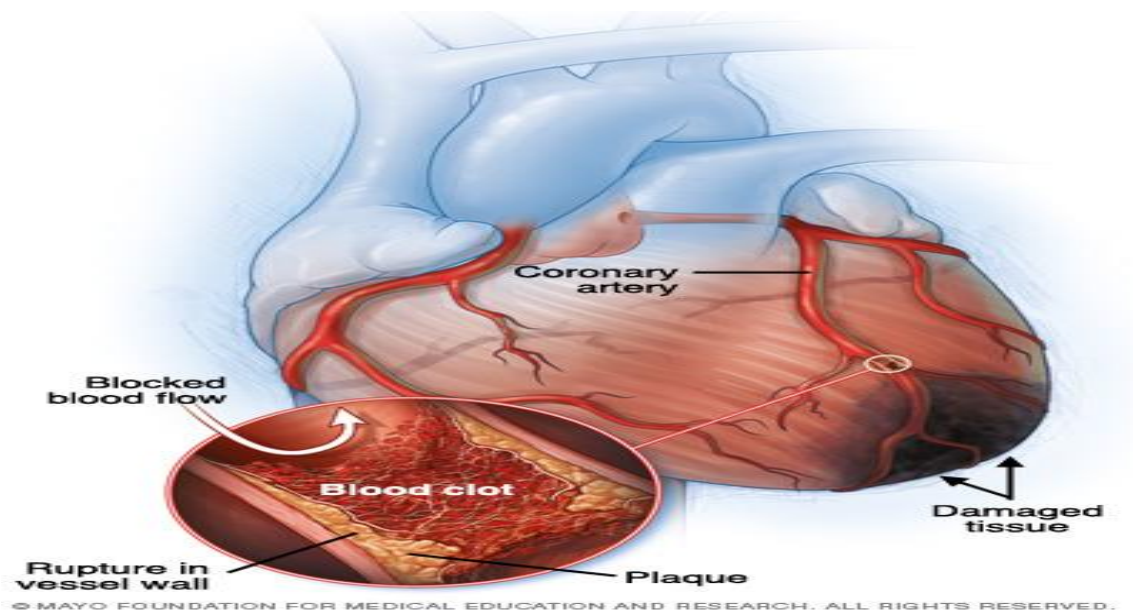
1. The patient is directed to stop all activities and sit or rest in bed in a semi-Fowler's position
2. The nurse then continues to assess the patient, measuring vital signs and observing for signs of respiratory distress
3. ECG is usually obtained.
4. Reducing Anxiety
5. Teaching patients self-care.

The teaching the patient and family understand the illness, identify the symptoms of myocardial ischemia, state the actions to take when symptoms develop, and discuss methods to prevent chest pain. and to prevent complications

Heart attack

A heart attack occurs when the flow of blood to the heart is blocked, most often by a build-up of fat, cholesterol and other substances, which form a plaque in the arteries that feed the heart (coronary arteries). The interrupted blood flow can damage or destroy part of the heart muscle.

A heart attack, also called a myocardial infarction.



Symptoms

Common heart attack signs and symptoms include:

- Pressure, tightness, pain, or a squeezing or aching sensation in chest or arms that may spread to neck, jaw or back
- Nausea and vomiting indigestion, heartburn or abdominal pain
- Shortness of breath
- Cold sweat
- Fatigue
- Lightheadedness or sudden dizziness

Causes

A heart attack occurs when one or more of **coronary arteries become blocked**. Over time, a coronary artery can narrow from the buildup of various substances, including cholesterol (atherosclerosis).

During a heart attack, one of these plaques can rupture and spill cholesterol and other substances into the bloodstream. A blood clot forms at the site of the rupture. If large enough, the clot can completely block the flow of blood through the coronary artery.

Another cause of a heart attack is a **spasm of a coronary artery** that shuts down blood flow to part of the heart muscle. Use of tobacco and of illicit drugs, such as cocaine.

Risk factors

Heart attack risk factors include:

- **Age.** Men age 45 or older and women age 55 or older are more likely to have a heart attack than are younger men and women.
- **Tobacco.**
- **High blood pressure.**
- **High blood cholesterol or triglyceride levels.** A high level of low-density lipoprotein (LDL) cholesterol (the "bad" cholesterol) is most likely to narrow arteries.
- **Diabetes**
- **Family history of heart attack.**
- **Obesity.** Obesity is associated with high blood cholesterol levels, high triglyceride levels, high blood pressure and diabetes.
- **Stress.**
- **Illegal drug use.** Using stimulant drugs, such as cocaine, can trigger a spasm of coronary arteries that can cause a heart attack

Complications

- **Abnormal heart rhythms (arrhythmias).**
- **Heart failure.**
- **Heart rupture.**
- **Valve problems.**

Diagnosis

- **Electrocardiogram (ECG).**

- **Blood tests.** Certain heart enzymes slowly leak out into blood if the heart has been damaged by a heart attack.
- **Chest X-ray.**
- **Echocardiogram.**
- **Coronary catheterization (angiogram).**
- **Exercise stress test.**
- **Magnetic resonance imaging (MRI).**

Medical Management

Medications

Medications given to treat a heart attack include:

- **First Step Give Oxygen Therapy**
- **Aspirin**
- **Antiplatelet agents:** These include medications, such as clopidogrel (Plavix) and others,
- **Pain relievers.** May receive a pain reliever, such as morphine, to ease discomfort.
- **Nitroglycerin.** This medication, used to treat chest pain (angina), can help improve blood flow to the heart by widening (dilating) the blood vessels.

Surgical and other procedures

In addition to medications, may undergo one of the following procedures to treat heart attack:

- **Coronary angioplasty and stenting.** Doctors insert a long, thin tube (catheter) that's passed through an artery, usually in leg or groin, to a blocked artery in heart. If had a heart attack, this procedure is often done immediately after a cardiac catheterization, a procedure used to locate blockages.
- **Coronary artery bypass surgery.** In some cases, doctors may perform emergency bypass surgery at the time of a heart attack. If possible, doctor may suggest that have bypass surgery after heart has had time — about three to seven days — to recover from heart attack.

Nursing Management for patient with heart attack (M I)

Nursing interventions should be anchored on the goals in the nursing care plan.

- Administer oxygen along with medication therapy to assist with relief of symptoms.
- Encourage bed rest with the back rest elevated to help decrease chest discomfort and dyspnea.
- Encourage changing of positions frequently to help keep fluid from pooling in the bases of the lungs.
- Check skin temperature and peripheral pulses frequently to monitor tissue perfusion.
- Monitor the patient closely for changes in cardiac rate and rhythm, heart sounds, blood pressure, chest pain, respiratory status, urinary output, changes in skin color, and laboratory values.

Congestive Heart Failure

- Heart failure is the inability of the heart to supply blood flow to meet physiologic demands, without utilizing compensatory changes.
- There may be failure involving one or both sides of the heart, and over time, causes the development of pulmonary and systemic congestion and complications.
- Congestive heart failure, or CHF, is a common complication after myocardial infarction.

Classification

Heart failure is classified into two types: left-sided heart failure and right-sided heart failure.

Etiology

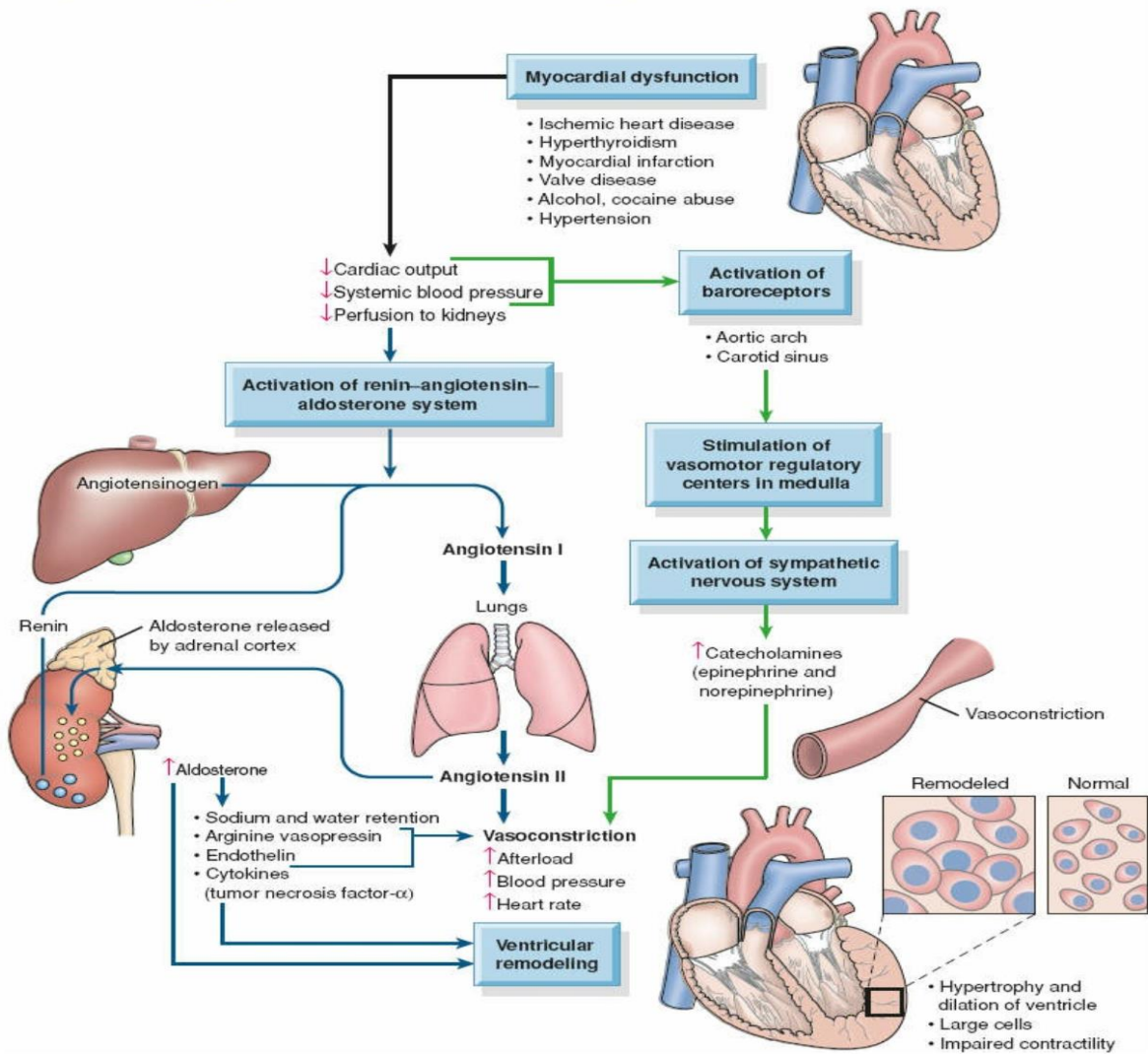
HF can be caused by a number of conditions, including coronary artery disease, hypertension, cardiomyopathy, valvular

disorders, and renal dysfunction. Patients with diabetes are also at high risk for HF. Atherosclerosis of the coronary arteries is a primary cause of HF, and coronary artery disease is found in the majority of patients with HF.

Common signs and symptoms of heart failure:

- Feeling tired (fatigue)
- Swelling in your ankles, legs and abdomen
- Dizziness , confusion
- Palpitations
- A dry, hacking cough
- Dyspnea
- Orthopnea
- Jugular venous distention

Physiology/Pathophysiology



Diagnostic tests

1. Laboratory

- Electrolyte levels to monitor for imbalances;** renal profiles to monitor for kidney function problems.
- Digoxin levels** to monitor for toxicity.
- platelet count** to monitor for thrombocytopenia from amrinone

2. **Chest x-ray:** shows any enlargement of the heart and pulmonary vein, presence of pulmonary edema or pleural effusion
3. **Electrocardiography:** used to monitor for dysrhythmias which may occur as a result of the heart failure or as a result of digitalis toxicity
4. **Echocardiography:** used to study structural abnormalities and blood flow through the heart
5. Intra-aortic balloon **pump:** decreases the workload on the heart, decreases myocardial oxygen demand, and increases coronary perfusion.

Medical management

Medication	Example	Action
Oxygen		to increase available oxygen supply
Morphine		-induce vasodilation -reduce pain and anxiety, and -decrease myocardial oxygen consumption.
Cardiac glycosides	digitalis (Digoxin, Lanoxin) PO or IV	- increase the force and strength of ventricular contractions. -
Vasodilators	- (Isordil) -nitroglycerine	-relax vascular smooth muscle. - decrease oxygen demand.
Electrolytes	mainly potassium	-to replace that which is lost during diuretic therapy.

NURSING PROCESS

1. Nursing Assessment

The nursing assessment for the patient with HF focuses on observing for the effectiveness of therapy and for the patient's ability to understand and implement self-management strategies.

Health History

- Assess the signs and symptoms such as dyspnea, shortness of breath, fatigue, and edema.
- Assess for sleep disturbances, especially sleep suddenly interrupted by shortness of breath.
- Explore the patient's understanding of HF, self-management strategies.

Physical Examination

- Auscultate the lungs for presence of crackles and wheezes.
- Assess JVD for presence of distention.
- Assess the dependent parts of the patient's body for perfusion and edema.
- Measure the urinary output carefully to establish a baseline against which to assess the effectiveness of diuretic therapy.
- Weigh the patient daily in the hospital or at home.

2. Nursing Diagnosis

- Activity intolerance related to decrease CO.
- Excess fluid volume related to the HF syndrome.
- Anxiety related to breathlessness from inadequate oxygenation
- Ineffective therapeutic regimen management related to lack of knowledge.

3. Nursing Planning & Goals:

- Promoting physical activities.
- Reducing fatigue.
- Relieving fluid overload symptoms.
- Decreasing anxiety.
- Increasing the patient's ability to manage anxiety.
- Teaching the patient about self-care program

4. Nursing Interventions:

- **Promoting activity tolerance.** A total of 30 minutes of physical activity every day should be encouraged.

- **Managing fluid volume.** The patient's fluid status should be monitored closely, auscultating the lungs, monitoring daily body weight, and assisting the patient to adhere to a low sodium diet.
- **Controlling anxiety.** When the patient exhibits anxiety, the nurse should promote physical comfort and provide psychological support, and begin teaching ways to control anxiety and avoid anxiety-provoking situations.

5. Evaluation:

For the expected patient outcomes, the following are evaluated:

- Demonstration of tolerance for increased activity.
- Maintenance of fluid balance.
- Less anxiety.
- Decides soundly regarding care and treatment.
- Adherence to self-care regimen.
-

Intestinal Obstruction

Intestinal obstruction occurs when intestinal contents cannot pass through the GI tract. The obstruction may occur in the small intestine or colon and can be partial or complete, simple or strangulated. A partial obstruction usually resolves with Conservative treatment, whereas a complete obstruction usually requires surgery.

Two types of processes can impede this flow :(Causes)

1.Mechanical obstruction: An intraluminal obstruction or a mural obstruction from pressure on the intestinal wall occurs. Examples are intussusception, neoplasms, stenosis, adhesions, hernias, abscesses, (i.e., foreign objects created by ingesting unusual substances)

2.Functional or paralytic obstruction: The intestinal musculature cannot propel the contents along the bowel. Examples are muscular dystrophy, endocrine disorders such as diabetes, or neurologic disorders such as Parkinson disease. The blockage also can be temporary and the result of the manipulation of the bowel during surgery (i.e., ileus).

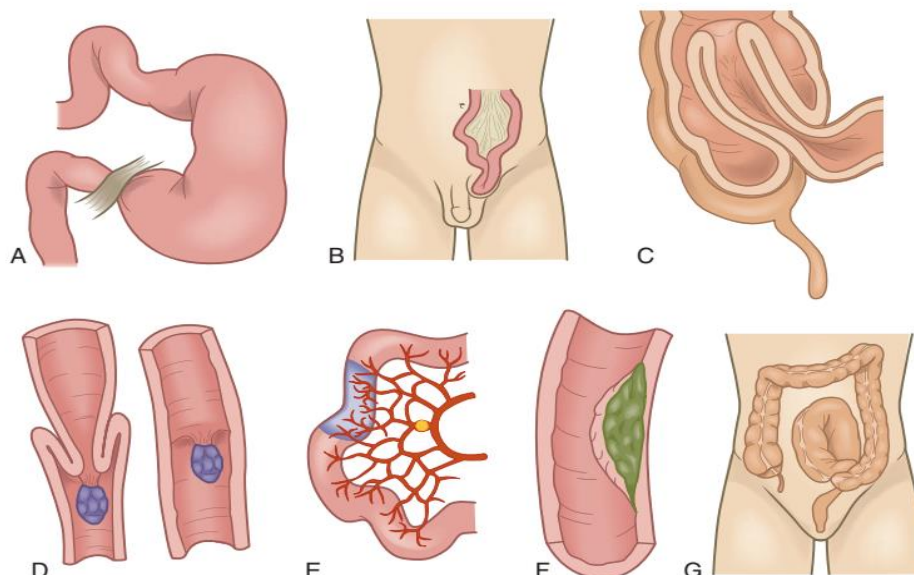


FIG. 43-5 Bowel obstructions. **A**, Adhesions. **B**, Strangulated inguinal hernia. **C**, Ileocecal intussusception. **D**, Intussusception from polyps. **E**, Mesenteric occlusion. **F**, Neoplasm. **G**, Volvulus of the sigmoid colon.

Clinical Manifestations:

1. Colicky abdominal pain,
2. Nausea and vomiting,
3. Abdominal distention.
4. Constipation
5. Decreased flatus occur later.
6. Abdominal tenderness and rigidity are usually absent unless strangulation or peritonitis has occurred
7. Bowel sounds may also be absent.
8. Decreased appetite

Potential complications

Treatment is essential to reduce complications such as:

- dehydration

- electrolyte imbalances
- perforation, or a hole that forms in your intestines, which leads to infections
- kidney failure

Diagnostic Studies:

1. Perform a thorough history and physical examination.
2. CT scans and abdominal x-rays are ordered.
3. Sigmoidoscopy or colonoscopy may provide direct visualization of an obstruction in the colon.
4. An elevated WBC count may indicate strangulation or perforation.

Management:

Emergency surgery is performed if the bowel is strangulated, but many bowel obstructions resolve with conservative treatment. Initial medical treatment of bowel obstruction caused by adhesions includes placing the patient on NPO status, inserting an NG tube for decompression, providing IV fluid therapy with either normal saline or lactated Ringer's solution (since fluid losses from the GI tract are isotonic), adding potassium to IV fluids after verifying renal function, and administering analgesics for pain control.

NURSING MANAGEMENT:

1. NURSING ASSESSMENT

Nursing assessment begins with a detailed patient history and physical examination. Record the onset, frequency, color, odor, and amount of vomitus. Assess bowel function, including the passage of flatus. Auscultate for bowel sounds and document their character and location. Inspect the abdomen for scars, visible masses, and distention. Maintain a strict intake and output record, including emesis and tube drainage. A urinary catheter is ordered to monitor hourly urine outputs.

2. NURSING DIAGNOSES:

- Acute pain related to abdominal distention and increased peristalsis

- Deficient fluid volume related to a decrease in intestinal fluid absorption, third space fluid shifts into the bowel lumen and peritoneal cavity, NG suction, and vomiting.

3. PLANNING

The overall goals are that the patient with an intestinal obstruction will have

- (1) Relief of the obstruction and return to normal bowel function,
- (2) Minimal to no discomfort
- (3) Normal fluid and electrolyte and acid-base status.

4. NURSING IMPLEMENTATION:

- 1) Monitor the patient closely for signs of dehydration and electrolyte imbalances.
- 2) Administer IV fluids as ordered. Watch for signs and symptoms of fluid overload
- 3) Monitor serum electrolyte levels closely/
- 4) Provide comfort measures and promote a restful environment.
- 5) Check the nose for signs of irritation from the NG tube.
- 6) Check the NG tube every 4 hours for patency.

Colostomy

A colostomy is a surgical procedure that brings one end of the large intestine out through the abdominal wall. During this procedure, one end of the colon is diverted through an incision in the abdominal wall to create a stoma.

A colostomy may temporary or permanent.



Reasons for the procedure:

- Birth defect, such as a blocked or missing anal opening, called an imperforate anus.
- Inflammatory bowel disease
- Injury to the colon or rectum
- Partial or complete intestinal or bowel blockage
- Rectal or colon cancer
- ulcerative colitis, which is an inflammatory bowel disease that causes the long-term inflammation of the digestive tract

Risks of a Colostomy:

- a blockage of the colostomy
- a hernia, which occurs when an internal organ pushes through a weak area of muscle
- an infection
- internal bleeding
- problems from scar tissue
- a prolapse of the colostomy
- a wound breaking open.

How to Prepare for a Colostomy:

Before surgery, your doctor will take

- 1 .Explain the procedure to the patient.
- 2- Blood samples
- 3- Perform a physical examination
- 4- Review your complete medical history.
- 5- During these visits, tell your doctor about any prior surgeries you've had and any medications you're taking, including over-the-counter medicines and supplements.
- 6- Your doctor will likely ask you to fast for at least 12 hours before surgery.
- 7- You may also be given a laxative or an enema to take the night before the surgery to help cleanse your bowels
- 8- You should prepare to stay in the hospital for three to seven days. This includes packing the right necessities, arranging care for your children, pets, or home, and taking the appropriate amount of time off of work.
- 9- Willingness to change a lifestyle

After a Colostomy

1. Inspect stoma and periosteal skin area with each pouch change. Note irritation, bruises (dark, bluish color), and rashes.
2. The nurse encourages those with an ostomy to engage in early ambulation.
3. It is important to administer prescribed pain medications as required.
4. An accurate record of fluid I&O.
5. Fluids are given IV for 4 to 5 days to replace lost fluids.
6. If rectal packing has been used, it is removed by the end of the first week.
7. Investigate reports of burning, itching, or blistering around stoma.

Acute Complications of Diabetes

Hypoglycemia: means low (hypo) sugar in the blood (glycaemia) and occurs when the blood glucose falls to less than 70 mg/dL.

Causes: It can occur when there is too much insulin or oral hypoglycemic agents, too little food, or excessive physical activity. May occur at any time of the day or night. It often occurs before meals, especially if meals are delayed or snacks are omitted. For example, midmorning hypoglycemia may occur when the morning insulin is peaking.

Clinical Manifestations:

1. In mild hypoglycemia: sweating, tremor, tachycardia, palpitation, nervousness, and hunger.
2. In moderate hypoglycemia: Signs of impaired function of the CNS may include inability to concentrate, headache, lightheadedness, confusion, memory lapses, numbness of the lips and tongue, slurred Speech, emotional changes, irrational or combative behavior, double vision, and drowsiness.
3. In severe hypoglycemia: Symptoms may include disoriented behavior, seizures, difficulty arousing from sleep, or loss of consciousness.

Diabetic Ketoacidosis(Hyperglycemia)

DKA is caused by an absence or markedly inadequate amount of insulin. This deficit in available insulin results in disorders in the metabolism of carbohydrate, protein, and fat. The three main clinical features of DKA are as follows:

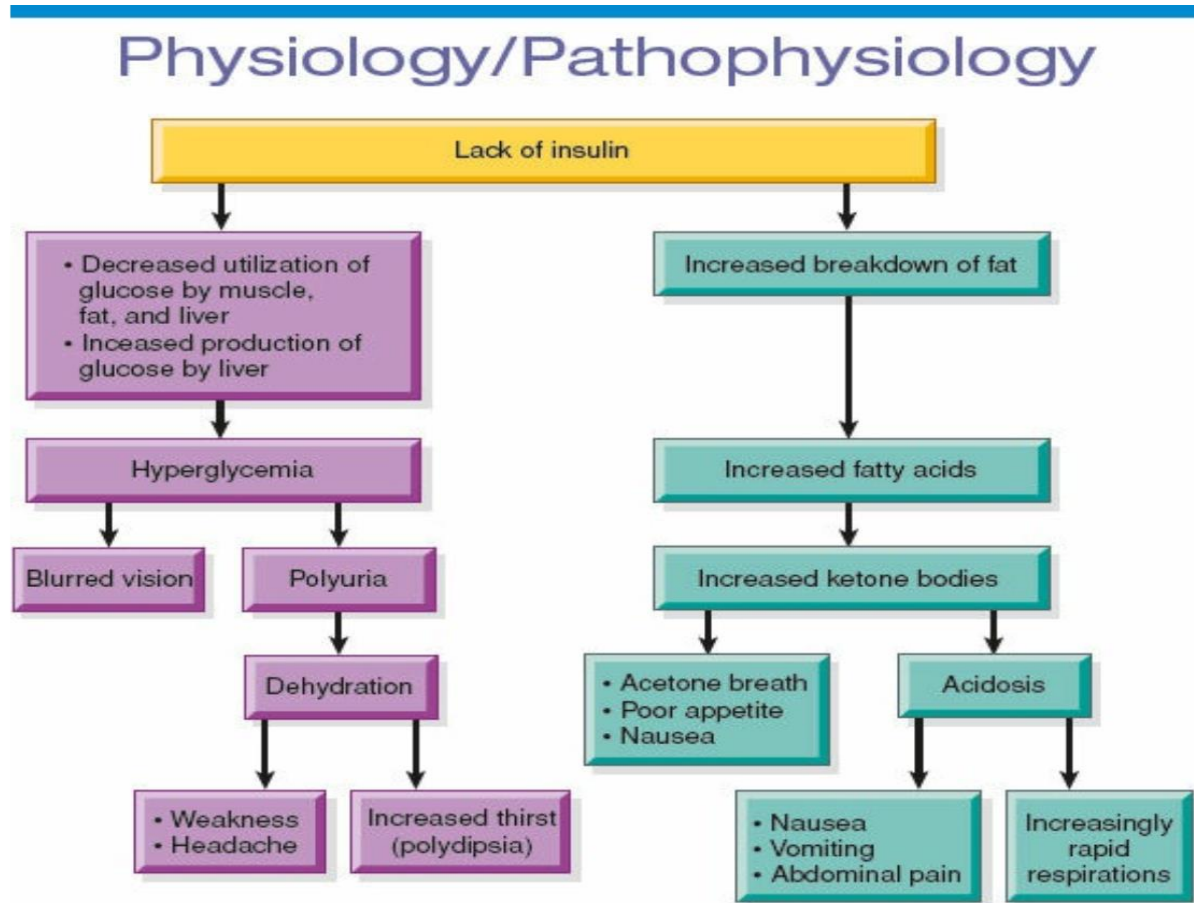
- Hyperglycemia
- Dehydration and electrolyte loss
- Acidosis

Clinical Manifestations:

1. polyuria, polydipsia (increased thirst),
2. Marked fatigue. In addition,
3. patient may experience blurred vision,
4. Weakness, and headache.
5. Weak, rapid pulse.
6. Anorexia, nausea, vomiting, and abdominal pain. The patient may have acetone breath (a fruity odor), which occurs with elevated ketone levels.

Management

In addition to treating hyperglycemia, management of DKA is aimed at correcting dehydration, electrolyte loss, and acidosis before correcting the hyperglycemia with insulin.



Complications of Diabetes

1. Eye problems (retinopathy)
2. Foot problems
3. Heart attack and stroke
4. Kidney problems (nephropathy)
5. Nerve damage (neuropathy)
6. Gum disease and other mouth problems.

NURSING PROCESS

Assessment:

1. The nurse monitors the ECG for dysrhythmias indicating abnormal potassium levels.
2. Vital signs (especially blood pressure and pulse)
3. arterial blood gases, breath sounds, and mental status are assessed every hour
4. Neurologic status checks are included as part of the hourly assessment because cerebral edema can be a severe and sometimes fatal outcome.
5. Blood glucoses are checked every hour.
6. Fluid status and urine output are closely monitored because of the high risk of kidney failure secondary to severe dehydration.

NURSING DIAGNOSES:

1. Risk for deficient fluid volume related to polyuria and dehydration
2. Risk for electrolyte imbalance related to fluid loss or shifts
3. Deficient knowledge about diabetes self-care skills or information Anxiety related to loss of control, fear of inability to manage diabetes, fear of diabetes Complications.

Planning and Goals

The major goals for the patient may include maintenance of fluid and electrolyte balance, increased knowledge about diabetes basic skills and self-care, decreased anxiety, and absence of complications.

Nursing Interventions:

1. Intake and output are measured. IV fluids and electrolytes are given as prescribed, and oral fluid intake is encouraged when it is permitted.
2. Laboratory values of serum electrolytes (especially sodium and potassium) are monitored.
3. Vital signs are monitored hourly for signs of dehydration
4. The patient is educated about basic skills, including treatment modalities (Diet, insulin administration, monitoring of blood glucose).
5. The importance of self-monitoring and of monitoring and follow-up by primary providers is reinforced.

Evaluation:

1. Achieves fluid and electrolyte balance
2. Decreased anxiety
3. Absence of complications

Appendicitis

Appendicitis is the inflammation of the appendix which is a small finger-like appendage attached to the cecum.

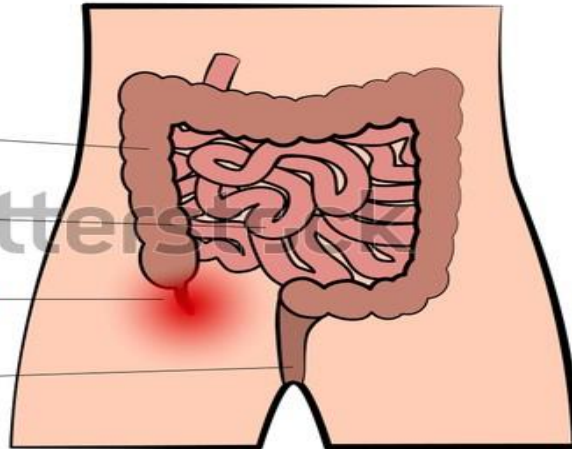
Appendicitis

large intestine

small intestine

inflamed appendix

rectum



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Pathophysiology

- Obstruction. The appendix becomes inflamed and edematous as a result of becoming kinked or occluded by a fecalith, tumor, or foreign body.
- Inflammation. The inflammatory process increases intraluminal pressure, initiating a progressively severe, generalized, or periumbilical pain.
- Pain. The pain becomes localized to the right lower quadrant of the abdomen within a few hours.
- Pus formation. Eventually, the inflamed appendix fills with pus.

Clinical Manifestations

- Pain. Vague epigastria or per umbilical pain progresses to right lower quadrant pain usually accompanied by low-grade fever, nausea, and sometimes vomiting.
- Rebound tenderness. Rebound tenderness or the production or intensification of pain when pressure is released.

Rovsing's sign. Rovsing's sign may be elicited by palpating the left lower quadrant

Complications

If appendicitis is left untreated, a complication could occur.

- Perforation of the appendix. This is a major complication of appendicitis, which can lead to peritonitis.
- Perforation generally occurs 24 hours after the onset of pain.
- Symptoms include a fever of 37.7°C or greater, a toxic appearance, and continued abdominal pain or tenderness.

Assessment and Diagnostic Findings:

1. Diagnosis is based on the results of a complete physical examination and on laboratory findings and imaging studies.
 2. **CBC count.** A complete blood cell count shows an elevated WBC count, with an elevation of the neutrophils.
 3. **Imaging studies.** Abdominal x-ray films, ultrasound studies, and CT scans may reveal a right lower quadrant density or localized distention of the bowel.
 4. **Laparoscopy.** A diagnostic laparoscopy may be used to rule out acute appendicitis in equivocal cases.
- C-reactive protein.** Protein produced by the liver when bacterial infections occur and rapidly increases within the first 12 hours.

Medical Management:

- IV fluids. To correct fluid and electrolyte imbalance and dehydration, IV fluids are administered prior to surgery.
- Antibiotic therapy. To prevent sepsis, antibiotics are administered until surgery is performed.
- Drainage. When perforation of the appendix occurs, an abscess may form and patient is initially treated with antibiotics and the surgeon may place a drain in the abscess.

Surgical Management

- Appendectomy. Appendectomy or the surgical removal of the appendix is performed as soon as it is possible to decrease the risk of perforation.
- Laparotomy and laparoscopy. Both of these procedures are safe and effective in the treatment of appendicitis with perforation.

Nursing Interventions:

The nurse prepares the patient for surgery.

- IV infusion. An IV infusion is made to replace fluid loss and promote adequate renal functioning.
- Antibiotic therapy. Antibiotic therapy is given to prevent infection.
- Positioning. After the surgery, the nurse places the patient on a High-fowler's position to reduce the tension on the incision and abdominal organs, thereby reducing pain.
- Oral fluids. When tolerated, oral fluids could be administered.

Discharge and Home Care Guidelines

Discharge teaching for patient and family is imperative.

- Removal of sutures. The nurse instructs the patient to make an appointment with the surgeon to remove the sutures between the 5th and 7th days after surgery.
- Activities. Heavy lifting is to be avoided postoperatively; however, normal activity can be resumed within 2 to 4 weeks.

Increased intracranial pressure (ICP)

A brain injury or another medical condition can cause growing pressure inside your skull. This dangerous condition is called increased intracranial pressure (ICP) and can lead to a headache.

ICP is the pressure exerted by the contents of the cranium, and it normally ranged from 10 to 20 mm Hg.

Causes of ICP:

- ❖ Tumor

- ❖ Hemorrhage
- ❖ Abscess or inflammation
- ❖ Brain tumor
- ❖ Cranial surgery
- ❖ Cytotoxic edema
- ❖ Ischemia and necrosis.

Clinical manifestation

1. Change in level of responsiveness, slowing of speech, confusion.
2. Pulse rate slow-high, irregular respiration, rising B.P, moderate elevated temperature.
3. Vomiting.
4. Pupillary changes.
5. Head ache.

Diagnostic Findings

1. CT scanning and MRI
2. Cerebral angiography.

Complications

- **Brain stem herniation.**
- **Diabetes insipid us**, is the result of decreased secretion of antidiuretic hormone (ADH).
- **Syndrome of inappropriate antidiuretic hormone (SIADH).** is the result of increased secretion of ADH.

- **Medical Management**

1. Osmotic diuretic, mannitol given to dehydrate brain and reduce cerebral edema.

2. steroid(dexamethasone)
3. drainage of CSF
4. Prepare patient for surgical intervention if the condition deteriorates.
5. Maintaining Oxygenation

Nursing Interventions:

1. Achieving cerebral tissue perfusion

- Monitor for bradycardia and rising blood pressure.
- Keep the patient's head in midline position.
- Suction should not last than 15 seconds.

2: Attaining normal respiration pattern:

- Monitor for irregular respiration.
- Paco₂ should be maintained between 25-30 mmHg.

3: Achieving airway clearance:

- Suction.
- Administer oxygen, if needed.
- Discourage coughing and straining.
- Elevate the head of the bed.

4: Preventing infection.

- Keep dressing set clean and dry.
- Aseptic technique is used when changing the dressing.
- Check the drainage system for loose connections, because leakage may lead to infection.
- Monitor for signs and symptoms of meningitis, fever, chills, neck rigidity and headache.

Diabetes mellitus

Diabetes mellitus is a chronic disease caused by inherited and/or acquired deficiency in production of insulin by the pancreas, or by the ineffectiveness of the insulin produced.

Classification

The major classifications of diabetes are:

1. Type 1 diabetes.
2. Type 2 diabetes.
3. Gestational diabetes.

Type 1 Diabetes

- affects approximately 5% to 10% of people with the disease.
- It is characterized by an acute onset, usually before 30 years of age.
- Type 1 diabetes is characterized by destruction of the pancreatic beta cells.

Type 2 Diabetes

- Affects approximately 90% to 95% of people with the disease.
- It occurs more commonly among people who are older than 30 years of age and obese.
- The two main problems related to insulin in type 2 diabetes are:
 - ❖ Insulin resistance: refers to a decreased tissue sensitivity to insulin.
 - ❖ Impaired insulin secretion Despite the impaired insulin secretion.

Gestational Diabetes

Gestational diabetes mellitus (GDM) is any degree of glucose intolerance with its onset during pregnancy.

- ✓ Hyperglycemia develops during pregnancy because of the secretion of placental hormones, which causes insulin resistance.
- ✓ Gestational diabetes occurs in as many as 14% of pregnant women and increases their risk for hypertensive disorders during pregnancy.
- ✓ After delivery, blood glucose levels in women with GDM usually return to normal

Clinical Manifestations

Classic clinical manifestations of all types of diabetes include the “three Ps”:

- I. Polyuria (increased urination)
- II. Polydipsia (increased thirst) occur as a result of the excess loss of fluid associated with osmotic diuresis.

III. Polyphagia (increased appetite) that results from the catabolic state induced by insulin deficiency and the breakdown of proteins and fats.

Other symptoms include:

- ❖ Fatigue and weakness.
- ❖ Sudden vision changes,
- ❖ Tingling or numbness in hands or feet,
- ❖ Skin lesions or wounds that are slow to heal, and recurrent infections.

Assessment and Diagnostic Findings

An abnormally high blood glucose level is the basic criterion for the diagnosis of diabetes.

1. Fasting plasma glucose.
2. Random plasma glucose.
3. Glucose level 2 hours after receiving glucose (2-hour post load)
4. HgbA1C (A1C)

Criteria for the Diagnosis of Diabetes Mellitus

1. Symptoms of diabetes plus casual plasma glucose concentration equal to or greater than 200 mg/dL (11.1 mmol/L). Casual is defined as any time of day without regard to time since last meal.

2. Fasting plasma glucose greater than or equal to 126 mg/dL (7.0 mmol/L). Fasting is defined as no caloric intake for at least 8 hours.

3. two-hour post load glucose equal to or greater than 200 mg/dL (11.1 mmol/L) during an oral glucose tolerance test. The test should be performed as described by the World Health Organization, using a glucose load containing the equivalent of 75 g anhydrous glucose dissolved in water.

Medical Management

The main goal of diabetes treatment is to normalize insulin activity and blood glucose levels to reduce the development of vascular and neuropathic complications.

Nutritional Therapy

Nutrition, meal planning, and weight control are the foundation of diabetes management.

Nutritional management of diabetes includes the following goals.

1. To achieve and maintain
 - Blood glucose levels in the normal range or close to normal
 - A lipid and lipoprotein profile that reduces the risk for vascular disease

- Blood pressure levels in the normal range or close to normal.
2. To prevent, or at least slow, the rate of development of the chronic complications of diabetes by modifying nutrient intake and lifestyle
 3. To address individual nutrition needs, taking into account personal and cultural preferences and willingness to change

Nursing Interventions

1. Teach the patient how to perform home glucose monitoring. Blood glucose is monitored before meals and at bedtime.
2. **Report BP of more than 160 mm Hg (systolic). Administer hypertensive as prescribed. Hypertension is commonly associated with diabetes. Control of BP prevents coronary artery disease, stroke, retinopathy, and nephropathy.**
3. Instruct the patient to avoid heating pads and always to wear shoes when walking. Patients have decreased sensation in the extremities due to peripheral neuropathy
4. Instruct patient to take oral hypoglycemic medications.(metformin (Glucophage),
5. Instruct patient to take insulin as:
 - **Rapid-acting insulin analogs:**
Has a clear appearance. Have an onset of action within 15 minutes of administration. The duration of action is 2 to 3 hours.
 - **Short-acting insulin (regular insulin): regular, Humulin R**
Short-acting insulin have a clear appearance, has an onset of action within 30 minutes of administration, duration of action is 4-8 hours. Regular insulin is the only insulin approved for IV use.
 - **Intermediate-acting insulin (NPH insulin): neutral protamine Hagedorn (NPH), insulin zinc suspension (Lente)**
They appear cloudy and have either protamine or zinc added to delay their action. Onset of action for the intermediate-acting is one hour after administration; duration of action is 18 to 26 hours.
 - **Long-acting insulin: Ultralente.**
Have a clear appearance .Long-acting insulin have an onset of one hour after administration, Duration of action is 36 hours.
6. Instruct patient on the proper injection of insulin.

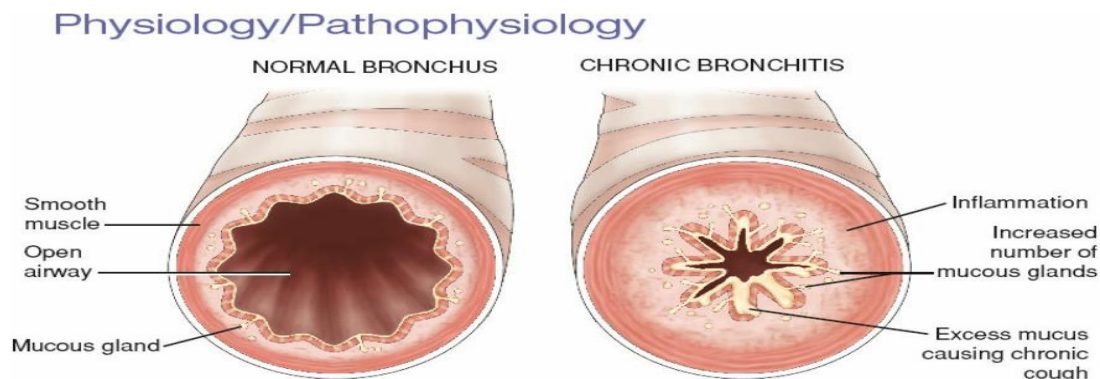
7. **Instruct the** patient on the proper storage of insulin
8. Educate the patient about the health benefits and importance of exercise in the management of diabetes.

Chronic Obstructive Pulmonary Disease

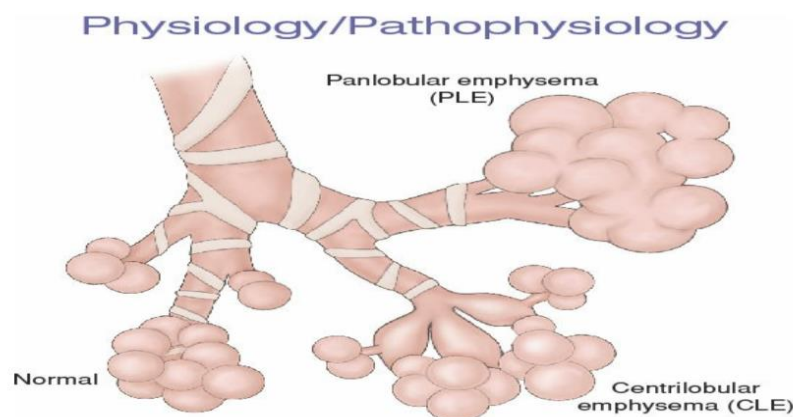
COPD: disease state characterized by airflow limitation that is not fully reversible; sometimes referred to as chronic airway obstruction or chronic obstructive lung disease.

COPD: includes two diseases: chronic bronchitis and emphysema.

Chronic bronchitis: a disease of the airways, is defined as the presence of Cough and sputum production for at least 3 months.



Emphysema: Pathologic term that describes an abnormal distention of the airspaces beyond the terminal bronchioles and destruction of the walls of the alveoli.



Risk Factors:

1. Exposure to tobacco smoke accounts for an estimated 80% to 90% of cases of chronic obstructive pulmonary disease
2. Passive smoking (i.e., secondhand smoke)
3. Increased age
4. Occupational exposure—dust, chemicals
5. Indoor and outdoor air pollution
6. Genetic abnormalities.

Clinical Manifestations:

It is generally a progressive disease characterized by three primary symptoms:

- Chronic cough: The cough may be intermittent and may be unproductive in some Patients.
- Sputum production.
- Dyspnea: may be severe and interfere with the patient's activities and quality of life. It is usually progressive, is worse with exercise, and is persistent. dyspnea may occur at rest
- Weight loss is common, because dyspnea interferes with eating and the work of breathing is energy depleting.

Complications

Complications of COPD include:

- Pneumonia
- chronic atelectasis
- pneumothorax
- pulmonary arterial hypertension

Medical Management

Therapeutic strategies for the patient with COPD include promoting smoking cessation as appropriate, prescribing medications that typically

include bronchodilators and may include corticosteroids, and providing supplemental oxygen therapy as indicated.

Nursing Processor Patient with COPD

A: Assessment

Assessing Health History of Patients with COPD:

1. Exposure to risk factors—types, intensity, and duration.
2. Past medical history—respiratory diseases/problems, including asthma, allergy, sinusitis, nasal polyps, history of respiratory infections.
3. Family history of COPD or other chronic respiratory diseases
4. History of exacerbations or previous hospitalizations for respiratory problems.
5. Appropriateness of current medical treatments.
6. Impact of the disease on quality of life.

B: Diagnosis

- Impaired gas exchange and airway clearance due to chronic inhalation of toxins
- Impaired gas exchange related to ventilation–perfusion inequality
- Ineffective airway clearance related to bronchoconstriction, increased mucus production, ineffective cough, Broncho pulmonary infection, and other complications
- Ineffective breathing pattern related to shortness of breath, mucus, bronchoconstriction, and airway irritants
- Activity intolerance due to fatigue, ineffective breathing patterns, and hypoxemia
- Deficient knowledge of self-care strategies to be performed at home

C: Planning and Goals

Major patient goals may include:

1. Smoking cessation.

2. Improved gas exchange, airway clearance, improved breathing pattern.
3. Improved activity tolerance
4. Maximal self-management
5. Adherence to the therapeutic program and home care, and ,
6. Absence of complications.

D: Nursing Interventions

1. Promoting Smoking Cessation
2. Administer bronchodilators as prescribed
3. Instruct and encourage patient in diaphragmatic breathing and effective coughing.
4. Adequately hydrate the patient.
5. Teach patient take deep breathing.
6. Monitor respiratory status, including rate and pattern of respirations, breath sounds, and signs and symptoms of acute respiratory distress.
7. Monitor pulse oximetry and arterial blood gases.

Cerebrovascular Accident (CVA)

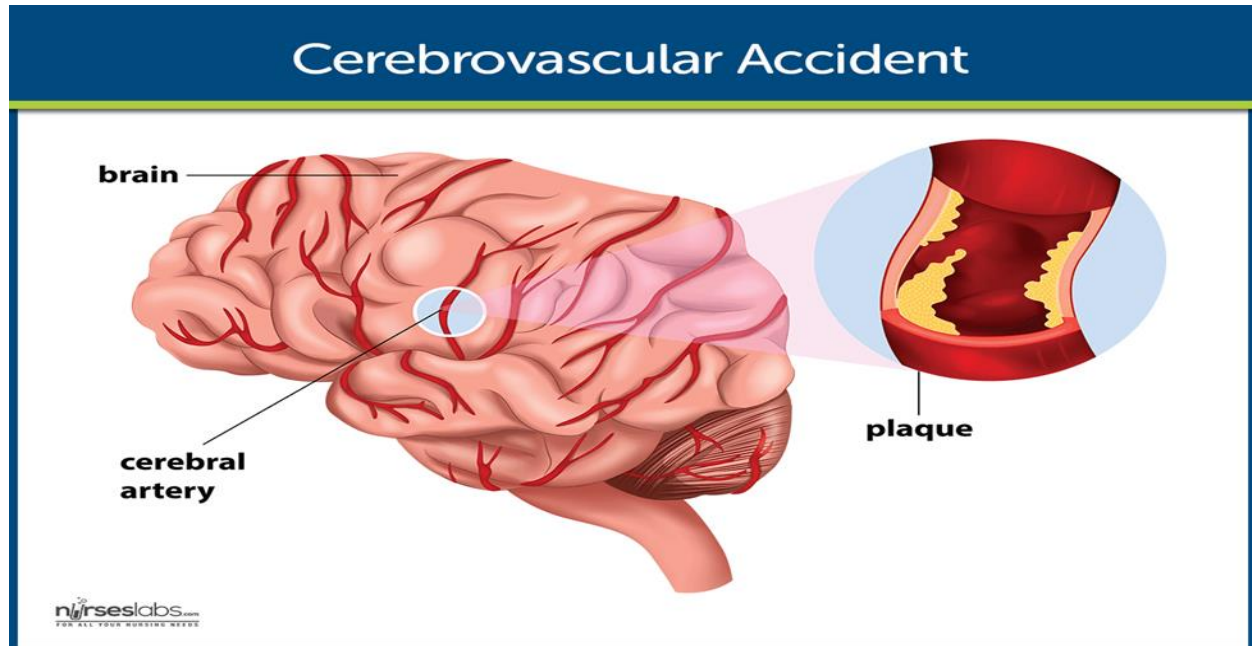
A **cerebrovascular accident (CVA)**, an ischemic stroke or “brain attack,” is a sudden loss of brain function resulting from a disruption of the blood supply to a part of the brain.

Classification:

Strokes can be divided into two classifications.

- **Ischemic stroke.** This is the loss of function in the brain as a result of a disrupted blood supply.

- **Hemorrhagic stroke.** Hemorrhagic strokes are caused by bleeding into the brain tissue, the ventricles



Risk Factors:

Non modifiable

- Advanced age (older than 55 years)
- Gender (Male)
- Race (African American)

Modifiable

- Hypertension
- Hyperlipidemia
- Obesity
- Smoking
- Diabetes

- Periodontal disease

Causes:

- **Large artery thrombosis.** Large artery thrombosis are caused by **atherosclerotic plaques** in the large blood vessels of the brain.
- **Small penetrating artery thrombosis.** Small penetrating artery thrombosis affects one or more vessels and is the **most common type** of ischemic stroke.
- **Cardiogenic emboli.** Cardiogenic emboli are associated with cardiac dysrhythmias, usually atrial fibrillation.

Clinical Manifestations:

- Numbness or weakness of the face.
- Change in mental status.
- Trouble speaking or understanding speech.
- Visual disturbances.
- Hemiplegia. Paralysis of the face, arm, and leg on the same side due to a lesion in the opposite hemisphere.
- Dysphagia. There is difficulty in swallowing.
- Paresthesia. There is numbness and tingling of extremities and difficulty with proprioception.

Prevention:

- **Healthy lifestyle.** includes not smoking, maintaining a healthy weight, following a healthy diet, and daily exercise can reduce the risk of having a stroke by about one half.
- **Stroke risk screenings.**
- **Education.** Patients and the community must be educated about recognition and prevention of stroke.
- **Low-dose aspirin.** Research findings suggest that low-dose aspirin may lower the risk of stroke in women who are at risk.

Assessment and Diagnostic Findings

- **CT scan**
- MRI
- Cerebral angiography.
- EEG
- Laboratory studies to rule out systemic causes: CBC, platelet and clotting studies, VDRL/RPR, erythrocyte sedimentation rate (ESR), chemistries (glucose, sodium).

Nursing Management

- Position to prevent contractures.
- Apply a splint at night to prevent flexion of affected extremity.
- Elevate affected arm to prevent edema and fibrosis.
- Change position every 2 hours; place patient in a prone position for 15 to 30 minutes several times a day.
- Encourage personal hygiene activities as soon as the patient can sit.
 - Provide emotional support and encouragement to prevent fatigue and discouragement.