



# *Emergency nursing*

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## Priorities and principle of Eemergency Mmanagement

### CONCEPT OF EMERGENCY NURSING

**Emergency:** Any trauma or sudden illness that requires immediate intervention to prevent imminent severe damage or death.

**Emergency care:** can be defined as the episodic and crisis-oriented care provided to patients with conditions ranging from minor to serious or life-threatening injuries or illnesses.

**Emergency nursing:** is a specialty within the field of professional nursing focusing on the care of patients with medical emergencies, that is, those who require prompt medical attention to avoid long-term disability or death.

### Four Basic Steps for Emergencies:

**1. Know your facility.** It is important to know what emergency resources are available in each location and the equipment's placement, such as overhead sprinkler systems, fire extinguishers, and defibrillators. Healthcare providers, especially nurses, should know where the E-carts and E-kits are placed in the hospital setting. They need to be available to providers very easily.

**2. Know the proper scope of your emergency care.** The nurse should know their role, accountability, and responsibility when dealing with emergencies. The nurse is responsible for the following:

- Deciding when to call the doctor
- Coordinating care
- Assisting with other emergency procedures
- Performing emergency assessment and interventions

## Primary and Secondary Assessment

- **Primary Assessment.** A primary assessment allows for the recognition of potentially life threatening conditions and the correct management to be implemented. The acronym ABCDE provides the basis of the primary assessment and it is an easy way to remember the correct order for assessing patients presenting to the emergency department.
    - **Airway.** The most important component to be established and maintained to prevent hypoxia and ultimately death.
    - **Breathing.** Assessed after the airway. During times of acute injury and stress, the respiratory system can be compromised.
    - **Circulation.** Adequate circulation is needed to maintain tissue perfusion and cellular oxygenation. This system involves the heart, vessels, and blood volume.
    - **Disability.** A neurological assessment to assess for motor or sensory deficits is vital as a decrease in level of consciousness can affect ABC.
    - **Exposure.** Once the patient is exposed for full body assessment, their privacy needs to be respected by providing a gown and blanket.
  - **Secondary Assessment.** When all life threatening conditions have been found and corrected, the secondary assessment is undertaken. The main focus of the secondary assessment is to explore specific medical conditions the patient may have. The components of the secondary are continuous with the primary assessment A, B, C, D, E, F, G, H, I.
    - **Full set of vital signs.** Vital signs such as temperature, respiration rate, heart rate, blood pressure, and pain should be assessed.
    - **Give comfort.** For many patients in the emergency department, levels of pain may be quite high.
    - **History.** Understanding the complexity and processes involved in history taking allows nurses to gain a better understanding of patients' problems.
      - The mnemonic AMPLE is a useful tool to guide history taking.
        - **Allergies**
        - **Medications**
        - **Past medical history**
        - **Last meal**
        - **Events surrounding injury**
      - **Inspect posterior surfaces.**
- 3. Know your patients.** Nurses are responsible for identifying if the patient is in an emergency and recognizing patients' symptoms, taking measures within their scope of practice to administer medications, providing other measures for symptom

alleviation, and collaborating with other professionals to optimize patients' comfort and families' understanding and adaptation.

**4. Stay prepared.** Preparing for unexpected occurrences is only part of the equation. Being fast, ready, and accurate for an emergency also involves practicing good mental health strategies that can develop one's level of competency in the event of a crisis.

## **Principles of Emergency Nursing**

### **1. Guiding principles for emergency care**

- Quick assessment of the casualty and situation to institute life saving measures.
- Keep casualty in dorsal position and cover his/her body with whatever cloth is available to prevent heat loss.
- Avoid unnecessary handling except to remove the victim from additional danger.
- Give first aid to the injured part.
- Observe and keep a medical record of the casualty's initial condition till he reaches the hospital.
- Reassurance should be given to the victim and relatives that he/she is in safe hands.
- Prevent people crowding near the victim; allow fresh air to circulate around the victim.
- Do not give water to drink to the victims with abdominal injuries may require immediate surgery.
- Make arrangements for safe transportation to hospital after first aid.
- In few emergencies like unconsciousness, uncontrollable bleeding, respiratory difficulties etc., require coordinated efforts for speedy transportation for medical facilities with simultaneous lifesaving appropriate care is important.

### **2. Principles of emergency management**

- Maintain patent airway & provide adequate ventilation employing resuscitation measures when necessary
- Control hemorrhage & its consequences
- Evaluate and restore cardiac output
- Prevent and treat shock, maintain or restore effective circulation
- Carry out a rapid initial and ongoing physical examination

- Assess the patient consciousness, whether the patient can follow commands or not, evaluate the size & reactivity of pupils.
- Start ECG monitoring if appropriate
- Apply Splint of suspected fractures sites including cervical spines in patients with head injuries
- Protect wounds with sterile dressings
- Start a flow sheet of patient's vital sign, neurological state, to guide in decision-making.

### **Bandages, Types, and Assessing before applying bandages**

**Bandage:** is any gauze or cloth material used for any of the purpose to support or to hold or to immobilize the body part. Bandaging is a technique of application of specific roller bandages to different parts of body.

#### **PURPOSE**

1. To control bleeding by pressure.
2. To immobilize sprained or fractured limb.
3. To hold a dressing or compress in place.
4. To secure splints in case of fracture of deformity.
5. To protect open wound from contaminants.
6. To provide support and aid in case of varicose veins or impaired circulation.

#### **GENERAL PRINCIPLES**

- The patient should be placed in a comfortable position and it should be convenient for the nurse
- The position of the part to be bandaged should be well supported and elevated if necessary
- The nurse should stand directly in front of the patient or facing part to be bandaged
- A bandage should accomplish its purpose. It may be used to hold dressing in place, to support a part or to immobilize
- Apply and fix bandage at least two circular turns around part at its smallest diameter, so that it can stay in place

- Skin surfaces should be separated. They may be separated. They may be separated by either gauze or cotton. In the application of casts, special padding is used over bony prominences
- Always bandage to the right
- Exert even pressure as far as possible. The bandage should be done in the direction of the venous circulation
- Do not cover the ends of the finger or toes, unless it is necessary in order to cover the injury. It is necessary to observe circulatory changes
- Never apply a wet bandage. When wet bandage applied, tends to shrink and become tight as it dries
- Do not apply a bandage too loosely because it may slip and expose the wound
- All turns of bandage should be made clockwise unless there is some special reason for doing otherwise the roll should be held in the palm of the hand, with the free end of the bandage coming from the part of the roll
- Applying bandage, secure terminal extremity by pinning with safety pins or strapping adhesive
- Remove bandages by gathering folds in a loose mass. Passing mass from one hand to the other
- Examine the bandage part frequently for pain, swelling, etc.

### TYPES

- **Gauze Bandage:** One of the most common types of bandage is gauze bandage. It is a simple woven strip of material having Telfa absorbent barrier that helps in preventing the wounds. It can be used for any type of bandage application. Also, it is usually available in any number of widths and lengths.



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**Gauze Bandage**

- **Compression Bandage:** The compression bandage includes a wide variety of bandages having diverse applications. There are short stretch compression bandages which are applied to limb for the treatment of venous ulcers, lymphedema, etc. The long-stretch compression bandages, on the other hand, feature long stretch properties and have a high compressive power that can be easily adjusted. This bandage has high resting pressure as well and thus required to be removed at night or if the patient is taking rest.



Elastic Roller Bandage

- **Triangular Bandage:** The triangular bandage is also known as cravat bandage. It is a piece of cloth that is put into a right-angled triangle and provided along with the safety pins to secure in a particular place. It can be used for specialized applications like on head or it can be folded as a normal bandage.



### 15 Uses for a Triangular Bandage



- **Tube Bandage:** The tube bandage is woven in a continuous circle and applied using an applicator. This bandage is used for holding the dressings and splints

onto limbs. It also provides support to strains and sprains as well as stops bleeding.



**Roller Bandage**

### **ASSESSING BEFORE APPLYING BANDAGE**

- ❖ Inspect and palpate the area for swelling
- ❖ Inspect for the presence of and status of wounds
- ❖ Note the presence of drainage (amount, color, odor, and velocity)
- ❖ Inspect and palpate for adequacy of circulation (skin temperature, color and sensation)
- ❖ Ask the patient about any pain experienced (location, intensity, onset and quality)
- ❖ Assess the ability of the patient to reapply the bandage when needed
- ❖ Assess the capabilities of the patient regarding activities of daily living (to dress, comb hair, bath)

### **Blood gas analysis**

#### **Blood gas test**

Measures the amount of oxygen and carbon dioxide in the blood. It may also be used to determine the pH of the blood, or how acidic it is. The test is commonly known as a blood gas analysis or arterial blood gas (ABG) test.

#### **Purpose:**



1. Kidney failure
2. Heart failure
3. Uncontrolled diabetes
4. Hemorrhage
5. Drug overdose
6. Shock

**In general, normal values include:**

**Arterial blood pH: 7.38 to 7.42.**

**Oxygen saturation: 94 to 100 percent.**

Blood pH	Condition	Common causes
Less than 7.4	Acidosis	Kidney failure, shock, diabetic ketoacidosis
Greater than 7.4	Alkalosis	Chronic vomiting, low blood potassium

### **Intravenous fluids:**

Intravenous fluids:

Are supplemental fluids used in intravenous therapy to restore or maintain normal fluid volume and electrolyte balance when the oral route is not possible .

### **Types of IV Fluids:**

#### **1. Isotonic IV Fluids:**

Meaning, they have the same concentration of solutes as blood plasma.

##### **A. Normal saline solution (0.9% NaCl)**

Crystalloid isotonic IV fluid that contains water, sodium (154 mEq/L), and chloride (154 mEq/L) and gives no calories.

Normal saline is the IV fluid used on the administration of blood products. It is also used to replace large sodium losses such as in

burn injuries and trauma. It should not be used for heart failure, pulmonary edema, and renal impairment, or conditions that cause sodium retention as it may risk fluid volume overload.

**B. Dextrose 5% in Water (D5W)**

Initially an isotonic solution and contains 50g of glucose. It should not be used for fluid resuscitation because hyperglycemia can result. It should also be avoided to be used in clients at risk for increased intracranial pressure as it can cause cerebral edema.

**C. Lactated Ringer's Solution (also known as Ringer's Lactate or Hartmann solution)**

Is a crystalloid isotonic IV fluid designed to be the near-physiological solution of balanced electrolytes. It contains sodium, potassium, calcium, and chloride. It is the most physiologically adaptable fluid because its electrolyte content is most closely related to the composition of the body's blood serum and plasma. IT is used to correct dehydration, sodium depletion, and replace GI tract fluid losses. It can also be used in fluid losses due to burns, fistula drainage, and trauma.

**D. Ringer's solution**

Is another isotonic IV solution that has content similar to Lactated Ringer's Solution but does not contain lactate .

**2. Hypotonic IV Fluids:**

**A. Sodium chloride 0.45% (1/2 NS)** also known as half-strength normal saline, is a hypotonic IV solution used for replacing water in patients who have hypovolemia with hypernatremia.

**B. 0.33% Sodium Chloride Solution** is used to allow kidneys to retain the needed amounts of water and is typically administered with dextrose to increase tonicity. It should be used in caution for patients with heart failure and renal insufficiency.

**C. 2.5% Dextrose in Water (D2.5W)**

Another hypotonic IV solution commonly used is 2.5% dextrose in water (D2.5W). This solution is used to treat dehydration and decreased the levels of sodium and potassium.

**3. Hypertonic IV Fluids:**

**Dextrose 50% in Water (D50W)**

Another hypertonic IV solution used commonly is Dextrose 50% in Water (D50W) which is used to treat severe hypoglycemia and is administered rapidly via IV bolus.

## **Nursing Management of the Patient Receiving Intravenous Therapy**

### **❖ Managing Systemic Complications**

#### **1. Fluid Overload**

Signs and symptoms of fluid overload include moist crackles on auscultation of the lungs, cough, restlessness, distended neck veins, edema, weight gain, dyspnea, and rapid, shallow respirations. Possible causes include rapid infusion of an IV solution or hepatic, cardiac, or renal disease. This complication can be avoided by using an infusion pump and by carefully monitoring all infusions. Its treatment includes decreasing the IV rate, monitoring vital signs frequently, assessing breath sounds, and placing the patient in a high Fowler position.

#### **2. Air Embolism**

It is most often associated with cannulation of central veins and directly related to the size of the embolus and the rate of entry. Manifestations of air embolism include palpitations, dyspnea, continued coughing, jugular venous distension, wheezing, and cyanosis; hypotension; weak, rapid pulse; altered mental status; and chest, shoulder, and low back pain.

**Complications of air embolism** include shock and death.

Treatment calls for immediately clamping the cannula and replacing a leaking or open infusion system, placing the patient on the left side in the Trendelenburg position, assessing vital signs and breath sounds, and administering oxygen.

#### **3. Infection**

Signs and symptoms include an abrupt temperature elevation shortly after the infusion is started, backache, headache, increased pulse and respiratory rate, nausea and vomiting, diarrhea, chills and shaking, and general malaise. Occur. Prevention includes the following:

- a) Performing careful hand hygiene.
- b) Examining the IV containers for cracks, leaks, or cloudiness.
- c) Using strict aseptic technique.
- d) Disinfecting injection/access ports with antimicrobial solution before and after each use.
- e) Removing the IV cannula at the first sign of local inflammation, contamination, or complication.

## **Managing Local Complications**

### **1. infiltration and extravasation**

Infiltration is characterized by edema around the insertion site, leakage of IV fluid from the insertion site, discomfort and coolness in the area of infiltration, and a significant decrease in the flow rate .

### **2. Phlebitis**

### **3. Thrombophlebitis**

Characterized by a reddened, warm area around the insertion site or along the path of the vein, pain or tenderness at the site or along the vein, and swelling.

Treatment includes discontinuing the IV infusion; applying a cold compress first to decrease the flow of blood and increase platelet aggregation, followed by a warm compress; elevating the extremity; and restarting the line in the opposite extremity.

### **4. Hematoma**

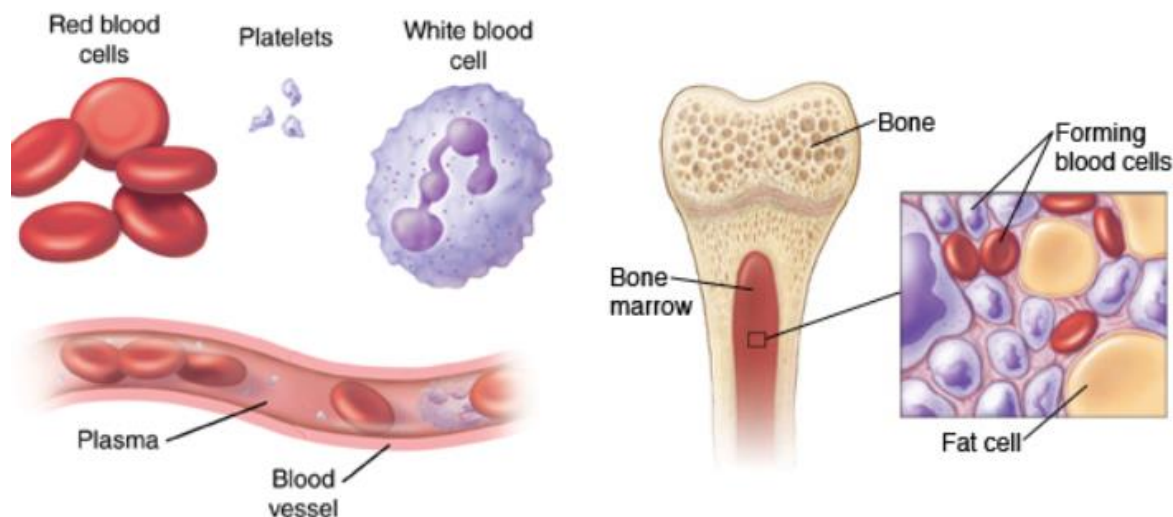
The signs of a hematoma include ecchymosis, immediate swelling at the site, and leakage of blood at the insertion site. Treatment includes removing the needle or cannula and applying light pressure with a sterile, dry dressing; applying ice for 24 hours to the site to avoid extension of the hematoma; elevating the extremity to maximize venous return.

## 5. clotting and obstruction

The signs are decreased flow rate and blood backflow into the IV tubing. If blood clots in the IV line, the infusion must be discontinued and restarted in another site with a new cannula and administration set.

## Blood and Blood Components

**Blood:** is a fluid that flows throughout the body in blood vessels.



### What are the components of blood?

- **Red blood cells (RBCs)** :carry oxygen to the body.
- **White blood cells (WBCs)**: are part of the body's immune system.
- **Platelets**: are cells that help with clotting.
- **Plasma**: is the liquid portion of blood.

### Functions of blood:

- supplying oxygen to cells and tissues
- providing essential nutrients to cells, such as amino acids, fatty acids, and glucose
- removing waste materials, such as carbon dioxide, urea, and lactic acid
- Regulating body temperature.

**Blood Transfusion Therapy:** Involves transfusing whole blood or blood components (specific portion or fraction of blood lacking in patient).

**Purpose:**

1. To increase circulating blood volume after surgery, trauma, or hemorrhage
2. To increase the number of RBCs and to maintain hemoglobin levels in clients with severe anemia
3. To provide selected cellular components as replacements therapy (e.g. clotting factors, platelets, albumin)

**Complications of Blood Transfusion:**

**1. Allergic Reaction**

Assess for:

- Flushing
- Rash, hives
- Pruritus
- difficulty of breathing

**2. Febrile**

Assess for:

- Sudden chills and fever
- Flushing
- Headache

**3. Septic Reaction** – it is caused by the transfusion of blood or components contaminated with bacteria.

Assess for:

- Rapid onset of chills
- Vomiting
- Marked Hypotension
- High fever

**4. Circulatory Overload** – it is caused by administration of blood volume at a rate greater than the circulatory system can accommodate.

Assess for:

- Dyspnea
- Distended neck vein
- Cough
- Elevated BP

**5. Hemolytic reaction** – it is caused by infusion of incompatible blood products.

Assess for:

- Low back pain (first sign). This is due to inflammatory response of the kidneys to incompatible blood.
- Chills
- Feeling of fullness
- Tachycardia
- Flushing
- Tachypnea
- Hypotension
- Bleeding
- Vascular collapse
- Acute renal failure

### **Nursing Interventions**

1. Verify doctor's order. Inform the client and explain the purpose of the procedure.
2. Check for cross matching and typing.
3. Obtain and record vital signs
4. Practice strict asepsis
5. At least 2 licensed nurse check the label of the blood transfusion. Check the following:
  - Serial number
  - Blood component
  - Blood type
  - Rh factor
  - Expiration date

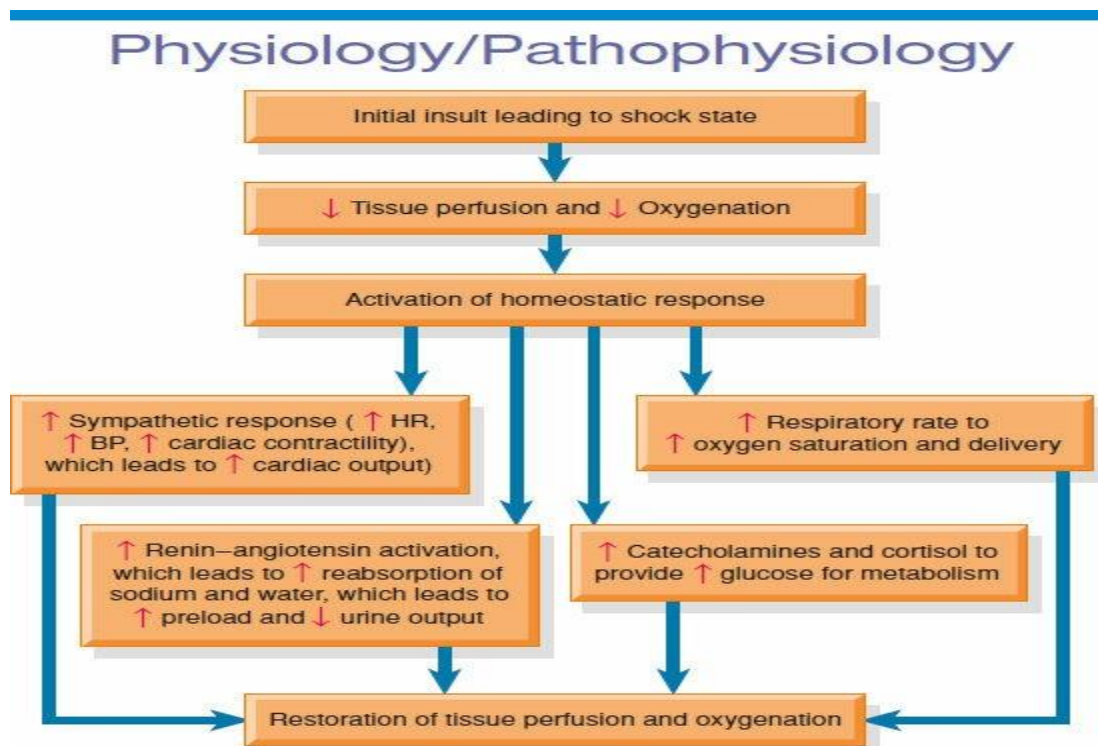


- Screening test (VDRL, HBsAg, malarial smear) – this is to ensure that the blood is free from blood-carried diseases and therefore, safe from transfusion.
6. Warm blood at room temperature before transfusion to prevent chills.
  7. Identify client properly. Two Nurses check the client's identification.
  8. Use needle gauge 18 to 19 to allow easy flow of blood.
  9. Start infusion slowly at 10 gtts/min. Remain at bedside for 15 to 30 minutes. Adverse reaction usually occurs during the first 15 to 20 minutes.
  10. Do not mix medications with blood transfusion to prevent adverse effects.
  11. Administer 0.9% NaCl before; during or after BT. Never administer IV fluids with dextrose. Dextrose based IV fluids cause hemolysis.
  12. Observe for potential complications. Notify physician.

## Shock and Multiple Organ Dysfunction Syndrome

**Shock:** is a life-threatening condition that results from inadequate tissue perfusion.

Shock is a very serious medical condition that results from a profound and widespread reduction in effective tissue perfusion leading to cellular dysfunction and organ failure.



## Classification

- It is valuable to classify different forms of shock according to etiology and cardiovascular physiology .because such classification results in appropriate patient management.

### Types of Shock

Shock is identified in most patients based on findings of hypotension and inadequate organ perfusion, which may be caused by either low cardiac output or low systemic vascular resistance (SVR).

Class	Clinical features
<b>Cardiogenic shock</b>	<ul style="list-style-type: none"><li>• Associated with heart problems.</li><li>• Happens when the heart is damaged and unable to supply sufficient blood to the body.</li><li>• This can be the end result of a heart attack or congestive heart failure.</li><li>• The patients have cool and clammy extremities, poor capillary refill, tachycardia, narrow pulse pressure, and low urine output.</li></ul>
<b>Hypovolemic shock</b>	<ul style="list-style-type: none"><li>• Caused by inadequate blood volume).</li><li>• It is caused by severe blood and fluid loss, such as from traumatic bodily injury, which makes the heart unable to pump enough blood to the body.</li><li>• the possible reasons for which include:<ol style="list-style-type: none"><li>a. Gastrointestinal bleeding.</li><li>b. Extravasation of plasma.</li><li>c. Major surgery.</li></ol></li></ul>

	d. Trauma, and severe burns.
<b>Anaphylactic shock</b>	<ul style="list-style-type: none"><li>• Caused by allergic reaction.</li><li>• It is a type of severe hypersensitivity or allergic reaction.</li><li>• Causes include allergy to insect stings, medicines or foods (nuts, berries, seafood), etc.</li></ul>
<b>Septic shock</b>	<ul style="list-style-type: none"><li>• Associated with infections.</li><li>• Results from bacteria multiplying in the blood and releasing toxins.</li><li>• Common causes of this are pneumonia, intra-abdominal infections (such as a ruptured appendix) and meningitis.</li></ul>
<b>Neurogenic shock</b>	<ul style="list-style-type: none"><li>• Caused by damage to the nervous system.</li><li>• It is caused by spinal cord injury, usually as a result of a traumatic accident or injury.</li></ul>

## Causes:

Shock can be caused by any condition that reduces blood flow, including:

1. Heart problems (such as heart attack or heart failure).
2. Low blood volume (as with heavy bleeding or dehydration).
3. Changes in blood vessels (as with infection or severe allergic reactions).
4. Certain medications that significantly reduce heart function or blood pressure.

## Symptoms

Depending on the specific cause and type of shock, symptoms will include one or more of the following:

1. Anxiety or agitation/restlessness.
2. Bluish lips and fingernails.
3. Chest pain.
4. Confusion.
5. Dizziness, lightheadedness, or faintness.
6. Pale, cool, clammy skin.
7. Low or no urine output.
8. Profuse sweating, moist skin.
9. Rapid but weak pulse.
10. Shallow breathing.
11. Unconsciousness.

### **Immediate care for patient with shock**

- Call for immediate medical help.
- Check the person's airway, breathing, and circulation. If necessary, begin rescue breathing and CPR.
- Even if the person is able to breathe on his or her own, continue to check rate of breathing at least every 5 minutes until help arrives.
- If the person is conscious and does NOT have an injury to the head, leg, neck, or spine, place the person in the shock position. Lay the person on the back and elevate the legs about 12 inches.
- Give appropriate first aid for any wounds, injuries, or illnesses.
- Keep the person warm and comfortable. Loosen tight clothing.

## DO NOT

- Do NOT give the person anything by mouth, including anything to eat or drink.
- Do NOT move the person with a known or suspected spinal injury.
- Do NOT wait for milder shock symptoms to worsen before calling for emergency medical help.

## Management

Treatment for shock depends on the cause.

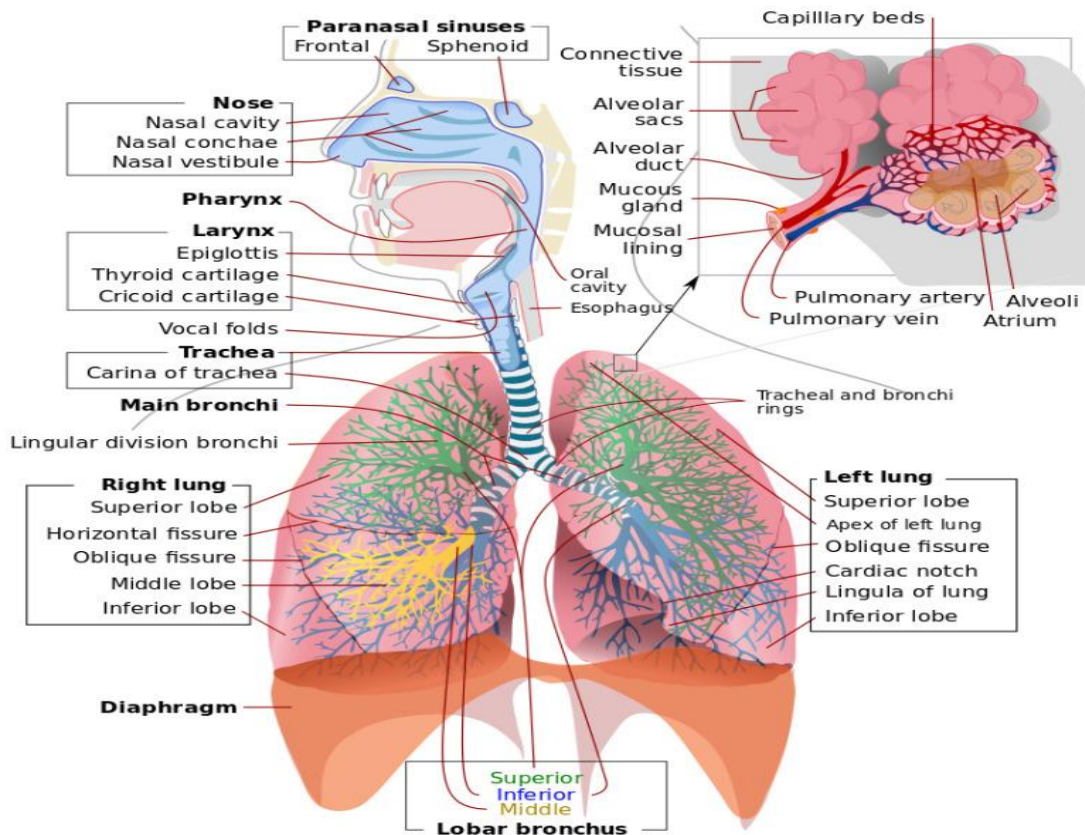
1. **Septic shock** is treated with antibiotics and fluids.
2. **Anaphylactic shock** is treated with diphenhydramine (Benadryl), epinephrine, and steroid medications. Administering medications to relieve itching, and applying warm soaks to skin.
3. **Cardiogenic shock** is treated by identifying and treating the underlying cause (heart failure). Diuretics may be used for preload reduction.
4. **Hypovolemic shock** is treated with fluids (saline) in minor cases, and blood transfusions in severe cases. Accurate monitoring of intake and output and daily weights are essential.
5. **Neurogenic shock** is the most difficult to treat as spinal cord damage is often irreversible. Immobilization, anti-inflammatories such as steroids and administration of prescribed anticoagulation therapy. Surgery are the main treatments.

## Obstruction and Trauma of the Upper Respiratory airway

OSA is a disorder characterized by recurrent episodes of upper airway obstruction and a reduction in ventilation. It is defined as cessation of breathing (**apnea**) during sleep usually caused by repetitive upper airway obstruction.

### Common causes of obstruction of the upper airway:

1. malignancy
2. Aspiration (e.g., foreign body)
3. Inflammatory disorders,
4. Trauma



### Clinical Manifestations:

1. OSA is characterized by frequent and loud snoring with breathing Cessation for 10 seconds or longer, for at least five episodes per hour.

2. Classic signs and symptoms of OSA include the “3S’s”—namely, Snoring, sleepiness, and significant-other report of sleep apnea episodes.
3. Patients are typically unaware of nocturnal upper airway Obstruction during sleep.
5. Exercise intolerance.

**Prevention of an airway obstruction:**

Many types of airway obstructions can be prevented. You can help reduce your risk by doing the following:

1. Eat small bites of food.
2. Eat slowly.
3. Supervise small children when eating.
4. Keep small objects away from children.
5. Avoid smoking.

**Epistaxis (Nosebleed):**

**Is** a hemorrhage from the nose, is caused by the rupture of tiny, distended vessels in the mucous membrane of any area of the nose.

**Causes:**

- Local infections (rhinitis,)
- Systemic infections (scarlet fever, malaria)
- Drying of nasal mucous membranes
- Nasal inhalation of corticosteroids (e.g., beclomethasone) or Drugs (e.g., cocaine)
- Trauma (blunt trauma, fracture)
- Hypertension
- Tumor (sinus or nasopharynx)
- Use of aspirin

**Medical Management:**

Management of epistaxis depends on its cause and the location of the bleeding site. Initial treatment may include applying direct pressure. The patient sits upright with the head tilted forward to prevent swallowing and aspiration of blood and is directed to pinch the soft outer portion of the nose against the midline septum for 5 or 10 minutes continuously. Application of nasal decongestants (phenylephrine, one or two sprays) to act as vasoconstrictors may be necessary. If these measures are unsuccessful in stopping the bleeding, the nose must be examined using good illumination and suction to determine the site of bleeding. Visible bleeding sites may be cauterized with electro cautery.

**Nursing Management:**

1. The nurse monitors the patient's vital signs
2. Assuring the patient in a calm, efficient manner that bleeding can be controlled can help reduce anxiety.
3. The nurse continuously assesses the patient's airway and breathing as well as vital signs.
4. Patient with significant hemorrhage requires IV infusions solutions (normal saline) as well as cardiac and pulse oximetry monitoring.
5. The nurse instructs the patient to avoid vigorous exercise for several days and to avoid hot or spicy foods and tobacco.
6. Avoiding forceful nose blowing, straining.
7. Adequate humidification may prevent drying of the nasal passages
8. The nurse explains how to apply direct pressure to the nose with the thumb and the index finger for 15 minutes

**Fractures of the Nose**

Fractures of the nose usually result from a direct assault. Nasal fractures may affect the ascending process of the maxilla and the septum.

**Clinical Manifestations:**

The signs and symptoms of a nasal fracture are pain, bleeding from the nose externally and internally into the pharynx, swelling of the soft tissues adjacent to the nose, per orbital ecchymosis, nasal obstruction, and deformity.



**Medical Management:**

Bleeding is controlled with the use of packing. Cold compresses are used to prevent or reduce edema. It is essential to ensure a patent airway. uncomplicated nasal fractures may be treated initially with antibiotics, analgesic agents, and a decongestant nasal spray. Timing is important when treating fractures because further delay in treatment may result in significant bone healing, which ultimately may require surgical intervention that includes

Rhinoplasty to reshape the external appearance of the nose.

**Nursing Management:**

1. Immediately after the fracture, the nurse applies ice and encourages the patient to keep the head elevated.
2. The nurse instructs the patient to apply ice packs to the nose to decrease swelling.
3. The patient who experiences bleeding from the nose (epistaxis) is usually frightened and anxious and needs reassurance.
4. The packing inserted to stop the bleeding
5. The use of analgesic agents such as acetaminophen or (i.e., ibuprofen or naproxen) is encouraged
6. The nurse instructs the patient to avoid sports activities for 6 weeks.

**Pneumothorax & Hem thorax**

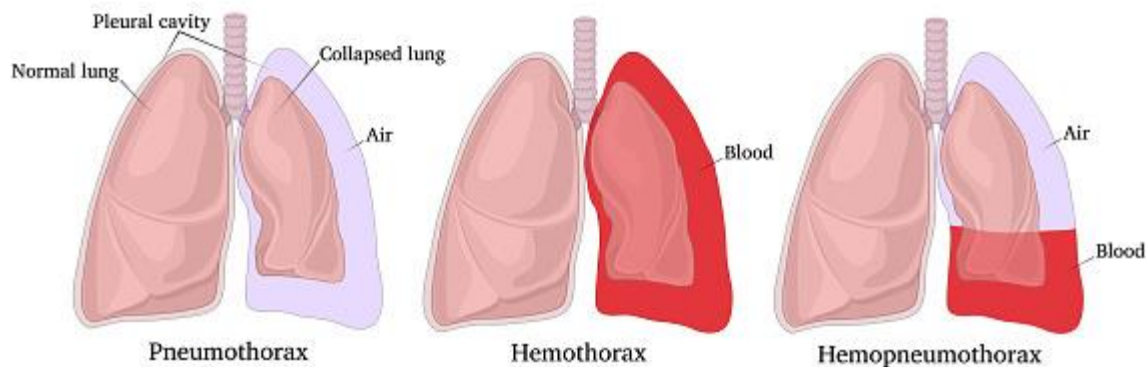
**Hem thorax:** partial or complete collapse of the lung due to blood accumulating in the pleural space, may occur after surgery or trauma.

**Pneumothorax:**

- Partial or complete collapse of the lung due to positive pressure in the pleural space
- A pneumothorax occurs when free air accumulates in the pleural cavity between the visceral and parietal areas, and causes a portion or the complete lung to collapse.

- Pressure in the pleural space is normally less than that of atmospheric pressure but following a penetration injury, air can enter the cavity from the outside changing the pressure within the lung cavity and causing it to collapse.

## Pneumothorax, Hemothorax and Hemopneumothorax



### Types of Pneumothorax

#### 1. Simple Pneumothorax

- A simple, or spontaneous, pneumothorax occurs when air enters the pleural space through a breach of either the parietal or visceral pleura.

#### 2. Traumatic Pneumothorax

- A traumatic pneumothorax occurs when air escapes from a laceration in the lung itself and enters the pleural space or enters the pleural space through a wound in the chest wall.
- **It may result from:**
  - a. Blunt trauma (e.g., rib fractures).
  - b. penetrating chest or abdominal trauma (e.g., stab wounds or gunshot wounds).

- c. Diaphragmatic tears.
- d. It may occur during invasive thoracic procedures (i.e., thoracentesis, Trans bronchial lung biopsy).

### **3. Open pneumothorax**

- Is one form of traumatic pneumothorax, It occurs when a wound in the chest wall is large enough to allow air to pass freely in and out of the thoracic cavity with each attempted respiration.

### **4. Tension Pneumothorax**

- A tension pneumothorax occurs when air is drawn into the pleural space from a lacerated lung or through a small opening or wound in the chest wall.
- It may be a complication of other types of pneumothorax.

### **5. Iatrogenic pneumothorax**

This type occur as a complication of some medical procedures, such as:

- Central venous catheter insertion
- Thoracentesis

### **Clinical Presentation**

- Sudden onset chest pain sharp in nature.
- Shortness of breath
- Tachypnea
- Tachycardia
- Cyanosis
- Decrease or absent breath sounds

## Treatment

**Varies according to type and amount of lung collapse**

### **A: traumatic**

- Chest tube to closed water seal.
- Chest drainage for lung expansion.
- Surgery.
- bed rest

### **B: Spontaneous**

If no sign of increased pleural pressure, less than 15% lung collapse, and no dyspnea or other indication of physiological compromise.

### **Diagnostic procedure**

**A: Laboratory:** hemoglobin and hematocrit may be decreased with blood loss.

### **B: Chest x-ray findings**

- Depressed diaphragm
- Atelectasis

**C: Chest tube:** placement required to facilitate re-expansion of the Collapsed lung and to permit drainage of fluid from lung.

**D: Thoracentesis:** needle thoracentesis is required for removing the accumulation air in the pleural cavity.

### **Nursing Interventions**

1. Reduce anxiety.
2. Semi Fowlers position

3. Encourage deep coughing exercise.
4. Measured respiratory rate
5. Encourage early ambulation.
6. Administered analgesics as order.
7. If chest tube is accidentally dislodged, occlusive dressing \*( gauze), to prevent lung collapse.

### **Oxygen Therapy:**

Oxygen therapy is the administration of oxygen at a concentration greater than that found in the environmental atmosphere. At sea level, the concentration of oxygen in room air is 21%.

### **Indication for Oxygen Therapy:**

- CPR
- PaO<sub>2</sub> less than 60 mmHg or SaO<sub>2</sub> less than 90%
- Patients with symptoms of chronic hypoxemia
- Asthma
- Trauma to the respiratory system
- Heart failure
- acute myocardial infarction.

### **How we measure O<sub>2</sub> levels:**

- Pulse oximetry measures SpO<sub>2</sub> the saturation of hemoglobin with O<sub>2</sub>
- ABG measures PaO<sub>2</sub> the pressure of O<sub>2</sub> dissolved in plasma & SaO<sub>2</sub> O<sub>2</sub> saturation of hemoglobin
- ABG is the “gold standard” for determining the patients ventilation, tissue oxygenation & acid-base status.



## Patient assessment

### Signs and symptoms

- Alteration in rate (tachypnea, bradyp and apnea)
- Depth of respirations (hypopnea)
- Difficulty of breathing (dyspnea)
- Changes in color (pallor or cyanosis)
- Heart rate fluctuations
- Elevated BP then marked decrease.

### What are the symptoms of low oxygen?

When you aren't getting enough oxygen, you'll experience a host of symptoms, including:

- Rapid breathing
- Shortness of breath
- Fast heart rate
- Coughing or wheezing
- Sweating
- Confusion
- changes in the color of your skin.

## OXYGEN THERAPY SYSTEMS (Methods).

### 1. Nasal Cannula:

- Is the most common inexpensive device used to administer oxygen.
- It is easy to apply and does not interfere with the client's ability to eat or talk.
- It delivers a relatively low concentration of oxygen which is 24% to 45%



## 2. Face Mask

- It cover the client's nose and mouth may be used for oxygen inhalation.
  - A simple face mask can deliver 35% to 60% oxygen



## 3. Face Tent

- It can replace oxygen masks when masks are poorly tolerated by clients.
- It provide varying concentrations of oxygen such as 30% to 50% concentration of oxygen



## 4. Trans tracheal Oxygen Delivery

- It may be used for oxygen-dependent clients.
- The client requires less oxygen (0.5 to 2 liters per minute) because all of the low delivered enters the lungs.

**Oxygen Therapy Safety Precautions:**

1. For home oxygen use or when the facility permits smoking, teach family members and roommates to smoke only outside or in provided smoking rooms away from the client.
2. Place cautionary signs reading “No Smoking: Oxygen in use” on the clients door, at the foot or head of the bed, and on the oxygen equipment.
3. Instruct the client and visitors about the hazard of smoking with oxygen use.
4. Avoids materials that generate static electricity, such as woolen blankets and synthetic fabrics. Cotton blankets should be used, and client and caregivers should be advised to wear cotton fabrics.
5. Avoid the use of volatile, flammable materials such as oils, greases, alcohol, ether, and acetone (e.g. nail polish remover), near clients receiving oxygen.
6. Ground electric monitoring equipment, suction machines and portable diagnostic machines.
7. Place more fire alarms throughout the home to help prevent serious complications.

**Complications of oxygen therapy:**

1. Lung damage.
2. Fluid buildup or bursting (rupture) of the middle ear.
3. Sinus damage.
4. Changes in vision, causing nearsightedness, or myopia.
5. Oxygen poisoning, which can cause lung failure, fluid in the lungs, or seizures



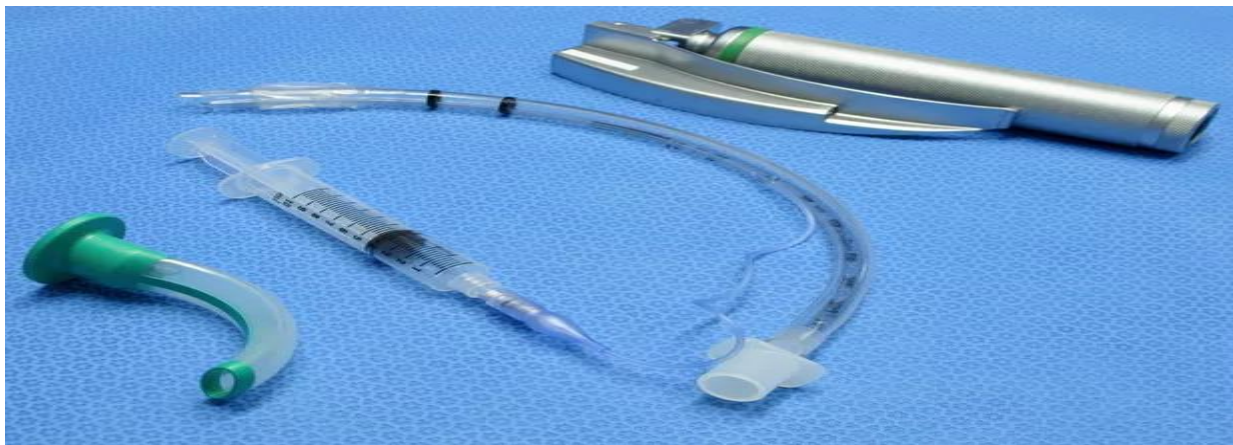
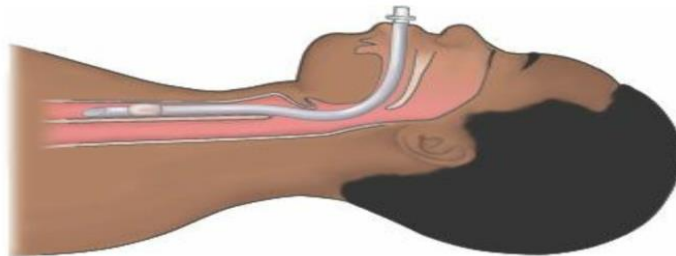
## Endotracheal Intubation

Endotracheal intubation involves passing an endotracheal tube through the nose or mouth into the trachea. Endotracheal intubation is a means of providing an airway for patients who cannot maintain an adequate airway on their own (e.g., patients who are comatose and patients with upper airway obstruction).

### Indications for endotracheal intubation

1. Maintenance of airway patency.
2. Protection of the airway from aspiration.
3. Application of positive-pressure ventilation.
4. Use of high oxygen concentrations.

Endotracheal tube in place.



### Complications

1. Nasal and oral trauma.

2. Pharyngeal and hypo pharyngeal trauma.
3. Vomiting with aspiration, and cardiac arrest.
4. Tracheal rupture is a rare and often fatal complication.
5. Hypoxemia and hypercapnia can also occur, resulting in bradycardia, tachycardia, dysrhythmias, hypertension, and hypotension.

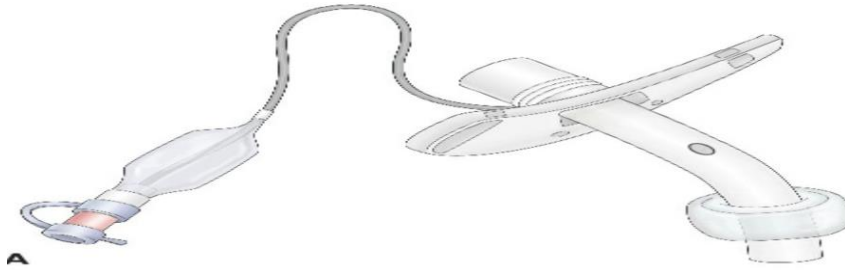
### **Care of the Patient with an Endotracheal Tube:**

#### **Immediately After Intubation**

1. Check symmetry of chest expansion.
  2. Auscultate breath sounds of anterior and lateral chest bilaterally.
  3. Ensure chest x-ray obtained to verify proper tube placement.
  4. Check cuff pressure every 6–8 hours.
  5. Monitor for signs and symptoms of aspiration.
  6. Administer oxygen concentration as prescribed by the primary provider.
  7. Secure the tube to the patient's face with tape, and mark the proximal end for position maintenance.
  8. Use sterile suction technique and airway care to prevent infection.
  9. Provide oral hygiene and suction the oropharynx whenever necessary.

### **Tracheostomy**

A **tracheotomy** is a surgical procedure in which an opening is made into the trachea. The indwelling tube inserted into the trachea is called a tracheostomy tube



### Complications:

**Early complications** include tube dislodgement, pneumothorax, air embolism, aspiration, subcutaneous or mediastinal emphysema, recurrent laryngeal nerve damage, and posterior tracheal wall penetration.

**Long-term complications** include airway obstruction from accumulation of secretions or protrusion of the cuff over the opening of the tube, infection.

### Preventing Complications Associated with Tracheostomy Tubes

1. Administer adequate warmed humidity.
2. Maintain cuff pressure at appropriate level.
3. Suction as needed per assessment findings.
4. Maintain skin integrity. Change tape and dressing as needed
5. Auscultate lung sounds.
6. Monitor for signs and symptoms of infection, including temperature and white blood cell count.
7. Administer prescribed oxygen and monitor oxygen saturation.
8. Monitor for cyanosis.
9. Use sterile technique when suctioning and performing tracheostomy care.

## Mechanical Ventilation

Mechanical Ventilation is ventilation of the lungs by artificial means usually by a ventilator.

### Purposes:

1. To maintain or improve ventilation, & tissue oxygenation.

2. To decrease the work of breathing & improve patient's comfort.



### Indications:

- 1- Acute respiratory failure includes neuromuscular diseases as, Guillain-Barre Syndrome, and Poliomyelitis (failure of the normal respiratory neuromuscular system).
- 2- Infectious diseases of the lung such as pneumonia, tuberculosis.
- 3- Conditions such as pulmonary edema, atelectasis, pulmonary fibrosis.
- 4- Patients who has received general anesthesia as well as post cardiac arrest.

### Complications of Mechanical Ventilation:-

1. Paralytic ileus

2. Pneumothorax
3. Infection
4. Otitis media
5. Acute hemorrhage at the site

### Nursing care of patients on mechanical ventilation

1. Assess the patient's respiratory status at least every 4 hours for the first 24 hours and then as needed
2. Take vital signs at least every 4 hours.
3. Assess the patient's color (especially lips and nail beds).
4. Observe the patient's chest for bilateral expansion.
5. Assess the placement of the nasotracheal or endotracheal tube.
6. Obtain pulse oximetry reading.
7. Check to be sure alarms are set (especially low-pressure and low exhaled volume).
8. Ensure humidity by keeping delivered air temperature maintained at Body temperature.
9. Be sure the tracheostomy cuff (or endotracheal cuff) is adequately inflated to ensure tidal volume.
10. Auscultate the lungs for crackles, wheezes, equal breath sounds, and decreased or absent breath sounds.
11. Check the patient's need for tracheal, oral, or nasal suctioning every 2 hours, and suction as needed.
12. Perform mouth care every 2 hours.  
Carefully move the oral endotracheal tube to the opposite side of the Mouth once daily to prevent ulcers.
13. Maintain accurate intake and output records to monitor fluid balance.

14. Turn the patient at least every 2 hours.
15. Monitor for adverse effects of mechanical ventilation: infection,  
Reduced cardiac output.
16. Administer muscle-paralyzing agents, sedatives, and narcotic  
Analgesics, as prescribed.

### **Cardiac arrhythmias**

Cardiac arrhythmias, also known as cardiac dysrhythmias, are abnormal electrical conduction or automaticity changes in heart rate and rhythm. Arrhythmias vary in severity, from those that are mild, asymptomatic, and require no treatment.

#### **Heart Arrhythmia (Dysrhythmia) Causes:**

The following can lead to dysrhythmia development:

- A high-fat diet
- Coronary artery disease (blockage in the arteries)
- Diabetes
- Drug abuse
- Excessive use of alcohol (more than two drinks per day)
- High blood pressure
- High cholesterol
- Obesity
- Sleep apnea
- Smoking
- Stress

#### **Heart Arrhythmia (Dysrhythmia) Signs and Symptoms**

- Chest pain or tightness
- Dizziness or lightheadedness
- Fainting

- Palpitations – a feeling of skipped heartbeats or fluttering
- Pounding in the chest
- Shortness of breath
- Weakness or fatigue.

### **Heart Arrhythmia (Dysrhythmia) Diagnosis**

**Echocardiogram:** This ultrasound exam uses sound waves to take moving pictures of the heart's chambers and valves.

**Electrocardiogram (EKG):** This test measures the electrical activity of the heart and can help determine if parts of the heart are enlarged, overworked or damaged.

**Stress testing:** This test is conducted during exercise.

#### **Risk Factors:**

Risk factors that could contribute to dysrhythmia include:

**Advancing age:** People over the age of 60 are more likely to develop dysrhythmia.

**Congenital heart defects:** Certain structural or functional heart problems may be present at birth.

**Family history:** Some cases of heart disease or conditions like Long QT syndrome can run in families.

**Previous heart attacks or surgeries:** Damage to the heart can weaken the muscle and affect its electrical system.

#### **Complications:**

Many dysrhythmias are mild and don't cause complications. However, more serious arrhythmias can raise the risk of severe, and even life-threatening, complications, such as:

1. Congestive heart failure



2. Fainting (syncope)

3. Sudden death

### **Nursing Care:**

1. Palpate pulses, noting rate, and regularity.
2. Auscultate heart sounds, noting rate, rhythm, presence of extra heartbeats, dropped beats.
3. Monitor vital signs.
4. Provide quiet and calm environment.
5. Administer supplemental oxygen as indicated.
6. Administer medications as appropriate: Other antiarrhythmic medications, lidocaine (Xylocaine), propranolol (Inderal)
7. Encourage identification and reduction of individual risk factors: smoking and alcohol consumption, obesity.
8. Encourage development of regular exercise routine, avoiding overexertion. Identify signs and symptoms requiring immediate cessation of activities: dizziness, lightheadedness, dyspnea, chest pain.

### **Nasogastric Intubation NG Tube**

**Nasogastric (NG) intubation** is a procedure in which a thin, plastic tube is inserted into the nostril, toward the esophagus, and down into the stomach.

#### **Indications:**

- **Gastric decompression.** Gastric decompression is indicated for bowel obstruction and paralytic ileus and when surgery is performed on the stomach or intestine.
- Aspiration of gastric fluid content.
- Feeding and administration of medication
- Prevention of vomiting and aspiration.

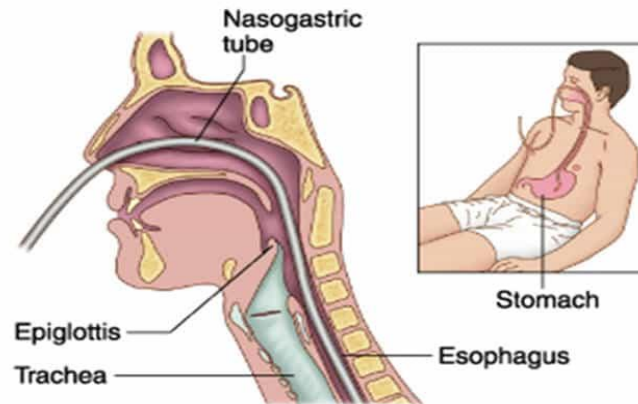
#### **Contraindications:**

- Recent nasal surgery and severe midface trauma



- **Other contraindications include:** coagulation abnormality, esophageal varices, recent banding of esophageal varices.

## Nasogastric Intubation



nurseslabs

### Risks and Complications:

- **Discomfort.** A conscious patient may feel a little discomfort while the NG tube is passed through the nostril and into the stomach which can induce gagging or vomiting.
- **Trauma.** The tube can injure the tissue inside the sinuses, throat, esophagus, or stomach if not properly inserted.
- **Wrong placement.** Unwanted scenarios such as wrong placement of an NG tube into the lungs will allow food and medicine pass through it that may be fatal to the patient.
- **Other complications include:** abdominal cramping or swelling from feedings that are too large, diarrhea, regurgitation of the food or medicine, a tube obstruction or blockage, a tube perforation or tear.

### Nursing care:

1 Confirm physician's order for NG tube.

2 Observe drainage from NG tube. Check amount, color, consistency, and odor. Hamates drainage to confirm presence of blood in drainage

3 Inspect suction apparatus.

4 Assess placement of NG tube. NG tube may be displaced into trachea through movement or manipulation.

5 Assess comfort of client. Check for presence of nausea and vomiting, feeling of fullness, or pain. May indicate incorrect operation of NG suction or blockage in tube.

6 Assess client's abdomen for distension and auscultate for presence of bowel sounds.

7 Assess mobility of client and respiratory status.

8 Observe condition of client's nostrils and oral cavity

9 Monitor NG tube and suction apparatus at least every 2 hours.

10 Record and measure NG irrigations and drainage on intake/output chart according to schedule and agency protocol.

## **Epilepsy (seizures)**

Epilepsy is a disorder of the brain characterized by repeated seizures. A seizure is usually defined as a sudden alteration of behavior due to a temporary change in the electrical functioning of the brain.

### **Causes**

- The main cause is unknown
- Causes of acquired seizures include:
  1. Cerebrovascular disease.
  2. Hypoxemia of any cause, including vascular insufficiency.

3. Fever (childhood).
4. Head injury, Hypertension.
5. Infectious diseases, such as meningitis, AIDS and viral encephalitis.
6. Central nervous system infections.
7. Metabolic and toxic conditions (eg, renal failure, hypo-natremia, hypocalcaemia, hypoglycemia, pesticides)
8. Brain tumor.
9. Drug and alcohol withdrawal.
10. Developmental disorders, such as autism and neurofibromatosis.

## Types of epilepsy

### A: Generalized Seizures:

1. **Clonic seizures.** are associated with rhythmic, jerking muscle movements. These seizures usually affect the neck, face and arms.
2. **Tonic seizures.** Tonic seizures cause stiffening of the muscles. These seizures usually affect back muscles, arms and legs and may cause to fall to the ground.
3. **Myoclonic seizures.** Myoclonic seizures usually appear as sudden brief jerks or twitches of the arms and legs.
4. **Atonic seizures.** Atonic seizures, also known as drop seizures, cause a loss of muscle control, which may cause patient to suddenly collapse or fall down.
5. **Tonic-clonic seizures.** Tonic-clonic seizures, also called grand mal seizures, are characterized by a loss of consciousness, body stiffening and shaking, and sometimes loss of bladder control or biting the tongue.

**B: Partial Seizures:** In this type only part of the brain is involved.

## Diagnosis

1. **Neurological examination**
2. **Blood tests.** to check for signs of infections, genetic conditions or other conditions which may be associated with seizures.
3. **Electroencephalogram (EEG).** This is the most common test used to diagnose epilepsy.
4. **Computerized tomography (CT) scan.** A CT scans can reveal abnormalities in the brain, such as tumors, bleeding and cysts.
5. **Magnetic resonance imaging (MRI).**to detect lesions or abnormalities in the brain that could be causing the seizures.

### Nursing Interventions

1. Administer anticonvulsant therapy as prescribed.
2. Protect the patient from injury during seizures.
3. If the patient is taking antiepileptic medications, constantly monitor for toxic signs and symptoms such as slurred speech, ataxia, lethargy, and dizziness.
4. Teach the patient to take exact dose of medication at the times prescribed.
5. Encourage the patient to eat balanced, regular meals.
6. Limit or avoid alcohol intake.
7. Encourage to have enough sleep to prevent attacks.
8. Avoid restraining the patient during a seizure.
9. Avoid any forcing anything into the patient's mouth if his teeth is clenched.
10. Avoid using tongue blade or spoon during attacks which could lacerate the mouth and lips of displace teeth, precipitating respiratory distress.
11. Turn the patient's head to the side to provide an open airway.
12. Reassure patient after the seizure subsides by telling him that he's all right, orienting him to time and place, and informing that he's had a seizure.

## Burn

- A burn injury is the destruction of the different layers of the skin and the structures within the skin, such as sweat glands, oil glands, and hair follicles.

### Types of burn Injuries

#### 1. Thermal burn injury

- a. Steam
- b. Flame
- c. **Scalding** is a specific type of burning that is caused by hot fluids or gasses.

#### 2. Inhalation burn injury

- a. Toxic inhalation
- b. Smoke inhalation
- c. Carbon monoxide poisoning

#### 3. Chemical Burn

Exposure to strong acid or alkaline fluids.

#### 4. Electrical Burn

### Classification of Burns

#### A: Burn Depth

##### 1. Superficial partial-thickness burn(First degree burn )

- The epidermis is destroyed or injured and a portion of the dermis may be injured.

- The damaged skin may be painful and appear red and dry, it may blister.

## 2. A deep partial-thickness (Second degree burn )

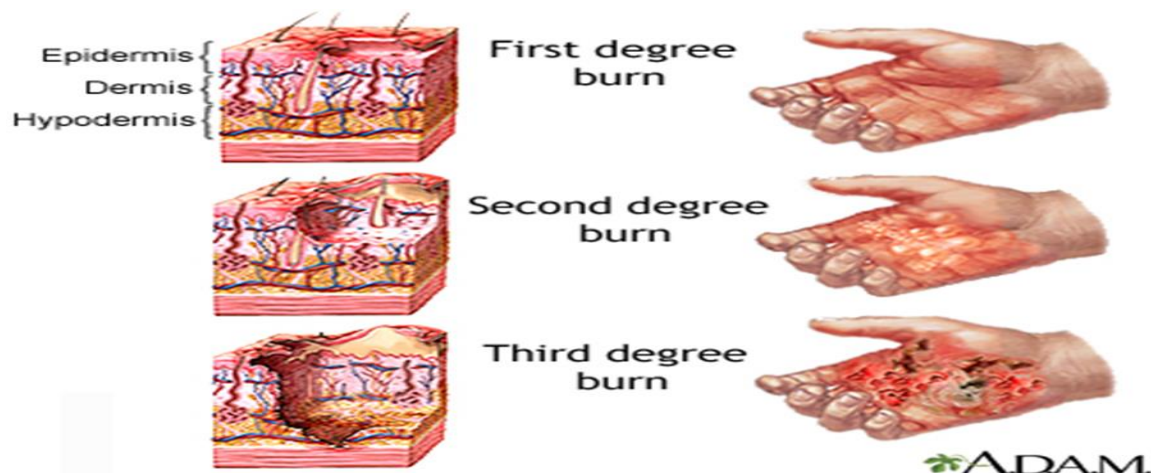
- Burn involves destruction of the epidermis and upper layers of the dermis and injury to deeper portions of the dermis.
- The wound is painful, appears red, and exudes fluid.

## 3. A full-thickness burn(Third degree burn )

- Involves total destruction of epidermis and dermis and, in some cases, destruction of underlying tissue.
- Wound color ranges widely from white to red, brown, or black.
- The burned area is painless because nerve fibers are destroyed.
- The wound appears leathery.
- Hair follicles and sweat glands are destroyed.

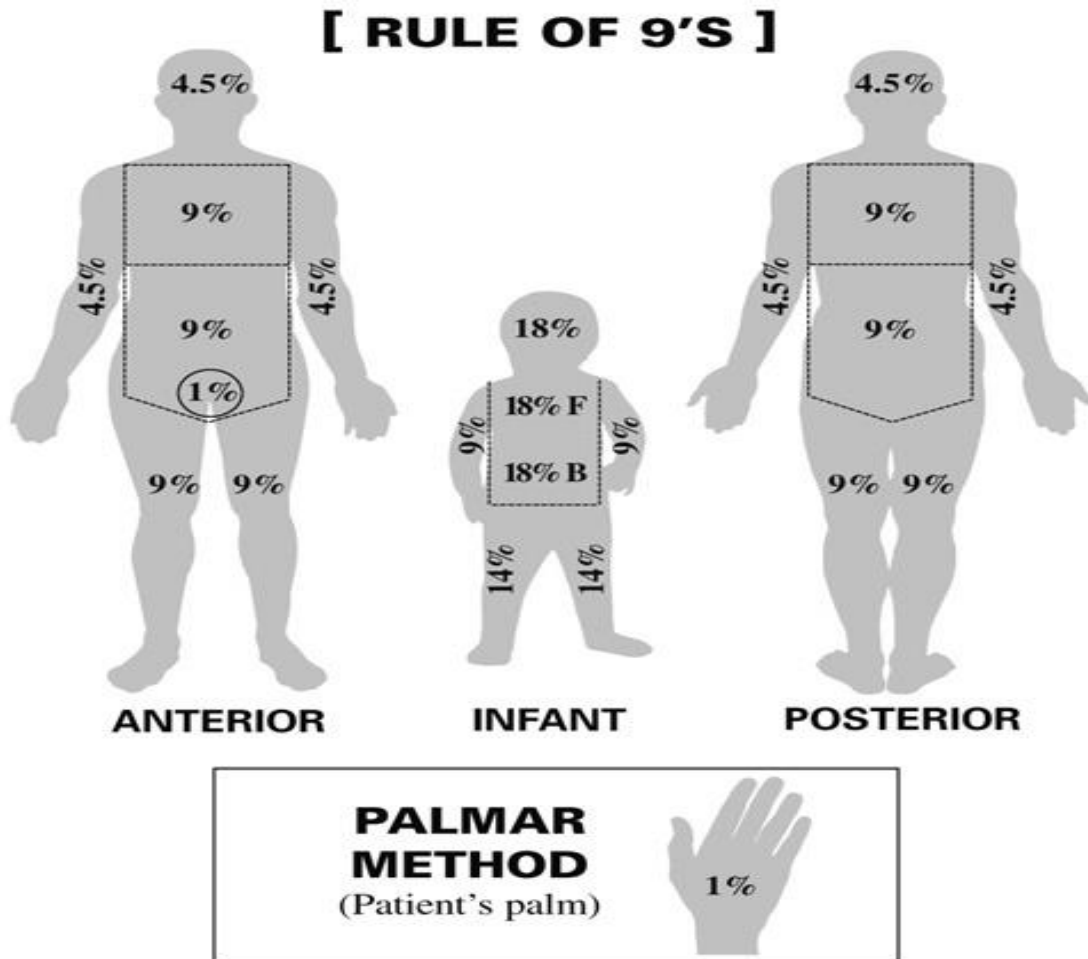
### B: Extent of Body Surface Area Injured

Various methods are used to estimate the total body surface area (TBSA) affected by burns; among them are the rule of nines, the Lund and Browder method, and the palm method.



## Rule of Nines

- The rule of nines is a quick way to estimate the extent of burns.
- The system assigns percentages in multiples of nine to major body surfaces.



- Head and neck-----9%
- Anterior trunk-----18%
- Posterior trunk-----18%
- Anterior upper extremities-----9%
- Posterior upper extremities-----9%
- Anterior lower extremities-----18%
- Posterior lower extremities-----18%

- Perineum -----1%

### **Nursing Intervention**

1. Immediate therapy is directed toward establishing an airway and administering humidified 100% oxygen. If such a high concentration of oxygen is not available under emergency conditions, oxygen by mask or nasal cannula is given initially.
2. No food or fluid is given by mouth, and the patient is placed in a position that will prevent aspiration of vomitus, because nausea and vomiting typically occur due to paralytic ileus resulting from the stress of injury.
3. Maintain patient airway through proper patient positioning, removal of secretions, and artificial airway if needed.
4. Providing a clean and safe environment.
5. Maintain IV lines and regulate fluids as prescribed.
6. Monitor urine output at least hourly and weigh patient daily.
7. Assess core body temperature frequently.
8. Monitor urine output and blood urea nitrogen (BUN) and creatinine levels



