- First Aid Measures -

* **Definition:** Measures done to save life, in life-threatening emergencies, where no trained medical personal or no medical equipment is available until definitive medical treatment can be accessed or until the illness or injury is fully dealt with.

I- FB inhalation:-

* **Foreign-body airway obstruction** should be considered in any victim - especially a younger victim - who suddenly stops breathing, becomes cyanotic, or loses consciousness for no apparent reason. The universal sign for choking is hands clutched to the throat. If the person doesn't give the signal, **look for these indications:**

- Inability to talk
- Difficulty breathing or noisy breathing
- Inability to cough forcefully
- Skin, lips and nails turning blue or dusky
- Loss of consciousness

* **Steps of 1st aid measures:**

A- In conscious victim:

1- Call for help.

2- Perform the Heimlich maneuver (subdiaphragmatic abdominal thrusts) with the victim standing or sitting:

- **Principle:** The Heimlich maneuver **is a physical measure** that elevates the diaphragm, **to create a sharp ↑ in the intrathoracic pressure that** can force air from the lungs aiming to expel a foreign body obstructing the airway. The diaphragm provides more than 80% of respiratory exchange; the intercostal muscles provide only 20%.
- **Precautions:** Guard against damage to internal organs, such as rupture or laceration of abdominal or thoracic viscera. To minimize this possibility, your hands should never be placed on the xiphoid process of the sternum or on the lower margins of the rib cage. They should be below this area but above the navel (umbilicus) and in the midline.
- **Advantages:**

- Heimlich maneuver is the only effective, safe, and scientifically sound procedure for saving the lives of all choking victims. It is recommended for choking persons of all ages.
- It is better than back blows and chest thrusts used to treat choking victims that have been proven ineffective and have caused deaths.
- **With chest thrusts**, the intrathoracic pressure resulting from chest thrusts is dissipated by depression of the diaphragm. The effective energy to expel a foreign body is, therefore, significantly diminished. Reports of injuries following chest thrusts include damaged liver, heart, spleen, and lungs.
- **A back blow** can drive a foreign object even deeper into the throat.
- **Guidelines also recommend the use of Heimlich maneuver to expel water** (a foreign body) from a near-drowning victim, with the victim placed in the prone position and the face turned to one side. Mouth-to-mouth ventilation is not appropriate until the water has been removed.

- **Disadvantages:**
  - Regurgitation may occur as a result of abdominal thrusts. Be prepared to position the patient so aspiration does not occur.
  - Damage to internal organs: guard against.

- **Steps:** stand behind the victim, wrap your arms around the victim's waist, and proceed as follows:
  - **Step 1:** Make a fist with one hand.
  - **Step 2:** Place the thumb side of the fist against the victim's abdomen, in the midline slightly above the navel and well below the tip of the

xiphoid process and the lower margins of the rib cage (to guard against damage to internal organs).

- **Step 3:** Grasp the fist with the other hand and press the fist into the victim's abdomen with a quick inwards and upwards thrust.

3- Check the mouth for any visible FB: if obstruction not relieved →

4- Attempt rescue breathing: if obstruction not relieved →

5- Measures to secure the airway (cricothyroidotomy)

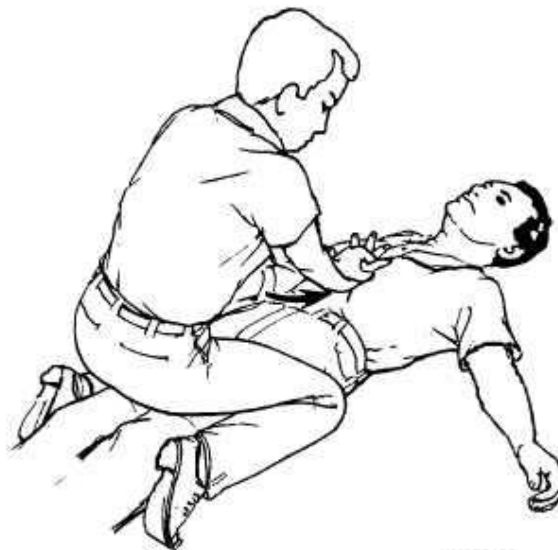
B- In unconscious victim:

1- Call for help

2- Blind finger sweeps of the upper airway.

3- Perform the Heimlich maneuver with the victim lying down: proceed as follows:

- **Step 1:** Place the victim in the supine position (face up).
- **Step 2:** Kneel astride the victim's thighs and place heel of one hand against the victim's abdomen, in the midline slightly above the navel and well below the tip of the xiphoid.
- **Step 3:** Place the second hand directly on top of the first.
- **Step 4:** Press into the abdomen with a quick upward thrust.



4- Check the mouth for any visible FB: if obstruction not relieved →

5- Attempt rescue breathing (CPR): if obstruction not relieved →

6- Measures to secure the airway (cricothyroidotomy)

N.B. American and British Red Cross recommend the following with infants:

i. **Turn the baby face down along the forearm** and perform up to 5 back blows with the heel of one hand, if failed →

ii. **Turn the baby face up on your forearm** and perform up to 5 sharp chest thrusts just below the nipples in midline with 2 fingers.

iii. **if failed → use the upright position (if conscious)**

II- Epistaxis:-

* **80% of patients with epistaxis** have anterior nose bleeds (from Little's area).

* **Steps of first aid measures:**

1- **Use sterile disposable gloves,** and face shield if possible (to avoid risk of blood contamination; conjunctivae are potential sites for transmission of HIV), and:

- **Assess** the amount of blood loss: severity of epistaxis and duration.
- **Enquire** about history of hypertension or ischaemic HD

2- **Be sure that the victim is breathing:** Check for signs of breathing (chest rises and falls, and place your cheek next to his or her mouth to check for breath). If the person is not breathing, perform CPR.

3- **Check if the victim is shocked (hypovolaemic or neurogenic):** Untreated shock can be fatal

- **Signs and symptoms of shock include:**
  - Pale, cold, clammy skin, the lips and fingernails may look blue.
  - Rapid pulse and breathing.
  - Agitation, disorientation or giddiness.
  - Nausea or vomiting may occur.
  - The person seems weak, with vacant eyes.
- **Anti-shock measures:**

A- Call for help.

B- Keep the victim lying down; elevate the legs on a pillow about 12 inches above the head.

C- If blood comes from the mouth and nose, turn the victim aside to prevent choking.

D- Stop bleeding first.

E- Reassure and comfort the victim; keep him or her calm until help arrives.

F- Cover the victim with a blanket.

G- Loosen collars and unbutton or cut away tight clothing, unbuckle the belt, loosen the shoes, and remove constrictive jewelry on the victim's wrists or neck.

H- Do not give the victim food or water.

4- If the victim is not shocked, perform the next steps:

- The victim is sitting down.
- Flex the neck to avoid swallowing of blood.
- Spitting out swallowed blood to avoid choking.
- Pinch the anterior fleshy part of the nose.
- The pressure and posture should be maintained for at least 10 minutes but a longer time may be required.
- Breathe through the mouth.
- Ice packs to adjacent cheeks/face may be applied.
- A piece of cotton soaked with a vasoconstrictor drops can be introduced into the nose if the patient is not hypertensive or ischaemic.
- Reassurance and keep the victim calm.

5- Uncontrollable epistaxis (for more than 1/2 an hour), severe epistaxis and posterior epistaxis should be referred to the hospital.

III- Cricothyroidotomy:-

* **Cricothyrotomy is life-saving** in extreme circumstances. It is only intended as a temporary measure until a definitive airway can be established.

* **A permanent tracheostomy** should be placed within 24 hours. Stomas maintained via cricothyroidotomy for more than 2 days are associated with a higher risk of glottic and subglottic stenosis than tracheostomies are.

* **Needle cricothyrotomy** can be used for approximately 40 minutes, after which time CO_2 accumulates; this can be particularly devastating in patients with head trauma.

* **Steps:**

- **Position:** The victim lies supine with the neck in the neutral position or if possible, a towel put under the shoulders and the neck is hyper-extended.
- **The medical personnel** stand on the victim's right side.

- If available, cleansing with antiseptic solution.
- **Identify the anatomic landmarks:** Palpate the thyroid cartilage (the first prominent landmark on the anterior neck), the cricoid cartilage (caudal to the thyroid cartilage), and the area between them, which is the cricothyroid space that contains the membrane.
- **Stabilize the area, with the non-dominant hand,** using the first and third digits to either side of the thyroid cartilage, leaving the index finger to palpate the membrane.
- **With the dominant hand, make a midline vertical incision,** approximately 1-3 cm long and skin deep, over the cricothyroid membrane. It may result in a small amount of venous bleeding but avoids the laterally located vasculature of the neck.
- **Palpate the cricothyroid membrane through the incision,** using the index of the non-dominant hand. Make a horizontal stab incision through the membrane. A distinct pop will be felt as the scalpel pierces the membrane and enters the trachea.
- **Insert the tracheal hook at the superior end of the incision** and retract the skin and membrane cephalad. Keep the scalpel in place until the tracheal hook is inserted. If the incision is lost, the location can be identified by means of air bubbles produced during exhalation. If the patient is apneic, apply pressure to the anterior chest wall to simulate exhalation and thereby produce air bubbles.
- **Dilate the incision vertically,** using the Trousseau dilator with the non-dominant hand.
- **With the dominant hand, insert the tracheostomy tube** (6 or 7 mm internal diameter) between the 2 blades of the dilator, directing it initially to one side of the patient. Once the tube is through the membrane, rotate it 90° and insert caudally.
- **Remove the obturator,** and insert the inner cannula. Lock it into place.
- **Inflate the balloon with 5-10 ml of air**. Attach the tube to a BVM (Bag Valve Mask) and ventilate.
- **Confirm placement through observation of chest rise,** auscultation, and assessment of end-tidal CO_2.
- **Remove the tracheal hook,** and secure the tube in place.