NICOLAE TESTEMIŢANU STATE UNIVERSITY
OF MEDICINE AND PHARMACY

DEPARTMENT OF EMERGENCY MEDICINE

LECTURE nr. 4
AIRWAYS AND FOREIGN BODIES AIRWAYS OBSTRUCTION. DROWNING. HEIMLICH MANEUVER AND ALGORITHMS FOR ASSESSING AND MANEUVERS OF CLEARING FOREIGN BODIES AIRWAY OBSTRUCTION IN ADULTS

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OBJECTIVES

I. INTRODUCTION

II. THE RESPIRATORY SYSTEM - STRUCTURE

III. THE RESPIRATORY SYSTEM FUNCTIONS

IV. BREATHING ADJUNCTS

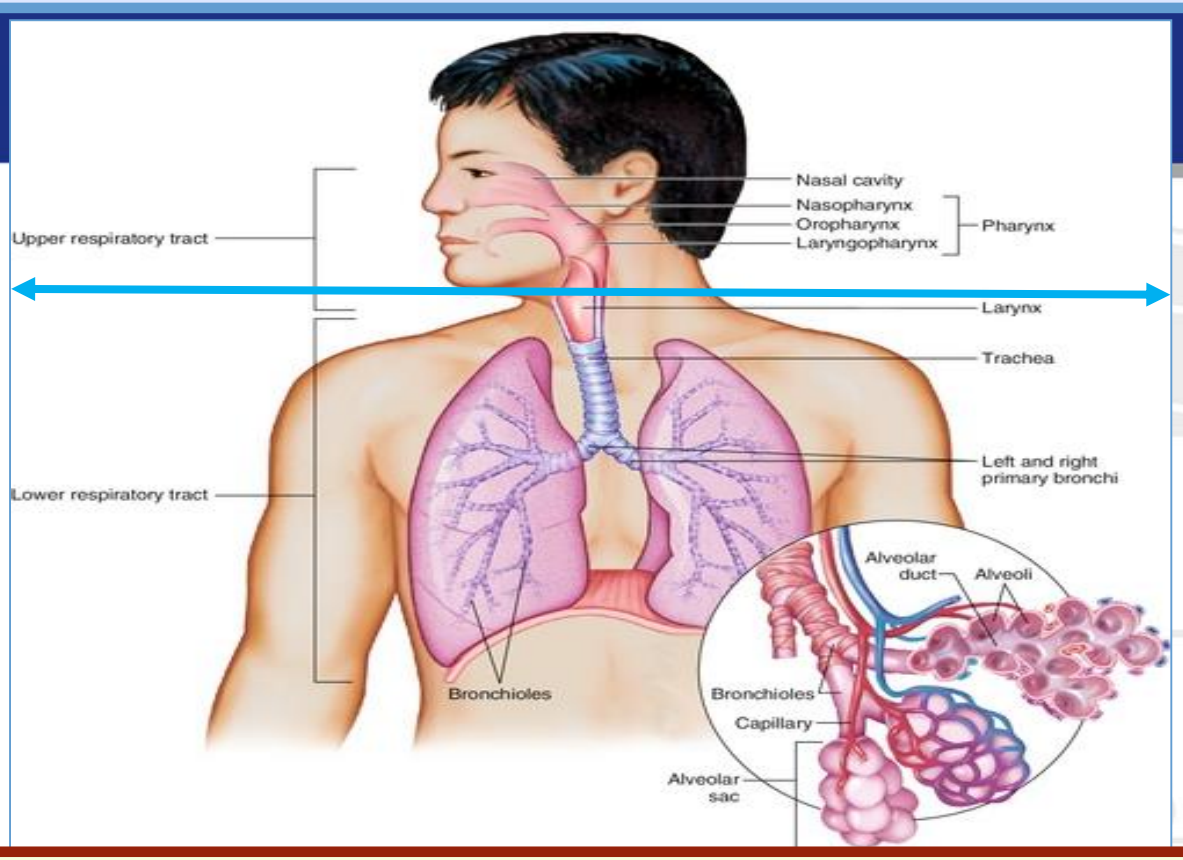
V. FOREIGN-BODY AIRWAY OBSTRUCTION (CHOKING) (FBAO)

VI. HEIMLICH MANEUVER

VII. SPECIAL RESUSCITATION SITUATIONS

VIII. DROWNING
(Epidemiology, Definition, Chain of Survival, Treatment Approach)

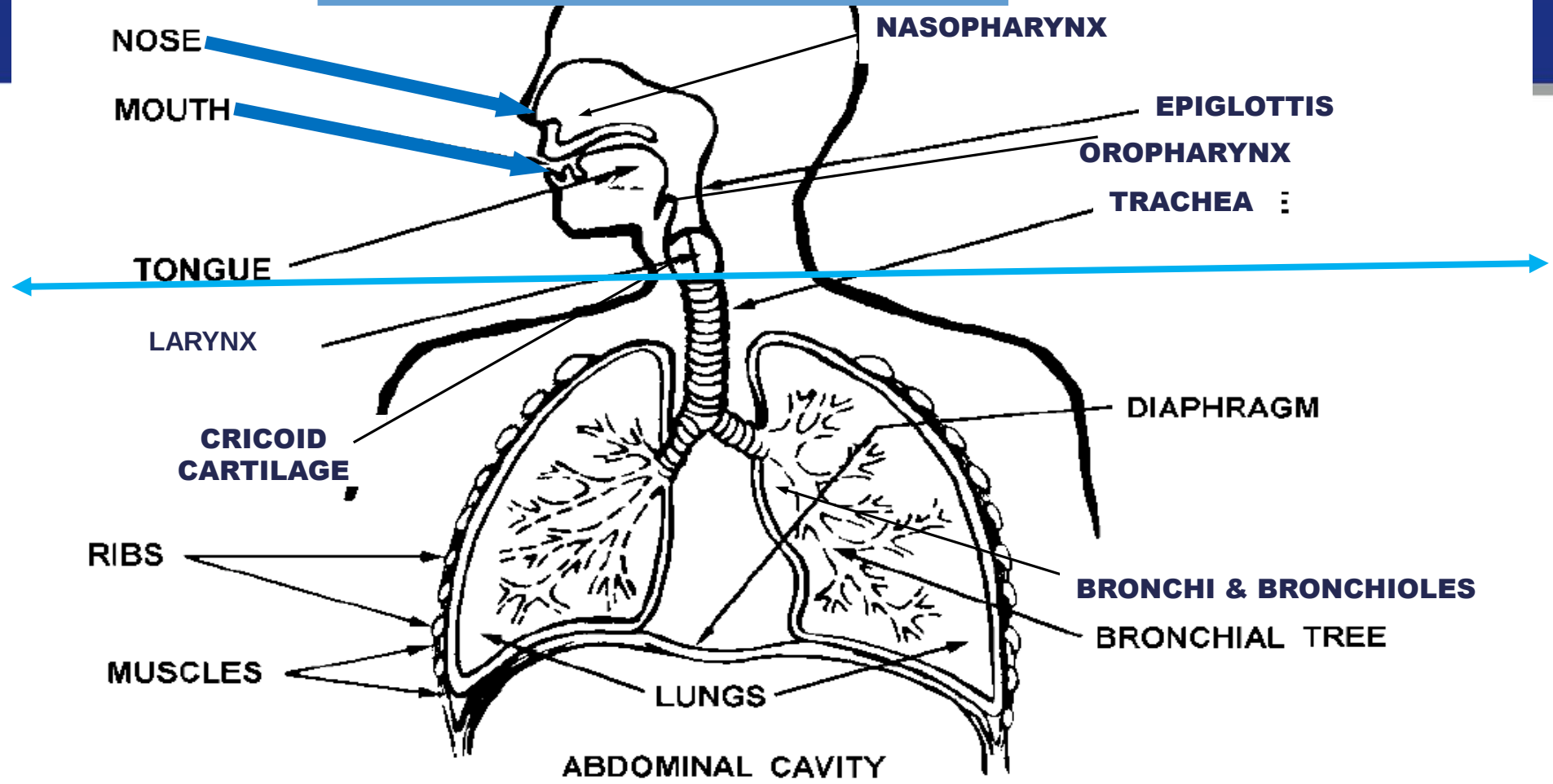
I. INTRODUCTION of the RESPIRATORY SYSTEM



The respiratory system is the system in the human body that enables us to breathe. The act of breathing includes: inhaling and exhaling air in the body; the absorption of oxygen from the air in order to produce energy; the discharge of carbon dioxide, which is the byproduct of the process.

Airway maintenance and ventilation takes priority over almost anything else an emergency medical caregiver will do for a patient. It is critical to maintain competency in airway skills. If skills are not used on a regular basis, they must be practiced. Improperly performed procedures will harm the patient. An open airway and adequate respirations are essential for life.

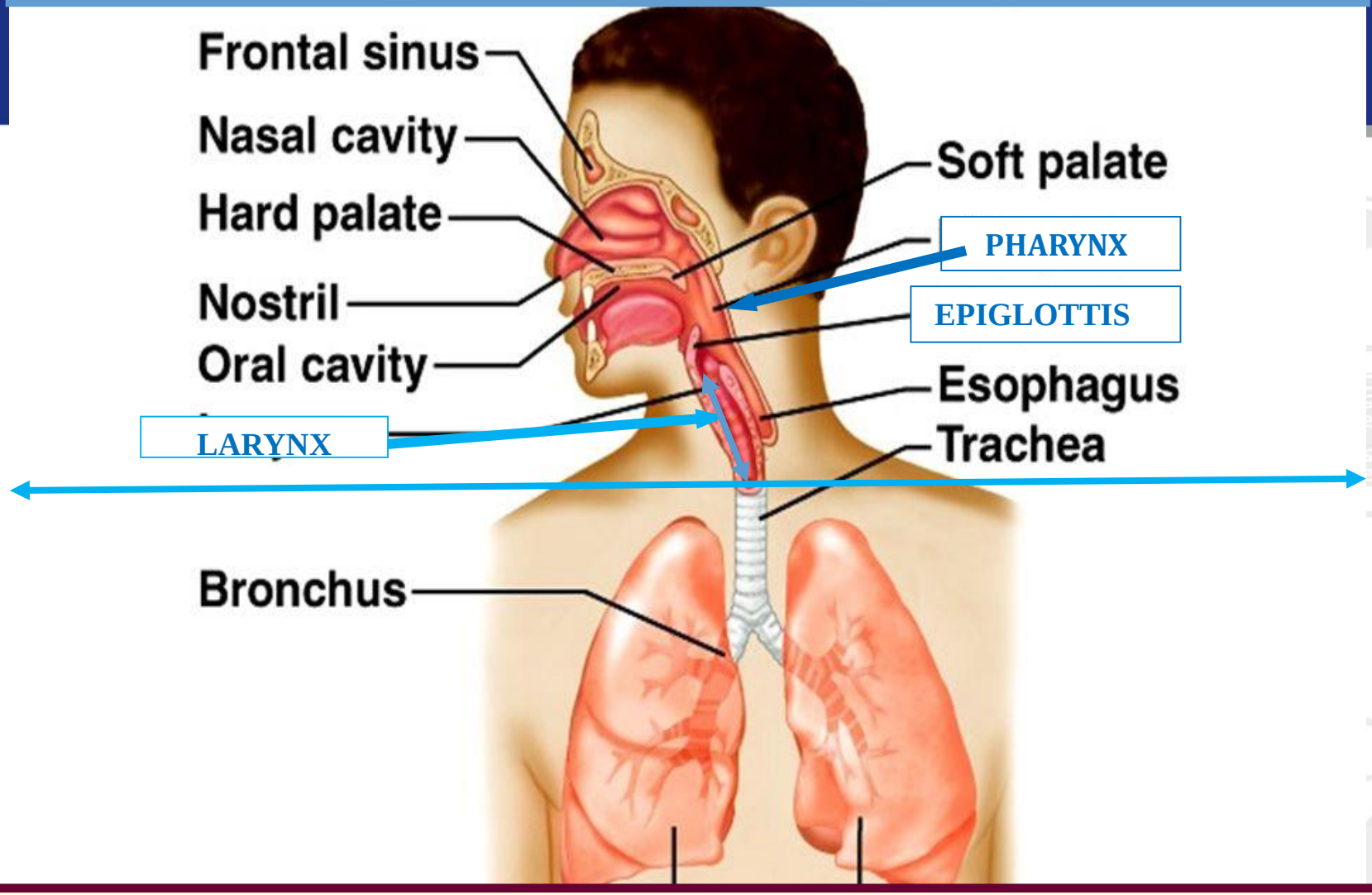
Airway Anatomy and Physiology
Upper Respiratory System



Nose. Allows air to enter, warms inhaled air, and filters out impurities with the help of nose hairs and mucus.

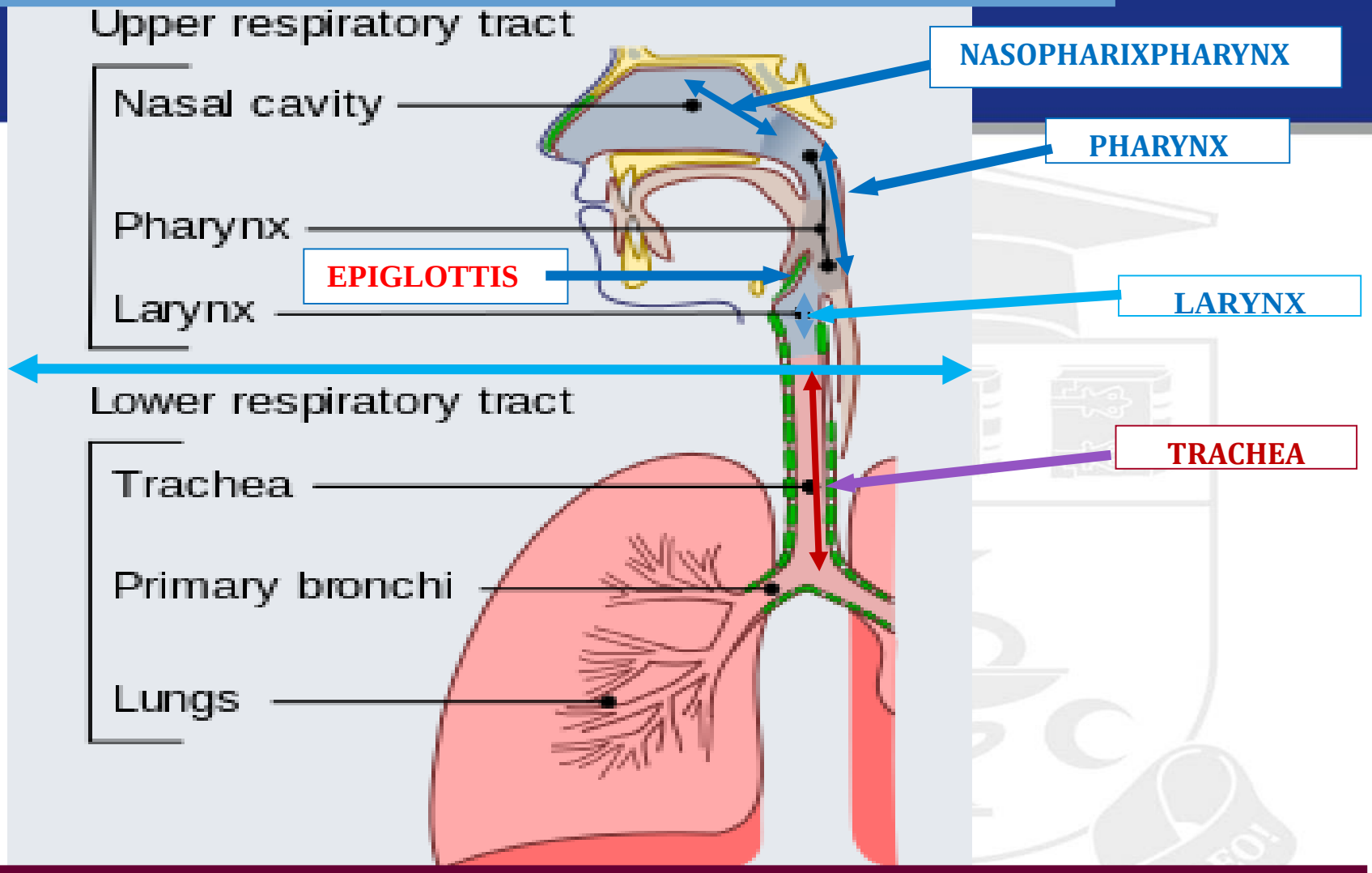
Mouth. One of the openings to the airway and respiratory system that allows the taking in and of air.

Airway Anatomy and Physiology Upper Respiratory System



- **Pharynx.** The small tubular structure located right behind the nasal cavity.
- **Larynx.** It has a simple, yet important purpose in respiration, to let the inhaled air pass into the trachea

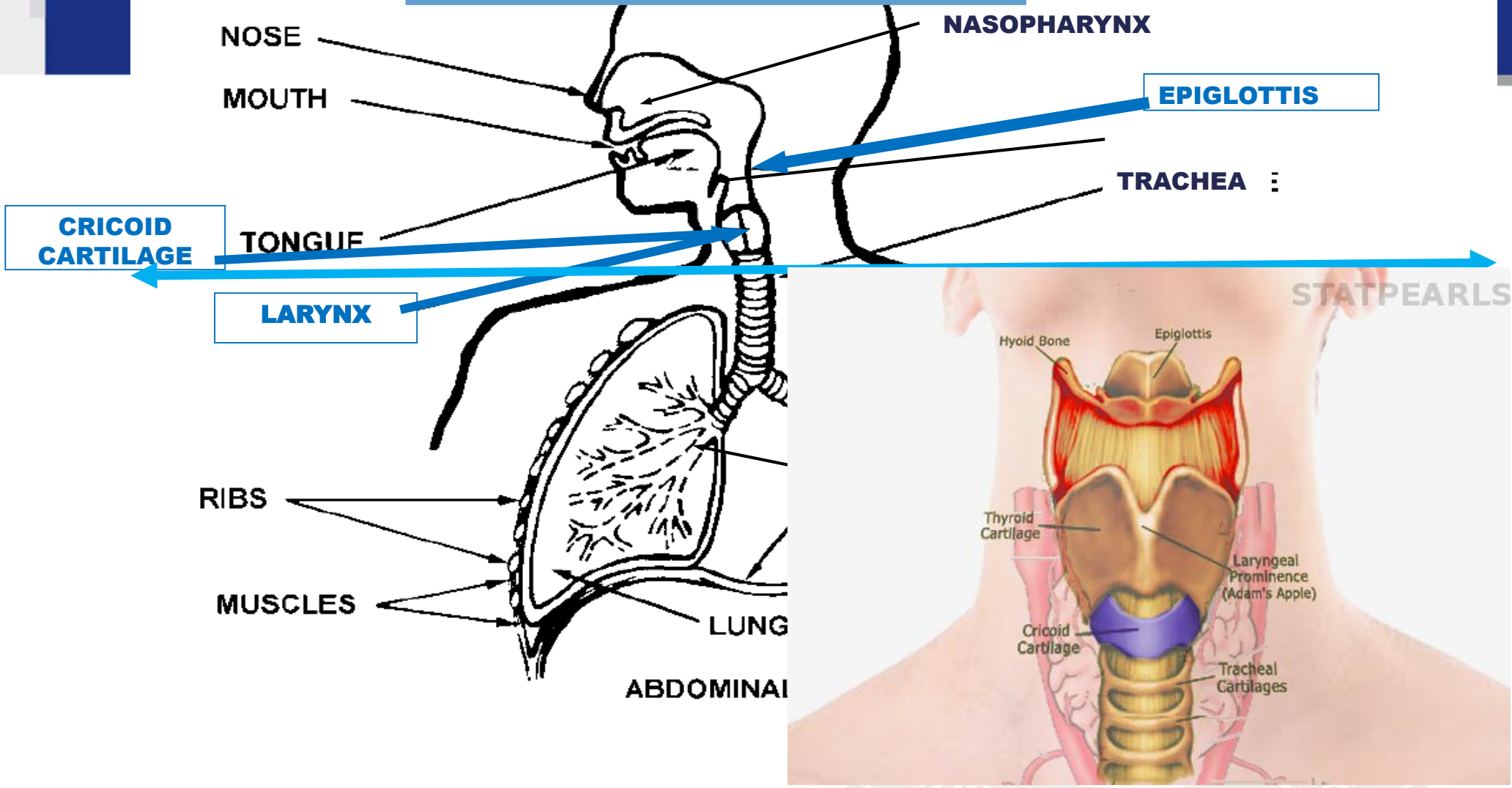
Airway Anatomy and Physiology Upper Respiratory System



- There is a thin flap, called epiglottis, at the superior end of the larynx that closes it off during swallowing so food cannot enter the airways and choke you.

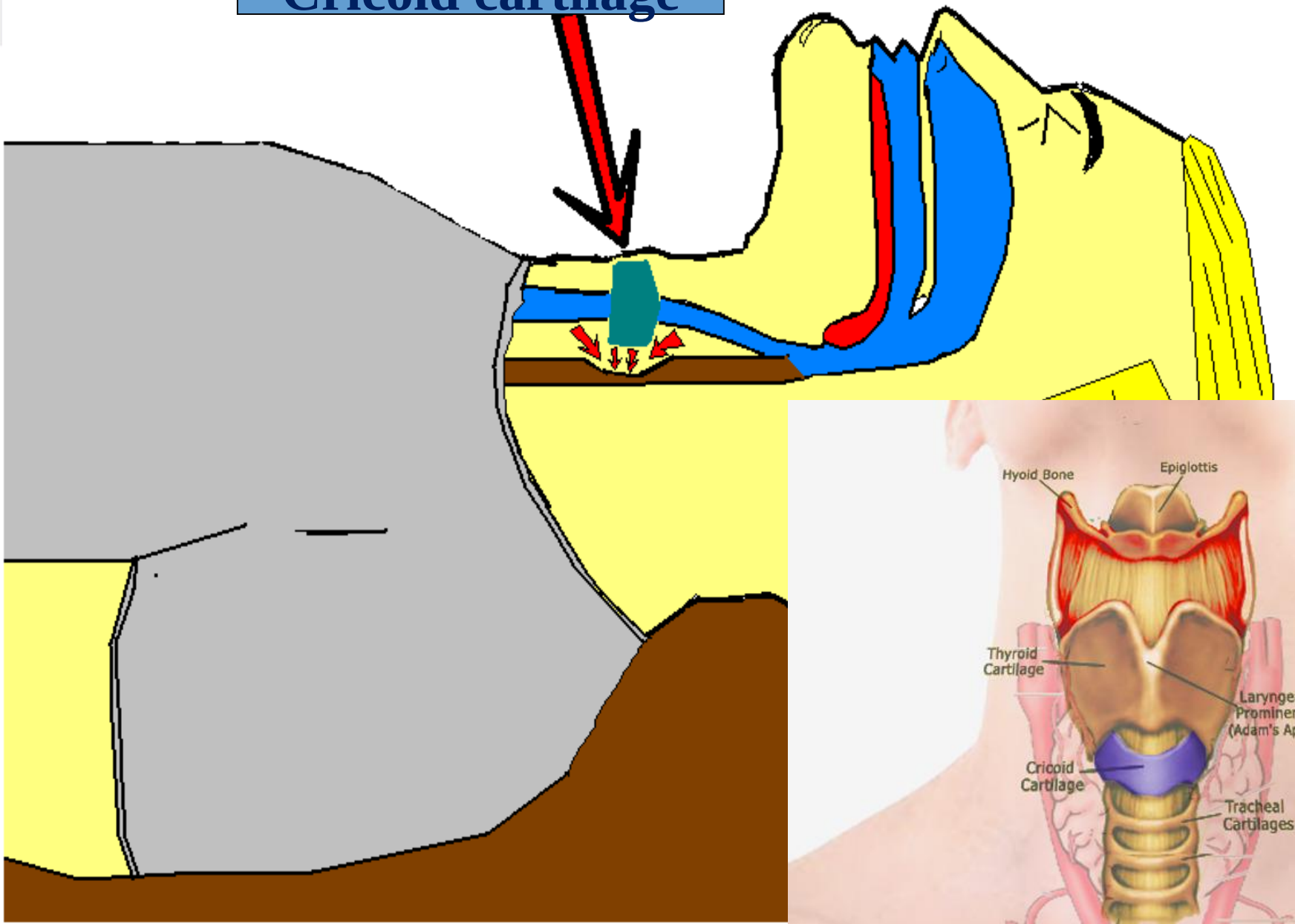
Airway Anatomy and Physiology

Upper Respiratory System



Cricoid cartilage. A ring of cartilage that completely surrounds the trachea at the lower edge of the larynx to the vocal chords.

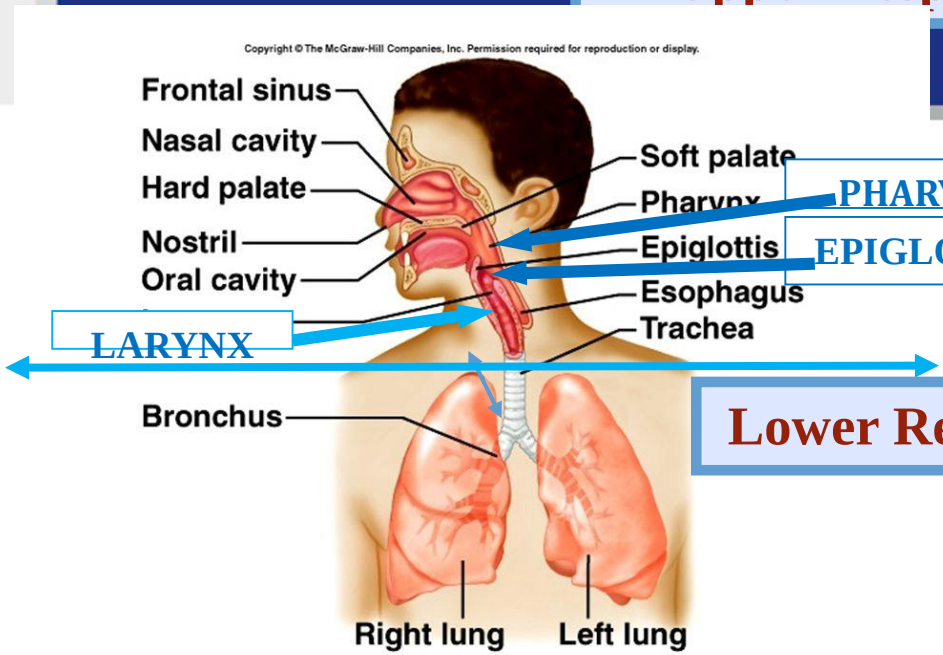
Cricoid cartilage

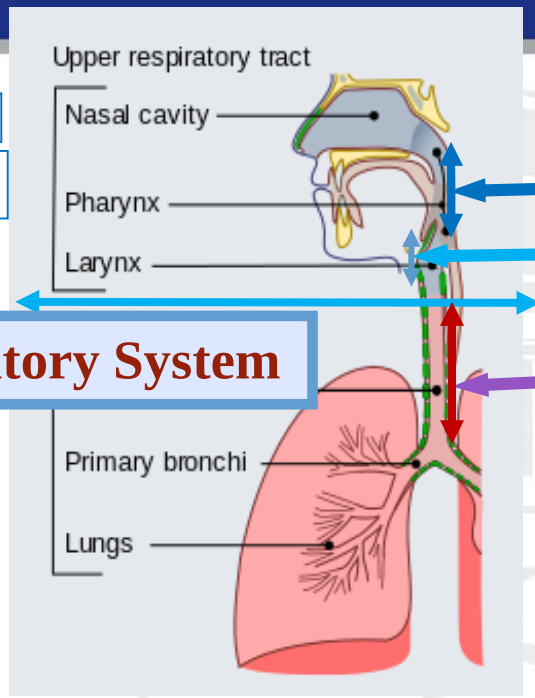


Airway Anatomy and Physiology

Upper Respiratory System

EPIGLOTTIS

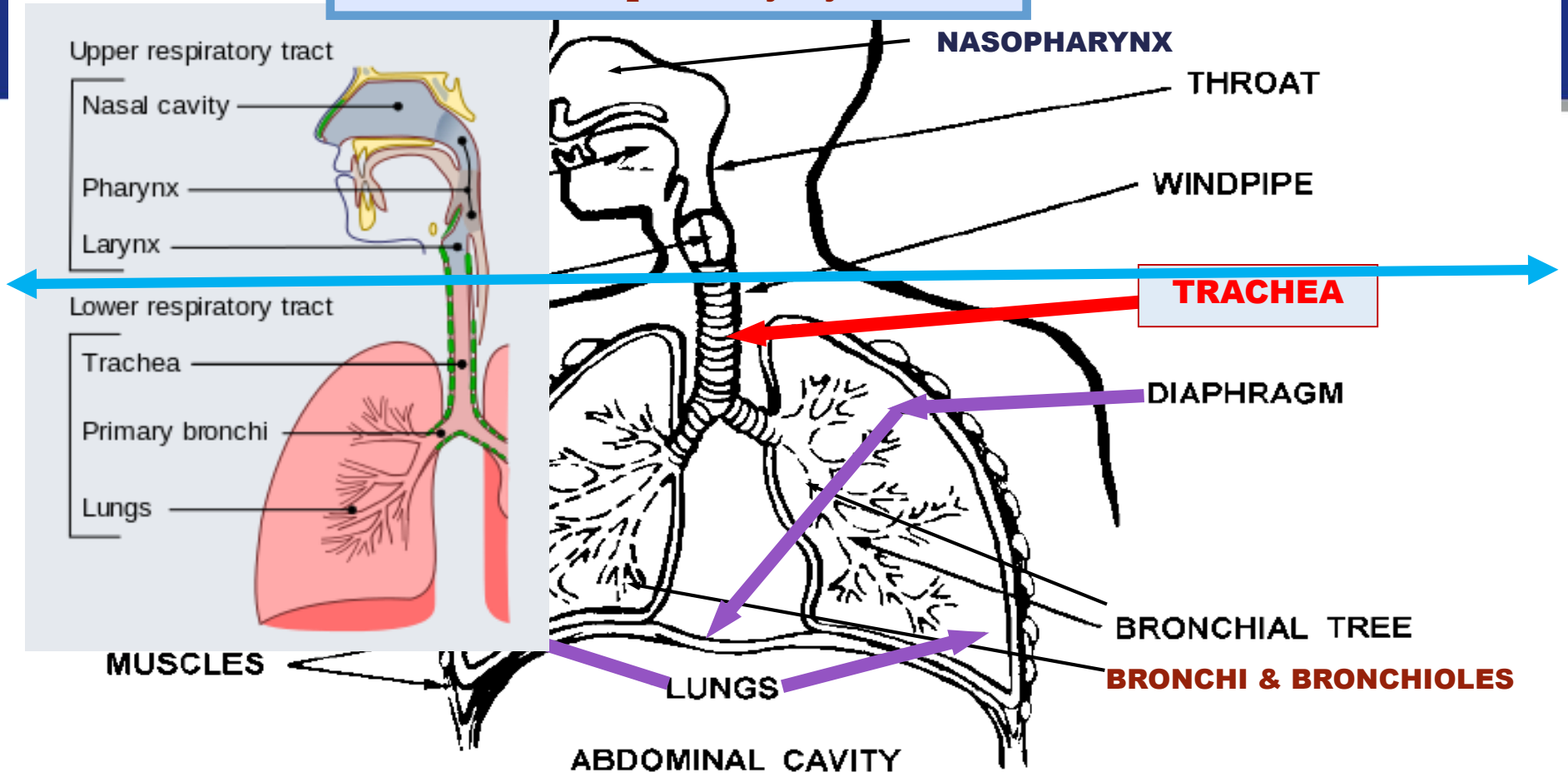




Lower Respiratory System

The trachea or windpipe is the longest part of the airway, starting from the lower end of the larynx, it divides into the two main bronchi near the lungs. It lets the air travel to and from the lungs, through the other parts of the respiratory tract.

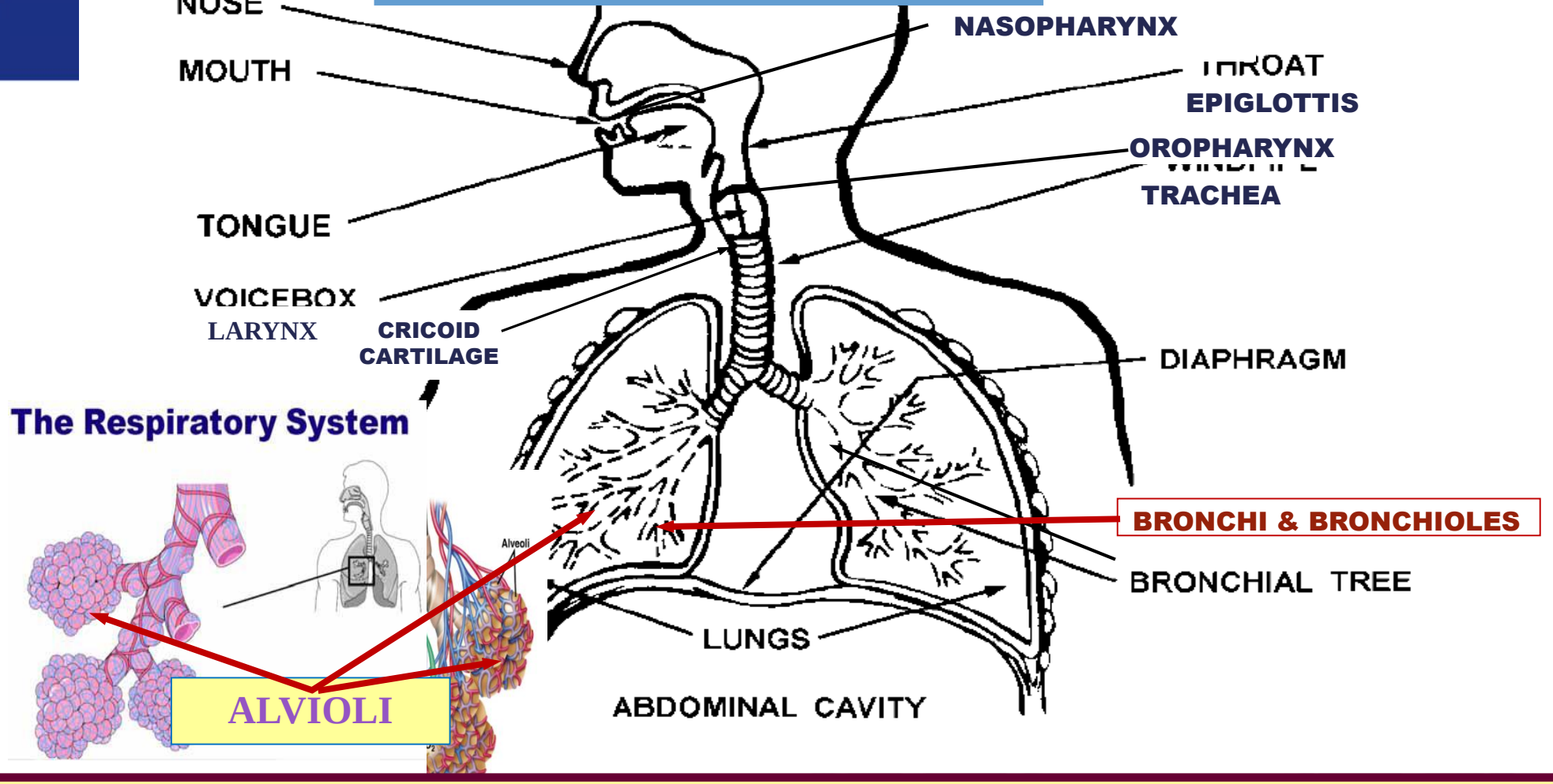
Airway Anatomy and Physiology
Lower Respiratory System



Bronchi. The part of the respiratory tract entering the lungs, the right primary bronchus is responsible for making the air enter the right lung, while the left primary bronchus lets air pass to and from the left lung

Airway Anatomy and Physiology

Lower Respiratory System

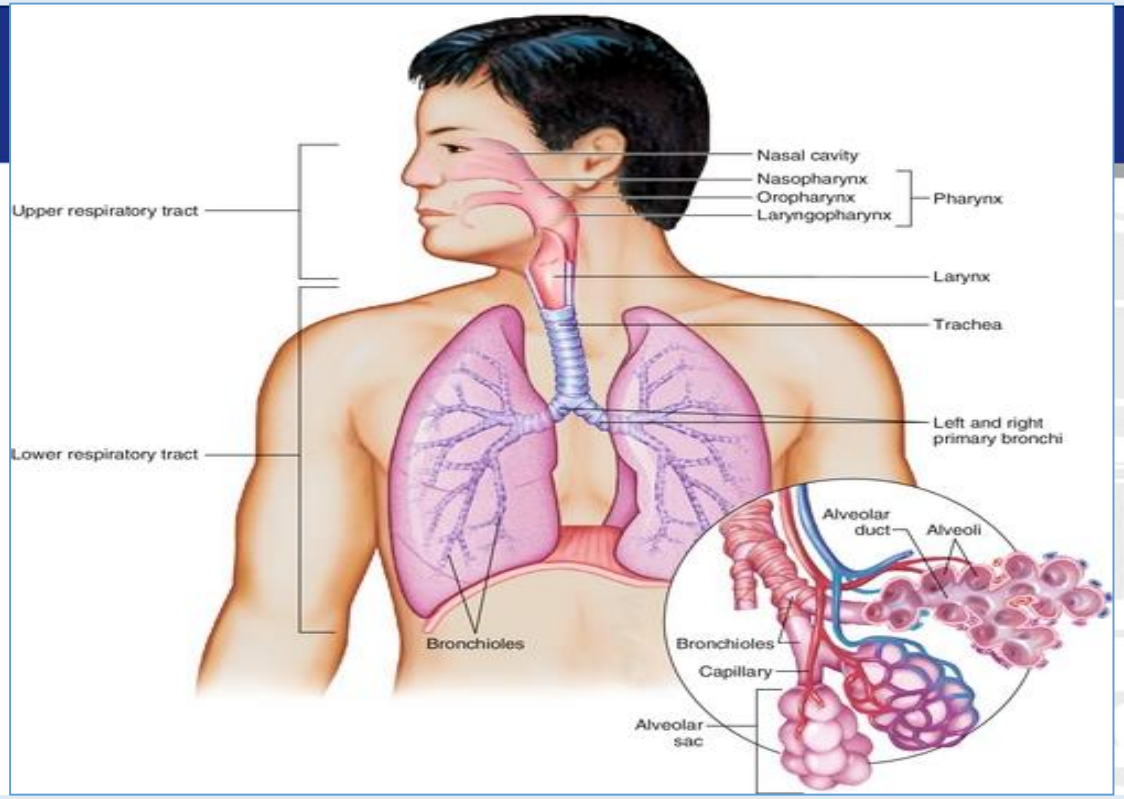


Alveoli. Grape-like sacs within the lungs that are surrounded by capillaries whose red blood cells pick up inhaled oxygen and droop off carbon dioxide.

Lungs.The organ where oxygen is exchanged for carbon dioxide.

Diaphragm. A large primary muscle of breathing that separates the thorax from the abdomen.

THE RESPIRATORY SYSTEM FUNCTION

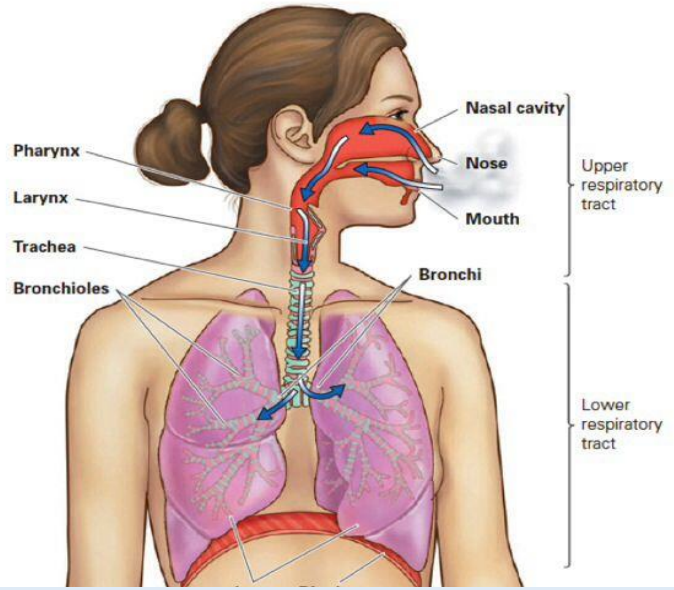


What are the Primary Functions of the Respiratory System ?

1. The inhalation and exhalation of air or **Breathing**. This involves the nasal and oral cavities, the pharynx, the larynx, the trachea and the lungs. Also involved are the diaphragm, the intercostal muscles, and the rib cage to pull in air for inhalation and push it out for exhalation.

2. Gas exchange between the lungs and the bloodstream (*External Respiration*). This involves the passage of oxygen from the air in the *alveoli* (tiny sacs at the end of the *bronchioles* in the lungs) through the alveolar and capillary walls to the blood in the capillaries, as well as the passage of carbon dioxide from the bloodstream to the alveoli.

THE RESPIRATORY SYSTEM FUNCTION



What are the Primary Functions of the Respiratory System

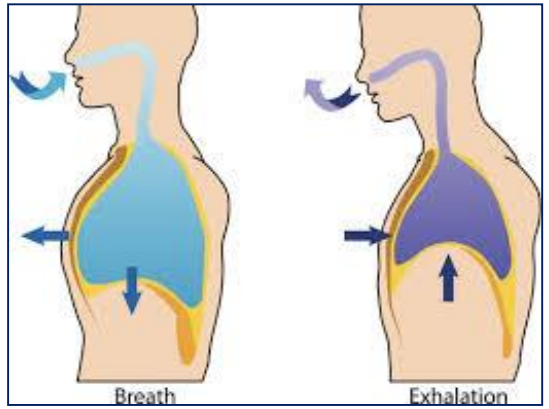
3.Gas exchange between the bloodstream and the body tissues (*Internal Respiration*). This involves the transport of oxygenated blood from the heart to all parts of the body, where the oxygen is delivered to tissues and cells for energy and metabolism, while carbon dioxide, as a waste product, is absorbed by the blood.

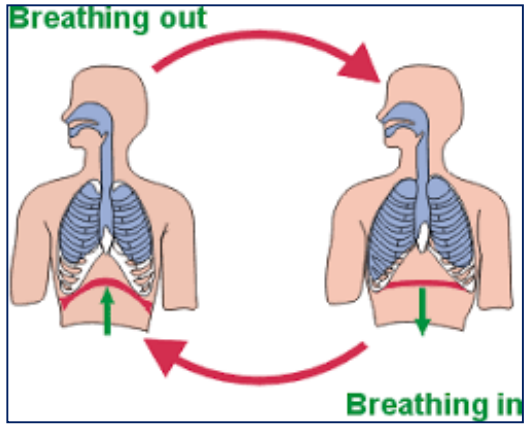
4. Vibration of the vocal cords in the larynx to produce **Sound**. This is a more specialized function in which air passing over the vocal cords is modulated by laryngeal muscles pushing the vocal cords together so that they vibrate when air passes over them, creating sound.

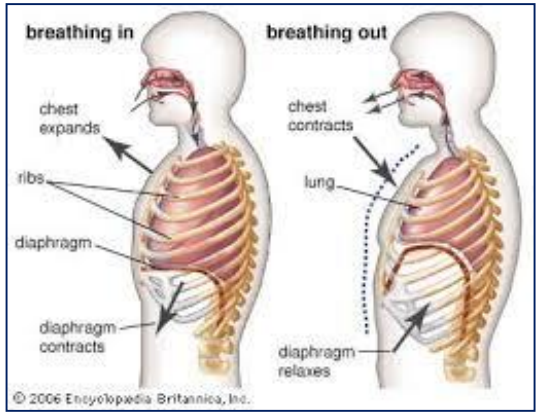
5. The sense of **Smell**. *Olfaction*, or the sense of smell, occurs when air passes over olfactory fibers in the nasal cavities that sense certain chemicals in the inhaled air that bind to them and transmit a signal to the brain which is then identified.

Respiratory Quality

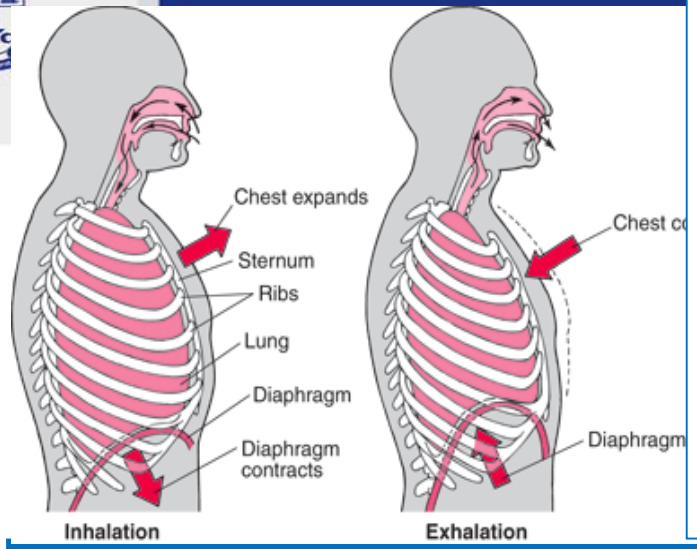
Quality of breathing can be determined while assessing the rate. Quality can be placed in 1 of 4 basic categories:
normal,
shallow,
labored,
and noisy.

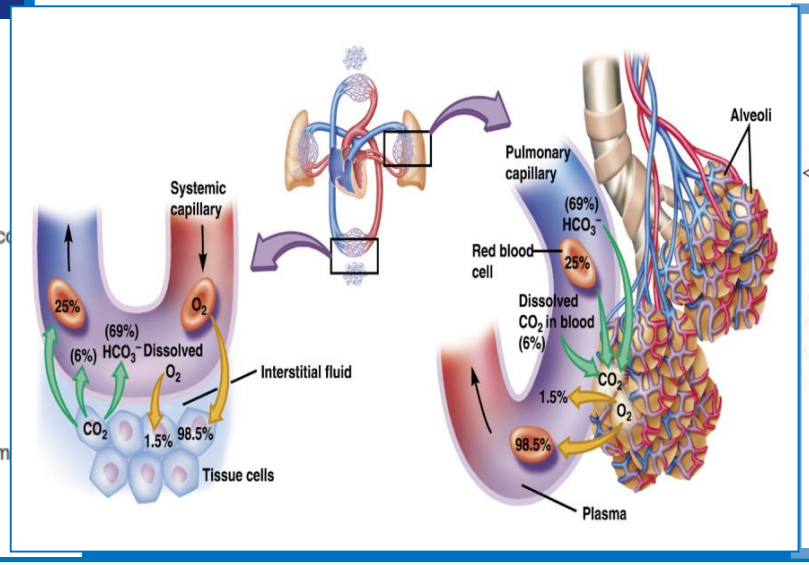


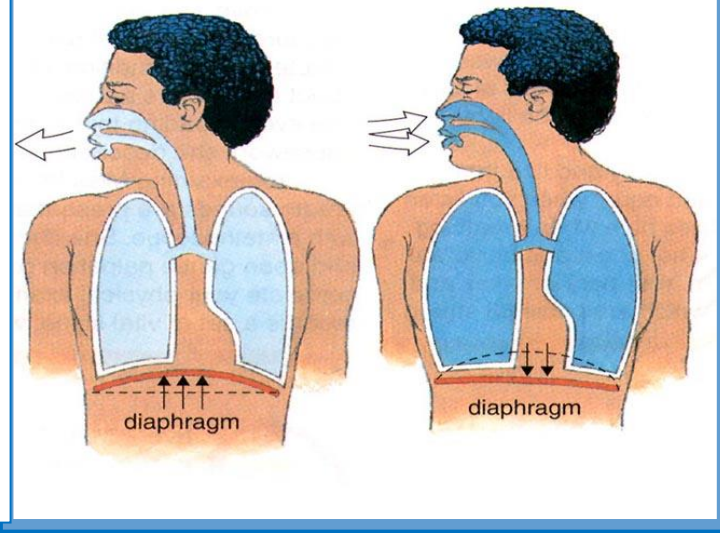




Normal respirations **are characterized by average chest wall motion, not using accessory muscles. The rhythm is effortless, regular and even.**







The respiratory system allows the body to inhale oxygen and exhale carbon dioxide. All the body's cells and organs use oxygen. Carbon dioxide is the major waste product of respiration. If anything disrupts the breathing process, the patient is likely to develop the sensation or complaint of dyspnea (shortness of breath) and be at risk for respiratory failure.

Inhalation is the act of bringing air into the lungs. The diaphragm contracts, moving downward as the intercostal muscles *pull the ribs up* and out to create a larger cavity into which air flows.

Exhalation is where the diaphragm and intercostals muscles relax, decreasing the size of the thoracic cavity. The diaphragm moves upward and the ribs move downward and inward as air flows out of the lungs.

Adequate Breathing: Normal Rates

= Adults 12-20 / min. Children 15-30 / min. Infant 25-40 / min. Newborn: 30-60 / min.

The normal ranges of respiratory rates for children of different ages include:

Newborn: 30-60 breaths per minute

Infant (1 to 12 months): 25-40 breaths per minute

Toddler (1-2 years): 20-30 breaths per minute

Preschooler (3-5 years): 20-30 breaths per minute

School-age child (6-12 years): 20-25 breaths per minute

Adolescent (13-17 years): 12-24 breaths per minute

Adequate Breathing: Normal Rates

= Adults 12-20 / min. Children 15-30 / min. Infant 25-40 / min. Newborn: 30-60 / min.

Signs of Adequate Breathing

To determine signs of adequate breathing you should:

Look for adequate and equal expansion of both sides of the chest when the patent inh

Listen

(when auscultated, or listened to, with a stethoscope) should be present and equal on both sides of the chest. The sounds from the mouth and nose should be typically free of gurgling, gasping, crowing, wheezing, snoring and stridor (harsh, high-pitched sound during inhalation

Feel

Normal respirations are regular with occasional singhs that serve to keep the alveoli open.

Adequate Breathing: Normal Rates

= Adults 12-20 / min. Children 15-30 / min. Infant 25-40 / min. Newborn: 30-60 / min.

Measurements of lung function

Air volume (in liters) – lung capacity

Maximum lung volume is known as TLC (total lung capacity). It can be obtained by maximum strenuous inhalation.

The maximum lung volume of a healthy adult is up to 5-6 liters. In children the maximum lung volume is up to 2-3 liters, depending on age. In infants it is up to 600-1000 milliliters.

Note! Differences in lung volume can only be caused by gender, age, and height.

Essential air volume is the maximum volume utilized by the lungs for inhalation, also known as VC (vital capacity).

Residual volume (RV) is the volume of air remaining in the lungs after strenuous exhalation when the lungs feel completely empty. Residual volume prevents the broncheoli and the alveoli from sticking together. Residual volume is approximately 1.5 liters (adults).

The differential between total lung capacity and residual volume is the **maximal volume utilized by the lungs in order to breath. It is known as vital capacity** (VC). In an adult, the VC is between 3.5 and 4.5 liters.

Tidal Volume or VT is the volume of air displaced between normal inspiration and expiration. In a healthy adult the tidal volume is approximately 500 millilitres.

Adequate Breathing: Normal Rates

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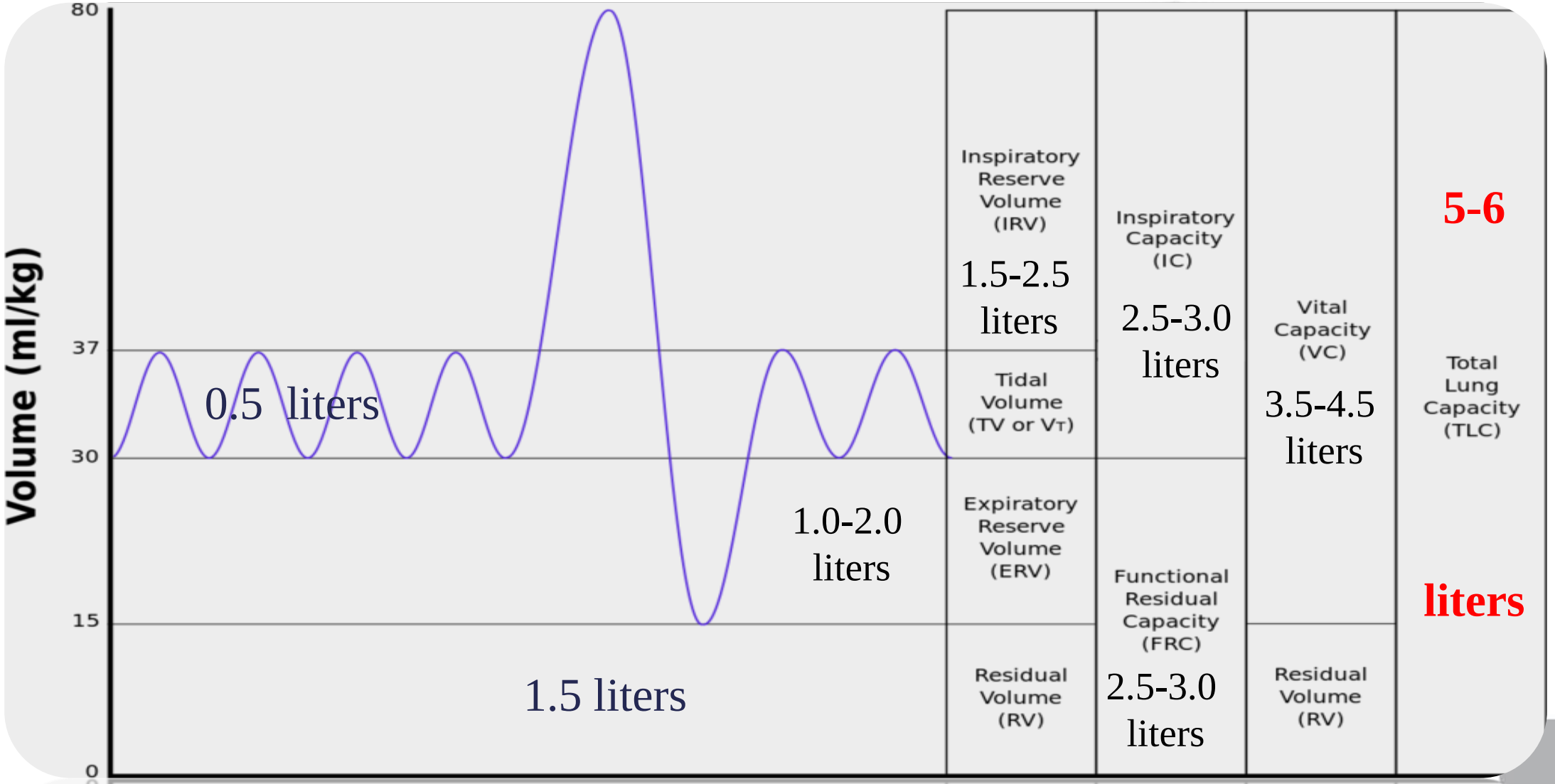

Signs of Inadequate Breathing

- **Signs of inadequate breathing include the following:**
- **Chest movements are absent minimal, or uneven.**
- **Movement associated with breathing is limited to the abdomen (abdominal breathing)**
- **No air can be felt or heard at the nose or mouth, or the amount of air exchanged is below normal.**
- **Breath sounds are diminished or absent**
- **Noises such as *wheezing, crowing, stridor, snoring, gurgling, or gasping* are heard during breathing**
- **Rate of breathing is too rapid or too slow.**
- **Breathing is very shallow, very deep, or appears labored.**

- **Signs of Inadequate Breathing**

- **Patient is cyanotic; that is, the patient's skin, lips, tongue, ear lobes, or nail beds are blue or gray. This is called cyanosis.**

- **Inspirations are prolonged (indicating a possible upper airway obstruction) or expirations are prolonged (indicating a possible lower airway obstruction)**

- **Patient is unable to speak, or the patient cannot speak full sentences because of shortness of breath.**

- **In children, there may be retractions (a pulling in of the muscles) above the clavicles and between and below the ribs.**

- **Nasal *flaring* (widening of the nostrils of the nose with respirations) may be present, especially in infants and children.**

Respiratory Quality

Quality of breathing can be determined while assessing the rate. Quality can be placed in 1 of 4 basic categories:
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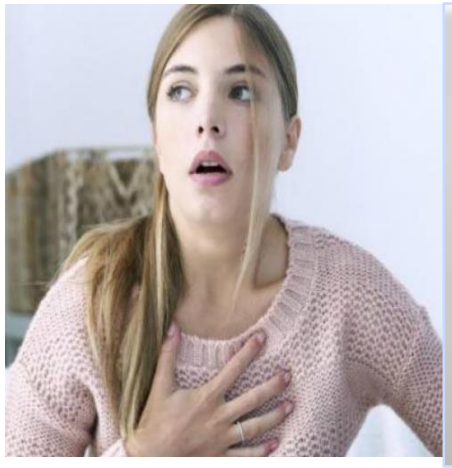
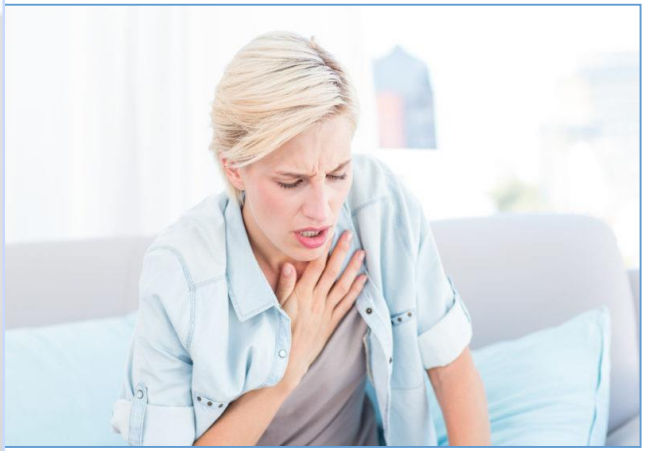
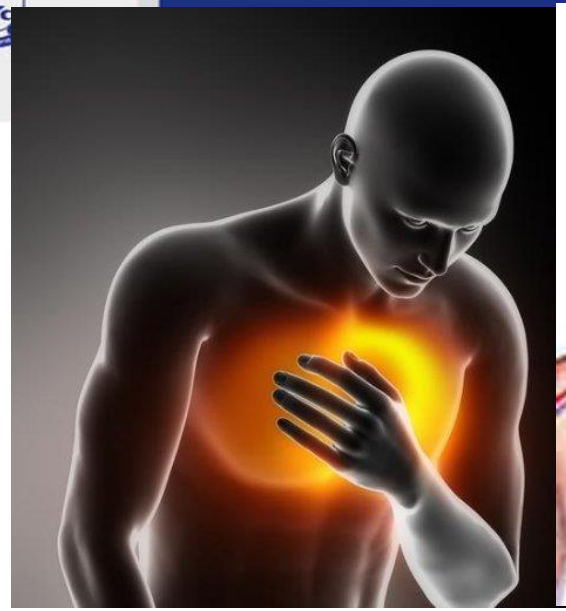
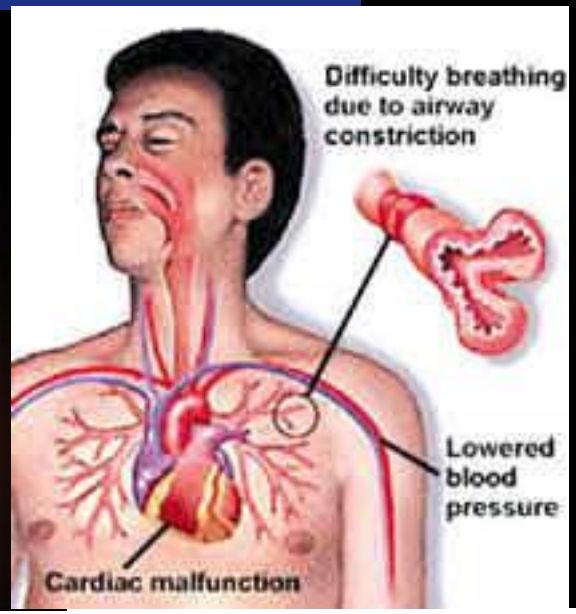




Shallow respirations **have slight chest or abdominal wall motion and usually indicate that the patient is moving only small volumes of air into the lungs. Even when within average range (12 – 20 breaths per minute) patients with shallow respirations may not be receiving enough oxygen to support the needs of their body. It is important to also look at the abdomen when assessing respirations. Many resting people breathe more with their diaphragm than with their chest muscles.**

Respiratory Quality (continuation)





Labored respirations **are characterized by an increase in the effort of breathing (the patient has to work hard to breath).** **Stridor** **and** **Grunting** **are often present.**

Stridor **typically indicates an upper airway obstruction. Accessory muscles are often used to help facilitate breathing. Watch the abdominal, shoulder and neck muscles for excessive movement to determine if a patient is using accessory muscles. Nasal flaring (the widening of the nostrils during inhalation), supraclavicular and intercostals retractions in infants and children are often found. Sometimes you may even see gasping, a continued fight for each breath.**

Grunting **typically indicates an lower airway obstruction - is the sound created when the patient forcefully exhales against a closed glottic opening, which traps air and keeps the alveoli open.**



Respiratory Quality (continuation)

Noisy respiration **is an increase in the audible sound of breathing. They may include snoring, wheezing, gurgling and crowing.**

Snoring is a sign that the patient cannot keep their airway fully open. The tongue is usually the reason for partially blocking the upper airway. A patient with snoring needs to have their airway opened.

Wheezing is a high-pitched whistling sound that is usually caused by constriction of smaller airways or bronchioles. Wheezing may respond to prescribed medication the patient has in their possession. You may be able to assist the patient in taking their medication if so indicated.

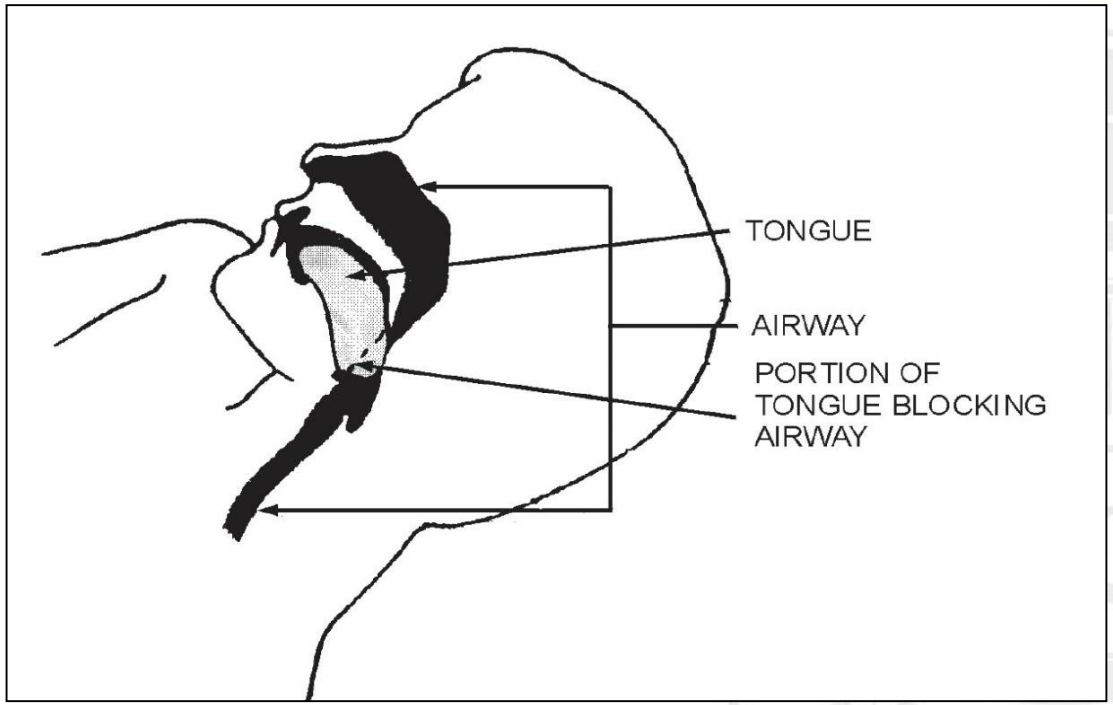
Gurgling indicates fluid in the airway. Gurgling usually means that it may be necessary to suction the patient's airway.

Crowing is a long high-pitched sound when breathing in. Crowing may not respond to anything you do. Be prepared to assist with ventilation and transport, as is required of all patients with difficulty breathing.

Inadequate Breathing-Note

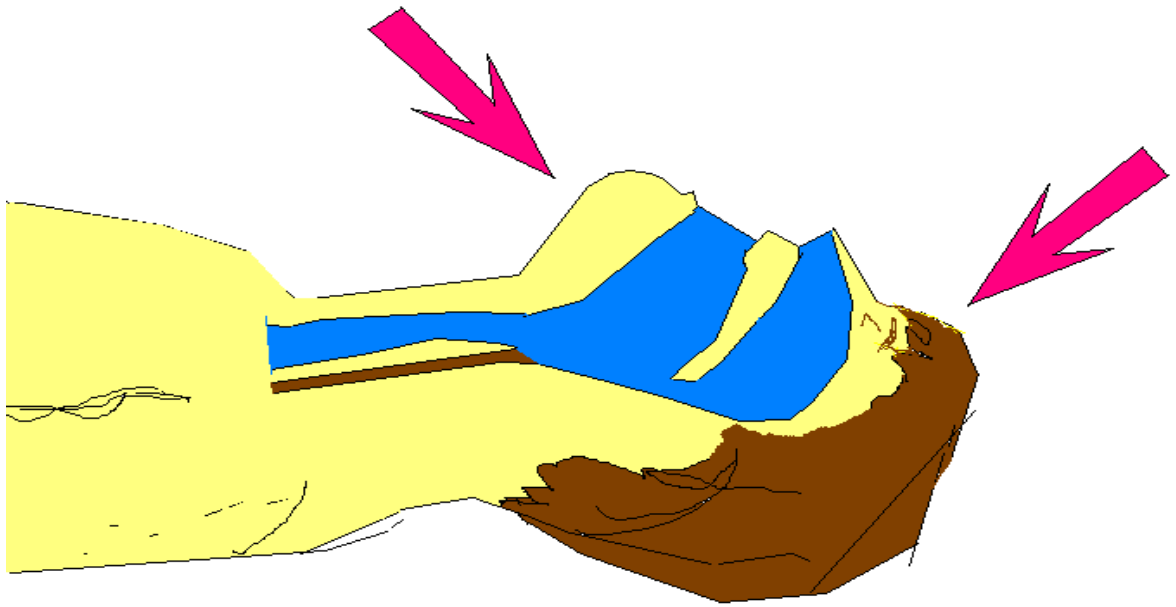
- When the patient's sign indicate inadequate breathing or no breathing is present then a life-threatening condition exist and prompt action must be taken. The principal procedures by which life-threatening respiratory problems are treated are:
- Opening and maintaining the airway.
- Providing artificial ventilation to the non-breathing patient and the patient with inadequate breathing.
- Providing supplemental oxygen to the breathing patient.
- Suctioning as needed.

Abnormal position of the tongue



In unresponsive or obtunded patients, the tongue becomes *flaccid* and, by the force of gravity, falls into the posterior pharynx. This is the most common form of airway obstruction.

Head hyperextension

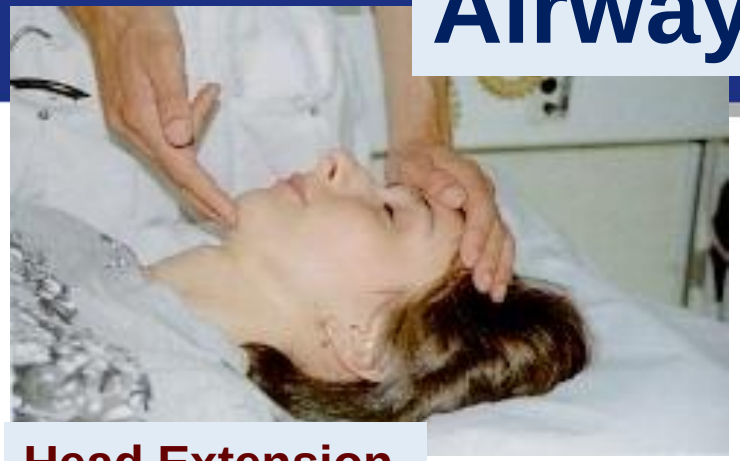


Respiratory assessment

- **To assess respirations observe the patient's breathing. Observing the chest rise and fall is the first means of assessment.**
- **Listen to the sound of breath**
- **Feel the exhaled air on the cheek**
- ***To decide whether the patient is breathing or not should not take longer than 10 seconds***

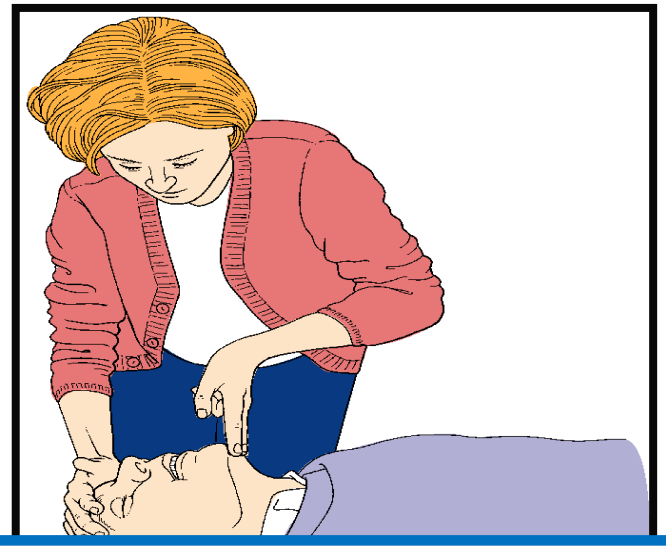
Head Tilt-Chin Lift Maneuver

Airway opening



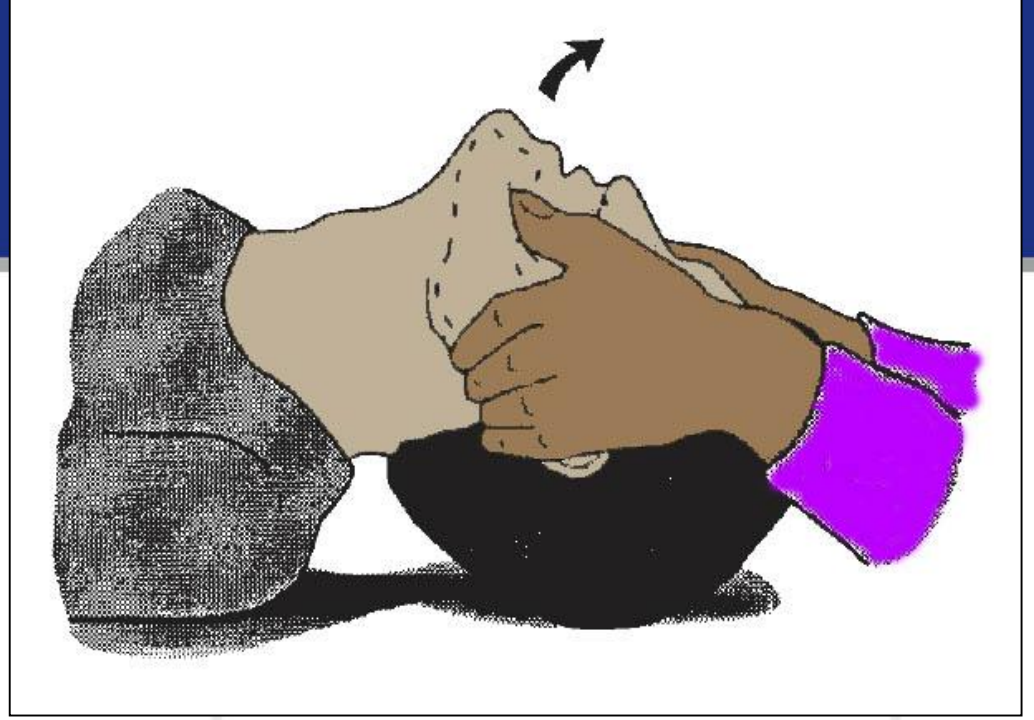
Head Extension

Mandible subluxation

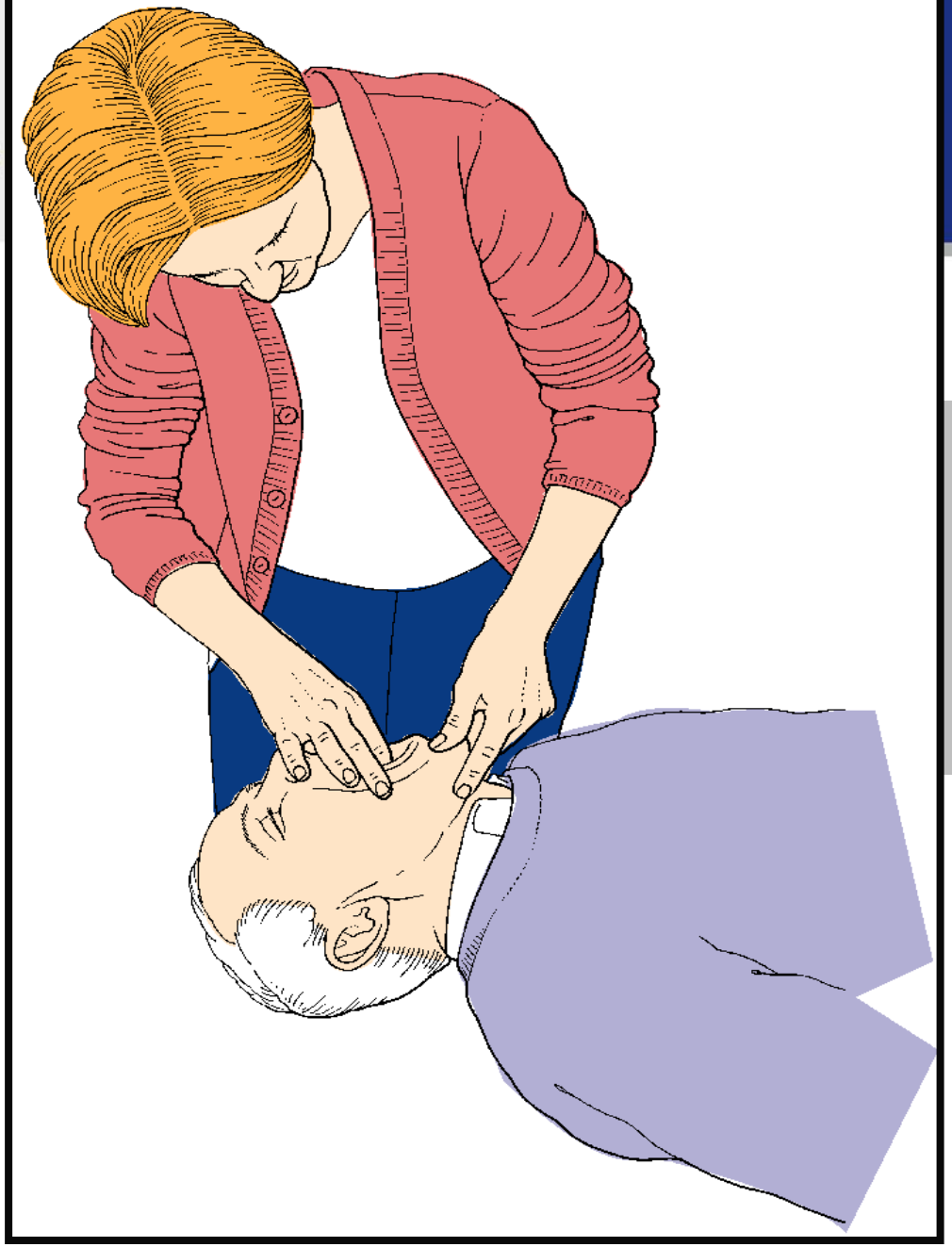


Fortunately, because the tongue is attached to and moves with the mandible, this form of airway obstruction is easily resolved with basic maneuvers such as the "chin lift" or the "jaw thrust" - Safar maneuver

Chin Lift



The chin lift is another form of opening the airway of an unconscious patient. This technique is applied by pulling the mandible forward by grasping the inside of the *incisors* and lifting outward. Again, as the mandible is displaced forward or anterior, the tongue is lifted from the posterior pharynx. This maneuver should not be used if you suspect that the patient may have a spinal injury as it may harm the patient's spine further.



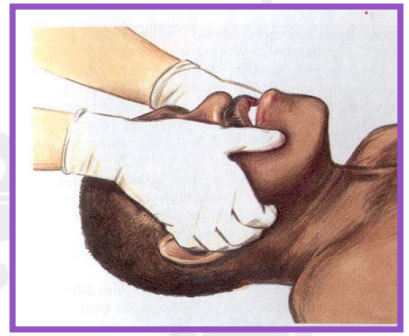
Digital cleaning of the oral cavity

It will only be done to remove visible solid foreign bodies

Airway opening

- The traumatized patient - jaw subluxation

Most favored in trauma patients as it does not overtly manipulate the cervical spinal process is the "Jaw thrust" maneuver or Esmarch maneuver .



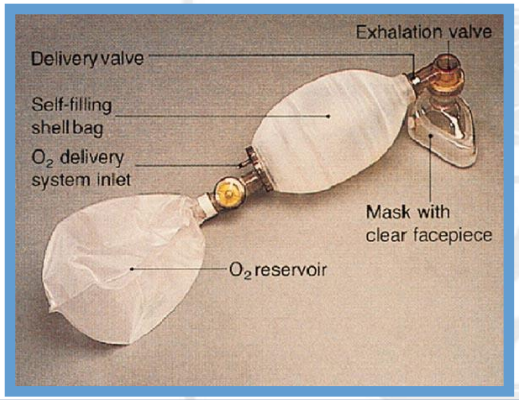
The jaw thrust (without head tilt) is used when there may be a cervical spine injury. Put hands on each side of the victim's head and place fingers under the angles of the lower jaw. Lift upward with both hands to displace jaw forward to lift the tongue and open the airway.

Barrier Devices

Face Shields

Pocket Masks

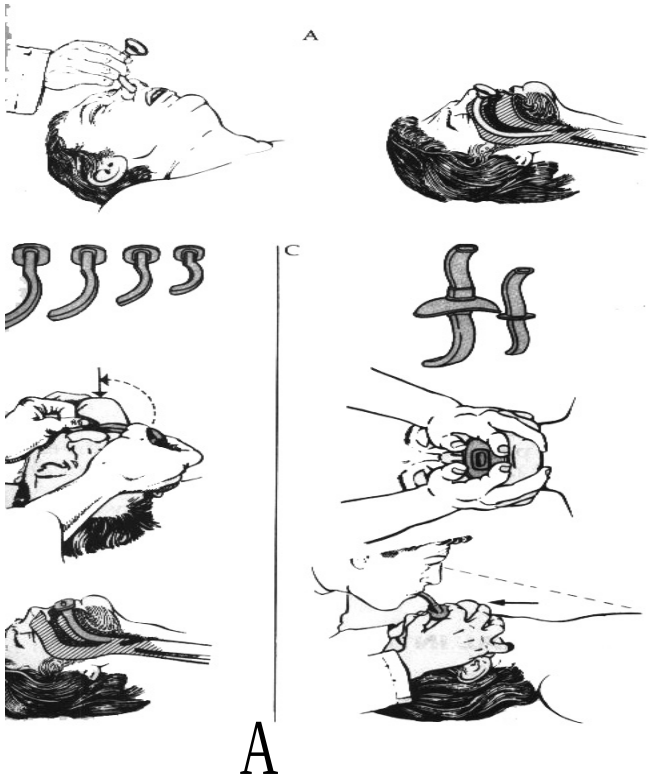
One-Person Bag-Mask Ventilation



Two-Person Bag-Mask Ventilation

CPR barrier devices are a type of personal protective equipment which is specifically designed to protect rescuers from exposure to infection when they are in close contact with victims. It's becoming an increasingly important issue due to HIV (HIV-positive people, people who have the human immunodeficiency virus HIV, the agent of the currently incurable disease AIDS) and a number of other viruses which are carried in our blood and some other body fluids.
Since there is no way to confirm if the victim of a cardiac arrest is carrying these or any other infectious diseases, it is highly recommended to use CPR Barrier Devices in order to keep the victim's fluids out of the rescuer's mouth in case rescue breaths are needed.

Airway Adjuncts



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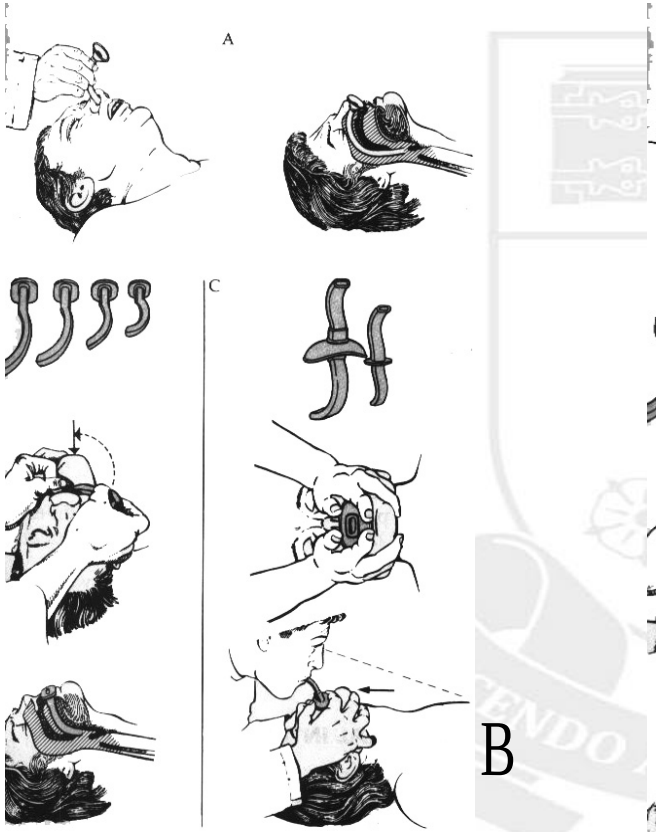

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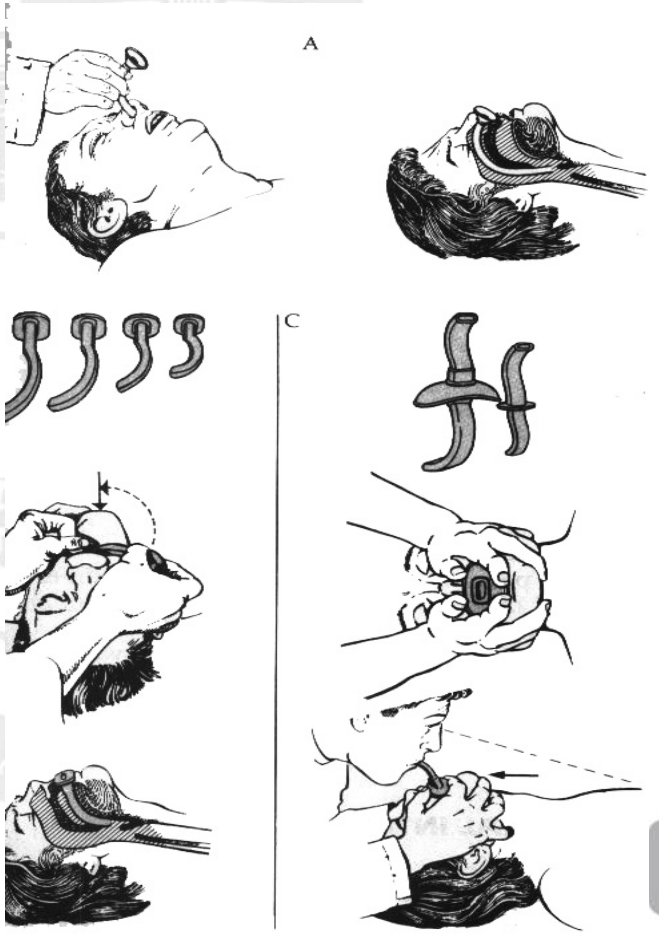
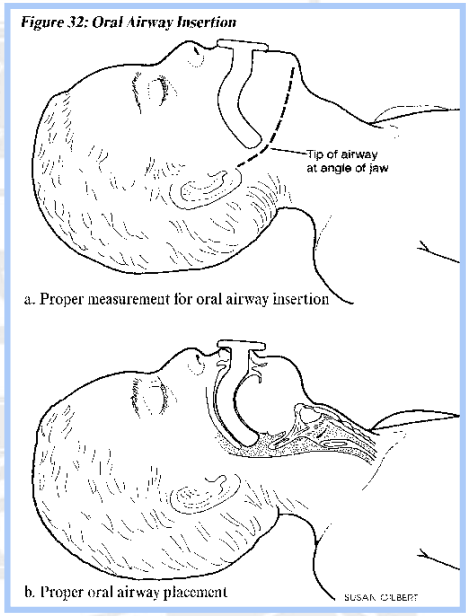
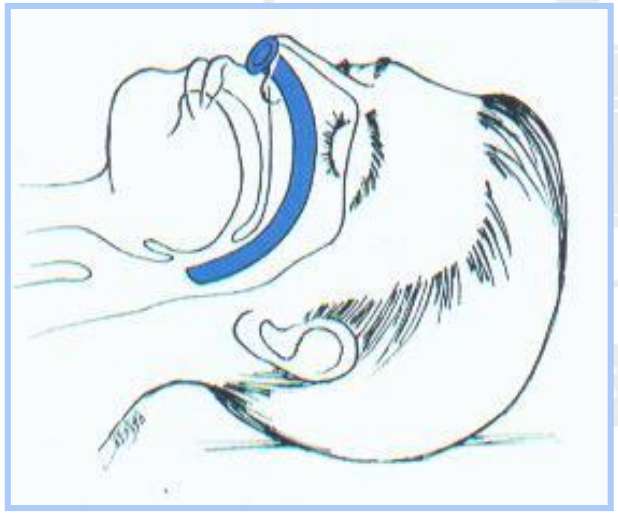


Airways:

Oropharyngeal airway





Nasopharyngeal airway

- Some general rules apply to the use of oropharyngeal and the nasopharyngeal airways:
- Use an airway on all unconscious patients who do not exhibit a gag reflex. The gag reflex causes vomiting or retching when something is placed in the pharynx.
- When a patient is deeply unconscious, the gag reflex usually disappears but may reappear as a patient begins to regain consciousness.
- A patient with a gag reflex who cannot tolerate an oropharyngeal airway may be able to tolerate a nasopharyngeal airway.
- Open a patient's airway manually before using an adjunct device.
- When inserting the airway, take care not to push the patient's tongue into the pharynx.
- Do not continue inserting the airway if the patient begins to gag. Continue to maintain the airway manually and do not use an adjunct device.
- If the patient remains unconscious for a prolonged time, the caregiver may later attempt to insert an airway to determine if the gag reflex is still present.

- When an airway adjunct is in place the caregiver:

- should maintain good airway positioning and continue to monitor the airway.

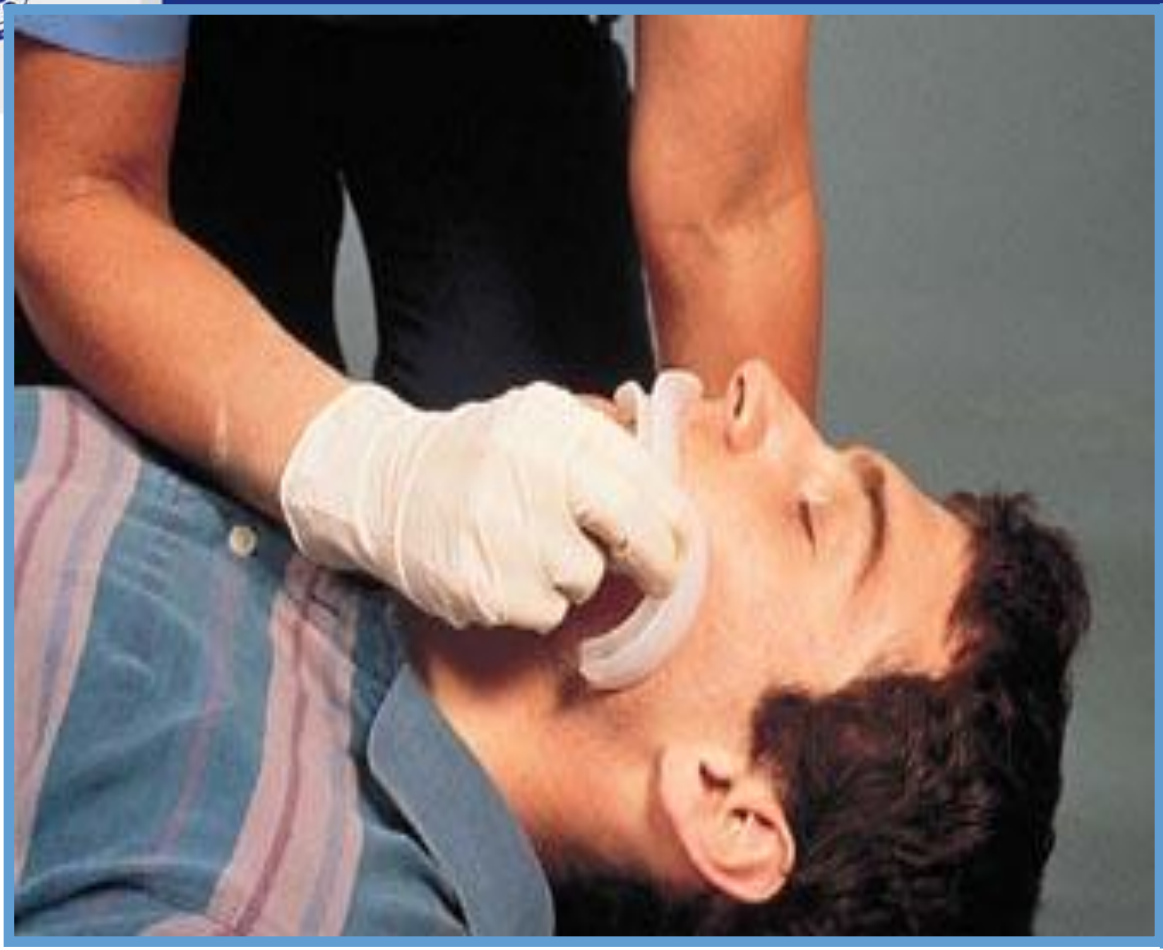
- must remain ready to suction any secretions as necessary.

- if the patient regains consciousness or develops a gag reflex, remove the airway immediately. *Be prepared to suction the patient again*.

- Use infection control practices while maintaining the airway. Wear disposable gloves.

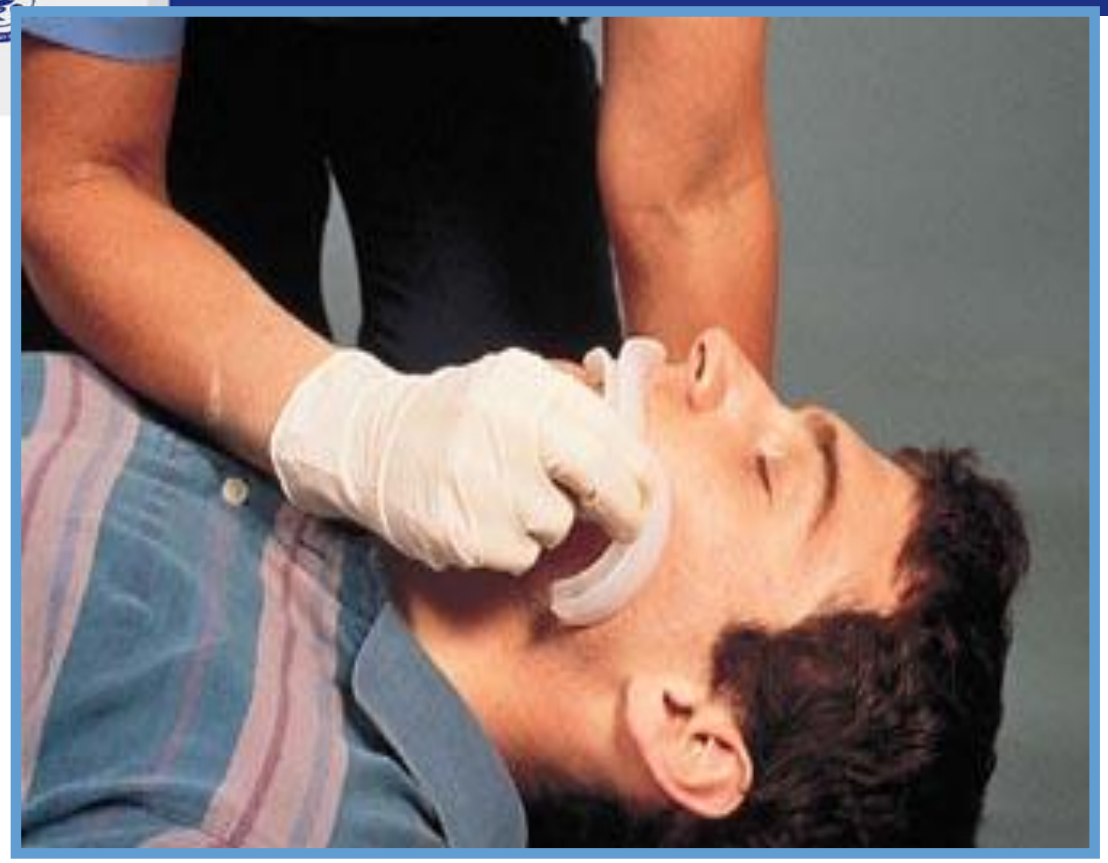
- In airway maintenance, there is a chance of a patient's body fluids coming in contact with the caregiver's face and eyes. Wear mask and goggles or other protective eye-were to prevent this contact.

Oropharyngeal Airway



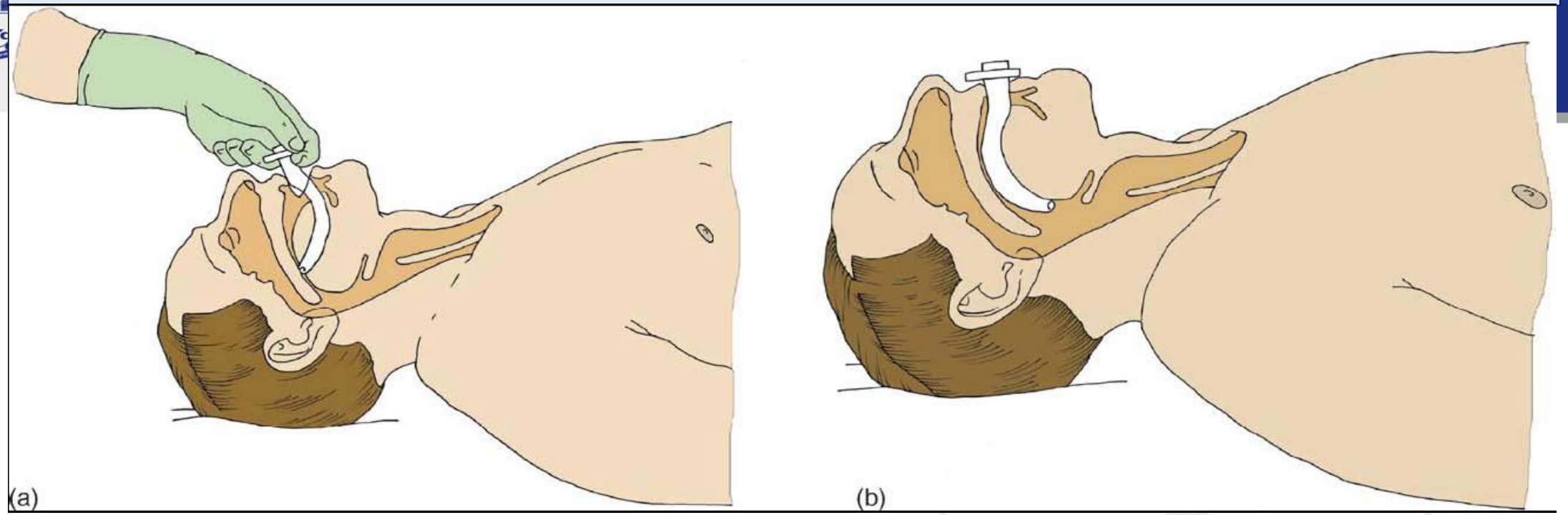
The most basic and simplest to use airway device is the oropharyngeal airway. This is a device is a semi-circular, semi-rigid plastic *designed to overcome* soft tissue obstruction and may serve as a bite block. The oropharyngeal airway is available in an assortment of sizes.

Orpharyngeal Airway



To find the correct size, the flange is placed against the patient's incisors with the body of the device parallel to *the palate*. The tip of the properly sized airway rests at the angle of the jaw. It should reach from the corner of the mouth to the earlobe. The sequence of inserting is demonstrated:

Insertion of oropharyngeal airway. © 2005 European Resuscitation Council



Alternate Technique for Use with Infants and Children

1. Select the proper size. Measure from the corner of the patient's lips to the bottom of the earlobe or angle of jaw.
2. Open the patient's mouth.
3. Use a tongue blade to press tongue down and away.
4. Insert airway in upright (anatomic) position.

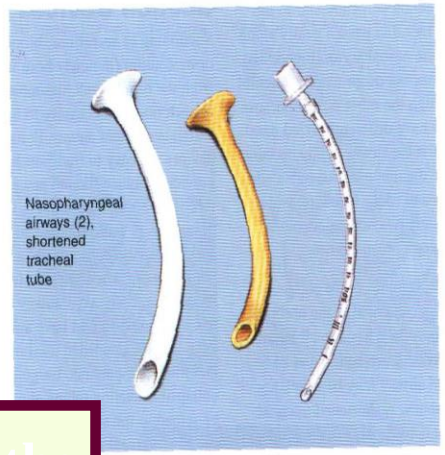
Nasopharyngeal Airway

The nasopharyngeal airway is an excellent airway for the patient who is semi-unconscious.

It is a tube mad from soft latex rubber with a *beveled tip* and a proximal flange. It has gained popularity because it often does not stimulate the gag reflex. This allows the nasopharyngeal airway to be used in patients who have a reduced level of responsiveness but still have an intact gag reflex.

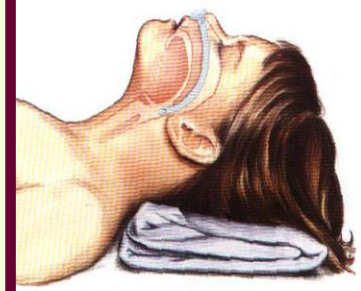
The advantage of the nasopharyngeal airway over the oropharyngeal is that it is well tolerated in conscious patients and it does not stimulate the gag reflex.

b. Nasopharyngeal (Nasal) Airways



It comes in multiple sizes ranging from 17 to 36 french. To insert the airway follow the steps below:

1. **Measure the nasopharyngeal airway from the patient's nostril to the earlobe or to *the angle of the jaw*. Choosing the correct length will assure an appropriate diameter.**
2. ***Lubricate* the outside of the tube with a water based lubricant before insertion.**
3. **Do no use a petroleum jelly or any other type of non-water based lubricant. Such substances can damage *the lining* of the nasal cavity and the pharynx and increase the risk of infection.**



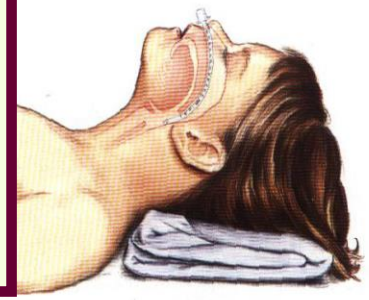
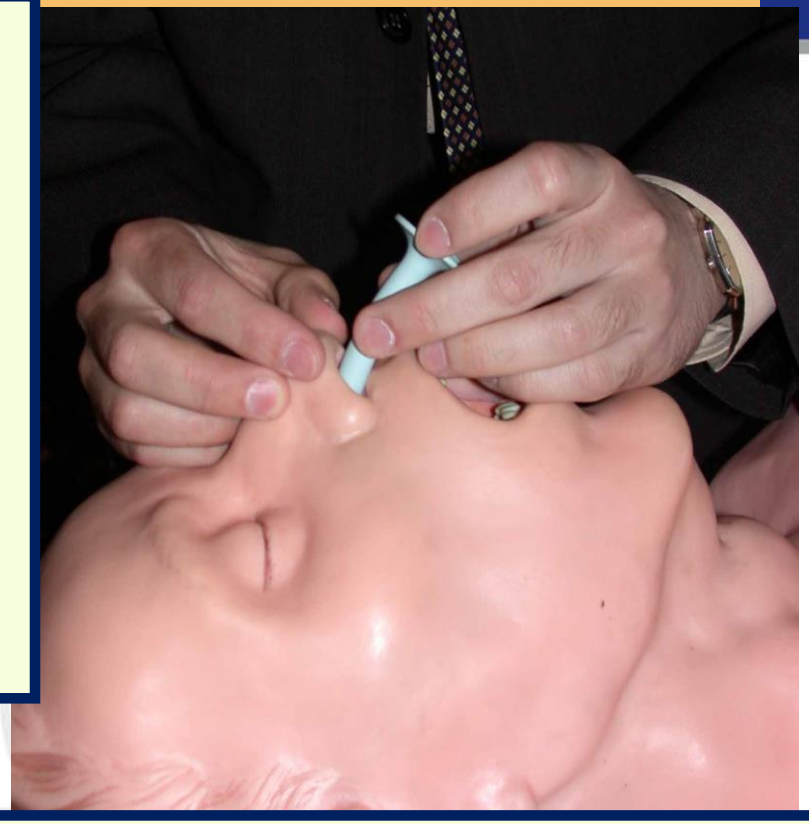


Fig. 2.11. Canula

Nasopharyngeal Airway

4. *Gently push the tip of the nose upward*. Keep the patient's head in a neutral position.
The bevel (angled portion at the tip) should point toward the base of the nostril or toward the septum (wall that separates the nostrils).

5. Insert the airway into the nostril. Never force a nasopharyngeal airway. If you experience difficulty advancing the airway, pull the tube out and try the other nostril.



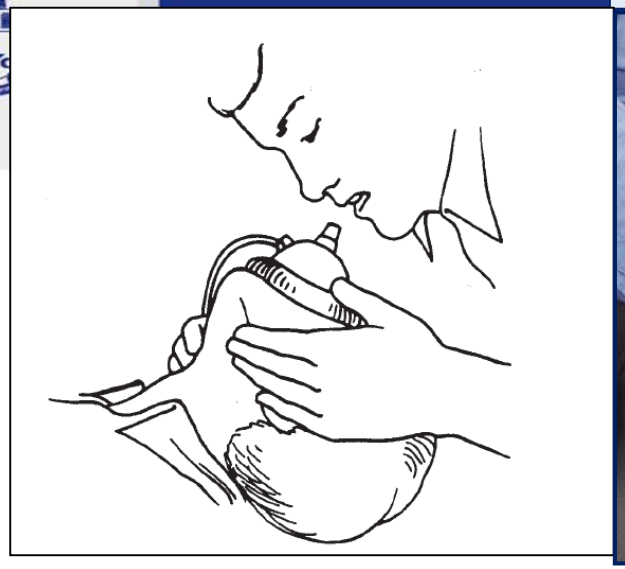
Warning!

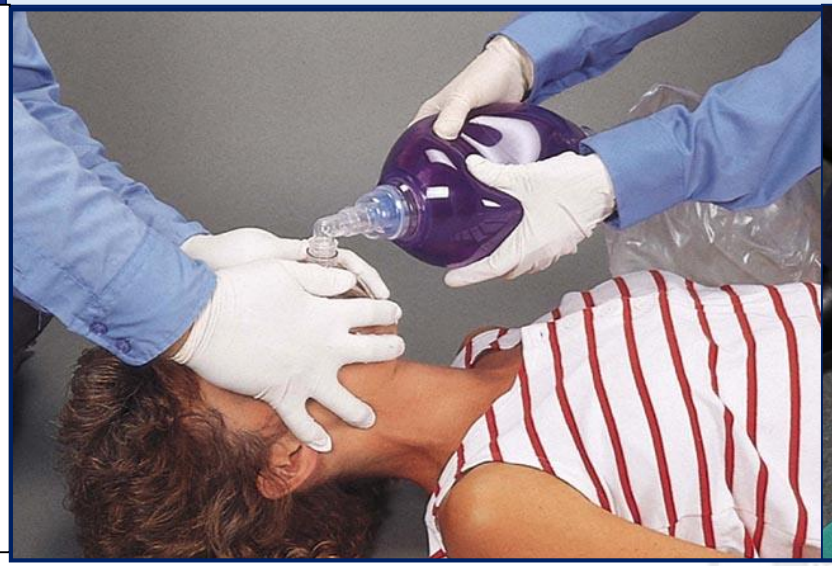
Do not attempt the use of a nasopharyngeal airway if there is evidence of clear (cerebrospinal) fluid coming from the nose or ears. This may indicate a skill fracture in the area where the airway would pass

Artificial Ventilation

- If the emergency medical caregiver determines that the patient is not breathing or that the respiratory efforts are so minimal that respiratory arrest is *imminent,* they will need to provide artificial ventilation. Ventilation is the breathing in of air or oxygen. Artificial ventilation (also called positive pressure ventilation) is forcing air or oxygen into the lungs when a patient has stopped breathing or has inadequate breathing. Several techniques are available to the emergency medical caregiver to facilitate this process.

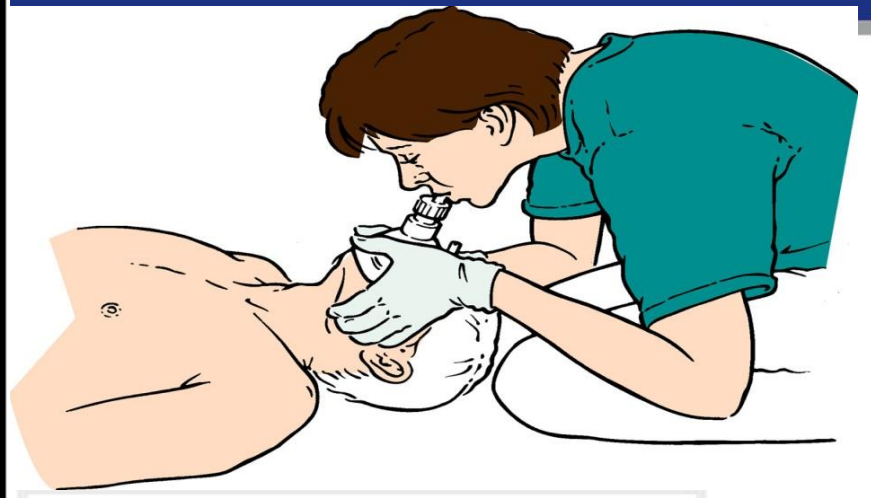
Artificial Ventilation





- In order of preference they are:
- *Mouth-to-mask* (with high-flow supplemental oxygen at 15 liters per minute if possible)
- *Two-rescuer bag-value mask*
- Flow restricted, oxygen-powered ventilation device
- *One-rescuer bag-valve mask*
- Regardless of which method chosen to ventilate the patient, the caregiver must assure that the patient is being ventilated adequately.

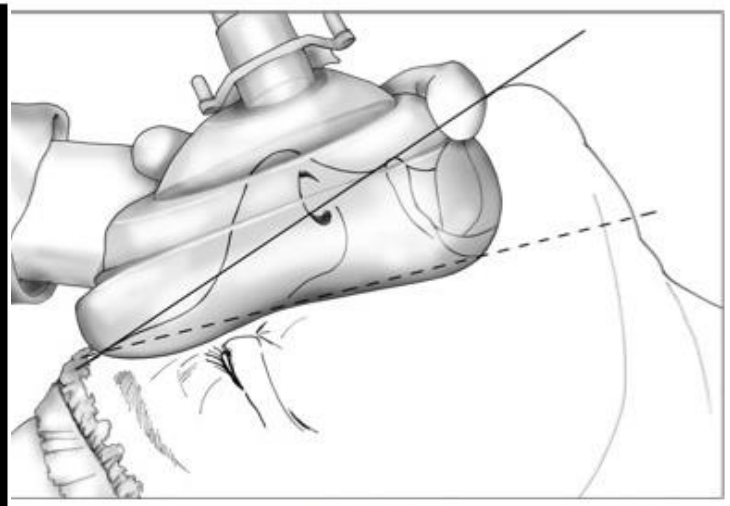
Mouth-Mask Ventilation



Position the mask on the patient's face so the apex (top of the triangle) is over the bridge of the nose and the base is between the lower lop and prominence of the chin. (Center the ventilation port over the patient's mouth).

Hold the mask firmly in place while maintaining the proper head tilt by:
Placing thumbs **over the top half of the mask, index and middle fingers over the bottom half.**
Using the ring and little fingers to bring the jaw up to the mask.

Mouth-Mask Ventilation



Take a deep breath and blow into the mask port or one-way valve at the top of the mask port. Each ventilation should be delivered over 1 to 2 seconds in adults, 1 to 1½ seconds in infants and children. Watch for the patient's chest to rise.

The rescue-breather should remove their mouth from the port between breaths and allow for passive exhalation. Continue repeating this cycle.

Bag-Valve Mask (One person)

One-Rescuer Bag-Valve Ventilation

1. Position yourself at the patient's head and establish an open airway. Suction and insert an airway adjunct as necessary.
2. Select the correct size mask for the patient.
3. Position the mask on the patient's face.

Bag-Valve Mask (One person)

4. Form a “C” around the ventilation port with thumb and index finger. Use middle, ring, and little fingers under the patient’s jaw to hold the jaw to the mask.
5. With the other hand, squeeze the bag once every 5 seconds. The squeeze should be a full one and causing the patient’s chest to rise.
6. Release pressure on the bag and let the patient’s exhale passively. While this occurs the bag is refilling from the oxygen source.

Two-Rescuer Bag-Valve Ventilations No Trauma Suspected

- Open the patient's airway. Suction and insert an airway adjunct as necessary.
- Select the correct size bag-valve mask (adult, child, infant)
- Kneel at the patient's head. Position thumbs over the top half of the mask, index and middle fingers over the bottom half.
- Place the apex, or top, of the triangular mask over the bridge of the nose. Then lower the mask over the mouth and upper chin. If the mask has a large, round cuff surrounding a ventilation port, center the port over the patient's mouth.
- Use ring and little fingers to bring the patient's jaw up to the mask.
- The chin lift works best with this device.

Two-Rescuer Bag-Valve Ventilations No Trauma Suspected

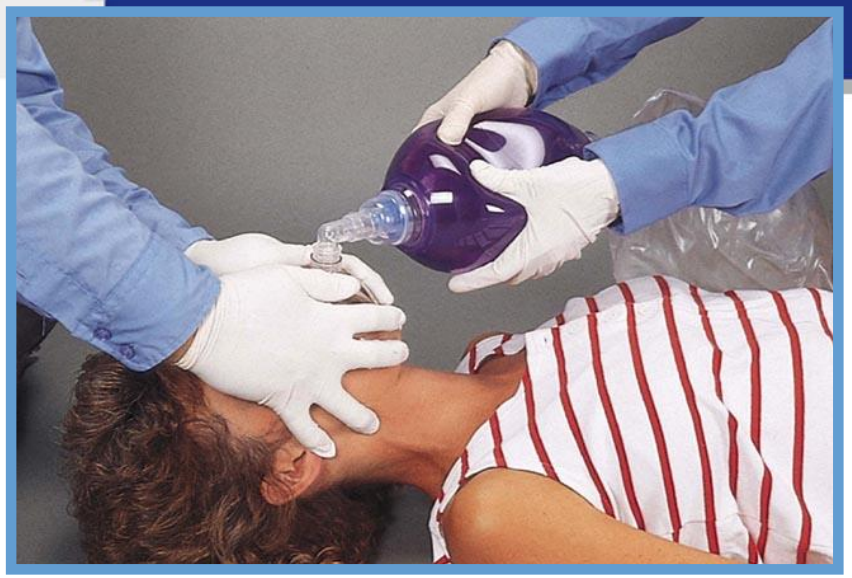


Figure 2. The two-handed C-E technique.

- **The second rescuer should connect bag to mask, if not already done. While you maintain the mask *seal*, the second rescuer should squeeze the bag once every 5 seconds for an adult and once every 3 seconds for a child or infant.**
- **The second rescuer should release pressure on the bag and let the patient exhale passively. While this occurs the bag is refilling from the oxygen source.**

Two-Rescuer Bag-Valve Ventilation Trauma Suspected

Open the patient's airway using the *chin* lift technique. Suction and insert an airway adjunct as necessary.

Select the correct bag-valve mask.
Kneel at the patient's head.

Place thumbs over the nose portion of the mask and placing the index and middle fingers over the portion of the mask that covers the mouth.

Use the ring and little fingers to bring the jaw upward, toward the mask ***without tilting*** **the head or neck.**

The second rescuer should squeeze the bag to ventilate the patient as described above for the non-trauma patient.

Algorithm
for artificial ventilation

mouth to mouth or mouth to nose respiration

ventilation by a face mask and a self-inflating bag with oxygen

↓

2 initial subsequent breaths

↓

wait for the end of expiration

↓

10-12 breaths per minute with a volume of app. 600 ml, each breath should take 1,5-2 seconds

↓

Control over the ventilation

↓

check chest movements during ventilation

↓

check the air return

Foreign Body Airway Obstructions in the Adult

- **An obstruction of the airway by a foreign body may be the *cause* of cardiac arrest. If the airway becomes blocked as a result of choking on food, bleeding into the airway, or regurgitated stomach contents, the resulting lack of oxygen can lead to cardiac arrest.**

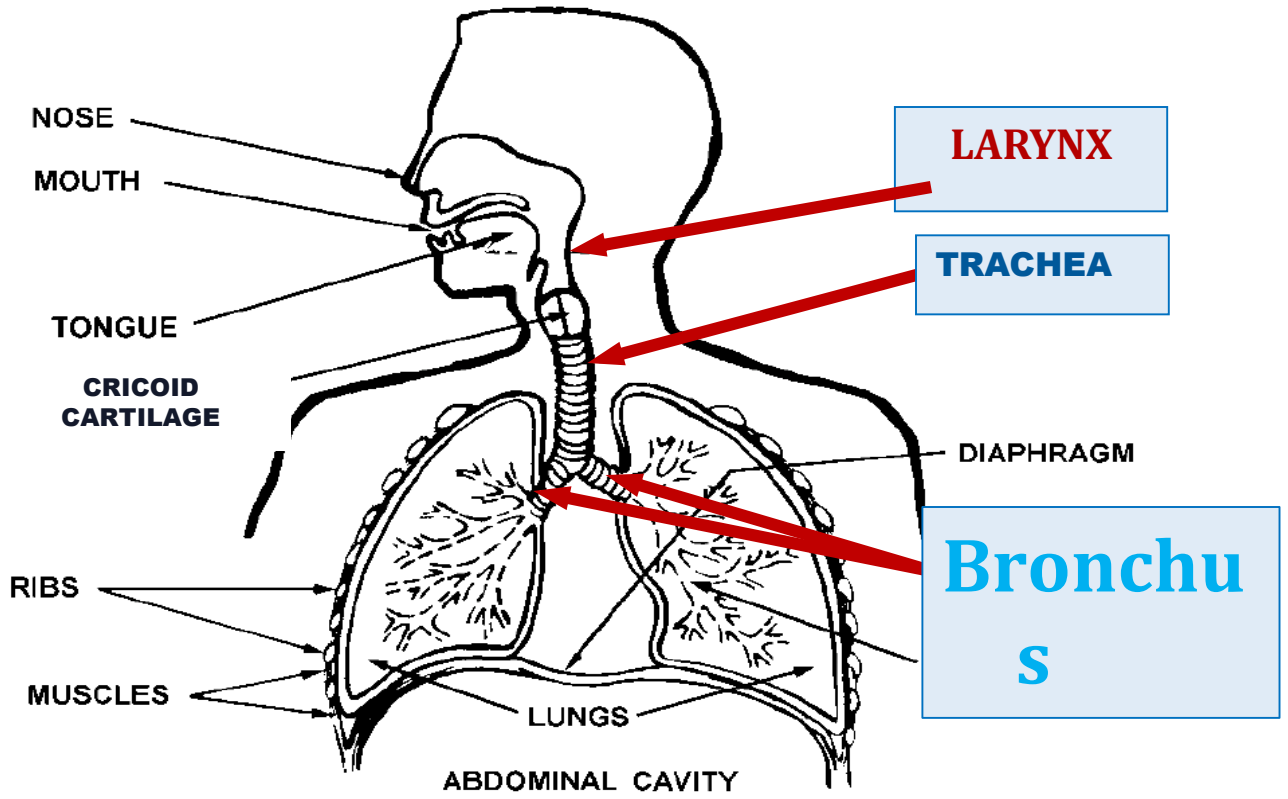
- **Dentures may become dislodged or the tongue may fall back in the throat in the unconscious patient, obstructing the airway.**

Airway obstruction by foreign body

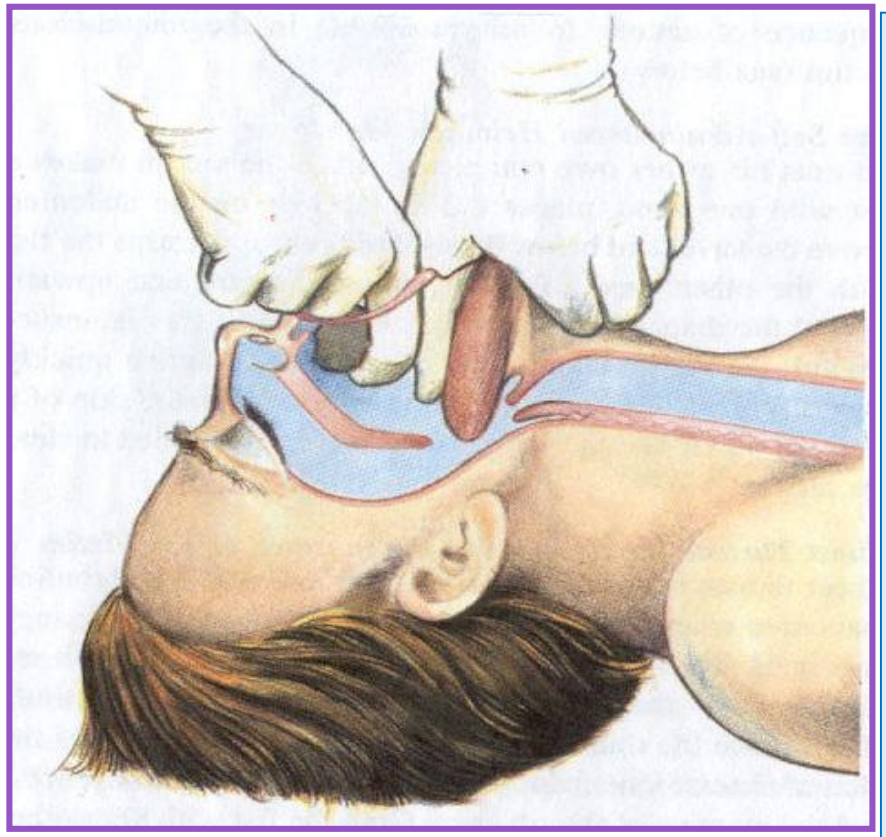
Location of foreign bodies

- Larynx
- Trachea
- Bronchus

Respiratory System



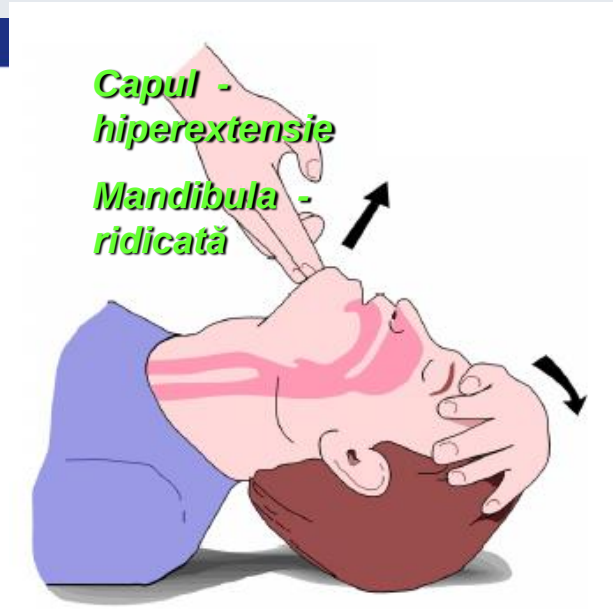
Foreign body aspiration



Finger sweep & tongue-jaw lift:
- for unresponsive/unconscious victim
- not indicated for responsive or seizure patient
-"tongue-jaw lift" maneuver

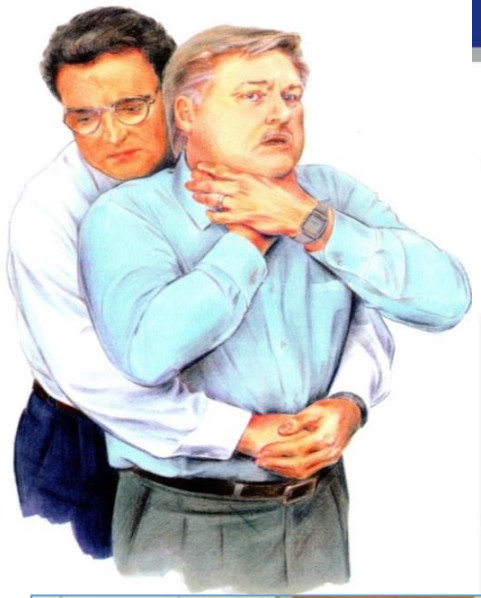
-During CPR, each time you open the airway to provide rescue breaths, look for the foreign body-if you see it, remove it.

UNCONSCIOUS PATIENT



Relief of Choking For Adult/Child

- For an adult or child choking: perform the Heimlich and abdominal thrust
- If no signs of breathing, give two slow breaths, call 112
- If no signs of circulation, start chest compressions, and continue rescue breathing

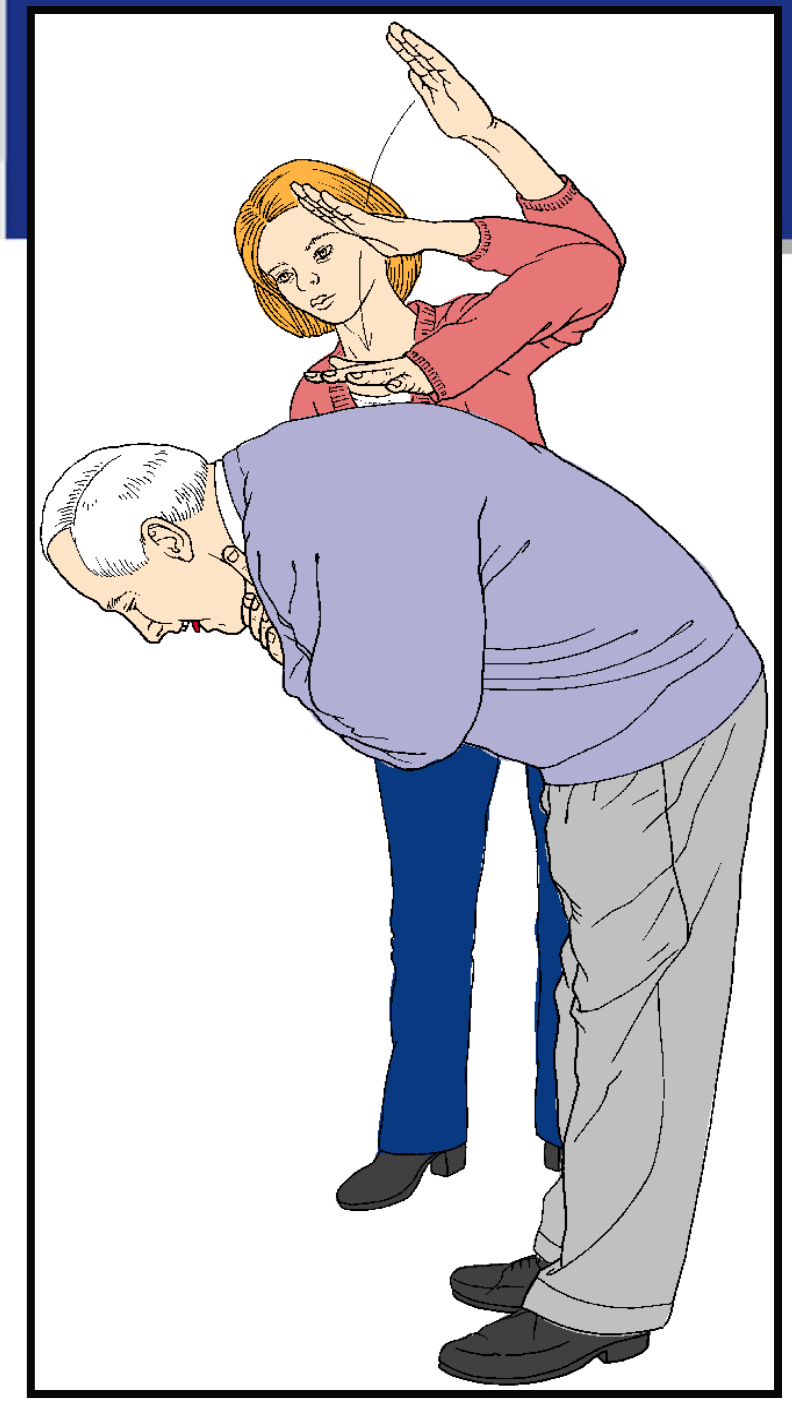


6. Clearing the Compromised Airway and Maintaining the Open Airway

- This method involves using your fingers to remove solid objects from the patient's airway. Remember to use body substance isolation.
- If foreign material or vomit is visible in the mouth, remove it quickly as the patient may inhale the foreign matter into the lungs with the next breath.
- **Do not perform blind finger sweeps in infants or children.**

- 1. If uninjured, roll the patient onto his/her side.
- 2. Wipe out liquids or semi-liquids with the index and middle fingers covered with a cloth.
- 3. Remove solid objects with a hooked index finger.

Foreign body aspiration

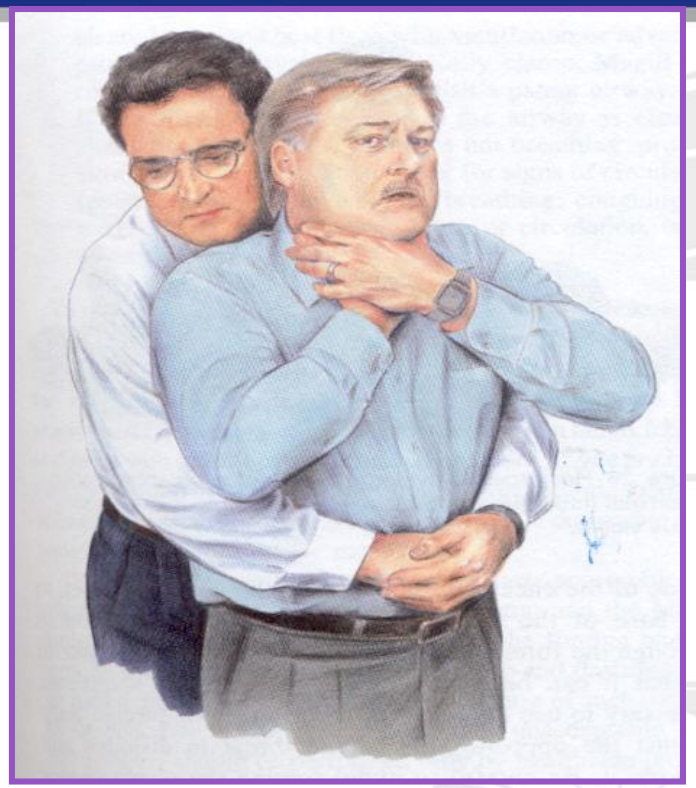


- **5 strong shots** with palm in interscapullar region
  PURPOSE: Interscapullar shorts are to cause cough and expel the foreign body

- If not achieved by interscapullar shots, it will be made

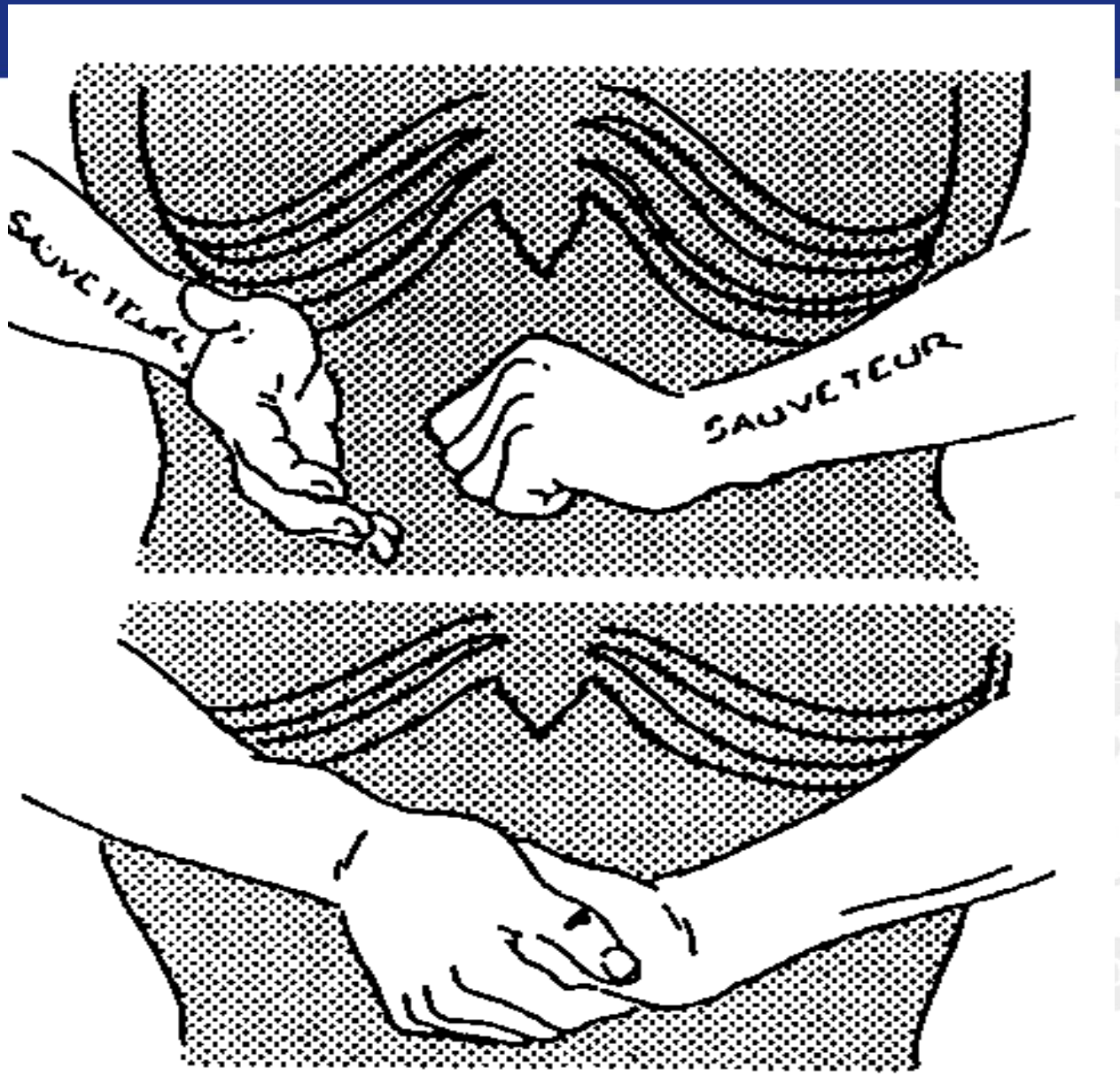
  five abdominal compression

Foreign body aspiration

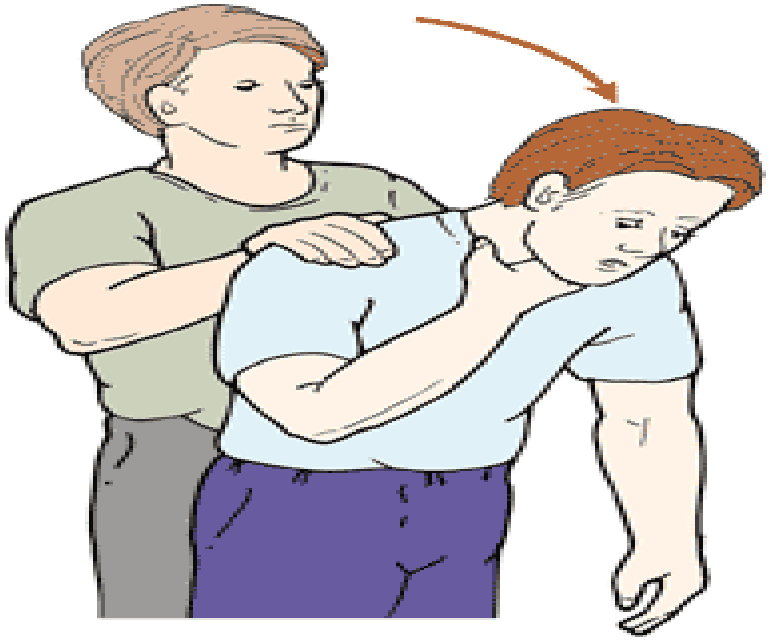


Heimlich maneuver:
- for responsive victim, standing or sitting
- give sub diaphragmatic abdominal thrust
- direction: inward & upward

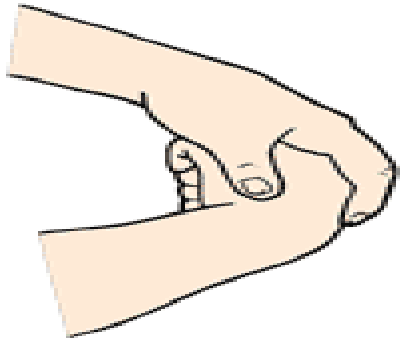
Hand position for abdominal compression



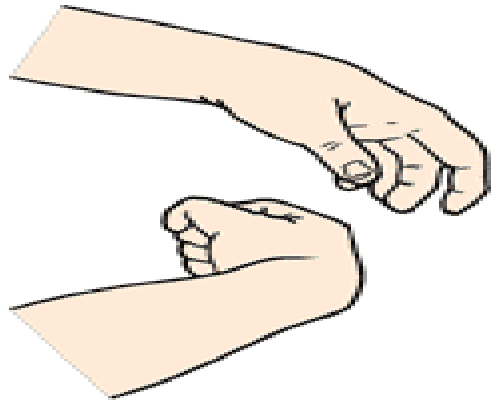
Heimlich Maneuver



1. Lean the person forward slightly and stand behind him or her.



3. Put your arms arund the person and grasp your fist with your other hand near the top of the stomach, just below the center of the rib cage.



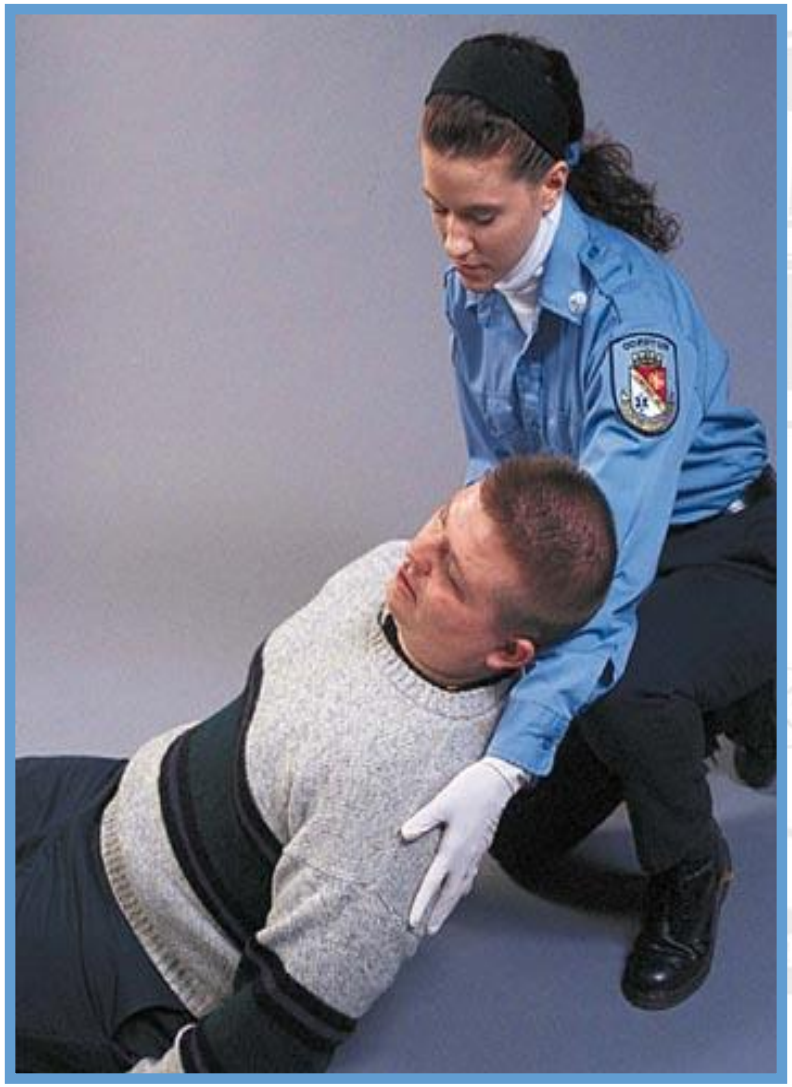
2. Make a fist with one hand.

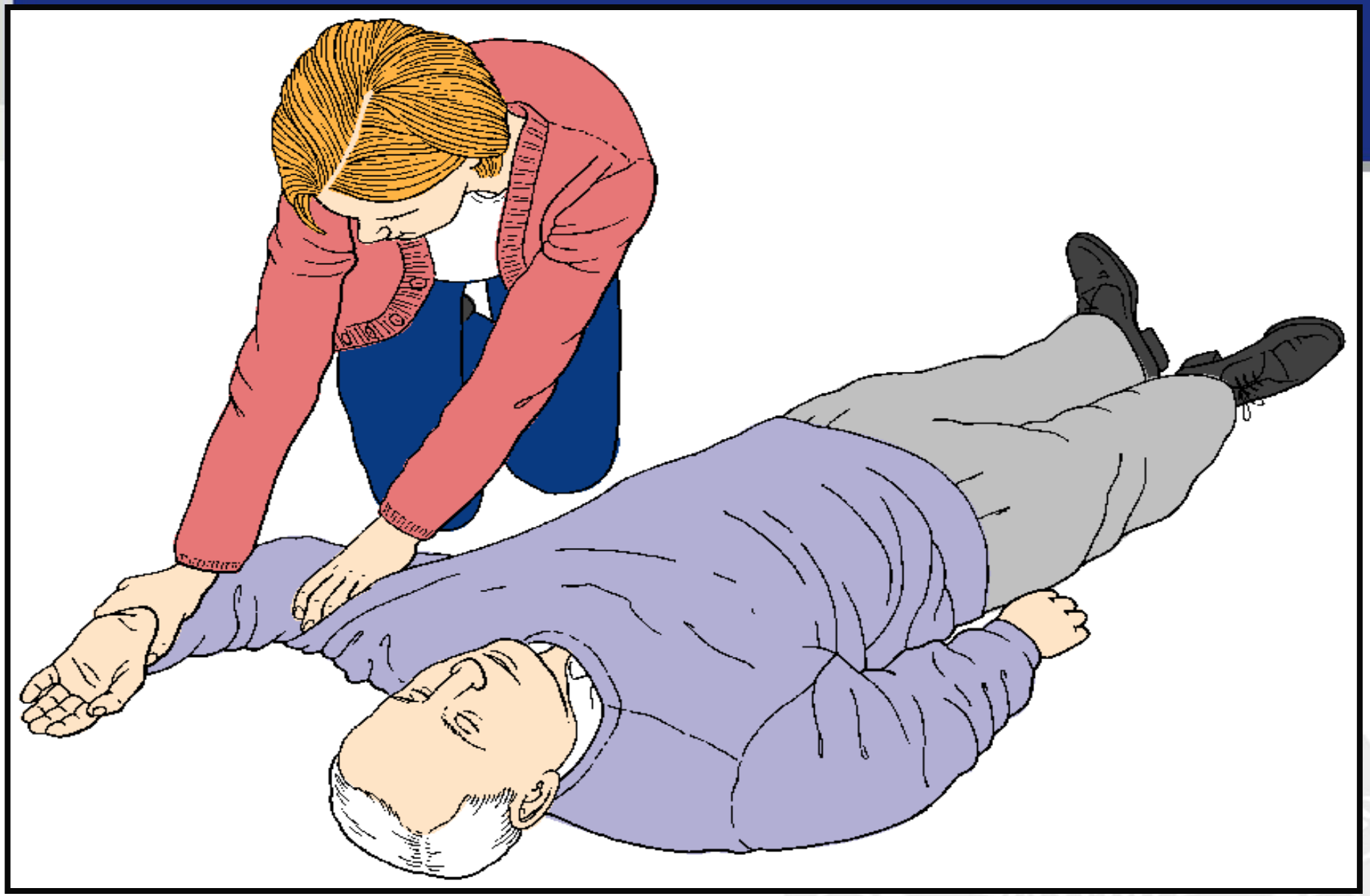
4. Make a quick, hard movement, inward and upward.

Heimlich Maneuver

Heimlich Maneuver
to pregnant women

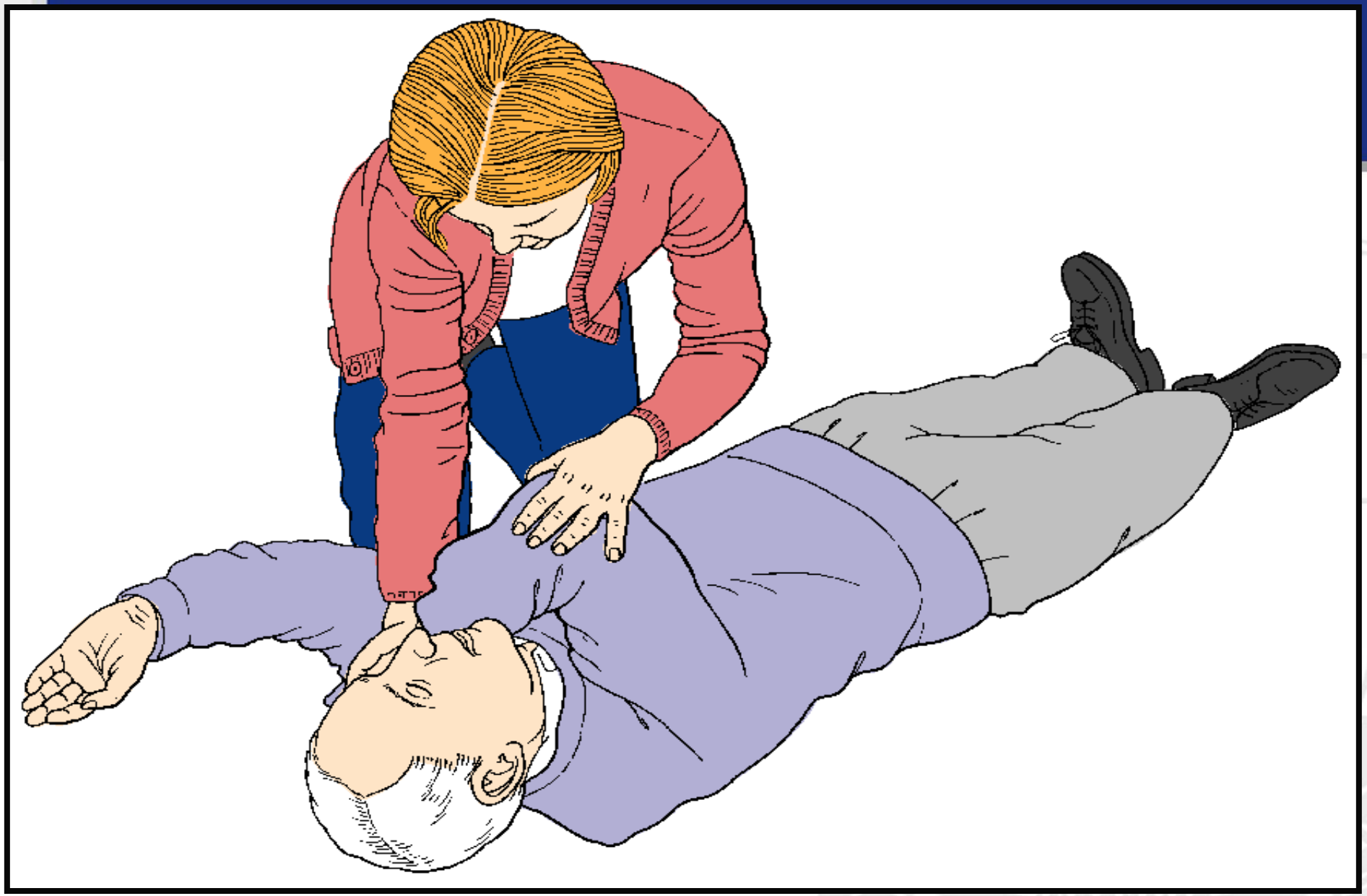
The suffocating person becomes unconscious





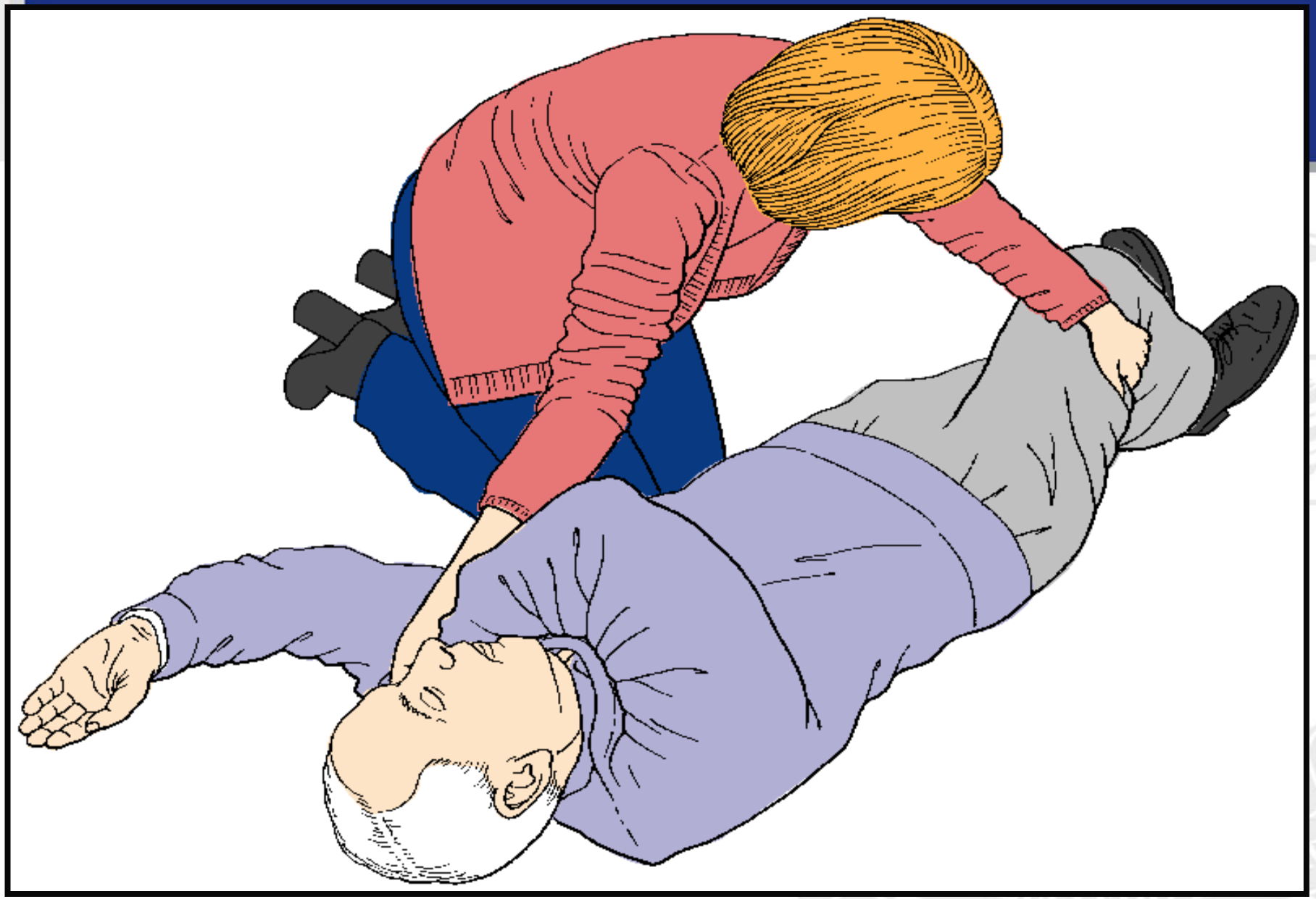
SIDE SAFETY POSITION

PHASE I



SIDE SAFETY POSITION

PHASE II

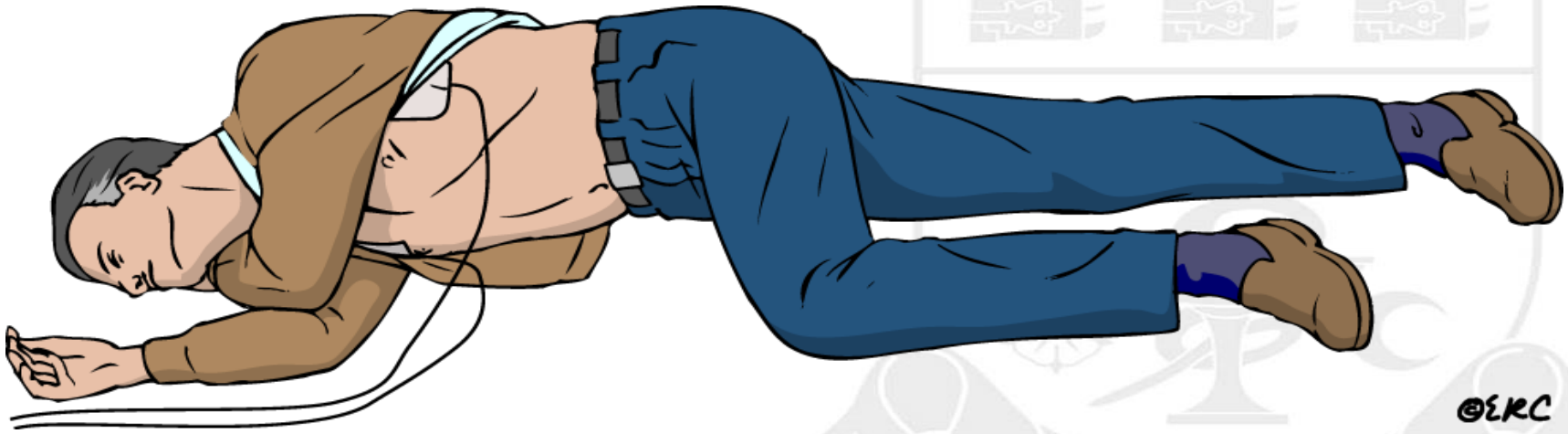


SIDE SAFETY POSITION

PHASE III

IF VICTIM STARTS TO BREATHE NORMALLY PLACE IN RECOVERY POSITION

IF VICTIM STARTS TO BREATHE NORMALLY PLACE IN RECOVERY POSITION



SIDE SAFETY POSITION
PHASE IV

SAFETY POSITION

- For unconscious persons, spontaneously breathe, exhibit mechanical heart activity (central pulse) and no traumatic lesions of the spine.

- The victim must not remain in the same position for more than 30 minutes, then returns the victim on the other side

- **VIII. DROWNING**
- **Epidemiology**
- Drowning is a major injury burden worldwide causing an estimated 500000 deaths annually. In many countries, including the United States, the incidence of drowning is consistently highest among children younger than 5 years and next highest in those 15 to 19 years old. Children younger than 5 years accounted for nearly 50% of drowning, and children 5 to 14 years nearly 25%.
- **Definition**
- "Process of experiencing respiratory *impairment from submersion/immersion in liquid".*
- **Treatment Approach**
- The 'Drowning Chain of Survival' refers to a series of interventions that, when put into action by laypersons or professionals, may reduce morbidity and mortality associated with drowning.
- The links of the chain are as follows:
- Prevention - be safe in and around water.
- Recognize distress - ask someone to call for help.
- Provide flotation - to prevent submersion.
- Remove from the water - only if safe to do so.
- Provide care as needed - seek medical attention.

- **Immersion**

- It means that part of the body is covered by water or other fluid.

- **For drowning, at least the face and airways must be submerged.**
- Submersion – involves the entire body, which is covered by water or other fluid along with the airways.

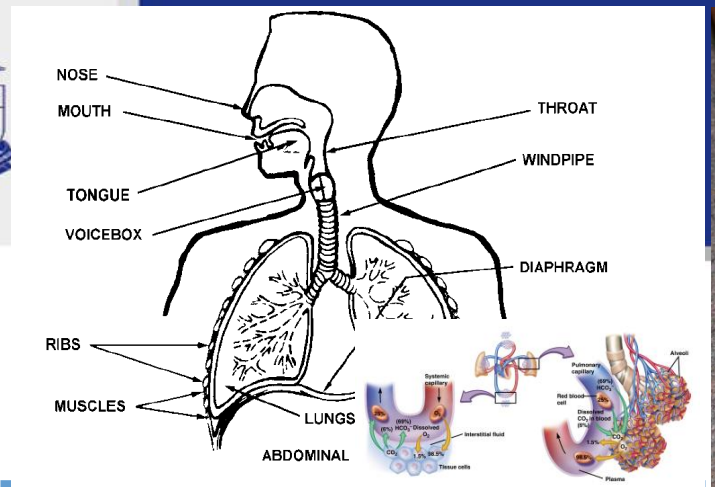
- Recognize distress and call for help.
- Provide flotation to stop the process of drowning. A responder who is not properly trained in advanced water rescue should never enter the water to attempt a rescue. If possible, reaching/throwing an object or maneuvering a craft to the victim is safest.
- Remove the victim from the water in as near a horizontal position as possible, with the airway open.
- For the unconscious victim, in-water ventilation by trained individuals increases the likelihood of neurologically intact discharge from the hospital. If there is no response to in-water ventilation, the victim should be assumed to be in cardiac arrest.
- Cardiopulmonary resuscitation (CPR) with chest compression and ventilation should be initiated once the victim is out of the water.
- Routine spinal motion restriction is not indicated for the majority of drowning victims because the incidence of cervical spine injury is extremely low. If cervical spine injury is suspected, the cervical spine may be held in midline, but attempts at further motion restriction with cervical spine collars or long spine boards should never impede resuscitative efforts.

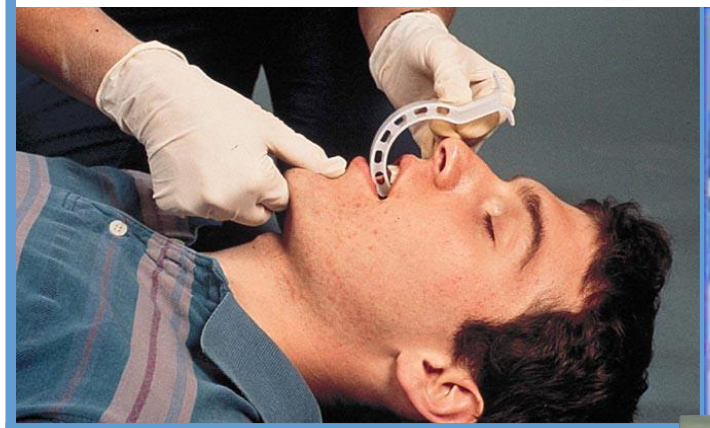
- **Cardiopulmonary resuscitation (CPR)**
- Should be given 5 rescue breaths before beginning chest compressions. This is to address the primary issue of hypoxemia. CPR should follow with a breath to compression ratio of 30:2 for adults and 15:2 for children.
- If an automated or manual defibrillator is available, it may be applied as long as this does not impede positive pressure ventilations and high-quality CPR; the majority of drowning cardiac arrest patients will be in pulseless electrical activity or asystole.
- Advanced Cardiac Life Support medications should be administered per local protocols, with the understanding that reversal of hypoxemia is the priority.

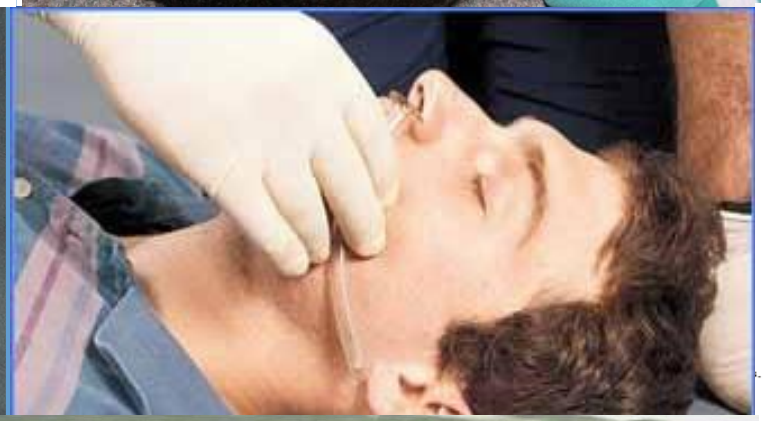
Protection - safety

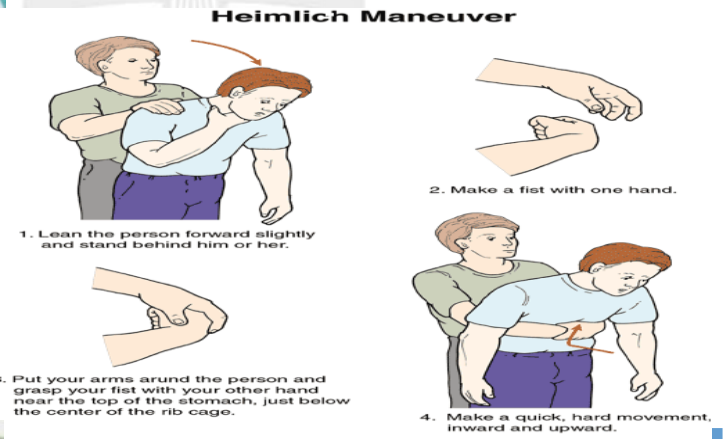
- **use the safety equipment**

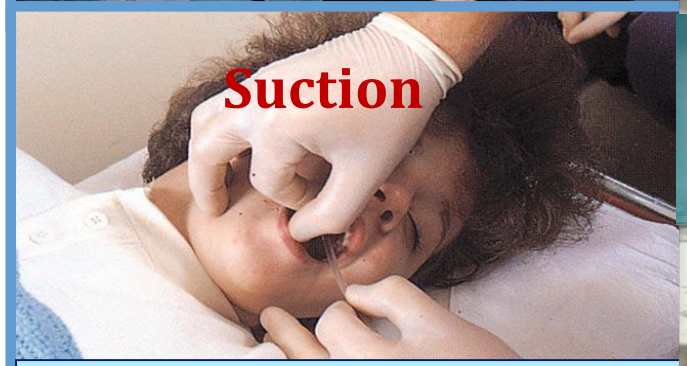
- **Gloves**
- **Protective eye wear**
- **Protective for ears**
- **face shield,**
- **pocket mask**

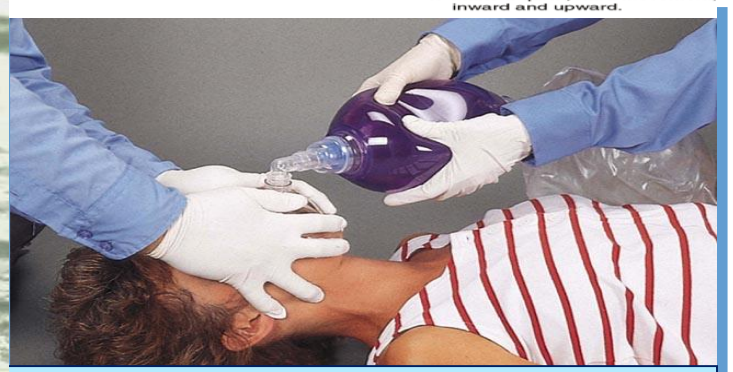












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- BIBLIOGRAFY:

1. European Resuscitation Council Guidelines for Resuscitation 2015 https://www.erc.edu/index.php/search/en/.
2. *American Medical Association (2009-05-05). American Medical Association Handbook of First Aid and Emergency Care. Random House. ISBN 978-1-4000-0712-7.*
3. Nolan JP, Hazinski MF, Aicken R, et al. Part I. Executive Summary: 2015 International Consensus on Cardiopulmonary Resuscitation and Emergency Cardiovascular Care Science with Treatment Recommendations. Resuscitation 2015:95:e1-e32.
4. Vadeboncoeur T, Stolz U, Panchal A, et al. Chest compression depth and survival in out-of-hospital cardiac arrest. Resuscitation 2014;85:182-8.
5. *Mohan, R; Iyer, R; Thaller, S (2009). "Airway management in patients with facial trauma". Journal of Craniofacial Surge*
6. "Basic Airway Management & Endotracheal Intubation". *Apps.med.buffalo.edu*. N.p., 2015. Web. 18 Nov. 2015. *ry. **20** (1): 21–3. doi:10.1097/SCS.0b013e318190327a. PMID 19164982.*
7. *Roberts K, Whalley H, Bleetman A (2005). "The nasopharyngeal airway: dispelling myths and establishing the facts". Emerg Med J. **22** (6): 394–6.*
8. *Luczak (2016.02.015). "Head-down self-treatment of choking". Resuscitation. doi:10.1016/j.resuscitation.2016.02.015*

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