

AIRWAY MANAGEMENT

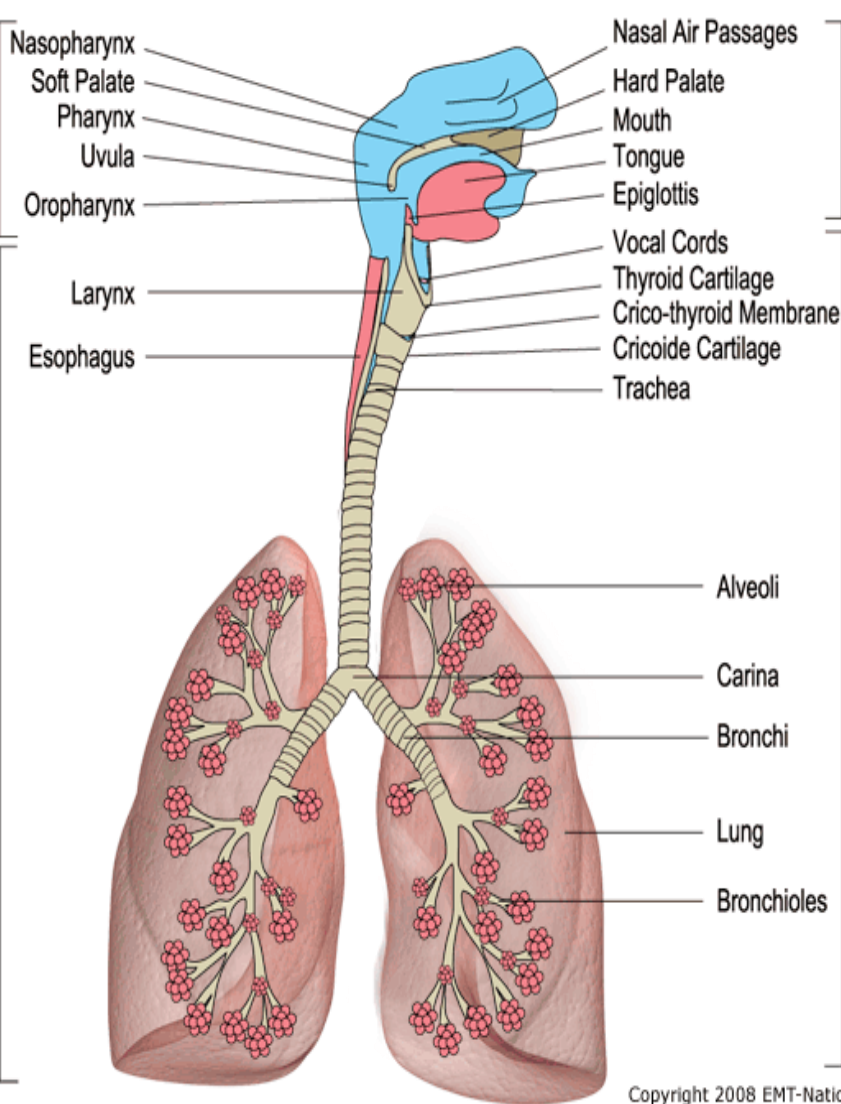
Why do we need to know it?

The airway obstruction leads to the sudden blood flow arrest.

It causes the secondary damage of the brain, central nervous system, cardiac muscle, major organs due to hypoxia.

The main goal is to prevent further hypoxia and organ damages.

Levels and reasons of obstruction



- **1. Upper airways** (oral and nasal cavity, pharynx)
 - Tongue, soft palate, epiglottis (loss of the muscle tone)
 - Trauma
 - Foreign body
 - Edema of the soft tissues
 - Blood, vomit
- **2. Larynx**
 - Laryngospasm (reflex due to irritants inhalation)
 - Foreign bodies
 - Trauma
 - Edema (due to burns, asphyxia, inflammation)
- **3. Trachea and bronchi (rare)**
 - Blood, edema, spasm
 - Gastric aspirate
 - Trauma

What kind of obstruction?

- ***Partial***

- *Wheeze* (upper airways and larynx obstruction)
- *Gurgling* (liquid in upper airways)
- *Snoring* (muscle tone loss of the soft palate/epiglottis/tongue)
- *Laryngeal whistle* (laryngospasm, laryngeal obstruction)
- *Whistle on exhale* (lower airways obstruction)

- ***Absolute***

- *Paradox movements* of the chest and abdomen (inhale- chest compression/abdomen inflates; exhale – vice versa)
- Visualization of the *neck, chest muscles involvement* into the act of breathing
- *No air movement*
- *Loss of consciousness*

What kind of obstruction?

- Partial obstruction:

You can hear loud sounds

- Absolute one:

Silence

If there is obstruction of upper airways suspected what do we do?

Choking with Good Breathing

Able to speak
Signs of distress - eyes show fear
Forceful coughing
Wheezing and gagging between coughs
Reddish face
Grabbing throat
Drooling



Choking with Little or No Breathing

Not able to speak
Signs of distress - eyes show fear
Weak or no coughing
High-pitched noise or no noise when trying to breathe or cough
Greyish face and blueish lips and ears
Grabbing the throat

I'm choking but I can breathe!

I'm choking and I can't breathe!



IF SEEN
CHOAKING
PLACE
HANDS
HERE



AND
SQUEEZE

Heimlich maneuver

If The Victim is Conscious



Stand behind the person and wrap one arm around their chest. Firmly strike the person on the back between the shoulder blades 5 times.



If the back blows do not dislodge the object, wrap both your arms around the abdomen. Make a fist with one of your hands and place it thumb side in the center of the abdomen. Grasp your fist with the other hand,



Give 5 abdominal thrusts by making a quick hard movement inward and upward 5 times. Keep giving 5 back blows and 5 abdominal thrusts until the object is coughed up or the person loses consciousness.

Heimlich maneuver

If The Victim Is Unconscious

- 1** Lay the victim on his/her back.
- 2** Face the victim and kneel inside the victim's hips.
- 3** With one of your hands on top of the other, place the heel of your bottom hand on the abdomen below the rib cage and above the navel.
- 4** Use your body weight to press into the victim's abdomen with a quick upward thrust. Repeat until object is expelled.
- 5** Should the victim vomit, quickly place him/her on his/her side and wipe out his/her mouth to prevent vomit from being drawn into the throat.
- 6** After the object is dislodged, the victim should really see a doctor.



Heimlich maneuver

Choking Infant

conscious

The infant (under 1 year) is making high-pitched noises or is having trouble breathing.

1 Give 5 Back Blows

Place the infant stomach-down across your forearm.

Give 5 claps on the infant's back with heel of your hand.



2 Give 5 Abdominal Thrusts

1. If object remains lodged, turn the infant over.
2. Support the head and neck securely with your palm. Keep the head lower than the chest.
3. Give 5 chest thrusts using two fingers on the infant's breastbone just below the nipple line.
4. Repeat 5 back blows and 5 chest thrusts.
5. Continue until object is expelled, or until someone takes over.



unconscious

3 Rescue Breathing

If the infant becomes unconscious:

1. Have someone else call the emergency number.
2. Lay the infant on a flat surface.
3. Open the mouth, look for and remove any foreign object seen in the mouth.
4. Open the airway - push back on forehead and lift chin.
5. Check for breathing, if not breathing...
6. Cover the nose and the mouth.
7. Give 2 breaths.
8. Use 2 fingertips to press down firmly on the breastbone just below the nipple.
9. Compress firmly 30 times then give 2 breaths.
10. Continue cycles of 30 compressions and 2 breaths until help arrives.



Heimlich maneuver

Choking Child

conscious

If a choking child (1-6 years) can speak, breathe or cough - stand by and encourage coughing to bring out the object.

1 Give 5 Back Blows

1. Stand behind the child.
2. Hold the child with your single arm.
3. Give 5 slaps on the child's back with heel of your hand.



2 Give 5 Abdominal Thrusts

1. Stand behind the child.
2. Place a fist below the child's navel and above the navel.
3. Press into the child's abdomen with a quick upward thrust. Be gentle.
4. Repeat until object is expelled or the child becomes unconscious.



unconscious

3 Rescue Breathing

If the child becomes unconscious -

1. Have someone else call the emergency number.
2. Lay the child on a firm flat surface.
3. Open the mouth, look for and remove any foreign object seen in the mouth.
4. Open the airway - pull back on forehead and lift chin.
5. Check for breathing. If not breathing...
6. Cover the nose and the mouth.
7. Give 2 breaths.
8. Press down firmly on the center of chest.
9. Compress firmly 30 times then give 2 breaths.
10. Continue cycles of 30 compressions and 2 breaths until help arrives.



Possible food choking hazards for infants & children - tough or large chunks of meat, fish with bone, peanuts or other nuts and seeds, whole uncut fruit, raw vegetable pieces, popcorn, hard or sticky candy, whole grain kernels.

Heimlich maneuver on special occasions



Heimlich maneuver on special occasions



Heimlich maneuver on special occasions



What do we do?

1. A – stands for airway

- We need to **assess airways**
- We need to provide **patency of the airways**

2. B – breathing

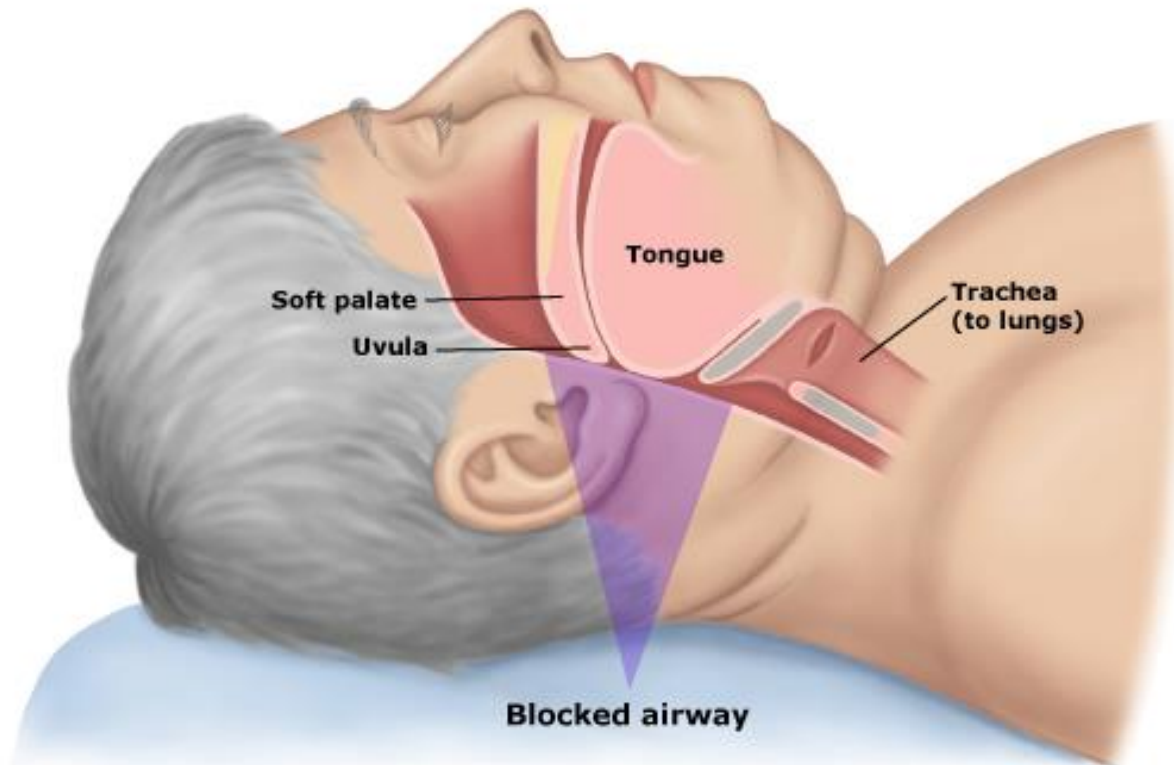
- Provide **ventilation**
- Provide proper **oxygenation**

Assessing the airways

- **Look** – chest movements
- **Listen** – snoring and gurgling
- **Feel** – the air, chest movements



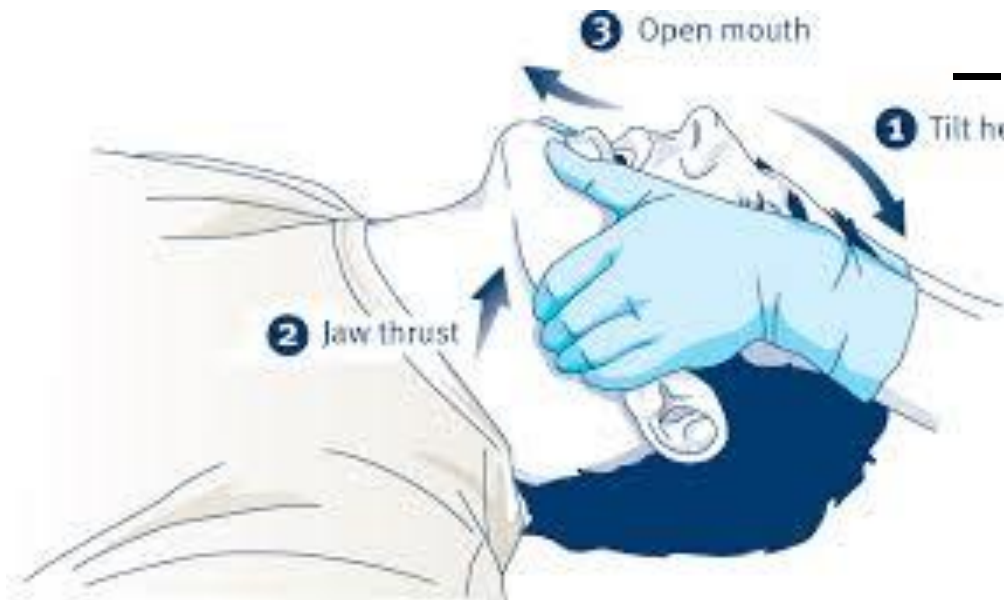
How does it look?



Airway patency

- Triple maneuver by P. Safar:

- Tilt head
- Jaw thrust
- Mouth opening



Airway patency

Triple maneuver by P. Safar

– Tilt head

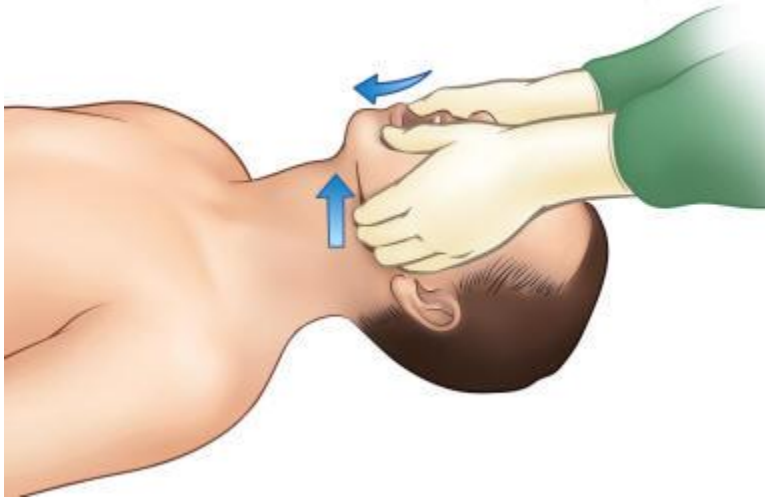


- Place one hand above patient's forehead, thumb pointing towards patient's nose.
- Put another hand under patient's neck or shoulders.
- Gently extend head by applying pressure with the hand on a forehead with force, dependent on patient's age and size.
- Maintain extension by applying jaw support.

Airway patency

Triple maneuver by P. Safar

- Jaw thrust



1. Place one hand on each side of patient's head:

- 5th, 4th and 3rd fingers around the angle of the mandible;
- index fingers on the body of the mandible;
- thumbs over the zygomas.

2. Protract the jaw:

- at right angles to the line of the pharynx;
- by pressure at the angles of the mandible.

Airway patency

Triple maneuver by P. Safar

- Mouth opening

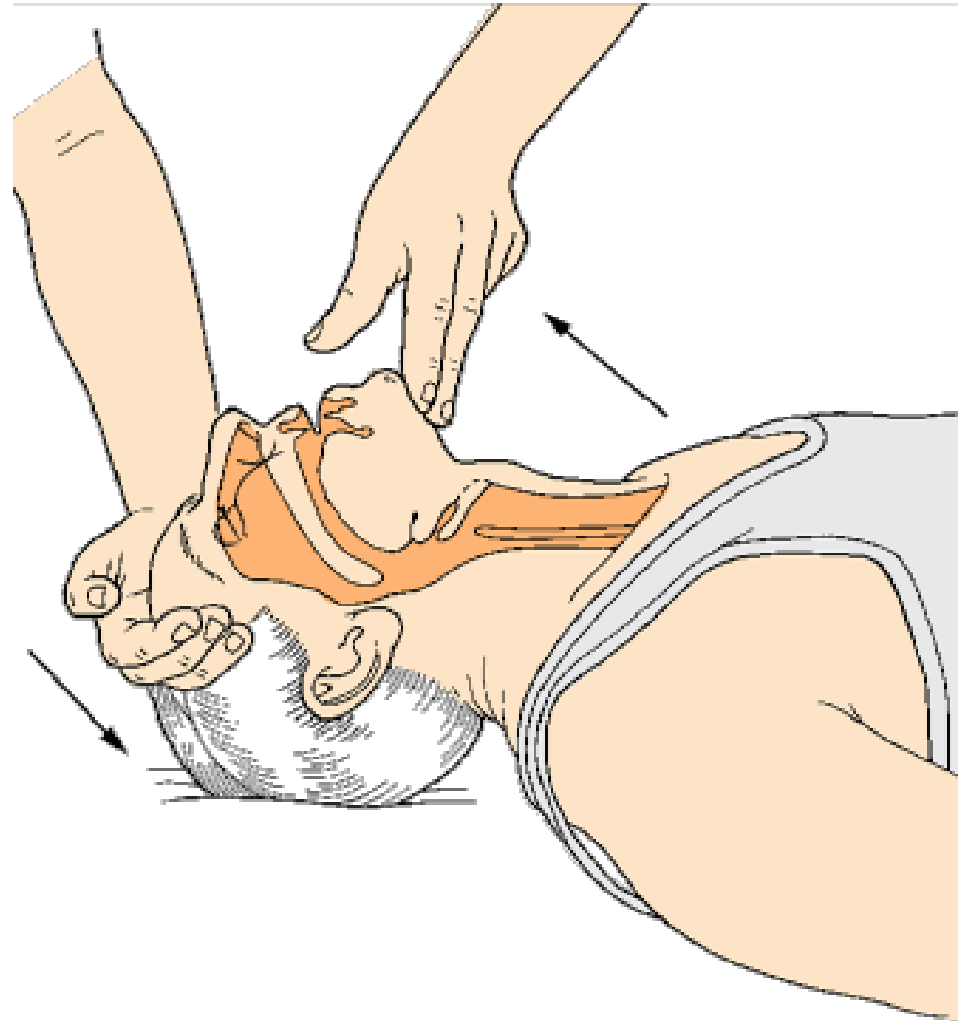


A (Airway)
ensure open
airway



Airway patency

- Head tilt –chin lift maneuver:
- Place one hand above patient's forehead, thumb pointing towards patient's nose.
- Hold point of jaw with another hand for support.
- Gently extend head by applying pressure with the hand on a forehead with force, dependent on patient's age and size.
- Maintain extension by applying jaw support.



Airway patency

- Open the mouth with “cross-finger maneuver”

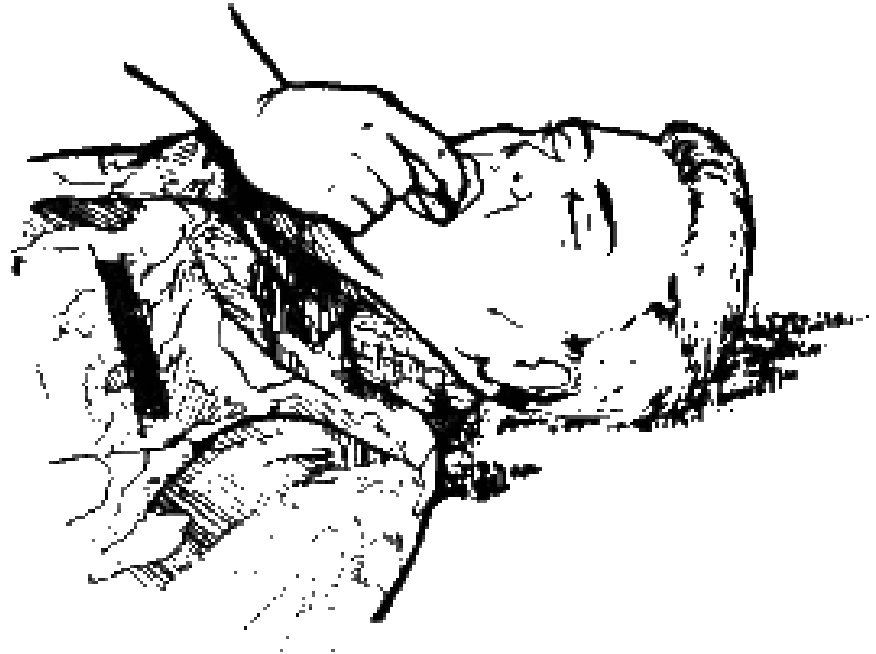
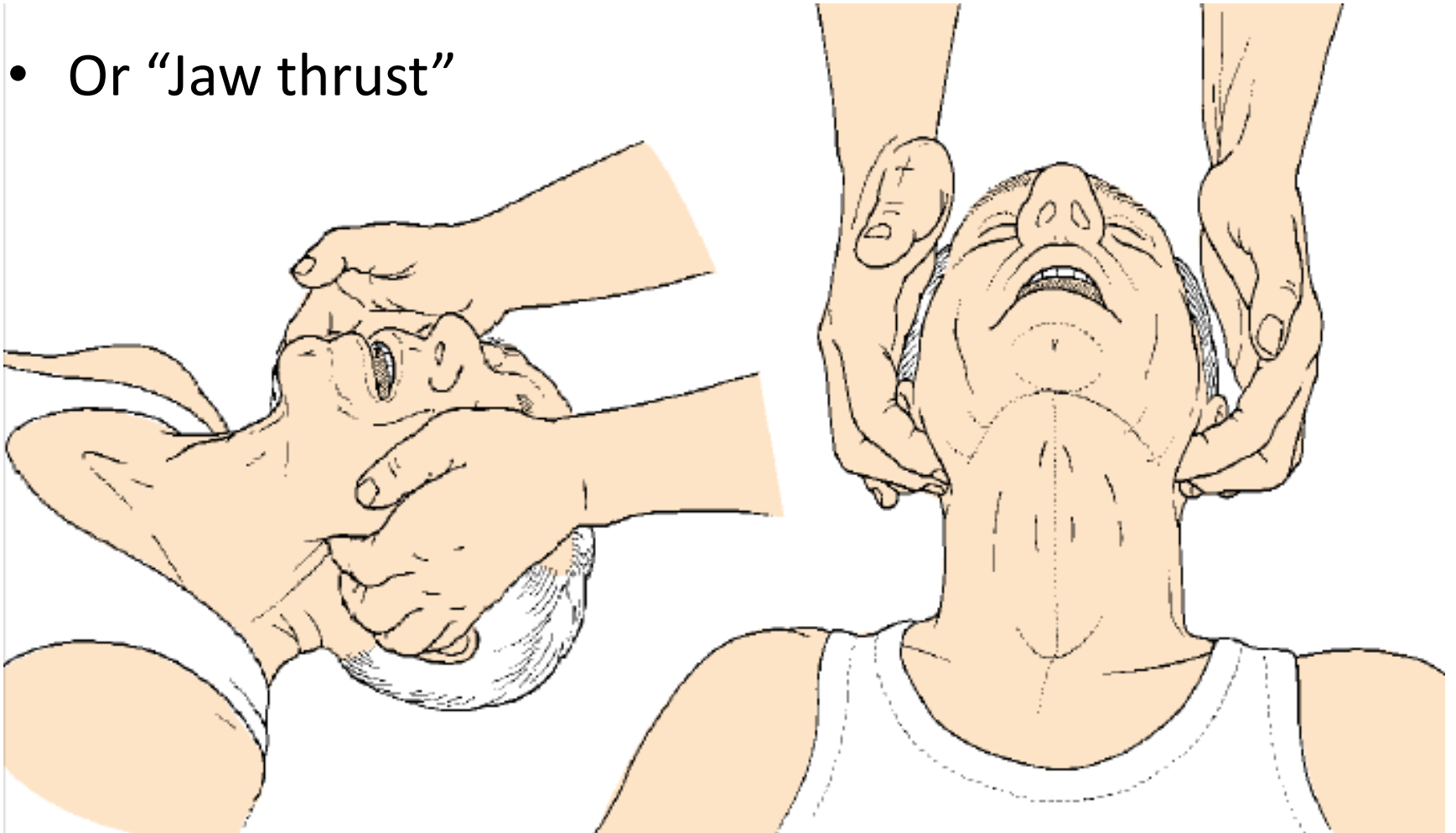


Figure 2-26. Opening casualty's mouth (crossed-finger method).

Airway patency

- Or “Jaw thrust”



To provide proper ventilation and oxygenation we need to keep the airways open

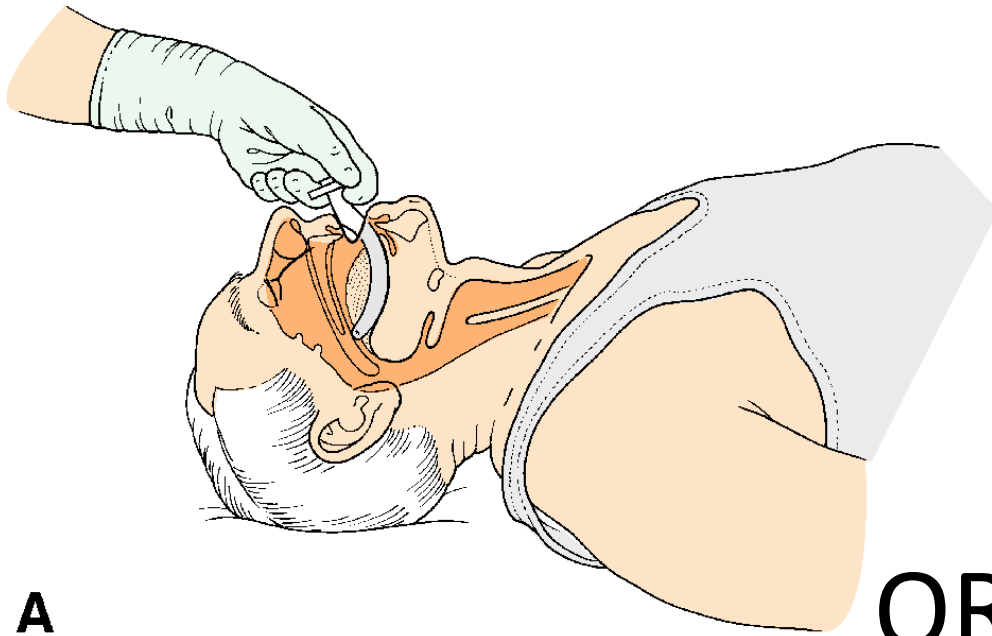
Simple gadgets

- Nasopharyngeal tube
- Oropharyngeal tube



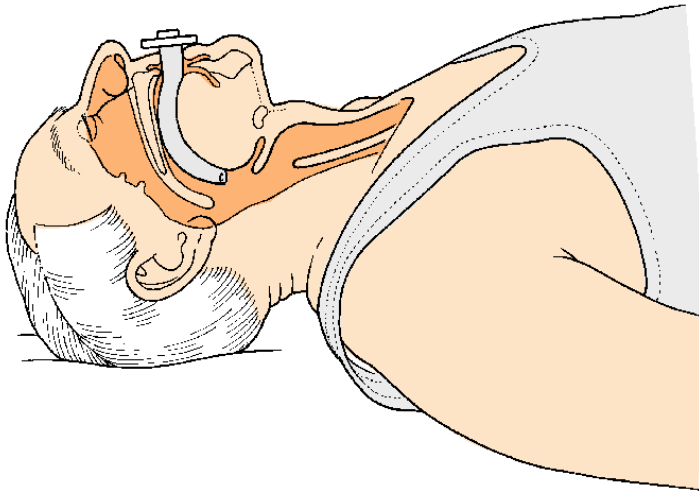
How to choose the right one?





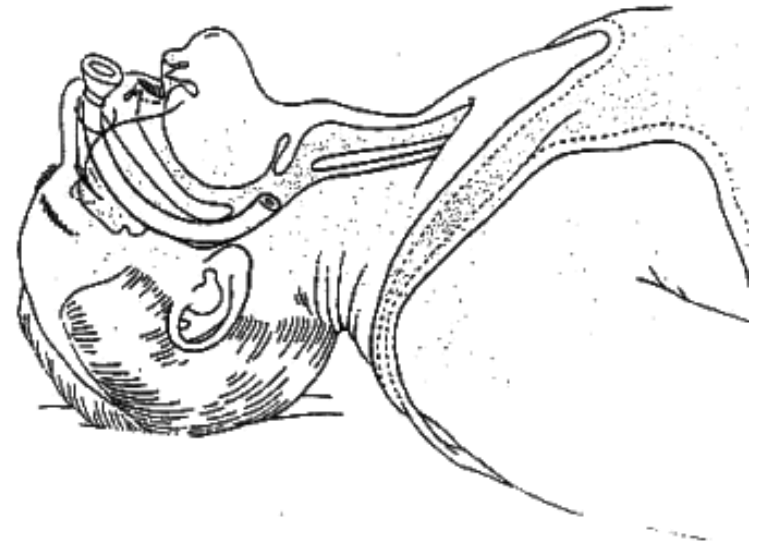
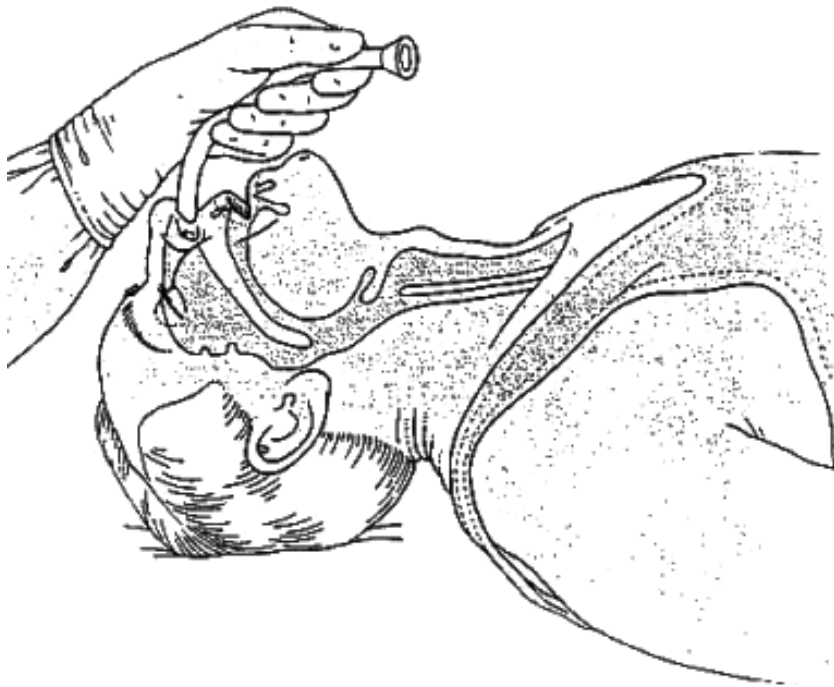
A

**OROPHARYNGEAL
airway placement**



B

NASOPHARYNGEAL airway placement



The correct size airway is chosen by measuring the device on the patient:
the device should reach from the patient's nostril to the earlobe or the angle of the jaw

When do we use NP tube?

- Jaw injury
- Lock jaw (trismus)
- Semi-conscious state of the patient



Remove the remains of foreign bodies with the suction pump



Ventilation “mouth to mouth”



Ventilation
“mouth to nose”

VENTILATION

- Can be carried out with the help of rescue facial mask



VENTILATION

- Mouth to mask ventilation

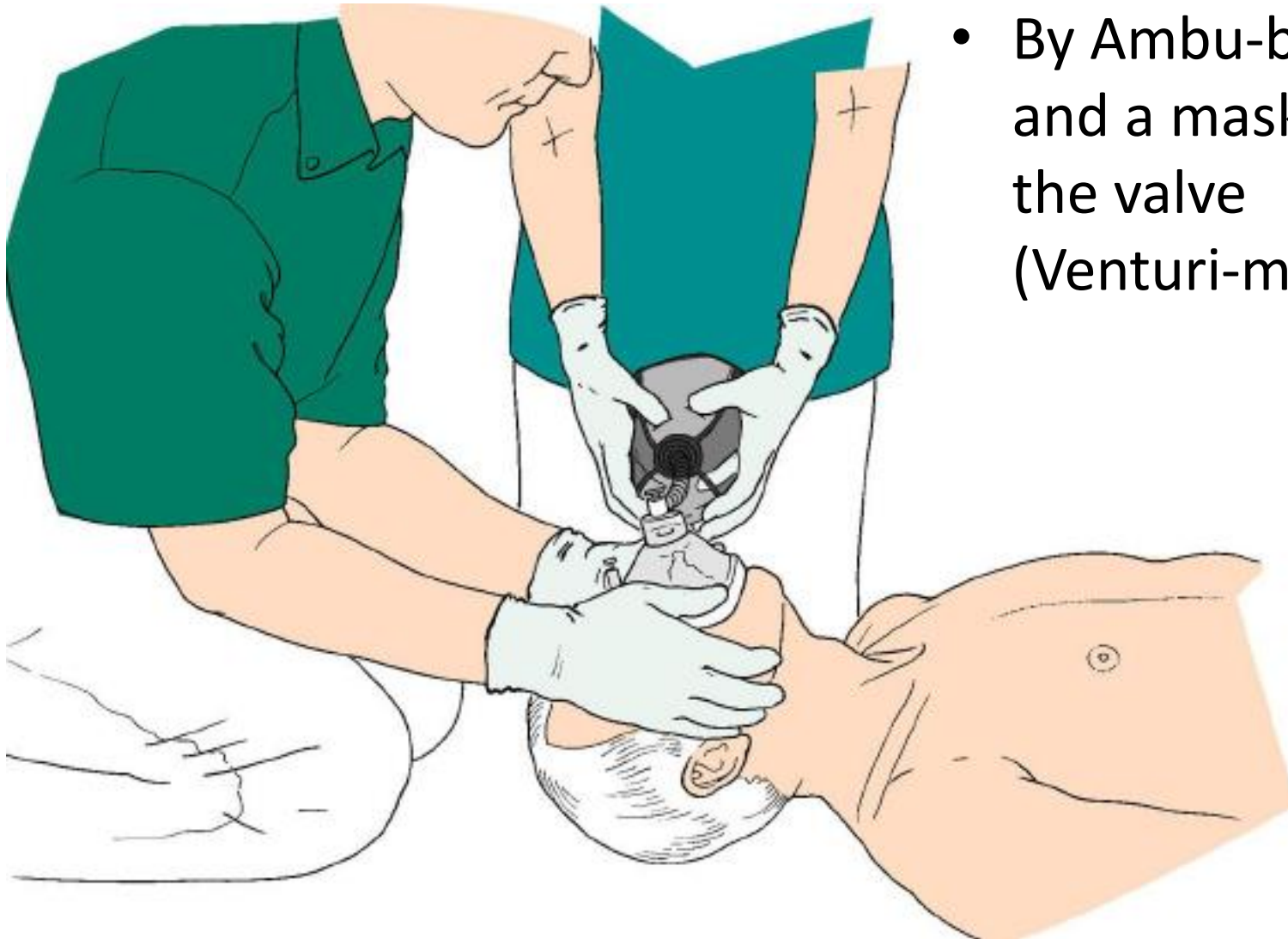


VENTILATION

mouth to mask

- Advantages:
 - Increases the ventilation effectiveness
 - Allows to avoid direct contact of a rescuer and a victim
 - Allows to minimize rescuer's contamination
 - Allows to increase Fraction of Inspired Oxygen (F_{iO_2})
- Restrictions
 - Maintenance of the air-tightness
 - Ingress of the air into the victim's stomach

VENTILATION



- By Ambu-bag and a mask with the valve (Venturi-mask)

VENTILATION

with the help of Ambu-bag and Venturi mask

- Advantages
 - Allows to avoid direct contact of a rescuer and a victim
 - Allows to increase O₂ concentration up to 85%
 - Can be used with rescue facial mask, Laryngeal Mask, Combitube, endotracheal tube and others
- Restrictions
 - Need an assistant (4 hands)
 - Risk of ineffective ventilation
 - Ingress of the air into the victim's stomach