

# AIRWAY MANAGEMENT AND VENTILATION

# AIRWAY MANAGEMENT AND VENTILATION

- Basic airway management and ventilation
- The laryngeal mask airway and Combitube
- Advanced techniques of airway management
- Basic mechanical ventilation

# Basic airway management and ventilation

## Objectives

- Causes of airway obstruction
- Recognition of airway obstruction
- Basic techniques for airway management
- Simple airway adjuncts
- Simple devices to ventilate the patient's lungs

# Common causes of airway obstruction

- Upper Airway
  - tongue
  - soft tissue oedema, foreign material
  - blood, vomit
- Larynx
  - laryngospasm, foreign material
- Lower Airway
  - secretions, oedema, blood
  - bronchospasm
  - aspiration of gastric contents

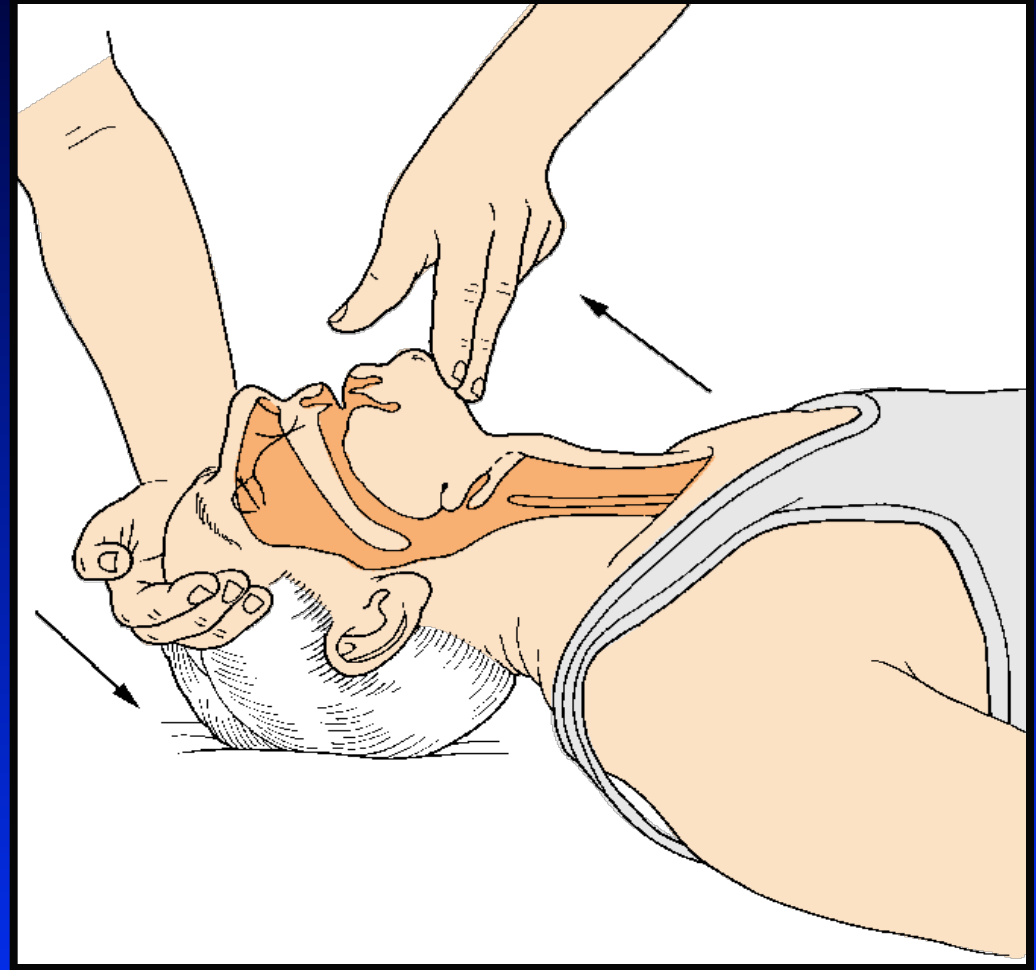
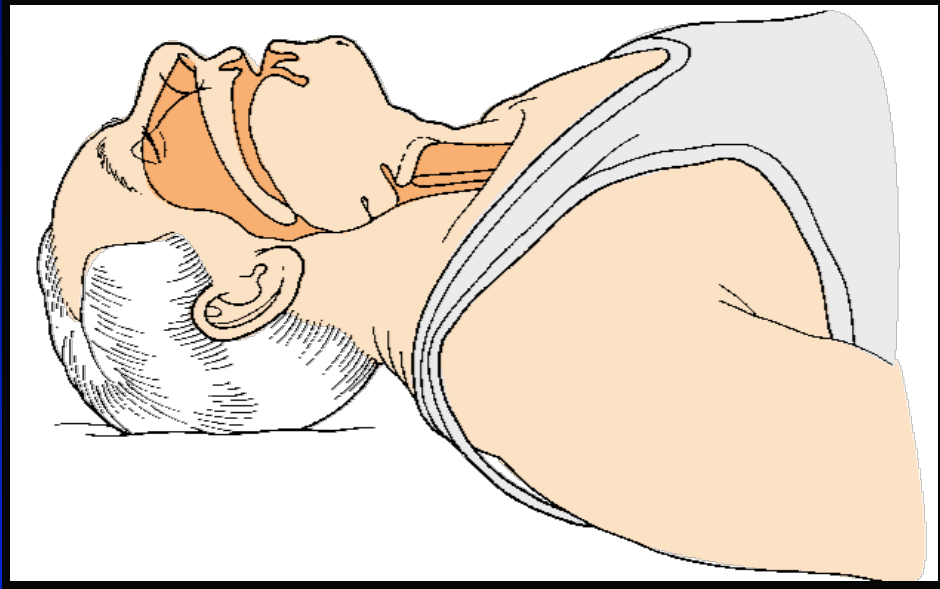
# Recognition of airway obstruction

- LOOK for chest/abdominal movement
- LISTEN at mouth and nose for breath sounds, snoring, gurgling
- FEEL at mouth and nose for expired air

# Opening the airway

- Head tilt
- Chin lift
- Jaw thrust
- CAUTION! – cervical spine injury
  - But, death from hypoxia is more common than from injury to the cervical spinal cord

# Head Tilt and Chin Lift

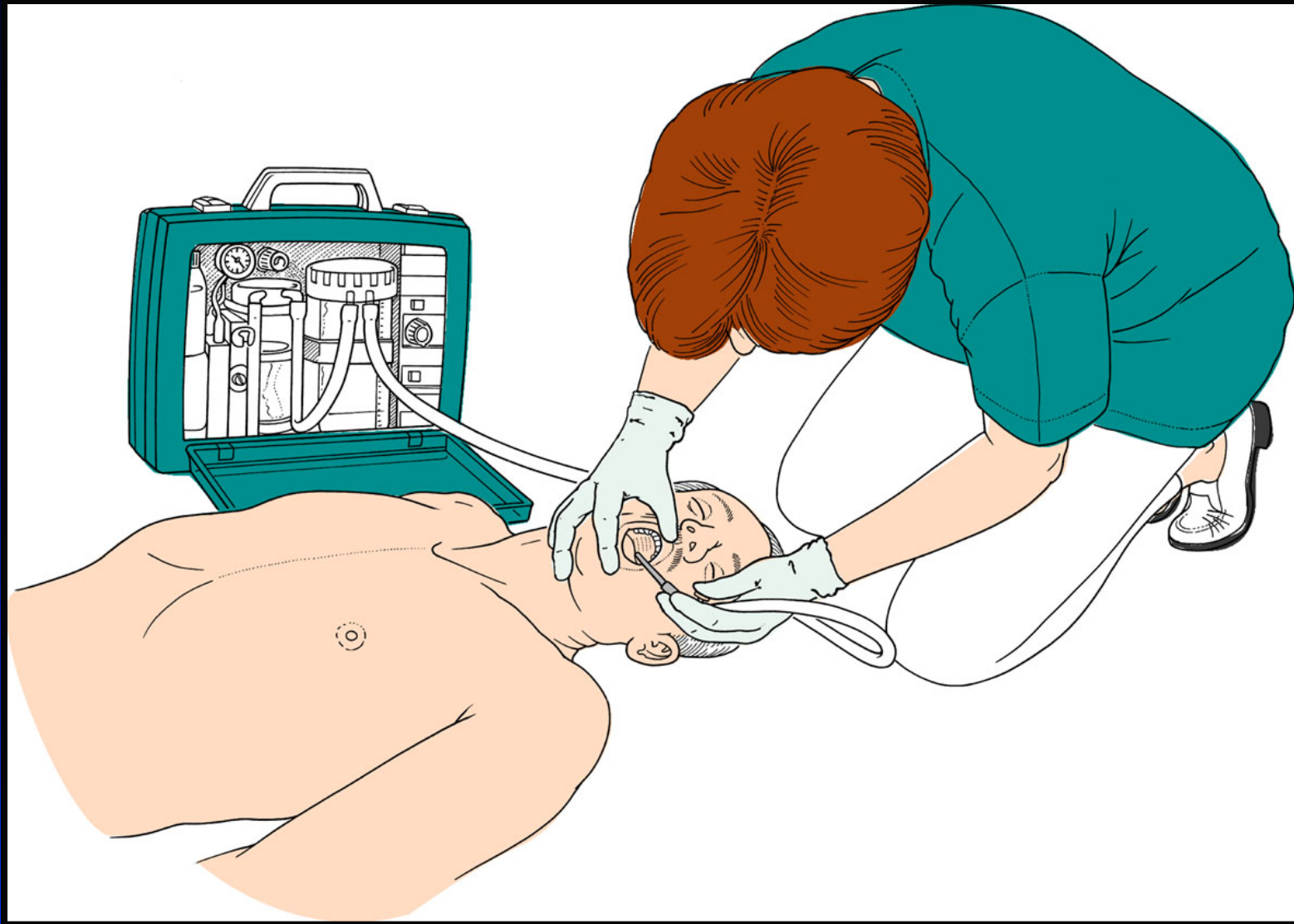


# Jaw Thrust





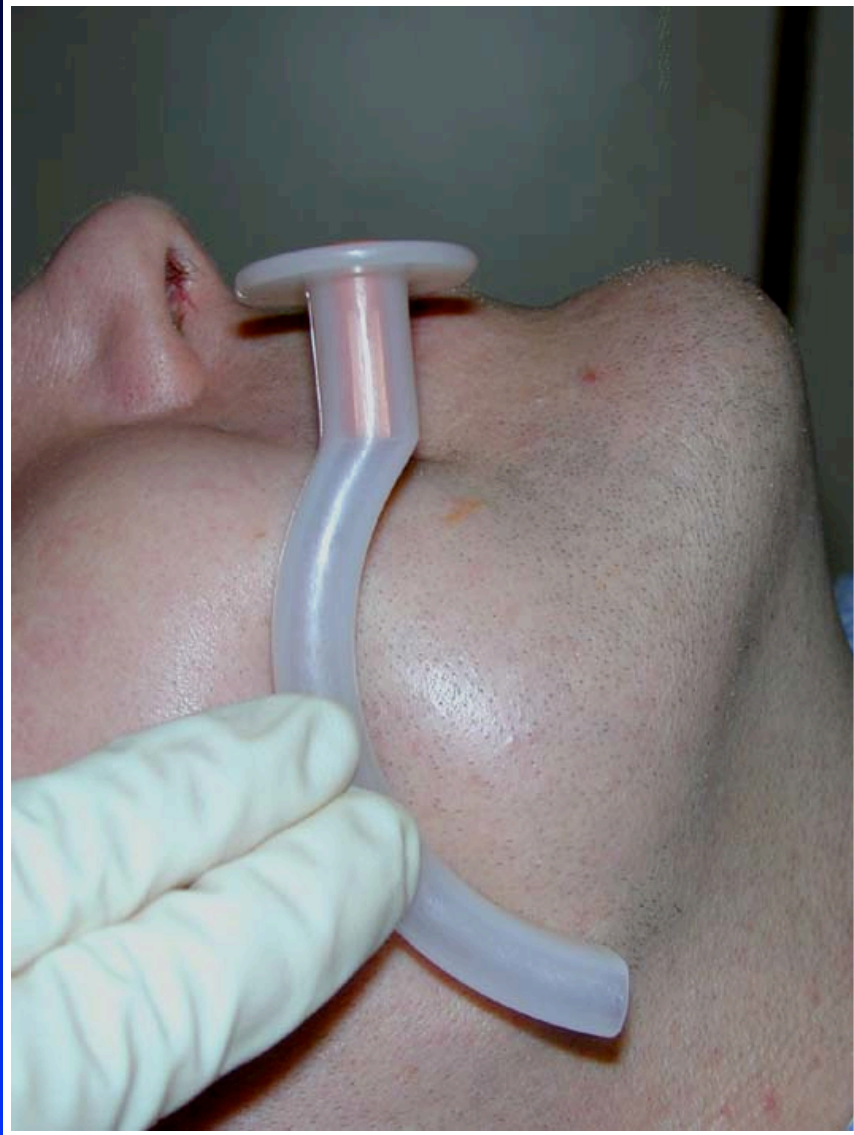
# Suction



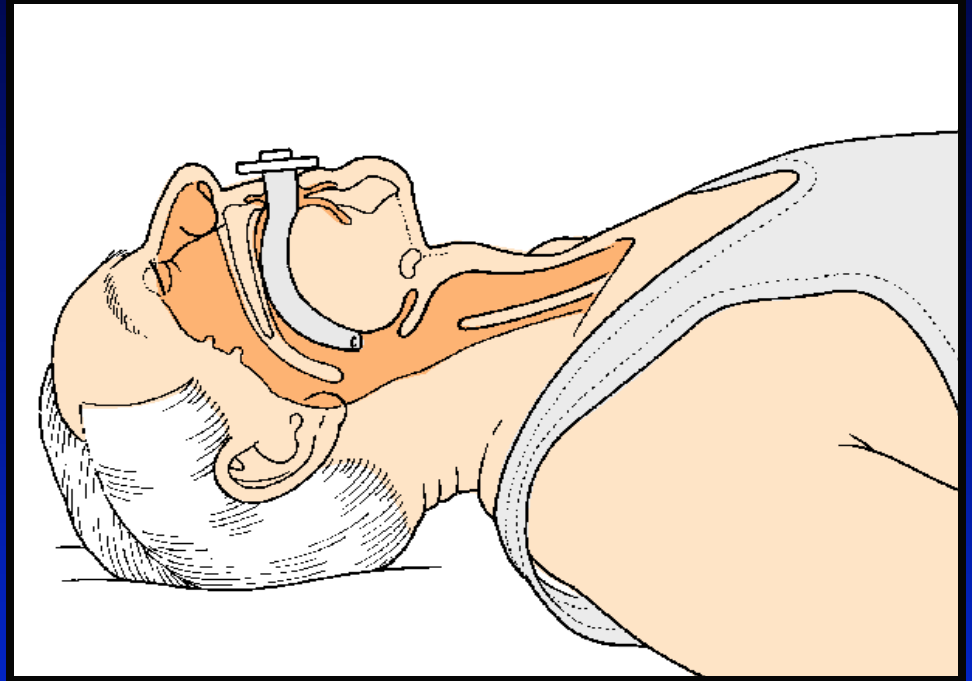
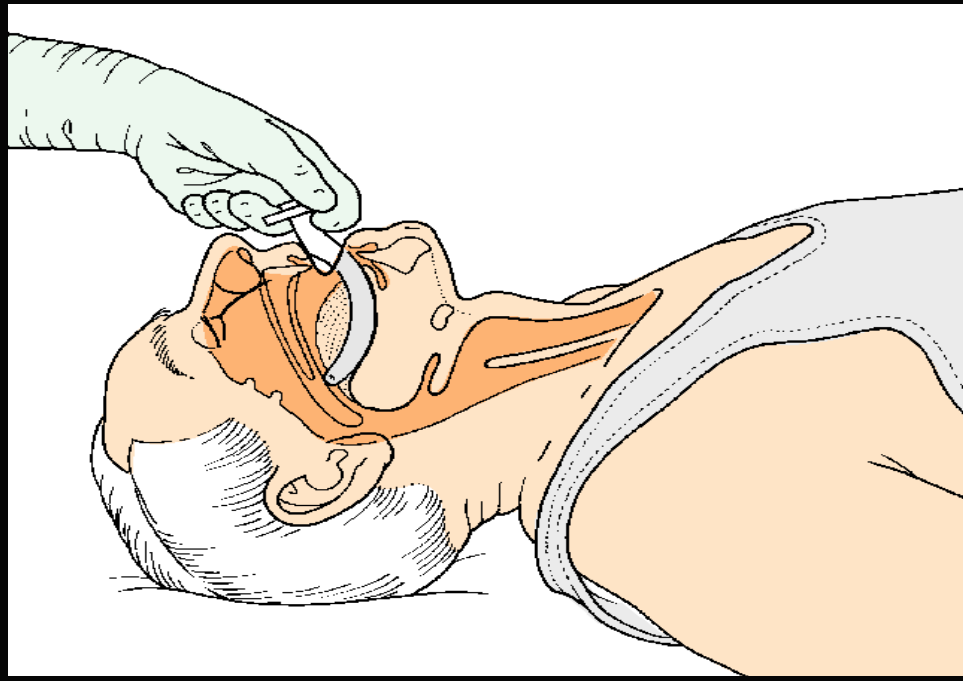
# Simple airway adjuncts



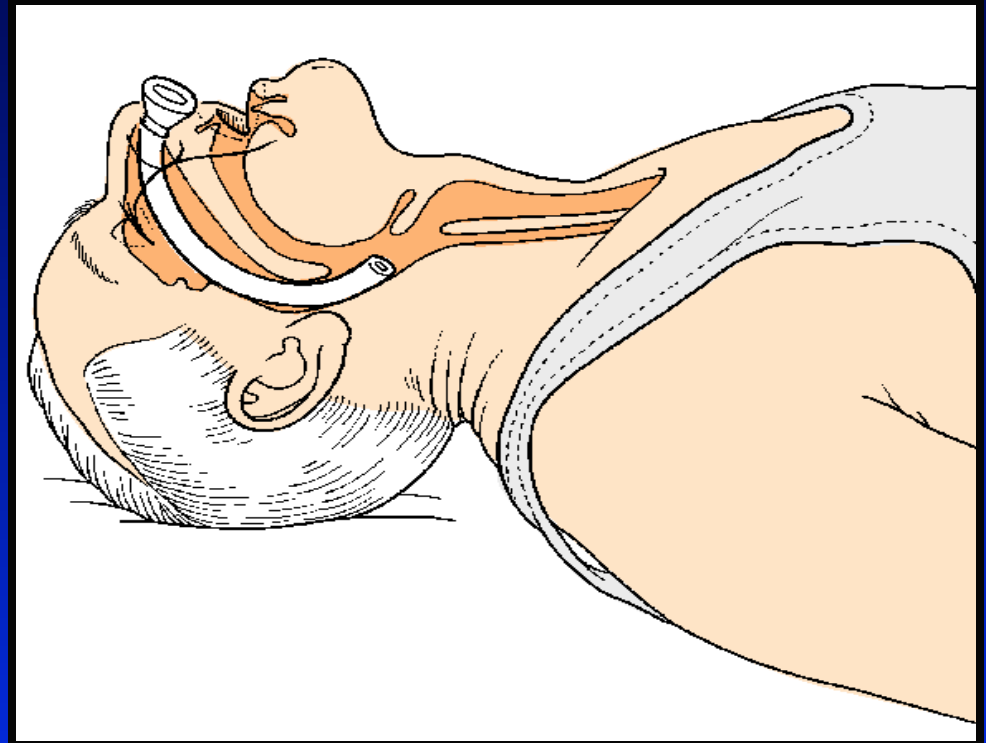
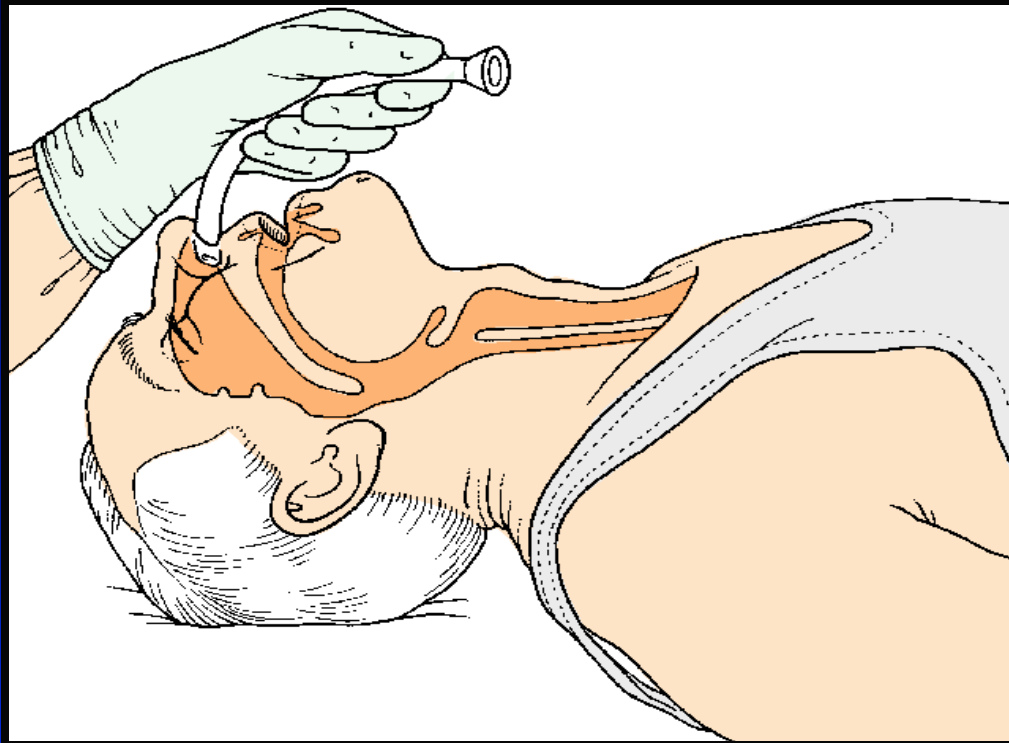
# Sizing an oropharyngeal airway



# Oropharyngeal airway insertion

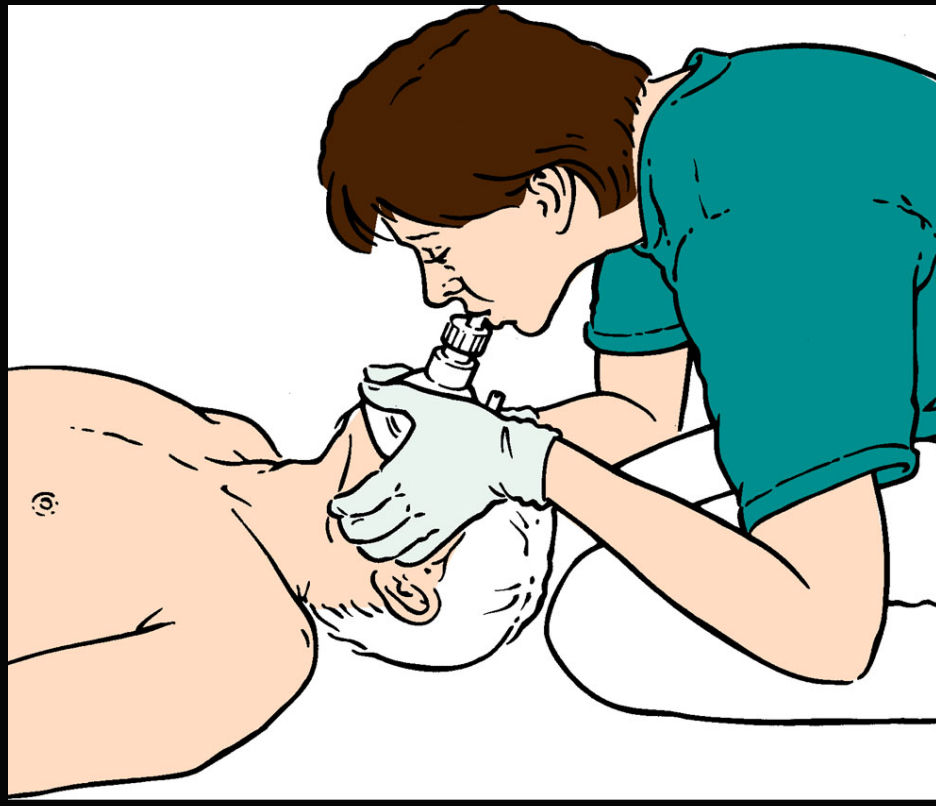


# Nasopharyngeal airway insertion





# Mouth to mask ventilation



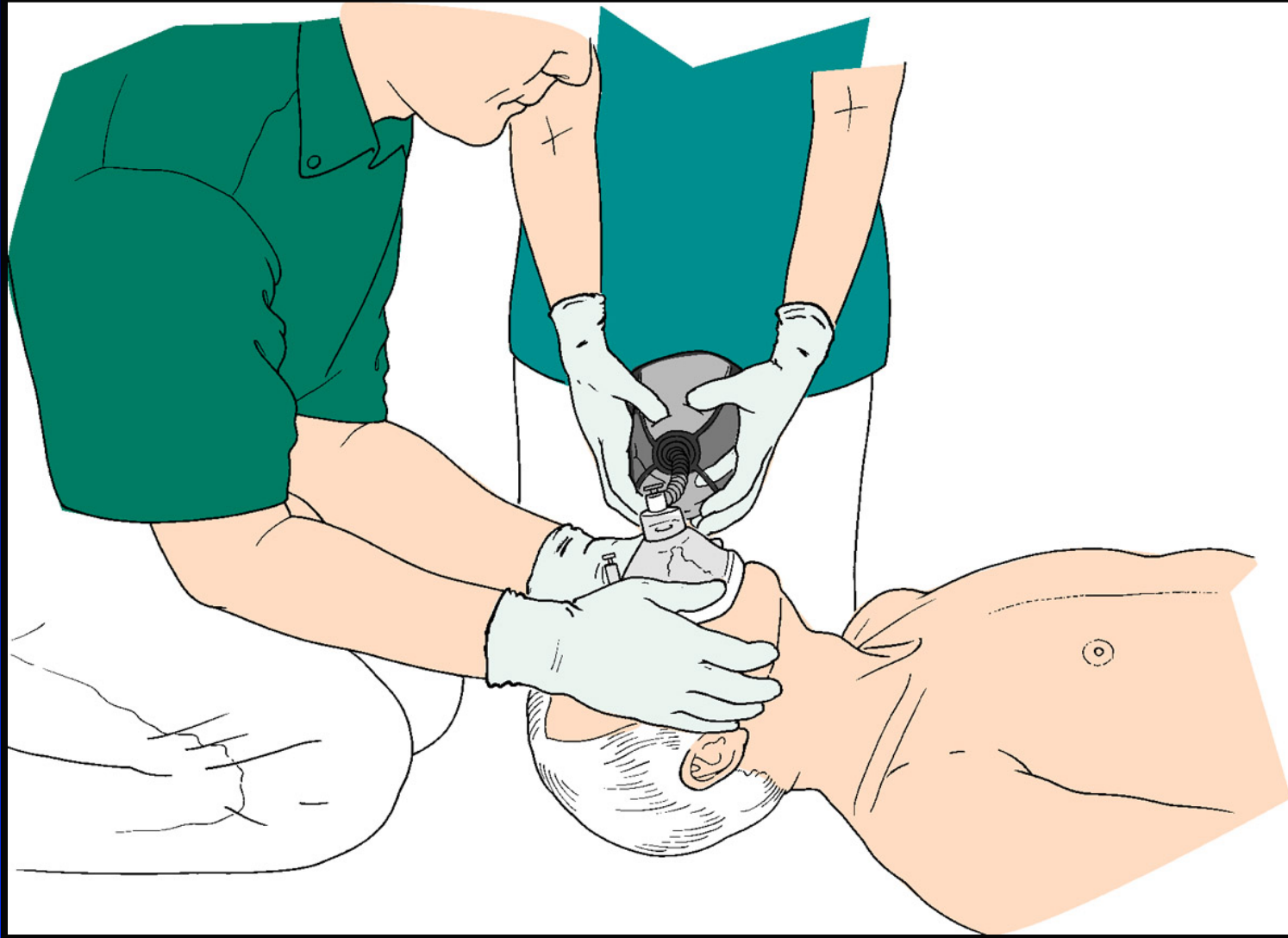
## Advantages:

- Avoids direct person to person contact
- Decreases potential for cross infection
- Allows oxygen enrichment

## Limitations:

- Maintenance of airtight seal
- Gastric inflation

# Bag-valve-mask, 2-person ventilation



# Ventilation using self inflating bag

## Advantages

- Avoids direct person to person contact
- Allows oxygen supplementation – up to 85%
- Can be used with facemask, LMA, Combitube, tracheal tube

## Limitations

*When used with a facemask:*

- Risk of inadequate ventilation
- Risk of gastric inflation
- Need two persons for optimal use



# The Laryngeal Mask Airway and Combitube

## Objectives

To understand:

- The role of the LMA and Combitube during CPR

# The Laryngeal Mask Airway

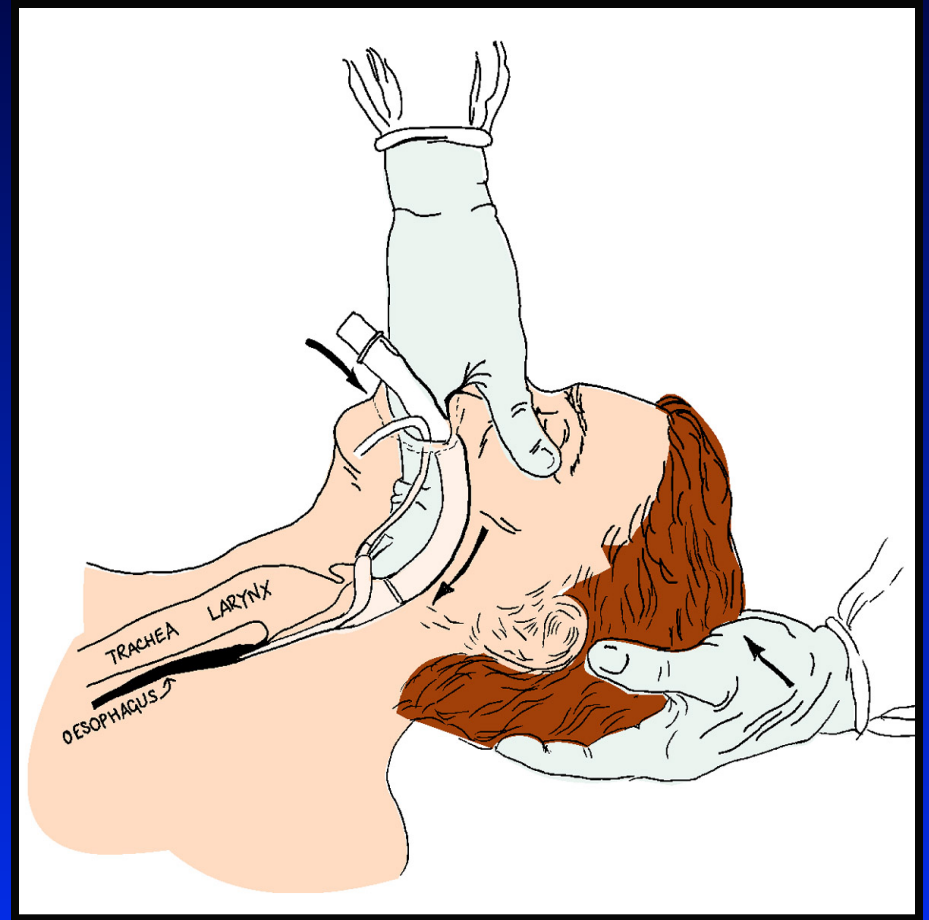
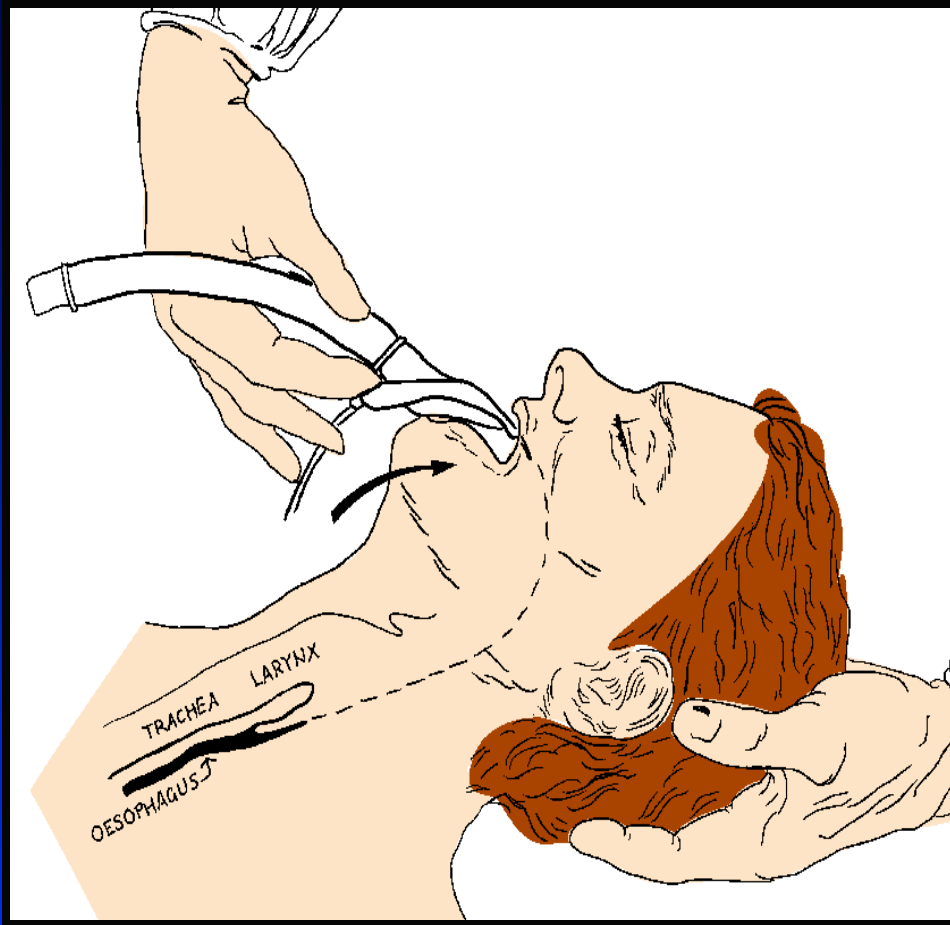
## Advantages

- Rapidly and easily inserted
- Variety of sizes
- More efficient ventilation than facemask
- Avoids the need for laryngoscopy

## Limitations

- No absolute guarantee against aspiration
- Not suitable if very high inflation pressures needed
- Unable to aspirate airway

# LMA Insertion



# The Combitube

## Advantages

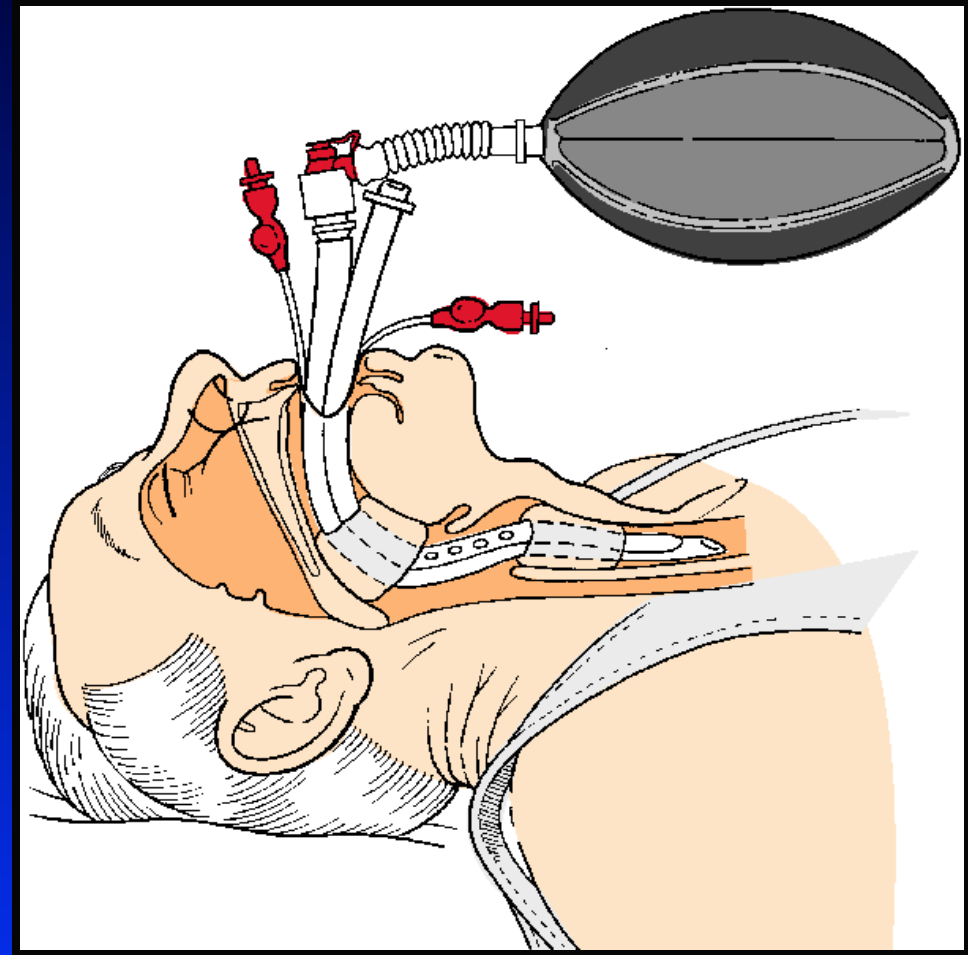
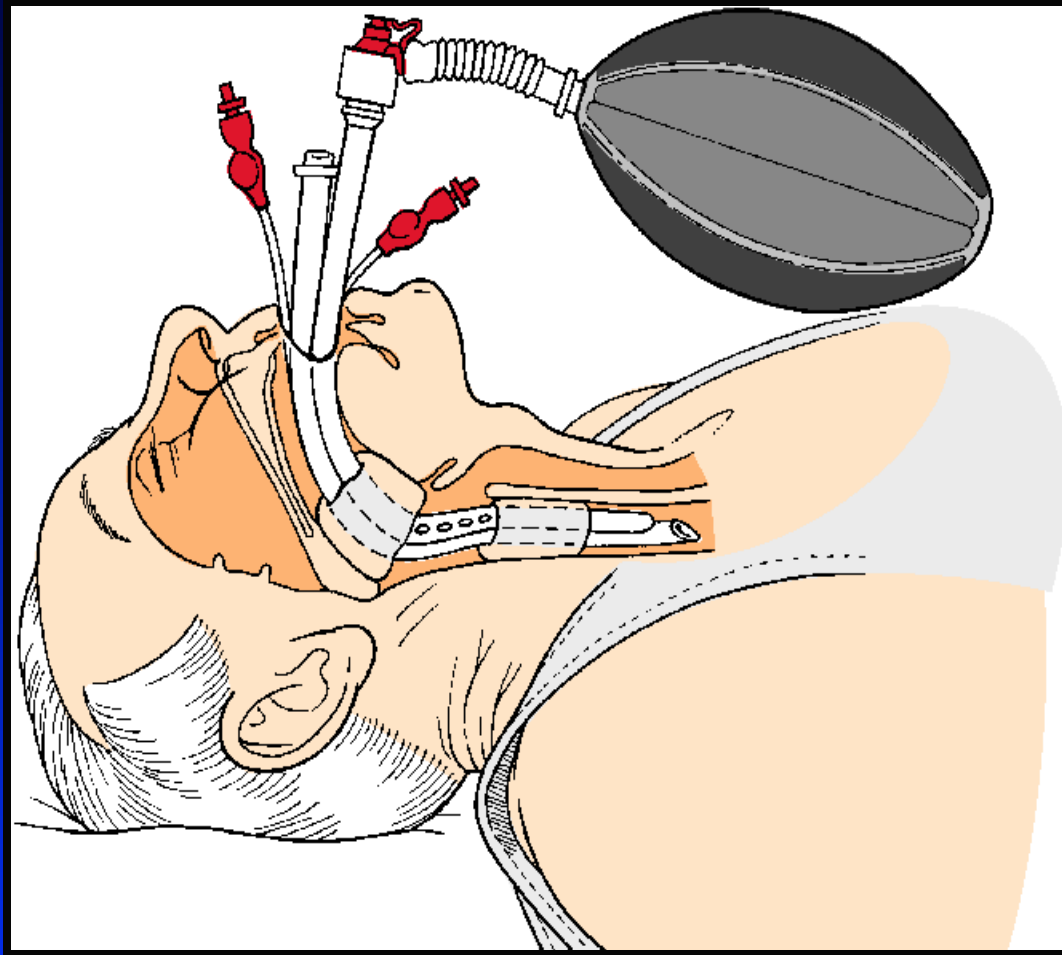
- Rapidly and easily inserted
- Avoids need for laryngoscopy
- Protects against aspiration
- Can be used if inflation pressures high

D20

## Limitations

- Available in 2 sizes only
- Potential for ventilation via wrong lumen
- Damage to cuffs on insertion
- Trauma on insertion
- Single use

# Ventilation with the Combitube



# Advanced techniques of airway management

## Objectives

To understand:

- The advantages and limitations of tracheal intubation during CPR
- The technique of tracheal intubation
- Methods for confirming correct placement of a tracheal tube
- The role of needle cricothyroidotomy

# Tracheal Intubation

## Advantages

- Allows ventilation with up to 100% O<sub>2</sub>
- Isolates airway, preventing aspiration
- Allows aspiration of the airway
- Alternative route for drug administration

D23

## Limitations

- Training and experience essential
- Failed insertion, oesophageal placement
- Potential to worsen cervical cord or head injury

# Tracheal Intubation

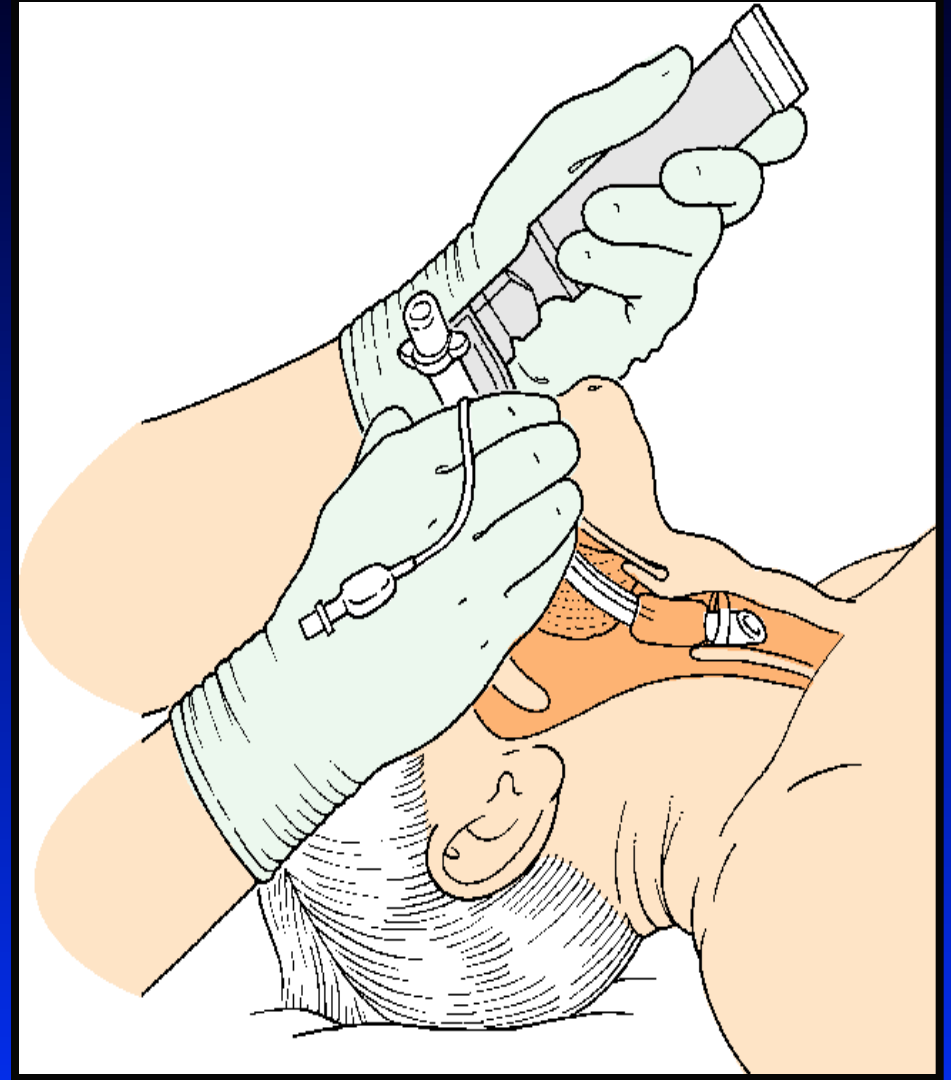
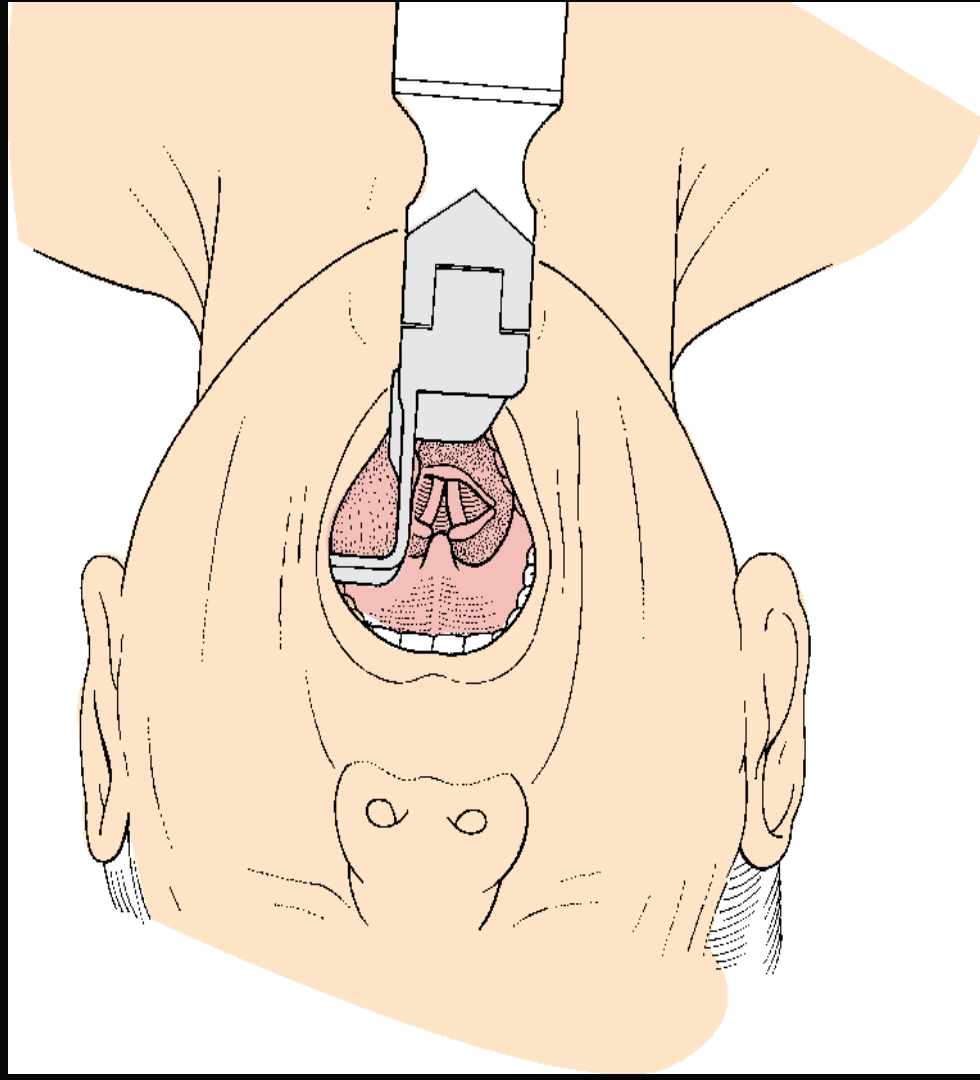
## Attempting intubation:

- Pre-oxygenate the patient
- Allow 30 seconds for attempt
- Insert tube through larynx under direct vision
- If in doubt or difficulty, re-oxygenate before further attempts

***Patients are harmed by failure of oxygenation, not failure of intubation!***



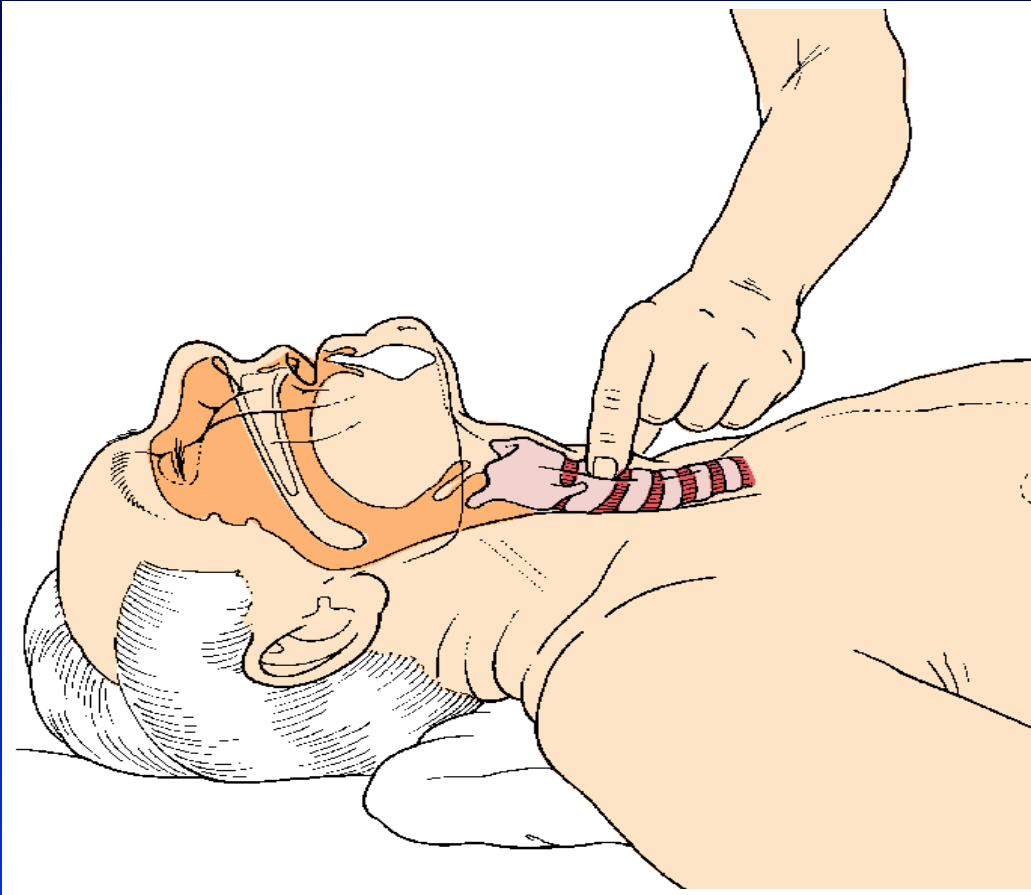
# Insertion of Tracheal Tube



# Confirming correct placement of a tracheal tube

- Direct visualisation at laryngoscopy
- Auscultation:
  - Bilaterally, mid-axillary line
  - Over the epigastrium
- Symmetrical movement of the chest during ventilation
- Oesophageal detector device
- Capnometry

# Cricoid Pressure



- Anteroposterior pressure on cricoid cartilage by an assistant to occlude the oesophagus against cervical vertebra

# Cricoid Pressure

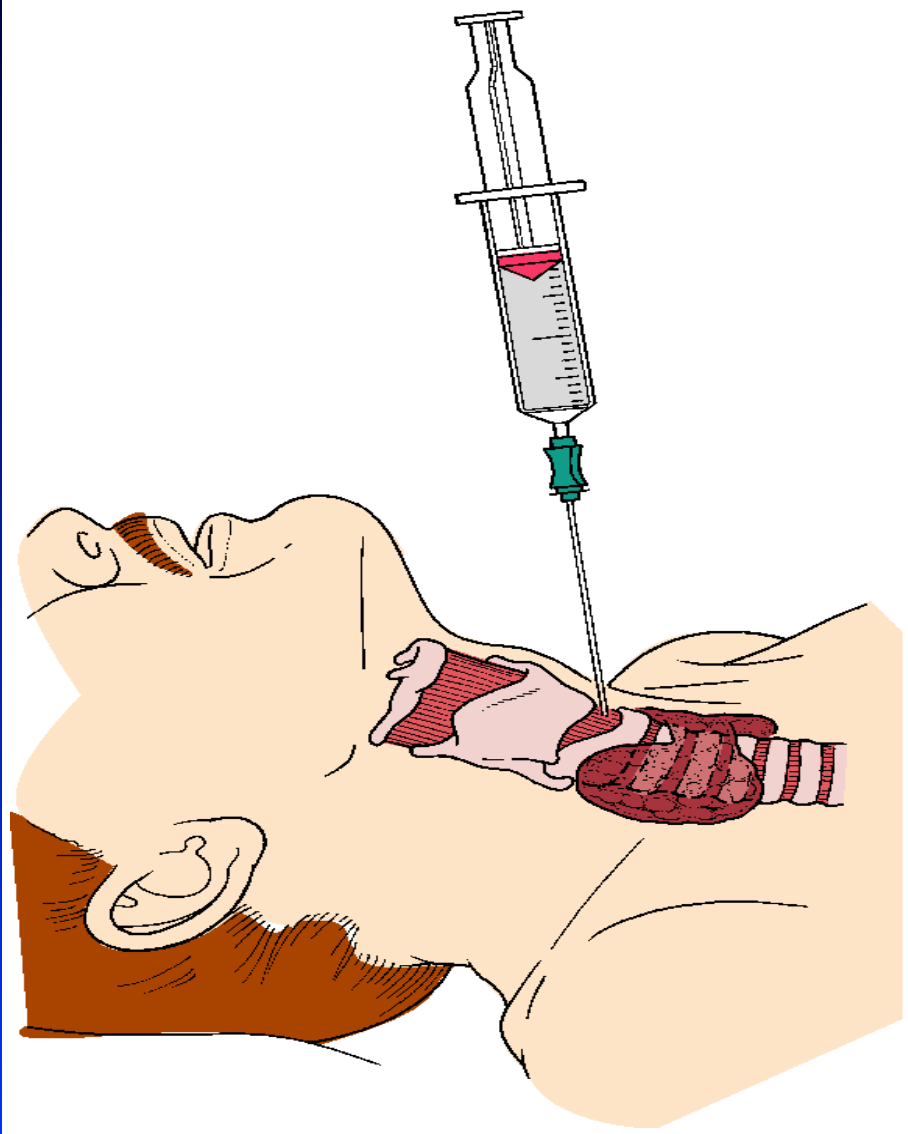
## Advantages

- Reduces risk of regurgitation and aspiration
- Useful during intubation, ventilation with facemask or LMA

## Limitations

- May make intubation more difficult
- May impair ventilation via facemask , LMA
- Avoid if active vomiting

# Needle Cricothyroidotomy



## Indication

- Failure to provide an airway by any other means

## Complications

- Malposition of cannula
  - Emphysema
  - Haemorrhage
  - Oesophageal perforation
- Hypoventilation
- Barotrauma

# Any Questions?