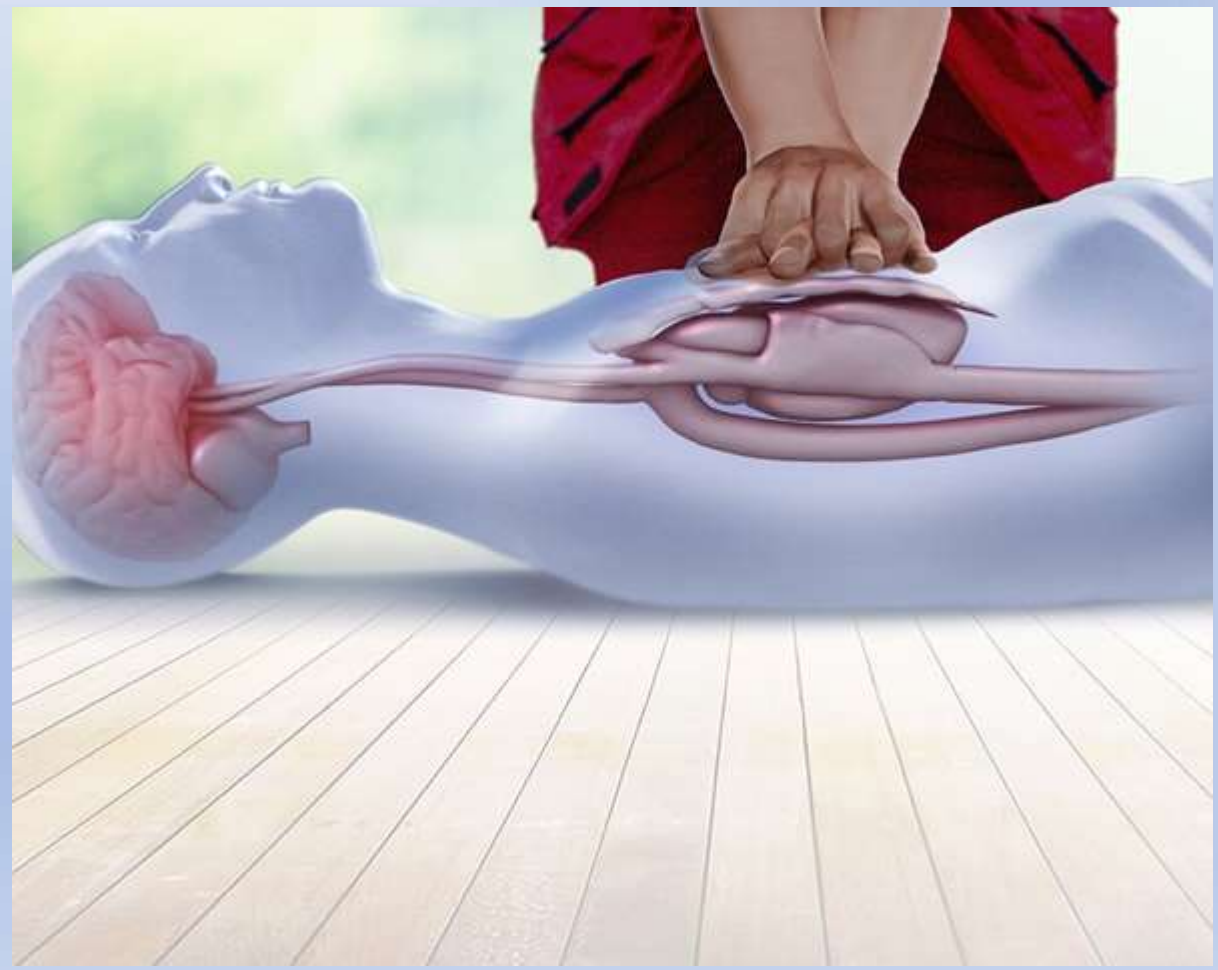

به نام خدا

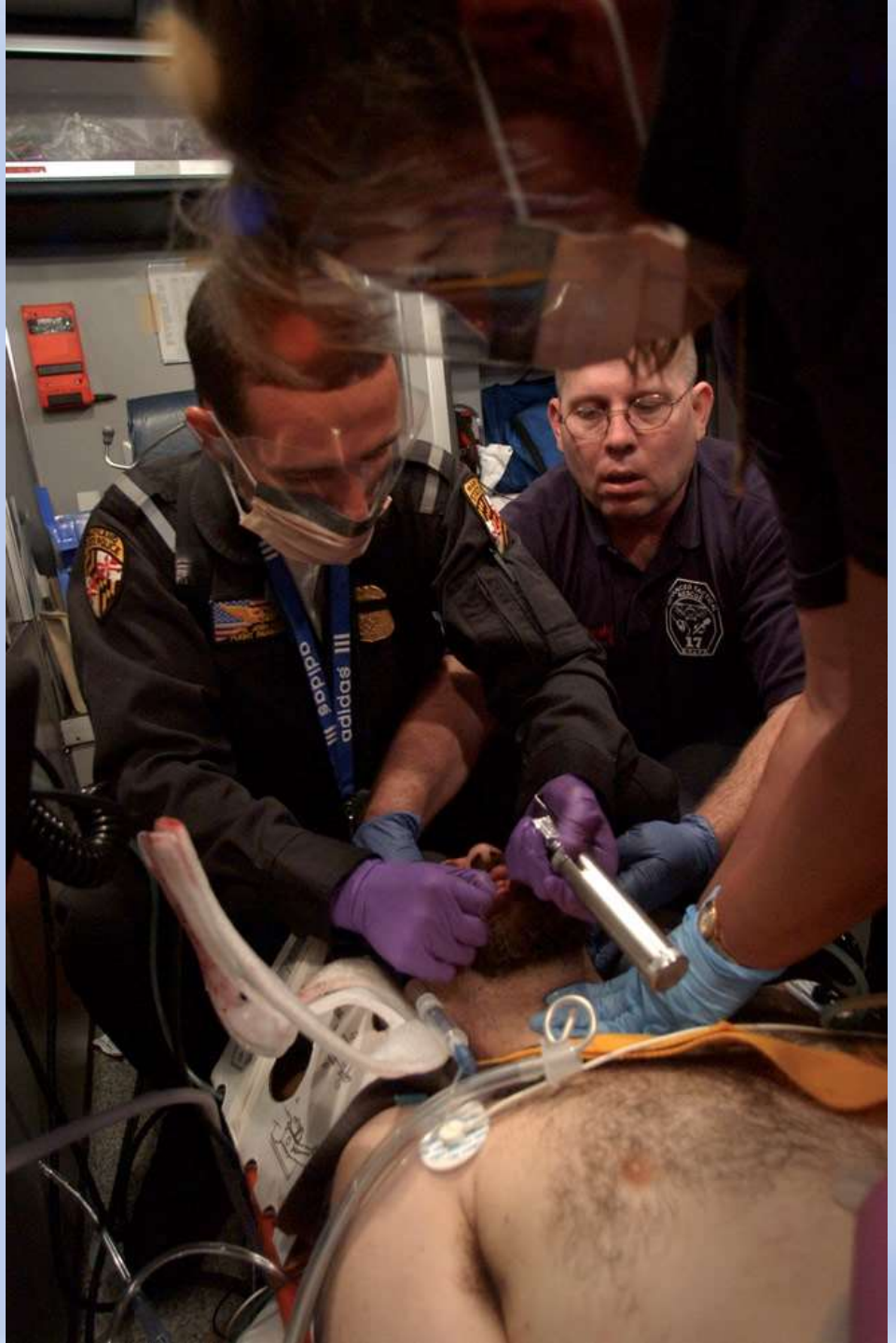
Airway Management in C.P.R

Dr.SIAMAK RIMAZ

Anesthesiologist

(G.U.M.S)

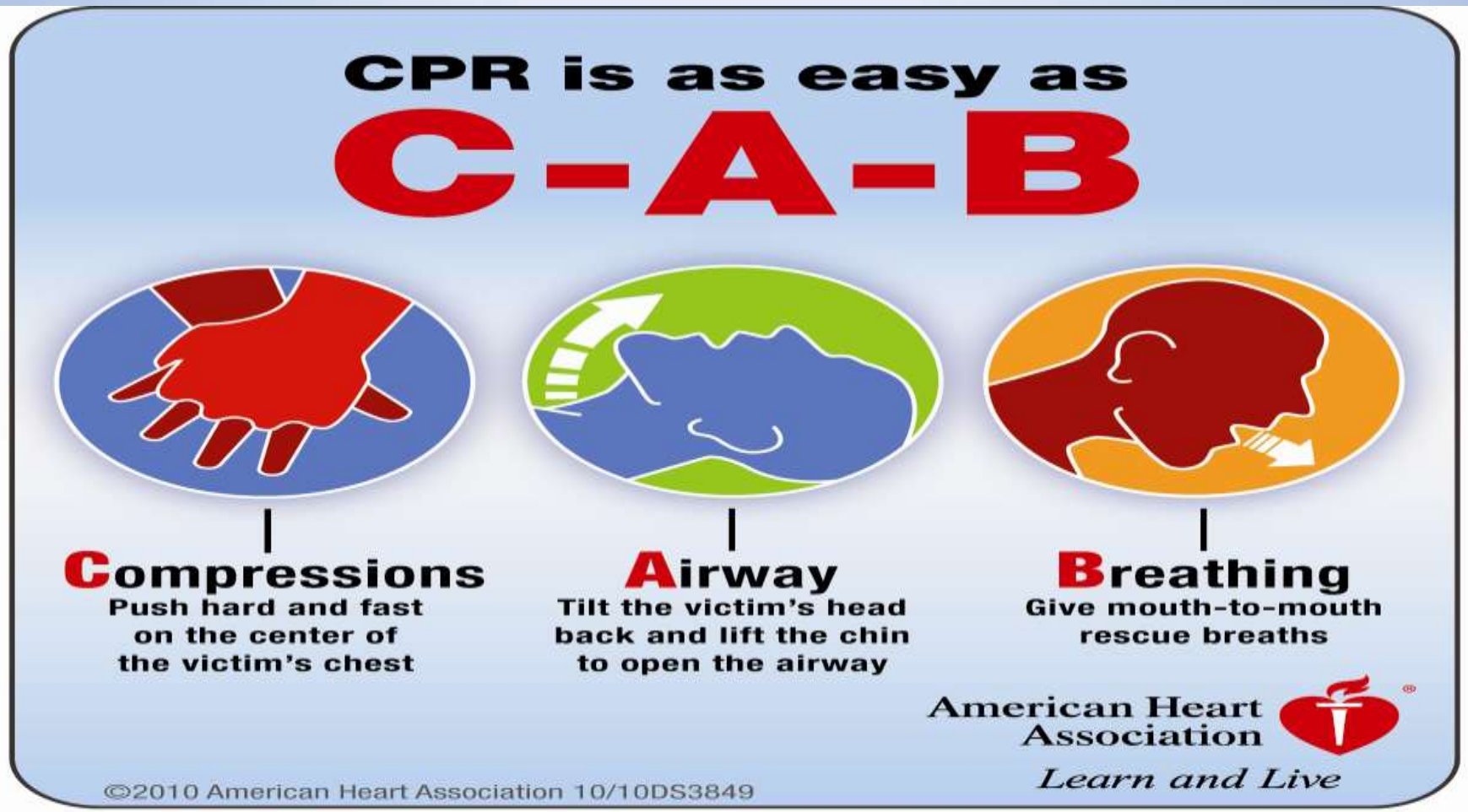




Airway Management and Ventilation

Dr.SiamaK RimaZ
(Anesthesiologist)

ABCDE


CPR is as easy as
C-A-B
Compressions
Push hard and fast on the center of the victim's chest
Airway
Tilt the victim's head back and lift the chin to open the airway
Breathing
Give mouth-to-mouth rescue breaths
American Heart Association
Learn and Live
©2010 American Heart Association 10/10DS3849

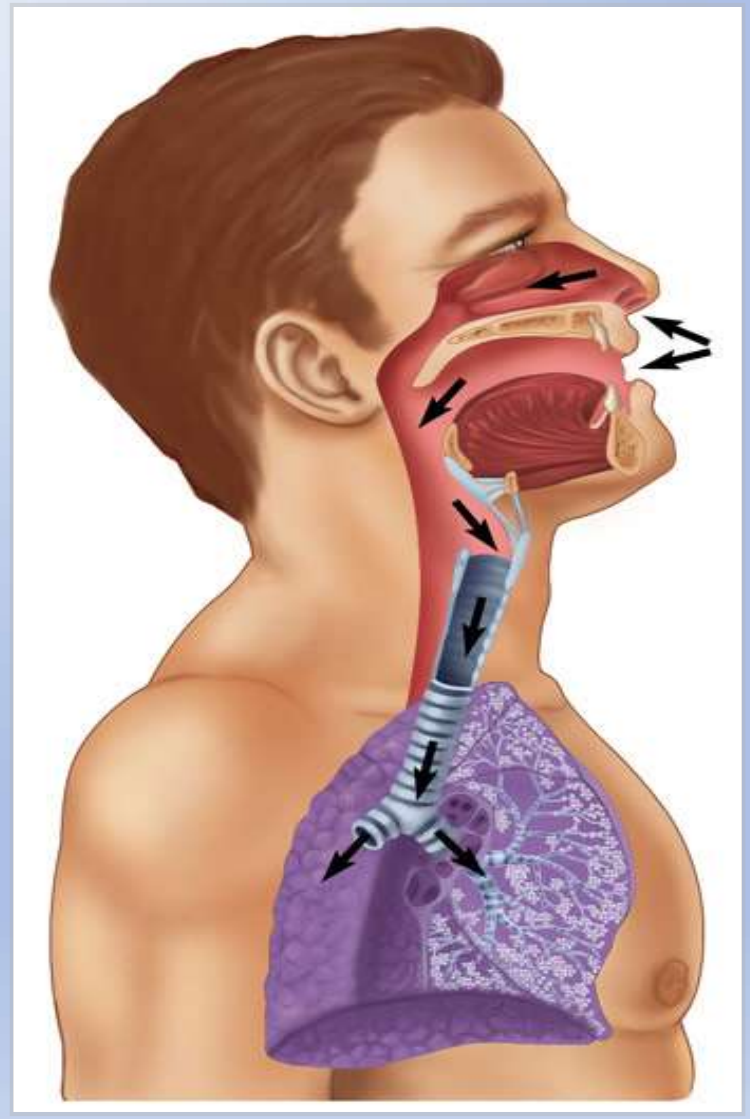
به ازاي هر 30 ماساژ 2 بار تنفس دهيد

Basic Airway Management

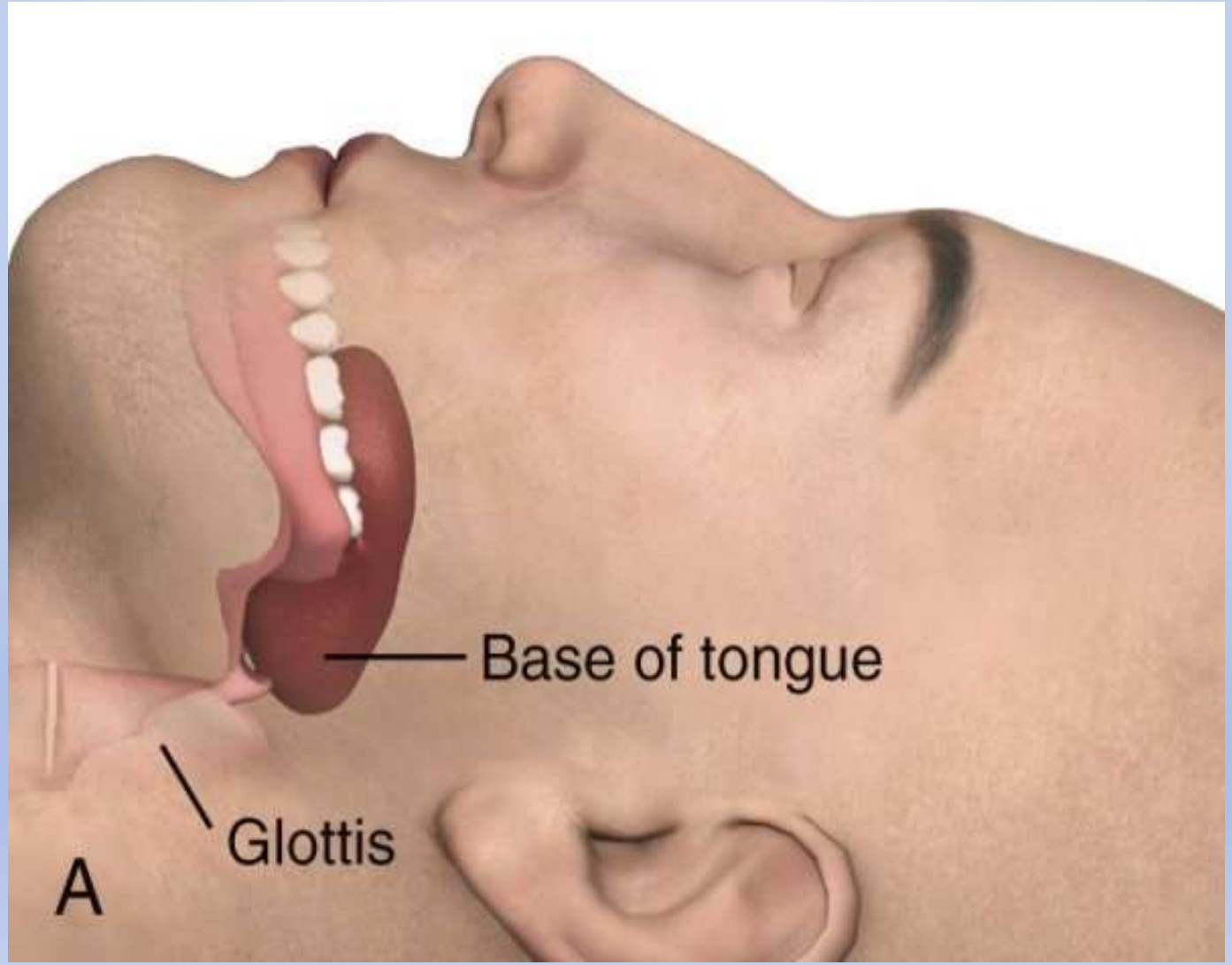
Opening the Airway

Airway Management

- Air reaches the lungs only through the trachea.
  - In a compromised airway, clearing the airway and maintaining patency are vital.



The airway can be obstructed by the tongue and or collapse of the airway.



Opening the Airway

- ***Manual Airway Maneuvers:***

- The Head-Tilt/Chin-Lift Maneuver

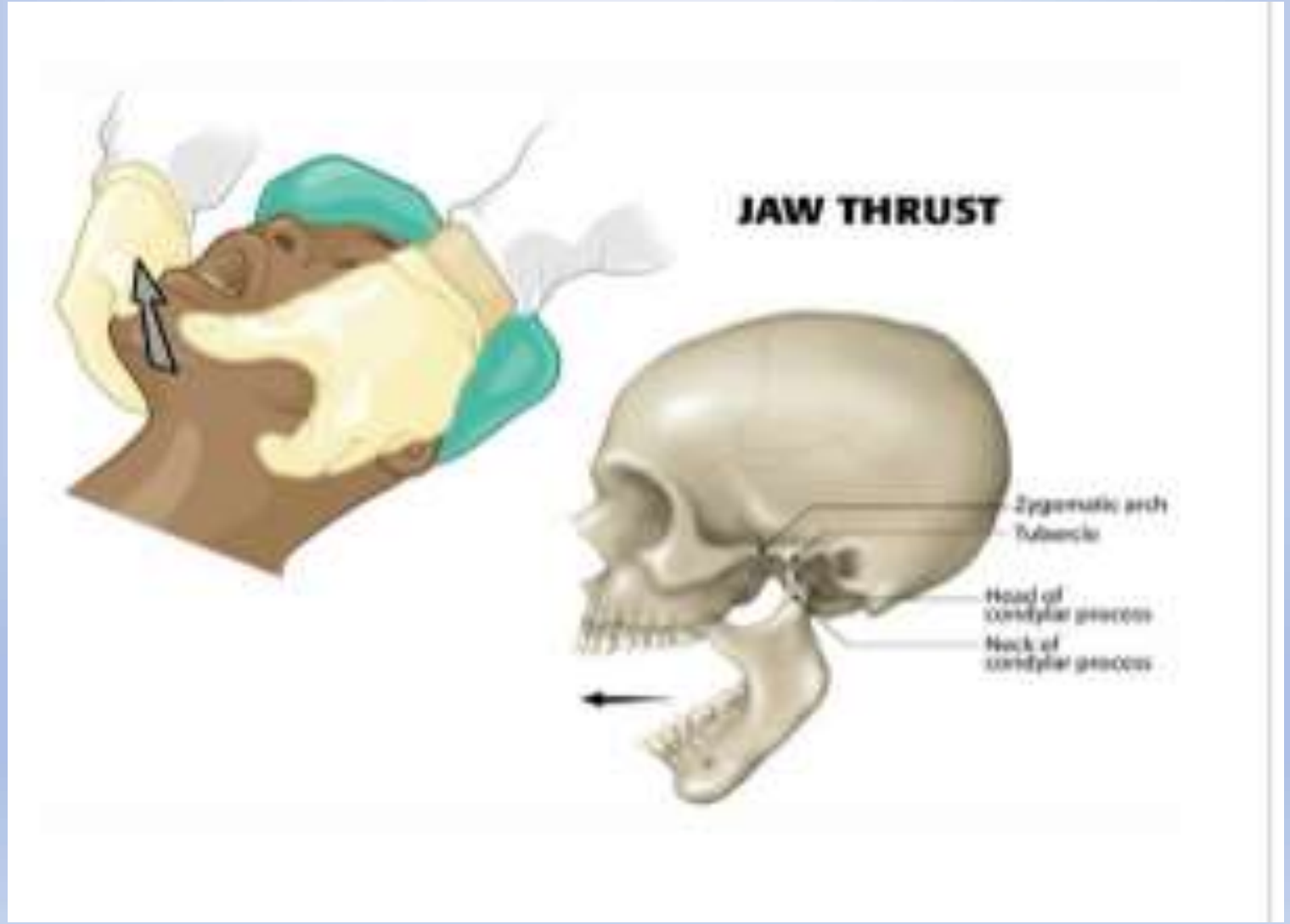
- The Jaw-Thrust Maneuver

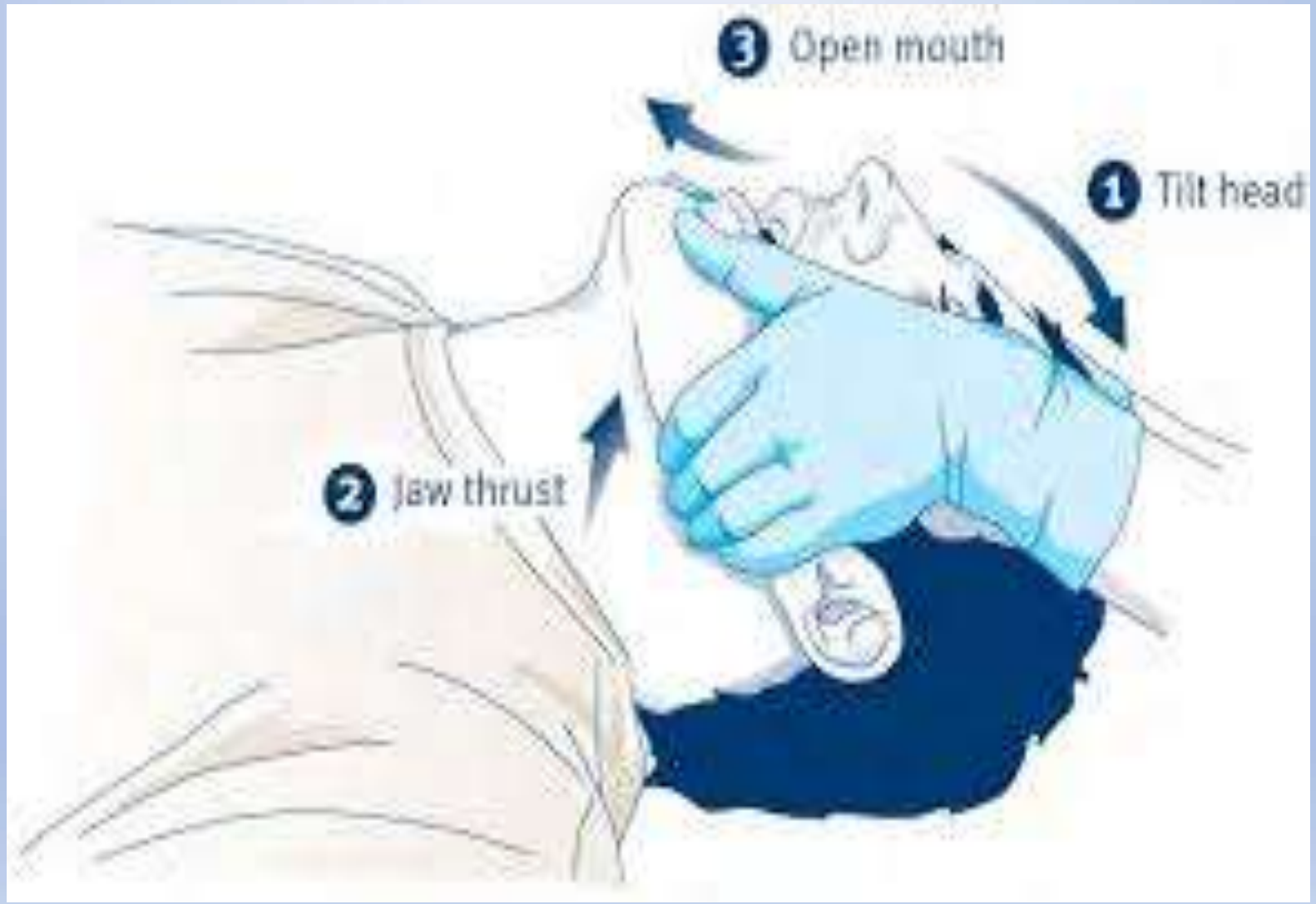
The Head-Tilt/Chin-Lift Maneuver

Head-Tilt
Chin-Lift Maneuver

The Jaw-Thrust Maneuver

Jaw-Thrust Maneuver




3 Open mouth
1 Tilt head
2 Jaw thrust

Manual Airway Maneuvers

در بیماران ***مشکوک به ترومای گردن***،***بهترین*** مانور جهت باز کردن راه هوائی بیمار،مانورJaw-thrust-only در وضعیت Nutral Position همراه با In-Line Stabilization گردن میباشد.

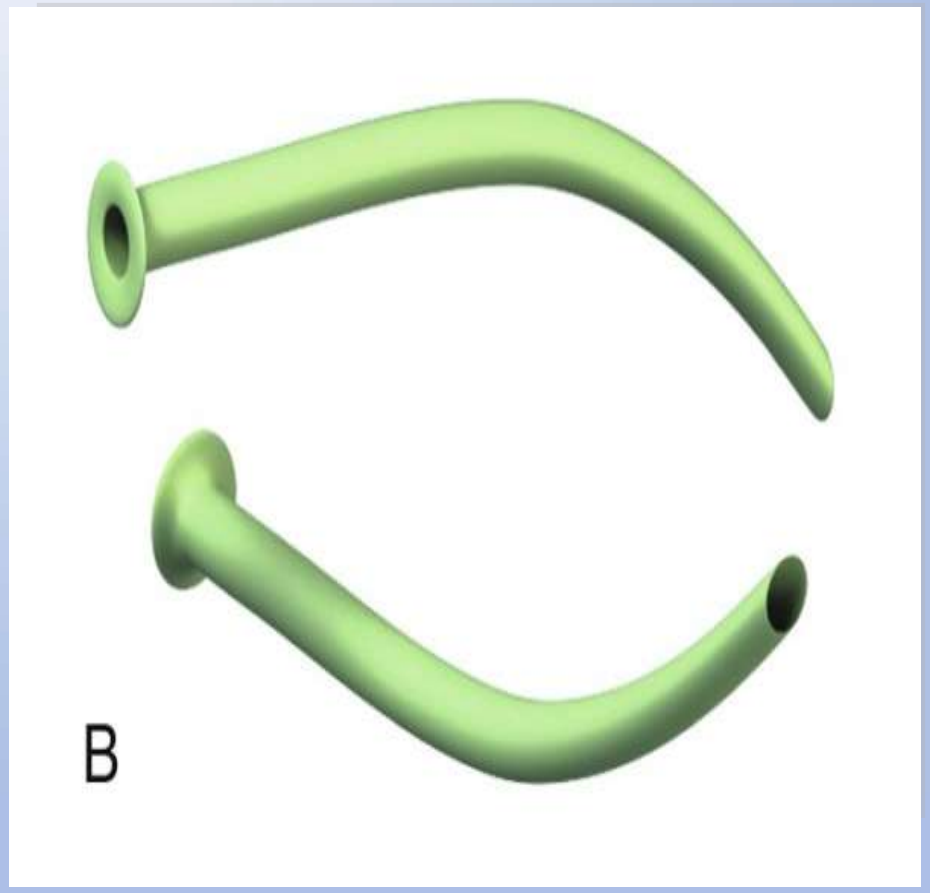
Airway Adjuncts

- Airway position and maneuvers are short-term solutions:

- Two most common airway adjuncts:
  - Oropharyngeal airway (OPA)

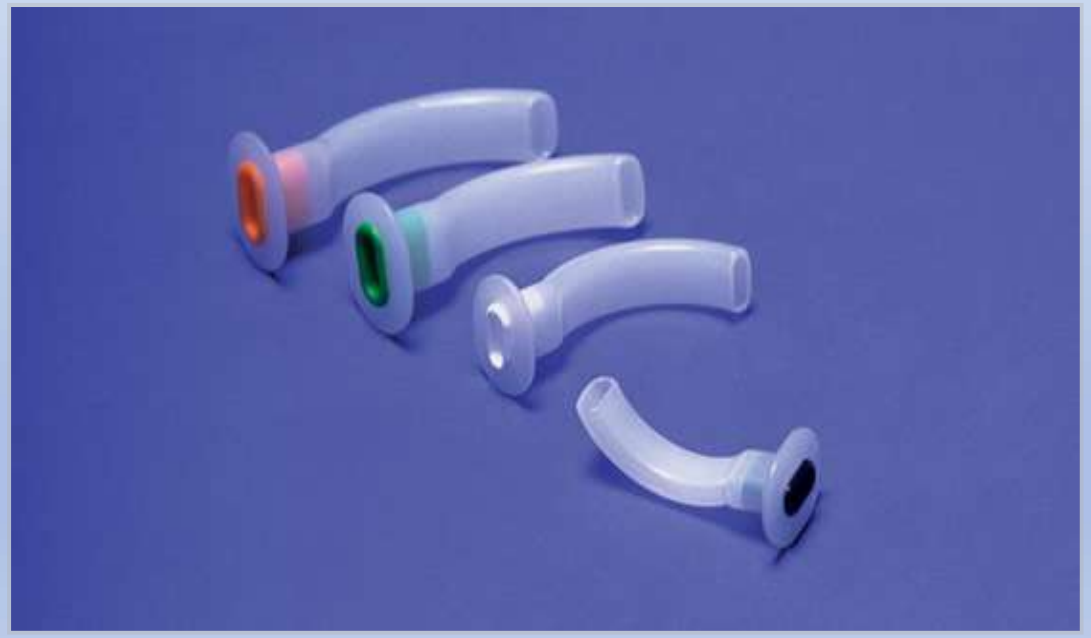
  - Nasopharyngeal airway (NPA)

Artificial Airways



Oropharyngeal (Oral) Airway

- Curved, hard plastic device
- Should be inserted in unresponsive patients who have no gag reflex



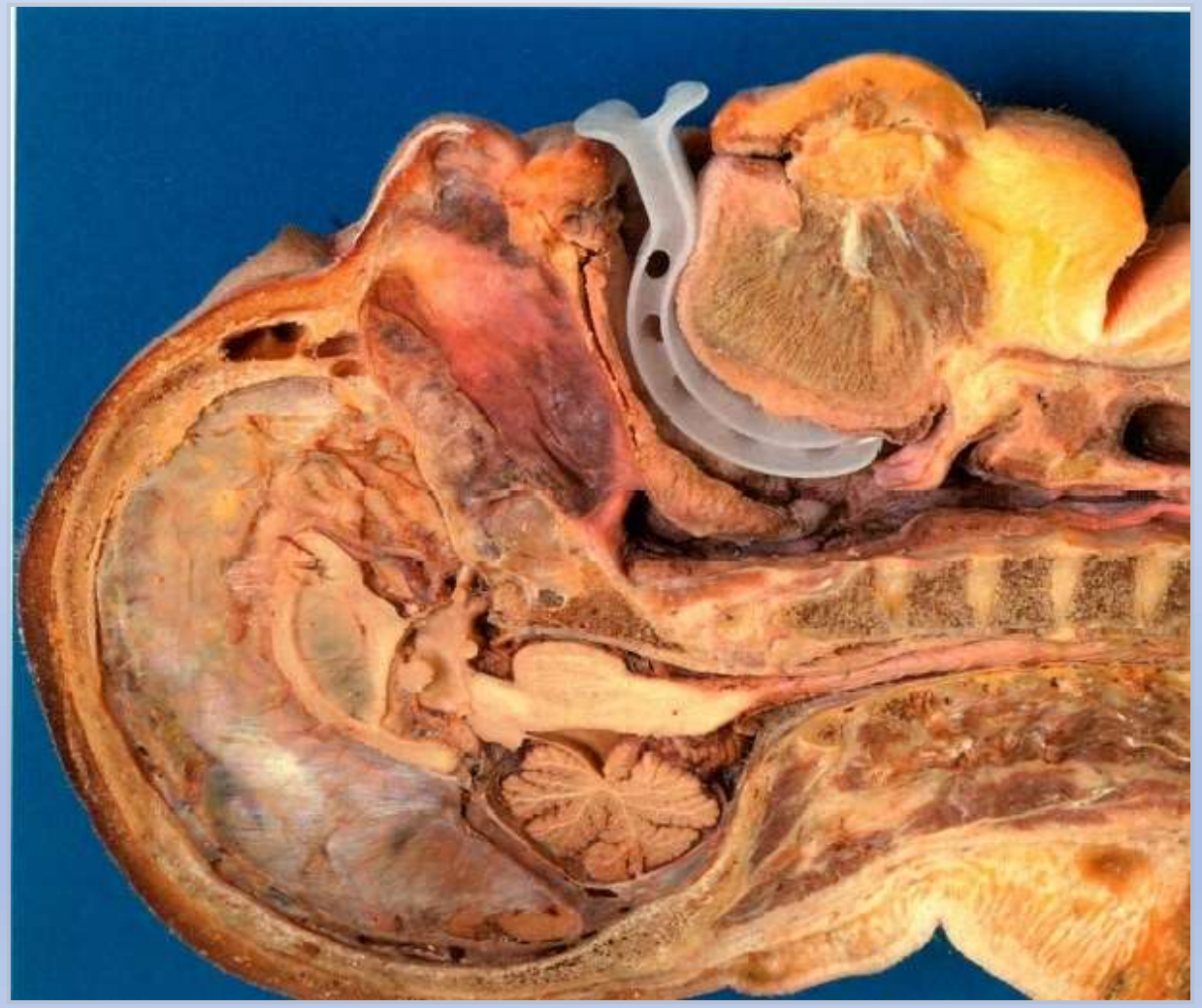
Find the correct size

An airway of correct size will extend from the *corner of the mouth to the earlobe* or the angle of the mandible.

Oropharyngeal Airway Placement

Oropharyngeal Airway Placement

Oropharyngeal Airway



Nasopharyngeal (Nasal) Airway

correct size will extend from the tip of the nose to the earlobe.

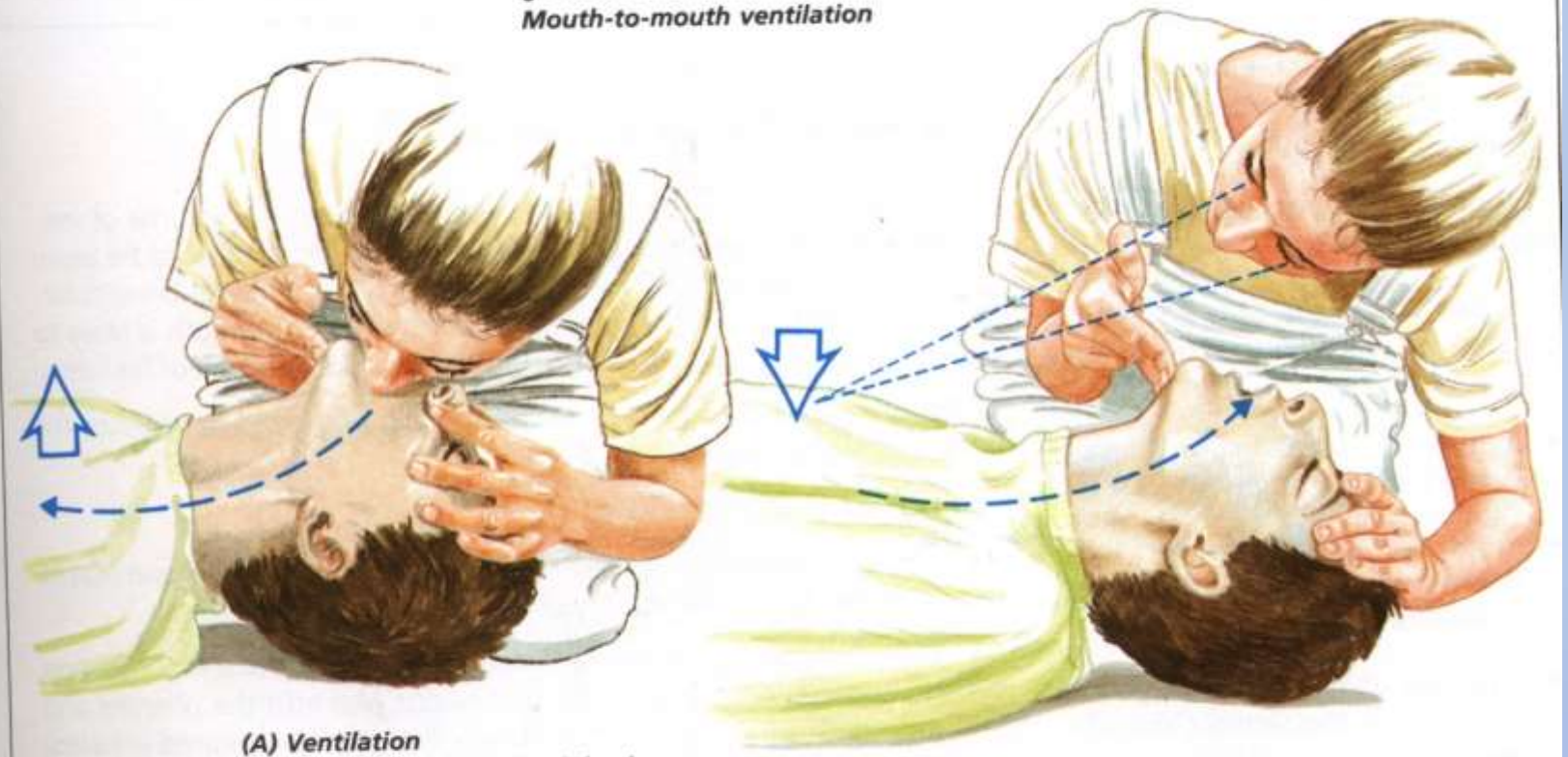
lubricate the airway prior to insertion.

Nasopharyngeal Airway Placement

Nasopharyngeal Airway Placement

Nasopharyngeal Airway

6
Mouth-to-mouth ventilation



(A) Ventilation
With the fingers of your hand that is on the victim's forehead, pinch his nostrils closed.

Seal your lips around his mouth and exhale until you see his chest rise.

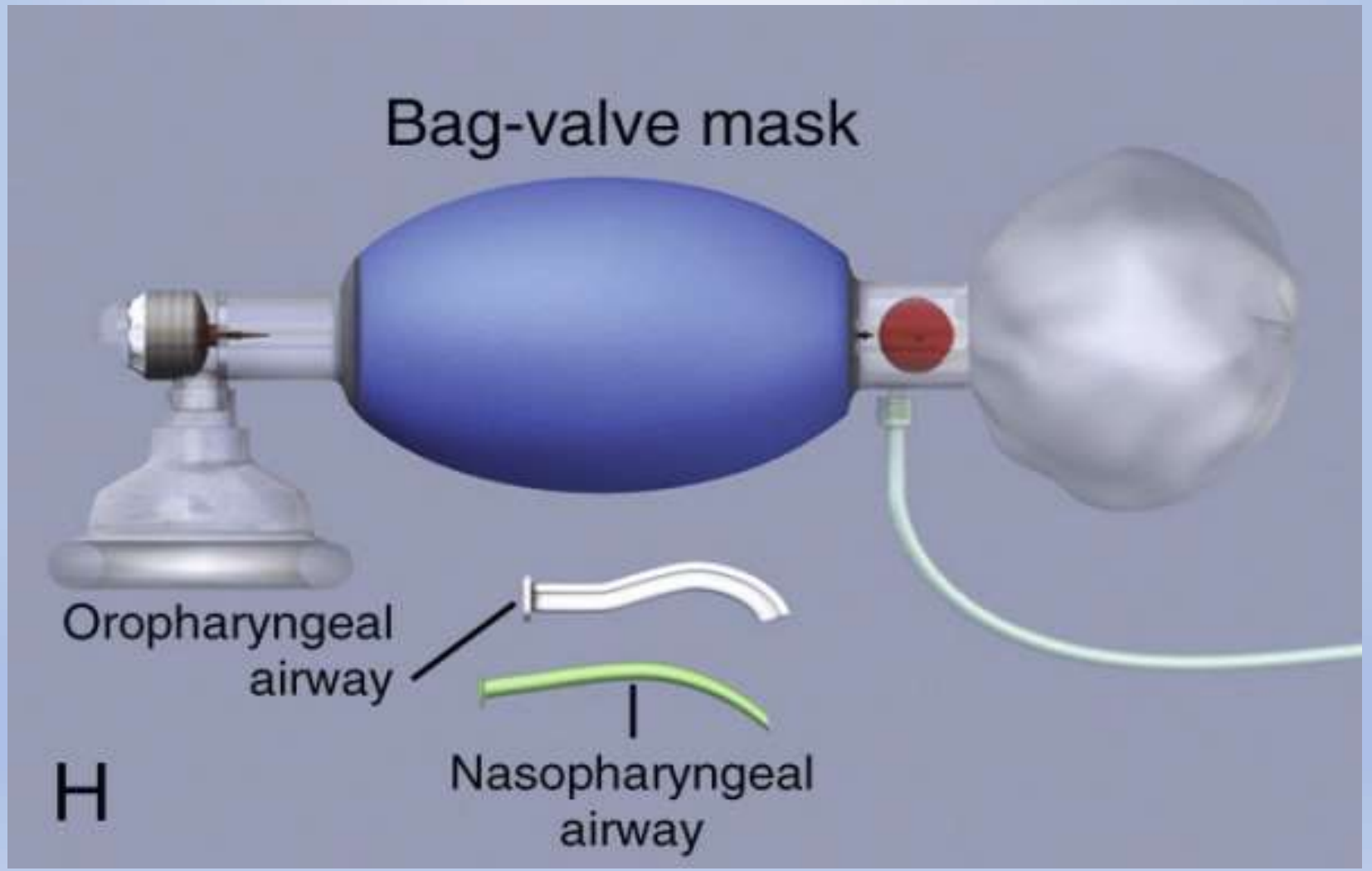
(B) Relaxation
Remove your mouth from his mouth and let go of his nose. Let the air escape from his lungs through his mouth and nose.

Suctioning Equipment

Emergency Medical Care for Foreign Body Airway Obstruction

- If you see the foreign body, remove it with Magill forceps.

A bag-mask


Bag-valve mask
Oropharyngeal airway
Nasopharyngeal airway
H

Ambu bag:

One-handed Bag-Mask Ventilation Technique

Bag-Mask Device Technique

- If alone, hold your index finger over the lower part of the mask and your thumb over the upper part.
- Observe for gastric distention, changes in compliance, and changes in status.

Two-handed Bag-Mask Ventilation Technique


A

Bag-Mask Device Technique

Courtesy of AAOS

Bag-Mask Ventilation Technique

- ***The best method of bag-mask ventilation is to provide a tidal volume of about 500 mL delivered over 1 to 1.5 seconds.***

AIRWAY MANAGEMENT in ***ACLS***

نکات مهم

- در اولین فرصت ممکن بیمار را انتوبه کنید
- در صورت انتوباسیون بیمار لازم نیست نسبت 30 به 2 را رعایت کنید 120-100 بار در دقیقه ماساژ و 10 بار در دقیقه تنفس

Laryngoscopy&Intubation

Advanced Airway

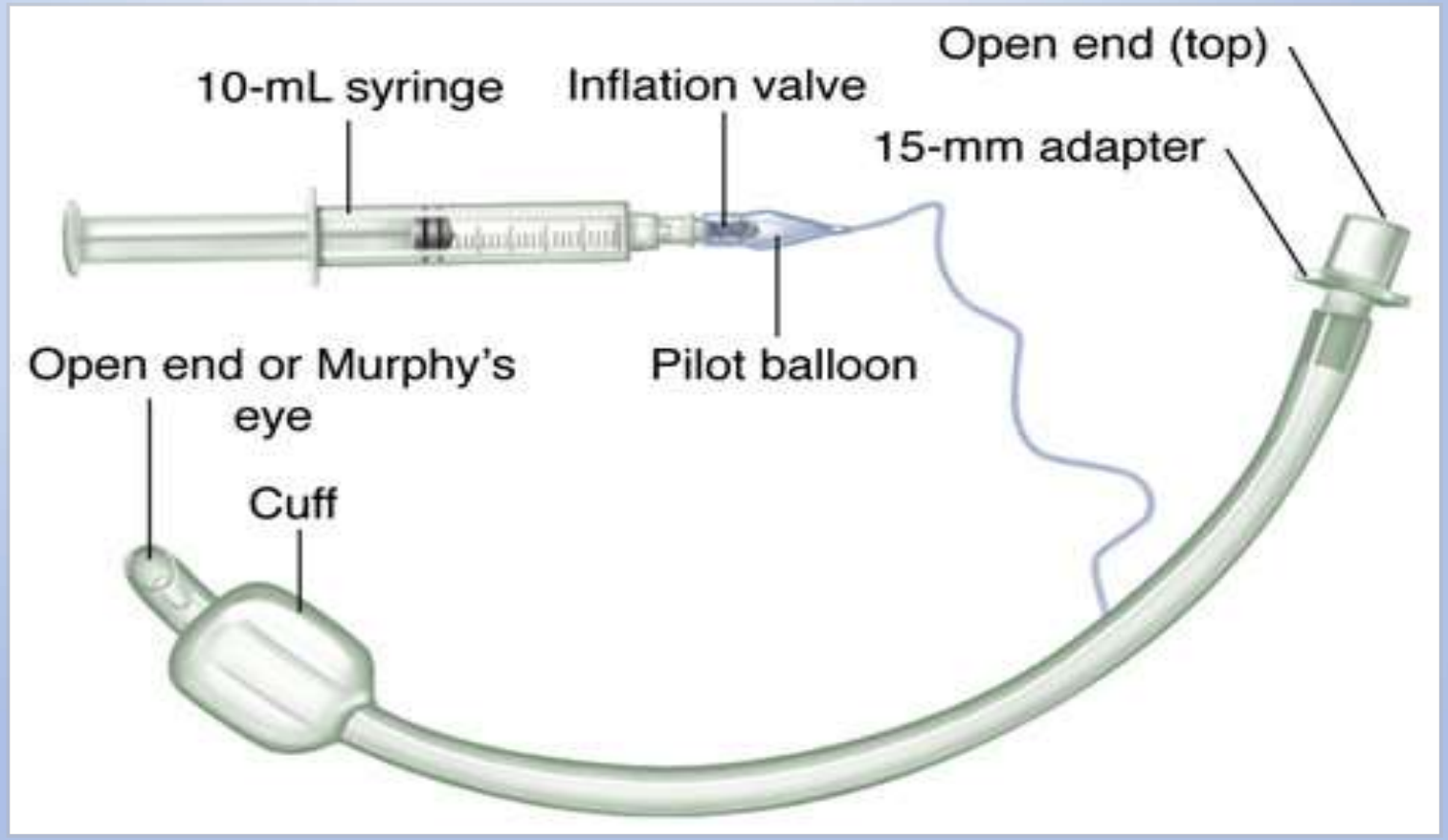
- **Advantages of advanced airway placement** include:
- *elimination of the need for pauses in chest compressions for ventilation,*
- *potentially improved ventilation and oxygenation*
- *reduction in the risk of aspiration,*
- *and ability to use quantitative waveform capnography*.


Surgilube

Endotracheal Tubes

- Sizes range
  - 2.5 to 9.0 mm in inside diameter
  - 12 to 32 cm in length

Basic Structure of Endotracheal Tubes



انتخاب سایز مناسب لوله تراشه

- سایزمناسب لوله تراشه در: آقایان: ***8 – 7.5***
- ***خانم ها:7-7.5***
- عمق مناسب: آقایان ***23cm*** &در خانم ها ***21cm***

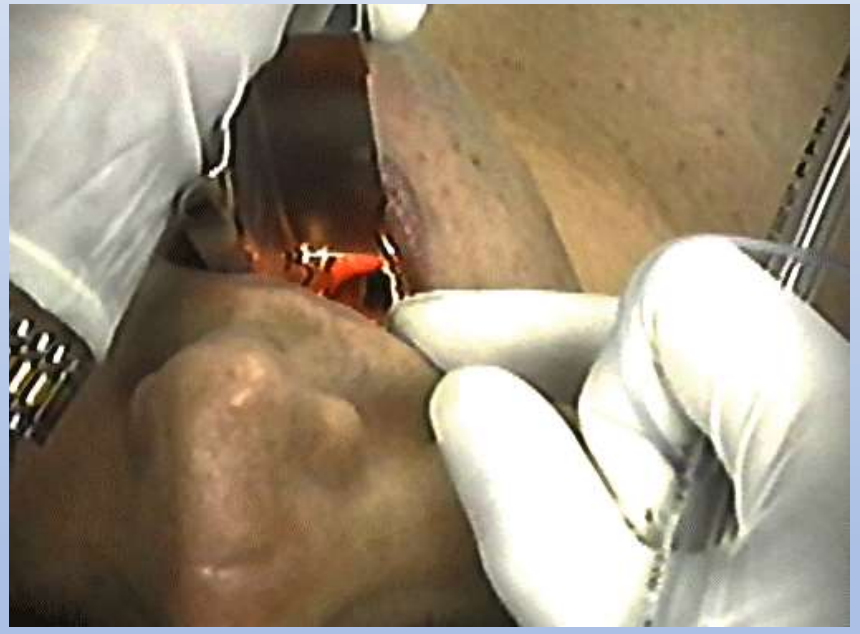
- سایزمناسب لوله تراشه درکودکان:***4/{سن(سال) +۱۶}***

-عمق مناسب لوله تراشه درکودکان:**۱۲+نصف سن(سال)**

Laryngoscopes and Blades

- Curved (Macintosh) blades
  - Curve conforms to tongue and pharynx
  - Tip is placed in the vallecula
    - Indirectly lifts epiglottis to expose vocal cords

Direct Laryngoscopy



Visualization

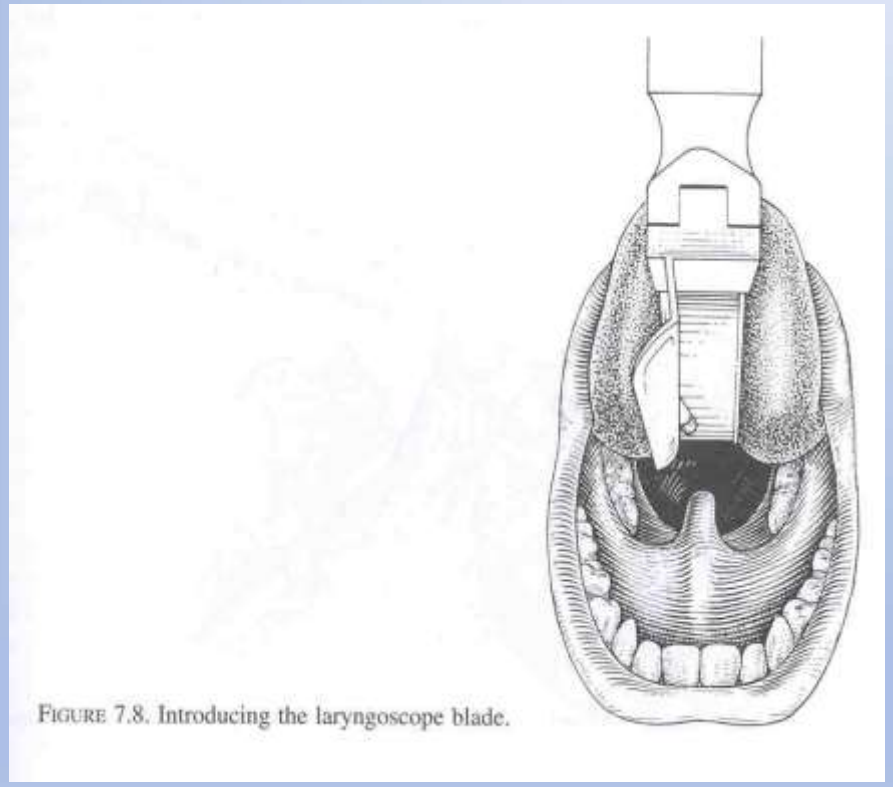


FIGURE 7.8. Introducing the laryngoscope blade.

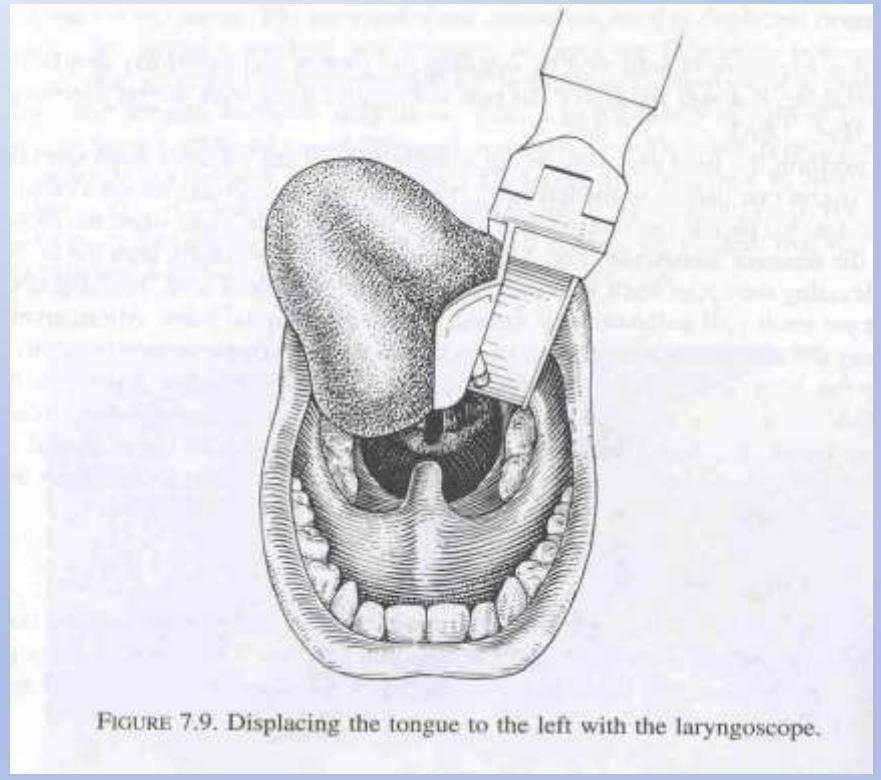
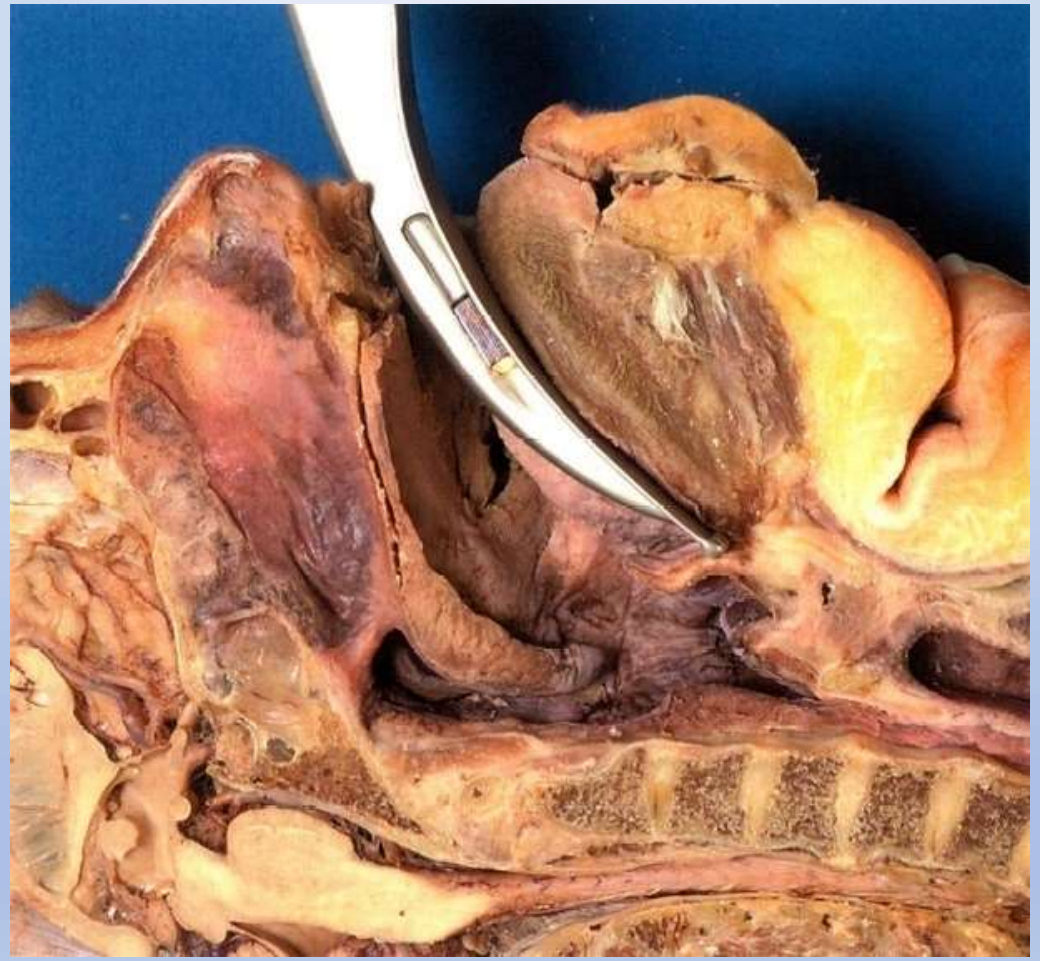
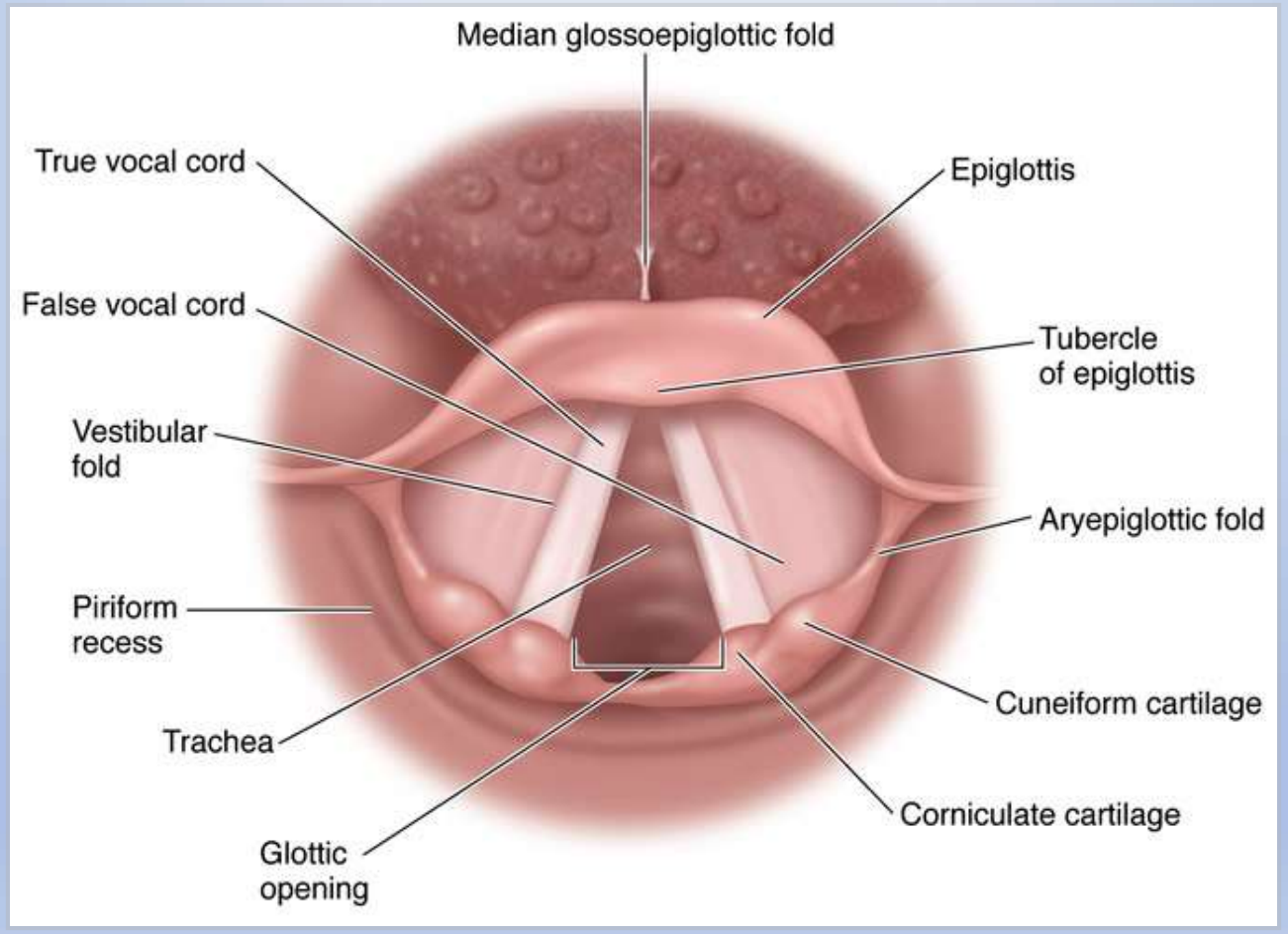
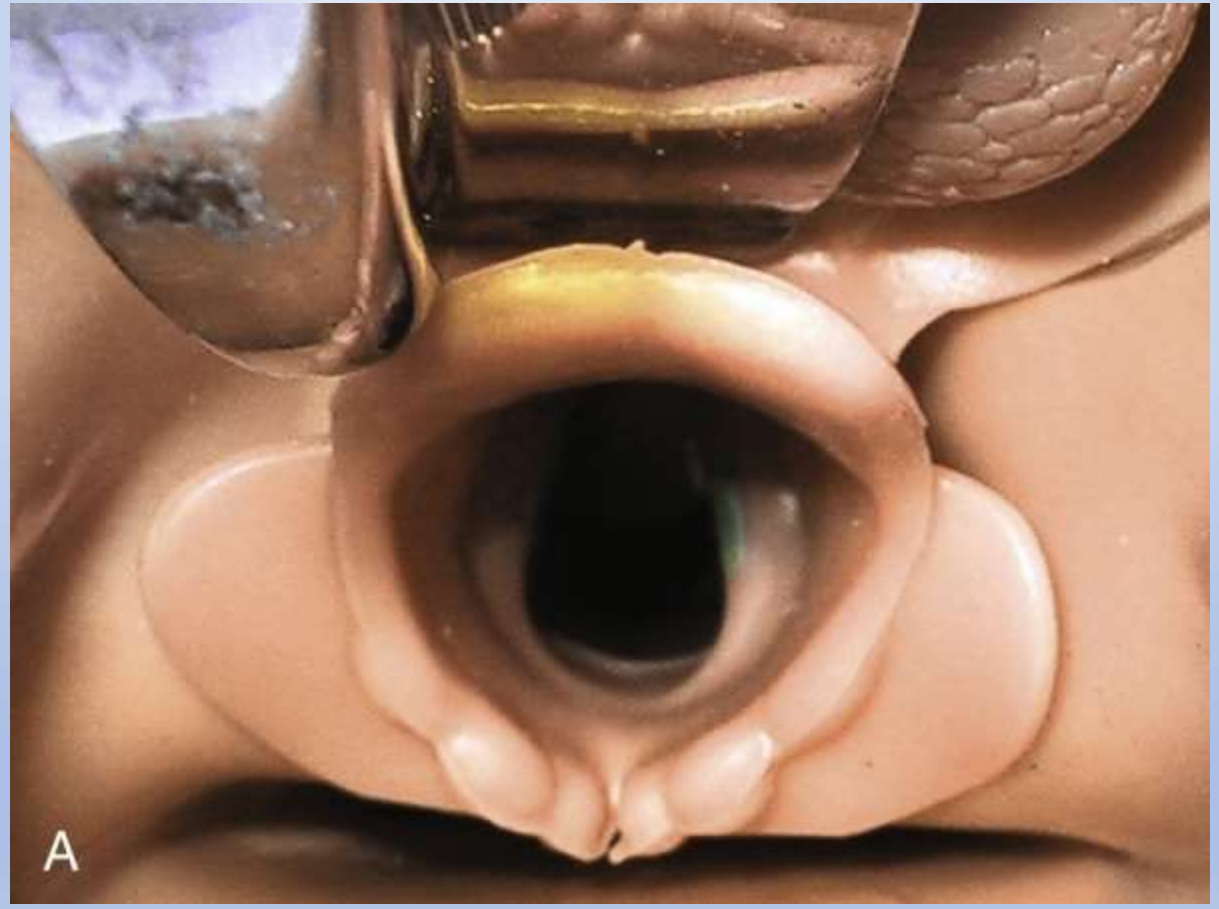


FIGURE 7.9. Displacing the tongue to the left with the laryngoscope.



Glottis


Median glossoepiglottic fold
True vocal cord
Epiglottis
False vocal cord
Tubercle of epiglottis
Vestibular fold
Aryepiglottic fold
Piriform recess
Cuneiform cartilage
Trachea
Corniculate cartilage
Glottic opening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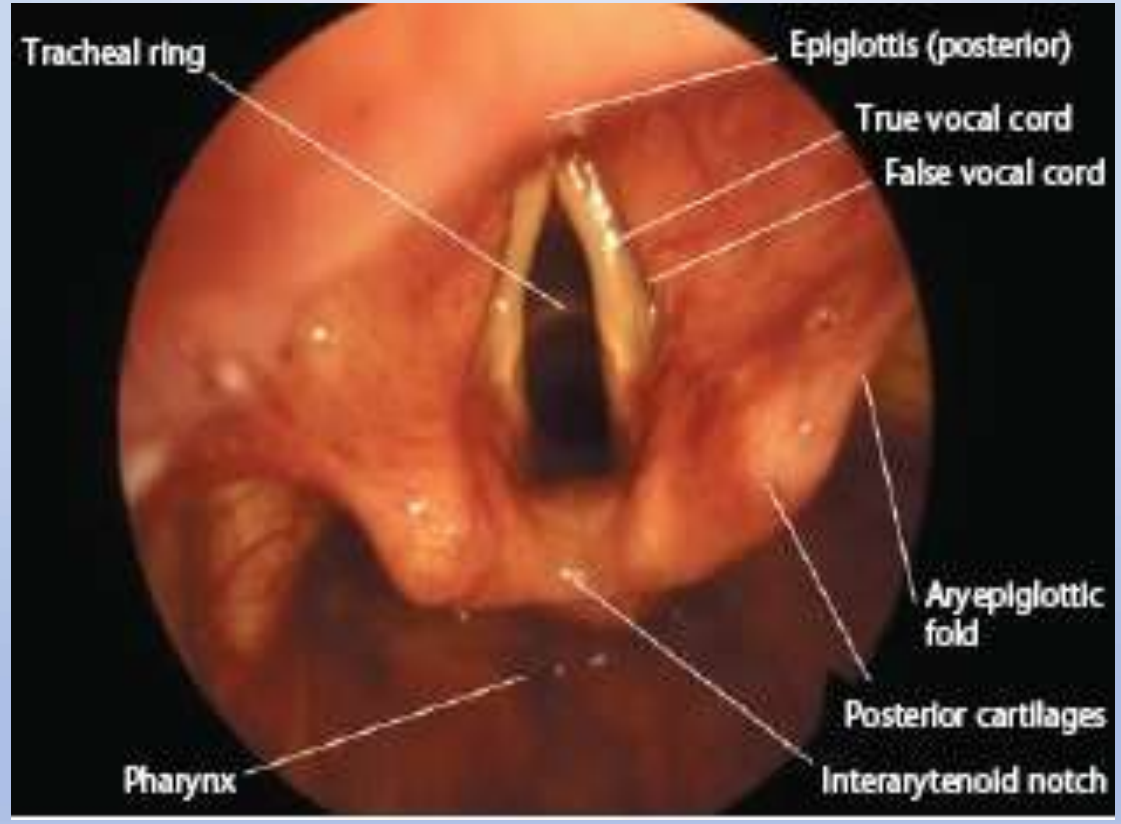
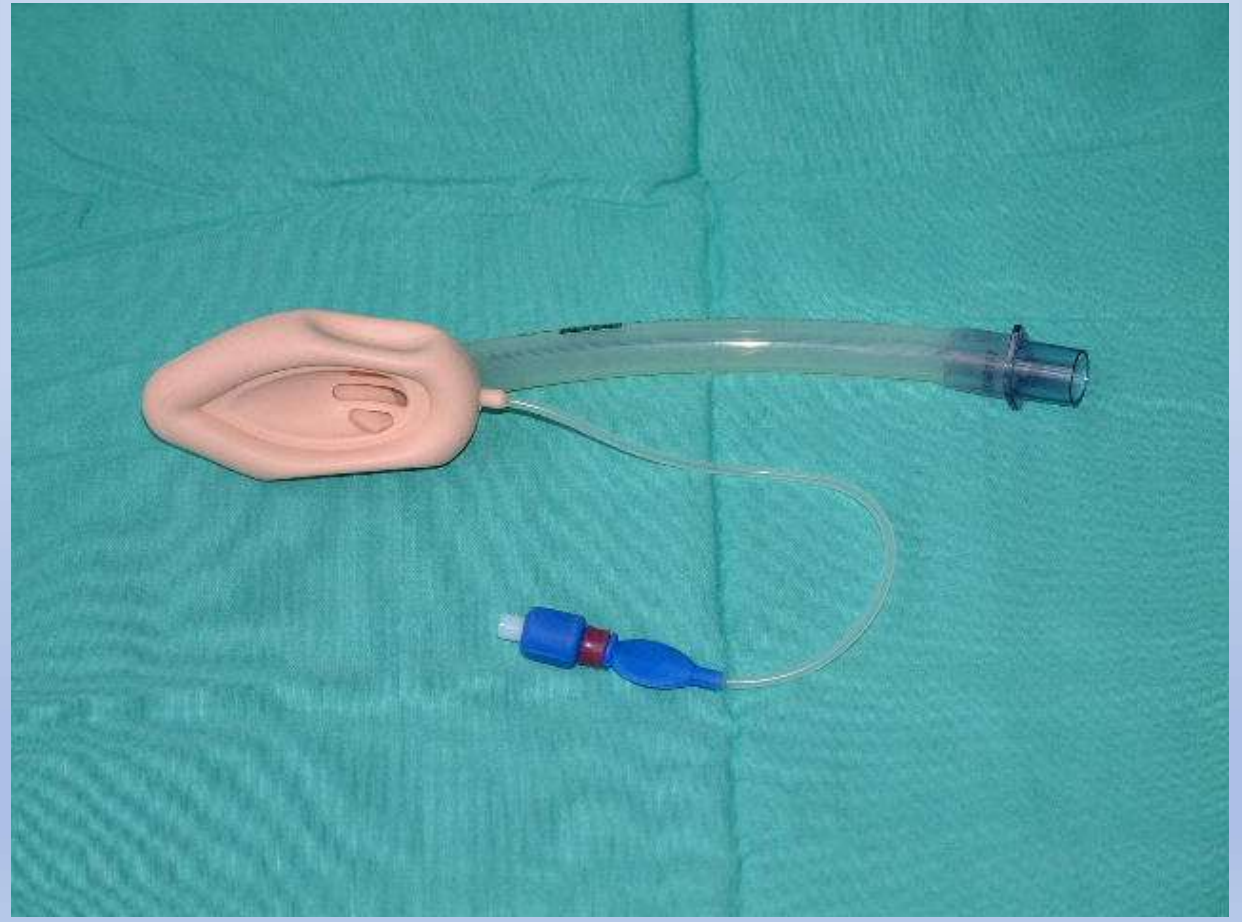

Tracheal ring
Epiglottis (posterior)
True vocal cord
False vocal cord
Aryepiglottic fold
Posterior cartilages
Interarytenoid notch
Pharynx

Direction of forces applied for direct laryngoscopy.

INTERMEDIATE AIRWAY DEVICES

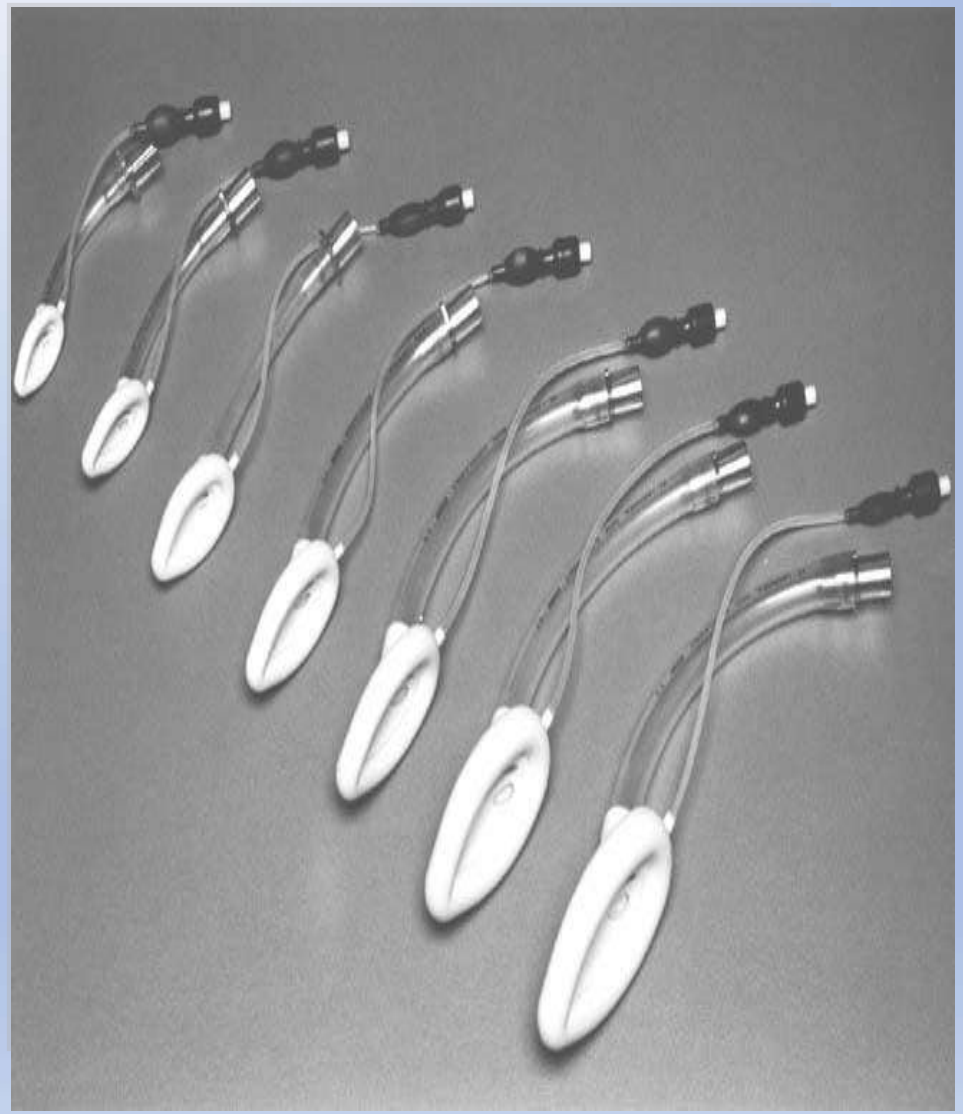
- In an emergency airway situation, use these devices for temporary rescue ventilation until tracheal intubation or a surgical airway can be performed:
- - **The LMAs(**laryngeal mask airway)
- **- The Esophageal-Tracheal Combitube**
- **- The Laryngeal Tube**

- •

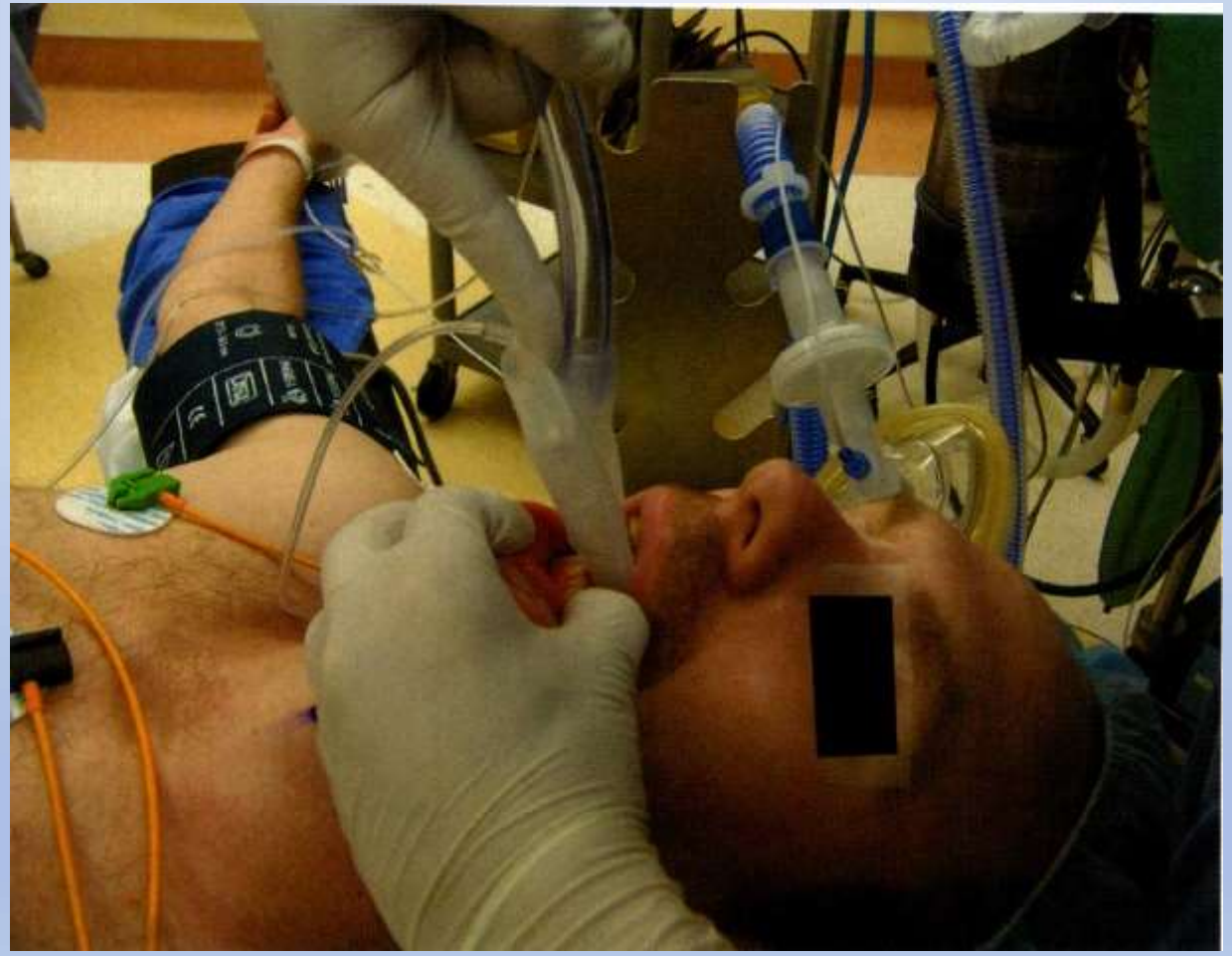


Laryngeal mask airway(LMA)

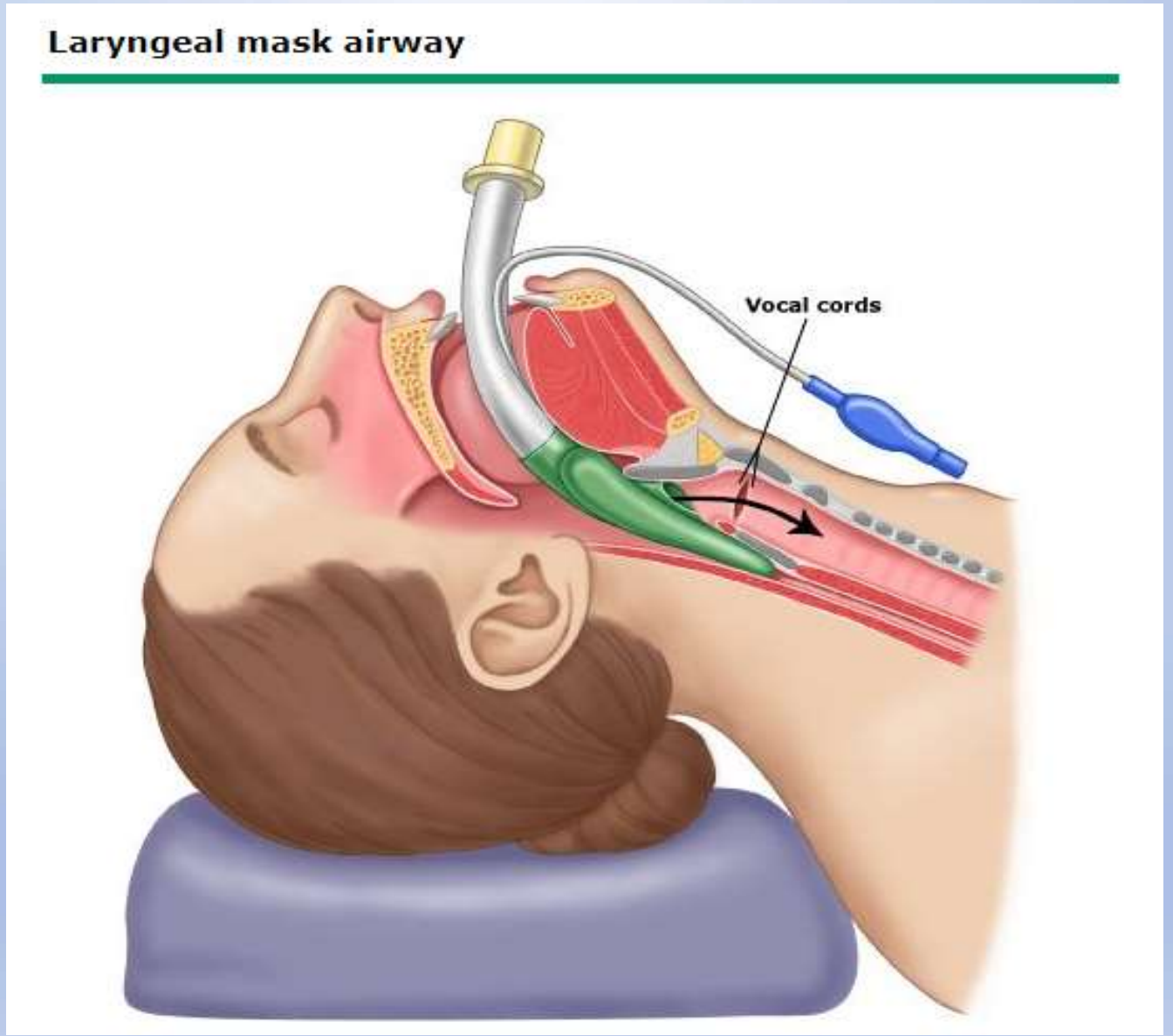
- **The LMA is available in a wide range of sizes, from size 1 for neonates weighing less than 5 kg to size 6 for adults weighing more than 100 kg.**



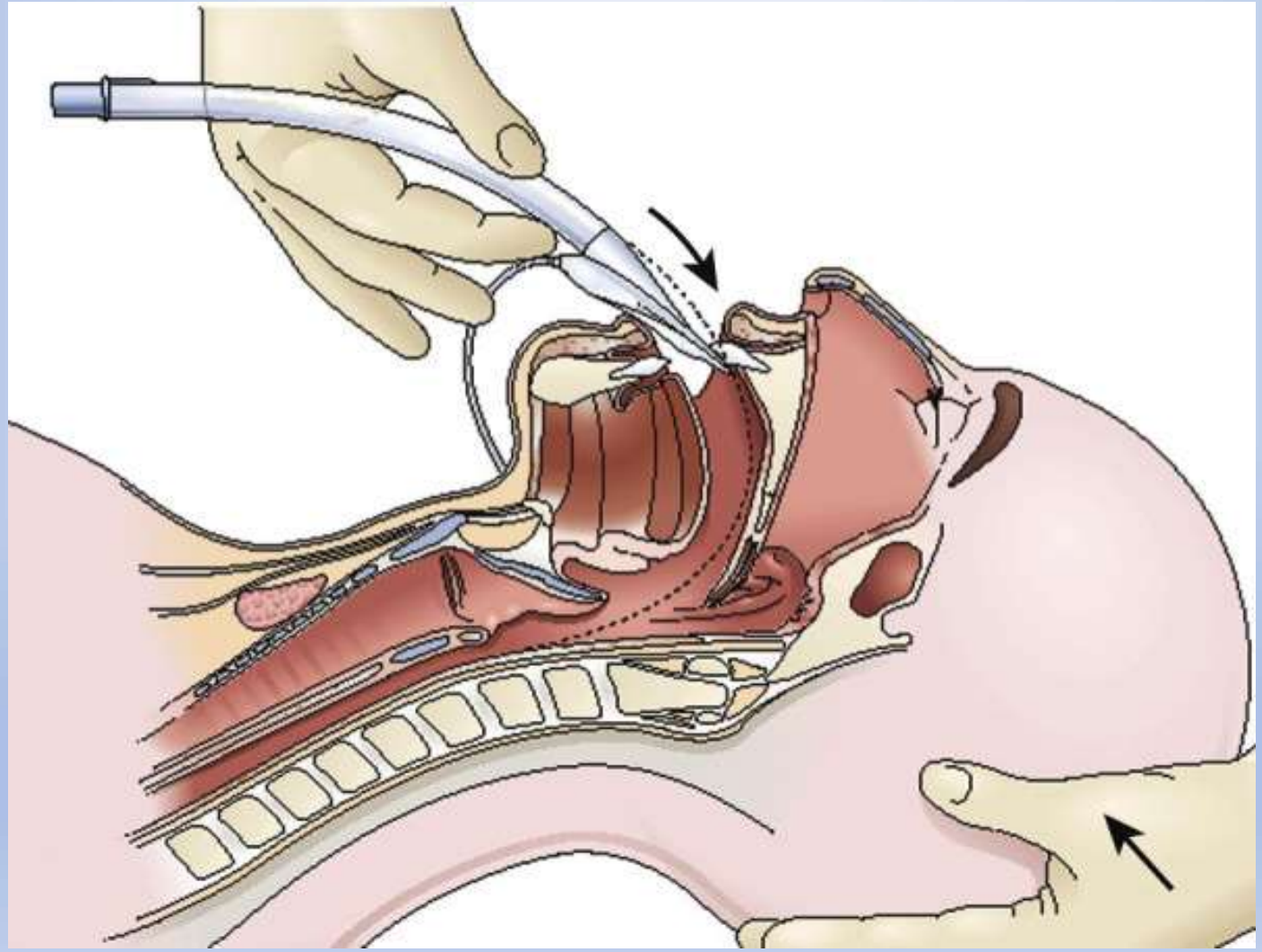
L.M.A Insertion



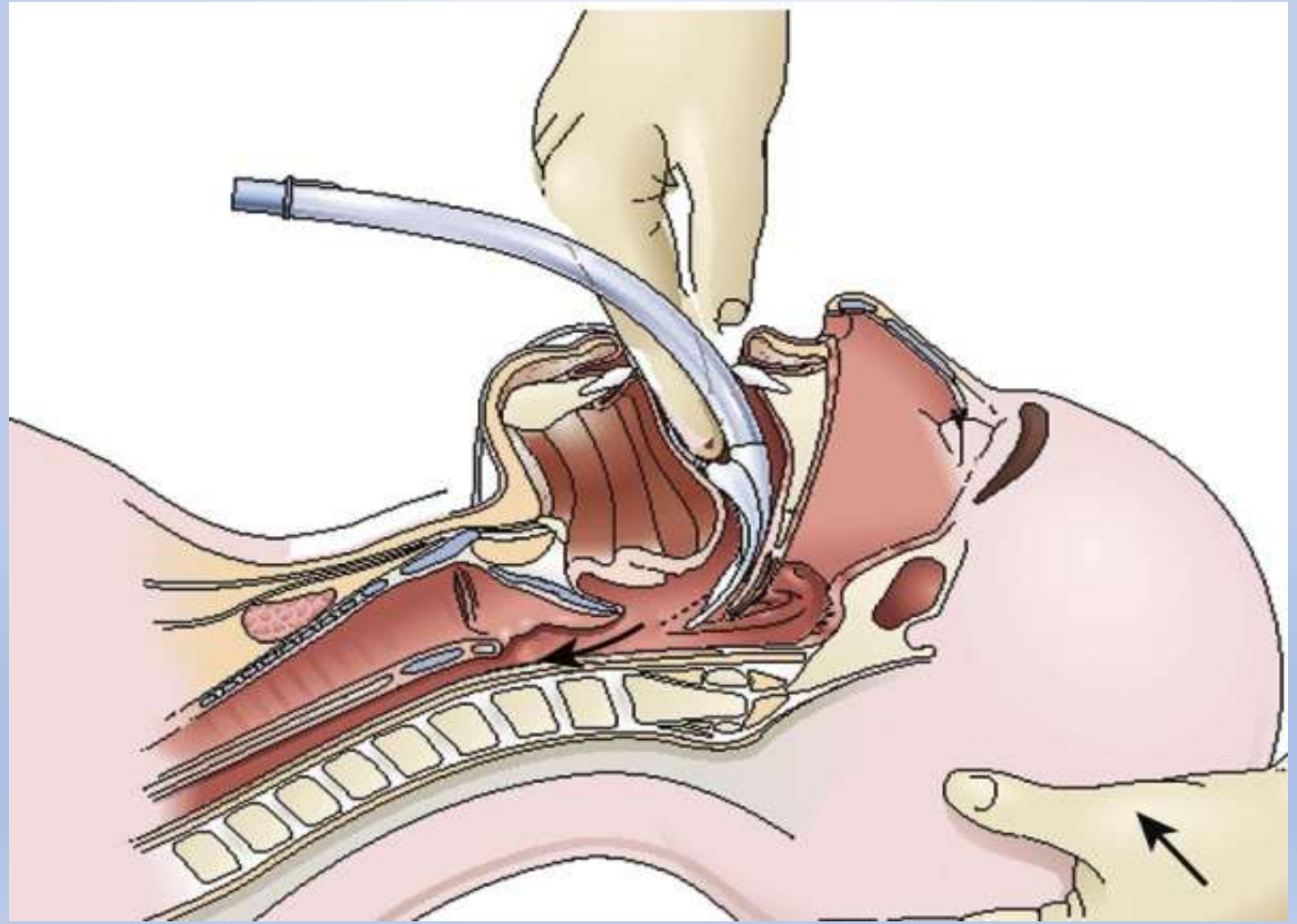
Laryngeal mask airway



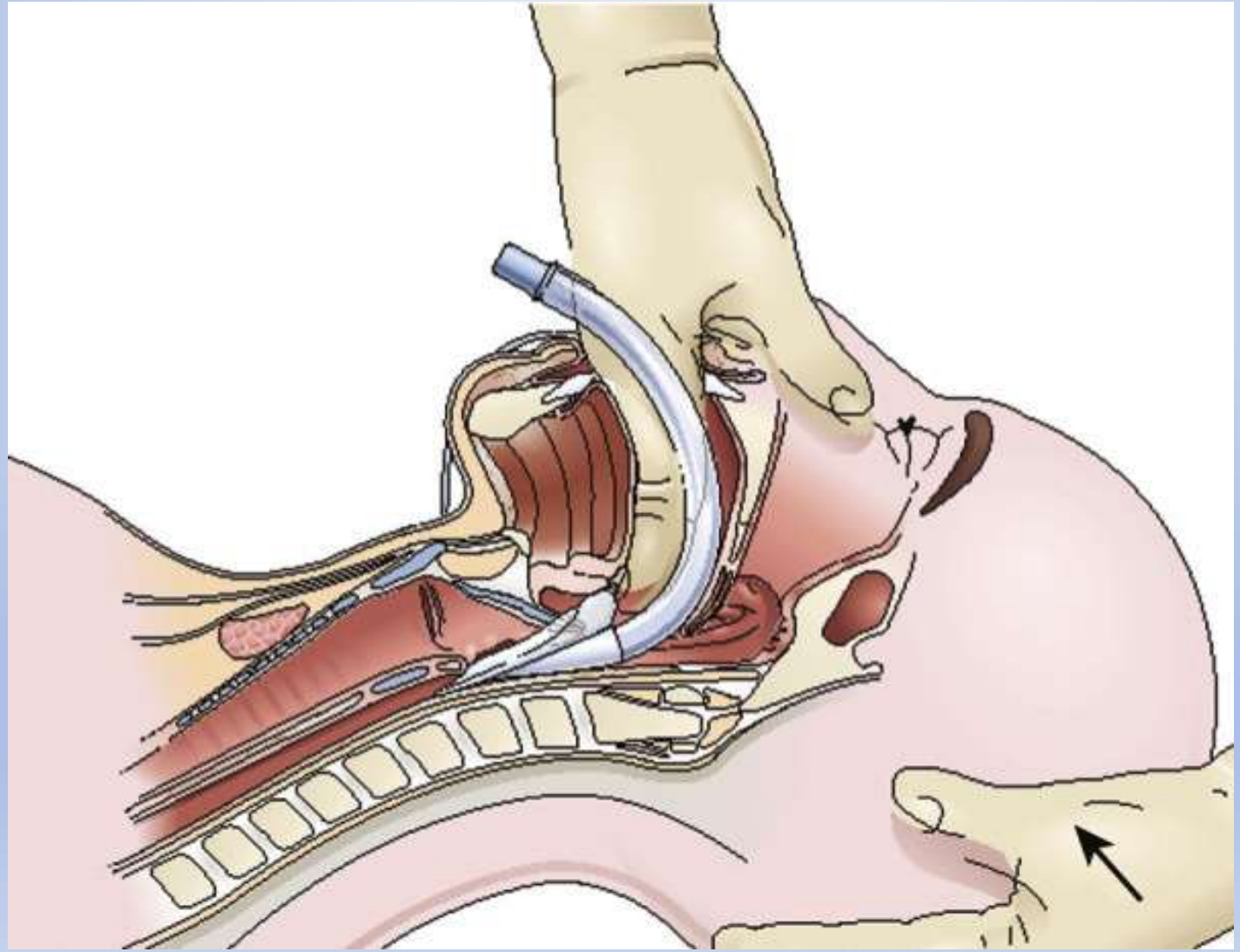
Placement of the LMA



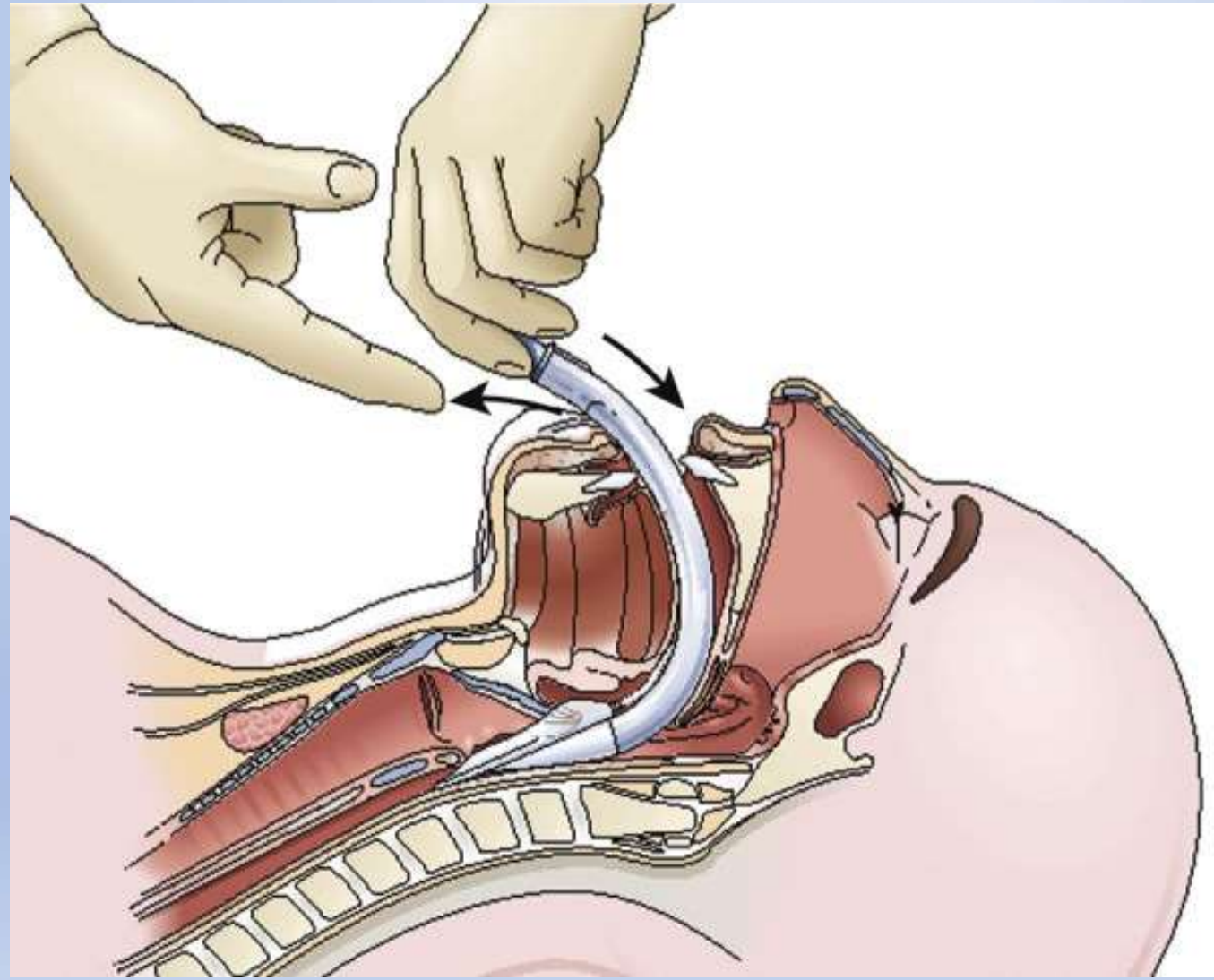
Using the index finger, slide the LMA along the hard palate and posterior pharynx.



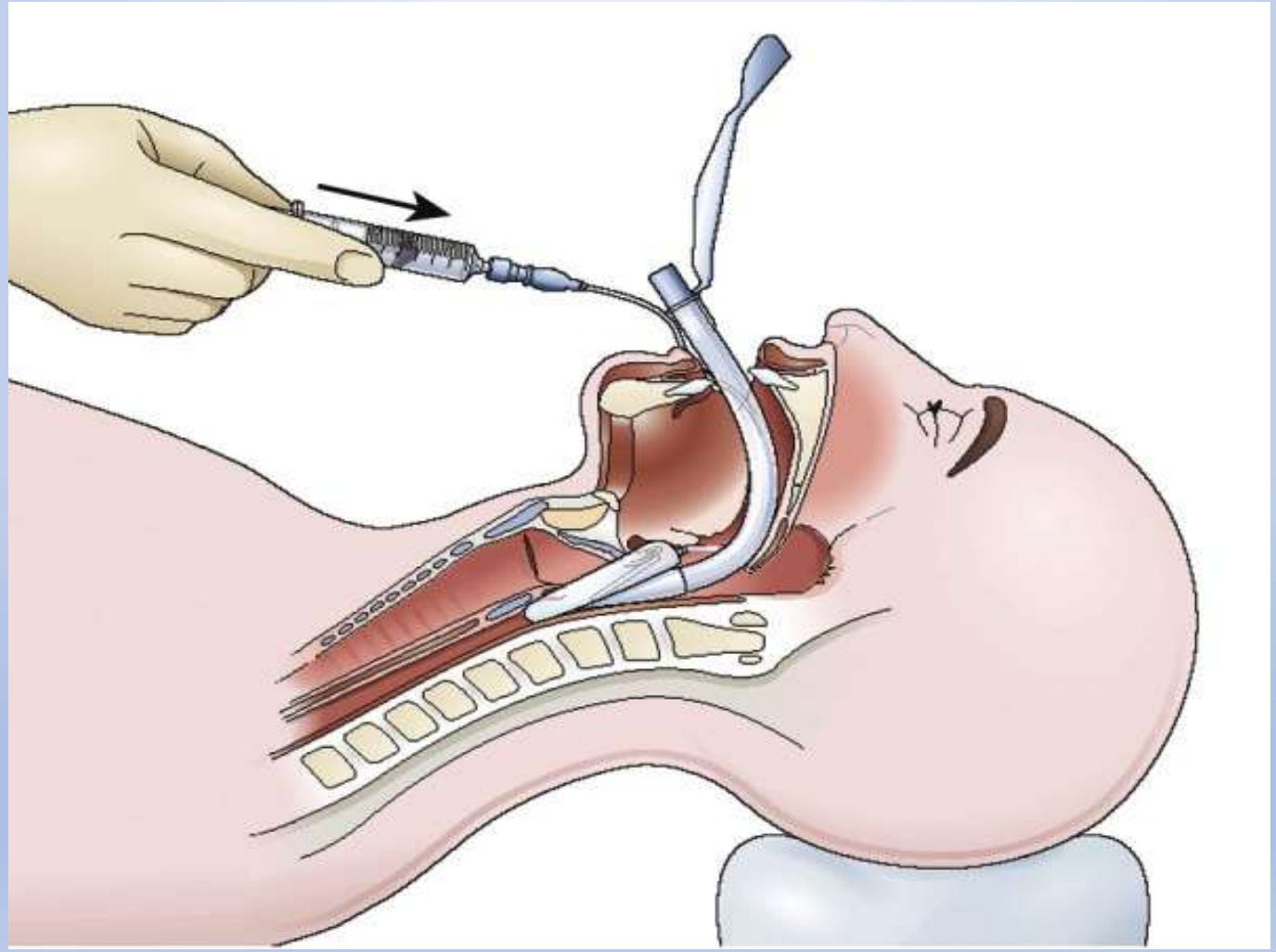
To advance the LMA into its final position, fully extend the index finger and continue to advance the LMA along the posterior hypopharynx until it meets firm resistance.



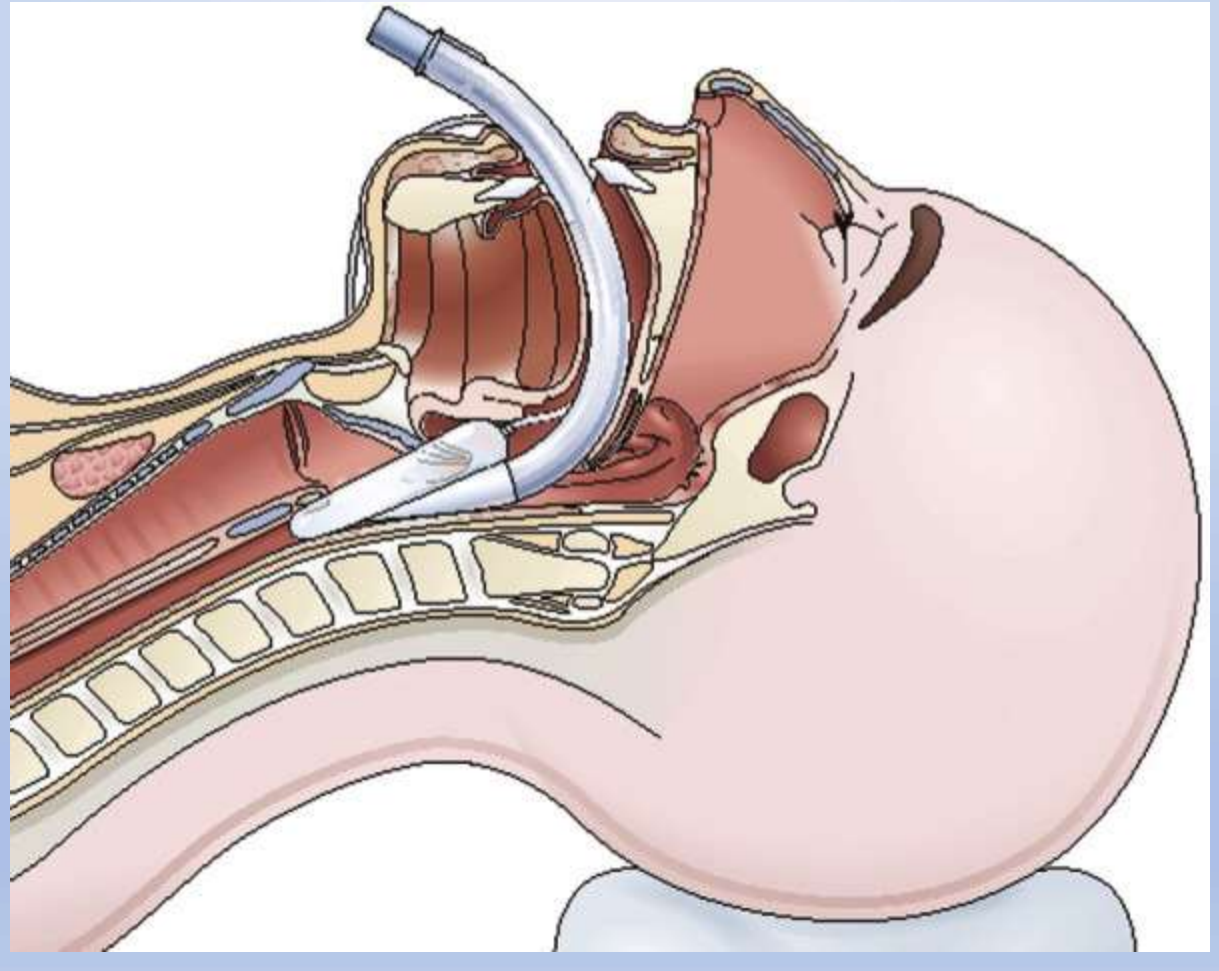
Hold onto the proximal end of the LMA airway tube with the other hand, so that it is not displaced, while carefully removing the inserting hand and index finger from the patient's mouth.

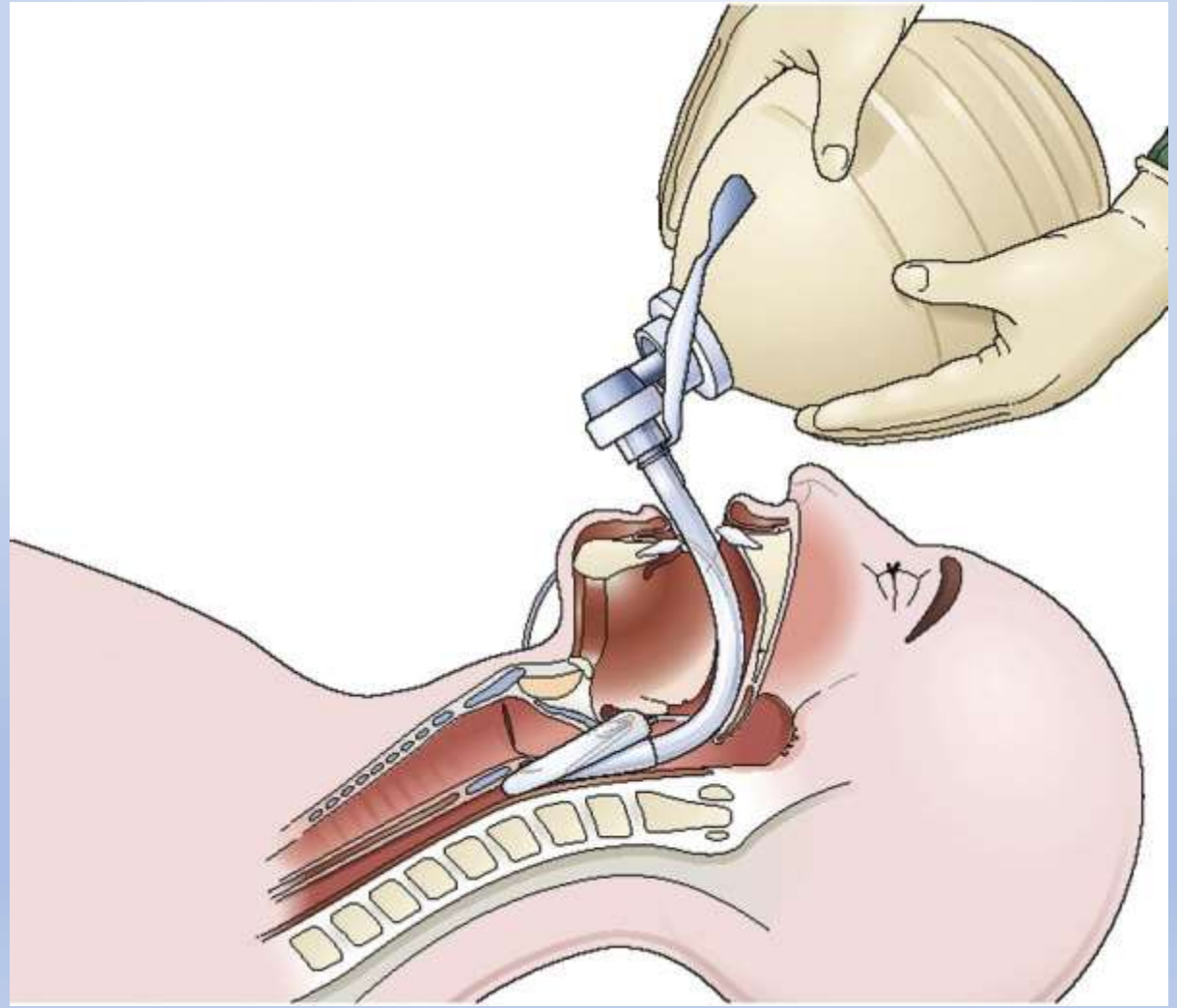


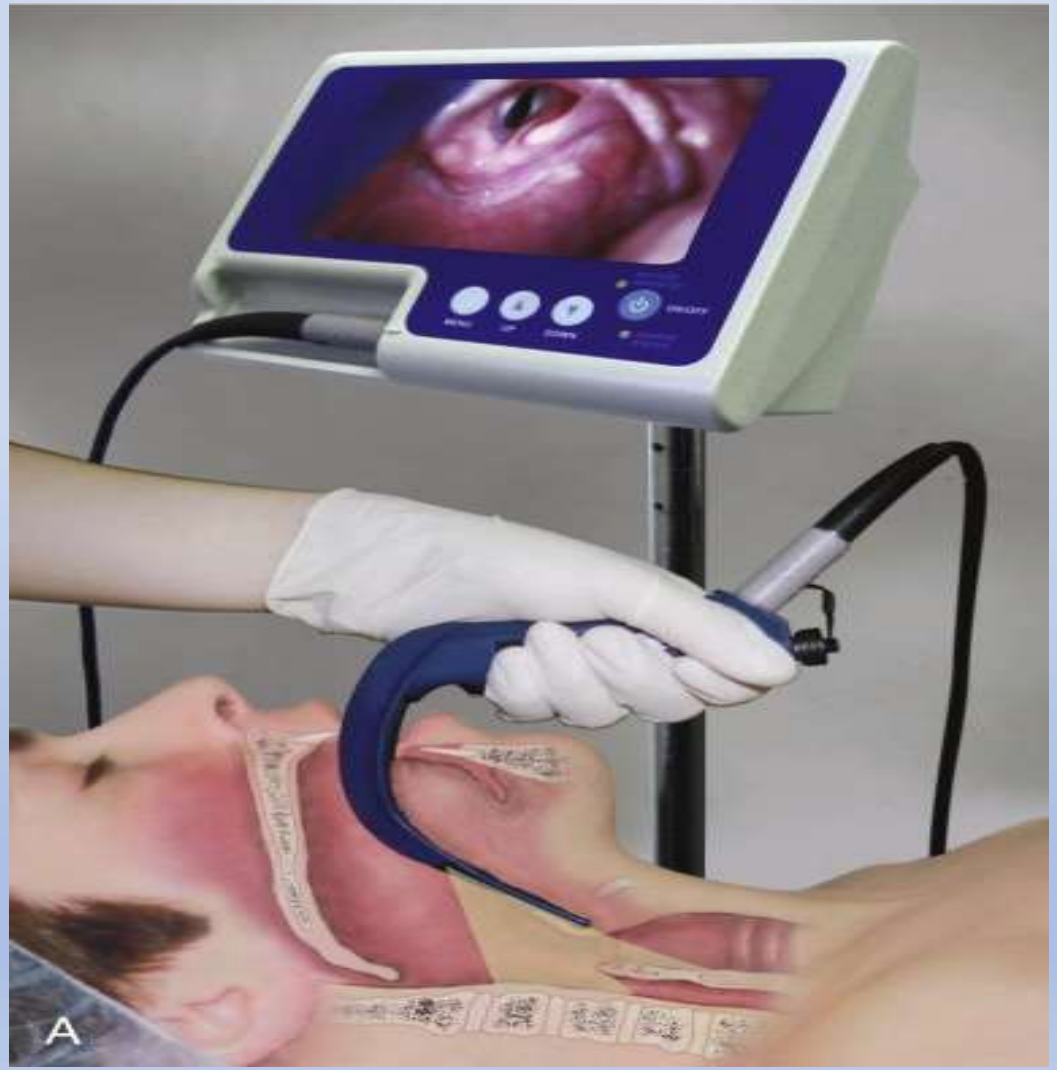
LMA cuff inflation



Initially inflate the cuff with only half of the maximum cuff volume, and then increase inflation as needed.






A

PRINCIPLES* OF AIRWAY MANAGEMENT IN

CORONAVIRUS COVID-19

FOR SUSPECTED/REPORTABLE** OR CONFIRMED CASES OF COVID-19

BEFORE

AHA Guidance for Resuscitation When Caring for Patients With Suspected or Confirmed COVID-19

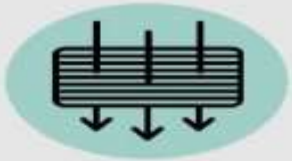
This information is intended to help find the right balance between providing timely, high-quality resuscitation to patients and protecting rescuers.

Reduce Provider Exposure

Properly don personal protective equipment before entering the scene.

Limit the number of personnel inside the resuscitation room.

Prioritize Oxygenation and Ventilation Strategies That Minimize Aerosolization



Use a HEPA filter for all ventilation.

Intubate early with a cuffed tube and connect to a mechanical ventilator, if available.

If intubation is delayed, consider using a supraglottic airway.

Consider resuscitation appropriateness. Address the goals of care in anticipation of the potential need for increased levels of care.

Template designed by Sparsh Shah, MD candidate. Infographic designed by Kara Tastad, MD candidate and Meenhas Oravil, MD. Edited by Sparsh Shah and AlvinChin, MD, MSc.

CPR.heart.org KJ-1426 5/20

Interim guidance provided by

American Heart Association.

Public Hands-Only CPR*

during the COVID-19 pandemic. Four steps you can handle.

Phone 9-1-1 and shout for an AED.

Don't delay – ACT!

If no one is around, use your mobile phone on speaker mode to call 9-1-1.

Tell them if COVID-19 is suspected.

Prevent contamination by laying a cloth, towel, or clothing over the mouth and nose.

This will help prevent any potential spread of the virus through contaminated air or saliva.

Push hard and fast in the centre of the chest.

Think of the beat of *Stayin' Alive* or about 100-120 beats per minute.

Don't stop until help arrives or the person begins to respond.

Use an AED if available.

AEDs are safe and simple to use. Turn it on and follow the voice instructions.

After providing Hands-Only CPR
Wash or throw away the cloth, towel, or clothing used to cover the person's face.
Wash your hands thoroughly with soap and water. An alcohol-based hand gel is an alternative.

If you see someone suddenly collapse or if they're unresponsive, you can save their life using your phone, your hands and your wits. **Don't hesitate – you can't hurt, you can only help.**

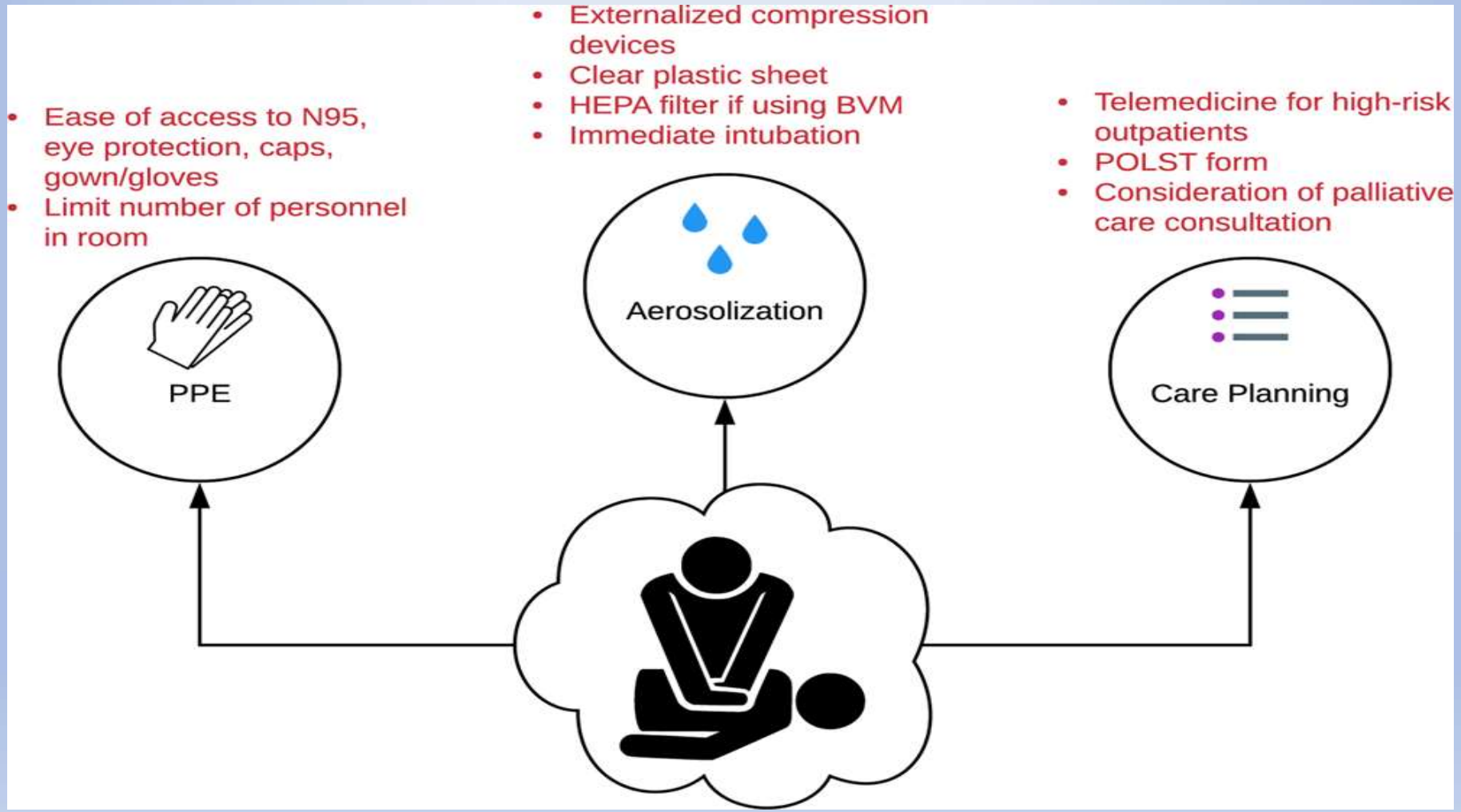
heartandstroke.ca/cpr

Heart&Stroke.

Several additional strategies have been suggested to mitigate the risk associated with CPR

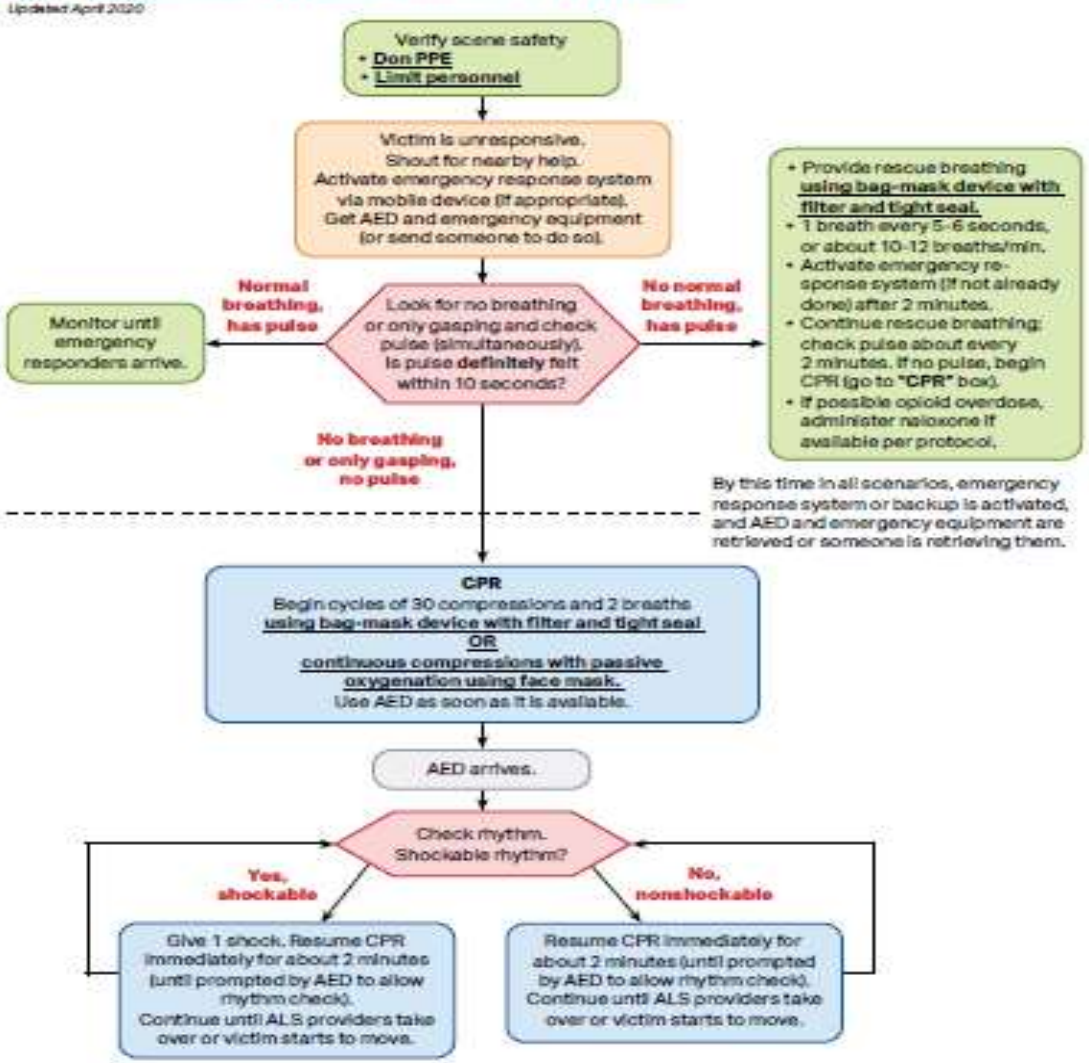
- ***some have suggested increasing the use of external mechanical chest compression devices to reduce the risk to personnel when available.***
- ***Others have suggested that plastic sheets be placed between the patient and the provider performing chest compressions to minimize aerosolization.***
- ***In patients who are not already intubated, a high-efficiency particulate air filter may be considered during bag-mask ventilation.***
- ***When an invasive airway is secured, endotracheal intubation should be performed by the provider with the most experience with airway management using video-laryngoscopy to minimize the number of attempts and the risk of transmission.***

Cardiopulmonary Resuscitation During the COVID-19 Pandemic



BLS Healthcare Provider Adult Cardiac Arrest Algorithm for Suspected or Confirmed COVID-19 Patients

Updated April 2020



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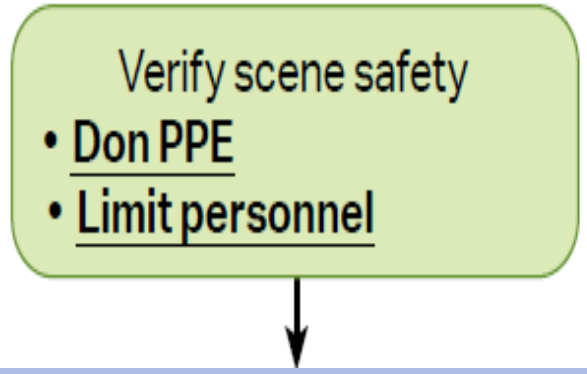
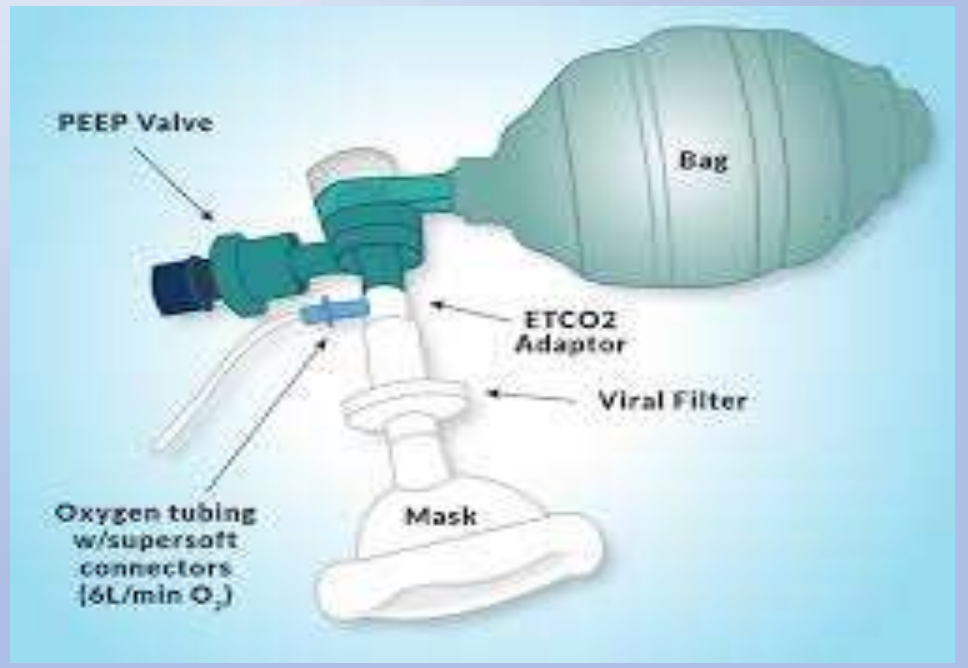


- Provide rescue breathing **using bag-mask device with filter and tight seal.**
- 1 breath every 5-6 seconds, or about 10-12 breaths/min.
- Activate emergency response system (if not already done) after 2 minutes.
- Continue rescue breathing; check pulse about every 2 minutes. If no pulse, begin CPR (go to **"CPR"** box).
- If possible opioid overdose, administer naloxone if available per protocol.

Use a viral filter (e.g. HME, HEPA) between the self-inflating bag and airway (mask, supraglottic airway or tracheal tube) to minimize the risk of virus spread.



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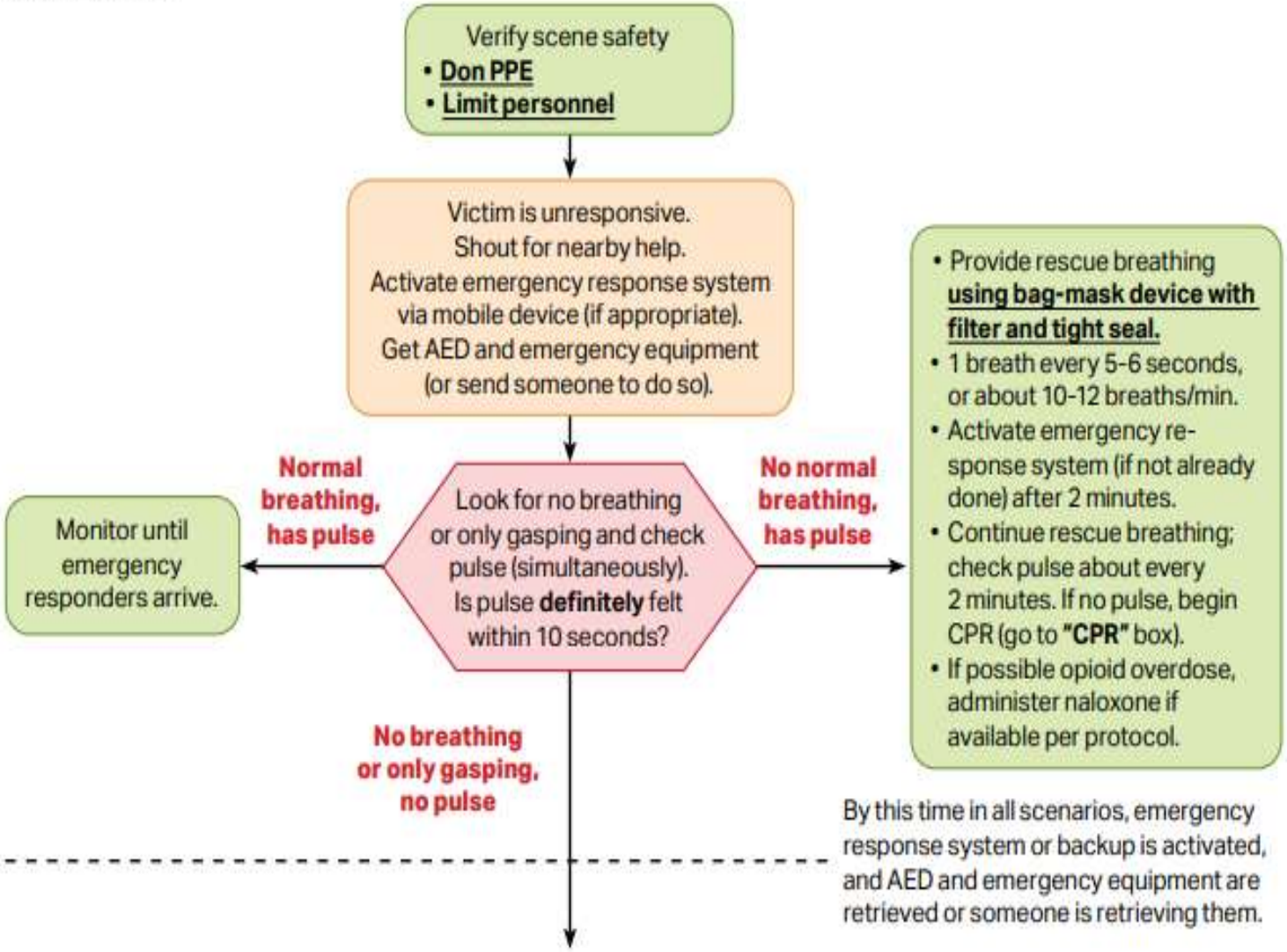
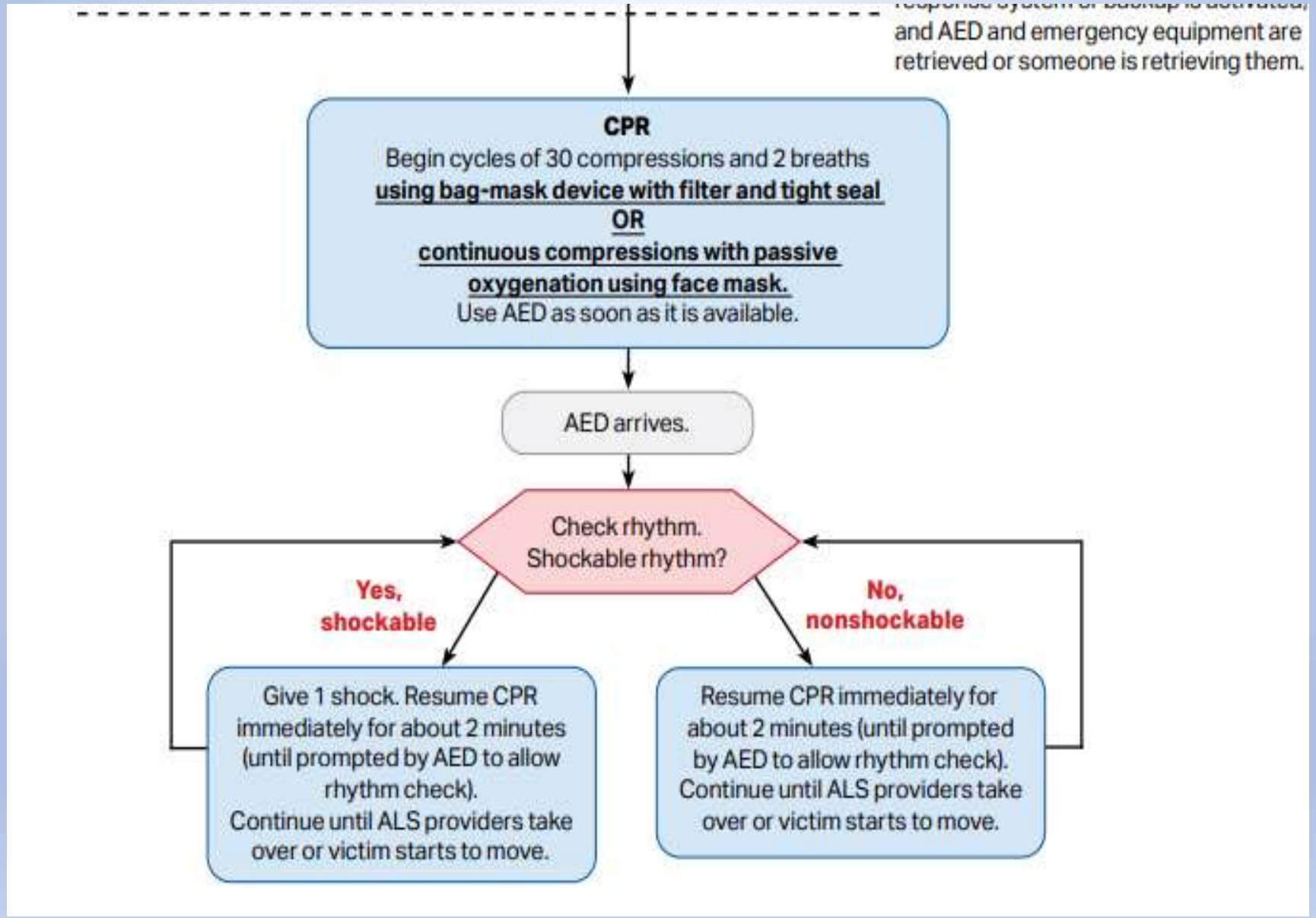
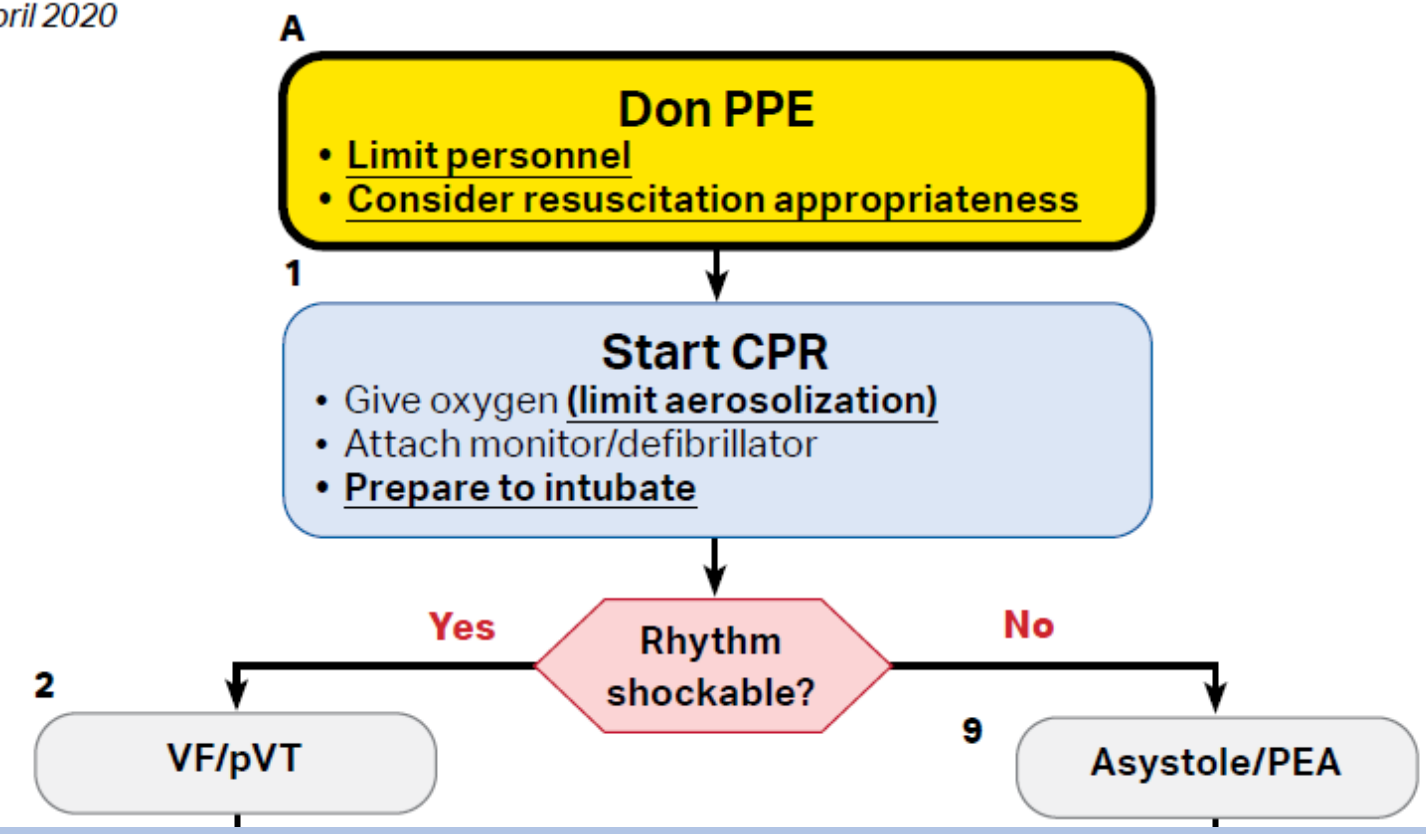
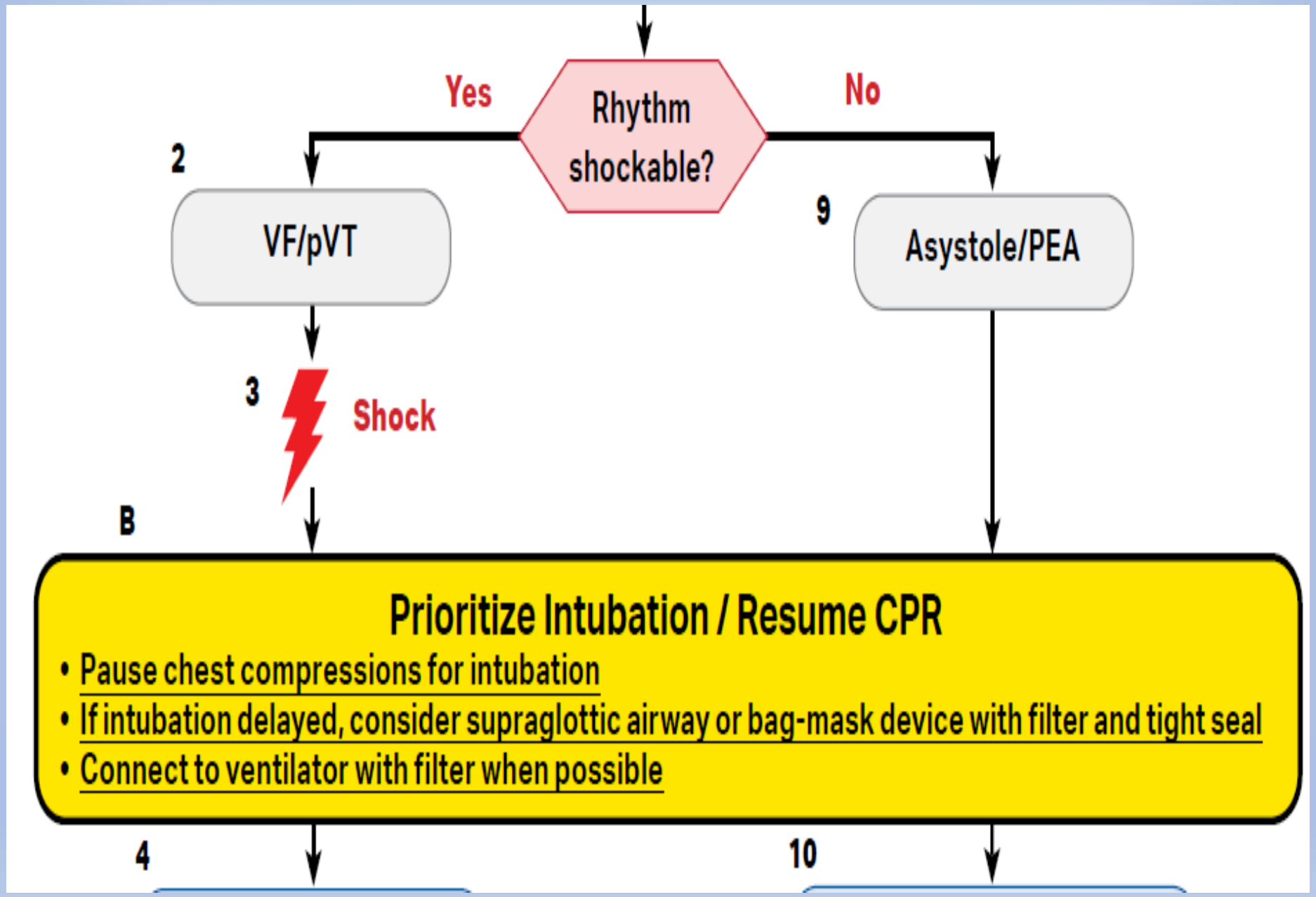



and AED and emergency equipment are retrieved or someone is retrieving them.
CPR
Begin cycles of 30 compressions and 2 breaths
using bag-mask device with filter and tight seal
OR
continuous compressions with passive oxygenation using face mask.
Use AED as soon as it is available.
AED arrives.
Check rhythm.
Shockable rhythm?
Yes, shockable
No, nonshockable
Give 1 shock. Resume CPR immediately for about 2 minutes (until prompted by AED to allow rhythm check).
Continue until ALS providers take over or victim starts to move.
Resume CPR immediately for about 2 minutes (until prompted by AED to allow rhythm check).
Continue until ALS providers take over or victim starts to move.

ACLS Cardiac Arrest Algorithm for Suspected or Confirmed COVID-19 Patients

Updated April 2020

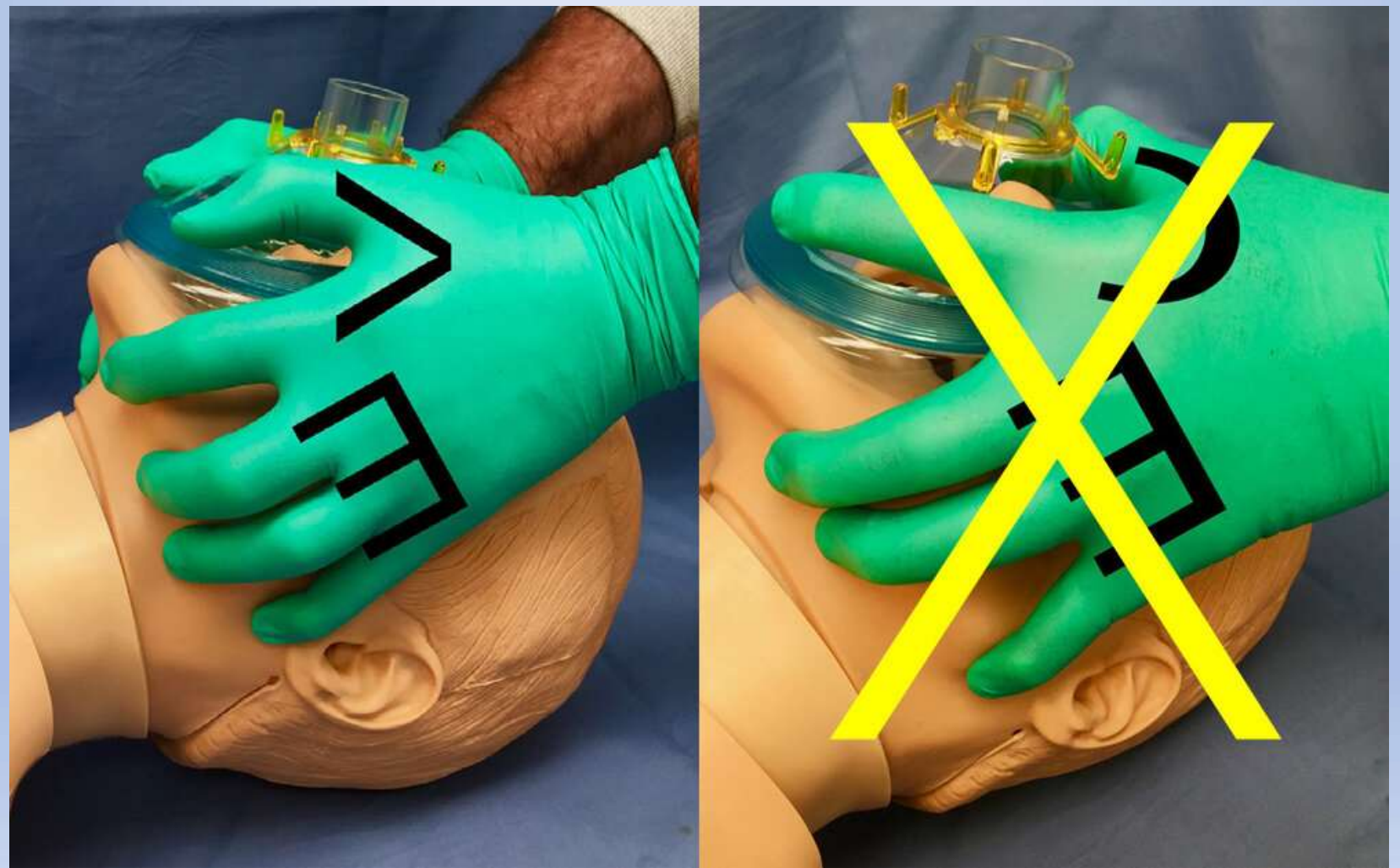



Yes
Rhythm shockable?
No
2
VF/pVT
9
Asystole/PEA
3
Shock
B
Prioritize Intubation / Resume CPR
• Pause chest compressions for intubation
• If intubation delayed, consider supraglottic airway or bag-mask device with filter and tight seal
• Connect to ventilator with filter when possible
4
10

Advanced Airway

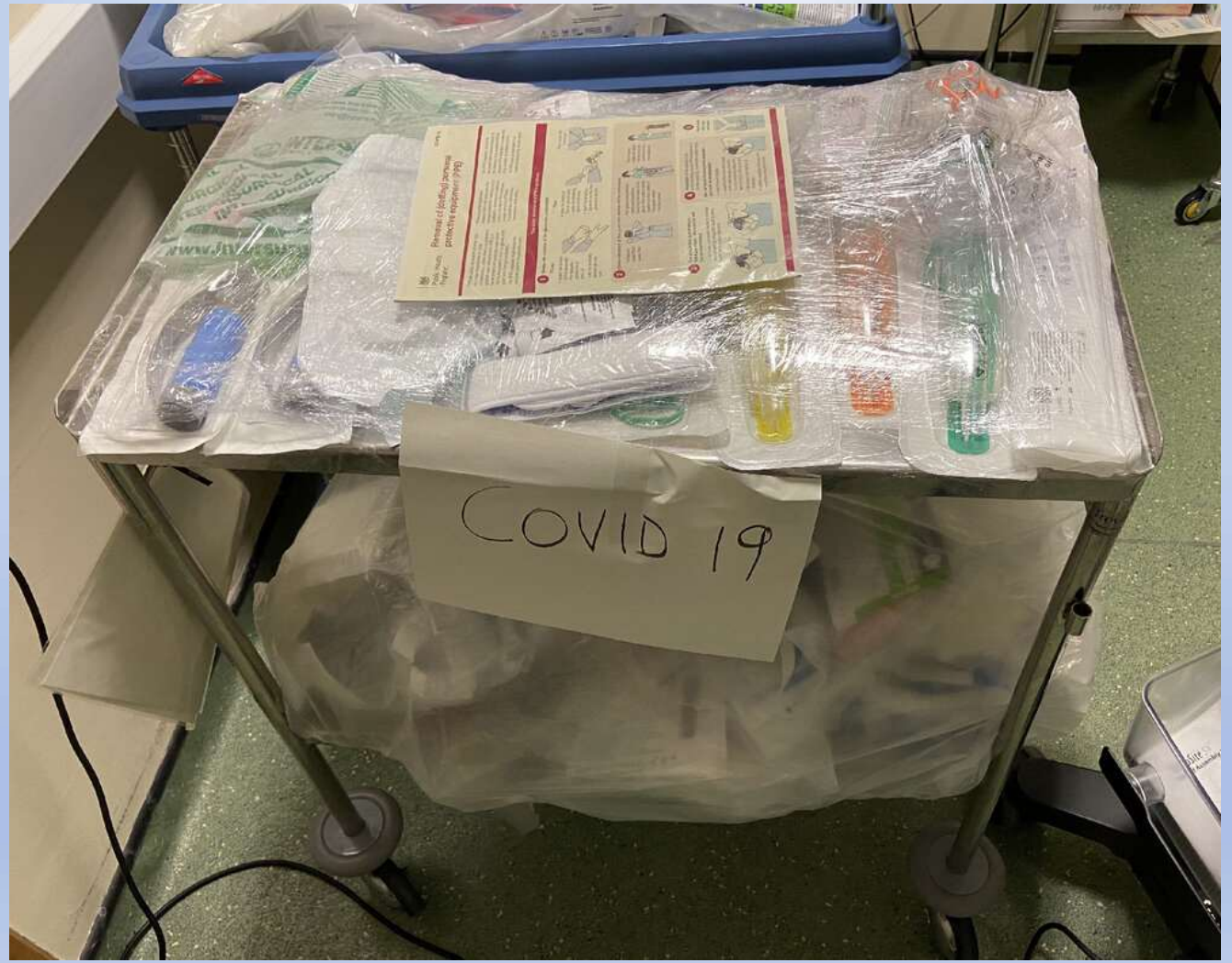
- **Minimize closed-circuit disconnection**
- **Use intubator with highest likelihood of first pass success**
- **Consider video laryngoscopy**
- Endotracheal intubation or supraglottic advanced airway
- Waveform capnography or capnometry to confirm and monitor ET tube placement
- Once advanced airway in place, give 1 breath every 6 seconds (10 breaths/min) with continuous chest compressions

2-handed 2-person BMV technique with the ‘VE hand position’, the second person squeezes the bag

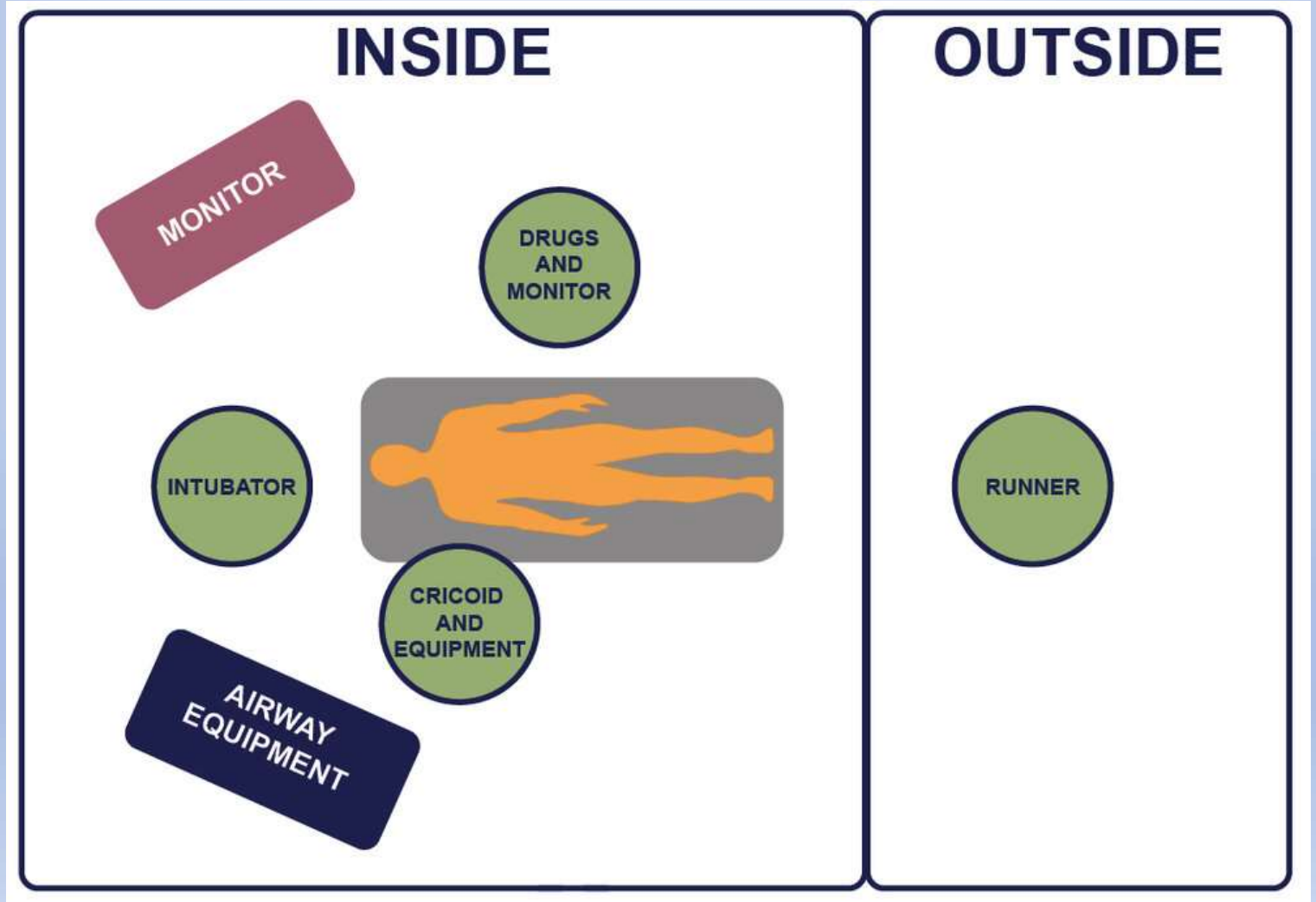


Video laryngoscopes with angulated blades (GlideScope,McGrath Series 5, Storz D-Blade)

COVID-19 airway trolley



Personnel plan for tracheal intubation of a patient with COVID-19




Thank you for your considerations