



Airway Management in C.P.R

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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

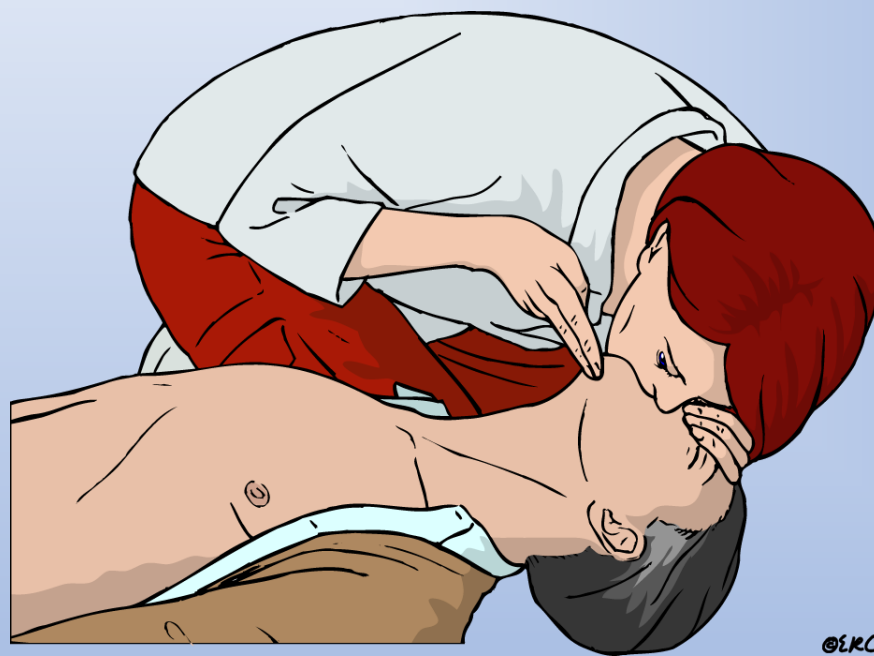
Give mouth-to-mouth
rescue breaths

American Heart
Association



Learn and Live

به ازای هر 30 ماساژ 2 بار تنفس دهید

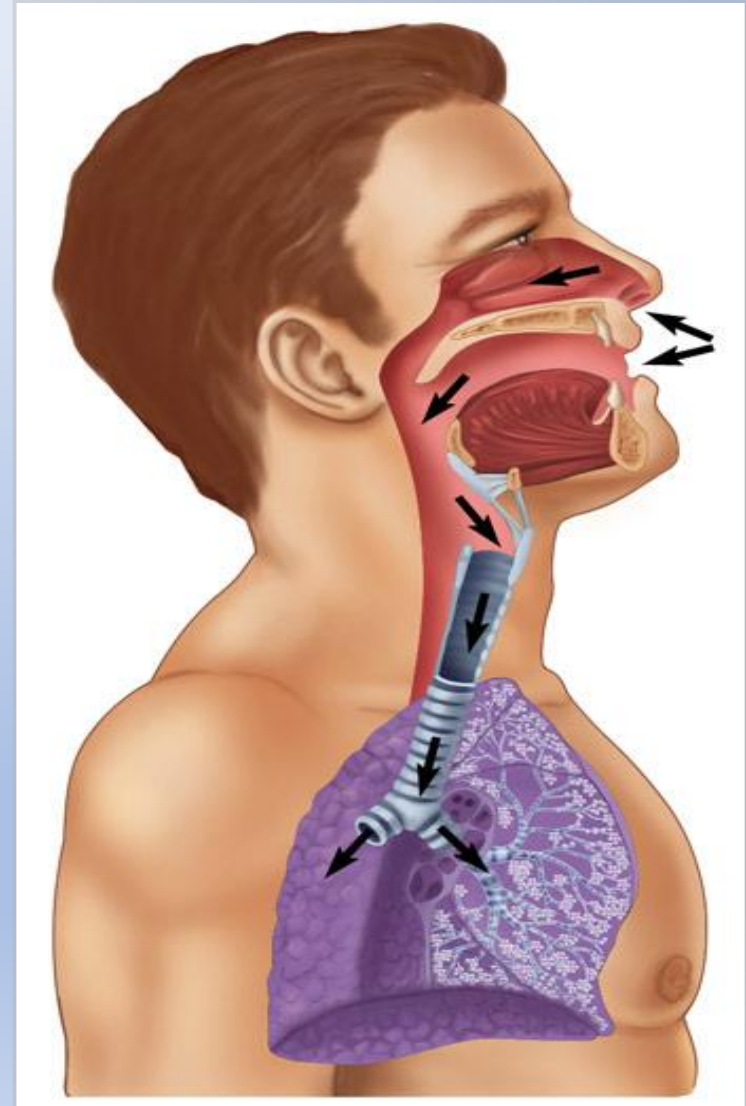


Basic Airway Management

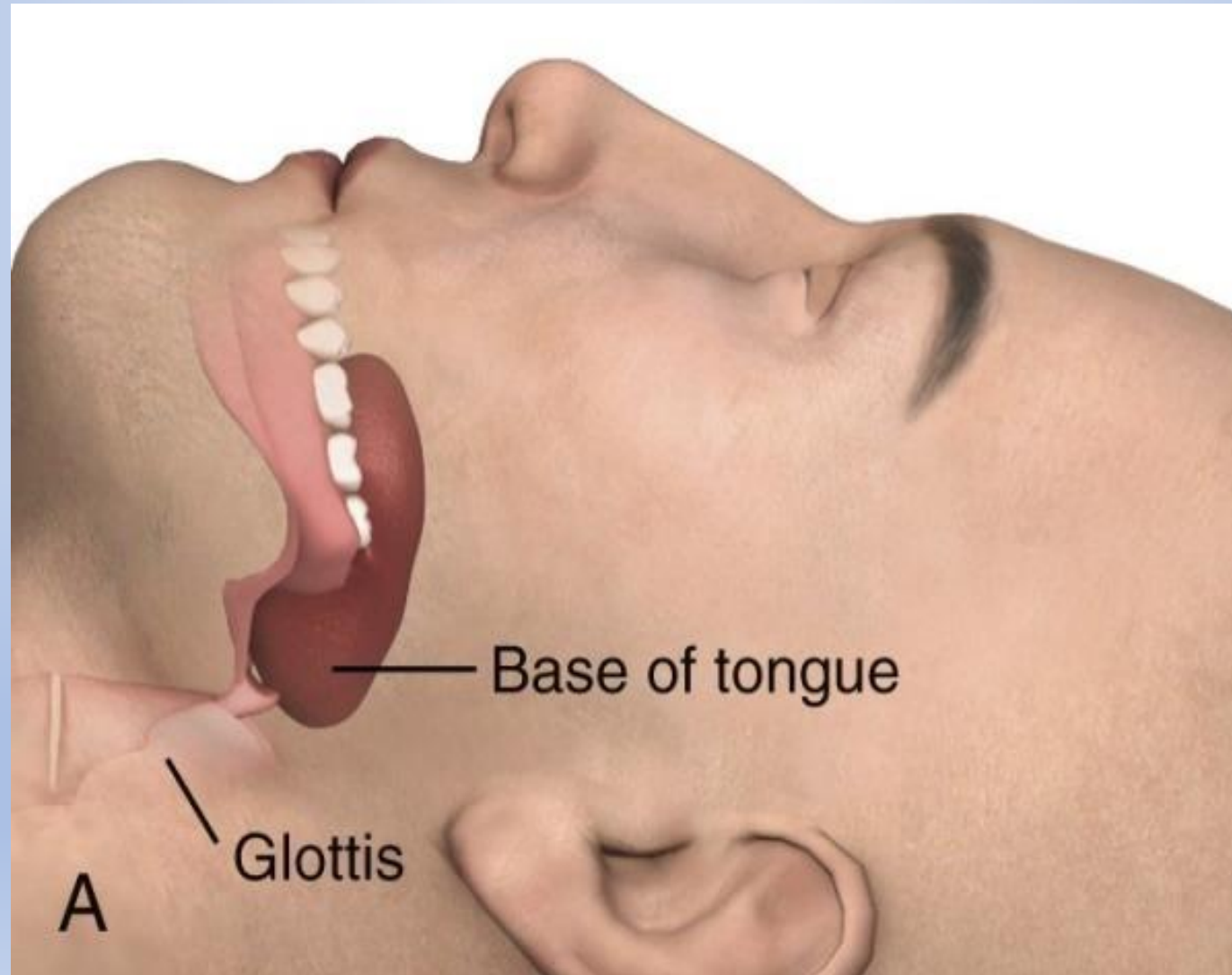
Opening the Airway

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

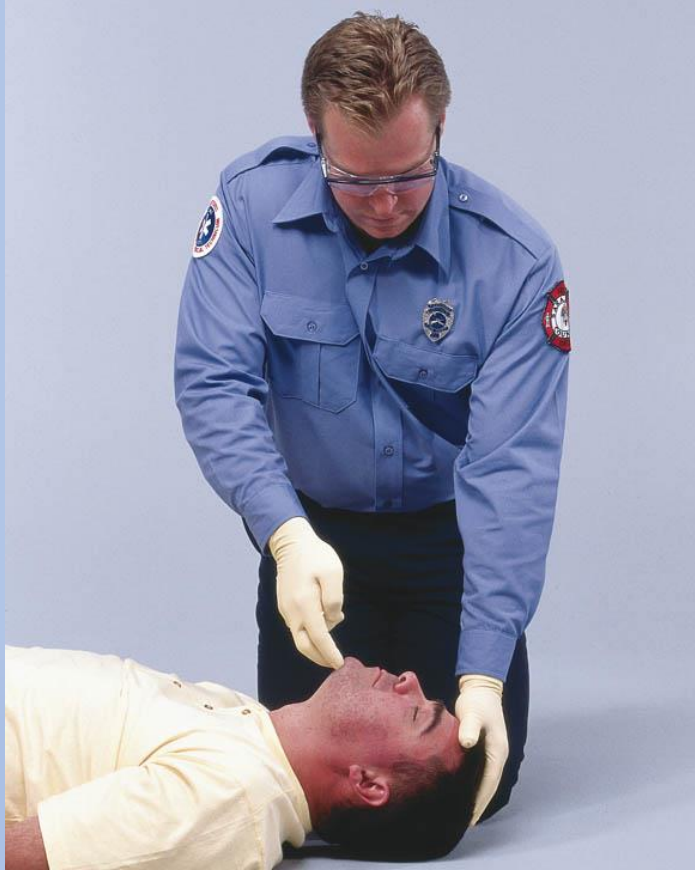
- ***Manual Airway Maneuvers:***

- The Head-Tilt/Chin-Lift Maneuver
- The Jaw-Thrust Maneuver

The Head-Tilt/Chin-Lift Maneuver



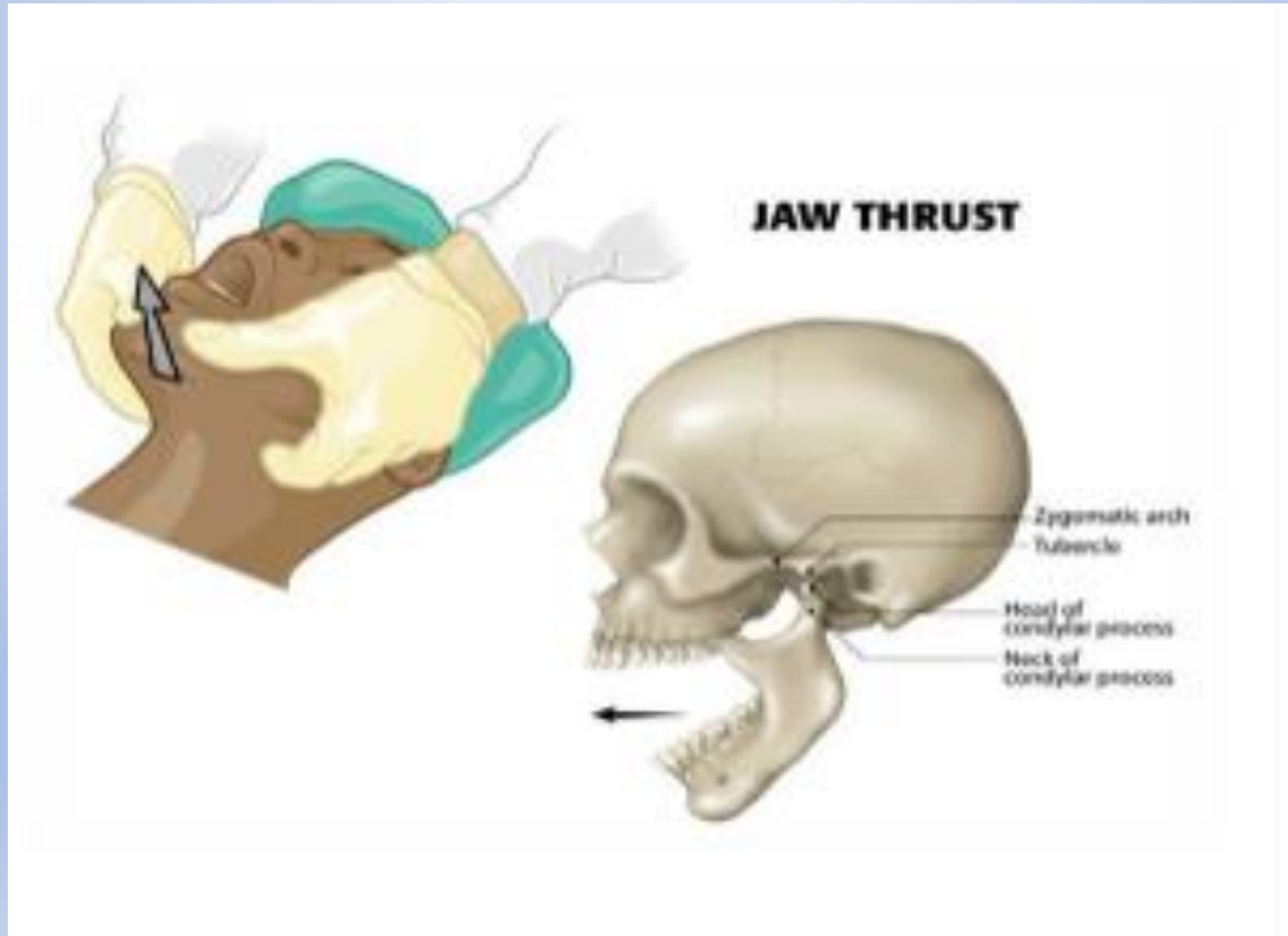
Head-Tilt Chin-Lift Maneuver



The Jaw-Thrust Maneuver



Jaw-Thrust Maneuver





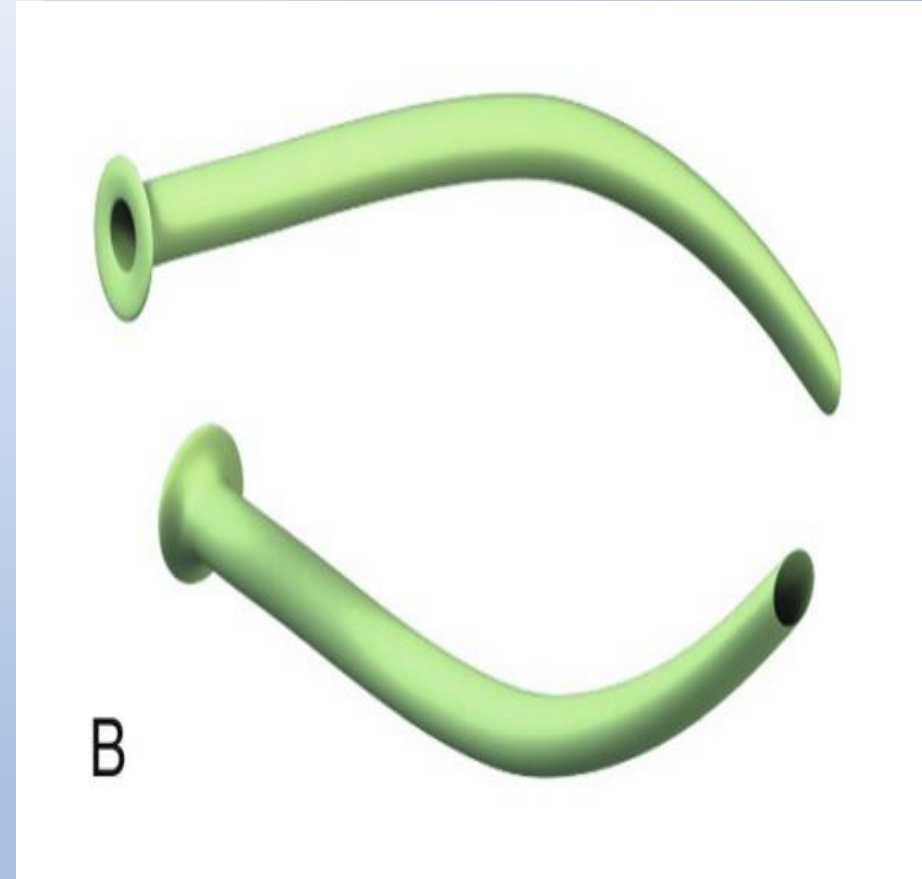
Manual Airway Maneuvers

در بیماران مشکوک به ترومای گردن، بهترین مانور جهت باز کردن راه هوایی بیمار، مانور Jaw-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



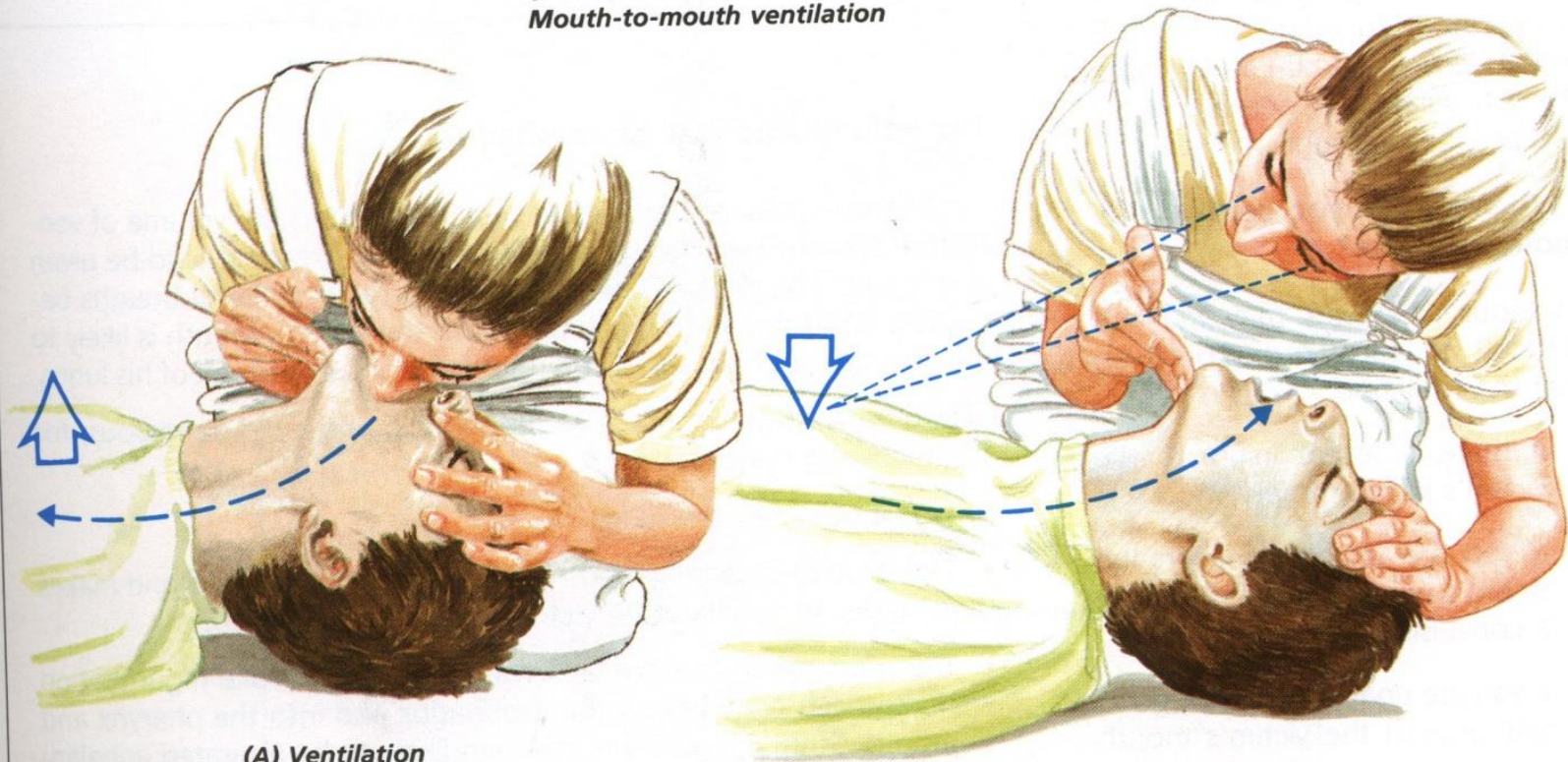
Oropharyngeal Airway Placement



Oropharyngeal Airway



6
Mouth-to-mouth ventilation



(A) Ventilation

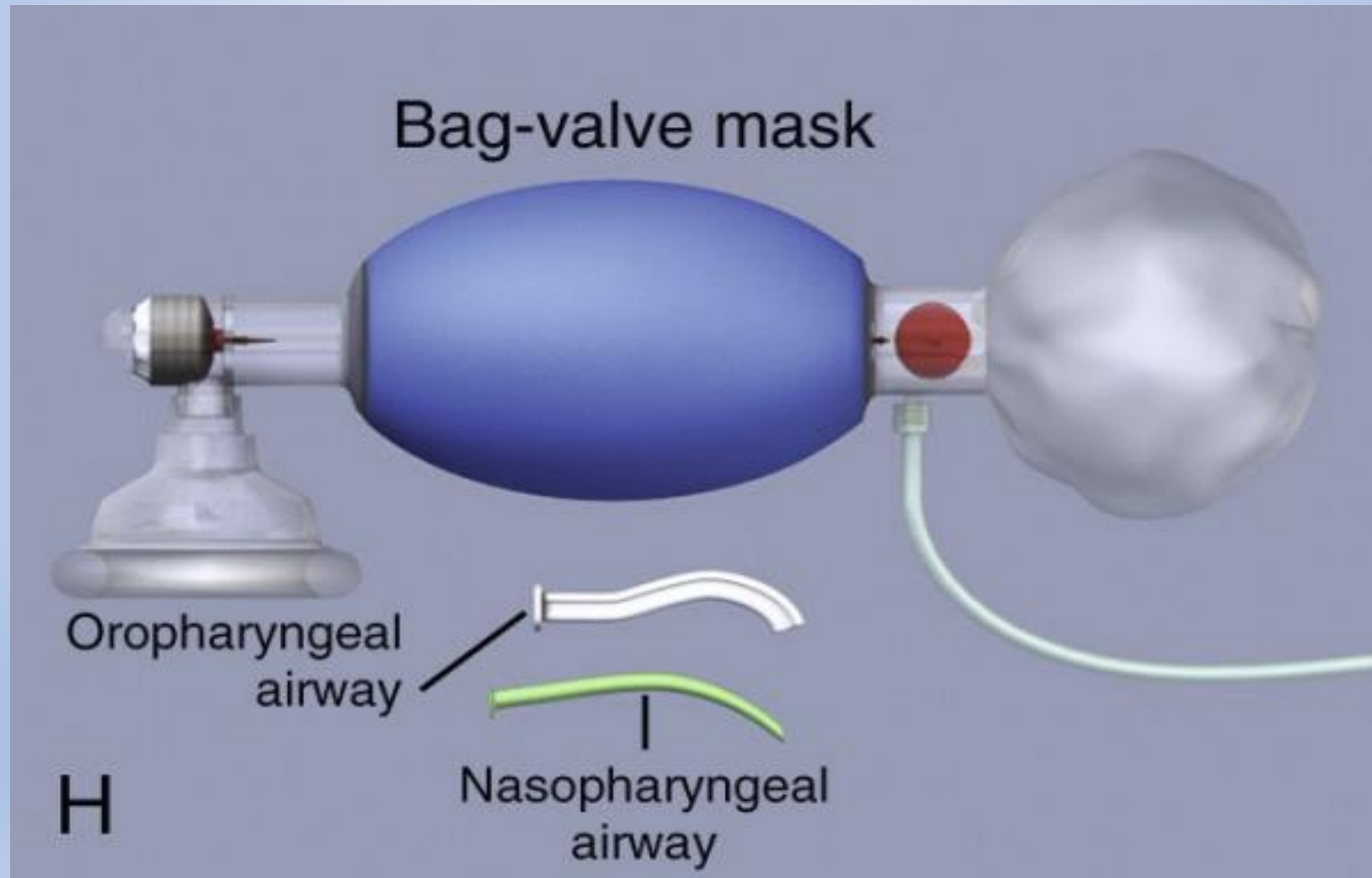
With the fingers of your hand that is on the victim's forehead, pinch his nostrils closed.

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.

A bag-mask



Ambu bag:



One-handed Bag-Mask Ventilation Technique



Bag-Mask Device Technique

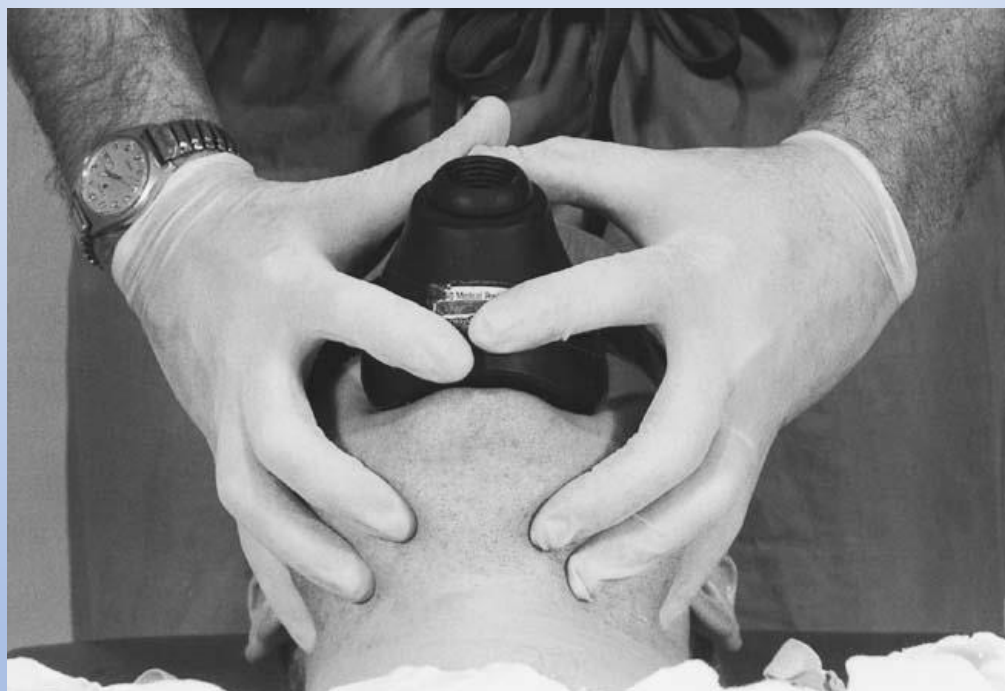


- If alone, hold your index finger over the lower part of the mask and your thumb over the upper part.
- Observe for gastric distention, changes in compliance, and changes in status.

Two-handed Bag-Mask Ventilation Technique







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 100-120 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.*

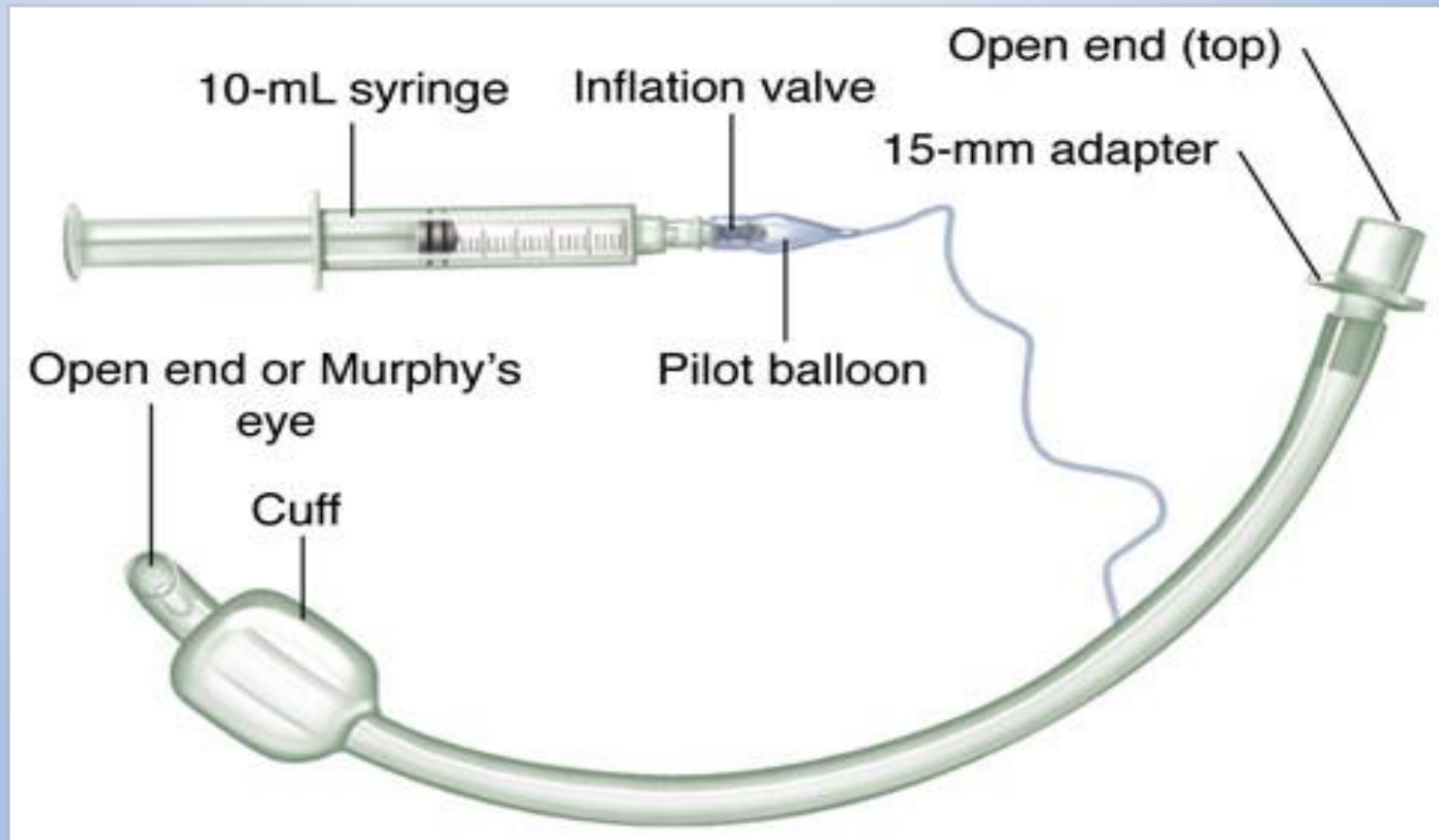


Endotracheal Tubes

- 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

- سایز مناسب لوله تراشه در: آقایان: 8 – 7.5
- خانم ها: 7.5-7
- عمق مناسب: آقایان 23cm & در خانم ها 21cm
- سایز مناسب لوله تراشه در کودکان: $\frac{سن(سال) + 16}{4}$
- عمق مناسب لوله تراشه در کودکان: $12 + نصف سن(سال)$

Laryngoscopes and Blades



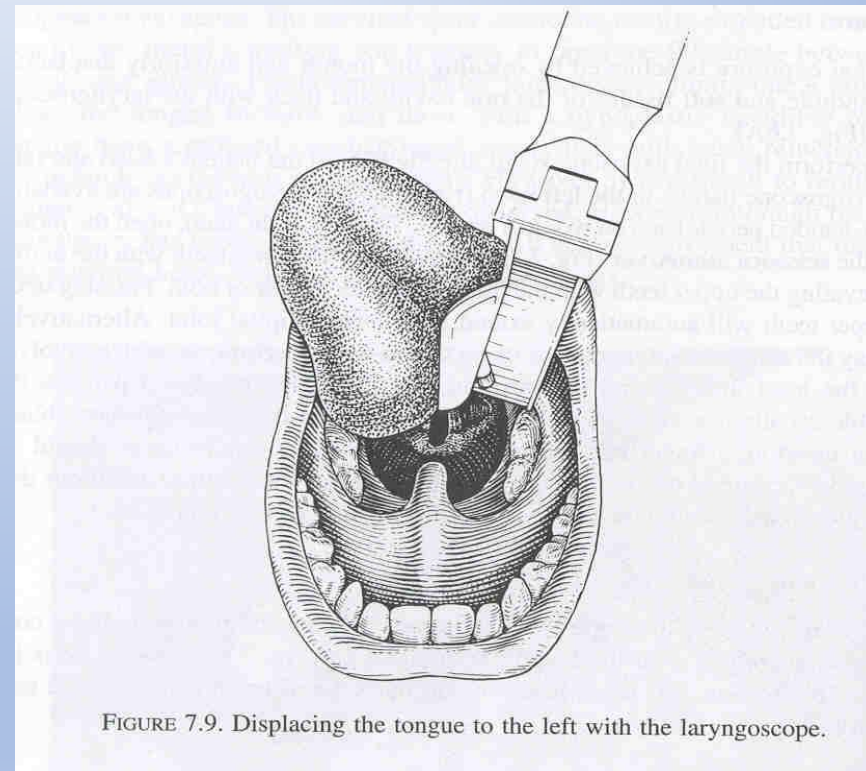
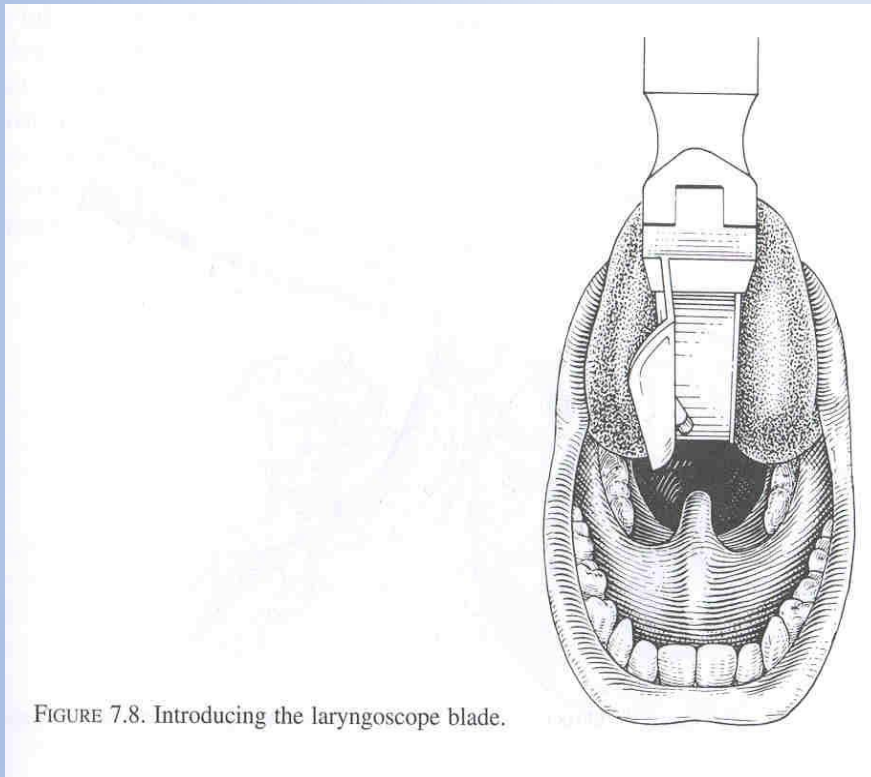
- Curved (Macintosh) blades
 - Curve conforms to tongue and pharynx
 - Tip is placed in the vallecula
 - Indirectly lifts epiglottis to expose vocal cords

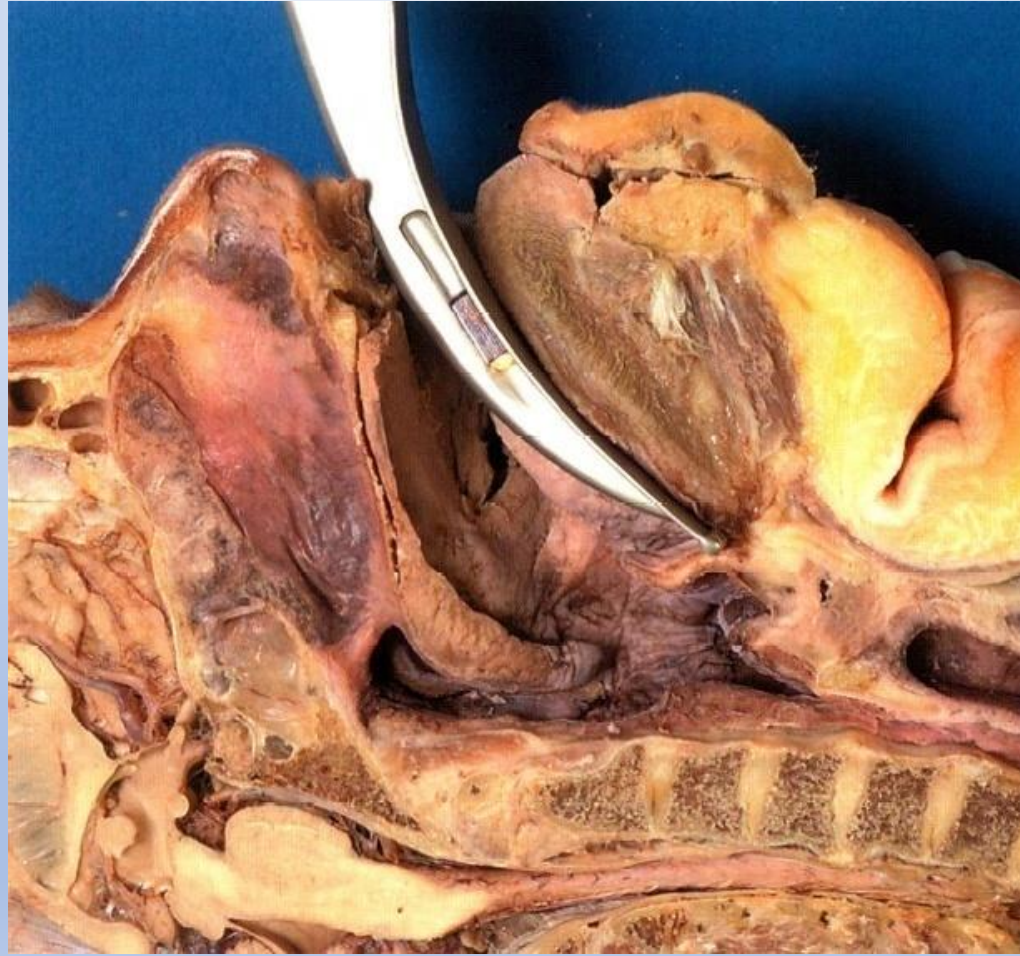


Direct Laryngoscopy

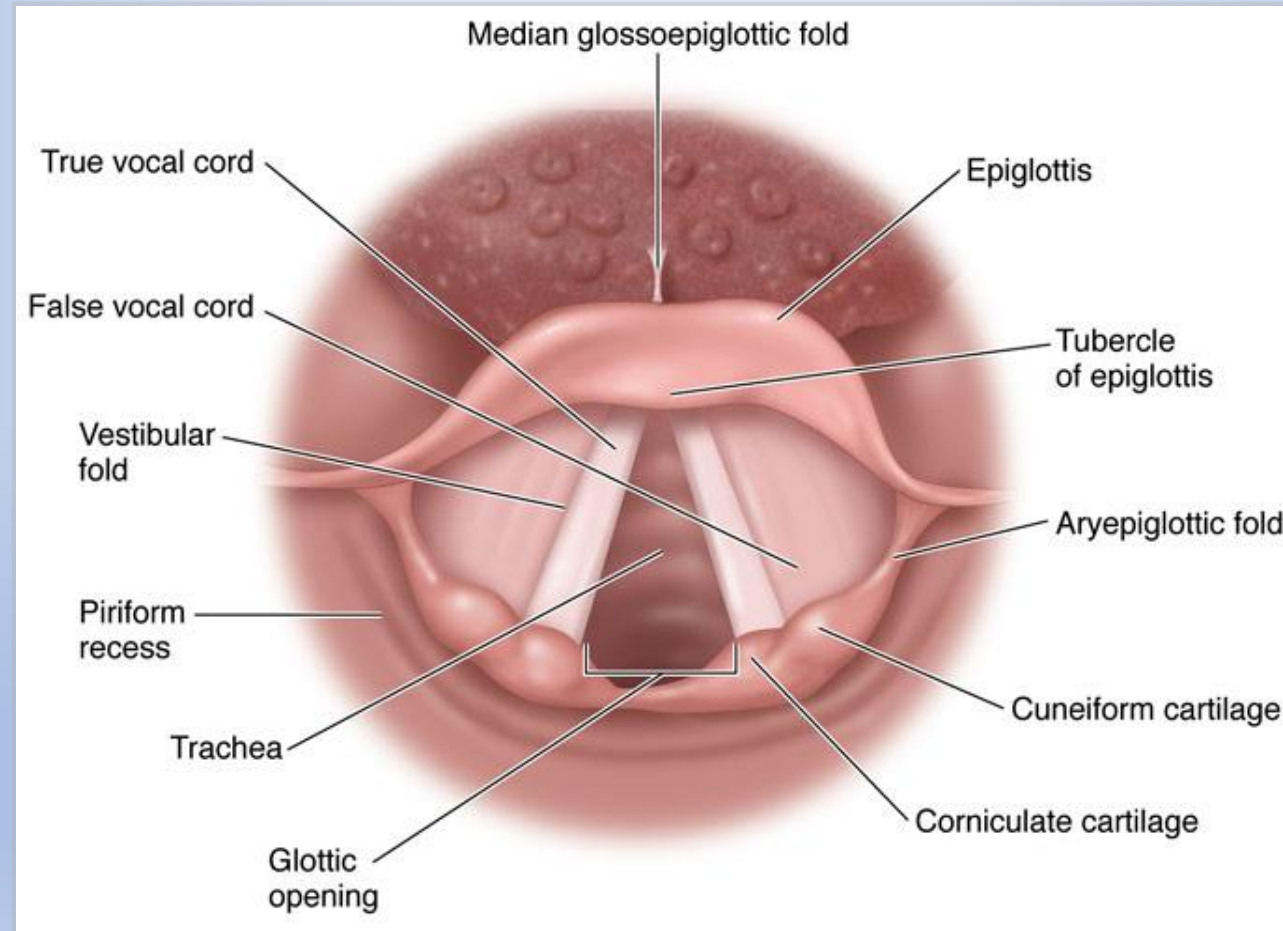


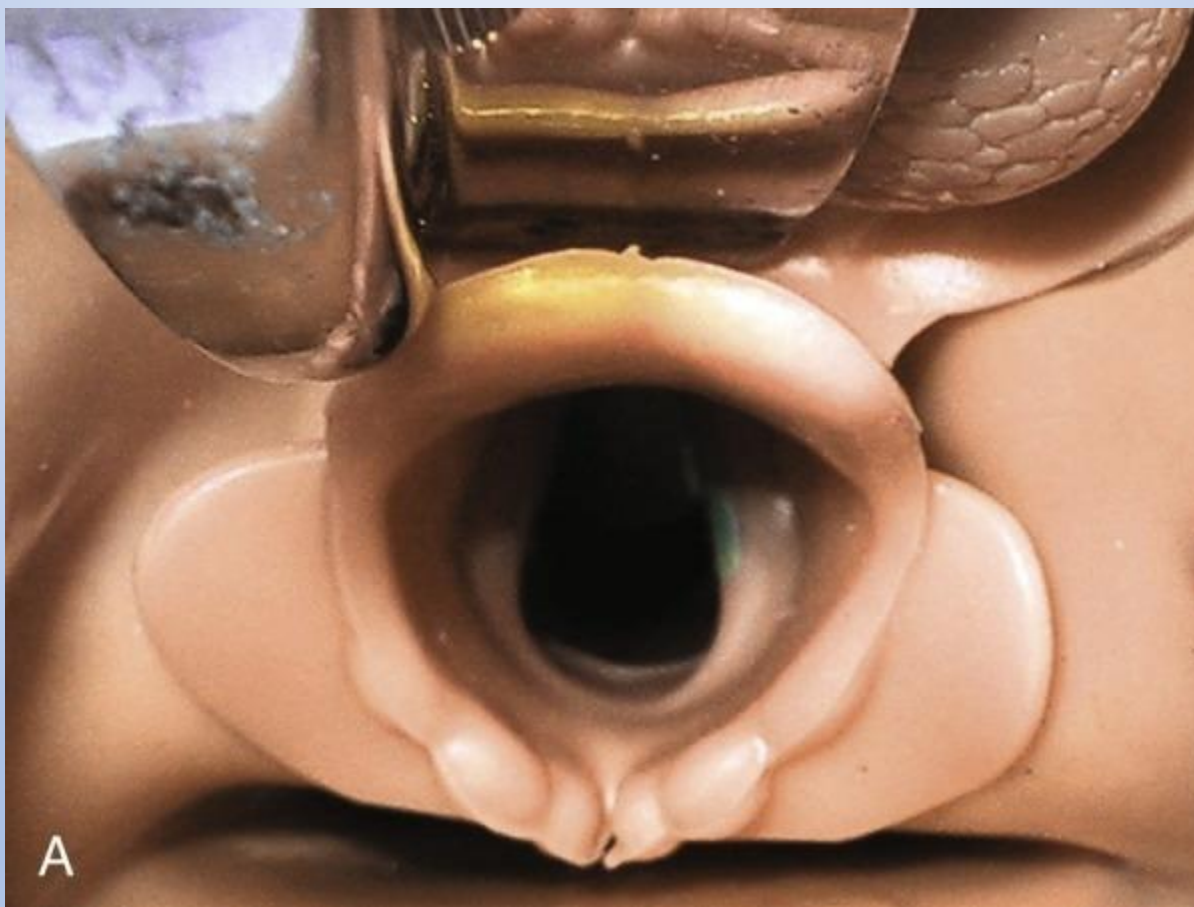
Visualization

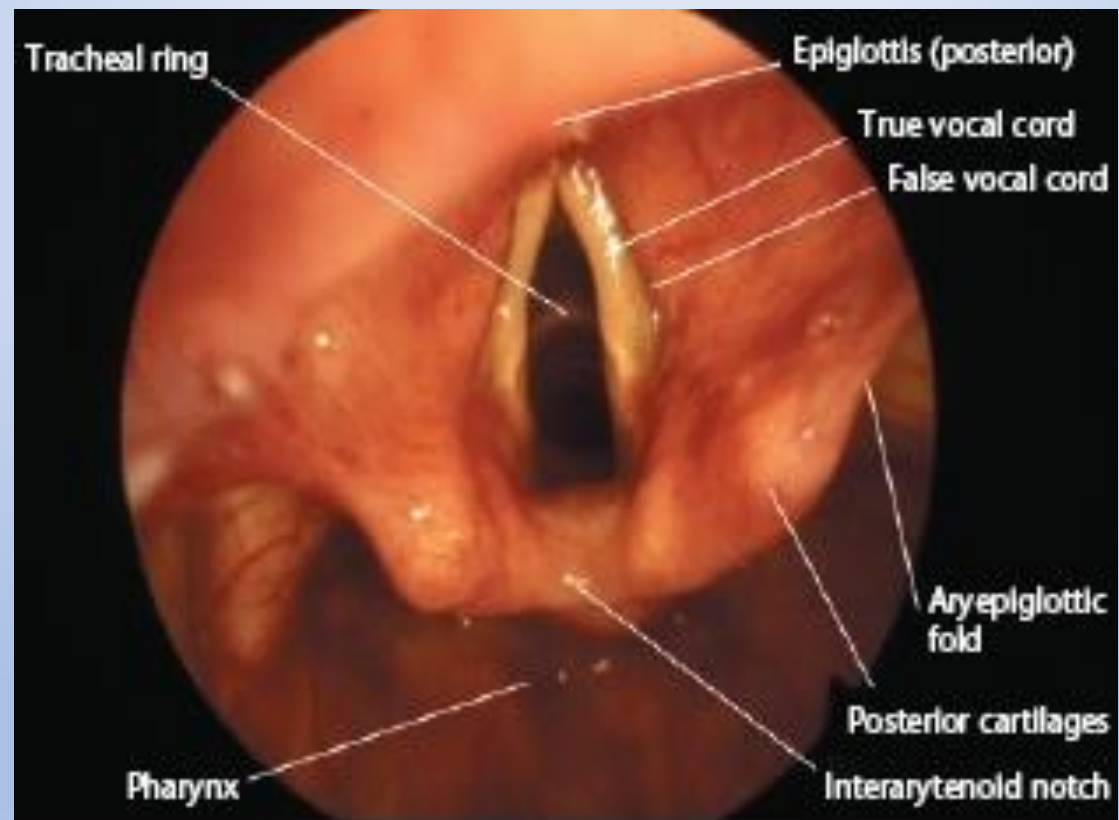




Glottis







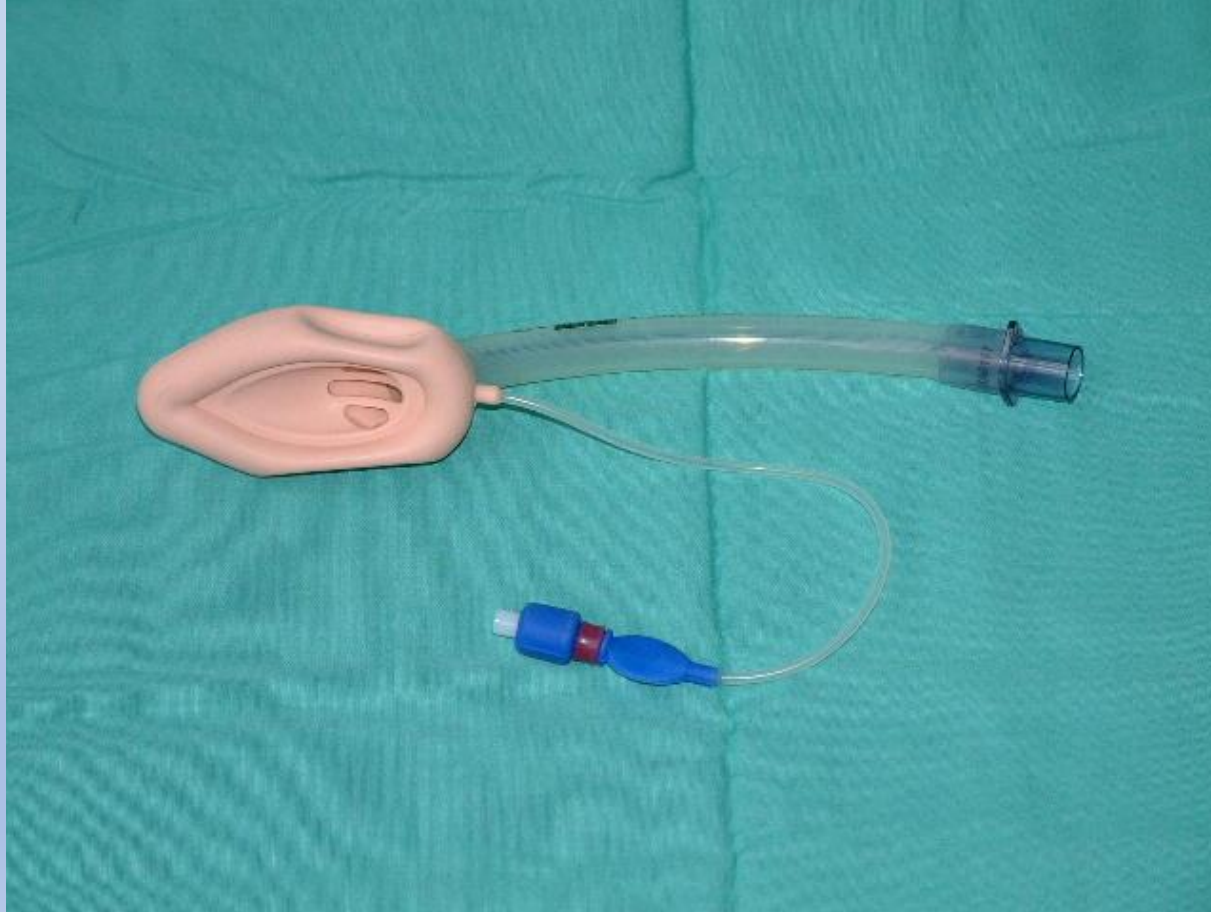
Direction of forces applied for direct laryngoscopy.



INTERMEDIATE AIRWAY DEVICES

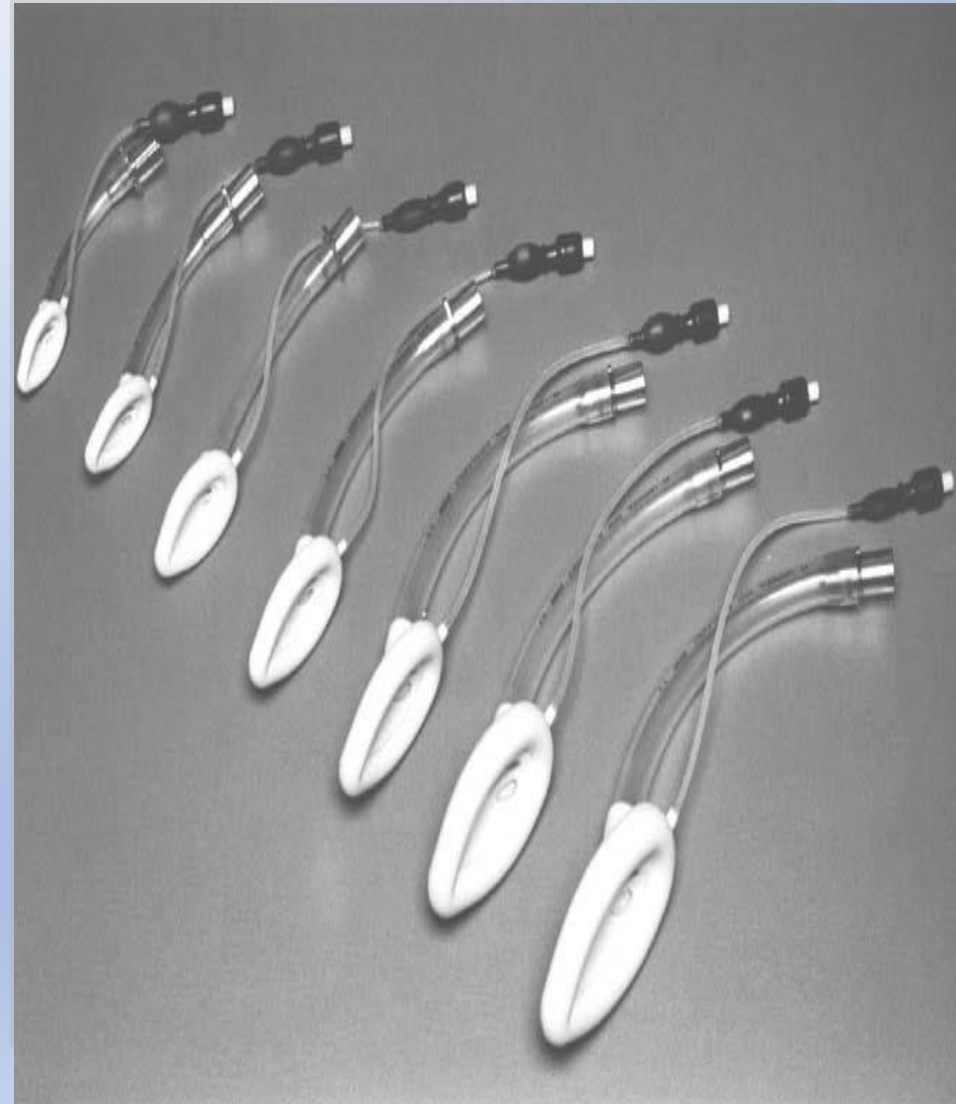
- In an emergency airway situation, use these devices for temporary rescue ventilation until tracheal intubation or a surgical airway can be performed:
- - **The LMAs**(laryngeal mask airway)
- - **The Esophageal-Tracheal Combitube**
- - **The Laryngeal Tube**

- •

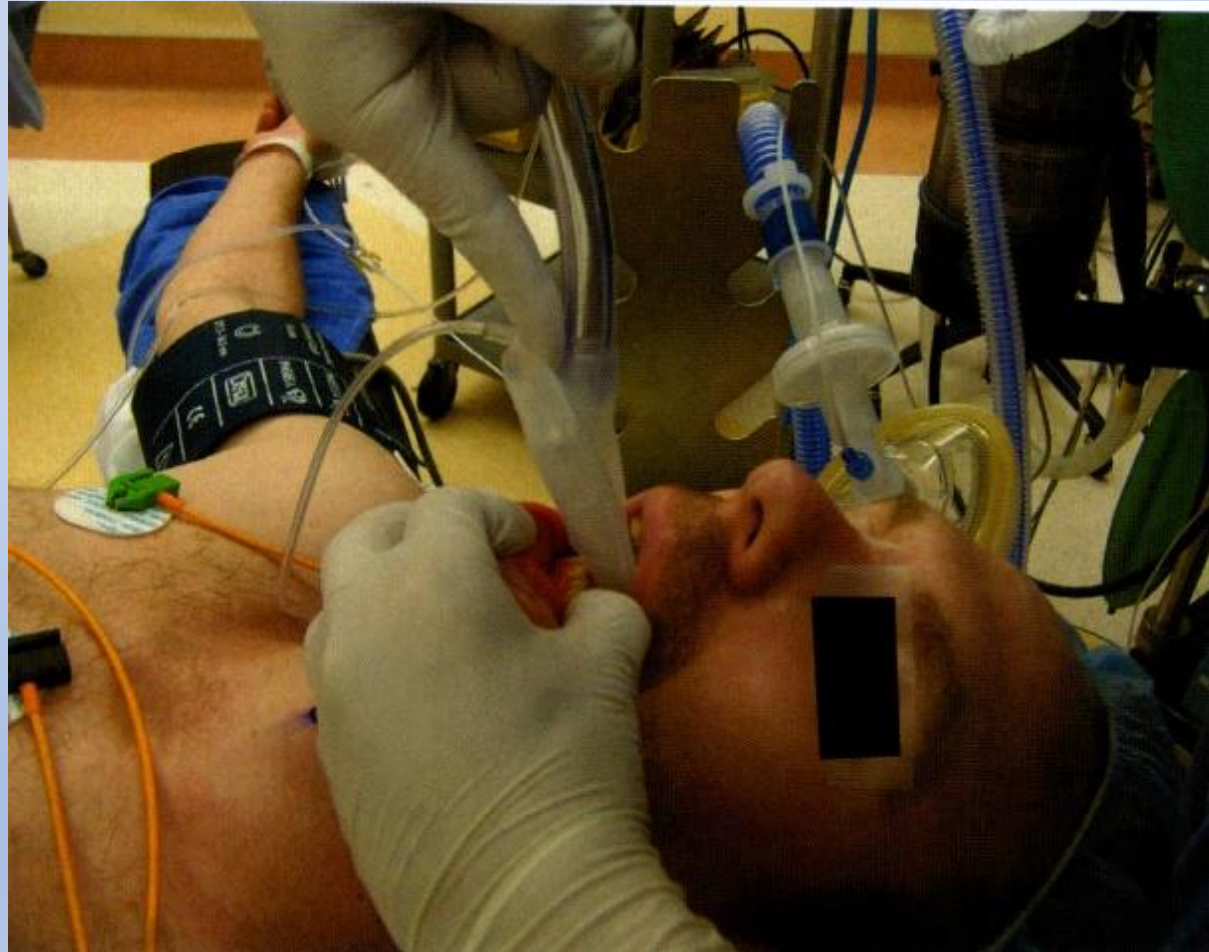


Laryngeal mask airway(LMA)

- 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.

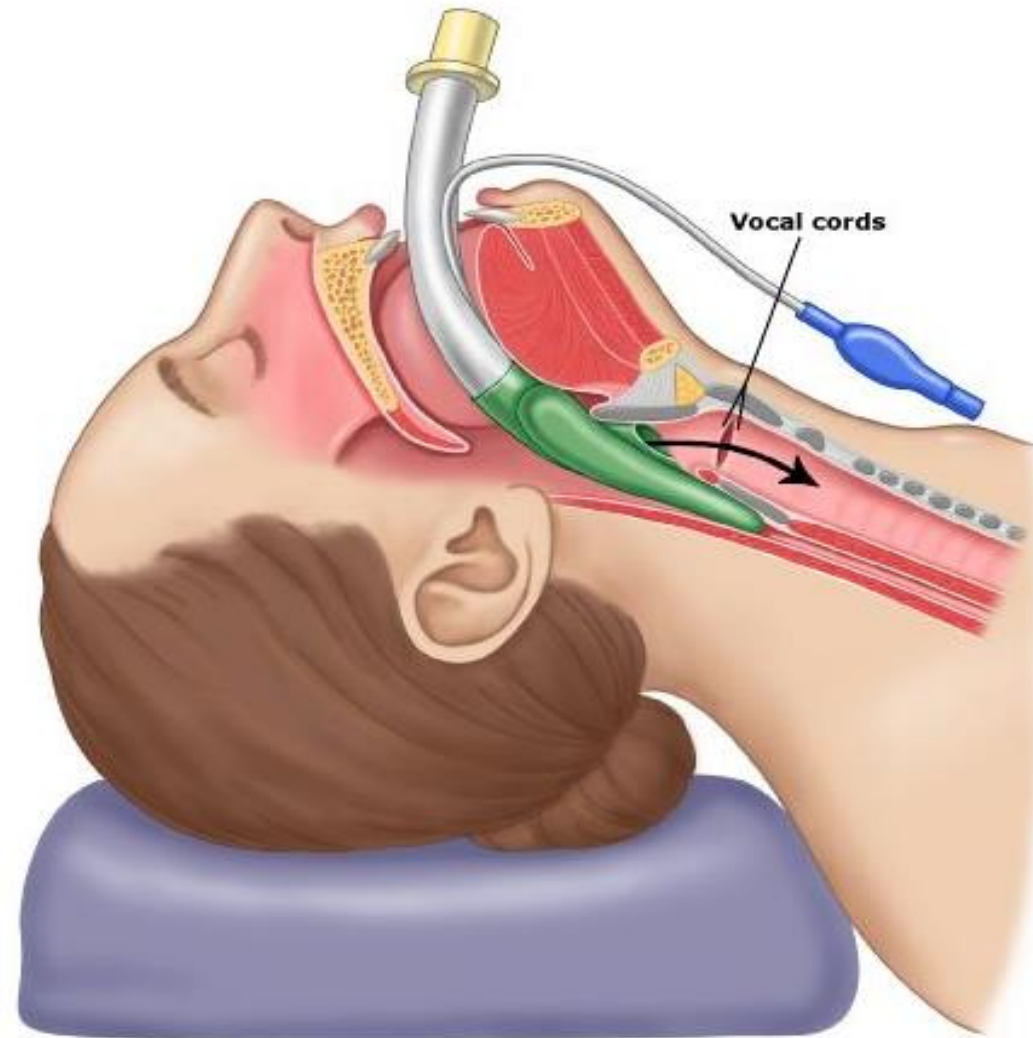


L.M.A Insertion

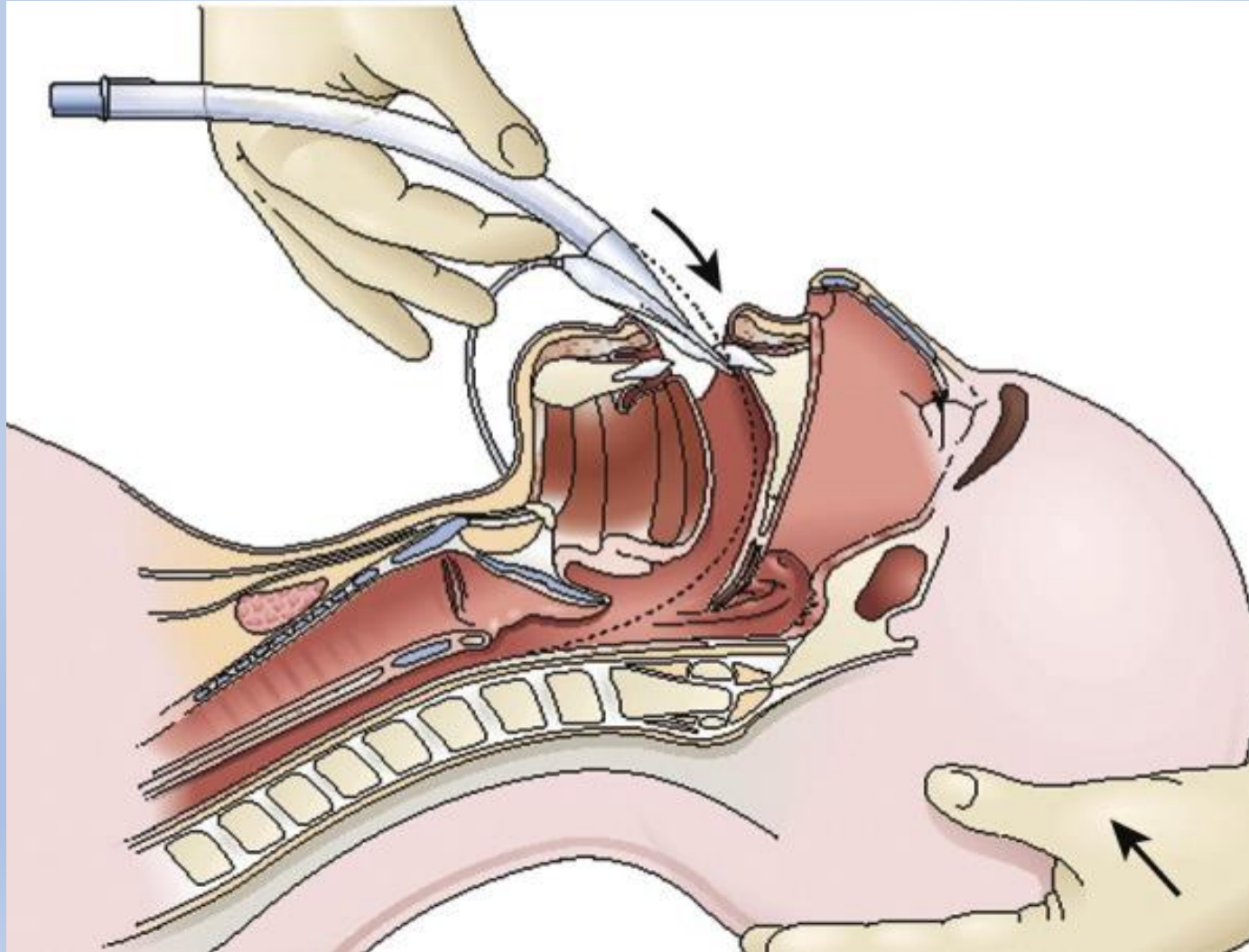




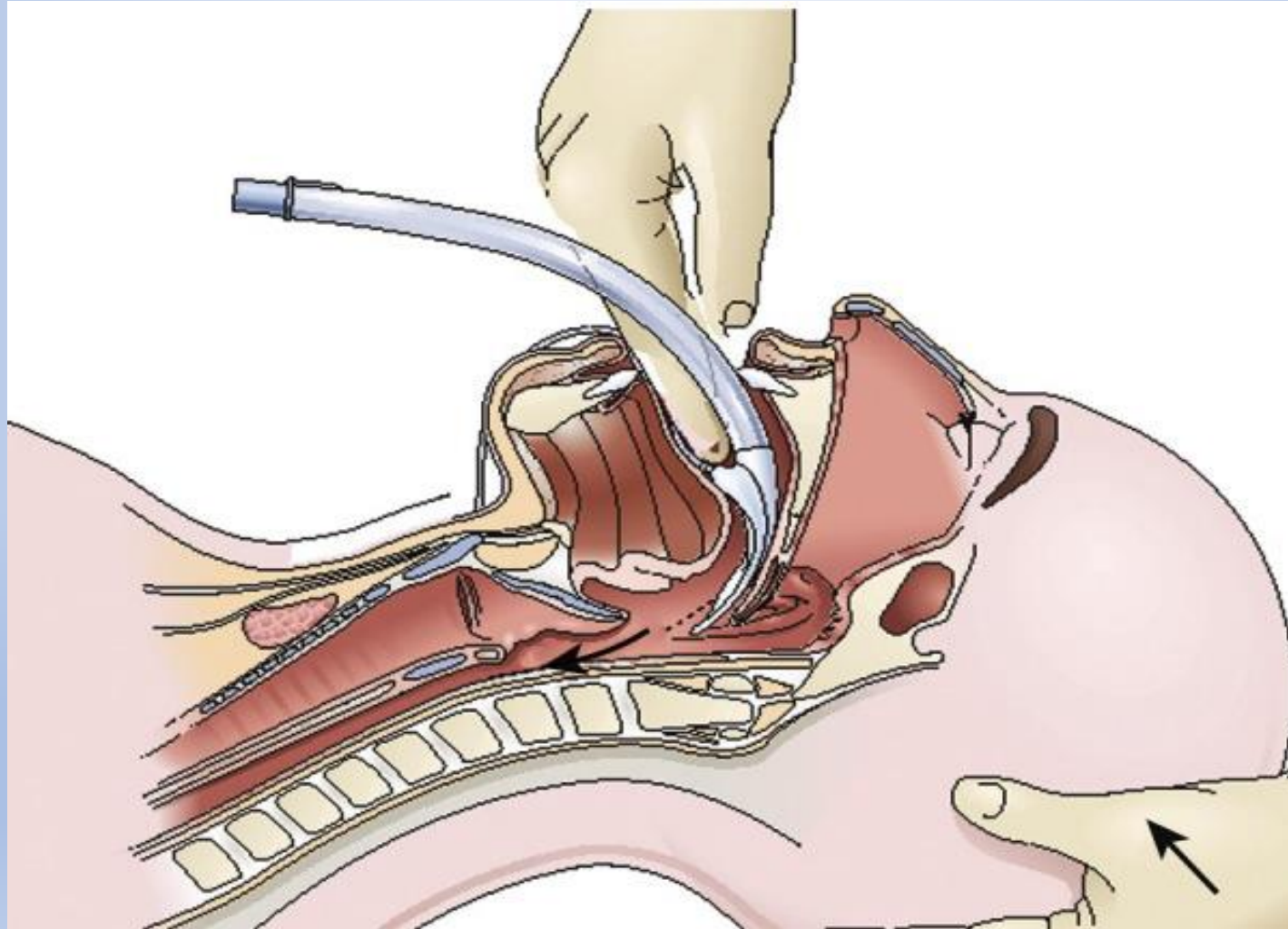
Laryngeal mask airway



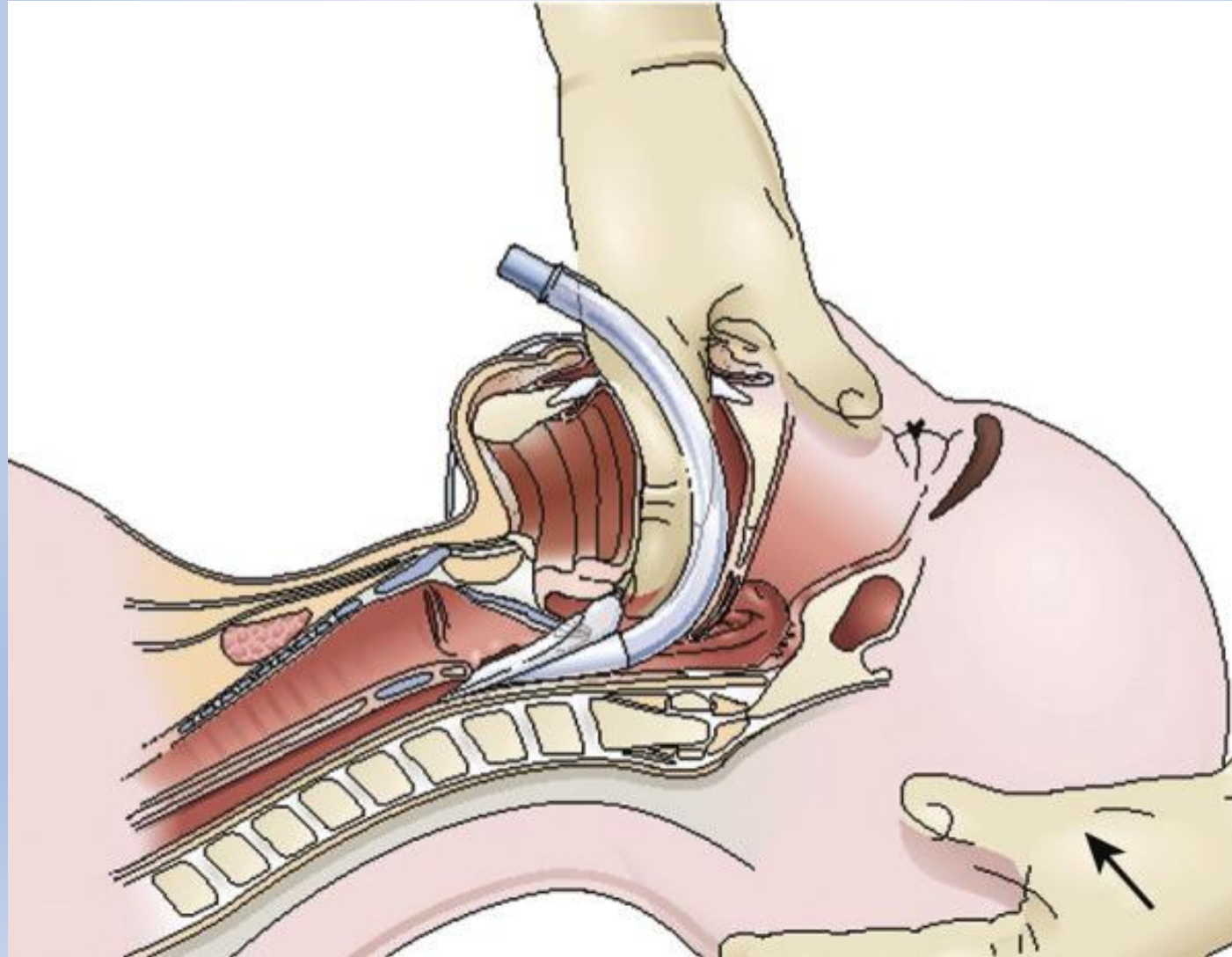
Placement of the LMA



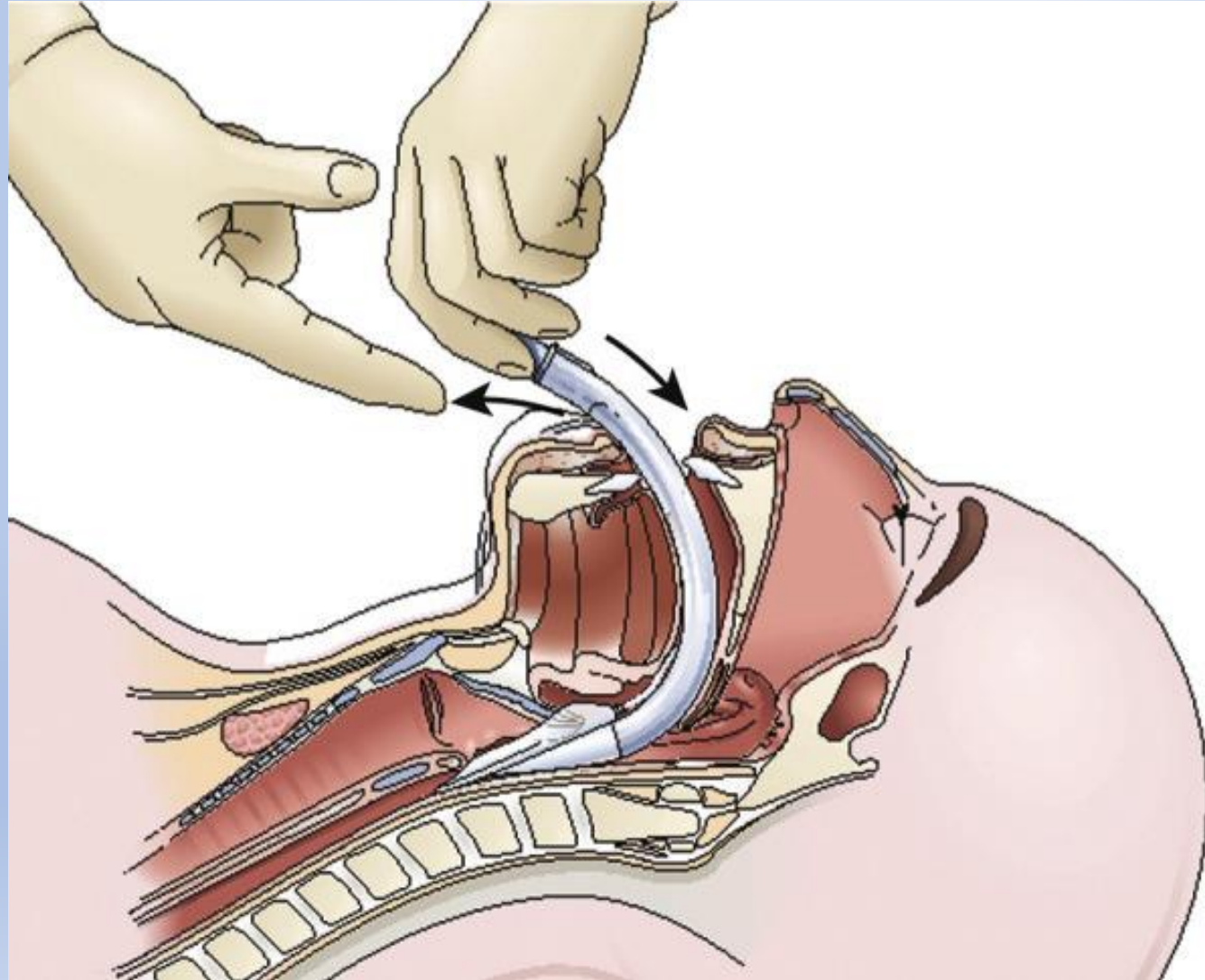
Using the index finger, slide the LMA along the hard palate and posterior pharynx.



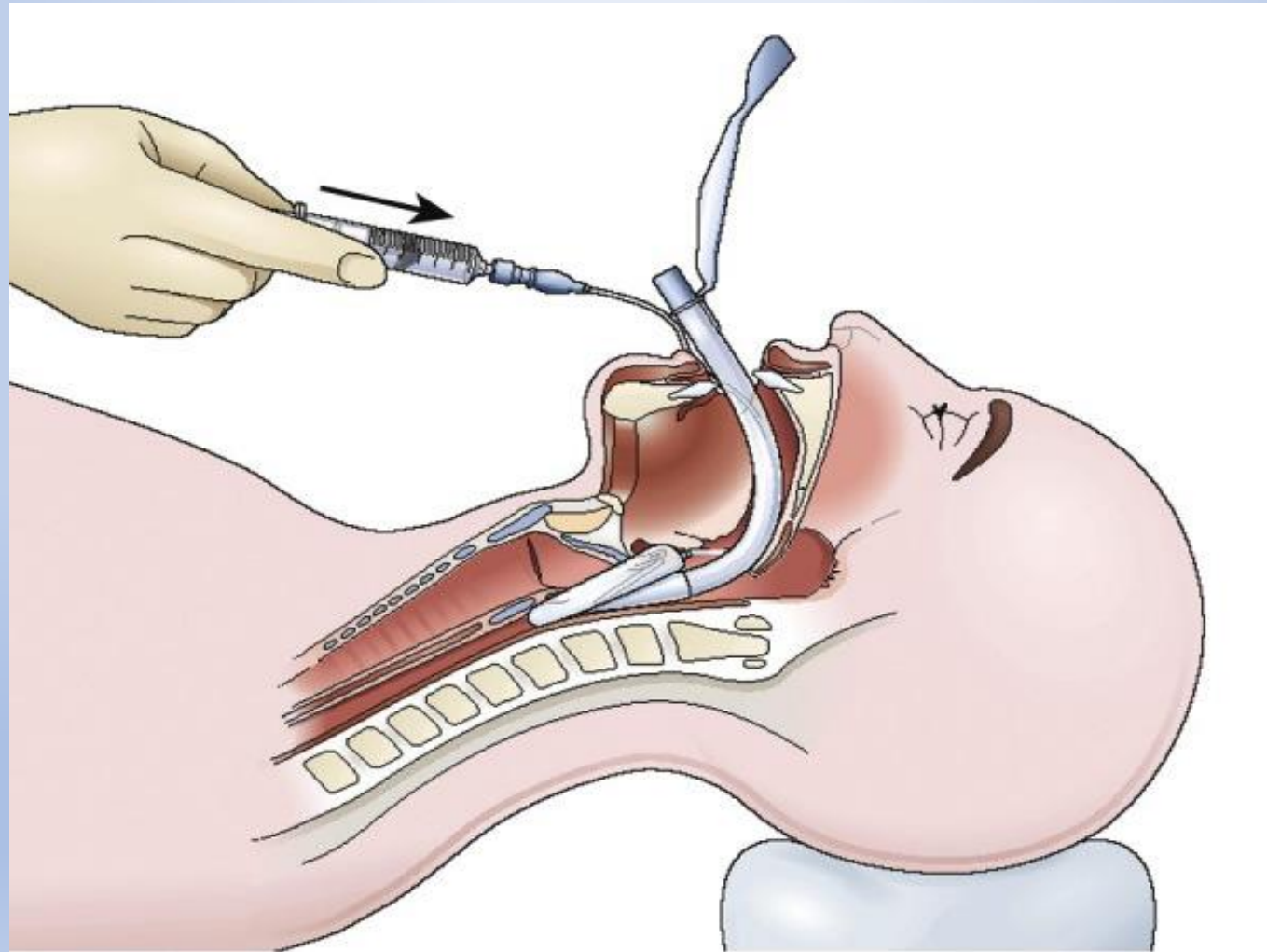
To advance the LMA into its final position, fully extend the index finger and continue to advance the LMA along the posterior hypopharynx until it meets firm resistance.



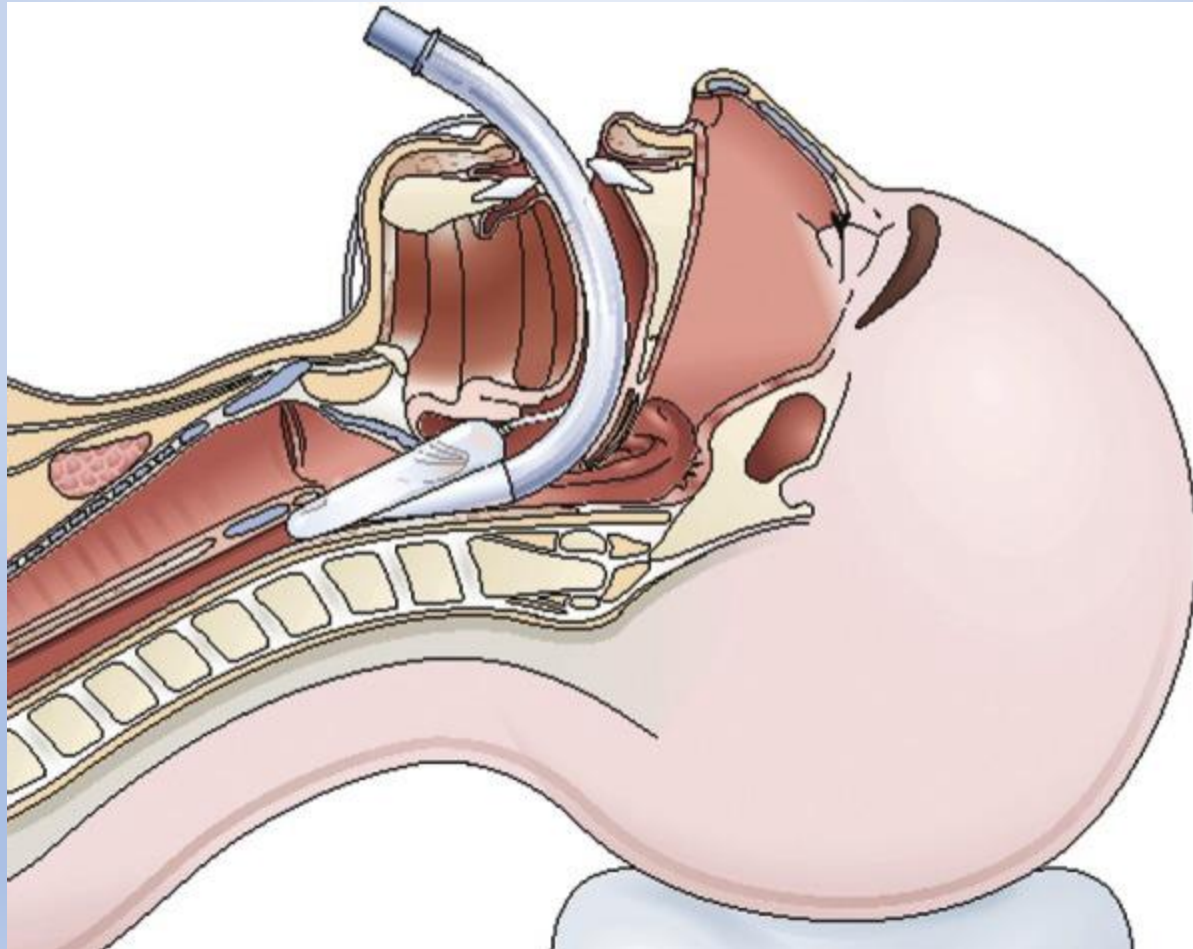
Hold onto the proximal end of the LMA airway tube with the other hand, so that it is not displaced, while carefully removing the inserting hand and index finger from the patient's mouth.

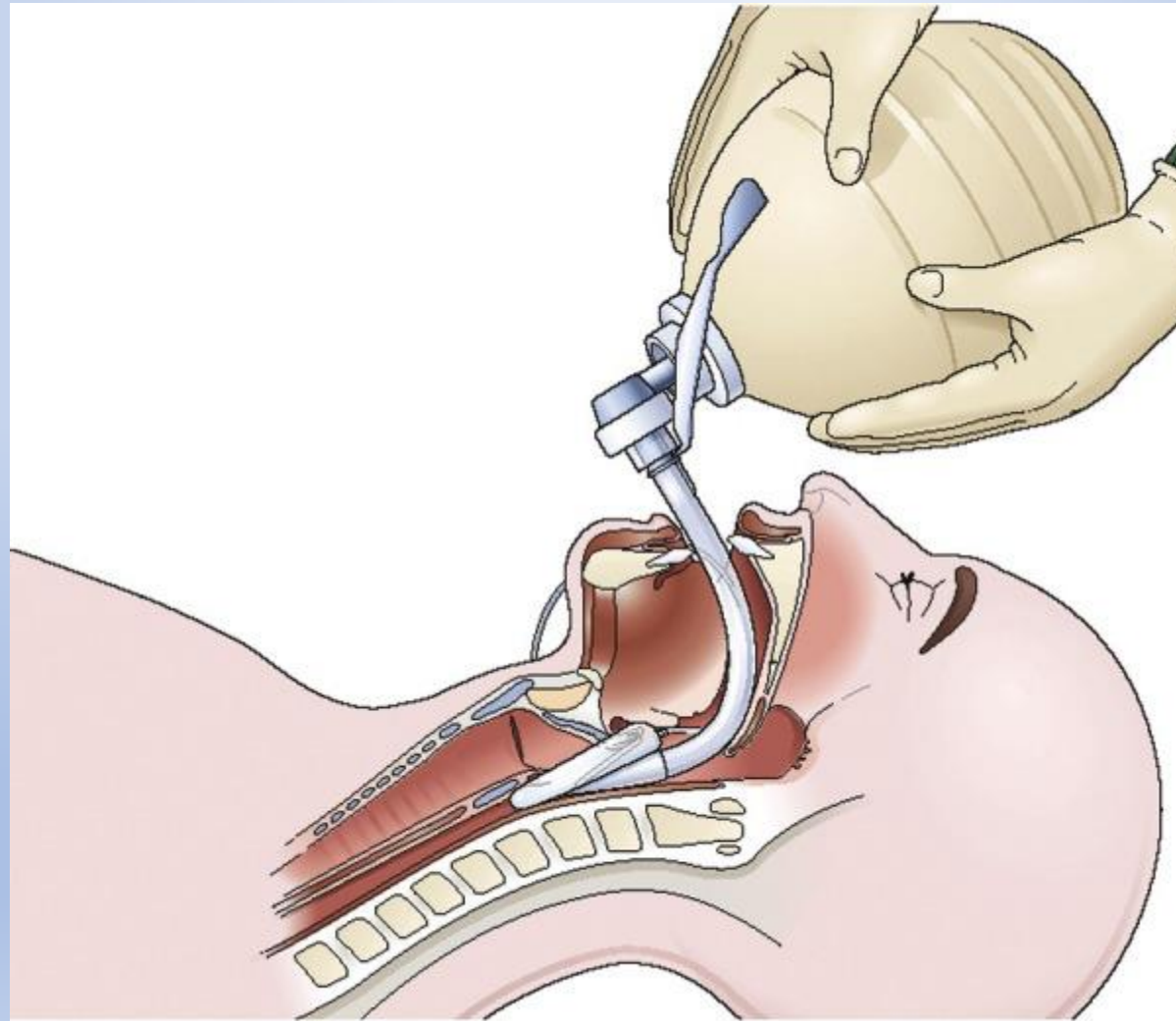


LMA cuff inflation



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





PRINCIPLES* OF AIRWAY MANAGEMENT IN CORONAVIRUS COVID-19

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



BEFORE

Activate Windows
Go to Settings to activate Windows

COVID-19 airway management: SAS

Safe for staff and patient

Accurate avoiding unreliable, unfamiliar, or repeated techniques

Swift timely, without rush or delay

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



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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

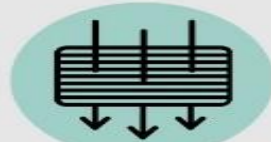


Properly don personal protective equipment before entering the scene.



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.



Interim guidance provided by



American
Heart
Association.

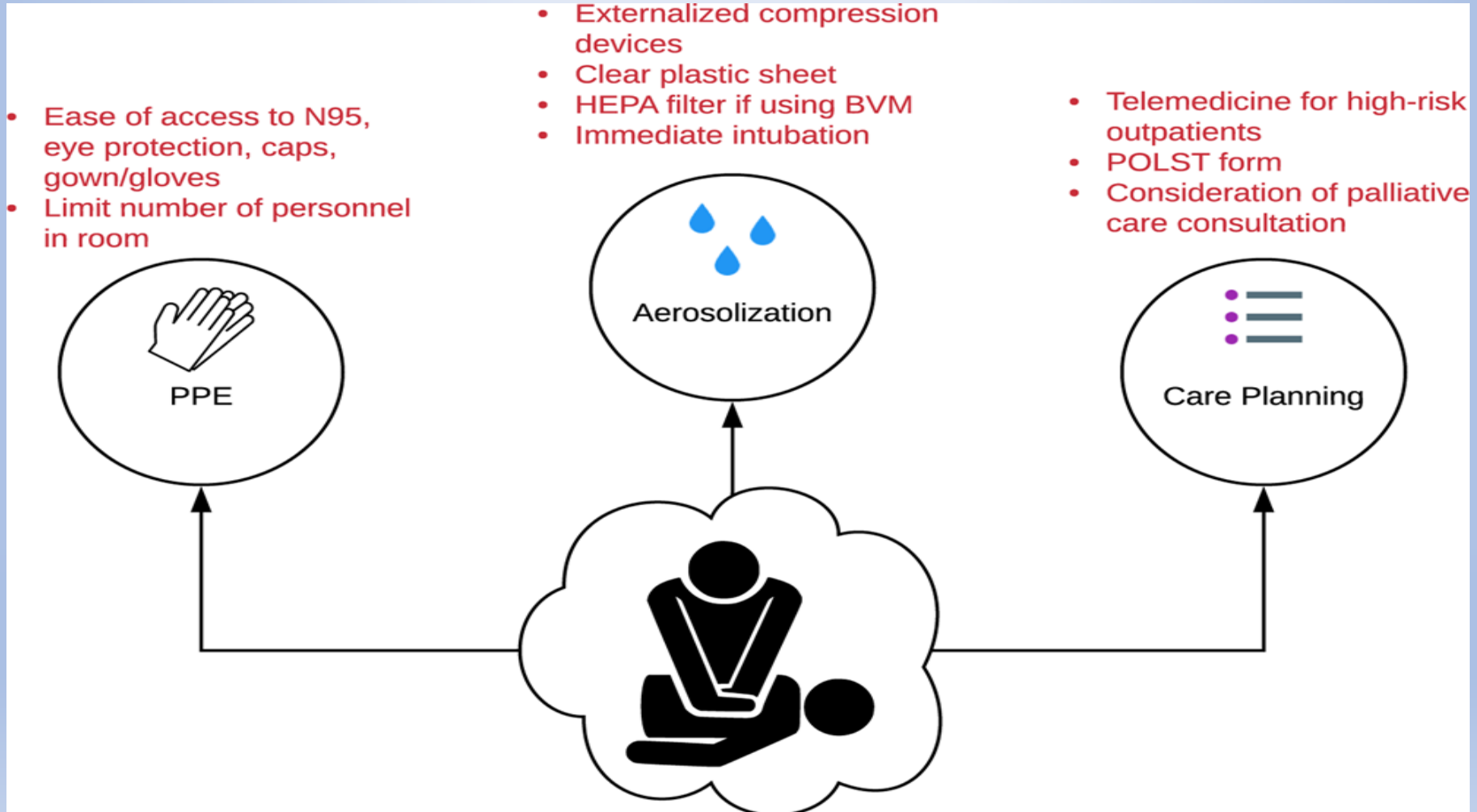
Template designed by Sparsh Shah, MD candidate. Infographic designed by Kara Tastad, MD candidate and Meenhas Oravil, MD. Edited by Sparsh Shah and AlvinChin, MD, MSc.

CPR.heart.org KJ-1426 5/20 © 2020 American Heart Association

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

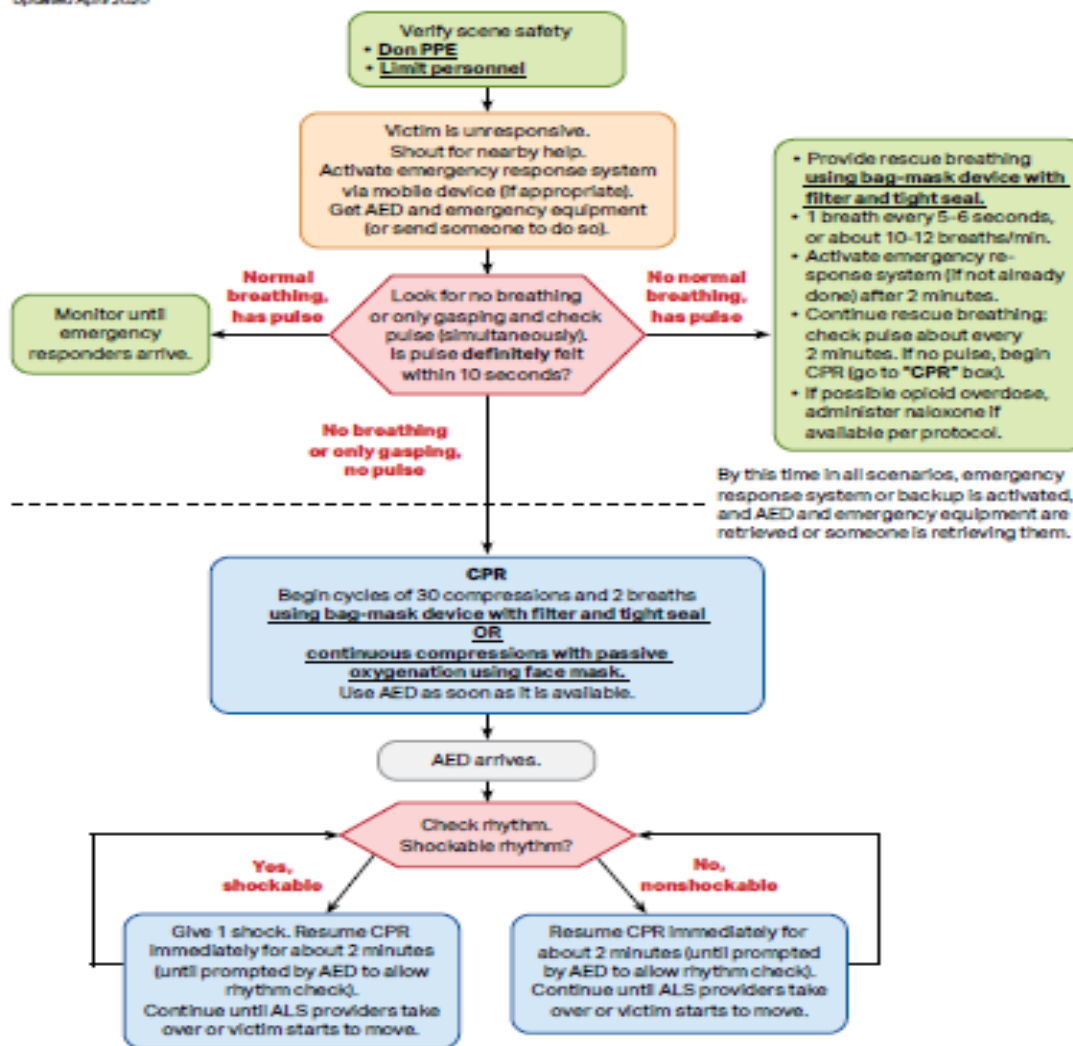
- some have suggested increasing the **use of external mechanical chest compression devices** to reduce the risk to personnel when available.
- Others have suggested that **plastic sheets** be placed between the patient and the provider performing chest compressions to minimize aerosolization.
- In patients 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



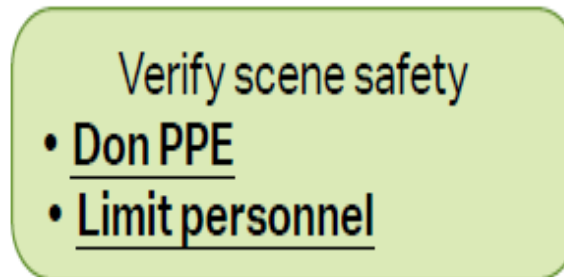
BLS Healthcare Provider Adult Cardiac Arrest Algorithm for Suspected or Confirmed COVID-19 Patients

Updated April 2020



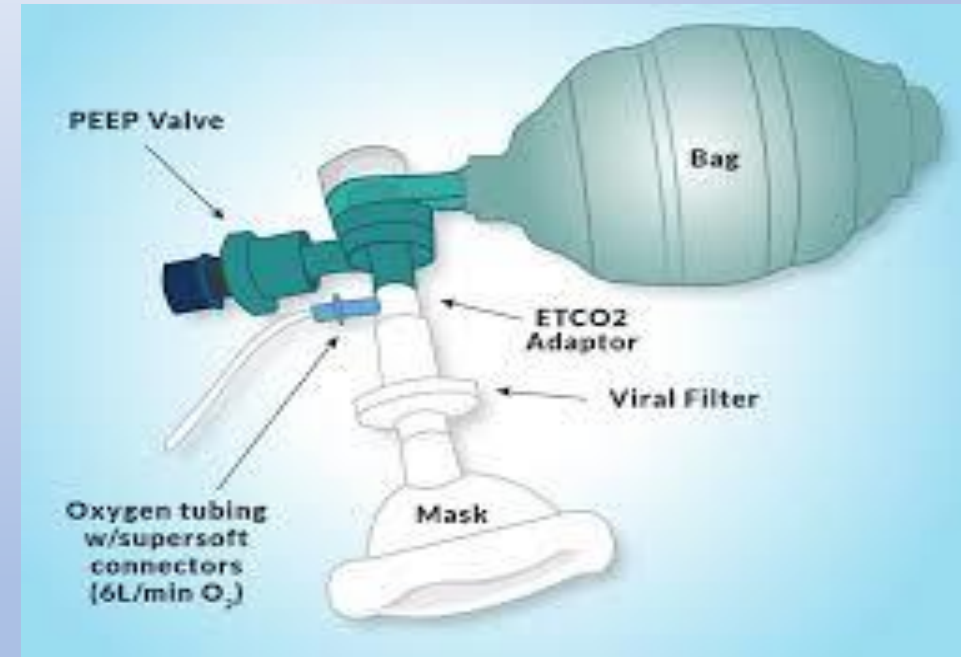
BLS Healthcare Provider Adult Cardiac Arrest Algorithm for Suspected or Confirmed COVID-19 Patients

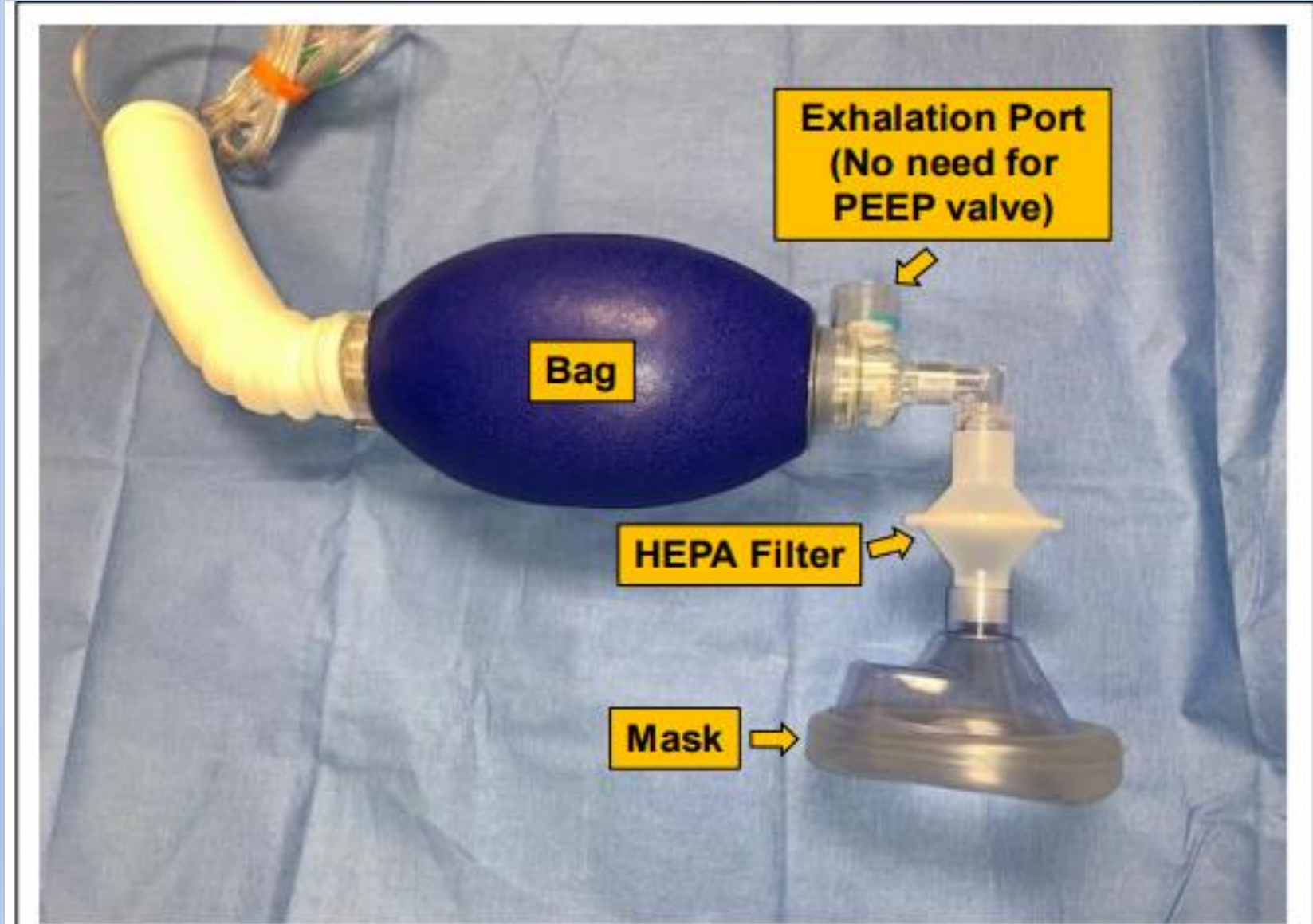
Updated April 2020



- 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.

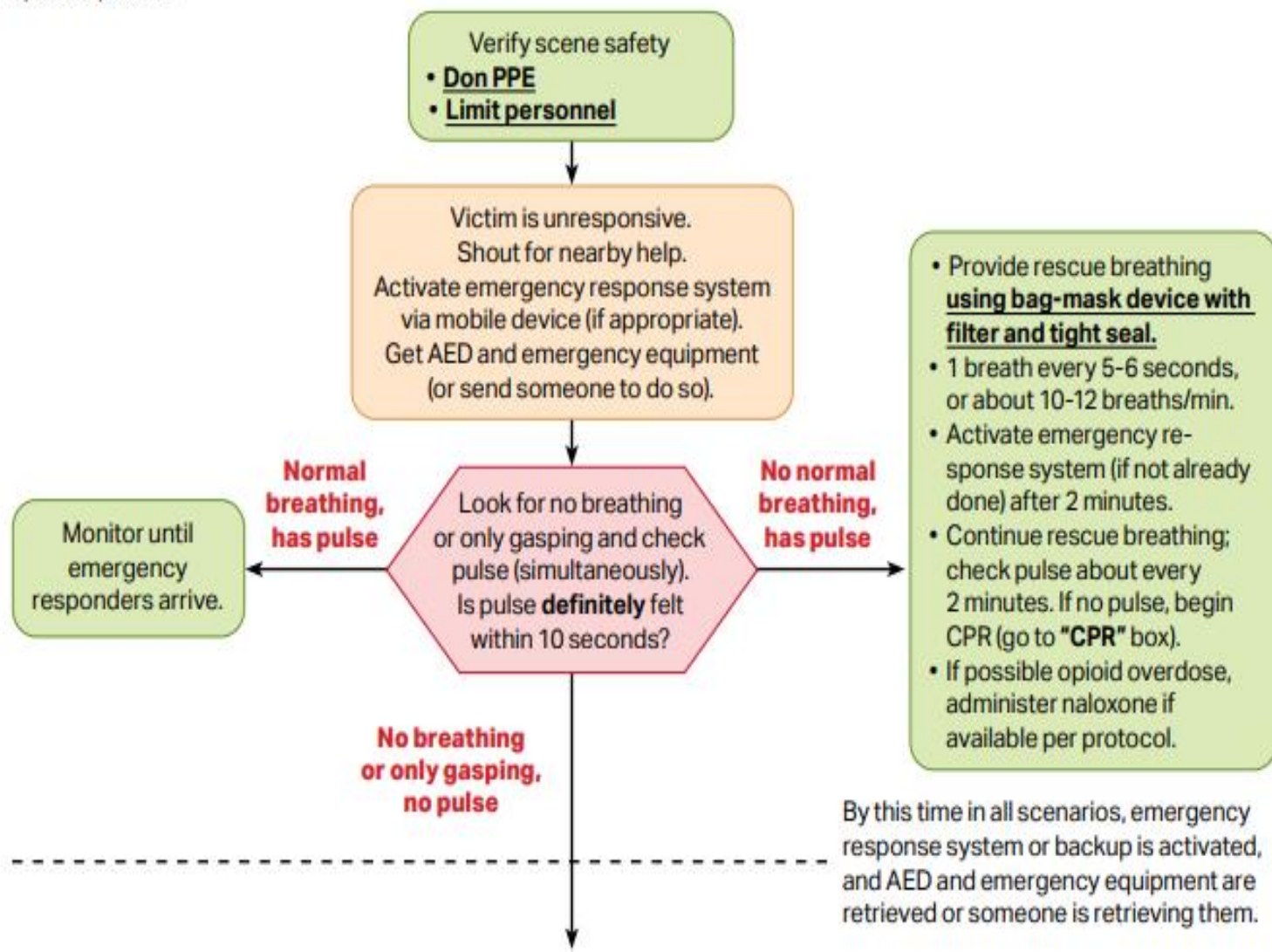
Use a viral filter (e.g. HME, HEPA) between the self-inflating bag and airway (mask, supraglottic airway or tracheal tube) to minimize the risk of virus spread.



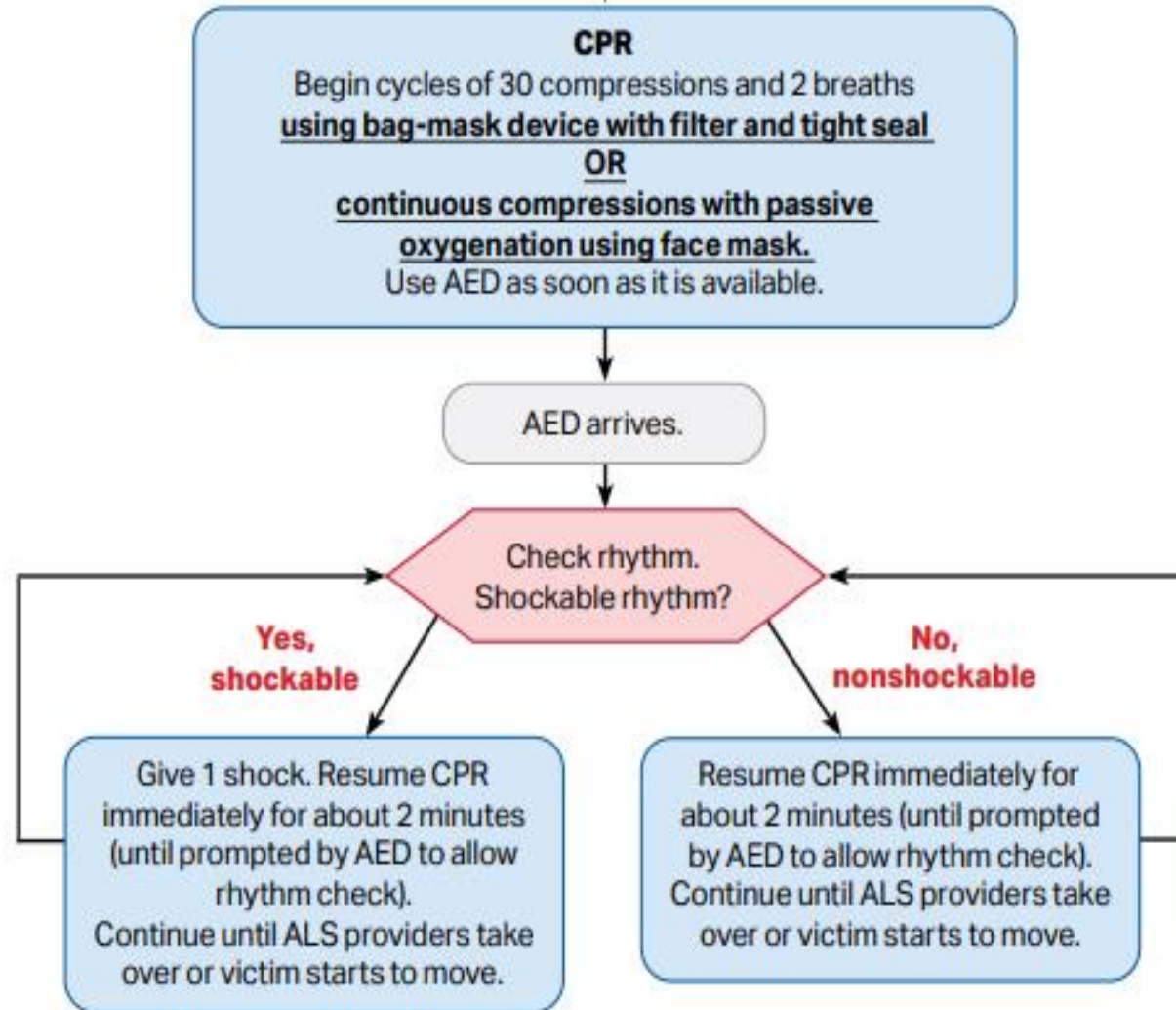


BLS Healthcare Provider Adult Cardiac Arrest Algorithm for Suspected or Confirmed COVID-19 Patients

Updated April 2020

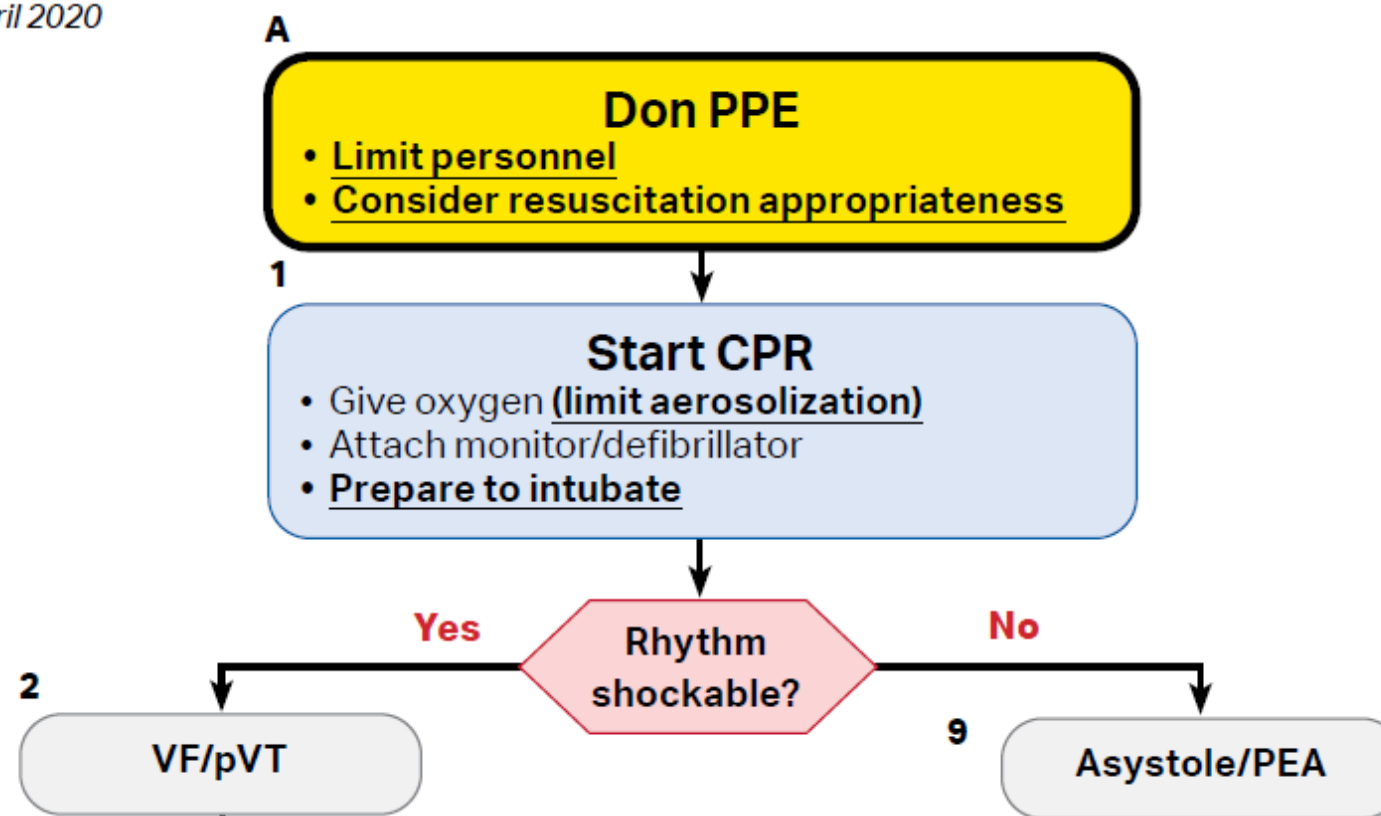


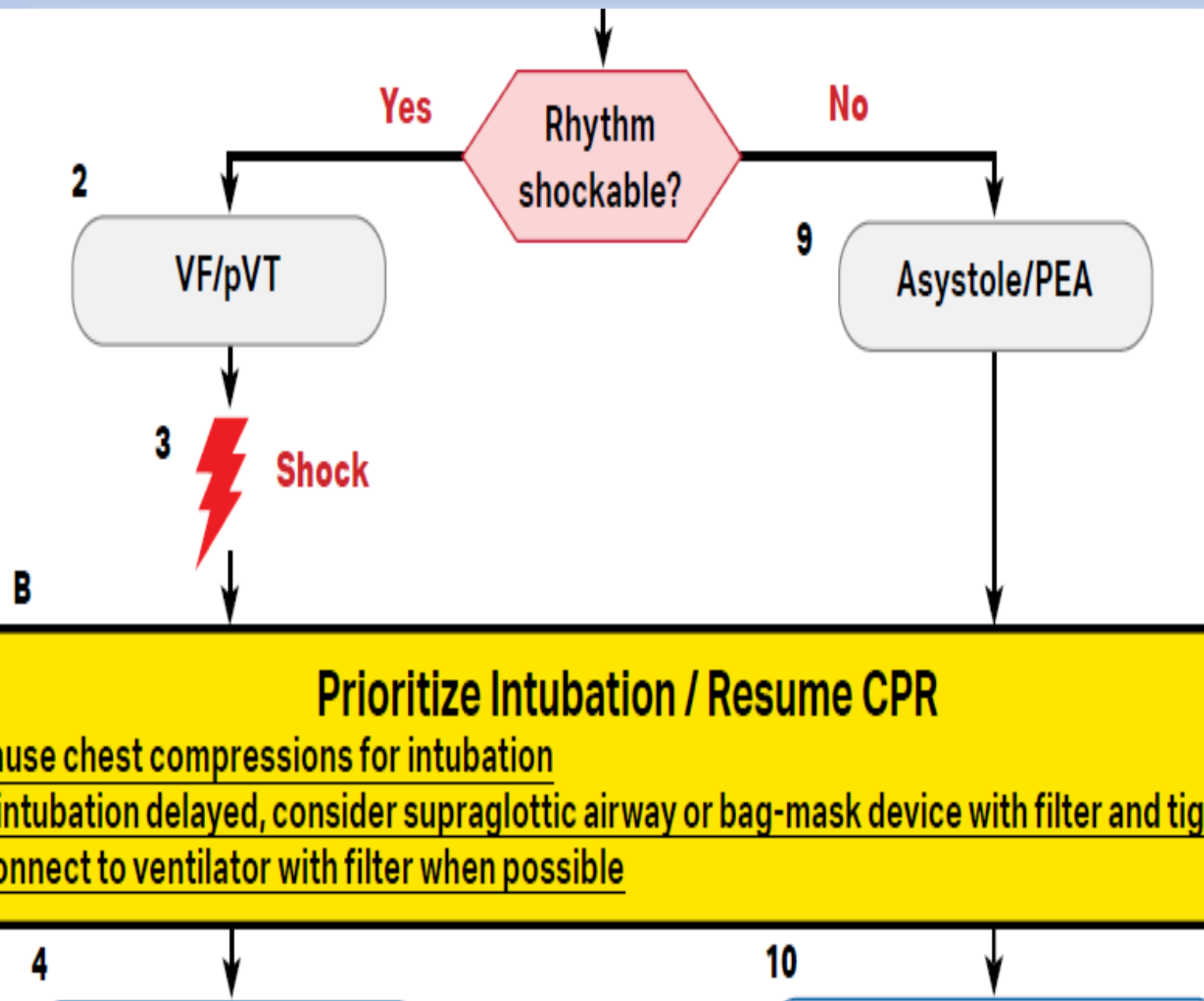
response system or backup is activated,
and AED and emergency equipment are
retrieved or someone is retrieving them.



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

Updated April 2020

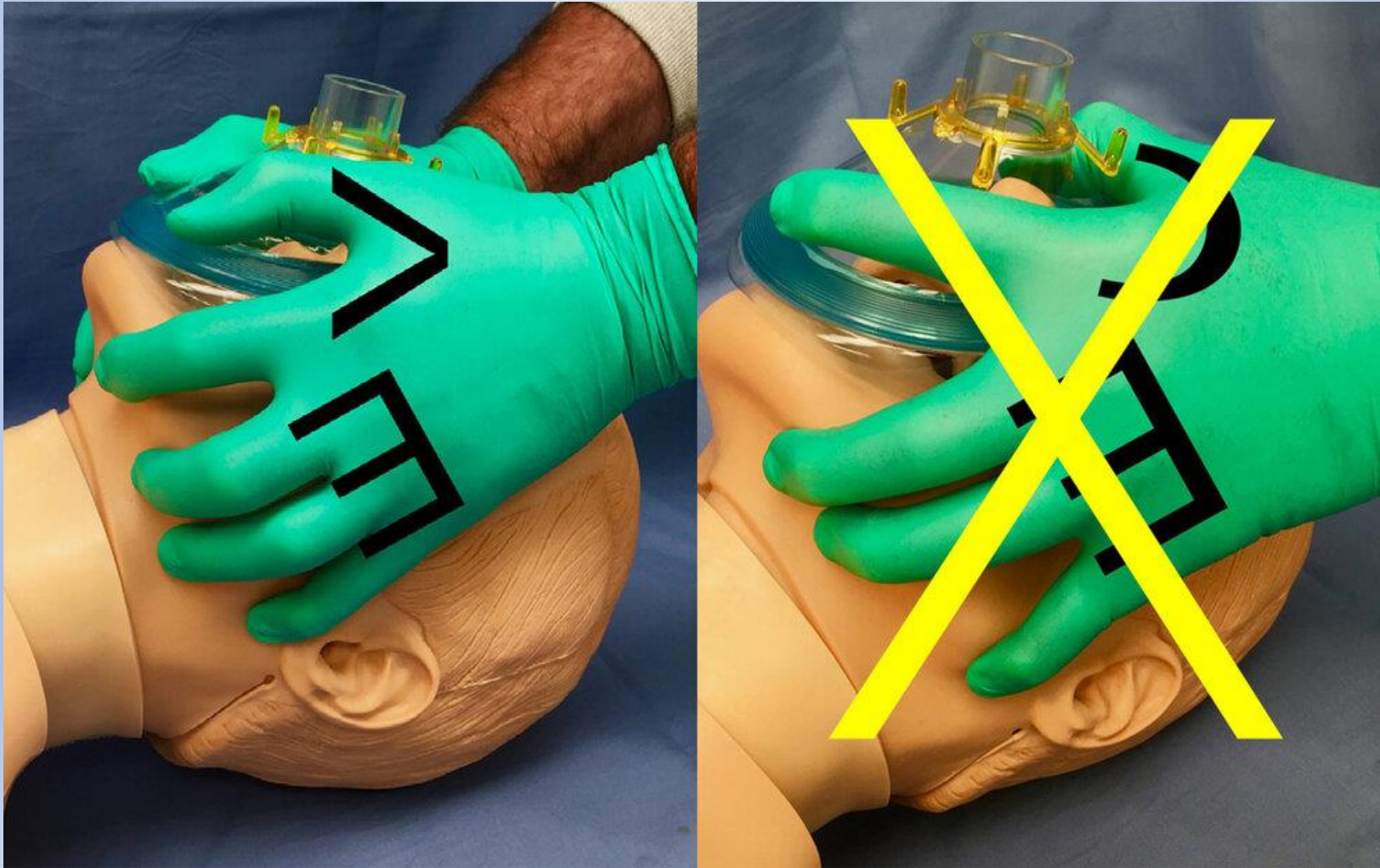




Advanced Airway

- 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



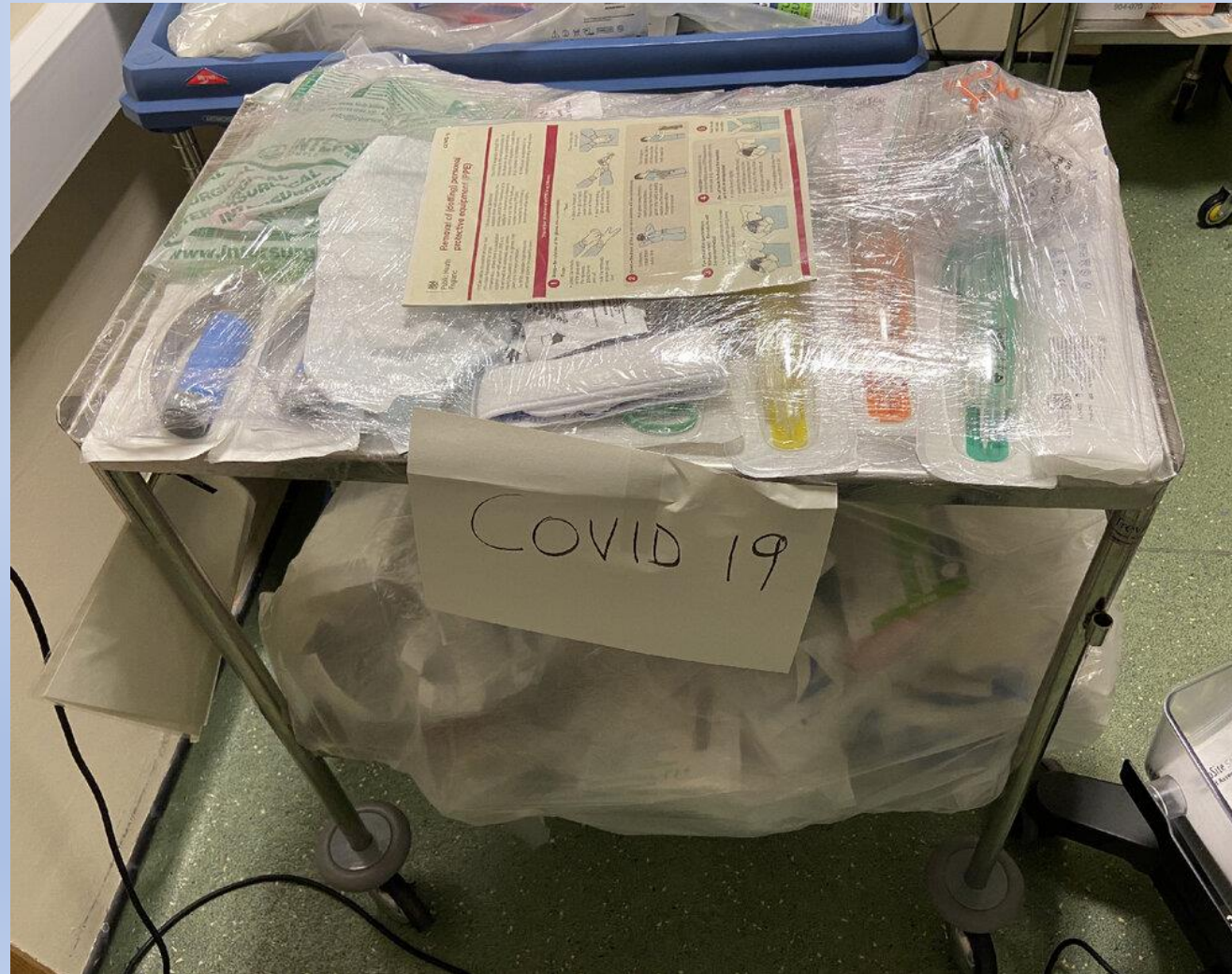


Video laryngoscopes with angulated blades (GlideScope, McGrath Series 5, Storz D-Blade)

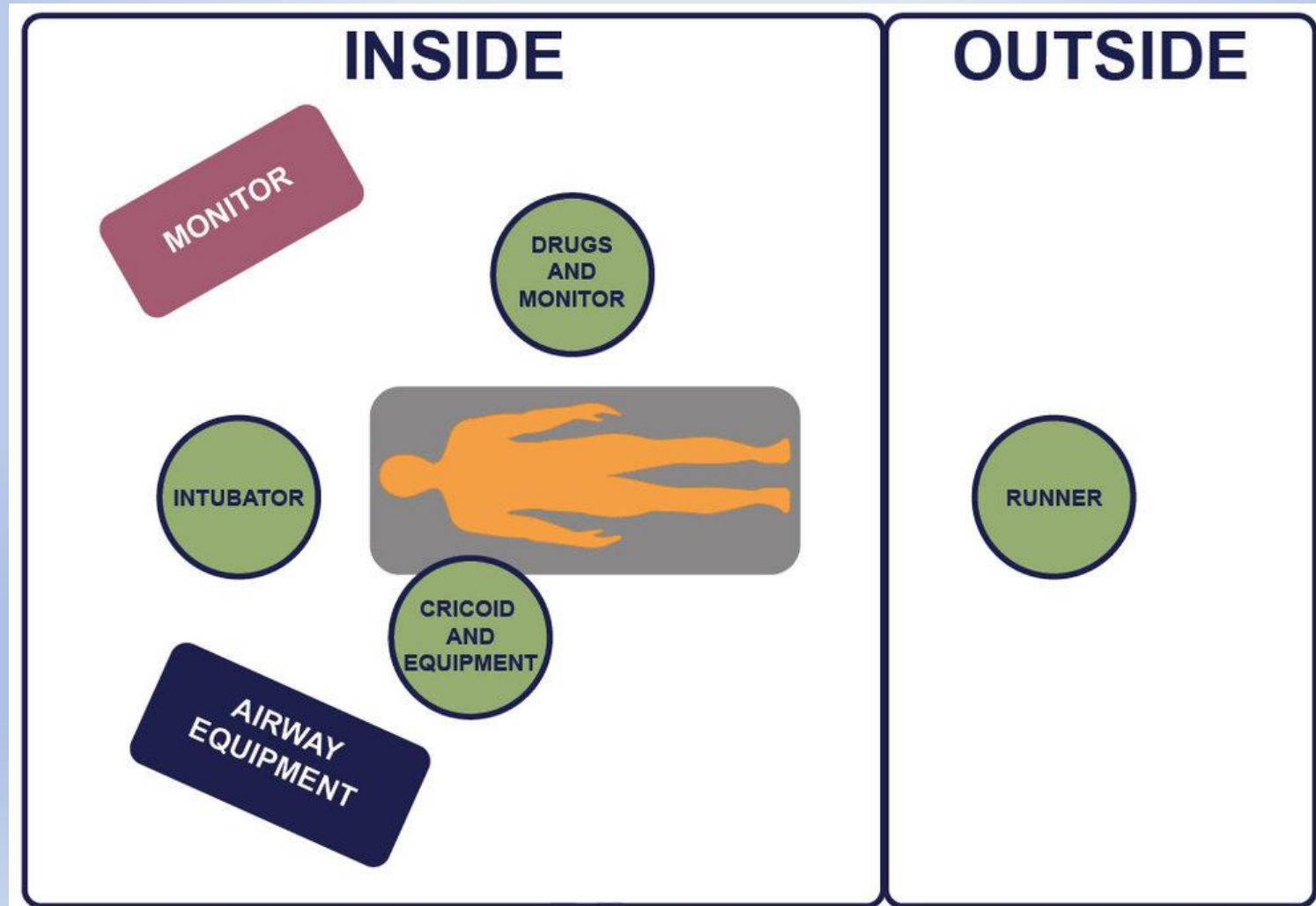




COVID-19 airway trolley



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



Airway management in patients with COVID-19 is associated with aerosol generation that carries the risk of virus transmission to healthcare workers, and in turn other patients.

Aerosol Generating Procedures (AGPs)	
Face mask ventilation	Oropharyngeal suctioning
Ventilation via a supraglottic airway (SGA) eg laryngeal mask airway (LMA)	CPR on patient prior to intubation
Intubation including insertion of an SGA	Extubation including removal of an SGA
Open suctioning of endotracheal tube (ETT) (in-line suction is preferred)	Non-invasive ventilation / high flow nasal cannula therapy (HFNC) / nebuliser therapy
Continuous nitrous oxide sedation	Bronchoscopy

★Thank you for your
considerations★

