

Airway Management in BLS





Topics

- Airway Physiology
- Airway Pathophysiology
- Opening the Airway
- Airway Adjuncts
- Suctioning
- Keeping an Airway Open: Definitive Care
- Special Considerations

AIRWAY PHYSIOLOGY

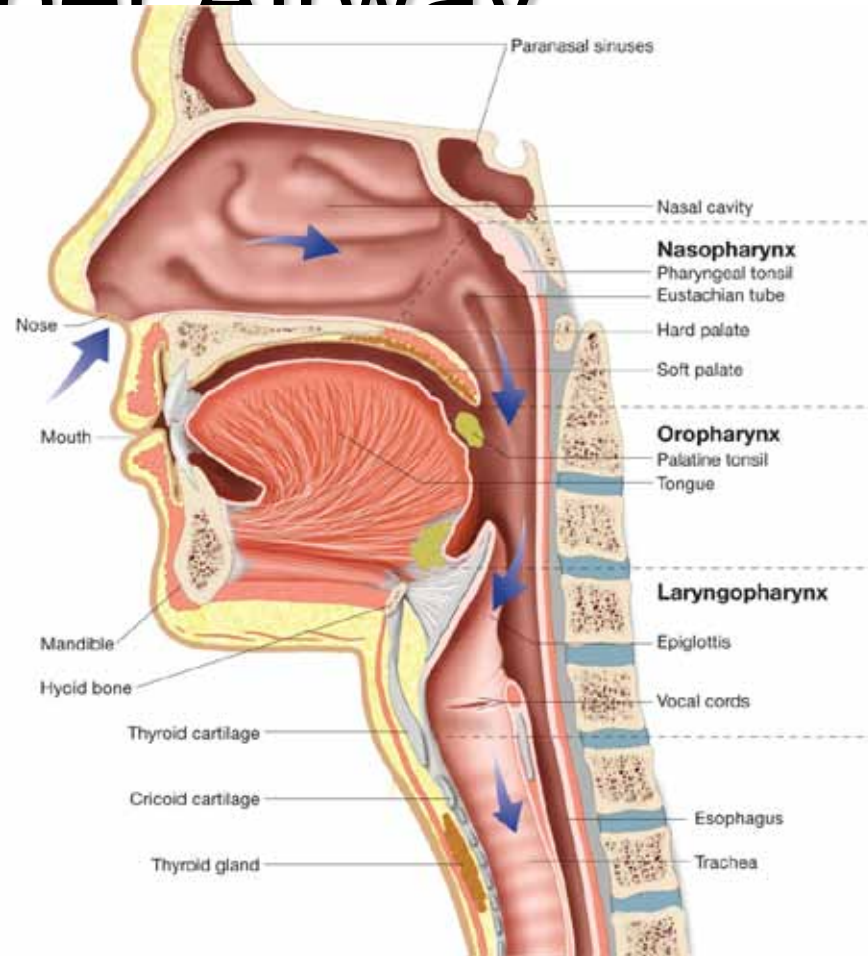


Upper Airway

- Begins at mouth and nose
 - Air is warmed and humidified in nasal turbinates
- Pharynx
 - Oropharynx, nasopharynx, and laryngopharynx
- Ends at glottic opening

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Upper Airway



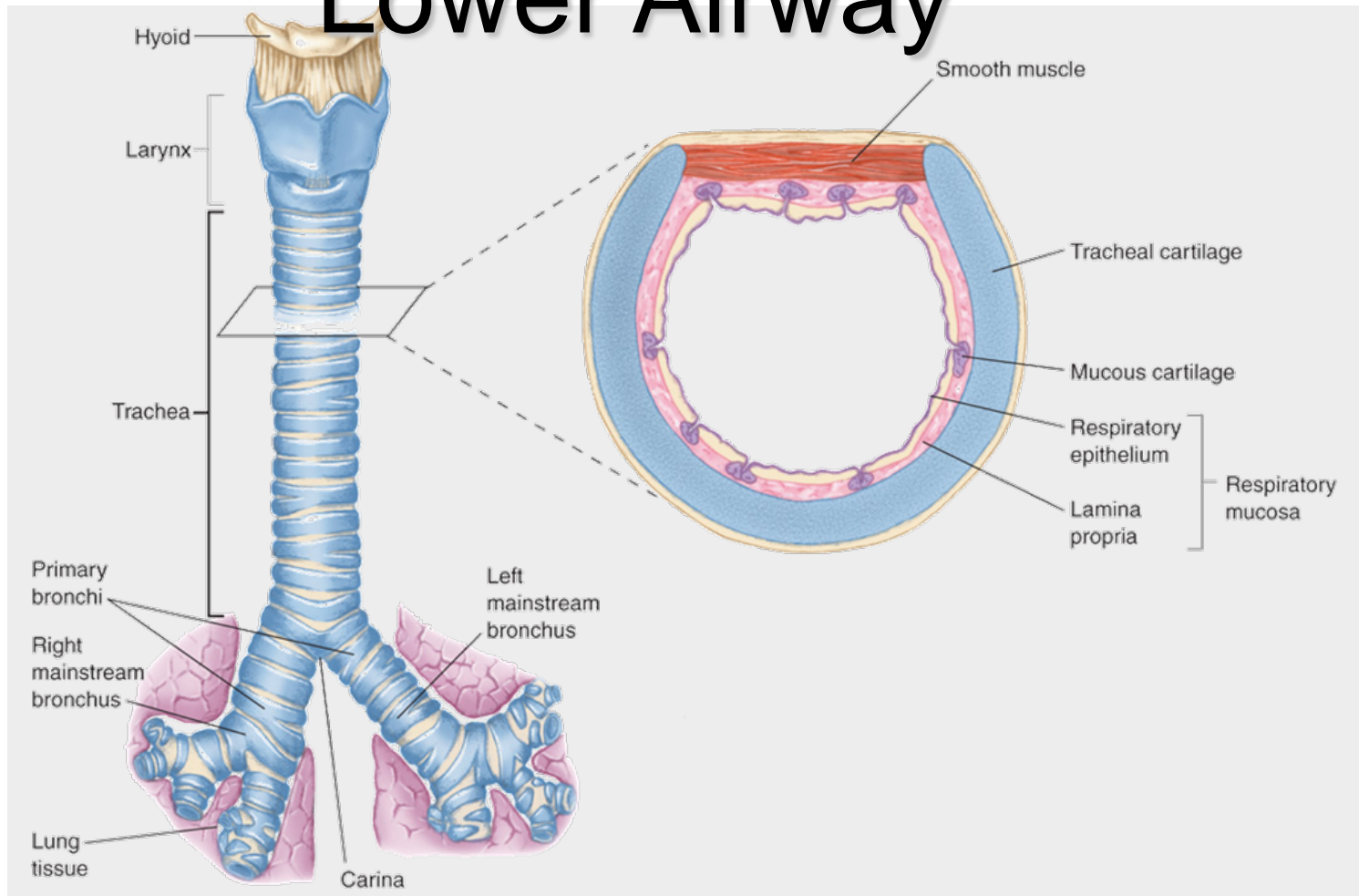


Lower Airway

- Begins at glottic opening
- Trachea
- Bronchial passages
- Alveoli

continued

Lower Airway





Alveoli

- Tiny sacs in grapelike bunches at the end of the airway
- Surrounded by pulmonary capillaries
- Oxygen and carbon dioxide diffuse through pulmonary capillary membranes

AIRWAY PATHOPHYSIOLOGY



Airway Obstructions

- Variety of obstructions interfere with air flow
 - Foreign bodies: food, small toys
 - Liquids: blood, vomit
- Obstruction may result from poor muscle tone caused by altered mental status

continued



Airway Obstructions

- Obstructions can be acute or chronic
- Providers must initially evaluate airway and monitor patency over time

continued



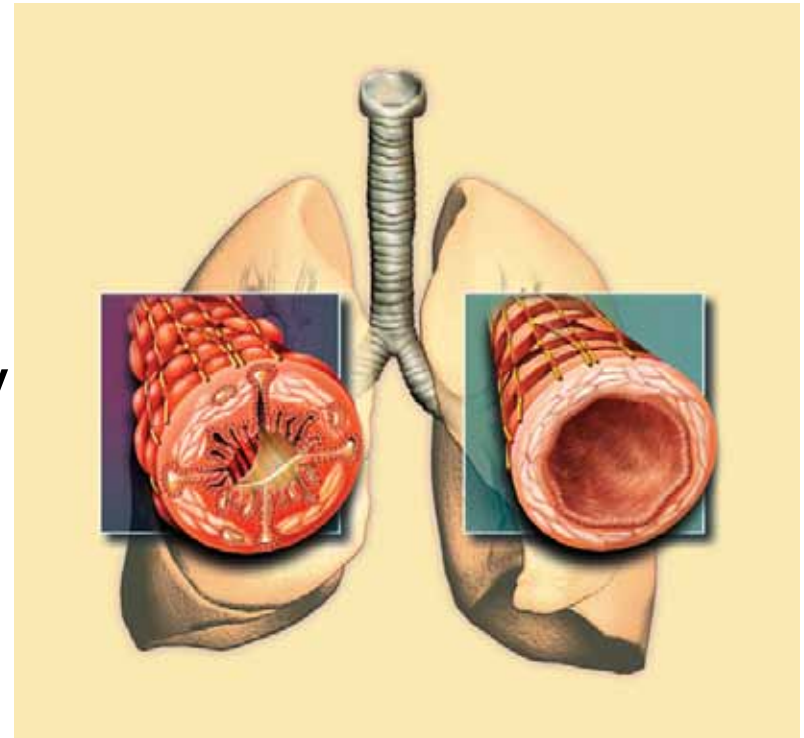
Airway Obstructions

- Acute
 - Foreign bodies
 - Vomit
 - Blood
- Occurring over time
 - Edema from burns, trauma, or infection
 - Decreasing mental status

continued

Airway Obstructions

- Bronchoconstriction
 - Disorder of lower airway
 - Smooth muscle constricts internal diameter of airway





Airway Assessment

- Addressed in initial assessment
- Two questions must be answered
 - Is airway open?
 - Will airway stay open?



Will Airway Stay Open?

- Airway assessment is not just a moment in time
- Must give constant consideration



Findings that indicate Airway PROBLEMS...

- Inability to speak
- Unusual raspy quality to voice
- Stridor
- Snoring
- Gurgling



Signs of Inadequate Airway

- Foreign bodies in airway
- No air felt or heard (air exchange below normal)
- Absent or minimal chest movements
- Abdominal breathing

Pediatric Airway Assessment

- Retractions



Normal nostrils



Flared nostrils



OPENING THE AIRWAY



Patient Care. Airway Management

- When primary assessment indicates inadequate airway, a life-threatening condition exists
- Take prompt action to open and the maintain airway

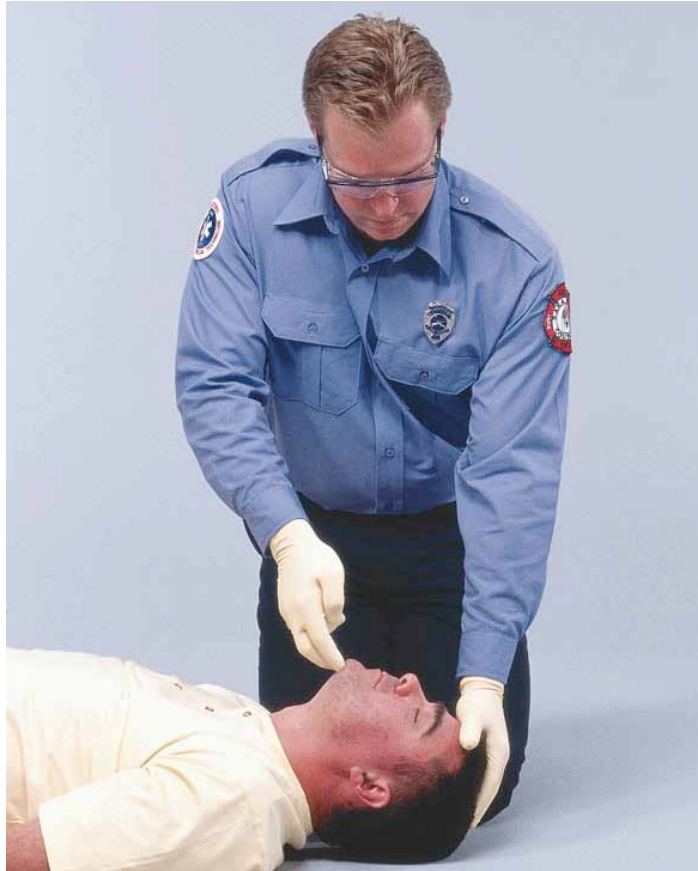


Open Airway

- If airway is not open, use position to open it
- Head-tilt, chin-lift maneuver and jaw-thrust maneuver move airway structures into position allowing air movement



Head-Tilt Chin-Lift Maneuver



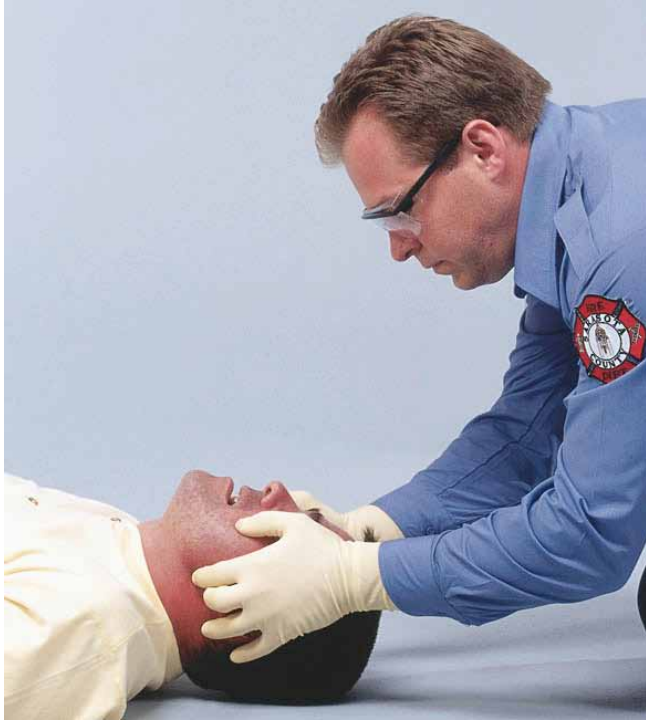


Performing Head-Tilt Chin-Lift Maneuver

Place one hand on forehead and fingertips of other hand under patient's lower jaw

- Tilt head
- Lift chin
- Do not allow mouth to close

Jaw-Thrust Maneuver





Performing Jaw-Thrust Maneuver

1. Place one hand on each side of patient's lower jaw at angles of jaw below ears
2. Using index fingers, push angles of patient's lower jaw forward
3. Do not tilt or rotate patient's head



Patient Care: Airway Management

- After airway has been opened, position must be maintained to keep airway open
- Airway must be cleared of secretions and other obstructions



Pediatric Note: Opening the Airway

- Infants and small children often have larger occipital regions of their heads
- Lying flat may cause hyperflexion of neck and airway occlusion
- Evaluate need to pad behind patient's shoulders to achieve neutral airway position

continued



Pediatric Note. Opening the Airway



AIRWAY ADJUNCTS



Patient Care: Airway Adjuncts

- Airway position and maneuvers are short-term solutions
- Airway adjunct provides longer term air channel
- Two most common airway adjuncts:
 - Oropharyngeal airway (OPA)
 - Nasopharyngeal airway (NPA)



Rules for Using Airway Adjuncts

- Use OPA only on patients not exhibiting gag reflex
- Open patient's airway manually before using adjunct device
- When inserting airway, take care not to push patient's tongue into pharynx

continued



Rules for Using Airway Adjuncts

- Have suction ready
- Do not continue inserting airway if patient gags
- Maintain head position after adjunct insertion

continued



Rules for Using Airway Adjuncts

- Patient may regain consciousness
- Be prepared to remove adjunct and have suction ready
- Use infection control practices while maintaining airway

Oropharyngeal Airway

- Device used to move tongue forward as it curves back to pharynx
- Sizes: infant, child, adult



Sizing Oropharyngeal Airways





Inserting OPA

- Open mouth with crossed-finger technique
- Position airway with tip pointing toward



continued



Inserting OPA

1. Insert until you meet resistance
2. Gently rotate airway 180° so tip is pointing down into pharynx
3. Check that flange of airway is against lips
4. Monitor patient closely



Pediatric Note: Inserting OPA

- Use tongue depressor or rigid suction tip and insert OPA directly
- Do not rotate into place

Nasopharyngeal Airway

- Soft, flexible tube inserted through nostril and into hypopharynx
- Moves tongue and soft tissue forward to provide a channel for air

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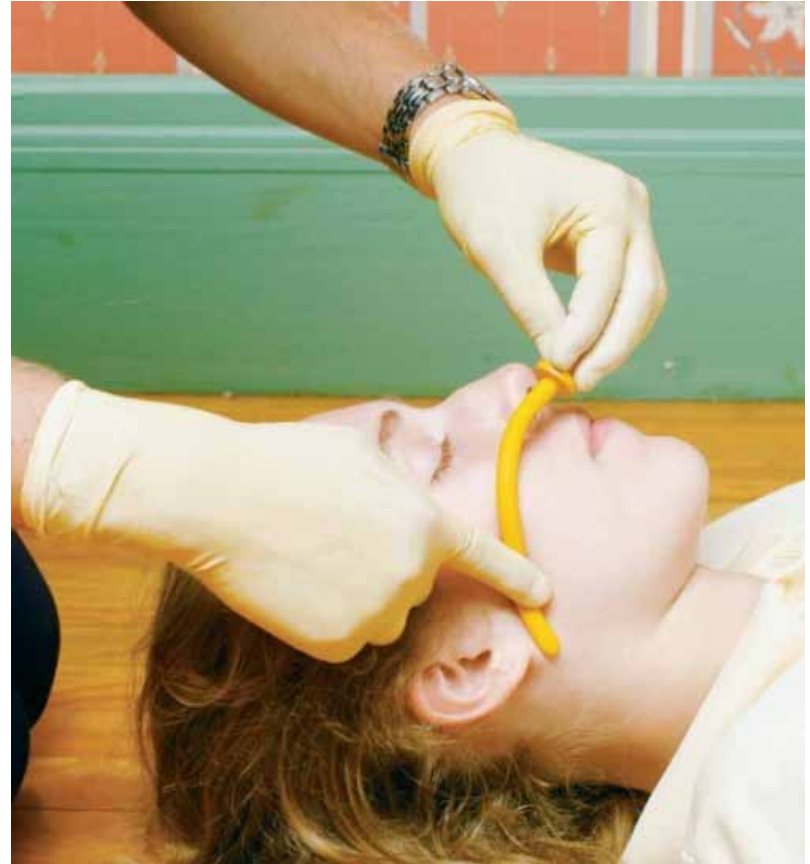
Nasopharyngeal Airway

- Can be used in patients with intact gag reflex or clenched jaw
- Contraindicated if clear (cerebrospinal) fluid coming from nose or ears

continued

Nasopharyngeal Airway

- Come in various sizes
- Must be measured
- Typical adult sizes: 34, 32, 30, and 28 French





Inserting NPA

1. Lubricate outside of tube with water-based lubricant before insertion



continued

Inserting NPA

2. Push tip of nose upward; keep head in neutral position
3. Insert into nostril; advance until flange rests firmly against nostril



SUCTIONING



Patient Care: Suctioning

- Obvious liquids (blood, secretions, vomit) must be removed from airway to prevent aspiration into lungs
- Use vacuum device to remove liquids from airway

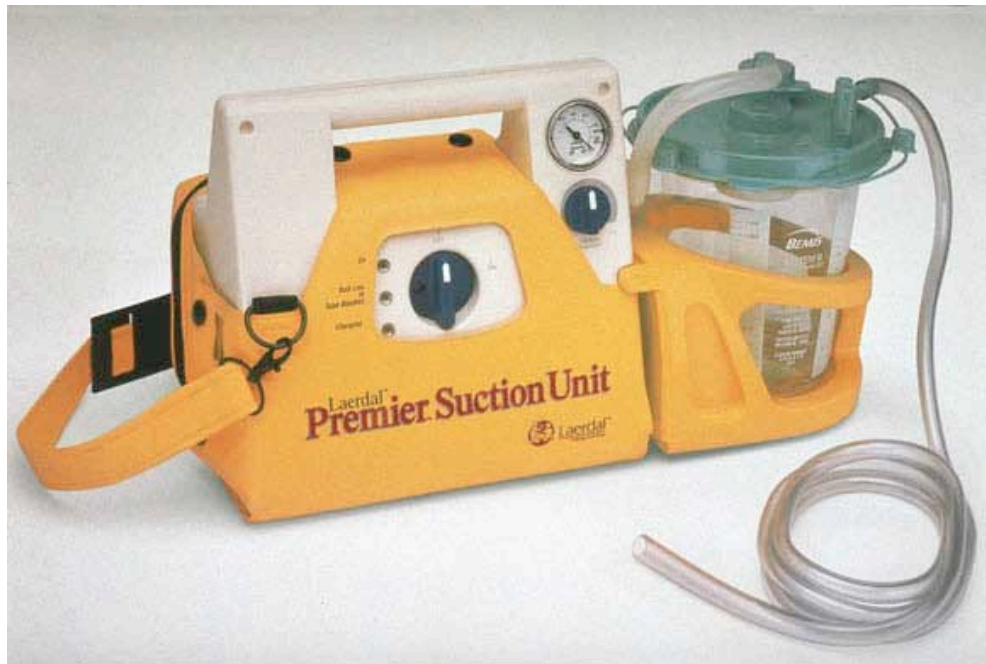


Components of Suction Unit

- Suction source
- Collection container
- Tubing
- Suction tips or catheters

Suction Systems

- Fixed or portable



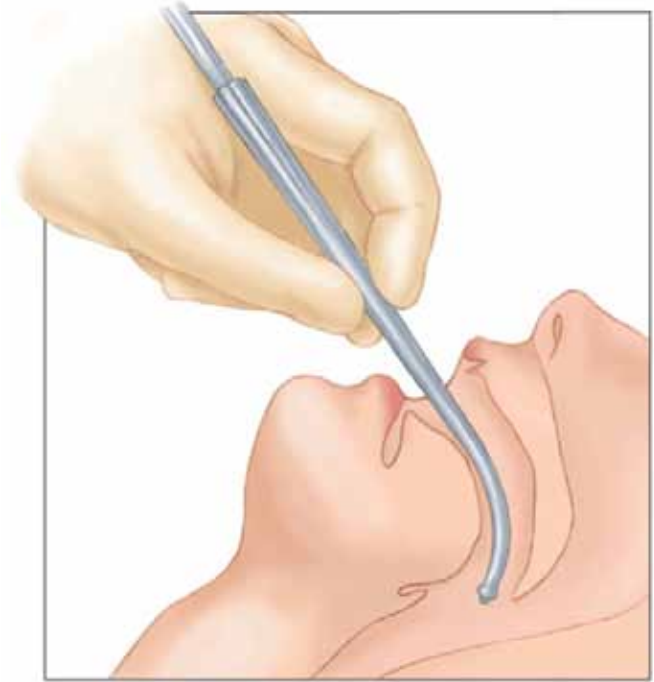
Suction Device Requirements



- Must furnish air intake of at least 30 LPM at open end of collection tube
- Must generate vacuum of no less than 300 mmHg when collecting tube is clamped

Rigid Pharyngeal Suction Tip

- Also called “Yankauer Tip”
- Larger bore than flexible



continued



Rigid Pharyngeal Suction Tip

- Suction only as far as you can see
- Do not lose sight of distal end
- Careful insertion helps prevent gag reflex or vagal stimulation



Flexible Suction Catheter

- Designed to be used when a rigid tip cannot be used
- Can be passed through a tube such as the nasopharyngeal or endotracheal tube
- Can be used for suctioning the nasopharynx

continued



Flexible Suction Catheter

- Come in various sizes identified by a number “French”
- Larger the number, larger the catheter

continued

Flexible Suction Catheter

- Not typically large enough to suction vomitus or thick secretions
- May kink
- In event of copious, thick secretions consider removing tip or catheter and using large bore, rigid suction tubing

continued



Flexible Suction Catheter

- Measured in similar way as OPA
- Length of catheter that should be inserted into patient's mouth equals distance between corner of patient's mouth and earlobe

Measuring Flexible Suction Catheter



Suctioning Techniques



- Use appropriate infection control practices while suctioning
- Protective eyewear, mask, disposable gloves

continued



Suctioning Techniques

- Suction no longer than 10 seconds at a time
- Prolonged suctioning can cause hypoxia and bradycardia
- If patient vomits for longer than 10 seconds, continue suction

continued



Suctioning Techniques

- Place tip or catheter where you want to begin suctioning
- Suction on the way out



Suctioning—Oral Pharyngeal Video



Click [here](#) to view a video on the subject of suctioning.

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KEEPING AN AIRWAY OPEN: DEFINITIVE CARE



Keeping an Airway Open: Definitive Care

- Keeping the airway open may exceed capabilities of a basic EMT
- Medications and/or surgical procedures may be necessary to resolve airway obstruction

continued



Keeping an Airway Open: Definitive Care

- Rapidly evaluate and treat airway problems
- Quickly recognize when more definitive care is necessary
 - May be advanced life support intercept
 - May be closest hospital



Think About It

- If you were not able to manage an airway at the basic level, what advanced resources might be available to you?

SPECIAL CONSIDERATIONS



Facial Injuries

- Frequently result in severe swelling or bleeding that may block or partially block airway
- Bleeding may require frequent suctioning or more definitive airway



Obstructions

- Many suction units are not adequate for removing solid objects
- Objects may have to be removed with manual techniques: abdominal thrusts, chest thrusts, finger sweeps



Dental Appliances

- Leave in place during airway procedures when possible
- Partial dentures may become dislodged during an emergency
- Be prepared to remove if airway endangered



Pediatric Patients

- Present a variety of anatomical differences to consider when managing the airway



Pediatric Anatomical Considerations

- Smaller mouth and nose
- Larger tongue
- Narrow, flexible trachea

continued

Pediatric Anatomical Considerations

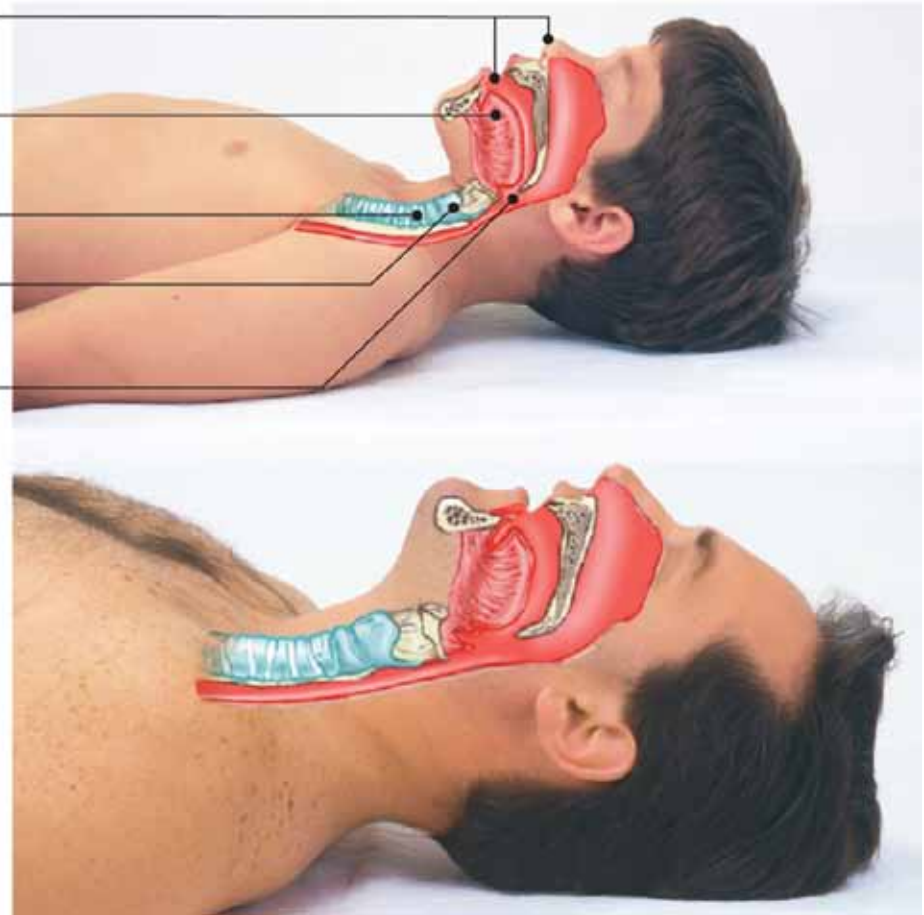
Child has smaller nose and mouth.

In child, more space is taken up by tongue.

Child's trachea is narrower.

Cricoid cartilage is less rigid and less developed.

Airway structures are more easily obstructed.





Pediatric Management Considerations

- Open airway gently
- Do not hyperextend neck
- Consider adjuncts when other measures fail
- Use rigid tip with adjunct, but do not touch back of airway

CHAPTER REVIEW

Chapter Review

- The airway is the passageway by which air enters the body during respiration, or breathing.
- A patient cannot survive without an open airway.
- Maintaining an open airway is the first priority of emergency care.

continued

Chapter Review

- Airway adjuncts can help keep the airway open.
- It may be necessary to suction the airway or to use manual techniques to remove fluids and solids from the airway before, during, or after artificial ventilation.

Remember

- Always use proper personal protective equipment when managing an airway.
- Airway assessment must be an ongoing process. Airway status can change over time.
- Airway management should start simply and become more complicated only if necessary.



Questions to Consider

- Name the main structures of the airway.
- Explain why care for the airway is the first priority of emergency care.
- Describe the signs of an inadequate airway.



Questions to Consider

- Explain when the head-tilt, chin-lift maneuver should be used and when the jaw-thrust maneuver should be used to open the airway—and why.
- Explain how airway adjuncts and suctioning help in airway management.



Critical Thinking

- On arrival at the emergency scene, you find an adult female patient with gurgling sounds in the throat and inadequate breathing slowing to almost nothing. How do you proceed to protect the airway?

continued



Critical Thinking

- When evaluating a small child you hear stridor. What does this sound tell you? What are your immediate concerns regarding this sound?

continued



Critical Thinking

- When assessing an unconscious patient, you note snoring respirations. Should you be concerned with this and if so, what steps can you take to correct this situation?