AIRWAY MANAGEMENT

Basic Airway Management

Indication

Signs and Symptoms of respiratory distress (rapid, slow, shallow, irregular, labored and/or noisy breathing, cyanosis, agitation, confusion, or apnea) or respiratory arrest.

BLS

Adult	Pediatric
Evaluate RR Open and position the airway Airway Adjuncts: OPA/NPA as needed to control the airway O_2 via selected device based on the patient's condition, titrate SpO_2 to $\geq$ 94% Oral pharyngeal suctioning as needed Avoid hyperventilation	
• Nasal Cannula: 2 - 6 LPM • Non-rebreather mask: 10 - 15 LPM • BVM ventilations: 10 breaths/min • CPAP when indicated • Existing High Flow Device or BiPAP if compatible with transport capabilities	• Nasal Cannula: 2 - 6 LPM • Non-rebreather mask: 10 - 15 LPM • BVM ventilations: 12 - 20 breaths/min • CPAP when indicated • Existing High Flow Device or BiPAP if compatible with transport capabilities

Advanced Airway Management

Indications

The inability to adequately ventilate with a BVM and airway adjuncts and the patient is unresponsive, without a gag reflex, apneic and/or has a decreased respiratory effort.

Guidelines

- An intubation attempt is defined as the introduction of an advanced airway device past the patient's teeth
- Make no more than 2 attempts
- Each attempt should last no longer that 15 seconds
- ALS personnel must re-confirm correct advanced airway placement on any patient when the advanced airway has been established by a BLS Service Provider
- ALS personnel assume responsibility for the advanced airway once they have arrived on scene and assume patient care
- Advanced airway placement must be re-confirmed anytime there is concern for the patency of the airway or anytime there is movement of the patient including but not limited to:
  - Movement of the patient to or from the ambulance gurney
  - Movement of the patient into or out of the ambulance
  - Transfer of patient care.

BLS

Adult	Pediatric

Supraglottic Airway

Contraindications

- Patient with known esophageal disease
- Extensive airway burns
- Suspected foreign body obstruction

BLS Optional Scope

Adult - 15 years of age or older

King Tube

- Select appropriately sized King Tube
- Prepare, position, and oxygenate the patient with 100% O_2
- Lubricate with a water-based lubricant
- Grasp the patient's tongue and jaw and pull forward
- Advance the tip behind the base of the tongue while rotating the tube back to midline so that the blue orientation line faces the chin of the patient
- Without exerting force, advance tube until base connector is aligned with the teeth or gums
- Inflate cuff with 45 – 90 mL of air depending on the size of the device used
- Attach BVM, gently bag the patient to assess ventilation, withdraw the tube until ventilation is easy and free flowing
- Secure with a commercial tube holder
- Verify placement using **ALL** of the following:
  1. Rise and fall of the chest
  2. Bilateral breath sounds
  3. Continuous waveform capnography when available (ALS)

ALS

Adult | Pediatric

i-gel®

- Select appropriately sized i-gel®
  1. For pediatric patients a length based tape is required to determine weight for tube sizing
- Prepare, position, and oxygenate the patient with 100% O_2
- Lubricate with a water based lubricant
- Position the device so the cuff outlet is facing towards the chin of the patient
- Introduce the leading soft tip into the mouth in a direction towards the hard palate
- Glide the device downward and backwards along the hard palate with a continuous but gentle push until a definitive resistance is felt
- Attach BVM, gently bag the patient to assess ventilation
- Secure
- Verify placement by **ALL** of the following:
  1. Rise and fall of the chest
  2. Bilateral breath sounds
  3. Waveform $EtCO_2$ required for verification
- Place an OG tube down the i-gel® gastric channel

Consider

- If unsuccessful consider laryngoscopy for foreign body airway obstruction

Endotracheal Tube (ETT)

Adult - 15 years of age or older

Procedure

- Prepare, position, and oxygenate the patient with 100% O_2
- Evaluate for difficult airway
- Select proper ETT and stylet
- The use of a Bougie device is required with all ETT intubation attempts
- Intubate the trachea via direct laryngeal visualization
- Inflate ETT cuff
- Verify placement using **ALL** of the following:
  1. Rise and fall of the chest
  2. Bilateral breath sounds
  3. Negative epigastric sounds
  4. Condensation in the tube
  5. Continuous waveform $EtCO_2$
- Secure with commercial tube holder
- Place a nasogastric or orogastric tube if not already placed during BLS airway

ALS *cont.*

Adult	Pediatric

Endotracheal Tube Inducer (Bougie)

Indications

- Patient meets clinical indicators for oral intubation

Procedure

- Prepare, position, and oxygenate the patient with 100% O_2
- Select proper ETT without stylet, test cuff and prepare suction
- Lubricate the distal end and cuff of the ETT and the distal half of the Bougie
- Using a laryngoscope visualize the vocal cords, maintain direct visualization during the procedure
- Introduce the Bougie with curved tip anteriorly and visualize the tip passing the vocal cords or above the arytenoids if the cords cannot be visualized
- Once inserted, gently advance the Bougie until you meet resistance, feel for the tracheal rings. If you do not meet resistance, you have probable esophageal intubation and insertion should be removed
- While maintaining a firm grasp on the proximal Bougie, introduce the ETT over the Bougie passing the tube to its appropriate depth
- If you are unable to advance the ETT into the trachea withdraw the ETT slightly and rotate the ETT 90° counterclockwise to turn the bevel of the ETT posteriorly
- Once the ETT is correctly placed, hold the ETT securely and remove the Bougie
- Confirm tracheal placement according to ETT procedure

Consider

- **Basic airway management is the preferred method of airway management** with cardiac arrest and multisystem trauma patients unless unable to effectively manage the airway with BLS maneuvers.
- Intubation of head injury or stroke patients is best addressed at the hospital. Intubation has the potential to increase ICP.
- If there is any doubt as to the proper placement of an advanced airway, attempt to re-verify using the verification steps in the guidelines above. If doubt still remains, remove tube and go to BLS airway.

Direction

- All patients being manually ventilated with a (**BLS**) or (**ALS**) airway shall have an NG/OG tube placed

Documentation

- Device size
- Intubation time
- Number of attempts (successful/unsuccessful)
- Placement location at teeth or gums
- All devices and methods used to confirm placement
- Reason the advanced airway was placed
- Continuous waveform capnography readings and description of waveform (**ALS**)

ALS *cont.*

Adult	Pediatric

NEEDLE CRICOTHYROTOMY (QUICKTRACH)

Purpose

A temporary emergency airway device for adult and pediatric patients that allows quick and safe ventilation of a patient in the presence of acute respiratory distress with upper airway obstruction that is preventing oxygenation and ventilation.

Indications

- Edema of the upper airway or larynx
- Upper airway hemorrhage
- Infection (e.g., Epiglottitis, Ludwig's angina)
- Laryngospasm
- Face and Neck Injuries
- Foreign body obstruction
- Allergic reaction

Contraindications

- Ability to ventilate the patient with other adjuncts
- When landmarks cannot be clearly identified
- Patient with an estimated weight < 22 lbs. (10kg)
- Transection of the trachea distal to the cricothyroid site

Complications

- Subcutaneous emphysema
- Tracheal mucosal injury
- Mediastinal emphysema
- Bending of Catheter
- Hemorrhage
- Aspiration
- Esophageal or mediastinal puncture
- Thyroid perforation

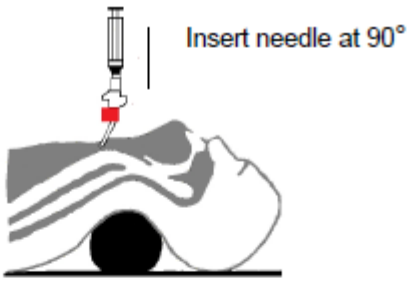
Adult (Kit Size 4.0 mm)	Pediatric (Kit Size 2.0 mm)
• 77 lbs. (35 kg) and higher	• 22 lbs. (10 kg) – 77 lbs. (35 kg)

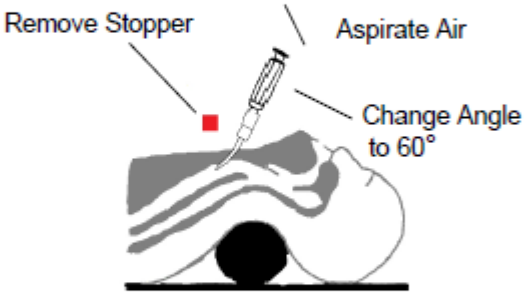
ALS *cont.*

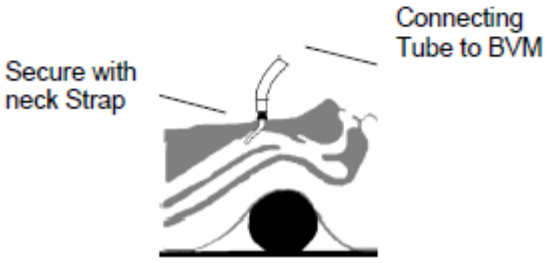
Adult	Pediatric

Procedure

1. Place the patient in a supine position. Stabilize and hyperextend the neck (unless cervical spine injury suspected).
2. Secure the larynx laterally between the thumb & forefinger. Find the puncture site between the thyroid & the cricoid cartilages.
3. Prep site vigorously scrubbing with appropriate prep solution.
4. Firmly hold the device and puncture cricothyroid membrane at a 90° angle.
5. After puncturing the cricothyroid membrane, check the needle entry into the trachea by aspirating air through the syringe. If air is present, the needle is within the trachea.
6. Now, change the angle of insertion to 60° degrees (from the head).
7. Advance the device forward into the trachea to the level of the stopper (red).
8. Remove the stopper. After the stopper is removed, be careful not to advance the device further with the needle still attached.
9. Hold the needle & syringe firmly, slide only the plastic cannula along the needle into the trachea until the flange rests on the neck. Carefully remove the needle and syringe.
10. Secure the cannula with the neck strap.
11. Apply the connecting tube to the 15 mm connection and connect the other end to the bag-valve mask with supplemental oxygen.
12. Patient shall be placed on $EtCO_2$ monitoring.
13. Continue ventilation with 100% oxygen and periodically assess the airway.







Direction

- **NEVER** attempt Needle Cricothyrotomy in a moving vehicle.

Documentation

- All BLS and ALS attempts to **oxygenate** and **ventilate**
- Size of QuickTrach
- Continuous $EtCO_2$ post insertion
- Continuous SpO_2 post insertion
- Reassessment post placement
- Device placement at turnover of care
- Any complications?