

SOUTH CAROLINA DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL

DIVISION OF EMS AND TRAUMA

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### TRAINING MODULE FOR BLIND INSERTION AIRWAY DEVICES

This training module is designed to assist instructors in presenting the Blind Airway Insertion Devices (BIAD) to students both in initial and refresher training courses and at the EMS service level In-service training. The module has been developed using manufacturer's specifications for each device. Audio-visual presentations are attached to assist in the training in the BIADs. EMT-Basics and Intermediates may only utilize BIAD airways under authorization from a medical control physician. This authorization may be accomplished by standing orders, protocols or voice command from the physician.

## BLIND INSERTION AIRWAY DEVICE: KING LT

### INDICATIONS:

1. Apneic or unconscious patient without a gag reflex.
2. Inability to ventilate a patient with a bag valve mask or longer EMS transport distances requiring a more advanced airway.

### CONTRAINDICATIONS:

1. Responsive patient with intact gag reflex
2. Patient with known esophageal disease
3. Patient that has ingested caustic substance

### WARNING/PRECAUTIONS

1. The King is not proven to protect the airway from the effects of regurgitation and aspiration.
2. Intubation of the trachea cannot be ruled out as a potential complication of insertion of the of the King LT airway.
3. High airway pressures may divert gas either to the stomach or to the atmosphere.
4. After placement, perform standard checks for breath sounds, absence of sounds over the epigastrium, and visualize for chest rise and fall.
5. Lubricate only the posterior surface of the King LT to insure that ventilation ports are not blocked.
6. The King LT is not intended for re-use.

### PROCEDURE FOR INSERTION OF THE KING AIRWAY

1. Take BSI precautions. Preoxygenate and hyperventilate the patient with high flow oxygen.
2. Select the appropriate tube size for the patient (See sizing information).
3. Test cuff inflation system by injecting the maximum recommended volume of air into the cuffs. Remove all air from the cuffs prior to insertion (See sizing information for cuff inflation volumes).

4. Apply water soluble lubricant to the distal tip and posterior aspect of the tube, taking care to avoid placing lubricant in or near the ventilator openings.
5. Position the patient's head. The ideal position for insertion of the King airway is the "sniffing position." However, the angle and shortness of the tube also allows for it to be inserted with the head in a neutral position.
6. Hold the airway at the connector with dominant hand.
7. With non-dominant hand, grasp the patient's tongue and jaw with gloved hand Lift (unless contraindicated by C-spine precautions).
8. Gently insert the tube rotated laterally 45-90 degrees so that the blue orientation Line is touching the corner of the mouth, introduce the tip into the mouth and advance behind the base of the tongue. NEVER FORCE THE TUBE INTO POSITION.
9. Advance the tip of the tube behind the base of the tongue while rotating back to the midline so that the blue orientation line faces the patient's chin.
10. Without exerting excessive force, advance the airway until the base of the connector aligns with teeth or gums.
11. Inflate cuffs with the minimum volume of air necessary to seal the airway at the peak ventilator pressure employed (just seal volume). See sizing information for typical inflation volumes. Remove air from cuffs prior to insertion.
12. Attach the resuscitation bag to the device connector and begin gently bagging the patient to assess ventilation, simultaneously withdraw the airway until ventilation is easy and free flowing.
13. Depth markings are provided at the proximal end of the device which refer to the distance from the distal ventilator openings. When properly placed with the distal tip and cuff in the upper esophagus and the ventilator openings aligned with the openings to the larynx, the depth markings give an indication of the distance, in centimeters, to the vocal cords.
14. Confirm proper placement of the device by auscultation of breath sounds, absence of sounds over the epigastrium, and rise and fall of the chest.
15. Readjust cuff inflation volumes as necessary.
16. Secure the device into place with a commercial device or tape.
17. After securing the airway device, re-confirm proper placement at regular intervals and after every patient movement.
18. Continue to ventilate with 100% oxygen.

## PROCEDURE FOR REMOVAL OF THE KING AIRWAY

1. Remove the King airway when protective reflexes have returned.
2. Have suction readily available before beginning removal of the airway device.
3. Suction above cuffs in the oral cavity if necessary.
4. FULLY deflate both cuffs before removal of the airway device.
5. Position the patient onto side
6. Remove the airway device carefully and suction as necessary.
7. Insert an oropharyngeal or nasopharyngeal airway as needed.
8. Continue to ventilate the patient with a BVM and oxygen at 10-15 LPM as needed.

## SIZING INFORMATION FOR THE KING LT AIRWAY

SIZE	TYPE	PATIENT CRITERIA	CONNECTOR COLOR	INFLATION VOLUME
2	LT-D	35-45 INCHES	GREEN	25-35 ML
2.5	LT-D	41-51 INCHES	ORANGE	30-40 ML
3	LT-D LTS-D	4-5 FT	YELLOW	45-60 ML 40-55 ML
4	LT-D LTS-D	5-6 FT	RED	60-80 ML 50-70 ML
5	LT-D LTS-D	GREATER THAN 6 FT	PURPLE	70-90 ML 60-80 ml

## BLIND INSERTION AIRWAY DEVICE-COMBITUBE

### INDICATIONS:

1. Apneic patient without gag reflex.
2. Inability to ventilate a patient with a bag valve mask or longer transport distances require an advanced airway.
3. Patient over 5' tall for Combitube. Patient over 4' tall but not taller than 5 1/2' for Combitube Small Adult (SA model).

### CONTRAINDICATIONS:

1. Patient is conscious
2. Patient has an intact gag reflex
3. Patient has known esophageal disease.
4. Patient has ingested a caustic substance
5. Patient is under 5' tall (over 4' tall but not taller than 5 1/2' for Combitube SA model)

### PRECAUTIONS:

1. Take appropriate universal precautions. Expulsion of stomach contents may occur through the #2 tube if the initial placement is in the esophagus.
2. Do not force the Combitube device. If the tube does not advance easily, redirect it or withdraw and insert again.

## PROCEDURE FOR INSERTION OF THE COMBITUBE AIRWAY

1. Open the airway and suction mouth and oropharynx as needed.
2. Preoxygenate and hyperventilate the patient.

3. While patient is being hyperventilated, test cuffs:
  - a. For Combitube: large syringe to the blue cuff labeled #1, inflate with 100cc.
  - b. For Combitube: Small syringe to the white cuff, labeled #2, inflate with 15cc.
  - c. For Combitube SA: Large syringe to the blue cuff labeled #1, inflate with 85cc.
  - d. For Combitube SA: Small syringe to the white cuff labeled #2, inflate with 12cc.
4. Withdraw the air from cuffs and leave assembled.
5. Attach mask elbow (fluid detector) to the shorter #2 white tube.
6. Lubricate the tube tip and pharyngeal balloon with a water soluble jelly.
7. Move to the patient's head.
8. Place the head in a neutral position.
9. Grasp the patient's tongue and jaw with your gloved hand and pull forward.
10. With the other hand hold the tube so that it curves in the same direction as the natural curve of the patient's airway.
11. Maintain a midline position with the tube and insert the tip into the mouth advancing in a curved motion until the teeth or gum line lie between the two black bands.
12. Inflate the cuffs to the required amount of air depending on the tube model.
13. Immediately begin ventilating through the longer blue tube #1
14. If breath sounds are present bilaterally with good chest rise and epigastric sounds are absent, the tube is in the esophagus. Continue ventilating with high flow oxygen through the #1 blue tube.
15. If breath sounds and chest rise are absent and epigastric sounds are present, remove the mask elbow and begin to ventilate through the #2 port. Re-asses.
16. If bilateral breath sounds and chest rise are present and sounds are absent over the epigastrium, the tube is placed in the trachea. Immediately begin ventilations through the #2 tube.
17. If no breath sounds or gastric sounds are heard after ventilation through both tubes and tube placement cannot be confirmed, the tube may have advanced too far into the Pharynx.
18. Deflate the #1 cuff and pull the Combitube back approximately 1". Re-inflate the cuff and attempt ventilation.
19. After confirming that the tube is properly placed, secure the tube in place with tape or commercial restraint.
20. Continue ventilations with high flow oxygen (12-15LPM).

## REMOVAL PROCEDURE FOR THE COMBITUBE

The Combitube should not be removed in the field except when:

1. The patient no longer tolerates the tube (gag reflex returns)
2. You cannot determine if the tube is properly placed
3. The patient vomits past the distal or pharyngeal cuff.

Should circumstances warrant removal of the Combitube in the field:

1. Have suction equipment immediately available.
2. Log roll the patient on the side.
3. Deflate the pharyngeal cuff using #1 pilot balloon.
4. Deflate distal cuff using #2 pilot balloon.
5. Remove the Combitube and suction.
6. Immediately hyperventilate the patient with high flow oxygen.

## BLIND INSERTION AIRWAY DEVICE LARYNGO-MASK AIRWAY (LMA)

### INDICATIONS:

1. Inability to ventilate a patient with a bag valve mask or longer EMS transport distances that require a more advanced airway.

### CONTRAINDICATIONS:

1. Patient with severe maxillofacial trauma
2. Patient greater than 14 to 16 weeks pregnant
3. Patient that is morbidly obese

### PRECAUTIONS:

1. The laryngo-mask airway does not prevent aspiration of stomach contents.
2. Be alert for mask “fold over” during insertion. This may lead to total occlusion of the airway as the epiglottis may be pushed into its down-folded position causing obstruction.
3. “Fold back” may be caused by failure to press the deflated mask up against the hard palate, inadequate pre-lubrication or deflation of the mask.
4. Re-verify proper LMA placement after moving patient.

## PROCEDURE FOR INSERTION OF THE LARYNGO-MASK AIRWAY (LMA)

1. Take all necessary BSI precautions, Insert OPA and hyperventilate with 100% oxygen.
2. Verify that the size of the LMA is correct for the patient (See size guidelines table)
3. Visually inspect the LMA cuff for tears or abnormalities.
4. Inspect the tube to ensure that it is free of blockage or loose particles.
5. Deflate the cuff to ensure that it will maintain a vacuum.
6. Inflate the cuff to ensure that it does not leak.
7. Slowly deflate the cuff to form a smooth flat wedge shape which will pass easily around the back of the tongue and behind the epiglottis.
8. Apply a water soluble lubricant to the posterior side of the cuff, avoiding excessive lubricant on the anterior surface of the cuff and the bowl of the mask.

9. Continue pre-oxygenation until ready to insert airway device.
10. Have suction readily available.
11. Position the patient's head in the "sniffing" position (unless cervical spine injury is suspected).
12. Grasp the LMA by the tube, holding it like a pen as near as possible to the mask end.
13. Place the tip of the LMA against the inner surface of the patient's upper teeth.
14. Under direct vision:
  - a. Press the mask tip upwards against the hard palate to flatten it out.
  - b. Using the index finger, keep pressing upwards as you advance the mask into the pharynx to ensure the tip remains flattened and avoids the tongue.
  - c. Press the mask into the posterior pharyngeal wall using the index finger.
  - d. Continuing to use your index finger, guide the mask downward into position.
  - e. Grasp the tube firmly with the other hand, then withdraw your index finger from the pharynx.
  - f. Press gently downward with your other hand to ensure the mask is fully inserted.
  - g. Inflate the mask with the recommended volume of air. (See size guidelines table).
  - h. Do not over inflate the LMA
  - i. Do not touch the LMA tube while it is being inflated unless the position is obviously unstable.
15. Normally the mask should be allowed to rise up slightly out of the hypopharynx as it is inflated to find its correct position.
16. Connect the LMA to a bag valve mask device.
17. Ventilate the patient while confirming equal breath sounds over both lungs in all fields and the absence of ventilator sounds over the epigastrium.
18. Insert a bite-block or roll of gauze to prevent occlusion of the tube should the patient bite down.
19. Secure the LMA with tape or a commercial device.
20. Continue ventilation via bag valve mask with high flow oxygen.
21. Re-verify proper placement of the LMA after every move and upon arrival in the ED.

### SIZE GUIDELINES FOR USE OF LMA

LMA SIZE	PATIENT WEIGHT (kg)	RECOMMENDED CUFF VOLUME
1	Under 5 kg	2-5 ml
1.5	5-10 kg	2-8 ml
2	10-20 kg	2-1- ml
2.5	20-30 kg	2-15 ml
3	30kg to small adult	10-25 ml
4	adult	20-30 ml
5	large adult or poor seal with size 4	20-40 ml