

OROTRACHEAL INTUBATION EMMCO WEST ALS GUIDELINE

Criteria:

- A. Cardiac arrest
- B. Patient with inadequate ventilations that requires manual ventilation by EMS personnel
- C. Patient who is unable to maintain a patent airway with nasopharyngeal or oropharyngeal airways.

Exclusion Criteria:

- A. In pediatric patients, ventilation with BVM may be the preferred method of ventilation and airway maintenance if the ETA to hospital is short and ventilation by BVM is adequate.

Procedure:

A. All Patients:

1. Assemble the equipment while providing maximal oxygen and continuing ventilation:
 - a. Choose tube and blade size. (See Table below)¹
 - b. Introduce the stylet and be sure it stops 1 cm short of the tube's end. Test balloon with 5-10 ml syringe full of air.
 - c. Assemble laryngoscope and check light.
 - d. Connect and check suction.
2. Position patient: neck flexed forward, head extended back. Back of head should be level with or higher than back of shoulders.
 - a. NOTE: neck should not be extended or flexed if cervical spine injury is suspected. In this case, intubation should be attempted with in-line cervical stabilization by another individual while neck is kept in a neutral position. During in-line stabilization, the cervical collar may be opened to permit better jaw mobility and improved visualization.
3. Ventilate prior to intubation, but avoid high volumes and overzealous ventilation. Two-person BVM technique with cricoid pressure is preferred.²
4. Insert laryngoscope to right of midline. Move it to midline, pushing tongue to left and out of view.³
5. Lift straight up on blade (no levering on teeth) to expose posterior pharynx. ⁴
6. Identify epiglottis: tip of curved blade should sit in vallecula (in front of epiglottis), straight blade should lift epiglottis.
7. Gently lift blade to expose glottis, identify trachea by arytenoids and vocal cords. ⁵
8. External laryngeal manipulation (by the intubator's right hand, generally in a backward, upward, and rightward direction) of the thyroid cartilage may dramatically improve the visualization of the glottic opening.
9. Insert tube from right side of mouth, along blade into trachea under direct vision.
10. Advance tube so cuff is 2-3 cm beyond cords.
11. Confirm placement and adequate ventilation using the Confirmation of Airway Placement Protocol- See protocol # 2032.
12. Inflate cuff with 5-10 ml of air. .Check for air leaking at mouth after cuff is inflated.
13. Secure tube using woven twill tape or commercial device.
14. Reconfirm tube placement per protocol # 2032, but especially after any patient movement. ⁶

Notes:

1. In children, a length-based reference tape is the preferred method of determining tube and equipment sizes. Other methods include the formula of ETT size = $[(age/4) + 4]$.
2. **Endotracheal intubation is NOT the procedure of choice in the first minutes of resuscitation.** It is a secondary procedure only. Most persons can be adequately ventilated with mouth-to-mask or BVM with oropharyngeal or nasopharyngeal airway. If the number of personnel is limited, defibrillation, good chest compressions with minimal interruption, and establishing an IV take precedence over intubation if the patient can be ventilated adequately.
3. An intubation attempt is defined by the insertion of the laryngoscope blade into the mouth passed the teeth or alveolar ridge. Every insertion of the blade should be considered an intubation attempt. Number of attempts must be documented.
4. Any dentures or partial dental plates should be removed prior to laryngoscopy.
5. Intubation should take no more than 15-20 seconds to complete: do not lose track of time. If visualization is difficult, stop and re-ventilate before trying again. If intubation is not successful

after 3 attempts, follow the Difficult Airway Algorithm and proceed to appropriate rescue or alternative device- see Protocol # ____.

6. If a patient's condition deteriorates, consider possible complications, such as:
 - a. Esophageal intubation: particularly common when tube not visualized as it passes through cords. The greatest danger is in not recognizing the error. Auscultation over stomach during trial ventilations should reveal air gurgling through gastric contents with esophageal placement.
 - b. Intubation of the right mainstem bronchus: be sure to listen to chest bilaterally.
 - c. Upper airway trauma due to excess force with laryngoscope or to traumatic tube placement.
 - d. Vomiting and aspiration during traumatic intubation or intubation of patient with intact gag reflex.
 - e. Hypoxia due to prolonged intubation attempt.
 - f. Induction of pneumothorax, either from overzealous ventilation or aggravation of underlying pneumothorax.
 - g. Teeth or dentures may be broken.

Orotracheal Tube Size Table	
Age	Endotracheal Tube (uncuffed)
Premature	2.5 - 3.0
Newborn	2.5 - 3.0
2.5 - 3.0 months	3.5
18 months	4.0
3 years	4.5
5 years	5.0
8 years	6.0
10-15 years	6.5 - 7.0 cuffed
Adult	7.0 - 9.0 cuffed

Laryngoscope Blade Size Table	
Age	Laryngoscope Blade Size
Premature	0 Straight
Term-1 year	1 Straight
1-1½ year	1½ Straight
1½-12 years	1½ Straight
13+ years	3 Curved