



# Section 14: Appendix 2: Medical Procedures

## SECTION 14: INTUBATION - ENDOTRACHEAL

A	AEMT	A
P	PARAMEDIC	P

INDICATIONS	SIGNS AND SYMPTOMS	PRECAUTIONS
<ul style="list-style-type: none"> <li>A patient without a gag reflex, is apneic, or is demonstrating inadequate respiratory effort</li> <li>Any patient medicated for rapid sequence intubation</li> </ul>	<ul style="list-style-type: none"> <li>Unstable airway</li> <li>Respiratory arrest</li> <li>Cardiac arrest</li> <li>GCS less than 8 without a treatable cause (for example, hypoglycemia)</li> </ul>	<ul style="list-style-type: none"> <li>Patient intolerance is only a relative contraindication to this procedure</li> </ul>

1. Cervical immobilization should be applied to the patient when indicated by mechanism of injury or when it is deemed necessary.
2. Prepare all equipment and have suction ready.
3. Hyper-oxygenate the patient (one breath every three seconds) for at least one minute before attempting endotracheal intubation, if possible.
4. Suction the pharynx as needed.
5. Open the patient's airway and holding the laryngoscope in the left hand, insert the blade into the right side of the mouth and sweep the tongue to the left.
6. Use the blade to lift the tongue and epiglottis (either directly with the straight blade or indirectly with the curved blade).
7. Once the glottic opening is visualized, slip the tube through the cords and continue to visualize until the cuff is past the cords.
8. No more than 30 seconds may be used per attempt.
  - a. Re-ventilation for at least 30 seconds after each attempt.
  - b. Some situations such as copious vomiting or bleeding may require suction attempts longer than 30 seconds. These are the exception; not the norm.
9. Remove the stylet.
10. Inflate the cuff of the endotracheal tube with 10 ml of air.
11. Attach the bag-valve device to the ET tube and ventilate the patient.
12. Assess for tube placement:
  - a. Watched tube pass through cords.
  - b. Waveform Capnography
  - c. Confirmation of lung sounds in the apices and bases bilaterally.
  - d. Absence of epigastric sounds.
  - e. Chest rise with ventilation..
  - f. Good compliance with bag-valve ventilation
  - g. Patent color improves.
  - h. Spo2 improves. (If distal perfusion is present to create a reading)

If at any time placement cannot be confirmed or obtained, the ETT shall be removed, an alternate airway placed, and the patient shall be ventilated. **If there is any doubt about proper placement, the tube shall be removed.**

13. If proper placement is confirmed, the cm markings on the tube at the level of the teeth shall be noted and secure the tube with a commercial tube holder.
14. Document ETT size, time, result, and placement location by the centimeter marks either at the patient's teeth or lips on the patient care report (PCR). Document all devices used to confirm initial tube placement. Also document breath sounds before and after each movement of the patient.
15. Routinely reassess for proper tube placement. The initial tube placement and all reassessments must be documented.

### KEY POINTS

- It is essential to have complete and detailed documentation concerning the placement of the endotracheal tube. The documentation MUST include: Methods used, success / failure, pre-oxygenation, suction, Spo2, Co2, medications used, visualization, tube size, lip line, all confirmation techniques, securement of tube, and repeat assessments of placement.
- Placement - direct visualization of the tube passing through the vocal cords.
- Applying c-collar may assist in minimizing ETT movement after placement.
- It is the responsibility of the provider to be familiar with the proper technique of using the different laryngoscope blades.
- Tube placement must be confirmed; after it was initially placed, after every movement, any significant change in patient status, and prior to entering the emergency department.
- Continually monitor the patient's SpO2, EtCo2, ease of ventilation, heart rate, and presence of JVD.
- A complication of endotracheal intubation and / or manual ventilation is a pneumothorax and tension pneumothorax. Refer to the chest decompression procedure if this occurs.
- Only functioning paramedics and AEMT may intubate. AEMT'S may only intubate patients who are apneic.
- Intubation does NOT have to be attempted if their airway can be effectively managed with BVM ventilations.
- Have tube placement confirmed immediately upon entering the ER by a Physician prior to moving patient to ER bed.



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## SECTION 14: INTUBATION – ENDOTRACHEAL-Cont.

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### BOUGIE ASSISTED INTUBATION

1. Prepare patient as described above for standard orotracheal intubation.
2. Use laryngoscope to lift mandible and displace tongue as normal.
3. Use the gum rubber Bougie with the bent end up in place of an ETT.
4. Pass the Bougie through the cords, this works as a place keeper to an ETT can be slide over the Bougie and into the trachea.
5. Pass a generously lubricated tube over the Bougie and into the trachea. Do not use force to advance the tube past the vocal cords.
6. Pull the Bougie out once the tube has been passed to the desired depth, inflate the ETT cuff, and verify tube placement using all standard methods.

### TUBE SIZING

The size of tube that can be passed easily into most adults is 8.0 mm (id). Therefore this tube should be tried first on the average adult. The size of tube is judged by the size of the adult, not by age.

For children, the proper tube is usually equal to the size of the child's little finger. The following guide will also help in determining the proper size tube:

Premature.....3mm (id)	18-24 months....5-6mm (id)
14-24 weeks.....4mm (id)	2-4 years.....6mm (id)
6-12 months.....4-5mm (id)	4-7 years.....6-7mm (id)
12-18 months....5mm (id)	7-10 years.....7mm (id)

### KEY POINTS

- All the above tube sizes are still dependent on the child's size rather than consideration of age.
- Children before puberty should have a cuffless tube, or if the tube has a cuff it should not be inflated after insertion.

### TUBE REMOVAL

If the patient begins to breathe spontaneously and effectively and is resisting the presence of the tube, removal of the tube may be necessary. The following procedures will be followed:

1. Explain procedure to victim.
2. Prepare suction equipment with large-bore catheter and suction secretions from endotracheal tube, mouth and pharynx.
3. The lungs should be completely inflated so that the patient will initially cough or exhale as the tube is taken from the larynx. This is accomplished in 2 ways:
  - a. The patient is asked to take the deepest breath they possibly can and, at the very peak of the inspiratory effort, the cuff is deflated and the tube removed rapidly; or
  - b. Positive pressure is administered with a hand-held ventilator and, at the end of deep inspiration, the cuff is deflated and the tube rapidly removed.
4. Prepare to suction secretions and gastric content if vomiting occurs.
5. Appropriate oxygen is then administered.
6. The patient's airway is immediately evaluated for signs of obstruction, stridor or difficulty breathing. The patient should be encouraged to take deep breaths and to cough.