



**REGION 11  
CHICAGO EMS SYSTEM  
PROCEDURE**

Title: Endotracheal Intubation - ALS
Section: Airway/Ventilatory Management
Approved: EMS Medical Directors Consortium
Effective Date: December 15, 2021

## **ENDOTRACHEAL INTUBATION - ALS**

### INDICATIONS

- Patients with respiratory failure where less invasive methods (bag-valve mask or supraglottic airway) are ineffective or where endotracheal intubation may be preferred such as severe inhalation burns or airway obstruction.

### CONTRAINDICATIONS

- None

### EQUIPMENT

- Bag-valve mask device with correct size for adult or pediatric patient
- Airway adjuncts (OPA) – sizes 00, 0, 1, 2, 3, 4, 5
- Airway adjuncts (NPA) – sizes 12F-34F
- Rigid suction catheter
- Suction tubing, canister, device or portable unit
- Magill forceps (adult or pediatric)
- Laryngoscope handle
- Laryngoscope blades: Miller (straight blade size 1, 2, 3) or Mac (curved blade size 2, 3, 4)
- Endotracheal tube cuffed (sizes 3.0 - 8.0 mm)
- Stylet (adult or pediatric)
- 10 ml syringe
- Stethoscope
- End-Tidal CO2 line adapter
- Oxygen tank with regulator and adapter
- Cardiac monitor with leads
- Pulse oximeter
- Airway tube holder
- Region 11 EMS Pediatric Resuscitation Card and Broselow tape (as indicated)

### PROCEDURE

1. Apply personal protective equipment: gloves, facemask, eye protection.
2. Attach cardiac monitor and pulse oximeter and evaluate reading.
3. Manually open airway with head tilt-chin lift or jaw thrust if concern for spinal injury.
4. Prepare rigid suction catheter and connect to tubing, canister and suction device.
5. Turn on power to suction device or retrieve manual suction device.



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6. Insert rigid suction catheter without applying suction.
7. Suction the mouth and oropharynx.
8. Select airway adjunct – either OPA or NPA.
9. Insert oropharyngeal airway (OPA).
  - a. Check for contraindications including gag reflex.
  - b. Measure size from the corner of the mouth to the tip of the earlobe.
  - c. Open mouth and insert airway along curvature of tongue to posterior oropharynx.
  - d. Advance gently until flange is against lips.
10. Insert nasopharyngeal airway (NPA).
  - a. Check for contraindications including midface trauma.
  - b. Measure size from the tip of the nose to the earlobe.
  - c. Lubricate airway with water based jelly.
  - d. Gently insert tube into largest unobstructed nostril with bevel to the septum.
  - e. Advance gently until flange is against nostril.
  - f. If resistance is met, withdraw airway and attempt on the other side.
11. Apply an appropriately sized bag-valve mask that completely covers the nose and mouth and maintain an effective seal around the cheeks and chin.
12. Attach supplemental oxygen to the bag-valve mask device.
13. Provide ventilation using a two-hand technique when possible using the two-thumbs down position and lifting the chin to the mask.
14. Ventilate patient with sufficient volume to make the chest rise.
  - a. Adults with spontaneous circulation: 1 breath every 6 seconds or 10 breaths per minute.
  - b. Adults during CPR: 1 breath every 6 seconds or 10 breaths per minute.
  - c. Infants and children with spontaneous circulation: 1 breath every 2-3 sec or 20-30 breaths per minute.
  - d. Infants and children with CPR: Compression to ventilation ratio of 15:2
15. Preoxygenate patient.
16. Assemble all appropriately sized equipment and test for function including laryngoscope blade light source and endotracheal tube cuff with syringe.
17. Insert stylet into tube and ensure the end of the stylet is not advanced past the tip of the endotracheal tube.
18. Position head properly and maintain spinal motion restriction for trauma patients.



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19. Insert laryngoscope blade and displace tongue. The Mac blade is designed to lift the epiglottis indirectly and provide a view of the larynx by placing the tip of the blade in the vallecula. The Miller blade is designed to lift the epiglottis directly to view the larynx.
20. Elevate mandible with laryngoscope.
21. Visualize vocal cords.
22. Remove any visualized foreign body with Magill forceps.
23. Insert endotracheal tube and advance until cuff passes through the cords with the approximate depth of insertion = (3) x (endotracheal tube size).
24. Remove stylet.
25. Inflate cuff with minimum air to seal airway and remove syringe.
26. Connect End-Tidal CO2 line adapter to endotracheal tube and cardiac monitor.
27. Ventilate patient and confirm proper tube placement using auscultation bilaterally over the lungs and over epigastrium.
28. Verify proper tube placement with waveform capnography.
29. Assess for hypoxia during intubation attempt.
30. If a paramedic is unsuccessful after two attempts at intubation, basic airway maneuvers should be re-attempted and if available a second paramedic may attempt intubation.
31. If the capnography indicates improper endotracheal tube placement with a flat line or no waveform, immediately remove the endotracheal tube and ventilate with bag-valve mask.
32. If the capnography indicates proper endotracheal tube placement with a continuous waveform, secure the endotracheal tube with airway tube holder.
33. If lung sounds are auscultated with decreased sounds on one side, the endotracheal tube may be positioned too deep and can be pulled back 1-2 cm with the cuff deflated. Cuff should be re-inflated after repositioning.
34. Ventilate patient at proper rate and volume while observing capnography and pulse oximeter, adjust rate for a goal ETCO2 of 35-45 mmHg.
35. Continually reassess patient condition, pulse oximeter, and waveform capnography.