

Airway Management & Intubation Guidelines

Designation of Condition: Patients who require active airway management or assisted ventilation due to:

- (1) depressed mental status with loss of protective airway reflexes,
- (2) failure to oxygenate with less invasive methods (e.g. [CPAP](#), NRB, NC),
- (3) failure to ventilate with less invasive methods, or
- (4) anticipated loss of airway prior to hospital arrival (e.g. rapidly progressive angioedema).

Guidelines for [Cricothyrotomy](#) and [Tracheostomy Tube Emergencies](#) are referenced separately.

GENERAL MANAGEMENT:

BVM:

- **Pull patient's face into mask** rather than pushing mask into face, which may occlude the airway.
- **Optimize patient positioning by placing the patient into a "sniffing" position** (unless concerned for cervical spinal injury).
- **Maintain basic airway maneuvers** during ventilation. Consider airway adjuncts (e.g. OPA, NPA).
- **Deliver ventilations slowly** (over 1-2 seconds) to avoid insufflating the stomach.
- **Two person ventilation is recommended** when resources allow, since a better mask seal can be made with two hands.
- If mask seal suffers due to rescuer fatigue, **consider rotating rescuers**.
- **Bag to subtle chest rise**. In most cases, it is not necessary to compress the entire BVM. Overventilation may be associated with worsened outcomes in several conditions.

NOTE: To limit overventilation, consider using a pediatric BVM (average volume of 500-1000mL), or consider squeezing an adult BVM with two fingers.

- Routine addition of a **PEEP valve** at 5cmH₂O is recommended.

Extraglottic Devices (e.g. King LTS-D™, AuraGain™, etc.):

- Use correctly-sized device for patient's height/weight.
- If ventilation is inadequate, attempt repositioning / reinserting the device before abandoning.
- The use of waveform [Capnography](#) with EGD placement is **MANDATORY**.

CARDIAC ARREST:

- If history suggests possible airway obstruction, visualize the airway with laryngoscopy before placing an EGD blindly.
- EGD is the **preferred airway device for prehospital cardiac arrest**, unless:
 - Failure to ventilate with EGD (e.g. poor lung compliance, distorted oropharyngeal anatomy)
 - Copious oral secretions with aspiration risk that cannot be adequately managed around the EGD.
- During CPR, ventilation rate should not exceed 8-10 breaths per minute through an advanced device (one breath every 6 seconds).

PEDIATRICS:

- **PATIENTS AGED 12 YEARS AND YOUNGER MAY NOT BE ENDOTRACHEALLY INTUBATED.** It is acceptable to manage the airway with either a BVM or an EGD.

OROTRACHEAL INTUBATION (ONLY for age ≥ 13 years):

- **Pre-oxygenation** with BVM and high-flow oxygen is strongly recommended prior to the intubation attempt.
- The use of **apneic oxygenation** (nasal cannula with flush-flow oxygen at >15LPM) during the intubation attempt may prolong the time until desaturation.
- The use of an [Airway Checklist](#) to verify equipment and preparation is recommended prior to the intubation attempt.
- Identify and prepare a **backup strategy** before initial intubation attempt (e.g. EGD).
- The use of cricothyroid pressure (Sellick's maneuver) is not routinely recommended, but [External Laryngeal Manipulation](#) (to improve view of the vocal cords) is.
- It is recommended to **lead with Suction** in the off-hand when performing laryngoscopy.
- When secretions, vomitus, or blood are copious, consider using the **Suction Assisted Laryngoscopy and Airway Decontamination ("SALAD")** technique to improve intubating conditions.
- **Bougie-assisted intubation** is strongly recommended.
- In most situations, providers should not make more than **two attempts** at intubation before resorting to another approach.

ENDOTRACHEAL TUBE CONFIRMATION:

- **ALL ENDOTRACHEAL TUBES MUST BE CONFIRMED BY WAVEFORM CAPNOGRAPHY.** If no capnography is available, **DO NOT** perform endotracheal intubation.
- Always auscultate both lungs to help identify right mainstem bronchus intubation.

TRAUMA:

- Attempts at intubation are likely to delay transport longer than other airway management strategies.
- It is recommended to utilize an assistant who is dedicated to in-line stabilization during the intubation attempt.
- If patient fails to ventilate or oxygenate by all other techniques, consider [Surgical Cricothyrotomy](#).

POST-INTUBATION / POST-EGD MANAGEMENT:

Reconfirmation:

- Reconfirmation of the endotracheal tube before and after any move or transfer is **mandatory**. It is recommended to print the waveform capnograph at these times.

Analgesia / Sedation:

- Administer analgesia if patient has a CPOT score ≥ 2 (see tool on right).
- Analgesia should be administered first, and sedation considered when analgesia is not sufficient to improve patient comfort.
- For transports < 1 hour, bolus dosing is preferred over continuous infusion.
- Consider [Fentanyl](#) for post-intubation pain control.
- Consider [Ketamine](#) or [Midazolam](#) for post-intubation sedation.

Restraints:

- Consider the use of soft restraints to help avoid inadvertent self-extubation.

Oxygenation:

- Target an SpO₂ of 90-95%. Hyperoxia should be avoided, as it may be more injurious to organs during reperfusion.

Ventilation:

- It is acceptable to increase ventilatory rate and/or depth to compensate for a high EtCO₂. **DO NOT attempt to correct a low EtCO₂ in a patient with signs of shock (e.g. fast heart rate, low blood pressure, tachypnea).** This is the body's compensatory response to acidosis; if this process is impaired, the patient could become critically acidemic.
- In patients that have spontaneous respirations, assisted ventilations will be more effective when delivered synchronously with the patient's own breaths.
- If using a [Ventilator](#), see appropriate guideline for more information.

Patient Positioning:

- If there are no contraindications (e.g. concern for spinal injury), it is reasonable to consider elevating the head of the bed 30 degrees after intubation. This improves respiratory physiology and may help reduce the risk of aspiration.

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| Ventilator Compliance | Tolerating ventilator or movement | + 0 |
| | Coughing but tolerating | + 1 |
| | Fighting ventilator | + 2 |
| Facial Expression | Relaxed, neutral | + 0 |
| | Tense | + 1 |
| | Grimacing | + 2 |
| Body Movements | Absence of movements | + 0 |
| | Protection | + 1 |
| | Restlessness | + 2 |
| Muscle Tension | Relaxed | + 0 |
| | Tense, rigid | + 1 |
| | Very tense or rigid | + 2 |
| Critical Care Pain Observation Tool (CPOT) | | |
| <i>Treat when score ≥ 2</i> | | |