



## Endotracheal Intubation

**Standards -** American Heart Association / ACLS for Healthcare Providers  
1998 US DOT Paramedic Curriculum  
Florida Regional Common EMS Protocols 2004

**Indications -**

1. Respiratory arrest.
2. Cardiac arrest
3. Patients where complete obstruction of the airway is imminent, i.e. respiratory burns, anaphylaxis.
4. Inability of the conscious patient to breathe adequately.
5. Inability of the unconscious patient to protect their airway, i.e. overdose, ETOH, coma.

**Contraindications -** The following are only relative contraindications to tracheal intubation:

1. Severe airway trauma or obstruction that does not permit safe passage of an endotracheal tube. Emergency cricothyrotomy is indicated in such cases.
2. Cervical spine injury, in which the need for complete immobilization of the cervical spine makes endotracheal intubation difficult.
3. Mallampati Classification of class III / IV or other determination of potential difficult airway.

**Side Effects -**

1. An endotracheal tube that is mistakenly sized or misplaced, especially in the apneic patient, can quickly lead to hypoxia and death.
2. Accidental intubation of the esophagus.
3. Oropharyngeal trauma.
4. Broken teeth or dentures.
5. Endobronchial intubation, ETT inserted too far.

### Steps for Tracheal Intubation

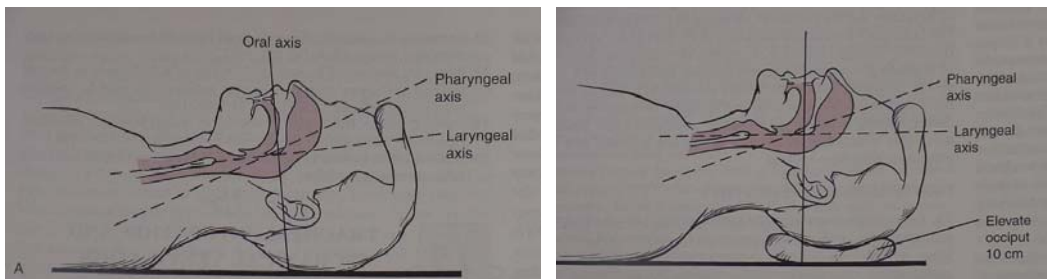
**Step 1:** Check the equipment (laryngoscope, curved (Macintosh type) and straight (Miller type) blades of an appropriate size for the patient and assure that the light works, check ETT cuff for leaks).

**Step 2:** Assemble all materials close at hand (laryngoscope handle, blades, assorted ET tube sizes, 10cc syringe, water-soluble lubricant, securing device, BVM, suction equipment, stethoscope).



### Step 3: Position of the patient:

Unless contraindicated – ie. Trauma. Elevating the patient's head about 10cm with pads under the occiput and extension of the head into the sniffing position serve to align the oral, pharyngeal and laryngeal axis, so that the passage from the lips to the glottic opening is almost a straight line. This position permits better visualization of the glottis and vocal cords and allows easier passage of the endotracheal tube.



### Step 4: Curved blade technique:



- Hyper-oxygenate the patient with 100% oxygen for 2 minutes.
- Open the patient's mouth with the right hand, and remove any dentures.
- Grasp the laryngoscope in the left hand.
- Spread the patient's lips, and insert the blade between the teeth, being careful not to break a tooth.
- Pass the blade to the right of the tongue, and advance the blade into the hypopharynx, pushing the tongue to the left.
- Lift the laryngoscope upward and forward, without changing the angle of the blade, to expose the vocal cords. The Sellick Maneuver is used to lower the trachea to facilitate tube passage and to compress the epiglottis and prevent aspiration. A crewmember should apply gentle downward pressure on the Cricoid cartilage, start off slowly and then gradually increase the downward force.
- Pass the tube through the vocal cords.



Step 5: Straight blade technique:



Follow the steps outlined above, but advance the blade down the hypopharynx, and lift the epiglottis with the tip of the blade to expose the vocal cords.

Step 6: Withdraw the stylet.

Step 7: Connect the bag-valve mask and begin ventilation with 100% oxygen.

Step 8: Verify tube placement. **Bolded are mandatory.**

1. Visualize tube passing through the cords.
2. Misting of the tube with respirations (not always reliable).
3. Movement of the chest with respirations.
4. **Auscultation of the chest (You should hear breath sounds on both sides of the chest).**
5. **Auscultation of the stomach (You shouldn't hear gurgles here).**
6. **Capnometer or CO2 colorimetric device.**
7. Esophageal detector device.
8. Rising or stable O2 saturation.
9. Clinical improvement of the patient.

\*Reasons for acute deterioration of the intubated patient:

Think **DOPE**

- **D**isplacement of the tube (It isn't where it should be).
- **O**bstuction of the tube (mucous plug, biting).
- **P**neumothorax, PE, pulselessness (cardiac arrest or shock).
- **E**quipment failure (No oxygen, failure of the ventilator, disconnected tubing).

Step 9: Secure the tube in place with tape or a commercial device.



## Mallampati Classification

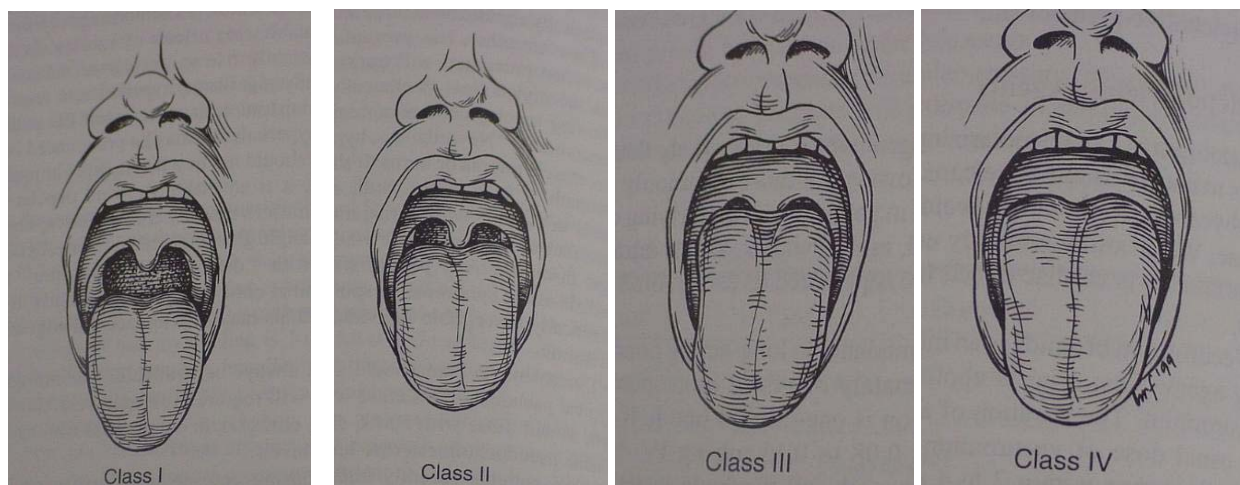
The Mallampati classification relates tongue size to pharyngeal size and is an important factor in determining the degree of difficulty of direct laryngoscopy. This classification allows one to assess upper airway access based on visibility of the oral pharynx ranging from complete visualization including tonsillar pillars to no visualization with the uvula pressed against the tongue. This test is performed while the patient is in the sitting position, awake and cooperative. Simply have the patient open their mouth and stick out their tongue and assess based upon the pharyngeal structures that are visible. This may not always be possible to accomplish in our patients.

**Class I:** Visualization of the soft palate, fauces, uvula and pillars. No anticipated difficulty.

**Class II:** Visualization of the soft palate, fauces, uvula. No anticipated difficulty.

**Class III:** Visualization of the soft palate and base of the uvula. Anticipate moderate difficulty.

**Class IV:** Soft palate is not visible. Anticipate severe difficulty.



The classification assigned may vary if the patient is in the supine position (instead of sitting).