# New Hampshire Department of Safety

# Division of Fire Standards & Training And Emergency Medical Services

Recommended Curriculum for

# The Rapid Sequence Intubation Assistant

## The Role of the NH

### EMT- Basic, Intermediate, Paramedic

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NH Fire Standards & Training and Emergency Medical Services
Toll Free: 1-888-827-5367
33 Hazen Drive, Concord, NH 03305
Business: (603) 271-4568

## INTRODUCTION

Securing and maintaining an airway is a paramedic's highest priority when caring for critically ill or injured patients. When required, advanced airway interventions must be performed quickly and efficiently by an experienced individual with the goal of establishing a definitive airway while minimizing any possible complications. The State of New Hampshire, Division of Fire Standards and Training and Emergency Medical Services (FST&EMS) had established a Rapid Sequence Intubation (RSI) Assistant program which offers a New Hampshire Basic, Intermediate or Paramedic advanced airway assessment and backup airway skills to best assist a paramedic performing RSI. Successfully performing these skills will require an experienced provider with a thorough understanding of the airway anatomy, basic and backup airways as well as the RSI process.
This class will discuss the recognition of airway compromise and management and the proper use of RSI medications and clinical skills with the goal of developing an RSI Assistant confidence and competence to successfully and safely perform his/her role in the RSI process in the prehospital setting.

## RAPID SEQUENCE INTBUATION CREDENTIALING PROCESS

In order to ensure the RSI program operates at a safe and efficient level, FST&EMS has stringent requirements for EMT-Basics, Intermediates, or paramedics who wish to complete the credentialing process.

The first step in the process is to decide whether you as an EMS provider are ready to take on the added responsibility association with assisting an RSI. Are you completely comfortable with your basic airway and backup airway skills or do you need more time to develop them? Are you intimately familiar with the back up airways? If not, then assisting an RSI is not for you. It is expected that anyone wishing to obtain RSI Assistant privileges be able to demonstrate mastery of basic airway assessment and management, as well as outline the RSI procedure.

Once ready, you will need to complete some competencies and meet other minimum requirements:

- Completion of the Airway Assessment Module
- Completion of the Backup Airway Module
- Completion of the Malignant Hyperthermia Competency
- Completion of the Rapid Sequence Intubation Module (aka Putting it all Together)
- Successfully complete the RSI in-service. This involves the RSI Assistant class, a final written exam, practical exams on the backup devices, and completing an RSI "Megacode" acting as the assistant with the EMS Medical Director

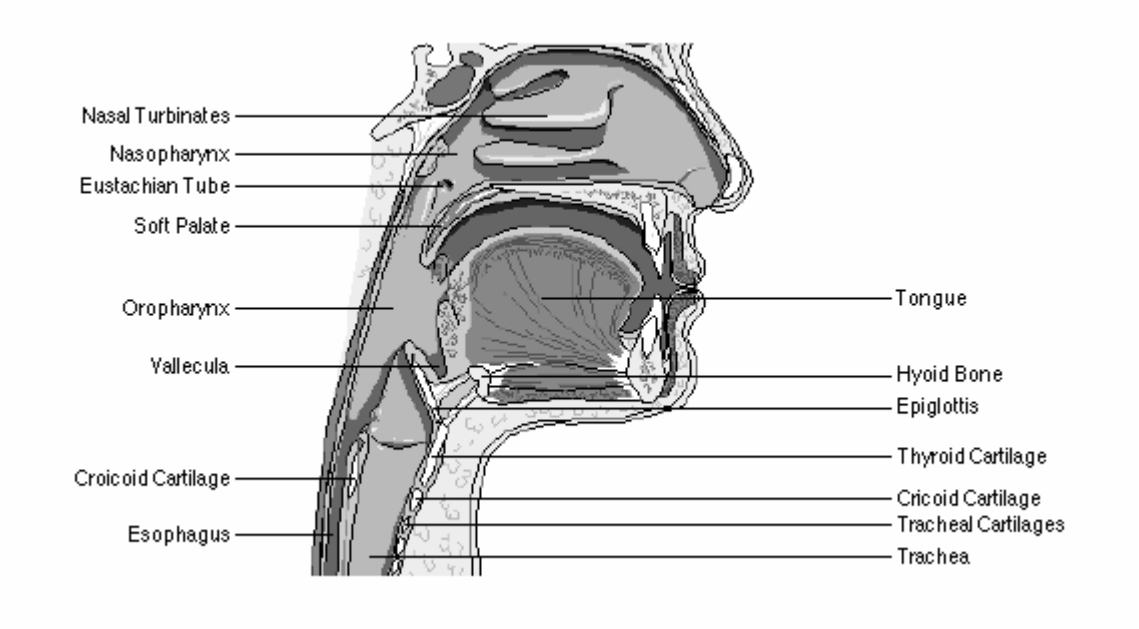
Once the requirements are met the EMS Medical Director and Unit Leader will review your packet and, if satisfied, give you final approval. Once you have protocol, they must be renewed every 2 years.

## ANATOMY / TERMINOLOGY REVIEW

The airway is divided into 3 regions, each with separate structures:

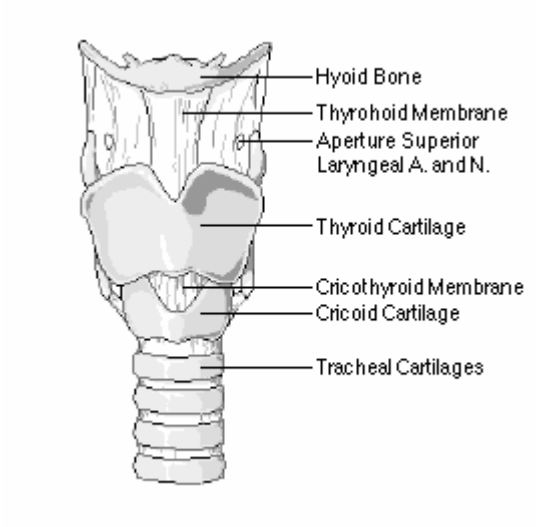
### Upper Airway

The face and the facial skeleton and are considered components of upper the airway. The upper airway heats, humidifies and conducts air into the lower airways. Problems can arise from obstructions, fractures and soft tissue injuries.




### Middle Airway

The middle airway consists primarily of the larynx. It is fairly well protected but is susceptible to injury. The larynx is comprised of cartilage and contains the vocal cords. Because it is narrow, edema, secretions, or foreign bodies can quickly cause problems.



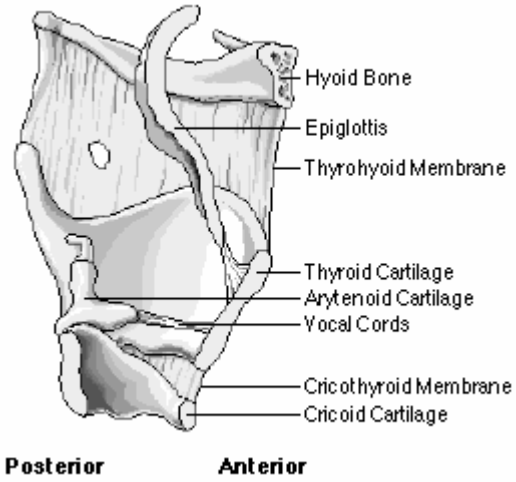

The rigid laryngeal structures are the hyoid bone, thyroid cartilage, cricoid cartilage and arytenoid cartilage. Inferior to the cricoid cartilage are tracheal cartilages. The cricoid cartilage is a complete ring and can be used to prevent passive reflux of stomach using cricoesophageal pressure (Sellick's Maneuver)

### Laryngeal Cartilages

The Cricothyroid artery is a small branch of the superior thyroid artery. It travels along the inferior border of the thyroid cartilage and becomes smaller as it reaches the midline. Cricothyroid puncture in the midline, inferior part of the membrane above the cricoid cartilage is least likely to produce bleeding.

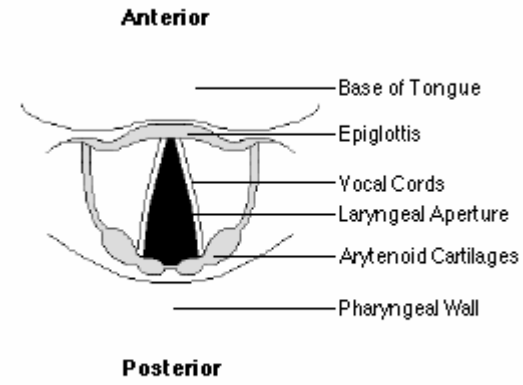
The large superior and inferior thyroid arteries

supply the thyroid gland. The gland is highly vascular. A pyramidal lobe may extend to the hyoid bone. Puncture below the cricoid cartilage has increased risk of bleeding. Palpate the puncture site carefully and avoid any masses (Engel et al, 2001).




### Laryngoscopic View

View during laryngoscopy is variable. Under ideal circumstances the epiglottis, arytenoid cartilages and nearly the entire vocal cords will be visible.




### Lower Airways

The lower airway begins at the trachea as it exits the neck and enters the chest. It consists of c-shaped cartilage rings held together by elastic-muscle tissue posteriorly, divides into the right and left mainstem bronchi and continues to the lung tissue.

## INDICATIONS

One of the basic functions of a paramedic is to ensure a patent airway. A paramedic must be able to rapidly identify patients at risk and determine the most appropriate method to manage the airway.

When determining the best method for maintaining an airway, consider the following:

- Is the patient at risk for a positional obstruction or aspiration?
- Is there inadequate oxygenation and/or ventilation?
- Is the patient's condition is expected to deteriorate?

## AIRWAY ASSESSMENT

### Difficult Airway Prediction

One of the most important factors when considering RSI is predicting the difficulty of an airway. There are three different dimensions of airway difficulty:

- Difficult to oxygenate
- Difficult to intubate
- Difficult to perform a cricothyroidotomy (Walls 2000)

Being able to predict a difficult airway will help the paramedic decide what interventions and techniques to use for securing the airway.

### Anatomic Clues to a Difficult Airway

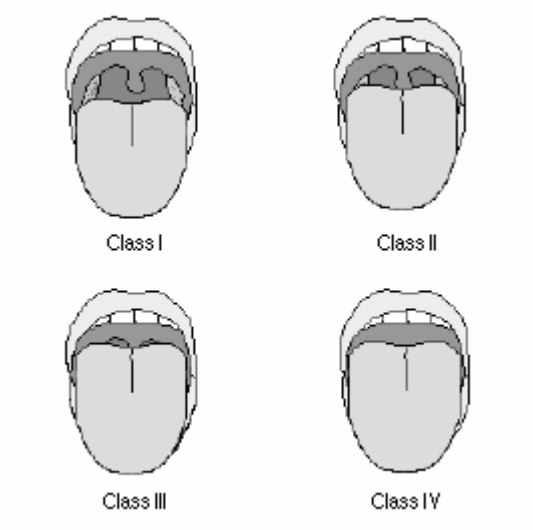
Visualizing the airway can be difficult in patients with the following features:

- Beards or facial hair
- Short, fat neck
- Morbidly obese patients
- Facial or neck trauma
- Broken teeth (can lacerate balloons)
- Dentures (should be removed)
- Large teeth
- Protruding tongue
- A narrow or abnormally shaped face

### Physical Examination of the Airway (3-3-2 Rule)

- The mouth should be able to accommodate a width of 3 fingers, incisor-to-incisor, top to bottom. The tongue should be normal sized.
- There should be a 3-finger distance from the tip of the chin to the hyoid bone (see picture)
- There should also be a 2-finger distance from the top of the thyroid cartilage to the hyoid bone

Any patient whose dimensions are smaller that 3-3-2 will probably present an intubation challenge.




**Mallampati Classification**

The Mallampati classification relates tongue size to pharyngeal size. This test is performed with the patient in the sitting position, the head held in a neutral position, the mouth wide open, and the tongue protruding to the maximum. The subsequent classification is assigned based upon the pharyngeal structures that are visible.

**Class I** visualization of the soft palate, fauces, uvula, anterior and posterior pillars

**Class II** visualization of the soft palate, fauces and uvula

**Class III** visualization of the soft palate and the base of the uvula

**Class IV** soft palate is not visible at all

The classification assigned by the clinician may vary if the patient is in the supine position (instead of sitting).
If the patient phonates, this falsely improves the view. If the patient arches his or her tongue, the uvula is falsely obscured.

A class I & II views correlate well with a laryngoscopic view grades I & II suggests relative ease of intubation. Class III & IV views suggests a poor laryngoscopic view, which may result in a difficult or failed intubation.

**Laryngoscopic View Grading**

Grade I: full aperture is visible
Grade II: Lower portion of cords visible
Grade III: Epiglottis only visible
Grade IV: Epiglottis not visible

Grades III & IV are rare. So, if you frequently see Grade III or IV – consider revisiting your technique. A severe grade III or IV view with failed endotracheal intubation occurs in 0.05-0.35% of patients

**Cervical Spine Mobility**

Patients with decreased C-spine mobility may be difficult or impossible to intubate in the field. As a rule the patient should be able to extend the neck 35º or greater to allow the maximal laryngoscopic view.

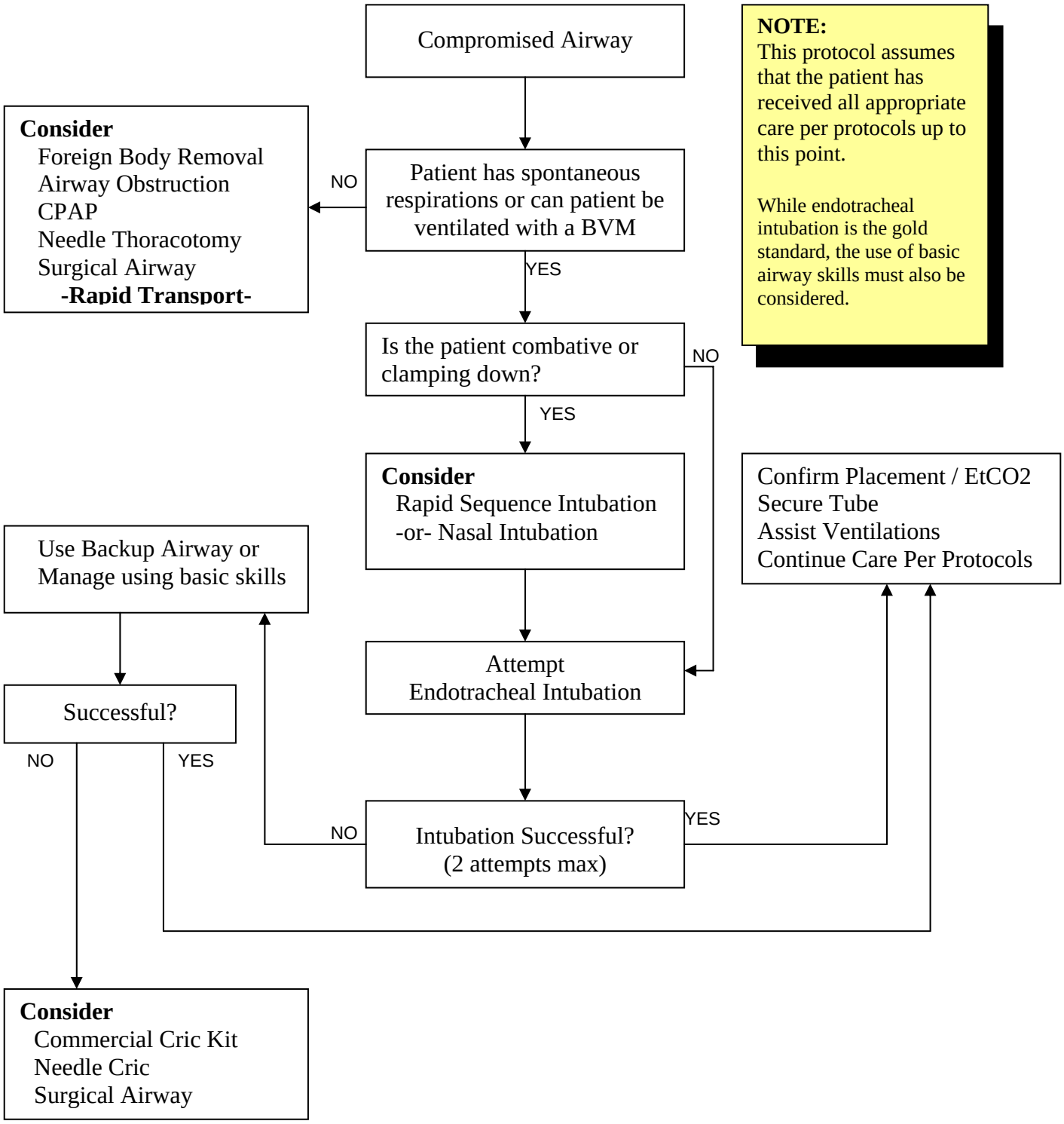
Suspected C-spine injury and immobilization also make it difficult to get a good laryngoscopic view. Additionally the application of Sellick's Maneuver has the potential of causing motion on

unstable segment.  Still, it is important to use cric pressure when performing RSI on these patients.

### Airway Obstruction

Any type of airway obstruction, whether from a foreign body, trauma, tumors or edema will make intubation difficult or impossible even if the patient has no other difficult airway indicators.

**Difficult Airway Flowchart**



## DOCUMENTATION AND THE QA PROCESS

The hallmark of any good program is ongoing quality assurance and the Unit Leader and the EMS Medical Director will review all uses of RSI for appropriateness and adherence to protocol. Paramedics are required to complete the QI form after any RSI case, and forward it and a copy of the run report to the paramedic manager prior to the end of their shift.

## REFERENCES


Engel, Applegate II, Chung & Sanchez. Management of the Difficult Airway, Cook Incorporated, 2001.

Scanlan, Wilkins & Stroller. Egan's Fundamentals of Respiratory Care, Mosby, St. Louis 1999.

Walls, Luten, Murphy, Schneider. Manual of Emergency Airway Management, Lippincott Williams and Wilkins, 2000.

# *AIRWAY MANAGEMENT* *5.0*

## *ASSESSMENT*

Each patient presents unique problems that cannot be fully outlined in any algorithm. As such, the provider must rely on thorough assessment techniques and consider each of the following:

1. **Airway Patency:** Assess for airway obstruction or risk of impending obstruction due to facial injuries, mass, foreign body, swelling, etc. Assess for presence/absence of gag reflex.
2. **Ventilatory Status:** Assess for adequate respiratory effort and impending fatigue/failure/apnea. Assess for accessory muscle use, tripod positioning, and ability of patient to speak in full sentences. If available, assess endtidal $CO_2$.
3. **Oxygenation:** Any oxygen saturation less than 90% represents relatively severe hypoxia and should be considered an important warning sign. In addition to oxygen saturation assess for cyanosis.
4. **Airway Anatomy:** Before attempting airway maneuvers or endotracheal intubation, especially with the use of medications, assess patient anatomy to predict probability of success and the need for back up device or technique. First, assess for difficulty of mask seal. Patients with facial hair, facial fractures, obesity, extremes of age and pathologically stiff lungs (COPD, ARDS, etc) may require special mask techniques or alternatives. Next, assess for difficulty of intubation. Patients with short neck, inability to open mouth at least three finger widths (or other oral issue such as large tongue or teeth), less than three finger widths of thyro-mental distance (or receding jaw), reduced atlanto-occiptal movement (such as suspected c-spine injury), obesity or evidence of obstruction (such as drooling or stridor) are some of the indicators of possible difficult intubation. Assessment of difficulty to place surgical airways includes surgery or airway disruption (trauma), hematoma, obesity, radiation, and tumors.

## *DEVISE PLAN*

1. Each patient will present unique challenges to airway management, therefore before any intervention is attempted, the provider should contemplate a plan of action that addresses the needs of the patient as well as anticipate complications and how to manage those complications, should the need arise.
2. Airway management is a continuum of interventions, not an "all or none" treatment. Some patients may only need airway positioning or a nasal or oral airway to achieve adequate ventilation and oxygenation. Others will require more invasive procedures. The provider should choose the **least** invasive method that can be employed to achieve adequate ventilation and oxygenation.
3. Continually reassess efficacy of plan and change plan of action as patient needs dictate.

## *BASIC SKILLS*

Mastery of basic airway skills is paramount to the successful management of a patient with respiratory compromise.

- Ensure a patent airway with the use of
  - Chin Lift/Jaw Thrust
  - Nasal Airway
  - Oral Airway
  - Suction
  - Removal of foreign body
- Provide ventilation with a bag-valve-mask: Proper use of the BVM includes appropriate mask selection and positioning to ensure a good seal. If possible, BVM is best accomplished with two people: one person using both hands to seal the mask and position the airway, while the other person provides ventilation. If the patient has some respiratory effort, synchronize bagging with the patient's own inhalation effort.

## *AIRWAY MANAGEMENT cont.* *5.0*

### *ADVANCED AIRWAY SKILLS*

Only after basic procedures are deemed either inappropriate or have proved to be inadequate should more advanced methods be used. Procedures documenting the use of each device/technique listed below are found elsewhere in this manual.

- **ETT**: The endotracheal tube was once considered the optimal method of managing the airway during cardiac arrest. It is now clear, however, that the incidence of complications is unacceptably high when intubation is performed by inexperienced providers or monitoring of tube placement is inadequate. The optimal method of managing the airway during cardiac arrest will vary based on provider experience, emergency medical services (EMS) or healthcare system characteristics, and the patient's condition.

  *2005 American Heart Association Guidelines for Cardiopulmonary Resuscitation and Emergency Cardiovascular Care (Circulation. 2005;112:IV-51 – IV-57)*

- **Bougie**: All providers who attempt ETT placement should become intimately familiar with the use of a bougie. It is the single most often used device by Anesthesiologists and Emergency Physicians for helping guide placement when a difficult airway is encountered
- **Alternate Devices:** utilize an alternate device when the clinical indications for intubation still exist but conditions prevent intubation or previous attempts at ETT placement have failed. Each of the approved devices has its own set of advantages/disadvantages and requires a unique insertion technique. Providers should have at least one of these devices available for use.
  - **King-LT**
  - **Combitube**
  - **LMA**
- **CPAP**: Continuous Positive Airway Pressure (CPAP) has been shown to be effective in preventing intubation and decreasing mortality in properly selected patients with acute respiratory failure.
- **Surgical Airways**: These procedures are indicated only when all other measures fail and you are presented with a situation* in which intubation is contraindicated or in which you cannot intubate or otherwise ventilate a patient.

*Situations that might require a surgical airway include

- Massive facial trauma
- Upper airway obstruction due to edema or mass or foreign body

### *DOCUMENTATION*

All efforts towards airway management should be clearly documented and, at the minimum, should include the following

- Pre/post intervention vital signs including oxygen saturation as well as capnography (if available)
- Procedures performed/attempted, including number of failed attempts and who performed procedure
- Size of device(s) placed, depth of placement if applicable.
- Placement confirmation: methods should include auscultation, condensation in the ETT, symmetrical chest wall rise, as well as at least one of the following: colorimetric $EtCO_2$, capnography, esophageal tube detector.

# GUM ELASTIC BOUGIE/FLEXGUIDE 5.1

## PARAMEDIC STANDING ORDERS

- Indications
  - Same as orotracheal intubation, but, unable to fully visualize vocal cords
- Contraindications
  - Use of a 6.0 or smaller ETT
- Procedure
  1. Lubricate bougie with surgilube.
  2. Using a laryngoscope (Macintosh or Miller blade) and standard ETT intubation techniques, attempt to visualize the vocal cords.
  3. If the vocal cords are visualized, pass the bougie through the cords while attempting to feel the signs of tracheal placement (see below). The bougie is advanced until the black line on the bougie reaches the lip line.
  4. If the vocal cords are not visualized, pass the bougie behind the epiglottis, guiding the tip of the bougie anteriorly towards the trachea and asses for signs of tracheal placement (see below).
  5. With laryngoscope still in place, have assistant load ETT over bougie and slide it to the level of the lips.
  6. Advance ETT over the bougie rotating the ETT about 1/4 turn counterclockwise so that the bevel is facing posteriorly as the ETT passes through the vocal cords. This maneuver allows the bevel to gently spread the arytenoids with a minimum of force, thus avoiding injury. If resistance is felt, withdraw the ETT rotating it in a slightly more counterclockwise direction and advance the tube again. Advance the tube to a lip line of 24 cm in an adult male, and 22 cm in an adult female.
  7. Holding ETT firmly in place, remove the bougie.
  8. Remove laryngoscope.
  9. Inflate the cuff with 5 – 10 ml of air.
  10. Assess for adequate placement by auscultation (equal breath sounds over the chest and lack of sounds over the epigastrium with bagging), condensation in the ETT, symmetrical chest wall rise and at least one additional method: colorimetric end-tidal $CO_2$ detector, capnography, or esophageal tube detector (note: this device should be used prior to ventilation to be accurate).
  11. This should be repeated often especially after movement of the patient
  12. Secure the ETT.
- Signs of tracheal placement
  1. The bougie is felt to stop or get 'caught up' as the airway narrows and is unable to be advanced further. This is the most reliable sign of proper bougie placement. If the bougie enters the esophagus, it will continue to advance without resistance.
  2. You may be able to feel the tactile sensation of 'clicking' as the bougie tip is advanced forward over the rigid cartilaginous tracheal rings.
  3. The bougie can be felt to rotate as it enters a main stem bronchus. Usually it is a clockwise rotation as the bougie enters the right mainstem bronchus but occasionally will rotate counterclockwise if the bougie enters the left mainstem bronchus.
  4. If the patient is not paralyzed, he or she may cough.

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# OROTRACHEAL INTUBATION 5.2

## PARAMEDIC STANDING ORDERS

- Indications
  - Apnea/Respiratory Failure
  - Impending Respiratory Failure
  - Impaired gag reflex
- Contraindications
  - Epiglottitis
  - Facial or neck injuries that prohibit visualization of airway anatomy - Relative
- Procedure

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1. Prepare all equipment and have suction ready.
2. Pre-oxygenate the patient, if time permits.
3. Open the patient's airway. While holding the laryngoscope in the left hand, insert the blade into the right side of the patient's mouth, sweeping the tongue to the left.
4. Use the blade to lift the tongue and the epiglottis either directly with the straight (Miller) blade or indirectly with the curved (Macintosh) blade.
5. Once the glottic opening is visualized, insert the tube through the vocal cords and continue to visualize while passing the cuff through the cords.
6. Remove the laryngoscope and then the stylet from the ETT.
7. Inflate the cuff with 5-10 ml of air.
8. Assess for adequate placement by auscultation (equal breath sounds over the chest and lack of sounds over the epigastrium with bagging), condensation in the ETT, symmetrical chest wall rise and at least one additional method: colorimetric end-tidal $CO_2$ detector, capnography, or esophageal tube detector (note: this device should be used prior to ventilation to be accurate).
9. This should be repeated often, especially after movement of the patient.
10. In addition to auscultation, confirm the placement of the tube by using at least one additional method: Colorimetric end-tidal $CO_2$ detector, capnography, or esophageal tube detector (note this should be used prior to ventilation to be accurate).
11. Secure the tube.
12. Document the ETT size, time, results, and placement depth (in cm at the level of the patient's teeth or gums) on the PCR. Also include in documentation the procedures and devices used for confirmation of tube placement (e.g. bilateral equal breath sounds and absence of epigastric sounds, end-tidal $CO_2$, etc.).

# NASOTRACHEAL INTUBATION 5.3

## PARAMEDIC STANDING ORDERS

- Indications
  - Impending respiratory failure with intact gag reflex or jaw is clenched and unable to be opened.
- Contraindications
  - Apnea
  - Nasal obstruction
  - Suspected basilar skull fracture
  - Age less than 12 years
  - Length less than a pediatric length based resuscitation tape (Broslow Tape)
- Procedure
  1. Pre-medicate nasal mucosa with 2% lidocaine jelly and nasal decongestant spray if available.
  2. Select the largest and least obstructed nostril and insert a lubricated nasal airway to help dilate the nasal passage.
  3. Pre-oxygenate the patient.
  4. Lubricate the endotracheal tube with water-based lubricant.
  5. Remove the nasal airway and gently insert the tube, keeping the bevel toward the septum (a gentle rotation movement may be necessary at the turbinates).
  6. Continue to advance the ETT while listening for maximum air movement.
  7. At the point of maximum air movement, indicating proximity to the level of the glottis, gently and evenly advance the tube through the glottic opening on inspiration.
  8. If you feel resistance, the tube may have become lodged into the pyriform sinus and you may note tenting of the skin on either side of the thyroid cartilage. If this happens, slightly withdraw the ETT, rotate it toward the midline, and again attempt to advance tube with the next inspiration.
  9. Upon entering the trachea, the tube may cause the patient to cough, buck, strain, or gag. This is normal. Do not remove. Be prepared to control the cervical spine and the patient, and be alert for vomiting.
  10. The 15mm marker usually rests close to the nostril with proper positioning.
  11. Inflate cuff with 5 to 10 ml of air.
  12. Assess for adequate placement by auscultation (equal breath sounds over the chest and lack of sounds over the epigastrium with bagging), condensation in the ETT, symmetrical chest wall rise and at least one additional method: colorimetric end-tidal $CO_2$ detector, capnography, or esophageal tube detector (note: this device should be used prior to ventilation to be accurate).
  13. Secure the ETT.
  14. Document the ETT size, time, results, and placement depth (in cm at the level of the patient's nares) on the PCR. Also include in documentation the procedures and devices used for confirmation of tube placement (e.g. bilateral equal breath sounds and absence of epigastric sounds, end-tidal $CO_2$, etc.).

# RAPID SEQUENCE INTUBATION (RSI) 5.4

## PARAMEDIC STANDING ORDERS

- Prerequisites Required
  - This procedure is only to be used by paramedics that are trained and credentialed to perform RSI by NH Bureau of EMS.
- Indication
  - Immediate severe airway compromise in the context of trauma, drug overdose, status epilepticus, etc., where respiratory arrest is imminent.
- Contraindication
  - Extensive recent burns, or crush injuries greater than 24 hours old
- Definition
  - RSI is the near-simultaneous administration of neuromuscular blocking agents and sedative-hypnotic drugs in order to facilitate oral intubation of a patient with the least likelihood of trauma, aspiration, hypoxia, and other physiologic complications.
- Procedure: The seven "Ps"

P

1. **Preparation**: The time-frame is limited, but the operator must have adequate Ambu-mask/oxygen sources, two laryngoscope handles, an assortment of blades, two assistants familiar with the procedure, one or two secure IV's, rescue airway devices, oxymetry & capnography monitoring, bulb-style tube checker.
2. **Preoxygenation**: When possible a nonrebreather mask for several minutes is more e ffective in performing nitrogen washout and establishing an adequate oxygen reserve during the procedure. In emergent cases, three mask breaths with 100% oxygen may suffice.
3. **Premedication**: Lidocaine (1.5mg/kg) given exactly 2 minutes before intubation may prevent a rise in ICP for head injured patients. Atropine should be given to bradycardic adults at 0.5mg IVP.
4. **Paralyze**: Etomidate (0.3mg/kg IV).
   - ◊ Apply cricoid pressure and maintain until the airway is secure.
   - ◊ Succinylcholine (1.5mg/kg IVP) immediately after etomidate
5. **Pass the tube**: Observe for fasciculations approximately 90 seconds after succinylcholine to indicate imminent paralysis. After paralysis is achieved, follow procedure outlined in section 5.2 to place the endotracheal tube.
6. **Proof of placement**: Assess for adequate placement by auscultation (equal breath sounds over the chest and lack of sounds over the epigastrium with bagging), condensation in the ETT, symmetrical chest wall rise and at least one additional method: colorimetric end-tidal $CO_2$ detector, capnography, or esophageal tube detector (note: this device should be used prior to ventilation to be accurate).
   - ◊ This should be repeated often, especially after movement of the patient.
7. **Post intubation care**: The patient may be given incremental doses of midazolam (0.05-0.10mg/kg IVP) **or** lorazepam 1 - 2 mg IV as needed for sedation. For continued paralysis, vecuronium 0.1 mg/kg IVP **or** rocuronium 1 mg/kg IVP may be considered, with on-line medical consultation. Consider wrist restraints.

# COMBITUBE 5.5

## BASIC & INTERMEDIATE & PARAMEDIC STANDING ORDERS

- Indications
  - Apneic patient when endotracheal intubation is not possible or not available.
  - Standard Combitube: patient must be at least 5 feet tall.
  - Combitube SA (small adult): patient 4 – 5 1/2 feet tall
- Contraindications
  - Intact gag reflex
  - Patients < 4 feet tall
  - Known esophageal disease such as cancer
  - Caustic ingestion
  - Allergy or sensitivity to latex (the pharyngeal balloon contains latex)
- Procedure

B/I/P

1. Prepare Combitube
   - Test balloons
     - Proximal pharyngeal cuff (blue pilot balloon) – 100 ml
     - Distal esophageal cuff (white pilot balloon) – 15 ml
   - Lubricate device with water-soluble lubricant.
2. Preoxygenate and hyperventilate the patient, if time permits.
3. Grasp the patient's tongue and jaw with your gloved hand and pull forward.
4. Gently insert the tube until the teeth (or gums) are between the printed rings.
5. Inflate cuff #1 (blue pilot balloon) with 100 ml of air.
6. Inflate cuff #2 (white pilot balloon) with 15 ml of air.
7. Ventilate taller blue tube (#1) with bag valve mask.
8. Auscultate for breath sounds and sounds over the epigastrium. Look for rise and fall of chest.
9. If breath sounds are present and epigastric sounds are absent, continue to ventilate through the blue tube. The tube is properly positioned in the esophagus. In the case above you can aspirate stomach contents through the #2 white tube to relieve some gastric distention.
10. If breath sounds are absent and epigastric sounds are present, attempt to ventilate through the shorter white (#2) tube and assess for breath sounds and epigastric sounds. If breath sounds are present and epigastric sounds are absent, continue to ventilate through the white tube (#2); you have intubated the trachea.
11. In addition to auscultation, confirm tube placement by using at least one additional method: colorimetric end-tidal $CO_2$ detector, capnography, or esophageal tube detector (note: this device should be used prior to ventilation to be accurate).
    This should be repeated often, especially after movement of the patient.
12. Secure the device.

## KING LT-D 5.6

### BASIC & INTERMEDIATE & PARAMEDIC STANDING ORDERS

- Indications
  - Apneic patient when endotracheal intubation is not possible or not available.
  - Patient must be > 4 feet tall.
- Contraindications
  - Intact gag reflex
  - Known esophageal disease such as cancer
  - Caustic ingestion
  - Patient less than 4 feet tall
- Procedure

B/I/P

1. Choose correct size:

| Size | Height (ft) | Cuff Volume (ml) |
|---|---|---|
| 3 | 4 - 5 | 50 |
| 4 | 5 – 6 | 70 |
| 5 | 6 + | 80 |

2. Prepare King LT-D
   - ◊ Test cuffs for leaks (see volume above)
   - ◊ Lubricate device with water soluble lubricant
3. Preoxygenate and hyperventilate the patient, if time permits.
4. Grasp the patient's tongue and jaw with your gloved hand and pull forward.
5. With the King LT-D rotated laterally at 45-90 degrees such that the blue orientation line is touching the corner of the mouth, introduce tip into mouth and advance behind base of tongue.
6. As tube tip passes under tongue, rotate tube back to midline (blue orientation line faces chin).
7. Advance tube until base of connector is aligned with teeth or gums.
8. Inflate cuffs to appropriate volume as listed above.
9. Connect the King LT-D to a bag-valve device and ventilate the patient.
10. Assess for adequate placement by auscultation (equal breath sounds over the chest and lack of sounds over the epigastrium with bagging), condensation in the ETT, symmetrical chest wall rise and at least one additional method: colorimetric end-tidal $CO_2$ detector, capnography, or esophageal tube detector (note: this device should be used prior to ventilation to be accurate).
    This should be repeated often, especially after movement of the patient.
11. Secure the device.

# LARYNGEAL MASK AIRWAY (LMA) 5.7

## INTERMEDIATE & PARAMEDIC STANDING ORDERS

I/P

- Indication
  - Inability to place ETT for airway management
- Contraindications
  - Intact gag reflex
  - Pulmonary Fibrosis
  - Morbid Obesity
- Procedure
  1. Check tube for proper inflation/deflation.
  2. Lubricate the back of the mask with a water-soluble jelly.
  3. Pre-oxygenate the patient.
  4. Insert the LMA into the hypopharynx until resistance is met.
     Inflate the cuff until a seal is obtained. (**Note**: This airway does not prevent aspiration of stomach contents.)
  5. Connect the LMA to a bag-valve device and ventilate the patient.
  6. Assess for adequate placement by auscultation (equal breath sounds over the chest and lack of sounds over the epigastrium with bagging), condensation in the ETT, symmetrical chest wall rise and at least one additional method: colorimetric end-tidal $CO_2$ detector, capnography, or esophageal tube detector (note: this device should be used prior to ventilation to be accurate).
     This should be repeated often, especially after movement of the patient.
  7. Secure the device.

# NEEDLE CRICOTHYROTOMY 5.8

## PARAMEDIC STANDING ORDERS

P

- Indications
  - Unable to perform endotracheal intubation or place alternate device due to airway obstruction.
- Contraindications
  - Ability to ventilate by any other means.
- Procedure
  1. Identify cricothyroid membrane between the cricoid and thyroid cartilages.
  2. Using non-dominate hand, stabilize membrane.
  3. Prep skin with providone-iodine swabs or other antiseptic.
  4. Using a syringe and a 14 – 16 gauge IV catheter or commercial equivalent, insert the needle through the cricothyroid membrane perpendicular to the surface of the membrane.
  5. Aspirate for air while inserting needle/device.
  6. Once air returns easily, stop advancing device.
  7. Secure catheter either by having assistant hold it in place or with the aid of a commercial device.
  8. Attach jet ventilation device/BVM as appropriate.
  9. Ventilate patient.
  10. Assess for adequate placement by auscultation (equal breath sounds over the chest and lack of sounds over the epigastrium with bagging), symmetrical chest wall rise, and at least one additional method (for commercial device only): colorimetric end-tidal $CO_2$ detector, capnography, or esophageal tube.
      This should be repeated often, especially after movement of the patient.
  11. When using the jet ventilation device, ensure ample time to allow for expiration using a 1:4 inspiration/expiration ratio.

# SURGICAL CRICOTHYROTOMY 5.9

## PARAMEDIC STANDING ORDERS

- Indications
  - Unable to perform endotracheal intubation or place alternate device due to airway obstruction
- Contraindications
  - Child whose height does not exceed length of length based resuscitation tape (Broslow Tape)
- Procedure

P

1. Identify cricothyroid membrane between the cricoid and thyroid cartilages.
2. Using non-dominate hand, stabilize thyroid cartilage.
3. Prep skin with providone-iodine swabs or other antiseptic.
4. Using a scalpel, make a 1-inch vertical incision through the skin and the subcutaneous tissue overlying the cricothyroid membrane.
5. Using blunt dissection, expose the cricothyroid membrane and make a 0.5-inch incision horizontally through the membrane.
6. Using a dilator, hemostat, or gloved finger to maintain surgical opening in the membrane, insert a 6.0 cuffed ETT tube (or device as supplied in commercial kit) into the trachea.
7. Inflate ETT cuff.
8. Connect a bag-valve device and ventilate the patient.
9. Secure the ETT/device.
10. Assess for adequate placement by auscultation (equal breath sounds over the chest and lack of sounds over the epigastrium with bagging), condensation in the ETT/device, symmetrical chest wall rise and at least one additional method (for commercial device only): colorimetric end-tidal $CO_2$ detector, capnography, or esophageal tube detector.
    This should be repeated often, especially after movement of the patient.

# ADVANCED SUCTIONING 5.10

## BASIC & INTERMEDIATE & PARAMEDIC STANDING ORDERS

B/I/P

- Indication
  - Obstruction of the airway (secondary to secretions, blood, and/or any other substance) in a patient currently being assisted by an airway adjunct such as an endotracheal tube, Combitube, tracheostomy tube, or a cricothyrotomy tube
- Procedure
  1. Ensure the suction device is operable
  2. Pre-oxygenate the patient
  3. While maintaining aseptic technique, attach the suction catheter to the suction unit.
  4. If applicable, remove ventilation devices from the airway.
  5. Insert the sterile end of the suction catheter into the tube without suction. Insert until resistance is met, pull back approximately 1-2 cm.
  6. Once the desired depth is met, apply suction by occluding the port and slowly remove the catheter from the tube, using a twisting motion.
  7. Suctioning duration should not exceed 15 seconds.
  8. Saline flush may be used to help loosen secretions and facilitate suctioning.
  9. Re-attach the ventilation device and oxygenate the patient.

RSI Assistant Education
Competency Check Sheet

Name:_____

| Requirement | Date | Verifying Signature |
|---|---|---|
| Number of years as an EMS Provider? | | |
| Completion of the Airway Assessment Module | | |
| 3 – 3 – 2 Assessment | | |
| Mallampati Classification | | |
| Laryngoscopic View Grading | | |
| Completion of the Backup Airway Module | | |
| BVM | | |
| Combitube | | |
| King LD-T | | |
| LMA | | |
| Completion of the Malignant Hyperthermia Competency | | |
| Completion of the Rapid Sequence Intubation Module (aka Putting it all Together for the Assistant) | | |
| Successfully completion of a RSI "Megacode" acting as the Assistant with the EMS Medical Director | | Requires signature from Medical Director |