

“To RSI or not to RSI, that is the question.”

Scientific advances have blurred the distinction of what was traditionally done in hospitals and has allied various techniques and procedures by means of their efficacy to field operations performed by prehospital providers under the jurisdiction of a duly licensed medical practitioner hereafter referred to as the Medical Director. As scientific knowledge continues to expand and the efficiency of prehospital treatment is recognized, additional modalities will be added to the prehospital repertoire. We recognize strokes in the field and have a mandate to procure the best treatment for said individuals at recognized stroke facilities. We identify chest pain and recognize ST elevations and begin thrombolytics before arriving at a STEMI center. The one condition that supersedes all our endeavors is the recognition and the appropriate treatment of respiratory distress and respiratory arrest. Man can live three weeks without food, three days without water, but cannot survive three minutes without air without dire consequences.

The Medical Directors Committee of GETAC has established a position in regards to the delegation of medical authority in the field. We believe there should be a relationship between competency certification and professional licensure, within parameters allowing execution of duties to best serve each community's needs allowing reasonable local variation based on education, equipment allocation, field organization, and local medical delegation. Within the context of local variability, there should be consistency in protocols and procedures as deemed appropriate to each locale, credentialed and delegated by the Medical Director.

The Medical Directors for their representative services should ensure their respective protocols represent safe, effective, patient centered, timely, efficient, and equitable practice guidelines. The Medical Directors Committee has already broached the subject of pediatric intubations in their position paper regarding “Pediatric Equipment for Ambulances”, April 2007. The Medical Directors Committee has further discussed entry level competence based on education and practical assessment for the use of Combitubes, LMA's, endotracheal intubation using a variety of techniques including ‘rapid sequence intubation’, needle and retrograde cricothyrotomy, and surgical cricothyrotomy, in their position paper regarding the “EMS National Scope of Practice Model”, April 2005.

In the State of Texas there is a wide disparity in practice patterns based on level and locale of service, clinical acumen based on formal education and in-field experience, and diversity of volume in the area of service. As a minimum all entry level responders should be knowledgeable in the use Bag-Valve-Mask assisted ventilatory support and be cognizant in and of the use of the Combitube and LMA for in-field operations where endotracheal intubation with or without the use of pharmacological support is not part of the services repertoire of exposure.

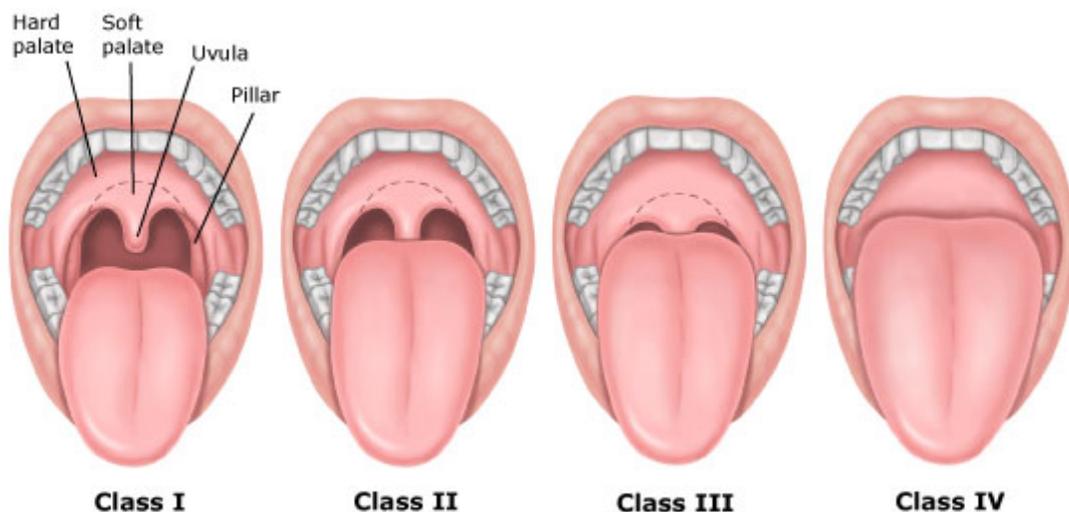
The question becomes problematic when presented with a difficult ventilation, a difficult intubation, whether or not presenting with a difficult laryngoscopy, with a resultant cannot intubate/cannot ventilate scenario.

The Definitive Airway by definition is a cuffed tube below the level of the cords. A Difficult Ventilation is the inability to maintain O₂ saturations greater than 90% with 100% FIO₂ utilizing a BVM if starting out greater than 90%, representing a PaO₂ of 60, with a variability of +/- 2%. By definition a Difficult Intubation takes more than 3 laryngoscopies or 10 minutes, for the experienced operator. For in-field operations only one attempt should be allowed prior to consideration of alternative technique or bridge. A Difficult Laryngoscopy is defined as a Cormack-Lehane class III or IV, see below.

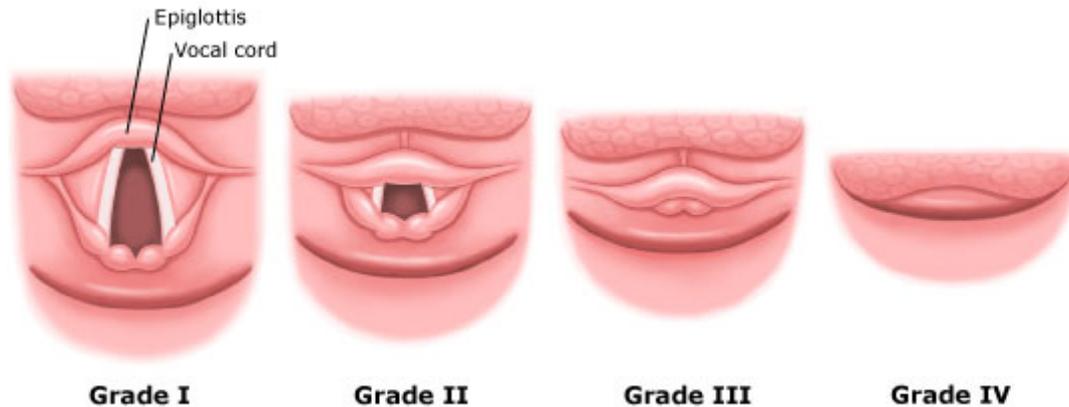
The handling of the Difficult Airway comes down to three key questions. Will I be able to ventilate this patient? (with BVM or LMA, the most important consideration). Will I be able to intubate this patient? Could I 'cric' this patient if I needed to? These intrinsic questions are designed to keep the responder out of the swirling vortex of H.... Airway management are skills that once obtained must be practiced and mentally configured to always look ahead. How many people have a difficult airway?

Less than 10% of the time in emergent situations will one be able to predict the difficult airway by thoroughly evaluating the patient. But in those situations certain features must be considered: Facial characteristics such as buck teeth, narrow face, high palate, large tongue, mandibular protrusions, interincisor distance, moustache and beard; C-spine and neck for decrease mobility and C-collar, short bull neck, potential spine trauma; Co-morbidity such as obesity, pregnancy, rheumatoid arthritis, cancer, sleep apnea, infection, large breasts, diabetes. The **LEMON** law summarizes: **L**ook externally, **E**valuate 3:3:2 Rule (mouth opening: 3 fingers between the incisors; mandible length: 3 fingers from mentum to hyoid; neck length: 2 fingers from hyoid to thyroid), **M**allampatti, **O**bstuction?, **N**eck mobility. It is imperative to have understanding of the Mallampatti Classification (Mal I-IV) and the Cormack-Lehane Laryngoscopy Grades (CL I-IV). A Mal I correlates to a 99-100% chance of a CL I, whereas a Mal IV correlates with a CL III or IV, in between there is no correlation.

Mallampatti Classification (Mal)



Cormack-Lehane Laryngoscopy Grades (CL)



Attention to basics is the rule. In the spontaneously breathing individual BVM support can be considered. With the advent and adoption of CPAP for in-field use there have been fewer required intubations and this technique with decreasing expenditures should be a consideration in the armamentarium for airway management.

Awake intubation options for in field operations to consider include oral tracheal intubation with topical anesthesia such as nebulized 4% lidocaine and sedation, and blind nasotracheal intubation in the spontaneously breathing patient without facial trauma. The use fiber optic intubation, the use of a lighted stylet, the use of an intubating LMA, and retrograde intubation and cricothyrotomy in the awake patient do not lend themselves to in-field operations.

Pharmacologic assisted intubations require a preplanned approach. Short acting sedation with agents such as Versed or Etomidate, and short acting paralytics such as succinylcholine have been advocated for use. Pending successful intubation longer acting agents as rocuronium or vecuronium can be added as well as additional sedation with fentanyl can be considered. Indications, contraindications, and adverse reactions for all agents used must be appreciated, i.e. succinylcholine and adverse effect in hyperkalemia, neuromuscular diseases, increase intracranial pressure, etc.

The concept of “Bridging” must be thoroughly understood as part of a three pronged approach to endotracheal intubation, i.e., A) RSI, B) bridging such as LMA, C) cricothyrotomy. There must be a mental image moving from step A to B to C in a difficult airway scenario. Disasters arise in repeating the same steps over and expecting a different outcome once they have failed. This may be as simple as changing the blade on the laryngoscope or utilizing the BURP technique. This is then followed by bridging, providing oxygenation and ventilation to get from one definitive technique to another. BVM is often under estimated but can secure valuable time and maintain oxygenation

and ventilation in a difficult airway. Consider LMA, King LT, Combitube, frova catheter with oxygenation, or needle cric as selected by the individual service.

An endotracheal tube can be passed over a frova catheter or gum elastic bougie. Definitive airways can be achieved utilizing an intubating LMA, fiberoptic blades or stylets, light wands, the use of digital intubation, and the establishment of a surgical airway by cricothyrotomy, retrograde intubation, or tracheostomy. Not all are amenable to in-field operations and should be selected by the appropriate services based on education and operability.

In a full arrest or unresponsive patient airway support may be obtained utilizing a Combitube, LMA, or endotracheal intubation providing a difficult airway is not suspected and providing the patient is completely relaxed. If the patient is not in full arrest and not unresponsive but requires a definitive airway, pharmacologic assisted intubation should be considered. Awake intubations can be considered in those patients with adequate oxygenation and ventilation but in whom a difficult airway is predicted and intubation is not reasonably likely and there is no contraindication to blind nasal intubation. In the cannot ventilate/cannot intubate scenario, there is only one choice, the establishment of an immediate surgical airway.

After any intubation in addition to observing the tube pass thru the cords if under direct vision and auscultation of lung fields and observing for chest rise, it is imperative to use any of the available CO2 detection devices including either capnometry but preferably capnography, in addition to available oximetry.

Algorithms are only as good as the practitioner. Education and continued practice are the main ingredients of a successful RSI program. And a successful RSI program requires ongoing surveillance and improvement programs.

The Medical Directors Committee of the Governor's EMS and Trauma Advisory Council encourages the Medical Directors of the State of Texas develop guidelines for airway management consistent with continuing education, advanced practice skills, and periodic and regular testing, consistent with reasonable local variation, to best serve their individual communities needs.

Respectfully submitted,

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Algorithms courtesy of Stanford University Xtreme Emergency Medicine Symposium