

Color and Line Key

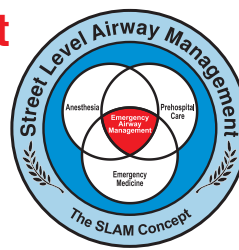
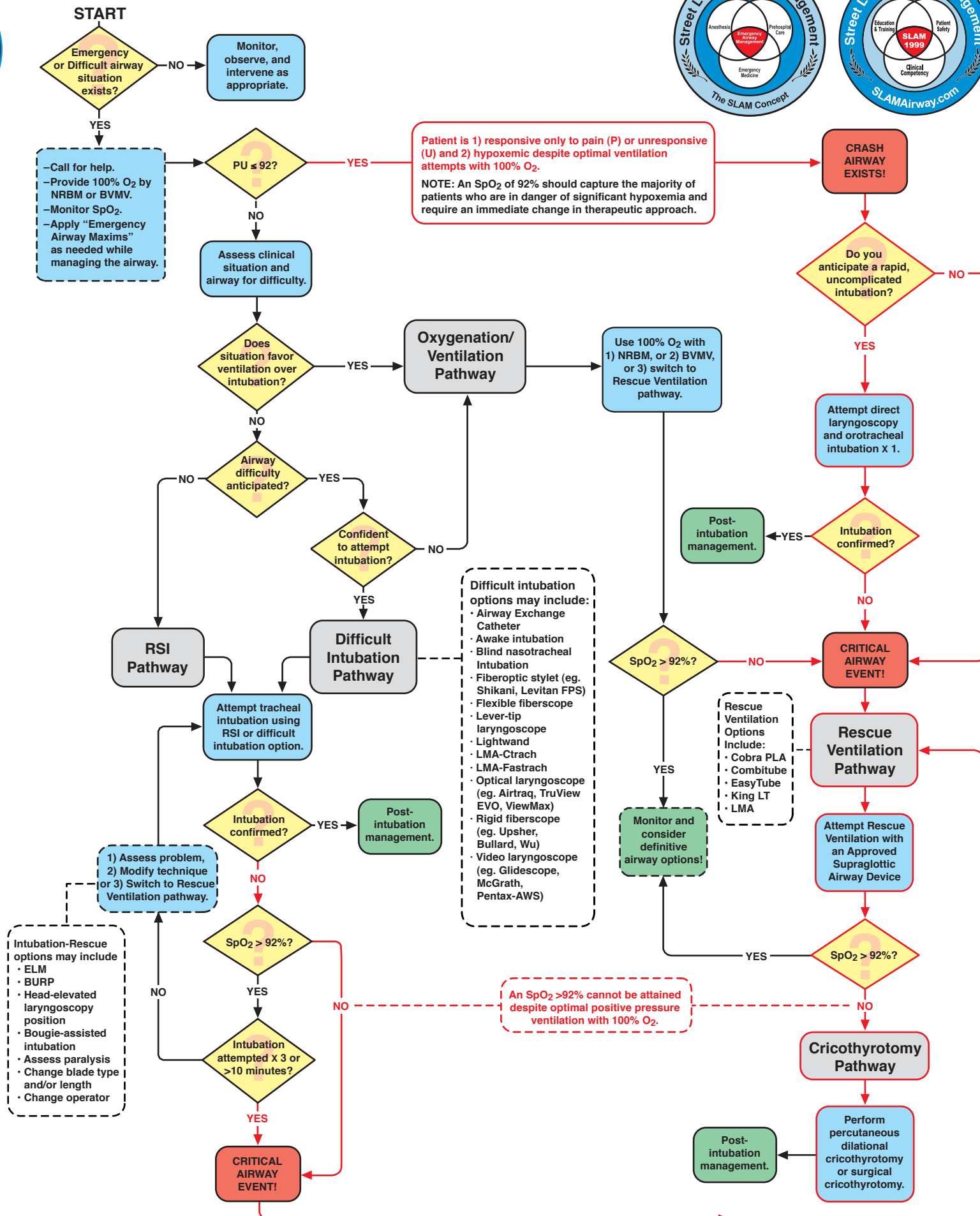
- Pathway headings are gray.
- Decision points are yellow with a question mark.
- Action blocks are aqua.
- Explanatory blocks are white.
- Critical blocks, borders, and lines are red: Treatment delays can lead to serious morbidity or mortality.
- Safe blocks are green: Definitive airway is established or oxygenation is attained and maintained using a ventilation technique.
- Consideration borders are dashed: Factors to consider include airway difficulty, clinical setting, clinical situation, provider skill, equipment/device availability, provider privileges, medical direction, and protocols/standing orders.

Abbreviations/Definitions

- BAAM:** Beck Airway-Airflow Monitor (a.k.a. Beck whistle)
- BURP:** Backward upward rightward pressure on the thyroid cartilage to improve the laryngoscopic view
- BVMV:** Bag-valve-mask ventilation (i.e., positive pressure mask ventilation)
- CMVCI:** Cannot mask ventilate—cannot intubate
- Cormack & Lehane laryngoscopic grades of the airway:** Grade 1—full view of the glottis from anterior to posterior commissure; grade 2—partial view of the glottis; grade 3—epiglottis only (3a—epiglottis can be lifted, 3b—epiglottis cannot be lifted from the posterior pharyngeal wall [may decrease success of bougie-assisted and fiberoptic intubation]); grade 4—soft tissue only, no visible laryngeal anatomy
- Crash airway:** Describes patients who have severe acute respiratory failure and typically 1) exhibit reduced responsiveness or are unresponsive; 2) have a respiratory rate of <10 or >30 breaths per minute; and 3) have severely depleted oxygen levels. Such patients are usually close to death and require either rapid tracheal intubation or immediate rescue ventilation.
- Critical airway event:** Indicated by 1) any CMVCI situation; 2) three or more failed intubation attempts or attempted intubation for >10 minutes by an experienced laryngoscopist; or 3) sustained hypoxemia that is refractory to positive pressure ventilation with 100% O₂
- Definitive airway:** Orotracheal tube, nasotracheal tube, or surgical airway
- Difficult intubation:** When multiple laryngoscopies, maneuvers, and/or blades are needed by an experienced practitioner
- Difficult/inadequate mask ventilation:** Inability of an experienced practitioner to prevent or reverse signs of inadequate ventilation with one- or two-person positive pressure BVMV, using an oropharyngeal or nasopharyngeal airway (or both) and 100% O₂
- ELM:** External laryngeal manipulation to improve the laryngoscopic view
- Failed intubation:** Failure to intubate the trachea after multiple attempts, with or without hypoxemia
- Head-elevated laryngoscopy position:** Use of blankets, pillows, or a wedge pillow (e.g., Troop Elevation Pillow) to raise the upper back and shoulders to improve the laryngoscopic view in large-framed and/or obese patients
- iLMA:** Intubating laryngeal mask airway or LMA Fastrach
- LMA:** Laryngeal mask airway (LMA Classic, LMA Fastrach, LMA Flexible, LMA ProSeal, LMA Supreme, LMA Unique)
- MIAS:** Manual in-line axial stabilization to protect the c-spine
- NRBM:** Nonbreathing mask
- PU \leq 92:** (From Mason's PU-92 Concept.) With the AVPU system (A = alert; V = responds to voice; P = responds only to pain; U = unresponsive), patients with "P" or "U" assessments have Glasgow Coma Scale scores of 9 or less. Hypoxemia exists with SpO₂ levels of 92% or less (generally allows for \pm 2% accuracy of pulse oximeters). If a "P" or "U" assessment and hypoxemia occur simultaneously (i.e., PU \leq 92) despite optimal attempts at oxygenation using positive pressure BVMV and 100% O₂, then a crash airway exists.
- Rescue ventilation:** Administration of 100% O₂ and positive pressure ventilation (preferably via an FDA-approved supraglottic airway device, (e.g., Cobra PLA[®], Combitube[®], EasyTube[®], King LT[®], or LMA[®]) to treat a critical airway event.
- RSI:** Rapid sequence intubation. Relative indications are 1) head trauma with need for airway control and ventilation (e.g., Glasgow Coma Scale score \leq 9); 2) uncooperative or combative patient with compromised airway; 3) uncontrolled seizure activity requiring airway control; 4) depressed level of consciousness in trauma patient; and 5) risk of pulmonary aspiration (e.g., full stomach).
- SLAM:** Street Level Airway Management is an instructional system for teaching emergency airway management (www.slamairway.com).
- SpO₂:** Oxygen saturation as measured by a pulse oximeter
- Tracheal intubation:** Indications include 1) airway protection and risk of aspiration; 2) definitive maintenance of airway patency; 3) head injury and Glasgow Coma Scale score \leq 9; 4) mechanical ventilation and respiratory failure; 5) emergency surgery and requirement for general anesthesia; 6) application of advanced cardiac life support and drug administration; 7) maintenance of oxygenation or positive end-expiratory pressure; 8) pulmonary toilet.



SLAM[®] Universal Adult Airway Flowchart



SLAM (Street Level Airway Management) Emergency Airway Maxims

- Call for help early. Maintain a portable emergency airway kit** with adjuncts that help to remedy difficult intubation, provide oxygenation/ventilation and rescue ventilation, facilitate cricothyrotomy, and confirm tracheal intubation. **Patients suffer death and disability from failure to oxygenate and failure to ventilate, not failure to intubate.**
- Emergency airway situation** (e.g., acute respiratory failure, airway obstruction, CO poisoning, CPR, critical airway event, drug-induced coma, respiratory arrest, tension pneumothorax, traumatic airway disruption): **The simple recognition that a patient needs a definitive airway does not mean that the patient should receive a definitive airway if the provider is not skilled in establishing one. Never exceed your ability, experience, or scope of practice. Consider naloxone or dextrose** to treat drug-induced coma. **Patients with a clenched jaw** will require paralysis and/or sedation in order to facilitate access to the oropharynx. In the absence of RSI drugs, insert one or two soft nasopharyngeal airways to optimize oxygenation.
- Oxygenation/ventilation: Provide 100% O₂ by nonbreathing mask or bag valve mask ventilation** (\pm chin lift/head tilt or jaw thrust with oral/nasal airway as tolerated). **If tension pneumothorax exists, decompress immediately. Monitor SpO₂** (carbon monoxide toxicity will falsely elevate SpO₂). When a standard pulse oximeter probe fails to register a reading due to low perfusion, apply a probe to a different site or use Masimo SET technology. Hypoxemia is difficult to diagnose clinically, so make every attempt to use pulse oximetry or obtain a blood gas reading.
- Airway assessment: Perform a 6-D assessment** for potential signs of airway difficulty (e.g., Disproportion, Distortion, Decreased range of motion, Decreased thyromental distance, Decreased interincisor gap, and Dental overbite). When no airway difficulty is predicted, unexpected difficulty managing the airway may still arise.
- C-spine protection: Use MIAS** in suspected or evident c-spine injury during all airway maneuvers and when c-spine collar is not in place. **Do not assess neck range of motion.** Any intubation technique is acceptable as long as MIAS is employed.
- Aspiration prophylaxis: Provide available aspiration prophylaxis**, e.g., cricoid pressure, particulate-free antacid, and metoclopramide, to help prevent silent aspiration or passive regurgitation. The aspiration prophylaxis afforded by double lumen supraglottic airways (e.g. Combitube or EasyTube) is comparable to that of a tracheal tube. Supraglottic airways should generally protect against aspiration better than BVMV. Direct laryngoscopy and tracheal intubation without neuromuscular blockers has a higher documented incidence of aspiration than RSI with neuromuscular blockers.
- Tracheal intubation:** Use only methods with which you are trained and skilled. **Intubation attempts should generally be limited to <10 minutes or \leq 3 times** by an experienced practitioner. Employ intubation-rescue techniques between attempts (to decrease the occurrence of trauma, bleeding, and edema in the airway, which can impair mask ventilation or subsequent intubation attempts and possibly cause a CMVCI situation). **Intubation-rescue techniques include** bougie-assisted intubation (e.g., gum elastic bougie, Eschmann Introducer, SunMed Bougie Introducer, etc); ELM or BURP; head-elevated laryngoscopy position; assessing and/or improving neuromuscular blockade; changing blade type (straight vs. curved) or blade length. **Along with the previously mentioned intubation-rescue techniques, difficult intubation options include but are not limited to** use of 1) the McCoy laryngoscope, 2) blind nasotracheal intubation (\pm BAAM [+ Endotrol tube where mouth opening is inadequate]), 3) LMA Fastrach \pm spontaneous ventilation/ \pm BAAM, 4) an optical stylet (e.g. Levitan FPS Scope[™], Shikani Optical Stylet[™] Foley Airway Stylet Tool[™]), 5) an optical-laryngoscope (e.g. Airtraq[®], TruView EVO[™] and ViewMax[™]), and 6) a video-laryngoscope (e.g. Glidescope[®], McGrath[®], Pentax-AWS[®]). Combined use of the head-elevated laryngoscopy position, ELM or McCoy lever-tip laryngoscope, and bougie introducer can synergistically facilitate intubation in patients with limited ROM due to c-spine precautions (MIAS), morbid obesity, and other causes of Cormack & Lehane grade 3 or 4 laryngoscopic views. **A definitive airway is always best;** however, rescue ventilation can provide interim improvement in oxygenation and ventilation until a definitive airway is established.
- Confirmation of tracheal intubation: Always confirm and document intubation** using an evidence-based device (CO₂ detector or self-inflating bulb) in conjunction with auscultation over the mid-axillary lines and abdomen. Use a quantitative or qualitative CO₂ detector in patients with a perfusing cardiac rhythm. Use a self-inflating bulb in patients with a nonperfusing cardiac rhythm.
- Rescue ventilation:** Provide rescue ventilation using an approved supraglottic airway device (e.g. Cobra PLA[®], Combitube[®], EasyTube[®], King LT[®], or LMA[®]) in the presence of a critical airway event. Supraglottic airway devices can only assist with a supraglottic (above the glottis) obstruction. If rescue ventilation fails, the final option is cricothyrotomy. Glottic or subglottic obstructions require intervention using either a tracheal tube or cricothyrotomy.
- Traumatized or burn airway: Avoid blind intubation techniques** in the presence of laryngotracheal trauma. Avoid neuromuscular blockers in blunt neck trauma to prevent potential airway collapse. Up to 6% of patients with blunt airway trauma may have coexisting c-spine injuries. Use only a tracheal tube to maintain patency of a surgical airway for acute burn and inhalation injuries and thus prevent subsequent edema of the anterior neck tissues from engulfing the surgical airway.

SLAM (Street Level Airway Management) Universal Adult Airway Flowchart

- The advice featured in this flowchart should be overridden when medical direction, clinical experience, the clinical situation, and/or local protocols dictate.
- This flowchart is intended for use in adult patients and should only be used by advanced airway practitioners who at a minimum are competent in the use of airway management drugs, direct laryngoscopy, tracheal intubation, rescue ventilation techniques, and cricothyrotomy.
- A thorough understanding of the flowchart is necessary prior to its use. Algorithms by their very nature cannot be all-encompassing and need to be interpreted, modified, and applied according to individual patient assessment and good clinical judgment.

*SLAM[®] — Street Level Airway Management[®]

Algorithm developed by James Michael Rich, CRNA, MA. From the SLAM Airway Training Institute (www.slamairway.com), Dallas, Texas. © 2002–2008. All rights reserved.