

Consensus Statement: ADULT Rapid Sequence Intubation and Post-Intubation Analgesia and Sedation for Major Trauma Patients

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Evidence considered in reaching the consensus statements:

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2. S. E. Mace. Challenges and Advances in Intubation: Rapid Sequence Intubation. *Emerg Med Clin North Am*. 26, 1043-68 (2008).
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4. American College of Surgeons. *Advanced Trauma Life Support for Doctors : student course manual 9th ed* p.34-46 Chicago: American College of Surgeons:2012
5. Mallampati S. Clinical assessment of the airway. *Anesthesiol Clin North Am*. 1995;13:301–308.
6. <http://emcrit.org/blogpost/hop-mnemonic/>
7. http://www.medscape.com/viewarticle/741166_3
8. A.E. Blair, R.Walls, J.Grayzel, UptoDate. Rapid sequence intubation for adults outside the operation room, section on 'Preoxygenation' June 28 2016
9. P. Atkinson, J.French, C.A. Nice. Procedural sedation and analgesia for adults in the emergency department. Page 1-5 *BMJ* 2014.
10. B. Pudelek Geriatric Trauma: Special needs for a special population. *AACN Adv Crit Care* February 2002 vol.13 No.1 61-72
11. Wolters Kluwer Health, Renaud-Bray *The Anesthesia Technician and Technologist's Manual* July 2012 p.157
12. Scott D. Weingart, MD, Richard M. Levitan, MD *Preoxygenation and Prevention of Desaturation During Emergency Airway Management*, 2011
13. *Airway Intervention and Management in Emergencies (AIME)*. Available at <http://caep.ca/cpdcm/roadshows-current-cme/aime>, accessed Jan 25, 2018.

Background:

- Major trauma patients frequently require advanced airway control.
- Endotracheal intubation is the preferred advanced airway intervention in major trauma patients.
- Intubated trauma patients also need significant post-intubation pharmacological support.
- Specifically, these patients require analgesia and sedation. This is particularly true when transfer to another facility is required, during which ICU level support is not available unless transfer occurs via Air Ambulance.
- In New Brunswick, there is significant variation in the approach to both advanced airway control and post-intubation analgesia and sedation practices for major trauma patients.
- Physicians in smaller centres in particular have asked for standardized, evidence-based guidance for both Rapid Sequence Intubation (RSI) and post-intubation pharmacological support in preparation for (and during) ground-based interfacility transfer.
- Rapid Sequence Intubation (RSI) is a method to achieve airway control that involves rapid administration of sedative and paralytic agents, followed by endotracheal intubation.
- The purpose of RSI is to affect a state of unconsciousness and neuromuscular blockade, allowing for increased first pass success of endotracheal intubation.
- Post-intubation analgesia and sedation is a method of controlling pain, agitation and medically induced amnesia for major trauma patients.

Consensus Statements:

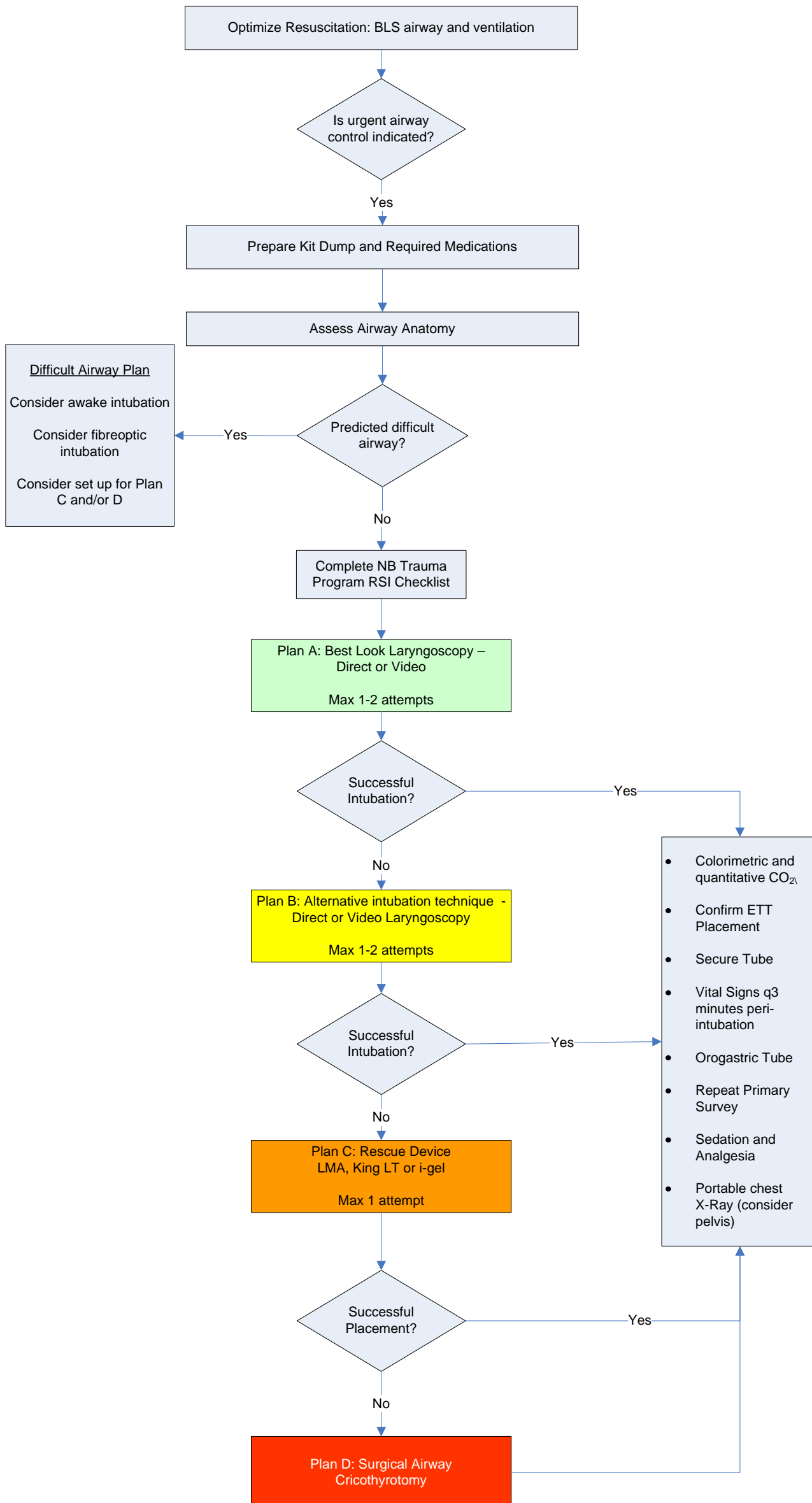
- A provincially standardized, evidence-based guideline for Rapid Sequence Intubation should be available in all NB Trauma Centres (Appendix A).
- Similarly, a provincially standardized, evidence-based guideline for Post-Intubation Analgesia and Sedation should be available in the Emergency Department of all NB Trauma Centres (Appendix B).
- In addition to standardized, evidence-based guidelines, a provincially standardized equipment layout is recommended to optimize the preparation for RSI (Appendix C).
- Ambulance New Brunswick should ensure consistency with the provincially standardized guidelines for RSI and Post-Intubation Sedation and Analgesia in procedures for Ambulance New Brunswick's Air Medical Crew.
- RSI should not be considered or applied for trauma patients who are in cardiac arrest or who are apneic.
- RSI should not be considered in patients with a predicted difficult airway.
- RSI should be considered for all trauma patients meeting the following:
 - GCS < 8, quickly deteriorating GCS or loss of airway protection
 - Facial trauma with poor airway control
 - Burns with suspected inhalation injury
 - Respiratory failure
 - Hypoxia
 - Persistent or uncompensated shock (reduction of respiratory efforts)
 - Agitation with possible injury to self or others
 - Potential for eventual respiratory compromise
 - Possible respiratory and/or neurological deterioration during prolonged transport
 - Transport in a confined space with limited resources
- In addition to the above, RSI Guidelines should include
 - Assessment of the possibility of a difficult intubation
 - Troubleshooting
 - Immediate reference to post-intubation analgesia and sedation
- In addition to standardized, evidence-based guidelines, a provincially standardized pre-induction checklist is recommended to optimize the preparation for RSI (Appendix D)

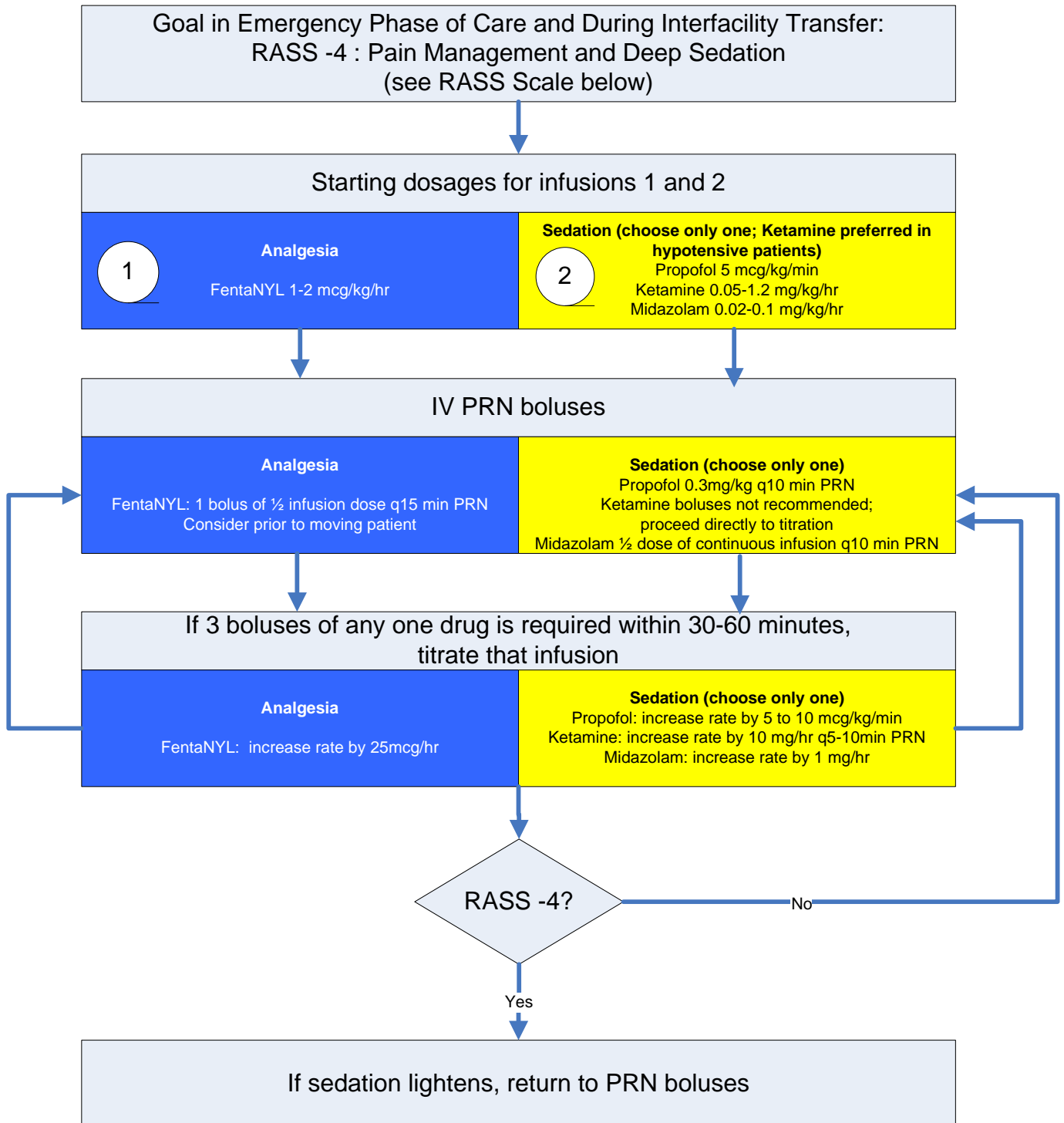
Special Patient Populations:

- **Pediatrics (age less than 16 years):** These guidelines are written for the adult patient population; use in pediatric patients is not recommended.
- **Geriatrics:** Age-related changes need to be addressed during the assessment, treatment and evaluation of care. Particular attention should be given to the resuscitation phase because the elderly do not have the physiologic reserve necessary to respond to hypoxia and shock.
- **Patients with high Body Mass Index (BMI):** BVM ventilation is more difficult as the soft tissue of the pharynx collapses under anesthesia or sedation. When spinal injury is not suspected, appropriate positioning (ramped position) improves the adequacy of mask ventilation therefore eases intubation. The redundant tissues in the upper airway make visualization of the glottis by direct laryngoscopy more difficult.
- **Pregnant patients:** For optimal outcome of mother and fetus, clinicians must assess and resuscitate the mother first. Management of the pregnant patient should be consistent with ATLS guidelines (eg. patient positioning and consideration of potential difficult airway). Early consultation with an obstetrician is recommended.

GRADE Level of Evidence:

- Level A : recommendation
- Generally, clinicians should follow the recommendations but should remain alert to new information and be aware of contraindications.





Critical Guidance

Refer to local policy for guidance on propofol infusion age restrictions

Call sending physician if:

- Patient becomes acutely agitated or presents a safety concern
- Patient becomes hypotensive, hold sedation (continue analgesia)

Other Clinical Guidance

- Refer to local policy for minimum and maximum infusion dosage limits
- Regularly repeated ABCDE assessments are recommended
- Vital signs are recommended prior to the administration of all medications

Richmond Agitation Sedation Scale (RASS)

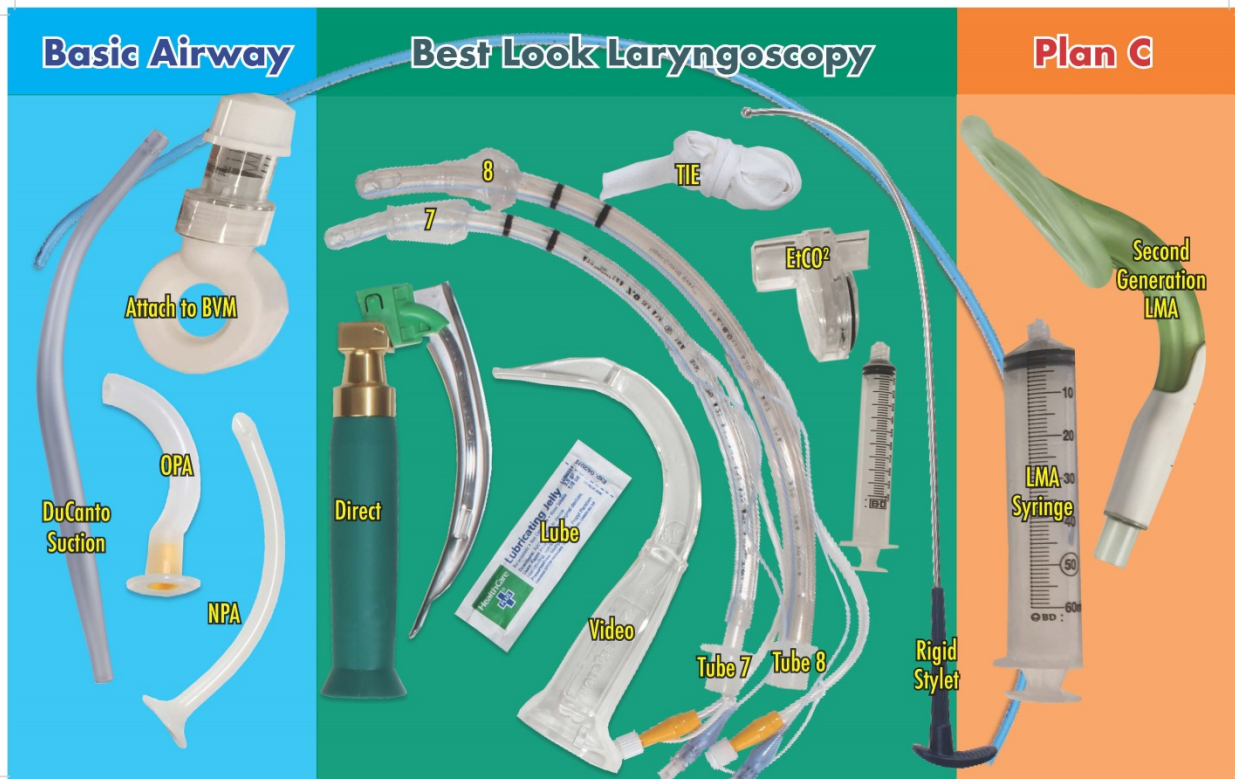
Target RASS	RASS Description
+ 4	Combative, violent, danger to staff
+ 3	Pulls or removes tube(s) or catheters; aggressive
+ 2	Frequent nonpurposeful movement, fights ventilator
+ 1	Anxious, apprehensive, but not aggressive
0	Alert and calm
- 1	awakens to voice (eye opening/contact) >10 sec
- 2	light sedation, briefly awakens to voice (eye opening/contact) <10 sec
- 3	moderate sedation, movement or eye opening. No eye contact
- 4	deep sedation, no response to voice, but movement or eye opening to physical stimulation
- 5	Unarousable, no response to voice or physical stimulation

Appendix C: Sample Kit Dump Layout

For the most current version, suitable for lamination and use in your facility,
contact the NB Trauma Program:

NBTrauma@HorizonNB.ca

(506)648-8040



Appendix D: Adult Pre-Intubation Checklist

Do RSI Checklist <u>AFTER</u> initial Primary Survey and Resuscitation			
1. Sats probe, 3 lead ECG attached? Blood pressure on 3 min cycles?			
2. What is the Pulse, Blood Pressure, Respiratory Rate, Oxygen Sats and GCS?			
3. Nasal Cannula at 15L, Bag Valve Mask at 30L and Peep valve at 5 cm?			
4. IV or IO Access Working?			
5. Hypotension YES/NO? - If Hemorrhagic shock start MTP. - If Septic shock start Norepinephrine infusion.			
6. Laryngeal Injury or Distortion? <i>Double Setup</i> better?			
7. In <u>non-trauma</u> is there Ear to Sternal Notch Alignment?			
8. Why RSI? Give a summary to the team.			
9. Bed height at Intubator's navel?			
10. Equipment silhouette items present? Waveform End Tidal CO2 connected?			
11. Suction on and Pre-positioned?			
12. What is Plan A for Best Look Laryngoscopy?			
13. What is Plan B for Alternative Intubation?			
14. What Size LMA or iGel for Plan C?			
15. Is the Surgical Cricothyrotomy Kit in the Airway Cart?			
16. C-Collar undone with manual immobilization from below?			
17. Who is giving the Drugs?			
18. Signs of Shock? <i>If YES halve the induction dose!</i>			
19. Patient estimated Weight in Kilos?			
20. #1 – KETAMINE <u>or</u> ETOMIDATE DOSE?			
	STABLE DOSE	SHOCKED DOSE	Dose?
KETAMINE	2.0 mg/Kg	1.0 mg/Kg	
ETOMIDATE	0.3mg/Kg	0.15 mg/Kg	
21. #2 – ROCURONIUM <u>or</u> SUCCINYLCHOLINE DOSE?			
	ADULTS	SHOCKED DOSE	Dose?
ROCURONIUM	1.5 mg /Kg	1.5 mg /Kg	
SUCCINYLCHOLINE	1.5 mg/Kg	2.0 mg/Kg	
22. Give the Drugs NOW by rapid IV Push! Sedative then paralysis! Start the clock			
23. Wait for drugs to work! 45 secs for Succinylcholine & 60 secs for Rocuronium			
24. Bag the patient if the O2 Sat drop below 95%			