

**Special notes as follow up from presentation:**

- note pre-oxygenation sats – which are more clearly outlined in this study guide.
- note that Regions EMS is requiring the use of the gum bougie when using an ETT during RSI.

**1. RSI involves the use of 2 medications in adults and 3 medications in children**

	Adults	Children ( $\leq 8$ yo)
Premedication	NONE	Atropine
Induction Agent (2 options, only need to give 1)	Ketamine/Etomidate	Ketamine/Etomidate
Paralytic Agent (Succs in 90% of cases, Vec in patients who can't have Succs)	Succinylcholine/Vec	Succinylcholine/Vecuronium

- Premedication with lidocaine for head injury is not used as it takes at least 3 minutes for the drugs to circulate and there is no good science to support their use

**2. Medication Doses are weight based:**

	INDUCTION AGENTS		PARALYTIC AGENTS	
	Ketamine	Etomidate	Succinylcholine	Vecuronium
Weight Based Dose	3mg/kg	0.3mg/kg	2mg/kg	0.1mg/kg
Key Points	First choice due to <u>excellent pain control</u>	Not a controlled substance, no pain control, <u>good for STEMI/CHF</u>	<u>Do not use with high potassium</u> , i.e. EKG with peaked T waves or wide QRS. Do not use with neuromuscular disorders (ALS, MS, etc)	Use for patients with high potassium i.e. <u>dialysis patients</u>  Not a standing order med for <b>induction</b> paralysis

**3. The goal of RSI is to allow intubation of patients who have a Gag Reflex or Clenched Jaw.**

The following situations are contraindications to RSI:

- i. An anticipated difficulty intubating the patient
- ii. An anticipated difficulty in BVM ventilations should intubation fail
- iii. The crash airway

**4. RSI should not be attempted in the following situations:**

- You are not confident that you can intubate the patient (i.e. very difficult airway)
- Equipment on the checklist is not available

**5. Rapid Sequence Intubation (RSI) vs. Rapid Sequence Airway (RSA)**

- Both techniques involve the use of an induction agent and a paralytic agent
- The difference in techniques is how you manage the airway after the medications are given
- RSI uses an Endotracheal Tube which is placed in the trachea
- RSA uses a King airway which does not enter the trachea
  1. RSA will be the primary method of managing an airway if the sats remain <95% after 3 minutes of preoxygenation
  2. RSA should not be used in patients where there is risk of airway swelling (i.e. inhalational burns and anaphylaxis)

**6. The best indicator that an endotracheal tube is correctly placed in the trachea is End Tidal CO2**

**7. Preoxygenation must be preformed for 3 minutes with either a NRB or a BVM**

- Only Bag a patient with the BVM if sats are < 95%
- If after 3 minutes the sats remain <95% a King airway should be placed (RSA, see #6 above)
- If after 3 minutes the sats are ≥95% an ETT should be placed (RSI, see #6 above)

**8. The best positioning for RSI is the sniffing position. This is not always possible (trauma pts).**

**9. Cricoid Pressure and External Laryngeal Manipulation (ELM) are different techniques**

<b>Cricoid Pressure</b>	<b>External Laryngeal Manipulation (ELM)</b>
Downward pressure on the cricoid cartilage	Intubator or assistant moves the tracheal cartilage to improve the view of the cords. ELM may take 2 people to find the best position.
Goal is to occlude the esophagus and prevent passive regurgitation	Goal is to improve the view of the vocal cords and make intubation easier
If cricoid pressure makes intubation more difficult it may be released	

## **10. Missed Intubations and Back Up Plans:**

- During an intubation attempt, if oxygen sats drop to 90% you **MUST stop intubation** and begin ventilating the patient with a BVM plus oral/nasal airways if needed
  1. If you are able to get sats  $\geq 95\%$  during bagging you may re-attempt ETT (RSI)
  2. If sats remain  $<95\%$  despite BVM with oral/nasal airways you should place a King airway (RSA, see #6 above)
- Change something between intubation attempts, i.e. head position, laryngoscope blade, ETT tube size, allow a second medic to attempt intubation, etc
- King airways make excellent backup airways, rescue airways or primary airways if sats are  $<95\%$  (RSA technique). LMA's are not used in our service and digital intubation takes a long time to perform.
- If unable to intubate and unable to ventilate with a King airway or with BLS techniques (BVM with oral/nasal airways) a surgical cricothyrotomy may be necessary.

## **11. Difficult Airways can be predicted based on anatomic features:**

- Beard, neck mobility (c-collar), buck teeth, Mallampati score, facial trauma, 3-3-2 rule

## **12. RSI Equipment includes: medications, backup airways, tube confirmation devices and basic airway supplies:**

- The checklist that must be run prior to pushing medications has all the necessary equipment listed on it. If you run the list you will have everything you need!
- Gum bougie should be used when using an ETT

### 13. Medications

Medication	Action
Midazolam / Versed (0.1mg/kg)	Sedative that causes amnesia and decreases anxiety. No analgesic properties.
Etomidate / Amidate (0.3mg/kg)	Induction agent with no analgesic properties, causes adrenal suppression, not a controlled substance
Ketamine / Ketalar (3mg/kg)	Induction agent with excellent analgesic properties. May cause tachycardia and raise BP. Only agent that is both an analgesic and a sedative.
Atropine (0.02mg/kg, minimum 0.1mg)	Used in pediatric RSI to prevent bradycardia by blocking the Vagus nerve. Also dries secretions
Vecuronium (0.1mg/kg)	Paralytic agent. Does not release potassium. Is preferred for dialysis and crush patients and those with neuromuscular disorders
Fentanyl / Sublimaze (1mg/kg)	Analgesic agent that is hemodynamically stable (does not drop BP much).
Succinylcholine (2mg/kg)	Paralytic agent that is depolarizing and releases potassium. Do not use in patients at risk for high potassium (dialysis and crush patients). Look for EKG signs of high potassium like peaked T waves or wide QRS.

### 14. Pediatric patients have different airway anatomy compared to adults:

- Big head, floppy epiglottis, anterior airway, undeveloped cricoids rings which are hard to feel with a bougie, large tongue
- Determine pediatric patients weight by using the Broslow tape or Pedi Stat smart phone application