***Rapid Sequence Intubation***

**Description**

RSI is defined as a technique where an induction agent is given in conjunction with a neuromuscular

blocking agent to facilitate rapid tracheal intubation. This procedure is only considered successful if the patient is intubated without experiencing avoidable hypoxia and/or hypotension.

**Indications**

* Unable to maintain or protect an airway
* Impending respiratory failure

**Precautions and Considerations**

* Major facial or laryngeal trauma
* Upper airway obstruction
* Distorted facial or airway anatomy
* High likelihood of failure

**Procedure- Must use CCEMS Intubation Checklist on every intubation**

 **Position**

 -HOB raised approximately 30 degrees

 -Sniffing position, ear in-line with sternal notch

 -Face parallel to ceiling

 **Pre-Oxygenate**

-Goal is SpO2 >95% for 3-5 minutes
-Spontaneously breathing-NC 15LPM and NRB 15LPM

- consider BVM without assistance and PEEP valve set to 10 cmH2O if patient will allow

-Ineffective breathing-NC 15LPM and BVM 15LPM; PEEP valve set to 10cmH2O

 **Prepare**

 -Video Laryngoscope, BVM, NPA, OPA

 -ETT x2, Rigid Stylet, I-Gel, Cricothyroidotomy Kit

 -Suction, Bougie, flex tip Bougie EtCO2, Tube Tie

 -Full set of vitals every 3-5 minutes

 **Pre-Medication**
 -Reversible causes- Narcan, D50

 -Hypotension- Fluid Bolus, Push dose Epi SBP >100

 -Seizure/Combative- consider Versed

 -Analgesia- consider Fentanyl

 **Push Induction and Paralysis**

-Induction- Ketamine 2mg/kg IV/IO; decrease dose to 1mg/kg for hemodynamically unstable patients or patients with a shock index of greater than 1.

**OR**

-Induction- Etomidate 0.3mg/kg IV/IO; consider Fentanyl 1-2mcg/kg for analgesia

**AND**

-Paralysis- Rocuronium 1mg/kg

**OR**

-Paralysis- Succinylcholine 2mg/kg; max dose 200mg

**Placement with Proof**

 -Intubate with VL and RECORD the procedure

 -Print EtCO2 waveform immediately

-Bilateral lung sounds with no epigastric sounds; equal chest rise and fall; appropriate SpO2

 -FULL SET OF VITALS- address hypoxia and hypotension concerns IMMEDIATELY

**Post Intubation Sedation/Analgesia**

 - Ketamine 100 mg IV/IO, consider Fentanyl 1-2mcg/kg IV/IO;

 OR

 - Versed 5mg IV/IO, AND Fentanyl 1-2mcg/kg IV/IO

\*Consider halving Post Intubation Sedation/Analgesia medications if shock index >1

 **Post Procedure Temperature Management**

 **-**The warming blanket must be placed on all post-RSI patients

**Special Considerations**

* RSI procedure requires 2 Critical Care Paramedics
* Must contact receiving facility immediately post-intubation
* Post-Intubation deterioration? Use DOPE pneumonic
* Hypersalivation secondary to Ketamine- If suction is not adequate, give Atropine 0.5mg IV/IO
* Consider ketamine administration in the pre-oxygenation phase for the difficult to oxygenate patient.

**Etomidate (AMIDATE)**

Description

1. A sedative agent with very rapid onset, minimal hemodynamic effects

Onset & Duration

a. Onset: 30 seconds IV/IO

b. Duration: 10 to 15 minutes IV/IO

Indications

1. Induction agent during Rapid Sequence Intubation
2. (Critical care paramedics ONLY)

Contraindications

a. Age < 13 years

b. Known hypersensitivity

Adverse Reactions

a. Involuntary muscle contractions (rare)

b. Extreme salivation

Dosage & Administration

a. Adult > 13:

b. 0.3 mg/kg IV/IO

Pediatric < 13: NOT ALLOWED

Special Consideration

1. Etomidate has a short duration of action, post-intubation sedation must be started quickly
2. Etomidate does suppress cortisol secretion, unclear if clinically relevant

**Ketamine**

Description

1. An anesthetic agent with potent analgesic properties and the ability to produce a cataleptic state often referred to as “dissociative analgesia.”

Onset & Duration

a. Onset: 30 seconds IV/IO

b. Duration: 10 to 15 minutes IV/IO

Indications

1. Induction agent during Rapid Sequence Intubation
2. (Critical care paramedics ONLY)
3. Post Rapid Sequence Intubation sedation
4. (Critical care paramedics ONLY)

Contraindications

a. Age < 13 years

b. Known hypersensitivity

Adverse Reactions

a. Involuntary and tonic-clonic like movements (rare)

b. Extreme salivation

Dosage & Administration

a. Adult > 13:

Rapid Sequence Intubation Induction

* 1. 2 mg/kg IV/IO

Post Intubation Sedation

 a. 100mg IV/IO may repeat q 10 minutes

Pediatric < 13: NOT ALLOWED

Special Consideration

a. If extreme salivation after administration, consider administration of ATROPINE

b. Consider halving dosage for shock index >1

**Rocuronium Bromide (Zemuron)**

Description

a. It is a short-to-intermediate acting skeletal muscle relaxant. It initiates flaccid paralysis by blocking receptors of the motor end plate, rather than binding to them. Effectively, this action blocks neuromuscular transmission of impulses without depolarizing the muscle.

b. Due to the non-depolarizing nature of this drug, it has less adverse effects in relation to hyperkalemia and is also remarkably free of the traditional histaminic side effects that characterize most other non- depolarizing paralytics

Onset & Duration

a. Onset: Flaccid paralysis within 2 minutes

b. Duration: Typically 20 minutes but up to 80 minutes

Indications

a. paralytic agent for Rapid Sequence Intubation

Contraindications

1. Known hypersensitivity

Adverse Reactions

a. Patients with severe renal failure and/or hepatic failure may experience prolonged paralysis when given standard doses of the medication.

b. There are few, if any, cardiovascular side effects with the administration of rocuronium.

Dosage & Administration

a. Adult: 1 mg/kg IV/IO

b. Pediatric: NOT ALLOWED

**Succinylcholine (Anectine)**

Description

1. It is an ultra short-acting depolarizing-type, skeletal muscle relaxant for intravenous (IV) administration

Onset & Duration

a. Onset: Flaccid paralysis within 1 minute

b. Duration: 6 to 10 minutes

Indications

1. Paralytic agent for Rapid Sequence Intubation

Contraindications

1. Patients with personal or familial history of malignant hyperthermia and/or skeletal muscle myopathies (multiple sclerosis)
2. High risk for rhabdomyolysis or hyperkalemia (Crush injuries, burns, renal failure)
3. Hypersensitivity

Adverse Reactions

a. Cardiac arrest, malignant hyperthermia, arrhythmias, hypertension, and hyperkalemia

b. Muscle fasciculation, jaw rigidity, rhabdomyolysis, and excessive salivation.

Dosage & Administration

a. Adult: 2 mg/kg IV/IO (maximum dose 200 mg)

b. Pediatric: NOT ALLOWED

Special Considerations

a. Succinylcholine SHOULD be administered with GREAT CAUTION to patients suffering from electrolyte abnormalities and/or those who may have digitalis toxicity,

• In these circumstances it may induce serious cardiac arrhythmias or cardiac arrest due to hyperkalemia