

APPENDIX: 3

TITLE: MEDICATION ASSISTED INTUBATION (M.A.I.) SUPPLEMENT

REVISED: October 15, 2014

I. BACKGROUND:

Also known as *Rapid Sequence Induction (RSI)*, *Rapid Sequence Intubation (RSI)*, *Crash Airway Procedures (CAP)*, and other names, the use of medications to assist in intubation is both life saving and risky. The paramedic should be thoroughly familiar with ALL DRUGS DISCUSSED WITHIN THIS SECTION. Endotracheal intubation in this context, should only be initiated when it can be completed in a short period of time so as not to unduly delay provision of adequate ventilation.

Pharmacological agents should be used to assist the paramedic in performing intubation in patients who are difficult to intubate due to excessive gag reflex in instances for which protecting the airway is a potential life-saving maneuver. Specific examples of circumstances in which such agents could be utilized are:

- Isolated head trauma
- Cerebrovascular accidents
- Multiple system trauma
- Overdose
- Status epilepticus
- Acute pulmonary edema
- Respiratory failure
- Severe burns
- And based on anticipated clinical course

The above indications are applicable when in those instances it is necessary to manage severe respiratory distress, optimize airway protection, hyperventilate for central nervous system lesions, or to provide ventilatory assistance in the presence of hypoventilation and hypoxia when other means of doing so are ineffective or contraindicated.

II. MEDICATIONS (NOT ALL INCLUSIVE):

Sedative Hypnotics: To be used before depolarizing agents as an induction agent.

- Etomidate (Amidate): for adults and children greater than 2 years of age
IV, IO: 0.2 – 0.4 mg/kg

Dissociative Anesthetic: Induction agent used alternatively to Etomidate.

- Ketamine: 2mg/kg SLOW IV push 1 min prior to paralytic administration

Depolarizing Neuro-muscular Blocking Agents: To be used after Etomidate or Ketamine.

Succinylcholine Chloride (Anectine):

IV, and IO: 1-2 mg/kg, Repeat 1 time only

PEDS: 1-2 mg/kg for children, 2 mg/kg for infants

Other medications used in specific situations:

Lidocaine (for suspected increased ICP, CVA, etc.):

IV, IO: 1 mg/kg

Atropine for children > one month of age

IV, IO: 0.02 mg/kg. Minimum dose of 0.1 mg

Maximum dose of 0.5 mg

III. PROCEDURE:**PREPARATION:**

Have the following ready:

- Bag-valve-mask connected to functioning oxygen delivery system
- Working suction with Yankauer suction tip attached
- Full Intubation set to include:
 - Endotracheal tube(s) with stylet, syringe and intact cuff and ETT Introducer
 - Laryngoscope with blades and bright light source.
 - Scalpel
- Alternative airway (example: Combitube, if available and appropriate)
- Endotracheal tube introducer (AKA the “bougie”, Flexiguide)
- Anticipated pharmacological agents
- Manpower
- Check to be sure that a functioning, secure vascular access device (IV or IO) is in place. Note: If unable to establish IV or IO access certain drugs may be given IM instead
- Cardiac monitor. Be alert for the possibility of bradycardia or other dysrhythmias

Assess the patient for likelihood of successful intubation and need for definitive airway, and the feasibility of alternative methods (Nasal ETT, BVM use only).

Ensure adequate oxygenation, with a BVM if required, while preparing the equipment.

PRE-OXYGENATION AND MEDICATION:**Pre-medicate as appropriate and feasible:**

- Atropine Sulfate for children > one month of age
- Lidocaine for intracranial pressure control in head injured patients, patients with CNS injury (hypertensive crisis, bleed, CVA), or for dysrhythmia control in patients at risk for ventricular dysrhythmias

Oxygenate:

- Assist ventilations/oxygenate 2-3 minutes prior to *intubation attempt* unless patient’s situation precludes this (inability to ventilate with BVM and inability to protect airway). Oxygenate as best as possible based on patient’s condition using a BVM
- Place patient on 6+ liters nasal cannula during RSI procedures
- Good pre-oxygenation is a vital component to successful M.A.I. This ensures sustained oxygenation during the intubation attempt

Administer induction agent and paralytic 45-60 seconds prior to intubation:

- Ketamine or Etomidate
- Succinylcholine

As patient relaxes:

- Apply cricoid pressure to occlude the esophagus **until intubation is successfully completed, the endotracheal tube cuff is inflated, and tube position confirmed**
- After fasciculations stop (if they occur), demonstrate adequate jaw relaxation by manipulating the mandible. Jaw relaxation and decreased resistance to bag-mask ventilations indicate that the cords are paralyzed and that it is time to proceed with intubation.

If inadequate relaxation is present, give either a:

- Second dose of Etomidate/Ketamine
OR
- Initial or second dose of Succinylcholine

INTUBATION:

See Appendix 2

POST INTUBATION MEDICATIONS:

Non Depolarizing Neuro-muscular Blocking Agents: These are long acting paralytics to be used only after the ET is secured.

- **Vecuronium (Norcuron):** To be used only with estimated intubation times greater than 15-20 minutes, **on medical control order.** ONLY TO BE GIVEN AFTER TUBE IS CONFIRMED, AND SECURED.
ADULTS and PEDS: IV/IO 0.1mg/kg repeated PRN

Benzodiazepines (BZD): Versed is the preferred benzodiazepine in this setting.

Midazolam (Versed)

IV, IO, IM: 0.5-5 mg, Max of 10mg

PEDS: 0.1-0.2 mg/kg IV/IO to a max of 5 mg/dose. Max of 10 mg

Diazepam (Valium):

IV, IM, and IO: 5-10 mg. Repeat as needed up to max of 20 mg

PEDS: IV/IO: 0.2-0.3 mg/kg IV/IO PRN. Max of 20 mg

Opiates: Cautionary use with hypotension

Morphine Sulfate (MS)

IV, IO, IM: 0.1 mg/kg initial dose (Max initial dose 10 mg)

Repeat at 0.05mg/kg every 10 min PRN, max total dose 20mg

PEDS: IV/IM/IO: 0.1 mg/kg (max single dose 5 mg), repeat at 0.05 mg/kg PRN every 10 min. Max of 15 mg

Fentanyl, (Sublimaze)

IV, IO, IM: 1 mcg/kg initial dose (max initial dose 100 mcg)

May repeat PRN every 10 min to a total of 200 mcg

PEDS: 1 mcg/kg (max single dose 75 mcg) repeat every 10 min PRN to a max of 150 mcg

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