

PARAMEDIC TIP SHEET #7:

Intubation with Pharmacologic Adjuncts [aka RSI]

Indications for Intubation with Pharmacologic Adjuncts [aka RSI]

At times, endotracheal intubation can not be accomplished without the use of pharmacologic adjuncts. Indications for the use of such adjuncts include situations in which:

- ◆ **endotracheal intubation is needed, and**
- ◆ **the patient is unresponsive but has a gag reflex or laryngospasm, OR**
- ◆ **the patient is awake, agitated, combative or otherwise resistive to intubation**

Contraindications for Intubation with Pharmacologic Adjuncts [aka RSI]

Contraindications are primarily specific to the medication or the class of medications. Contraindications of the specific agent should be identified before administration. The following are general contradictions and precautions. Methods used to minimize the potential adverse effects of neuromuscular blocking agents including those of depolarizing agents should be considered when appropriate.

Neuromuscular Blocking Agents (NMB agents)

- ◆ Inability to intubate or ventilate the patient once paralysis is induced
- ◆ Hyperkalemia (depolarizing agents)
- ◆ Severe, non-acute burns (e.g. hours after severe, large surface-area burns) (depolarizing agents)
- ◆ History of hypersensitivity or adverse reaction to the NMB agent

Sedation/Induction/Analgesic Agents

- ◆ Hypotension (Caution with Hypovolemia)
- ◆ Hypersensitivity to the sedation or induction agent

Methods

Intubation facilitated by the use of Pharmacologic adjuncts generally involves the administration of sedative or induction agents, analgesics and neuromuscular blocking agents.

Sedative and induction agents reduce anxiety, induce amnesia, depress gag reflex, and depress spontaneous breathing. Commonly utilized agents include:

- ◆ *benzodiazepines (midazolam, diazepam)*
- ◆ *anesthesia agents (etomidate, ketamine, propofol)*
- ◆ *analgesics (fentanyl)*

Neuromuscular blocking agents induce a temporary voluntary muscle paralysis. Depolarizing agents bind at nicotinic receptor sites of voluntary muscle and block the action of acetylcholine after first allowing depolarization to occur. Non-depolarizing agents act in a similar manner but do not include the initial depolarization. Commonly utilized agents include:

- ◆ *Depolarizing Agents (succinylcholine)*
- ◆ *Non-depolarizing Agents (vecuronium, rocuronium, pancuronium, rapacuronium)*

In young children (generally less than approximately 4 years of age) or in bradycardic patients, pretreatment with atropine is indicated. In patients with suspected increased intracranial pressure in whom succinylcholine will be administered, many suggest pretreatment with lidocaine.

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PARAMEDIC TIP SHEET #7:

Intubation with Pharmacologic Adjuncts [aka RSI] (continued)

Methods (continued)

1. Ensure patient is being adequately ventilated and oxygenated.
2. Prepare all necessary equipment for ventilation and endotracheal intubation..
3. Prepare medications
4. Direct hyperoxygenation and controlled hyperventilation
5. Administer pretreatment agents if indicated: Ped Atropine – 0.02 mg/kg w/standard min. & max. or Adult 0.5 mg; Lidocaine 1 mg/kg
6. Administer sedation/induction/analgesia agents if not contraindicated
7. Administer Neuromuscular Blocking Agent.
8. Some suggest administering a defasciculating dose of a non-depolarizing agent prior to using succinylcholine in specific situations
9. Utilize the Sellick maneuver whenever possible
10. Intubate per usual endotracheal method
11. Assess (using multiple methods) for tube placement. End-tidal CO₂ monitoring is recommended except in those patients for whom minimal exhaled CO₂ is expected.
12. Reassess for possible complications or adverse reactions
13. Consider additional sedation/analgesia prn if not contraindicated
14. Consider continued neuromuscular blockade using a non-depolarizing agent

Tips

- ◆ DO NOT attempt use of pharmacologic adjuncts if:
 - ◆ Not properly trained in the use of the pharmacologic agents including their side effects and contraindications
 - ◆ Not prepared to intubate and ventilate
 - ◆ Not prepared to continue appropriate neuromuscular blockade, sedation and/or analgesia
- ◆ It is difficult to detect motor seizure activity when neuromuscular blocking agents. Vital signs including heart rate, pupillary response, and eye movement must be monitored frequently. This is particularly important when the patient's injuries or illness place him/her at risk for generalized seizures. Usual seizure treatment should not be withheld.
- ◆ Use of the Sellick maneuver is recommended to minimize the risk of aspiration during intubation.
- ◆ A few specific side effects of specific pharmacologic adjunct should be noted:
 - ◆ Rapid administration of fentanyl may (rare but can occur) result in a rigid chest wall. This effect **is not** readily relieved by the administration of a NMB agent
 - ◆ Benzodiazepines are likely to cause hypotension. This is of particular importance to the hypovolemic or head injured patient. Some suggest midazolam produces less hypotension than other benzodiazepines.
 - ◆ Fentanyl does not produce the extent of hypotension of other narcotic agents.
 - ◆ The effects of Induction agents may be enhanced or prolonged by other agents including ethanol. Use of induction agents should be limited to those with adequate knowledge and training in their use.