VANDERBILT UNIVERSITY
MEDICAL CENTER
DIVISION OF ACUTE CARE SURGERY

Guidelines for Rapid Sequence Intubation (RSI)

I. Definition

Rapid sequence intubation is indicated when concern for aspiration exists, which is often the case in trauma patients. To complete an RSI, the patient should not be ventilated until the ETT is in place. In the event of a desaturation (<80%) or a failed intubation attempt, mask ventilation with an oral airway should ensue.

II. Equipment that must be present

1. Cardiac monitor
2. Blood Pressure cuff or arterialline
3. Pulse oximetry *(on* opposite side of BP cuff orforehead)
4. IV access (on opposite side of BP cuff or central access)
5. Non-rebreather mask with oxygen source connected
6. High-flow nasal cannula with oxygen source connected
7. Bag-valve mask with oxygen connected (used after intubation)
8. ACLS drugs
9. End-tidal CO2 detector
10. Laryngoscope/intubation kit (McGrath preferred)
11. Suction with yankauer tip
12. 1O ml syringe
13. ETT with stylet (8.0 preferred, 7.0 as backup)
14. Airway adjuncts (i.e. oral airway, LMA, etc.)
15. Emergency airway bag with bougie
16. Percutaneous Tracheostomy kit, trach tray, and #8 Shiley trach available at bedside (#8 XLT or #9 if BMl>35 or with severe edema)
17. 11 blade scalpel available at bedside with 6.0 ETT

Ill. Induction drugs and paralytics to facilitate airway visualization

1. Hypnotic/sedatives:

a. *Ketamine (Ketalar):* 1.5-2mg/kg. Usually causes slight hypertension. Increases ICP but increases MAP more resulting in increased cerebral blood flow. Does not suppress respiratory function. May cause emergence psychosis, with benzodiazepines or propofol. May cause hypotension/bradycardia in patients with heart failure.

b. *Propofol (Diprivan):* 0.5-2mg/kg or 50-200mg. Will cause hypotension especially in elderly, hypovolemic, and septic patients. May consider use of presser before or after administration.

c. *Midazolam (Versed):* 0.2-0.3mg/kg. Usually has minimal hemodynamic effects and provides amnestic effects.

d. *Etomidate (Amidate):* 0.3mg/kg. Usually causes minimal hemodynamic changes immediately but may cause adrenal suppression. Use caution in sepsis, hypovolemia, or patients

expected to require presser support. **Consider decreased dose for these patients.**

2. **Paralytics:**
   - **a.** *Rocuronium (Zemuron):* 1mg/kg. No hemodynamic changes or significant contraindications. Onset of action: -45-60 sec. **Post-intubation sedation (fentanyl and/or propofol drip) is critical due to prolonged neuromuscular blockade.**
   - b. *Succinylcholine (Que/icin):* 1.5-2mg/kg. Contraindicated with prolonged bedrest, hyperkalemia. myopathy. burns, spinal cord injury. pseudocholinesterase deficiency. open globe, renal failure. and malignant hyperthermia. Can also cause significant bradycardia, especially with repeated doses.
3. **Vasopressors:**
   - a. *Phenylephrine (Neosynephrine):* Given in 100mcg doses (1ml). Can cause reflex bradycardia and should be avoided if HR is<60.
   - b. *Ephedrine:* Given in 5-10mg doses (1-2ml). Has both beta and alpha properties and will increase BP and HR. Ideal for hypotension with bradycardia or low normal HR-

IV. Preparation for Procedure

1. Review medical chart for previous airway management note or Anesthesia OR record
2. Consent for procedure if not emergent
3. Critical Care attending or Anesthesia airway team notified and present
4. Ensure that Respiratory Therapy is at bedside and vent is set up
5. If airway exam is concerning for high-risk airway (i.e. beard, thick neck, short thyromental distance, small mouth opening, prominent incisors, facial trauma or recent head neck surgery, documented difficult airway by Anesthesia OR record, halo or cervical traction) then Anesthesia airway team should be present
6. Identify medication nurse
7. Identify individual performing the intubation and back-up personnel
8. Verify a functioning IV (verified by physician and medication nurse)
9. Verify a functioning oxygen saturation probe with back up probe available
10. Blood pressure cuff should be set to record every 1 minute and **not on the same side as saturation probe or IV**
11. Verify medication doses and sequence to be given with 3-4 10ml flush syringes available (Consider contraindications for particular meds or dosage adjustments indicated)
12. Additional doses of drugs available as well as post-intubation sedation
13. Perform a "timeout" once everyone that is to be involved with the procedure is at the bedside

V. Procedure

1. Wash hands and don personal protective equipment
2. Lay sterile towel or bedside table at the head of bed to place equipment
3. Non-rebreather mask and high-flow nasal cannula on patient with oxygen connected and flowing and HOB as high as possible for preoxygenation
4. Preoxygenate for at least 3 minutes if no contraindication

5. Setup suction apparatus and connect yankauer tip
6. Check equipment
    a. Use syringe to inflate ETT cuff and assess for leak. Deflate cuff
    b. Stylet ETT and place a 30 degree upward bend
    c. Check McGrath laryngoscope to ensure appropriate blade is being used and the screen and light are functioning
7. Position patient's head by flexing the neck forward and extending head (sniffing position) if cervical trauma not suspected. If C-spine precautions are necessary, dedicate one person to provide in-line cervical stabilization and remove anterior portion of C-collar to facilitate intubation
8. Check mouth for dentures and loose dentition. Remove dentures if present
9. Have bag-valve mask present and oxygen connected at the bedside.
10. Administer induction and paralytic drugs while laying the patient flat with bed height appropriate for person performing intubation
11. No breaths to be given. Wait 45-60 seconds after drugs are flushed then proceed with intubation
12. Confirm ETT placement with end-tidal CO2 detector, bilateral breath sounds and chest rise. Confirm absent sounds over epigastrium
13. If no CO2 present and remainder of exam does not confirm proper tube placement, remove ETT and place appropriate size oral airway and manually ventilate while calling for additional help (Airway team). LMA to be used only as rescue if unable to mask ventilate
14. Once ETT properly placed, connect to mechanical ventilator
15. Replace anterior portion of cervical collar if in place
16. Order stat chest x-ray to confirm proper placement

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Revised: April 2020, April 2022

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Trauma Intensive Care Unit
Checklist for Intubation "Time Out"

- Verify consent if not emergent
- Confirm indication for intubation
- Preoxygenating with high-flow nasal cannula and non-rebreather with HOB elevated
- Identify proceduralist and back-up
- Identify medication nurse
- Confirm IV, pulse oximeter and cardiac monitoring are functioning properly
- Ensure BP cuff is not on same side as pulse oximeter or IV
- Set BP cuff to cycle every 1 minute
- Stethoscope available
- Examine airway (look for predictors of difficult airway such as beard, short chin, prominent upper incisors, thick neck, Mallampati III or IV, history of difficult airway by anesthesia OR record, dentures removed)
- Verify induction medications (all doses are suggested doses in ideal conditions)
    - Sedatives
        - Etomidate 0.2 mg/kg (usual dose 20mg, less ifhypovolemic)
        - Propofol 1 mg/kg (less ifhypovolemic)
        - Ketamine 0.5-2 mg/kg (usual dose 100mg)
    - Paralytics
        - Succinylcholine 1.5 mg/kg
        - Rocuronium 1 mg/kg
    - Pressors
        - Phenylephrine 100 mcg/mL (Neostick contains 10mL or 10oomcg)
        - Ephedrine 10 mg/ dose
    - Others
        - Fentanyl
    - Post-intubation analgesia and sedation ordered and available
        - Per sedation order set
- Intubation Equipment
    - Laryngoscope with functioning light source and 2 sizes of blades (confirmed by proceduralist)
    - 8.o ETT with stylet and 7.0 ETI backup, cuffs checked
    - Empty 10mL syringe
    - Suction with yankauer tip, available and functioning
    - End-tidal CO2 detector
    - Bag-valve mask with PEEP valve connected and flowing oxygen
    - Appropriately sized oral airway
- Emergency airway bag with Bougie confirmed
- Percutaneous tracheostomy kit, trach instruments, and #8 Shiley trach available
- #11scalpel and 6.o ETT available
- Attending physician present (Critical Care or anesthesia)