Post-Intubation Management

**Manual stabilize airway device until secured, as well as during all patient movements**

A Confirm appropriate waveform present on EtCO2 monitor

A Auscultate over epigastrium and both lungs to confirm breath sounds

**Exit to Adult Difficult Airway Guideline [53]**

**Is patient showing signs of discomfort?**
(Movement, tearing, tachycardia, hypertension, dysynchronous ventilations)

**NO**

A Consider utilizing transport ventilator for prolonged transports

A SBP > 100 mmHg? (Consider decreasing dose if SBP < 110)

A Fentanyl 1 mcg/kg IV / IO
S: 50 mcg M: 75 mcg L: 100 mcg
-OR-
Morphine 0.1 mg/kg IV / IO / IM
S: 4 mcg M: 6 mcg L: 8 mcg
-OR-
Hydromorphone 0.5 - 1 mg IV / IO / IM
May repeat ½ initial dose Q10 mins (no max)

A Midazolam 0.05 mg/kg IV / IO
S: 2 mg M: 2 - 5 mg L: 5 mg
May repeat 1-2 mg Q10 mins (no max)

A Ketamine 0.5 mg/kg IV / IO
S: 30 mg M: 40 mg L: 50 mg
May repeat Q10 mins (no max)

**YES**

A Check EtCO2 for appropriate waveform (Consider tube dislodgement if abnormal)

A Auscultate lung fields to confirm tube placement and assess pulmonary status
- Right mainstem intubation – pull back tube
- Tension pneumothorax – needle decompression
- Wheezing – albuterol
- Rales – suction

A Ensure O2 flow is adequate

A Ensure adequate sedation

A Consider gastric decompression

A Able to ventilate/oxygenate?

**YES**

Notify MRCC

**Exit to Adult Difficult Airway Guideline [53]**

A Able to ventilate/oxygenate?

**NO**

A Document tube size and depth

A Secure airway device with tube holder or tape

A Maintain EtCO2 35-45 (Increase ventilation rate to lower, decrease rate to raise)

A If SBP > 100 or concerns for head injury, elevate head of cot to 30°
Always weigh the risks and benefits of endotracheal intubation in the field against transport. All prehospital endotracheal intubations are considered high risk. If ventilation / oxygenation is adequate, transport may be the best option. The most important airway device and the most difficult to use correctly and effectively is the Bag Valve Mask (not the laryngoscope).

Few prehospital airway emergencies cannot be temporized or managed with proper BVM techniques.

### Difficult Airway Assessment

**Difficult BVM Ventilation - MOANS:**
- Mask seal inadequate due to facial hair, anatomy, blood or secretions / trauma
- Obese or late pregnancy
- Age > 55
- No teeth (roll gauze and place between gums and cheeks to improve seal)
- Stiff or increased airway pressures (Asthma, COPD, Obese, Pregnant)

**Difficult Laryngoscopy - LEMON:**
- Look externally for anatomical distortions (small mandible, short neck, large tongue)
- Evaluate 3-3-2 Rule (Mouth should fit 3 fingers, chin to neck should be 3 fingers, neck to thyroid should be 2 fingers)
- Mallampati (difficult to assess in the field)
- Obstruction / Obese or late pregnancy
- Neck mobility

**Difficult Supra-Glottic Placement - RODS:**
- Restricted mouth opening
- Obstruction / Obese or late pregnancy
- Distorted or disrupted airway
- Stiff or increased airway pressures (Asthma, COPD, Obese, Pregnant)

**Trauma:** Utilize in-line cervical stabilization during intubation, supra-glottic airway placement, or BVM use. During airway placement the cervical collar front should be open or removed to facilitate translation of the mandible / mouth opening.

### Troubleshooting Ventilation/Oxygenation Problems

**Airway Device Troubleshooting - DOPE:**
- Dislodgement (Check EtCO₂ waveform, listen to lung sounds, check tube depth)
- Obstruction (Kink in tube, airway obstruction)
- Pneumothorax (Listen to lung sounds, check tube depth, perform needle decompression)
- Equipment failure (Oxygen flowing, cuff inflated on tube)

**Tube Stress Signs/Symptoms:**
- Tachycardia (not due to shock)
- Hypertension
- Agitation
- Crying/tearing at the eyes
- Dyssynchrony with ventilations

**Richmond Agitation Sedation Scale (RASS)**

<table>
<thead>
<tr>
<th>Target RASS</th>
<th>RASS Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>+4</td>
<td>Combative, violent, danger to staff</td>
</tr>
<tr>
<td>+3</td>
<td>Pulls or removes tube(s) or catheters; aggressive</td>
</tr>
<tr>
<td>+2</td>
<td>Frequent nonpurposed movement, fights ventilator</td>
</tr>
<tr>
<td>+1</td>
<td>Anxious, apprehensive, but not aggressive</td>
</tr>
<tr>
<td>0</td>
<td>Alert and calm</td>
</tr>
<tr>
<td>-1</td>
<td>Awakens to voice (eye opening/contact) &gt;10 sec</td>
</tr>
<tr>
<td>-2</td>
<td>Light sedation; briefly awakens to voice (eye opening/contact) &lt;10 sec</td>
</tr>
<tr>
<td>-3</td>
<td>Moderate sedation, movement or eye opening. No eye contact</td>
</tr>
<tr>
<td>-4</td>
<td>Deep sedation, no response to voice, but movement or eye opening to physical stimulation</td>
</tr>
<tr>
<td>-5</td>
<td>Unatable, no response to voice or physical stimulation</td>
</tr>
</tbody>
</table>

**Goal RASS:** -3 to -5 during transport

**Pearls**
- Continuous capnography (EtCO₂) is mandatory for the monitoring of all patients with an airway device.
- An airway is considered secure when the patient is receiving appropriate oxygenation and ventilation.
- An Intubation Attempt is defined as passing the laryngoscope blade past the teeth with the intent of placing an endotracheal tube.
- An appropriate ventilatory rate is one that maintains an EtCO₂ of 35-45. Avoid hyperventilation, except in cases of metabolic acidosis (DKA, Aspirin overdose, shock).
- Do not assume hyperventilation is psychogenic– use oxygen for goal SpO₂ of 94-99%, not a paper bag.
- Hyperventilation in deteriorating head trauma should only be done to maintain an EtCO₂ of 30-35.
- A gastric tube should be placed in all intubated patients if time allows.
- It is important to secure the endotracheal tube well and consider c-collar (in absence of trauma) to better maintain ETT placement. Manual stabilization of endotracheal tube should be used during all patient moves / transfers.