**Esophageal/Tracheal Double Lumen Airway (ETDLA)**

The Esophageal/Tracheal Double Lumen Airway (ETDLA) or *Combitube* is a secondary option to endotracheal intubation in providing a method of ventilating patients who are unconscious, apneic and pulseless.

The ETDLA does not require direct visualization of the airway or significant manipulation of the neck. It is relatively simple to insert and can be used in patients 4 feet tall and up, including taller pediatric patients.

**Indications:**

- When attempts at intubation have failed (no more than three attempts should be made)
- Situations where the airway cannot be visualized for intubation
  - Trauma/blood/vomit/other secretions
  - Entrapment of the patient with limited access to the airway

**Contraindications:**

- Active gag reflex
- Caustic ingestion or extensive airway burn
- Known esophageal disease (e.g., cancer, varices, stricture, others)
- Laryngectomy with stoma (can place ET tube in stoma)
- Height less than 4 feet tall

**Equipment:**

- Adult ETDLA (Combitube) Rollup Kit - patients over 5 feet tall and
- SA Rollup Kit - patients between 4 feet tall and 5 feet 6 inches tall.
- Suction
- Water-soluble lubricant
- Bag-Valve-Mask
- Stethoscope

**Procedure:**

1) Assure an adequate BLS airway
2) Select appropriate “ETDLA.” Check cuffs to ensure that they do not leak. Deflate tube cuffs. Leave syringes attached. Lubricate the tip of the tube.
3) Attach “fluid deflector” elbow to tube #2.
4) Hyperventilate with 100% oxygen.
5) CAREFULLY insert the “ETDLA” into the mouth, keeping tube midline, advancing the tube until the double black line on the tube matches up to the teeth or the alveolar ridge.
6) Inflate #1 pilot balloon with 100cc of air (85cc for SA size)
7) Inflate #2 pilot balloon with 15cc of air (12cc for SA size)
8) Ventilate through tube #1 (blue)
9) Auscultate the chest for air entry on the right and left sides for equal air entry
10) If breath sounds present - continue to ventilate
11) If breath sounds absent
   a. Ventilate tube #2
   b. Auscultate the chest for air entry on the right and left sides for equal air entry
   c. If breath sounds present – continue to ventilate
12) Secure the tube with tape
13) Continue to monitor the patient for proper tube placement throughout prehospital treatment and transport.
14) Document “ETDLA” placement times and results of tube placement checks performed throughout the resuscitation and transport.

Troubleshooting:

- If air leak is heard, increase inflation slightly through pilot balloon #1 and recheck
- If no breath sounds are heard with ventilation through either tube #1 or tube #2, it is possible that the tube has been placed too far into the pharynx. Deflate the #1 pilot balloon and retract tube 2-3cm, then reinflate cuff. Recheck sounds.
- If placement is unsuccessful, remove tube, ventilate via BVM and repeat sequence of steps.
- If unsuccessful on second attempt, BLS airway management should be resumed.
- Most unsuccessful placements relate to failure to keep tube in midline during placement.

Additional Information:
- Medications can be given via the ETDLA only if the tube is in the trachea. Medications should not be administered with esophageal placement.
- For patients with perfusing pulses, end-tidal CO2 detectors will work and should be used.
- Cuffs can be lacerated by broken teeth or dentures. Remove dentures before placing tube.
- Do not force tube, as airway trauma may occur.
EXTERNAL CARDIAC PACING

External cardiac pacing may be performed for the treatment of symptomatic bradycardia. This procedure is required for transport providers and optionally available for first-responder paramedic providers.

Indications:
- Symptomatic bradycardia (heart rate <60 and one or more signs or symptoms below)
  - Signs and symptoms:
    - Blood pressure <90 systolic;
    - Shock—Signs of poor perfusion, evidenced by:
      - decreased level of consciousness or decreased sensorium;
      - prolonged capillary refill;
      - cool extremities or cyanosis;
    - Chest pain, diaphoresis;
    - CHF or acute shortness of breath.

Contraindications:
- Asystole
- Brady-asystolic cardiac arrest
- Hypothermia (relative contraindication) – patient warming measures have precedence
- Children <14 years old (hypoxia/respiratory problems are most likely causes of bradycardia in children and should be addressed.

Equipment
- Cardiac monitor/defibrillator with pacing capability
- Pacing electrodes

Procedure:
1) Patient assessment and treatment per Symptomatic Bradycardia treatment guideline. If IV access not promptly available, proceed to pacing (should not wait to administer atropine/wait for response to treatment).
2) Explain procedure to the patient.
3) Place pacing electrodes and attach pacing cable to pacing device per manufacturer’s recommendations.
4) Set pacing mode to demand mode, pacing rate to 80 BPM, and current at zero milliamps (mA).
5) As possible/if required, provide patient sedation/pain relief with midazolam or morphine sulfate IV or IM. Patients with profound shock and markedly altered level of consciousness may not require sedation/pain relief initially.
6) Activate pacing device and increase the current in 10 mA increments until capture is achieved (pacemaker produces pulse with each paced QRS complex).
7) Assess patient for mechanical capture and clinical improvement (BP, pulses, skin signs, LOC).
8) Continue monitoring. Contact base for further orders if patient symptoms are not resolving (consideration for dopamine, further alteration of pacer settings) or if further sedation /pain control orders required.

NOTE: Patients with high grade AV block (second degree type II or third degree block) who do not have symptoms do not require pacing. However, equipment should be immediately available if symptoms arise. Patients with symptoms who respond initially to atropine should have pacing equipment immediately available.