The following protocol addresses airway management experiencing medical and trauma emergencies. During the management of airway emergencies, advanced airway management should be considered for the following situations after the commencement of EMR and BLS procedures:

- Apnea
- Cardiac arrest
- Inability to maintain oxygen saturation > 90% with BVM ventilations
- Persistent GCS < 8
- Severe head injuries
- Maxillofacial trauma
- Serious facial and airway burns
- Penetrating neck injury with an expanding hematoma
- Major chest injury (flail chest)
- Persistent obstruction
- Signs of impending respiratory failure/arrest such as persistent cyanosis, hypoventilation or increased effort of breathing, diminished, absent, or noisy breath sounds, and/or respiratory depression. **Note: corrective treatment and measures for possible poisoning and/or overdoses should be performed first, after consultation with poison control and/or MCP.

A. Positioning Patient for Airway Support:

**Adult Care**

**EMR/BLS**

1. If a conscious breathing patient, place in an upright position.

2. If an unresponsive patient is found in a prone position, log roll in the supine position with c-spine stabilization if indicated Protocol 40 to assess the need for ventilations or CPR. If an unresponsive patient is found in the supine position and c-spine stabilization is not indicated, position in the recovery position (left lateral recumbent position) and administer supplemental oxygen as needed.

B. If spontaneous breathing is present, but impaired:

**Adult Care**

**EMR/BLS**
3. Maintain a patent airway utilizing head-tilt/chin lift or modified jaw thrust maneuver, observing cervical spine precautions if indicated.

4. Evaluate for and manage any suspected obstructions.

5. Suction as necessary.

6. Insert an oropharyngeal or nasopharyngeal airway if indicated.

7. Administer supplemental oxygen as needed.

**ALS**

8. If patient condition deteriorates and advanced airway management is indicated refer to **C. If spontaneous breathing is absent or seriously compromised** of this protocol.

**C. If spontaneous breathing is absent or seriously compromised:**

**Adult Care**

**EMR/BLS**

1. Maintain a patent airway utilizing head-tilt/chin lift or modified jaw thrust maneuver, observing cervical spine precautions if indicated.

2. Ventilate with a bag-mask device supplied with 100% oxygen and a reservoir, 1 breath every 6 seconds (10 breaths/min).

3. If unable to ventilate, reposition the head. If still unable to ventilate, consider an airway obstruction and refer to section **E. For complete airway obstruction in unconscious patients** of this protocol.

4. Insert an oropharyngeal or nasopharyngeal airway, if indicated.

5. While ventilating with the bag-mask device and the oxygen saturation continues to drop with your best basic airway management, consider ALS (it is best to proceed with intubation without delay).

**ALS**

6. Perform endotracheal intubation and confirm proper placement [Procedure 3](#)
a) Preoxygenate the patient for 2-3 minutes, prior to intubation.

b) If the patient is unable to maintain his/her own airway patency and requires endotracheal intubation, but has an intact gag reflex, perform intubation with sedation Procedure 9 or Nasotracheal intubation Procedure 7.

c) In the nontrauma patient, place the patient in the **sniffing position** to align the airway for visualization.

d) If c-spine stabilization is indicated, the head must be placed in a neutral in-line position.

e) If there is difficulty seeing the glottis opening, consider an assistant to perform the BURP (backward/upward/rightward pressure) maneuver on the lower third of the thyroid cartilage.

**Note:** If the patient is in cardiac arrest, DO NOT interrupt chest compressions to insert an ET tube. Intubation should be performed during continuous compressions. CPR should not be stopped for intubation.

**Note:** Inflate ET tube balloon with Saline in the event of hyperbaric chamber transport.

7. If endotracheal intubation is unsuccessful or a difficult airway is anticipated, perform endotracheal intubation with Bougie Stylette Procedure 46.

a) A **difficult airway** can be anticipated using the L-E-M-O-N, and a Bougie Stylette may be used on the first attempt.

  **L** ook externally (short or thick necks, obesity, dental conditions such as “overbite”)

  **E** valuate **3-3-2 rule**

  - mouth should be at least 3 fingers wide when open
  - space from the chin to the hyoid bone at least 3 fingers wide
  - distance from the hyoid bone to the thyroid notch at least 2 fingers

  **M** allampati (structures visible in an upright, seated patient able to open their mouth)

  **O** bstruction (anything that may interfere with intubation)

  **N** eck mobility
b) A **difficult laryngoscopy** can be determined using the Mallampati Grade scale on a conscious patient and/or the Cormack & Lehane Grade scale during laryngoscopy.

*NOTE: Class 4 and Grade 4 the glottis opening may be difficult to visualize.*

8. If intubation with the Bougie Stylette is unsuccessful, insert the i-Gel secondary airway device **Procedure 49**

9. If the patient is combative following a successful intubation, perform chemical restraint **Procedure 27**

10. Consider insertion of a nasogastric tube **Procedure 12** in situations where abdominal distension persists after successful endotracheal intubation. If i-Gel inserted, gastric tube will be required.

11. If unable to ventilate, consider an airway obstruction and refer to section E, **For complete airway obstruction in unconscious patients** of this protocol.
AIRWAY MANAGEMENT ALGORITHM FLOWCHART

SPONTANEOUS BREATHING PRESENT

Yes

- POSITION PATIENT
  - SUCTION AS NEEDED
  - OPA/NPA, IF NEEDED
  - SUPPLEMENTAL OXYGEN

No, or compromised

- HEAD-TILT/CHIN-LIFT OR MODIFIED JAW THRUST
- BAG-MASK DEVICE VENTILATIONS 1 BREATH EVERY 6 SECONDS (10 BREATHS/MIN) WITH SUPPLEMENTAL OXYGEN
- INSERT AN NPA/OPA, IF INDICATED
- WHILE VENTILATING, IF OXYGEN SATURATION CONTINUES TO DROP, CONSIDER ADVANCED AIRWAY MANAGEMENT

ADVANCED AIRWAY MANAGEMENT

- INITIAL INTUBATION ATTEMPT
  - *NOTE: Inflate ET tube balloon with Normal Saline in the event of hyperbaric chamber transport.

- ALTERNATE APPROACH TO INTUBATION USING THE BOUGIE STYLET
  - *NOTE: If Difficult Airway is anticipated using LEMON, Bougie Stylet may be used on first attempt.

- iGel
  - *NOTE: iGel may be used after confirmed difficult airway by visual laryngoscopy and use of the Bougie Stylet.

- CONTINUE POSITIVE PRESSURE VENTILATIONS USING THE BAG-MASK DEVICE

UNSUCCESSFUL
D. For airway obstruction in conscious patients:

**Note:** Patients with a partial airway obstruction may display signs of poor air exchange and increased breathing difficulty, cyanosis, or inability to speak or breathe. Encourage these patients to cough forcefully to relieve their own partial obstruction**

**EMR / BLS**

1. Approach the patient from behind and perform abdominal thrusts, also known as the Heimlich maneuver, in rapid succession, until the object is expelled or the patient becomes unconscious.
   a) Use chest thrusts for obese or pregnant patients. Repeat until cleared or the patient becomes unconscious.

E. For complete airway obstruction in unconscious patients:

**EMR / BLS**

1. Open the airway.
2. Attempt to ventilate. If unsuccessful, begin chest compressions / chest thrusts as if performing CPR.
3. After 30 compressions, and before attempting to ventilate, examine the airway for objects in the patient’s mouth and, if found, remove it.
4. Attempt to ventilate. If still unsuccessful, repeat steps 2 & 3 above.

**ALS**

5. If the airway remains obstructed, use a laryngoscope to visualize the obstruction and attempt to remove it using the Magill forceps.

**MCP**

If still unable to remove the obstruction:

6. Intubate the trachea and force the obstruction into one of the mainstem bronchi with forceful ventilations from a BVM
   OR
7. Consider cricothyrotomy Procedure 8

**Note:** Patients experiencing a partial or complete airway obstruction, which has been cleared on the scene, can experience delayed onset of symptoms including laryngospasm and laryngoedema. The patients should be transported to the closest appropriate facility even though the airway has been cleared.
F. Special Patient Considerations (Stoma, Tracheostomy):

Stoma

**EMR / BLS**

1. To ventilate with a bag-mask device, place the patient’s head in a neutral position, locate and expose the stoma.

2. Place the bag-mask device mask (pediatric mask preferred) or resuscitation mask (MDFR Ocean Rescue) over the stoma and ensure an adequate seal.

3. Assess for proper ventilation by observing rise of the chest and feeling for air leaks around the mask.

4. If air leakage is felt around the mask, seal the patient’s mouth and nose during ventilations.

**ALS**

5. When suctioning a stoma, use a properly sized French-tip suction catheter.

6. Inject 3 mL of sterile saline through the stoma and into the trachea.

7. Instruct the patient to exhale and the suction catheter until resistance is felt.

8. Suction while withdrawing the catheter, within 15 seconds on the way out. Continue to suction until suction catheter is clear.

9. Resume ventilations with a bag-mask device and 100% oxygen.
Tracheostomy

**EMR / BLS**

1. A tracheostomy tube is a plastic tube placed within the stoma.

2. To ventilate, connect bag-mask device via the 15/22-mm adapter.

**ALS**

3. When suctioning a tracheostomy tube, use a properly sized French-tip suction catheter.

4. Inject 3 mL of sterile saline through the stoma and into the trachea.

5. Instruct the patient to exhale and the suction catheter until resistance is felt.

6. Suction while withdrawing the catheter, within 15 seconds on the way out. Continue to suction until suction catheter is clear.

7. Resume ventilations with a bag-mask device and 100% oxygen.

8. When a tracheostomy tube becomes dislodged, the tracheostomy tube may not be able to be replaced and a new ET tube may have to be inserted into the stoma.

9. Use the ET tube in the surgical cricothyrotomy kit or a 6.0 mm ET tube if surgical kit is not available.

10. Instruct the patient to exhale and insert the ET tube approximately 1-2 cm beyond the balloon cuff, and confirm patency and proper placement.