Maine EMS recognizes 2 major classes of Blind Insertion Airway Devices (BIAD's). The first class, periglottic devices, includes the LMA® and Cobra PLA®. The second class, transglottic or potentially transglottic devices, includes the Combitube® and King LT®.

Any FDA approved devices from these classes are approved for use. It is recommended that agencies select only one device to minimize purchase costs and initial and ongoing education.

If an agency selects a transglottic/potentially transglottic device, continuous capnography, must be used to confirm and monitor placement. A C-spine collar should be considered to help protect placement of all endotracheal intubations, periglottic, and transglottic airway devices.

There are periglottic devices on the market that can be used to facilitate endotracheal intubation (e.g. ILMA®, IMA®). If these devices are placed without an attempt at endotracheal intubation, they may be treated as any other periglottic device. If they are used to assist in placing an endotracheal tube, that tube must be treated and confirmed as any other endotracheal intubation.

It is recommended to have **NO MORE THAN** one device per class (periglottic and transglottic), and if a service elects to have multiple options per class, then training and maintenance in proficiency for all devices available is required.
For cardiac arrest patients, consider placement of the ET tube as well as lack of pulmonary circulation in the interpretation of ETCO₂ findings.

Depending on the device used, ETCO₂ devices may not be applicable to the pediatric patient.

Nasotracheally-intubated patients should be assumed to have an incorrect placement if findings of breath sounds or ETCO₂ results are uncertain or equivocal.
Adult Airway Algorithm

Supplemental O2 and Monitoring

Adequate

All Providers

Assess A,B,C's - including respiratory rate, effort, adequacy

Pulse Oximetry/ETCO2

Unsuccessful

Obstruction

Critical Care/Paramedic

Intubation

Successful

Failed Airway Protocol

1. Continuous Monitoring
2. ETCO2
3. Consider C-Collar
4. Consider Oral Gastric Tube (Paramedic Only)
5. Contact Receiving Hospital

Inadequate

All Providers

EMT - contact ALS
Basic Measures First -
- Open Airway
- Nasal or Oral Airway
- Bag Valve Mask
Medic/AEMT - If CHF, COPD or Undifferentiated Respiratory Distress, Consider trial of CPAP

Unsuccessful

All Providers

Airway Obstruction Procedures

Critical Care/Paramedic

Direct Laryngoscopy

Paramedics: Consider Surgical Airway (Cricothyrotomy)

Successful

Becomes Inadequate

All Providers

Continue BVM

PEARLS for BLS Airway Management
* Consider multiple OPA/NPA
* Use a dual person BVM technique when possible

PEARLS for Endotracheal Intubation
* Position the airway for best view of the cords – raise head to the sniffing position (i.e.: earlobe in line with sternal notch)
* Use Bougie on every attempt
* Preparation: (four cornerstones) 1) ET tube, 2) laryngoscope with back up blade, 3) suction, 4) Bougie
* Always have a back-up plan should the primary strategy fail
* Use ETCO2 with all ETT or Blind Insertion Airway Device when available

- This protocol is for use in patients whose age is > 12 or patients longer than the Broslow Tape (or equivalent)
- ETCO2 is mandatory with all patients with BIAD or Endotracheal Tube – A/CC/P – If prolonged use of BVM, consider use of capnography
- The goal of Airway Management is adequate Oxygenation, Ventilation, and Airway Protection. If an effective airway is being maintained by BVM with OPA or NPA, it is acceptable to continue with basic airway measures rather than BIAD or Intubation. 
- An Intubation attempt is defined as passing a Bougie or the endotracheal tube past the teeth or inserted into the nasal passage
Maine EMS Failed Intubation Algorithm

A “Failed” Intubation (the “can’t intubate patient”) is defined as two (2) unsuccessful intubation attempts by most proficient technician on scene OR anatomy inconsistent with intubation attempts.

NO MORE THAN THREE (3) TOTAL ATTEMPTS PER PATIENT WITHOUT OLMC CONSULTATION

Continue BVM

Yes

Adequate Oxygenation and Ventilation with BVM?

No

Facial Trauma or Unrelieved Obstruction?

No

Yes

Blind Insertion Airway Device

Notify Medical Control or receiving hospital AS EARLY AS POSSIBLE regarding the patient’s difficult airway

Paramedics - Surgical Airway

Ventilate, monitoring for signs of adequacy including ETCO₂ and Pulse Oximetry

Notify Receiving Hospital

Continuous Pulse Oximetry and ETCO₂ monitoring should be utilized in all patients with difficult airways or respiratory distress.

Notify Medical Control or receiving hospital AS EARLY AS POSSIBLE about the patient’s difficult airway.

FOR PEDIATRIC PATIENTS REQUIRING SURGICAL AIRWAY – Consider needle cricothyrotomy in patients < 10 years old OR if physiologically young enough that surgical landmarks are NOT identifiable.
Pediatric Airway Algorithm

Supplemental O2 and Monitoring

Assess A,B,C's - including respiratory rate, effort, adequacy

Pulse Oximetry/ETCO2

All Providers

AEMT/CC/P

Blind Insertion Airway Device, or

Critical Care/Paramedic

Intubation

Unsuccessful

Inadequate

All Providers

EMT - contact ALS
Basic Measures First -
-Open Airway
-Nasal or Oral Airway
-Bag Valve Mask

Unsuccessful Attempts

Failed Airway Protocol

Successful

3

Obstruction

All Providers

Airway Obstruction Procedures

Successful

Becomes Inadequate

All Providers

Continue BVM and Ongoing Monitoring

PEARLS for Endotracheal Intubation
* Position the airway for best view of the cords – raise head to the sniffing position (i.e.: earlobe in line with sternal notch)
* Preparation: (four cornerstones) 1) ET tube with loaded stylette, 2) laryngoscope with back up blade, 3) suction, 4) Bougie
* Always have a back-up plan should the primary strategy fail

- ETCO2 is mandatory for all patients with BIAD or Endotracheal Tube – A/CC/P – If prolonged use of BVM, consider use of capnography
- The goal of Airway Management is adequate Oxygenation, Ventilation, and Airway Protection. If an effective airway is being maintained by BVM with OPA or NPA, it is acceptable to continue with basic airway measures rather than BIAD or Intubation.
- An Intubation attempt is defined as passing a Bougie or the endotracheal tube past the teeth or inserted into the nasal passage
CAUTION: RESPIRATORY DISTRESS MAY BE DUE TO MULTIPLE OTHER CAUSES FOR WHICH OTHER TREATMENTS MAY BE INDICATED, INCLUDING THE FOLLOWING:

Pulmonary Edema see page 17 “Blue 8”
Anaphylaxis see page 40 “Gold 1”
Chest Trauma see page 61 “Green 8”

EMT
1. O₂ as appropriate and manage airway as needed See “Blue 3 & 5”
2. If needed, assist ventilations with PPV using 100% O₂
3. Request ALS if available
4. For EMT level providers – assist with self-administered bronchodilator inhaler. Tell OLMC the name of the inhaler. OLMC will prescribe number of puffs

ADVANCED EMT
5. Cardiac monitor
6. Contact OLMC to administer albuterol, 2.5 mg by nebulization (use 3 ml premix or 0.5 ml of 0.5% solution mixed in 2.5 ml of normal saline)
7. Consider CPAP in patients > 18 y/o without asthma – Recall that CPAP should never take the place of bronchodilators and should be used only after or in concert with inhaled bronchodilators in patients with acute bronchospasm. For patients with minor symptoms only, or with resolution of symptoms after a single nebulizer, the AEMT, in consultation with OLMC, may modify the Paramedic response as appropriate.

8. If ALS unavailable or delayed, contact OLMC for the following OPTIONS:
   a. Repeated or continuous albuterol by nebulization or inhaler.
   b. For asthma only – pediatric – epinephrine: < 25 kg, 0.15 mg IM (0.15 ml of 1:1,000), > 25 kg, 0.3 mg IM (0.3 ml of 1:1,000) in anterolateral thigh via auto injector, if available
   c. For asthma only - adult – epinephrine 0.3 mg IM of 1:1,000 solution every 20 minutes via auto injector, if available

CRITICAL CARE / PARAMEDIC
9. Adult/Pediatric –
   a. Albuterol 2.5 mg by nebulization. May repeat 1 time; or
   b. Ipratropium bromide 0.5 mg / albuterol sulfate 3 mg nebulizer if greater than 1 year of age and more significant respiratory distress, and may repeat one time
Respiratory Distress with Bronchospasm 
(*COPD, emphysema, chronic bronchitis, asthma*)

CRITICAL CARE / PARAMEDIC

10. Consider CPAP - in patients > 18 y/o without asthma– Recall that CPAP should never take the place of bronchodilators and should be used only after or in concert with inhaled bronchodilators in patients with acute bronchospasm.

11. Contact OLMC for the following OPTIONS:
   a. Repeated or continuous albuterol by nebulization or inhaler.
   b. Methylprednisolone 125 mg IV x 1 dose
   c. For asthma only – pediatric – epinephrine: < 30 kg, 0.15 mg IM (0.15 ml of 1:1,000), > 30 kg, 0.3 mg IM (0.3 ml of 1:1,000) in anterolateral thigh
   d. For asthma only - adult – epinephrine 0.3 mg IM of 1:1,000 solution every 20 minutes
   e. For patients in Status Asthmaticus not responding to repeated nebulizers or above therapies, consider - Magnesium Sulfate - 2 grams IV/IO over 10 minutes, consider placing medication on a pump

PEARLS for Care of the Patient with Respiratory Distress due to Bronchospasm
* Consider use of a Breath Activated Nebulizer (BAN) as these devices may deliver medication more effectively
* Status Asthmaticus is defined as an acute exacerbation of asthma that remains unresponsive to initial and continuous medication therapies
* Airway management of asthmatic patients is primarily pharmalogical, not mechanical. Therefore, the focus should be on taking those actions that enable the provider to provide inhaled bronchodilators and, in patients with severe bronchospasm, obtain rapid IV or IO access, administer IV solumedrol, administer IM epinephrine and consider IV magnesium. Due to the pathophysiology of asthma, positive pressure ventilation (face mask, BIAD, or endotracheal intubation) rarely if ever is an effective treatment without pharmacological intervention. Therefore, unless the patient is apneic, provide supplemental oxygen via non-rebreather and focus on providing pharmacological interventions.
* Continuous nebulization is administration of 3 unit doses of albuterol without interruption; that is, put all 3 unit doses into the nebulizer at the same time and administer until complete.
* Patients are more effectively ventilated with face mask ventilation when: (1) a two person ventilation technique is used, (2) ETCO2 is used to guide ventilation (if available), (3) avoid hypo/hyperoxia, (4) avoiding hypo/hyperventilation, (5) minimize peak airway pressure, and (6) when tolerated, both oral and nasal airways are placed.
* End-tidal CO2 (ETCO2): Exhaled capnography monitoring with a MEMS approved device that is continuous and displays a waveform
Pulmonary Edema (without shock)

Do not give nitroglycerin if patient has taken erectile dysfunction medication (such as sildenafil [Viagra], tadalafil [Cialis], or vardenafil [Levitra]) within the past 48 hours. Contact OLMC for options in patients who have taken such medicines.

If initial systolic BP is less than 100 mm Hg, refer to Cardiogenic Shock See page 38 “Red 21”.

EMT
1. O2 as appropriate. Manage airway as needed See “Blue 3 & 5”.
2. Assess for shock. If BP greater than 100 mm Hg, place in sitting position.
3. Request ALS if available

ADVANCED EMT
4. Cardiac monitor
5. IV en route

6. Contact OLMC for administration of nitroglycerin 0.4 mg or 1 spray SL. Repeat nitroglycerin at 2 minute intervals if systolic BP greater than 100 mm Hg. After initiation of SL nitroglycerin, may place 1 inch of nitroglycerine ointment 2% to the chest wall if BP greater than 100 mm Hg and remove nitroglycerine ointment 2% if BP less than 100 mm Hg. If the patient has had nitroglycerin before and no IV is established, and systolic BP is greater than 100 mm Hg, then it is OK to give nitroglycerin. Do not administer nitroglycerin if patient has taken erectile dysfunction medication within the past 48 hours.

7. Consider use of CPAP

CRITICAL CARE / PARAMEDIC
8. Nitroglycerin 0.4 mg or 1 spray SL. Repeat nitroglycerin at 2 minute intervals if systolic BP greater than 100 mm Hg. After initiation of SL nitroglycerin, may place 1 inch of nitroglycerine ointment 2% to the chest wall if BP greater than 100 mm Hg and remove nitroglycerine ointment 2% if BP less than 100 mm Hg. If the patient has had nitroglycerin before and no IV is established, and systolic BP is greater than 100 mm Hg, then it is OK to give nitroglycerin. Do not administer nitroglycerin if patient has taken erectile dysfunction medication within the past 48 hours.