I. Purpose:

A. To establish indications, guidelines, and the standard procedure for airway management in the pre-hospital setting.

II. Authority:

A. Health and Safety Code, Section 1797.220, 1798. Title 22, Section 100170.

III. Policy:

A. The use of airway interventions is limited by certification skill level, and requires annual maintenance and testing completion.

B. This policy is to be used when identifying need for airway, breathing or ventilation support, with a current or impending issue.

C. Endotracheal intubation is the preferred method of airway management in adults who are suffering from respiratory arrest or failure. In pediatric patients Bag Valve Mask (BVM) ventilation is the preferred method of airway management.

1. Pediatric patients for the purposes of airway management are able to be measured by pediatric length-based tape (or equivalent). If the patient is greater than the length of the pediatric length-based tape, which corresponds to approximately 40 kg, the patient can generally fall under adult airway management, as clinically determined to be appropriate by the managing provider.

D. BLS personnel may use OPAs/NPAs (oropharyngeal airways and nasopharyngeal airways) but the use endotracheal or esophageal/tracheal double lumen airway devices (ETDLA) is reserved for ALS personnel, or those with specialized certification.

E. Any patient undergoing an airway procedure should have the maximum level of monitoring present including:

1. Pulse oximetry and frequent blood pressure measurements
2. ECG tracing and continuous capnography if ALS present

F. Definition: Intubation Attempt – An intubation attempt is defined as the introduction of an endotracheal tube or supraglottic airway *past the patient's teeth*.

IV. Continuous Capnography:

A. Continuous capnography will be used with all supraglottic and BLS airways adjuncts (ALS providers).

B. If a supraglottic airway is placed by a BLS provider with specialized certification, every

attempt should be made to enlist ALS provider support and end-tidal carbon dioxide (EtCO2) confirmation, as soon as possible. If a BLS provider recognizes a patient will require airway intervention, ALS should be requested prior to airway intervention when possible, and as soon as the need is recognized.

C. Continuous capnography will be used to confirm every presumed successful intubation regardless of the provider's confidence of placement. After application of the capnography sensor/device the provider will ventilate the patient. If there is development of a continuous capnography waveform then the placement of the endotracheal tube can be confirmed. The target range will be between 35-45 mmHg, in patients with a pulse, while providing adequate ventilation.

D. If continuous capnography cannot be confirmed, presume misplacement of intubation, and remove ETT. Troubleshooting of the EtCO2 device is allowed if the suspicion is high for device failure rather than skill failure. Troubleshooting of the device should take < 1 minute. If EtCO2 is still not visualized, presume misplacement and proceed as listed above.

V. BLS Airway Interventions:

A. Oropharyngeal Airway (OPA) should be used as a first line BLS method to secure a patient's airway. OPAs will be indicated in patients that are unresponsive without the presence of a gag reflex. The provider will ensure appropriate sizing prior to placement.

B. Nasopharyngeal Airway (NPA) can be used as a first line BLS method to secure a patient's airway. The provider will ensure appropriate sizing prior to placement.

1. Contraindications of the NPA are facial trauma or recent nasal or facial surgery.

C. Bag Valve Mask (BVM) Ventilations will be delivered in the range of:

1. For **rescue breathing in adults** - 10-12 respirations per minute (every 5 to 6 seconds) achieving chest rise, using up to 500 ml, attached to oxygen, 15-25 LPM, regardless of established airway adjunct.
2. For **rescue breathing in pediatrics** – 20-30 respirations per minute (every 2 to 3 seconds) achieving chest rise, attached to oxygen, 15-25 LPM, regardless of established airway adjunct.
3. Do not hyperventilate
4. For cardiac arrest follow established ratios:
    a. Adult without an advanced airway: 30:2 (30 compressions to 2 breaths)

b. Pediatric without an advanced airway: 30:2 for single rescuer

15:2 for two rescuers

c. Adult with an advanced airway: Continuous compressions between 100-120 bpm and 1 breath every 6 seconds (10 breaths per minute)

D. All BLS airways will be monitored for patency by continuous capnography, if equipped (ALS providers).

E. Ensure suction, preferably wall suction if available, is used early and often for airway or breathing complaints. Begin deep, and suction outward. Avoid injuring the soft structures of the pharynx while suctioning.

VI. Adult Intubation:

A. Intubation will be indicated for one (1) or more of the following:

1. Airway Obstruction
2. Respiratory Arrest and/or Failure
3. Hypoxia and/or hypoventilation
4. GCS < or = 8 in the context of trauma
5. Need for prolonged ventilation support
6. Severe hemorrhage with poor perfusion
7. Severe flail chest or pulmonary contusion
8. Multi-system trauma and abnormal mental status in which BVM cannot be used properly
9. Inhalation injury with erythema/edema at cords
10. Patient is at risk for aspiration/not protecting their airway
11. Insufficient BLS airway patency, verified by capnography and/or pulse oximetry
12. Airway edema resulting from respiratory tract burns or anaphylaxis

B. Contraindications:

1. Suspected or untreated pneumothorax (intubation can cause or worsen a tension pneumothorax and ultimately death)
2. Isolated medical respiratory arrest with prehospital reversible source (ex: suspected

hypoglycemia or narcotic overdose)

3. Maxillo-facial trauma with unrecognizable facial landmarks
4. Patients actively seizing
5. Patients with an active gag reflex
6. Pediatric patient

C. Procedure:

1. Patient should be connected to continuous monitoring including: pulse oximetry, ECG leads, EtCO2 monitoring (ALS present), and blood pressure throughout procedure
2. Maintain c-spine if traumatic injury suspected
3. All patients should be pre-oxygenated with 100% BVM (or NRB if patient ventilating well) and 6 L nasal cannula prior to intubation as possible. Do not hyperventilate the patient
4. Nasal cannula oxygenation should continue through intubation attempt
5. End tidal CO2 should be placed prior to intubation or supraglottic airway placement attempt (ALS providers)

D. A direct intubation attempt will consist of the introduction of the laryngoscope and endotracheal tube with the stylet or a Bougie by itself, into the oral cavity with the intent of intubation

E. One intubation attempt will be completed on patients in cardiac arrest before a provider can attempt placement of a supraglottic airway (ALS providers)

F. If the first attempt fails, the provider may either elect to make a second attempt at intubation or elect to place the supraglottic device or return to the BLS airway. This choice should be done with what has the best perceived likely successful effort

G. A combined total of two (2) attempts to successfully intubate will be allowed per patient (including all provider attempts)

H. After two (2) failed intubation attempts, the provider(s) will place either a supraglottic airway or return to a BLS airway

VII. Endotracheal Tube Placement Confirmation:

A. Endotracheal tube placement confirmation will consist of three (3) steps before placement may be considered confirmed. The provider must complete all of the steps along with

properly documenting each step on the patient care report.

1. Visualize the endotracheal tube pass through the patient's vocal cords
2. Confirm the presence of bilateral lung sounds with the absence of epigastric sounds through auscultation
3. Have the presence of continuous capnography waveform while ventilating the patient
4. LEAD SD

VIII. Laryngoscopy (Airway Visualization, non-intubation attempt):

A. This method is only to be used for patients with known or suspected foreign body or aspiration who have become unconscious

B. Visualization will consist of the introduction of the laryngoscope by itself without the endotracheal tube introducers (Bougie or stylet) and endotracheal tube loaded, into the oral cavity for the purpose of visualization, and/or the intent to:

1. Visualize a foreign body airway obstruction and/or remove the foreign body using McGill's forceps
2. Visualize and/or physically manipulate the tongue, for the purpose of suctioning secretions, blood or emesis from the pharynx

IX. Documentation for Intubation Should Include:

✓ Indication for procedure	✓ Response to treatment
✓ Size of ET tube	✓ Visualization of vocal cords
✓ Number of attempts	✓ Suction required
✓ ET Tube measurement (cm) at teeth	✓ Chest rise with ventilation
✓ Ventilation compliance	✓ Bulb syringe check (as applicable)
✓ Capnography used	✓ EtCO2/Capnography reading
✓ Equality of lung sounds	✓ Absence of epigastric sounds
✓ Method for securing the ET Tube	✓ Any complications with intubation procedure

X. Certification Requirements:

A. Maintain knowledge of the indications, contraindications, technique, and possible complications of the procedure.

B. Assessment of this knowledge may be accomplished via quality assurance mechanisms, classroom demonstrations, skills stations, or other mechanisms as deemed appropriate by the Imperial EMS System.

C. Assessment should include direct observation at least once per certification cycle.

XI. Troubleshooting:

A. If intubation or supraglottic airway placement is unsuccessful, remove device, ventilate with BVM and repeat sequence of steps.

B. If unsuccessful on second attempt, BLS airway management should be resumed.

APPROVED:

Signature on File

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