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, Division 2.5. California Code of Regulations, Title 22, Division 9.

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. Ventilation is more critical than intubation. Proper use of the bag-mask ventilation technique is the primary method of airway management and the foundation of clinical care even when secondary methods such as endotracheal intubation, laryngeal mask/tube, or needle/surgical airway are employed.

D. Any of the following actions will be considered an airway attempt:
   1. Orotracheal Methods: Insertion of laryngoscope blade into mouth (irrespective of whether an endotracheal tube is placed with the intent of performing endotracheal intubation).
   2. Nasotracheal Methods: Insertion of tube through nares of nose
   3. Laryngeal Mask/Tube and Other Methods: Insertion of laryngeal mask/tube into mouth (for Combitube, King, LMA, and other oral non airway devices)
   4. Surgical Methods: Insertion of needle/surgical airway device through neck (for cricothyroidotomy, needle jet ventilation, retrograde ETI, and other ‘’surgical’’ methods of airway management)
   5. The removal of a foreign body using a laryngoscope and Magill forceps does not constitute an intubation attempt.

E. 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.

F. 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.
   1. Specialized certification allows for adult administration of supraglottic devices in BLS personnel. Pediatric supraglottic insertion is in the paramedic scope only at this time.

G. 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

H. Video Laryngoscopy:
   1. ALS providers can consider video assisted laryngoscopy for approved Imperial County EMS providers when direct laryngoscopy is less desirable or contraindicated.
   2. Contraindications (Any of the following):
      a. Video laryngoscope model or use has not been approved by Imperial County EMS for the provider agency.
      b. Provider is <u>not trained</u> with the video laryngoscope.
   3. Special Concerns:
      a. Overwhelming fluid in the airway (blood/vomit will obscure camera view).
      b. Operator inexperience.

IV. <u>Continuous Capnography:</u>

A. Continuous capnography will be used with all supraglottic and BLS airways adjuncts.

B. If a supraglottic airway is placed by a BLS provider, an end-tidal carbon dioxide (EtCO2) device should be used to confirm placement. 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. 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 <u>not</u> 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.

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, 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

D. If CPR is ongoing, intubation should occur during CPR whenever possible. If pausing CPR to intubate, the pause should be the briefest period of time, with a goal of < 10 seconds or less.
    1. If multiple evaluations of a patient's airway are occurring, a patient should be bagged between airway evaluations, to minimize hypoxia and hypoventilation.

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 is unsuccessful, the provider may either make a second attempt at intubation, place a supraglottic device, or revert to BLS airway techniques. The choice should be based on the best perceived likelihood of success.

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

B. Documentation of ETT placement should address all aspects of LEAD SD (Lung sounds, Epigastric sounds, Absent epigastric, Depth marking, Symmetrical chest rise, and Device confirmation e.g., capnography)

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
✓ Provider attempting procedure	✓ Training level of provider

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:
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