Policy Number:	532
Original Issue Date:	*December, 2000*
Last Reviewed/Revised:	*October,2021*
Effective Date:	*January 10, 2022*
Next Review:	*October, 2023*

EMERGENCY MEDICAL SERVICES POLICIES and PROCEDURES

ENDOTRACHEAL INTUBATION

I. Purpose: To define the indications and procedure for use of the endotracheal tube by paramedics in the prehospital setting.

II. Authority: Health and Safety Code, Division 2.5, Section 1798 and 1798.2. California Code of Regulations, Title 22, Division 9, Sections 100144, 100146, 100147, 100169

III. Definitions:

A. *Intubation Attempt:* An interruption of ventilation with:
   1. Laryngoscope insertion for the purpose of endotracheal tube (ETT); **or**
   2. Lifting of the tongue for the purposes of insertion of a supraglottic airway device

B. *Advanced Life Support (ALS) Airway Management:* Use of laryngoscope, ETT, SBCEMSA-Approved supraglottic airway device and other pertinent ALS equipment per SBCEMSA policy for purposes of managing respiratory effort and maintaining airway patency.

C. *Basic Life Support (BLS) Airway Management:* Use of bag-valve-mask (BVM), oropharyngeal airway (OPA), nasopharyngeal airway (NPA) and other pertinent BLS equipment per SBCEMSA policy for purposes of managing respiratory effort and maintain airway patency.

IV. Policy:

A. Airway management shall be performed on all patients that are unable to maintain their own airway. Paramedics may utilize endotracheal intubation (ETI) on adults and pediatric patients (12-years-old or greater) based on the procedures outlined in this policy.

V. Procedure:

A. Intubation

1. Indications
   a. Cardiac Arrest – according to SBCEMSA Policy 533-09a & 533-09c **ONLY** if unable to adequately ventilate the patient using BLS airway management techniques;
   b. Respiratory arrest or severe respiratory compromise AND unable to adequately ventilate with BVM;
   c. After Base Hospital (BH) contact has been made, the BH Physician may order ETI in other situations.
2. Contraindications
   a. Intact gag reflex
3. Intubation Attempts
   a. There shall be no more than two (2) attempts to perform intubation, lasting no longer than 20 seconds each, prior to Base Hospital contact.
   b. If ETI cannot be accomplished in two (2) attempts, paramedic may consider using a SBCEMSA-approved a supraglottic airway device per Policy 546 – Air-Q®sp.
      i. If ALS Airway Management techniques are unsuccessful or contraindicated, the airway shall be managed using BLS airway management techniques.
4. Other Considerations

APPROVAL:

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a. A flexible stylet may be used for any ETI attempt that involves an ETT size of at least 6.0mm.
    i. Two-Person Technique (recommended when visualization is less than ideal):
        (a) Visualize as well as possible
        (b) Place stylet just behind the epiglottis with the bent tip anterior and midline
        (c) Gently advance the tip through the cords maintaining anterior contact
        (d) Use stylet to feel for tracheal rings
        (e) Advance stylet past the black mark
        (f) A change in resistance indicates the stylet is at the carina
        (g) Withdraw the stylet to align the black mark with the teeth
        (h) Have your assistant load and advance the ETT tip to the black mark
        (i) Have your assistant grasp and hold steady the straight end of the stylet
        (j) While maintaining laryngoscope blade position, advance the ETT
        (k) At the glottic opening turn the ETT 90-degrees counter-clockwise to assist passage over the arytenoids.
        (l) Advance the ETT to 22cm at the teeth
        (m) While maintaining ETT position, withdraw the stylet
    ii. One-Person Technique (recommended when visualization is good, but cords are too anterior to pass ET tube):
        (a) Load the stylet into the ETT with the bent end approximately 4 inches (10 cm) past the distal end of the ETT
        (b) Pinch the ETT against the stylet
        (c) With the bent tip anterior, while visualizing the cords advance the stylet through the cords
        (d) Maintain laryngoscope blade position
        (e) When the black mark is at the teeth ease your grip to allow the tube to slide over the stylet. If available have an assistant stabilize the stylet
        (f) At the glottic opening turn the ETT 90 degrees counter-clockwise to assist passage over the arytenoids
        (g) Advance the ETT to 22cm at the teeth
        (h) While maintaining ETT position, withdraw the stylet.

b. Tracheal Stoma Intubation
    i. Select the largest endotracheal tube that will fit through the stoma without force (it should not be necessary to use lubricant)
    ii. Do not use stylet
    iii. Pass ETT until the cuff is just past the stoma
    iv. Inflate cuff
    v. Attach the CO_2 measurement device to the ETT and confirm placement (as described below)
    vi. Secure tube

B. *Confirmation of ETI Placement*

1. It is the responsibility of the paramedic who has inserted the ETT to personally confirm and document proper placement.
2. Responsibility for the position of the ETT shall remain with the intubating paramedic until a formal transfer of care has been made.
    a. Prior to intubation, prepare the CO_2 measurement device (capnography)
    b. Insert ETT, advance, and hold at the following depth:
        i. Less than 5 ft. tall: Insert balloon 2cm past the vocal cords
        ii. 5’-6’6” tall: 22cm at the teeth
        iii. Over 6’6” tall: 24cm at the teeth or 2cm past the vocal cords

3. After inserting the ETT, in the patient requiring CPR, resume chest compressions while confirming ETT placement.
4. Inflate the ETT cuff, attach the CO_2 measurement device, and begin ventilations. During the first 5-6 ventilations, auscultate both lung fields (in the axillae) and the epigastrium.
    a. A regular waveform with each ventilation should be seen with tracheal placement.
        i. If the patient has been in cardiac arrest for a prolonged time (more than 5-10 minutes) the waveform may be diminished or, very rarely, absent.
        ii. In the patient with spontaneous circulation, if a regular waveform with a CO_2 of 25 or higher is not seen, that is a strong indicator of esophageal intubation.
        iii. If the CO_2 measurement device fails, use an alternative device if available.
    b. If a colorimetric CO_2 detector device is used for placement confirmation, observe the color at the end of exhalation after six ventilations
        i. Yellow indicates the presence of >5% exhaled CO_2 and tan 2-5% CO_2.
            (a) Yellow or tan indicates tube placement in the trachea
        ii. Purple indicates less than 2% CO_2 and in the patient with spontaneous circulation, is a strong indicator of esophageal intubation
5. Using information from auscultation and CO_2 measurement, determine the ETT position.
    a. If breath sounds are equal, there are no sounds at the epigastrium, and the CO_2 measurement device indicates tracheal placement, secure the ETT using an ETT holder;
    b. If auscultation or the CO_2 measurement device indicates that the ETT may be in the esophagus, immediately reevaluate the patient. If you are not CERTAIN that the ETT is in the trachea, the decision to remove the ETT should be based upon the patients overall clinical status (e.g., skin color, respirations, pulse oximetry);
    c. If breath sounds are present but unequal, the ETT position may be adjusted as needed.
6. Once ETT position has been confirmed, reassessment using CO_2 measurement, pulse oximetry (if able to obtain), and auscultation of breath sounds should be performed each time patient is moved.
7. Continue to monitor the CO_2 measurement device during treatment and transportation. If a change occurs from (yellow/tan) to negative (purple), or the waveform diminishes or disappears, reassess the patient for possible accidental extubation or change in circulation status.
8. The typical normal range of exhaled carbon dioxide is 35 – 45mmHg. Patients with underlying pulmonary conditions may have baseline values higher than this. Target 40mmHg if no known such history. Otherwise, higher values may be acceptable (40 – 50mmHg).
9. After confirmation of proper ETT placement, and prior to movement, all intubated patients shall have their head and neck maintained in a neutral position with head supports. A cervical collar will only be used if a cervical spine injury is suspected.
    a. Reconfirm ETT placement after any manipulation of the head or neck, including positioning of a head support, and after each change in location of the patient.
    b. Report to nurse and/or physician that the head support is for the purpose of securing the ETT and not for trauma (unless otherwise suspected).

C. Documentation

1. All ETI attempts must be documented in the “ALS Airway” section of the Santa Barbara County Electronic Patient Care Report
    a. All validated fields related to an advanced airway attempt shall be completed on the SBCEMSA ePCR per Policy 700 – Documentation of Prehospital Care.

i. Anything related to the advanced airway attempt that does not have an applicable corresponding field in the ePCR, but needs to be documented, shall be entered into the report narrative.
ii. All data related to an advanced airway attempt (successful or not) shall be documented in the ePCR. In addition, an electronic signature shall be captured on the mobile device used to document the care provided.
iii. If the *patient is transported*, the treating emergency room physician must verify the prehospital intubation attempt. The paramedic, or any other healthcare provider, shall not sign the 'Advanced Airway Verification' section in lieu of the treating physician.
(a) The treating emergency room physician will sign the 'Advanced Airway Verification' section of the ePCR and document all the following information:
1. Placement;
2. Findings;
3. Method;
4. Comments;
5. Physician Name;
6. Date

b. Documentation of the intubation in the approved SBCEMSA ePCR must include the following elements. The acronym for the required elements is "SADCASES."
i. Size of the ETT
ii. Attempts, number
iii. Depth of the ETT at the patient's teeth
iv. Confirmation devices used and results. For capnography, recording of waveform at the following points:
(a) Initial ETT placement confirmation;
(b) Movement of patient;
(c) Transfer of care.
v. Auscultation results
vi. Secured by what means
vii. $ETCO_2$, initial value
viii. Support of the head or immobilization of the cervical spine. An electronic upload of Cardiac Monitor data, including $ETCO_2$ waveform "snapshots" the ePCR is required.
(a) In the event an upload cannot occur, a printed code summary, mounted and labeled, displaying capnography waveform at the key points noted above is required.
(b) This printed code summary shall be scanned and attached to the ePCR.

c. Supraglottic Airway Device indications, contraindications, placement and documentation in accordance with Policy 546 – Air-Q®sp.

VI. References:

A. Policy 404 – ALS & BLS Mandatory Equipment and Supplies
B. Policy 546 – air-Q®sp
C. Policy 700 – Documentation of Prehospital Care

VII. Attachments: None