COUNTY OF VENTURA HEALTH CARE AGENCY		EMERGENCY MEDICAL SERVICES POLICIES AND PROCEDURES
Policy Title: Airway Management		Policy Number 710
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I. PURPOSE: To define the indications, procedure, and documentation for airway management by Ventura County EMS personnel.

II. AUTHORITY: California Health and Safety Code, §1798, §1798.2; §1798.160 and §1798.170 and California Code of Regulations, Title 22, §100091.01 and §100091.02.

III. Policy: Airway management shall be performed on all patients that are unable to maintain their own airway. Paramedics may utilize oral endotracheal intubation on adult patients. Paramedics may utilize oral endotracheal intubation on pediatric patients who are longer than the standard pediatric weight and length tape. Pediatric patients who fit on a pediatric length and weight tape will not be intubated by pre-hospital personnel.

IV. Definitions: Attempt: An interruption of ventilation, with, 1) laryngoscope insertion for the purpose of inserting an endotracheal tube (ETT), or 2) lifting of tongue for the purpose of insertion of a supraglottic airway device.

V. Procedure:

A. Bag-Valve-Mask (BVM) ventilations

1. Indications
    a. Respiratory arrest or severe respiratory compromise
    b. Cardiac arrest – according to VCEMS Policy 705
2. Contraindications
    a. None
3. Equipment
    a. Pediatric, below 15 kg (below white on Broselow or equivalent) infant BVM (240 ml with manometer) and mask with infant ETCO2 adaptor (< 0.5ml sidestream, < 1ml mainstream).

b. Pediatric, above 15 kg and below 36 kg (white through green on Broselow or equivalent) child BVM (500ml with manometer) with pediatric/adult ETCO2 sidestream (6.6 ml) or adult mainstream adaptor (< 5 ml) adaptor.
c. Adult and pediatric above 36 kg, small adult BVM (1,000 ml with manometer) and mask with pediatric/adult ETCO2 sidestream adaptor or adult mainstream adaptor.

B. Supraglottic Airway Device
1. The VCEMSA approved SAD may be used as the primary advanced airway device if utilized in accordance with VCEMS policy 729.
2. The VCEMSA approved SAD may be utilized prior to attempting intubation and/or as a rescue device if attempt(s) at endotracheal intubation are unsuccessful.

C. Endotracheal Intubation (ETI)
1. Indications
a. Cardiac arrest – according to VCEMS Policy 705 – ONLY if unable to adequately ventilate with BVM
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 endotracheal intubation in other situations.
2. Contraindications
a. Intact gag reflex.
3. Intubation Attempts
a. There shall be no more than two (2) attempts to perform ETI, lasting no longer than 40 seconds each, and prior to BH contact. For patients in cardiac arrest, each ETI attempt shall interrupt chest compressions for no longer than 20 seconds.
b. The patient shall be ventilated with 100% O_2 by BVM for one minute before each attempt.
c. If ETI cannot be accomplished in 2 attempts, the VCEMSA approved supraglottic airway device will be inserted in accordance with policy 729.

d. If attempts at ETI and the supraglottic airway device insertion are unsuccessful, the airway will be managed using BLS techniques.

4. Special considerations
    a. Video Laryngoscopy (VL)
        1) Providers may utilize a VL device if authorized by VCEMS
        2) The VL device must be equipped with the ability to record the intubation attempt for post-event analysis
        3) A “screenshot” confirming placement will be attached to the PCR for the incident
        4) Optimal technique varies by device and shall be addressed in training prior to use of the device.
    b. Flexible Stylet. A flexible stylet may be used for any ETI attempt that involves an ETT size of at least 6.0 mm.
        1) 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. A change in resistance indicates the stylet is at the carina.
            f) Withdraw the stylet to align the black mark with the teeth.
            g) Have your assistant load and advance the ETT tip to the black mark.
            h) Have your assistant grasp and hold steady the straight end of the stylet.
            i) While maintaining laryngoscope blade position, advance the ETT.
            j) At the glottic opening turn the ETT 90 degrees counterclockwise to assist passage over the arytenoids.

k) Advance the ETT to 22 cm at the teeth.
l) While maintaining ETT position, withdraw the stylet.

1) 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 counterclockwise to assist passage over the arytenoids.
g) Advance the ETT to 22 cm at the teeth.
h) While maintaining ETT position, withdraw the stylet.

c. Tracheal stoma intubation
1) Select the largest endotracheal tube that will fit through the stoma without force (it should not be necessary to use lubricant).
2) Do not use stylet.
3) Pass ETT until the cuff is just past the stoma.
4) Inflate cuff.
5) Attach the CO_2 measurement device to the ETT and confirm placement (as described below).
6) Secure tube.

5. Confirmation of Placement – It is the responsibility of the paramedic who has inserted the ETT to personally confirm and document proper placement. 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:
    1) Less than 5 ft. tall: balloon 2 cm past the vocal cords.
    2) 5'-6'6" tall: 22 cm at the teeth.
    3) Over 6'6" tall: 24 cm at the teeth or 2 cm past the vocal cords.
c. After inserting the ETT, in the patient requiring CPR, resume chest compressions while confirming ETT placement.
d. 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.
    1) A regular waveform with each ventilation should be seen with tracheal placement. 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. 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. If the CO2 measurement device fails, and an alternative is not immediately available, use a colorimetric CO2 detector.
    2) If a colorimetric CO_2 detector device is used for placement confirmation, observe the color at the end of exhalation after six ventilations. Yellow indicates the presence of >5% exhaled CO_2 and tan 2-5% CO_2. Yellow or tan indicates tube placement in the trachea. Purple indicates less than 2% CO_2 and in the patient with spontaneous circulation, is a strong indicator of esophageal intubation.
e. Using information from auscultation and CO_2 measurement, determine the ETT position.
    1) 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.

1) If auscultation or the CO_2 measurement device indicates that the ETT may be in the esophagus, immediately reevaluate the patient. The ETT should be removed if there is concern for esophageal intubation. If you are confident that the ETT is in the trachea, you must confirm placement by performing repeat laryngoscopy.
2) If breath sounds are present but unequal, the ETT position may be adjusted as needed.

f. 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.
g. Continue to monitor the CO_2 measurement device during treatment and transportation. If a change occurs from positive (yellow/tan) to negative (purple), or the waveform diminishes or disappears, reassess the patient for possible accidental extubation or change in circulation status.
h. The typical normal range of exhaled carbon dioxide is 35-45 mmHg. 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).
i. 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.
    1) 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.
    2) 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).

6. Documentation
    a. All ETI attempts must be documented in the “ALS Airway” section of the Ventura County Electronic Patient Care Report (VCePCR).

b. If a video laryngoscope is used, a screenshot confirming placement will be attached to the PCR.
c. All validated fields related to an advanced airway attempt shall be completed on the VCePCR. Anything related to the advanced airway attempt that does not have an applicable corresponding field in VCePCR, but needs to be documented, shall be entered into the report narrative. All data related to an advanced airway attempt (successful or not) shall be documented on a VCePCR. In addition, an electronic signature shall be captured on the mobile device used to document the care provided. The treating emergency room physician will sign the 'Advanced Airway Verification' section of the VCePCR, as well as document the supporting information (placement, findings, method, comments, name, and date). In the event the patient was not transported, another on scene paramedic (if available) will sign and complete the verification section.
d. Documentation of the intubation in the approved Ventura County Documentation System must include the following elements. The acronym for the required elements is "SADCASES."
    1) Size of the ETT
    2) Attempts, number
    3) Depth of the ETT at the patient's teeth
    4) Confirmation devices used and results. For capnography, recording of waveform at the following points:
        a) Initial ETT placement confirmation; and
        b) Movement of patient; and
        c) Transfer of care.
    5) Auscultation results
    6) Secured by what means
    7) ETCO2, initial value
    8) Support of the head or immobilization of the cervical spine. An electronic upload of Cardiac Monitor data, including ETCO2 waveform "snapshots" the VCePCR is required. 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. This printed code summary shall be scanned and attached to the VCePCR.

7. Supraglottic Airway Device indications, contraindications, placement and documentation in accordance with policy 729.
    a. CQI: For all VL attempts, the ImageTrend intubation CQI module must be completed monthly. Provider agencies are encouraged, though not required, to complete the CQI module for all other intubation attempts
    b. Failure to complete the module may result in loss of authorization to perform VL.
    c. VCEMSA reserves the right to request the complete video file as part of the VCEMS CQI program and medical oversight.
    d. Provider Agency EMS Medical Director commits to meeting with VCEMS Medical Director quarterly to review fall outs and complications.
    e. CQI Metrics
        1) Type of patient: med vs trauma
        2) Suction utilized appropriately?
        3) Grade view?
        4) Number of attempts?
        5) Bougie used?
        6) Blade entry to intubation time? (Defined as when the laryngoscope blade passes the teeth to when the ETT passes through the cords)
        7) Complications? (Hypoxia, bleeding, bradycardia, etc.)