GERALD HUBER
Director

EMERGENCY SERVICES BUREAU
355 Tuolumne Street,
Suite 2400, MS 20-240
Vallejo, CA 94590

DEPARTMENT OF HEALTH & SOCIAL SERVICES
Medical Services Division

SOLANO COUNTY

BRYN MUMMA, MD, MAS
EMS Agency Medical Director

TED SELBY
EMS Agency Administrator

(707) 784-8155
www.solanocounty.com

POLICY MEMORANDUM 6608

Implementation Date: August 18, 2014
Revised Date: July 1, 2017
Review Date: July 1, 2019

REVIEWED/APPROVED BY:

BRYN MUMMA, MD, MAS, EMS AGENCY MEDICAL DIRECTOR

TED SELBY, EMS AGENCY ADMINISTRATOR

SUBJECT: ADVANCED AIRWAY MANAGEMENT

AUTHORITY:

California Health & Safety Code §1797.220

PURPOSE/POLICY:

Airway management is a critical and potentially lifesaving skill for paramedics to master and maintain proficiency. This Policy is written to address both training and authorization requirements, as well as, audit outcome expectations for advanced airway management by Solano County Accredited Paramedics. This policy encompasses the use of all advanced airway techniques authorized in Solano County: oral endotracheal intubation, King Airway™, and the Endotracheal Tube Introducer (Gum-Elastic Bougie).

DEFINITIONS:

Endotracheal Intubation Attempt – An attempt at endotracheal intubation is defined as the insertion of a laryngoscope (i.e. past the teeth/gums) with the intention of intubation.

I. INITIAL ADVANCED AIRWAY AUTHORIZATION

A. Adult endotracheal (ET) intubation is within the basic Emergency Medical Technician-Paramedic (EMT-P) scope of practice for the State of California, therefore, an EMT-P licensed by the State of California will be considered authorized to perform adult endotracheal intubation in Solano County for the purpose of initial accreditation.

B. Pediatric endotracheal intubation is in the optional EMT-P scope of practice for the State of California. Documentation of training in this skill is required for accreditation in Solano County. Documentation of this skill may be by:

1. Completion of an advanced pediatric life support course such as PALS or APLS; or
2. Documentation of a course designed to specifically train and test the skill of pediatric endotracheal intubation (e.g., Special Procedures Testing in other counties); or
3. Other considerations as approved by the Solano County Emergency Medical Services (EMS) Agency Medical Director.

C. Use of use of lower airway multi-lumen adjuncts and supralaryngeal airway is a part of the basic EMT-P scope of practice for the State of California, therefore, an EMT-P licensed by the State of California will be considered authorized to use lower multi-lumen adjuncts and supralaryngeal airways in Solano County for the purpose of initial accreditation.

D. Solano County Accredited Paramedics, with proper training, are authorized to use the endotracheal tube introducer (gum-elastic Bougie), for all ET intubations.

E. Re-Accrediting Paramedics will demonstrate skills competency by attending a Continuing Education Course in advanced airway management for a minimum length of four (4) hours. AHA ACLS and/or PALS courses may be used to satisfy one (1) hour of this requirement for each certification. Refer to Policy 3400, Paramedic Accreditation/Reaccreditation Process, Section II(A)(4)(b).

II. KING AIRWAY™

The King Airway™ is available in three sizes and cuff inflation varies by model:

- Size 3 – Patient between 4 and 5 feet tall (50 ml air)
- Size 4 – Patient between 5 and 6 feet tall (70 ml air)
- Size 5 – Patient over 6 feet tall (80 ml air)

A. INDICATIONS FOR USE:

1. Cardiac and/or respiratory arrest **and**
2. Prior failed (maximum of two (2)) attempts at endotracheal intubation.
3. Situations where the airway cannot be visualized for intubation:
   a. Trauma/blood/vomit/other secretions.
   b. Entrapment of the patient with limited access to the patient.

B. CONTRAINDICATIONS FOR USE:

1. Intact gag reflex.
2. Ingestion of caustic substances.

3. Known disruption of esophageal anatomy.
4. Presence of a tracheostomy or stoma.

C. EQUIPMENT:

1. King Airway™ LTS-D kit (adult sizes 3, 4 and 5);
2. Water soluble lubricant;
3. Syringe 50 – 100 ml varies by size;
4. Stethoscope;
5. Portable suction;
6. Bag Valve Mask (BVM) device;
7. PPE (Personal Protective Equipment).

D. INSERTION PROCEDURE:

1. Assure an adequate BLS airway;
2. Oxygenate with 100% oxygen;
3. Select appropriately sized King Airway™;
4. Check the King Airway™ cuffs to ensure patency. Deflate tube cuffs. Leave syringe attached. Lubricate the tip of the tube;
5. Position the head. The ideal position is the "sniffing position". A neutral position should be used if traumatic injury to the cervical spine is suspected;
6. Without exerting excessive force, advance tube until the base of connector is aligned with teeth or gums;
7. Inflate cuffs based on size and recommended volume;
8. Attach bag-valve to King Airway™. While gently bagging the patient to assess ventilation, withdraw the airway until ventilation is easy and free flowing;
9. If breath sounds are present, continue to ventilate. If air leak is noted, up to 10 ml of air can be added to the cuff;
10. Secure the tube with tape. Note depth marking on tube;
11. Continue to monitor the patient for proper tube placement throughout pre-hospital treatment and transport (e.g. lung sounds, waveform capnography). Waveform capnography should be used on all patients with such an extraglottic airway. Do not use an esophageal detector device with extraglottic airways;
12. Document King Airway™ placement times and results of tube placement checks performed throughout the resuscitation and transport.

E. TROUBLESHOOTING AND ADDITIONAL INFORMATION

1. If placement is unsuccessful, remove tube, ventilate via BVM and repeat sequence of steps.
2. If unsuccessful on second attempt, Basic Life Support (BLS) airway management should be resumed.
3. Most unsuccessful placements relate to failure to keep tube in midline during placement.
4. Cuffs can be lacerated by broken teeth or dentures. Remove dentures before placing tube.
5. Do not force tube, as airway trauma may occur.

III. ENDOTRACHEAL TUBE INTRODUCER OR GUM-ELASTIC BOUGIE

The endotracheal tube introducer (gum-elastic bougie), is a flexible intubating stylet with a bent distal tip. The introducer can be bent or straightened as needed.

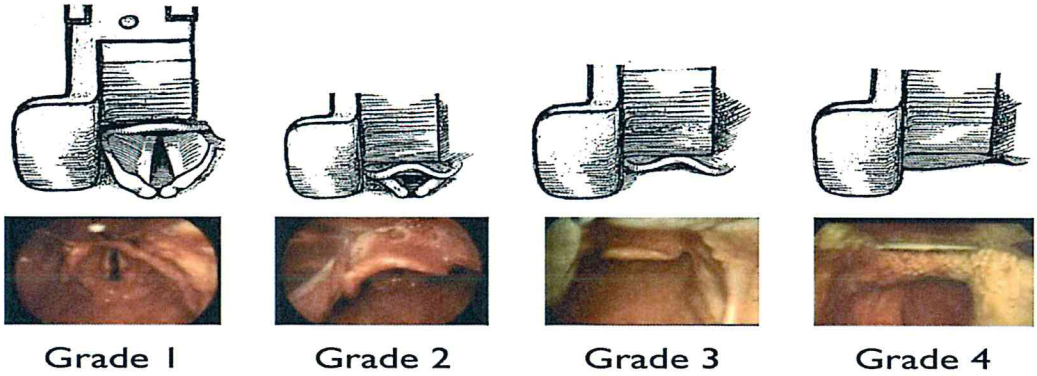
Newly Accredited Solano County Paramedics shall be trained on the usage of the introducer upon initial hiring. Current Solano County Accredited Paramedics shall be trained on the use of the introducer prior to the effective date of this policy. The Advanced Life Support (ALS) Provider will submit proof of training to the EMS Agency within thirty (30) days of class completion.

A. INDICATIONS FOR USE

The introducer was developed to assist with endotracheal intubation on patients with difficult airway anatomy where the vocal cords cannot be visualized.

However, Solano County Accredited Paramedics are encouraged to use the introducer on all intubation attempts.

Airways can be graded on scale of one to four using the Cormack-Lehane Scale. Grade one = full view of cords, grade two = partial view of cords, grade three = epiglottis only, grade four = no airway structures identifiable.



B. CONTRAINDICATIONS

Patient age < 8 years old or ET tube size < 6.5mm.

C. EQUIPMENT

1. Endotracheal Tube Introducer (Gum-Elastic Bougie), adult or pediatric size;
2. Water soluble lubricant;
3. Laryngoscope and blade appropriately sized for patient;
4. ET tube, appropriately sized for the patient;
5. 10 mL syringe for ET tube cuff inflation;
6. Device to secure the ET tube;
7. Bag-Valve-Mask Device.

D. INSERTION PROCEDURE

1. Oxygenation of the patient should be ongoing during the set up for intubation;
2. Select and assemble ET tube as standard procedure. Do not use a metal standard endotracheal tube stylette.
3. Lubricate the distal end of the ET tube using water soluble lubricant;
4. Select and assemble laryngoscope and blade per standard procedure;
5. Insert the laryngoscope into the patient's mouth and identify the airway noting the Airway Grade using the Cormack-Lehane Scale as described above;
6. Insert the introducer into the airway with the tip oriented anteriorly. A "clicking" may be felt as the bent tip passes over the rings of the trachea. Upon further passage of the introducer, a "hold up" or increased resistance may be noted. This implies that the tip is in the lower airway. Take care not to forcefully advance the introducer as it can cause trauma to the lower airways. A lack of "hold up" suggests that the introducer is in the esophagus.
7. Thread the ET tube over the introducer while maintaining the laryngoscope in place to displace the tongue;
8. Insert the ET to standard depth based on the size of the patient;
9. Remove the introducer;
10. Ventilate the patient using the BVM;
11. Confirm ET placement by using a waveform capnography device and confirm equal breath sounds by auscultation. Alternatively, in a patient without a pulse, the esophageal intubation detection (EID) device may also be used to confirm placement;
12. Secure ET Tube;

13. Continue to monitor the patient for proper tube placement throughout pre-hospital treatment and transport (e.g. lung sounds, waveform capnography, or esophageal intubation detection device). Waveform capnography should be used on all patients with an advanced airway;
14. Document the on the PCR the Airway Scale Grade (1 to 4), depth of ET tube placement, and ET tube securing device.

E. TROUBLESHOOTING AND ADDITIONAL INFORMATION

1. If you are unable to advance the ET tube into the trachea, withdraw the ET tube several centimeters and rotate the ET tube 90 degrees COUNTER clockwise to turn the bevel of the ET tube posteriorly and re-advance the tube.

IV. EDUCATION AND CONTINUOUS QUALITY IMPROVEMENT

Advanced Airway Management is viewed as a critical life saving skill. However, field intubations are becoming less frequent. Therefore, ongoing education is essential to maintain proficiency.

In order to maintain paramedic competency with Advanced Airway Maneuvers; the ALS Provider will provide annual training. The training will be a minimum of four (4) hours in duration annually. The training must provide both didactic instruction and include a skills portion showing proficiency in all relevant airway tools. At a minimum the following topics will need to be addressed:

- Anatomical features of the airway;
- The use of the Cormack-Lehane Scale to identify the classifications of patients with difficult airways;
- Patient preparation for and the use of BLS and ALS airway adjuncts to include, but not limited to, oropharyngeal (OPA) and nasopharyngeal (NPA) airways, adult and pediatric endotracheal intubation, use of the King Airway™, and the intubation of difficult airways using the endotracheal tube inducer (bougie).

The Advanced Life Support (ALS) Provider will submit proof of training to the EMS Agency within thirty (30) days of class completion.

The ALS provider will also perform an airway management skill proficiency evaluation on all paramedics to be held on a quarterly basis. The skill proficiency evaluation will include all airway adjuncts to include but not limited to: OPA insertion, NPA insertion, an intubation on an adult and pediatric mannequin, use of the ET tube introducer, and use of the King Airway™. The ALS Provider will submit proof of training to the EMS Agency within thirty (30) days of class completion.

A. The ALS Provider Medical Director shall construct airway training curriculum using the information above for their Agency. Prior to any training the educational material will be submitted to the EMS Agency for review.

B. Any adverse outcomes will be reported via Field Advisory Report (FAR) to the Medical Director of the Program, the Program CQI Coordinator, and the EMS Agency within 24 hours. These calls will be investigated and the outcome of the investigation will be reported to the Process Improvement Committee. The information to be reported is: Date of occurrence, the nature of the adverse outcome, what can be done to prevent the problem again.

C. ALS Providers may be requested to report the number of uses of Advanced Airway Maneuvers for the quarter during the quarterly Process Improvement Committee Meeting. The report will include (at a minimum) the total number of intubations attempted and completed, clinical indications for intubation, type of airway management and proportion of first pass success (i.e. % of patients intubated successfully on first attempt). Additionally, compliance of documentation in relation to Policy 8100, Respiratory-2, Verification of Out-of-Hospital ET Tube Placement will be tracked and reported.

D. ALS Providers will track individual paramedic statistics for use of the Advanced Airway Maneuvers. This information will be available for the EMS Agency and the Process Improvement Committee to review when requested.

E. ALS Providers will maintain records to document training in the use of Advanced Airway Maneuvers. These records will be sent to the EMS Agency upon request within 30 days.

//////////////////////////