



Procedure 704: Advanced Airway Management

Revision 4/20/22
Effective 9/1/22

- ❖ The following procedures are to be used in the care of patients for whom airway management is indicated. The equipment and procedures listed are provided as a guideline for managing airways in patients. Also listed are documentation standards that are to be utilized when charting these procedures. Patients requiring positive pressure ventilation should be ventilated using the most appropriate adjunct. This may include endotracheal intubation, supraglottic airways (I-Gel) or Bag Valve mask. See *Reference 805: Managing Airway and Ventilation*
- ❖ Endotracheal Intubation (ETI)
 - Authority for this policy is noted in the California Administrative Code, T22, Div. 9, Section 100145 (a) 1 (C). This policy outlines the criteria for use of this selected procedure in Santa Cruz County.
 - Indications for Endotracheal Intubation
 - Cardiac Arrest
 - Respiratory Arrest
 - Severe respiratory failure with impending respiratory arrest
 - Unstable airway or impending airway obstruction
 - Contraindications for Endotracheal Intubation
 - Pediatric patients \leq 12 years old or less than 36 kg
- ❖ Use of Midazolam
 - **Midazolam** may be used as an adjunct to intubation in those patients who need advanced airway management, but are unable to be managed due to combativeness, clenching, trismus, etc.
 - In these cases, **Midazolam** is a STANDING ORDER and may be used without first contacting the Base Hospital.
 - Nevertheless, in ALL CASES where **Midazolam** is used, early notification of the Base Hospital is advised. If unable to manage a patient's airway after initial dose of **Midazolam**, consider Base Hospital contact for subsequent doses. Maximum initial dose 5mg IVP/IO or 10mg IM. Do not exceed 5mg in elderly patients.
- ❖ Notes
 - No more than three (3) intubation attempts per patient.
 - Intubation of cardiac arrest patients should be performed during continuous compression. For patients with pulses, no more than 15 seconds is allowed for an intubation attempt. If endotracheal intubation is unsuccessful after 15 seconds, ventilate before next attempt.
 - If a patient should regain consciousness while intubated, extubate if such treatment is deemed medically safe and appropriate. Contact Base Hospital for chemical restraint if needed.



- Nasotracheal intubation is not authorized.
- Placement of a c-spine immobilization collar is required on all patients who have been intubated.

❖ Definitions of Intubation Procedure

➤ ATTEMPT

- An ETI attempt is when you place the tip of the endotracheal tube (ETT) past the plane of the patient's teeth. Until the tip of the ETT has passed the plane of the teeth there has been no attempt made. Once an attempt is made, it must be documented in the PCR as SUCCESSFUL ("S") or UNSUCCESSFUL ("U"). An examination of the airway is NOT an attempt. In most cases, it is simply an examination, or in some cases, a useful method of assisting with suctioning of the airway.
- SUCCESSFUL- "S": A successful ETI is one in which you witness:
 - The ETT pass through the vocal cords.
 - Upon ventilation, no abdominal or epigastric sounds are heard, and
 - Upon auscultation, bilateral breath sounds are heard.
 - You must document why your ETI is successful. An example of this would be "ETI successful after seeing the ETT pass through the vocal cords, confirmed with good bilateral lung sounds and end-tidal CO₂ device applied." In all cases of ETI, documentation of end-tidal CO₂ use is mandated.
- UNSUCCESSFUL- "U": An unsuccessful ETI attempt is when you are unable to place the ETT. Common reasons for inability to intubate include:
 - Inability to visualize landmarks.
 - Intubation attempt exceeds 15 second time limit.
- You must document why your ETI was unsuccessful. An example of this would be: "unable to visualize cords secondary to emesis; negative end-tidal CO₂ confirmation; clenched teeth, or esophageal placement."

❖ Principles Regarding Successful Placement and Confirmation of ET Placement

- Continuous waveform capnography is required for initial verification and throughout the duration of any endotracheal intubation.
- Any four of the following airway verification checks will be reviewed prior to and checked after all intubation attempts.
 - Manual checks:
 - Visualizing the tube passing through the patient's vocal cords.
 - Noting tube condensation or fog with ventilation.
 - Noting chest rise and fall with ventilation.
 - Noting the presence of breath sounds bilaterally.
 - Noting the absence of gastric sounds with ventilation.



- Use of an esophageal detection device.
- Reconfirmation of ETT position should be done in all patients when their clinical status changes, or when there is any concern about proper tube placement.
- Pulse oximetry and esophageal detector devices are not as reliable as end-tidal CO₂ devices in patients who have adequate tissue perfusion.
- Placement of a c-spine immobilization collar on all patients who have been intubated is required in instances where the collar fits correctly.
- ❖ Skill Maintenance
 - Maintaining a high level of ETI skill proficiency is a priority in Santa Cruz County's CQI Program. Periodic reviews of paramedic intubations are ongoing and include documentation of ETI attempts and successes. Annual manikin training may be required to maintain County accreditation.
- ❖ Supraglottic Airway Device (I-Gel)
 - Indications for an I-Gel.
 - The I-Gel is to be used in instances where endotracheal intubation is otherwise indicated. The provider has a choice of which airway device to use. The I-Gel may be preferred over endotracheal intubation when a difficult intubation or a delayed intubation is anticipated. Placement of an I-GEL in an adult or pediatric* patient is a STANDING ORDER for EMTs and medics trained in its use. It may be done prior to establishing contact with the Base Hospital according to the following indications:
 - Cardiac Arrest.
 - Respiratory Arrest.
 - Severe respiratory failure with impending respiratory arrest.
 - Unstable airway or impending airway obstruction.
 - *For patients < 36kg, BVM ventilation is the preferred method of ventilatory management. If BVM ventilation is unsuccessful or impossible, an SGA device may be placed
 - The I-Gel SGA device is carried in 7 sizes determined by the patient's weight:

Size	5	4	3	2.5	2.0	1.5	1.0
Weight (kg)	>90kg	50-90kg	30-60kg	25-35kg	10-25kg	5-12kg	2-5kg
 - Procedure
 1. The patient should be in the sniffing position. The chin should be gently pressed down/inferior before proceeding to insert the I-Gel device.
 2. Introduce the leading soft tip into the mouth of the patient in a direction toward the hard palate.
 3. Glide the I-Gel device downwards and backwards along the hard palate with a continuous, but gentle push until definitive resistance is felt.



4. Do not apply excessive force during insertion.
5. If unexpected resistance is met during insertion, apply jaw-thrust and slightly rotate the device.

▪ Use of Midazolam (Paramedics only)

- Midazolam may be used as an adjunct to I-GEL placement in those patients who need advanced airway management, but are unable to be managed due to combativeness, clenching, trismus, etc. In these cases, Midazolam is a STANDING ORDER and may be used without first contacting the Base Hospital. Nevertheless, in ALL CASES where Midazolam is used, early notification of the Base Hospital is advised. If unable to manage a patient's airway after initial dose of Midazolam, Base Hospital contact is required for subsequent doses.
 - ◆ Adult maximum initial dose 5mg IVP/IO or 10mg IM.
 - ◆ Pediatric dosing is 0.05mg/kg IVP/IO or 0.1mg/kg IM with a maximum initial dose of 5mg.

➤ Principles Regarding Successful Placement and Confirmation of I-GEL Placement

- The following four airway verification checks will be reviewed prior to and checked after all I-GEL placement attempts. These checks will be used in conjunction with waveform capnography, which is mandated on all patients in whom an I-GEL is placed.
- Manual checks:
 - Noting tube condensation or fog with ventilation
 - Noting chest rise and fall with ventilation
 - Noting the presence of breath sounds bilaterally
 - Noting the absence of gastric sounds with ventilation
- Reconfirmation of I-GEL position should be done in all patients when clinical status changes, or when there is any concern about proper tube placement.
- Pulse oximetry is not as reliable as end-tidal CO₂ devices in patients who have adequate tissue perfusion. Capnography may be utilized by EMTs to monitor I-GEL placement and patient response to treatment.

❖ Notes

- Use of oxygen powered ventilation devices to ventilate patients is EXPRESSLY PROHIBITED.
- Placement of the I-GEL shall follow all approved County procedural steps.
- The I-GEL may be placed initially, even without an actual endotracheal attempt, if the paramedic deems this is the timeliest way to manage the patient's airway.

❖ Skill Maintenance

- Periodic audits and regular training reviews will insure I-GEL skill maintenance.

❖ Documentation Requirements for Endotracheal Intubation and I-GEL Procedure

- All attempts to intubate (successful or unsuccessful placement) will be reported on the PCR.
- Required documentations elements are:



- eAirway.01 - Indications for invasive airway
- eAirway.02 - Date/Time Airway Device Placement Confirmation
- eAirway.03 - Airway Device Being Confirmed
- eAirway.04 - Airway Device Placement Confirmed Method
- eAirway.05 - Tube Depth
- eAirway.06 - Type of Individual Confirming Airway Device Placement
- eAirway.07 - Crew Member ID
- eAirway.08 - Airway Complications Encountered
- eAirway.09 - Suspected Reasons for Failed Airway Management
- Waveform capnography readings through duration of care. This is optional for EMT units not equipped with capnography.



Intubation Checklist

Incident Date:

Primary Paramedic:

Incident Number:

Secondary Paramedic:

Report Author:

Mark all criteria that have been met when intubating patient. At least four bolded criteria checked PLUS end tidal capnography improves chances of successful intubation.

Intubation Checks

comments

ET tube observed passing through the vocal cords.	<input type="checkbox"/>
No gastric sounds auscultated.	<input type="checkbox"/>
Bilateral lung sounds auscultated.	<input type="checkbox"/>
Chest rise observed with ventilation.	<input type="checkbox"/>
Mist noted in the tube with ventilation	<input type="checkbox"/>
Esophageal tube detector easily re-inflates, indicating ET tube placed in trachea.	<input type="checkbox"/>
If Visitor used, still photo or video recorded of intubation	<input type="checkbox"/>
ET tube checked every time patient is moved.	<input type="checkbox"/>

+

Continuous end tidal CO₂ monitoring established.

Primary Paramedic

Signature

Date