Jackson Hole Fire/EMS Operations Manual

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Title: **Procedure Guidelines: Endotracheal Intubation**
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ENDOTRACHEAL INTUBATION - OROTRACHEAL
(Procedure Guidelines)

SCOPE OF PRACTICE

Paramedics shall operate within their authorized Scope of Practice as limited to those skills and medication approved for use by the Physician Medical Director and Wyoming Office of EMS.

INDICATIONS:
Patients in cardiac, respiratory arrest, or in need of a definitive airway control that cannot be maintained by BLS maneuvers.

PURPOSE:
- Effective ventilating of patient
- Delivery of high concentration of oxygen
- Maintenance of airway patency
- Prevention of pulmonary aspiration
- Prevention of gastric insufflation
- Allowing more effective CPR

PRECAUTIONS:
- Do not use intubation as the initial method of managing the airway in any situation. Oxygenation and ventilation prior to intubation should be accomplished with appropriate BLS adjuncts and supplemental oxygen.
- During direct laryngoscopy, the jaw should be lifted with direct, upward traction by the laryngoscope. The teeth should not be used as a fulcrum for the laryngoscope
- Prepare suction beforehand. Intubation should take no more than 30 seconds to accomplish, preferably less than 15 seconds; do not loose track of time. If visualization of the cords is difficult, stop and re-ventilate before attempting intubation again. Consider using Endotracheal Tube Introducer (ETTI) or other adjunct.
- If more than 3 attempts are made, consider using supraglottic airway device (King LTsD, etc.).

TECHNIQUE:
USE APPROPRIATE BSI PRECAUTIONS

Prepare and organize equipment. Check power for video laryngoscope.

DIRECT LARYNGOSCOPY:

- Auscultate lung sound prior to intubation to establish a baseline
- Pre-oxygenate patient with BVM/OPA and high flow oxygen

- Place the head in a "sniffing position". Flex the patient's neck forward and extend the patient's head backward. Placing a folded towel under the patient's shoulder and head may be desirable
    - In case of possible spine injury, use a modified approach that emphasizes stabilizing the neck in a **neutral** position by the application of gentle in-line stabilization (utilizing another rescuer) during the attempted intubation
- Grasp the laryngoscope in your left hand, insert the blade into the right side of the patients mouth and use it to push the tongue gently to the left
- You may consider having an assistant apply gentle cricothyroid pressure to prevent pulmonary aspiration and to assist in visualization of the vocal cords
- Slowly advance the blade:
    - Straight blade going beneath the epiglottis
    - Curved blade going into the vallecula
- Advance the blade until the epiglottis and vocal cords come into view
- Suction any secretions as necessary
- The tube is inserted with the right hand into the right corner of the patient's mouth, and through the vocal cords. **If the vocal cords cannot be visualized**, discontinue your intubation attempt and re-ventilate before attempting intubation again
- Once the cuff has passed through the vocal cords 1-1.5 inches, remove the stylet (if used) from the endotracheal tube, ventilate into the tube to see if the chest rises, inflate the cuff, and check for proper tube placement using the following techniques:
    - Chest rise and fall with ventilation
    - Auscultation of bilateral lung sound and absence of gastric sounds
    - **End-tidal CO2 monitoring and waveform capnography. Use values to prevent hyperventilation. Ventilate to maintain appropriate ETCO2 levels according to patient condition and pathological demands.**
    - Condensation in the tube
    - Print and retain record of ETCO2 readings on cardiac monitor.
- Once placement has been confirmed, secure endotracheal tube using commercial tube holder or other method. Consider placement of OPA and/or C-Collar for limiting head motion to dislodge tube.
- In the event that the ET diameter is too large, do not force it through the vocal cords. This may cause permanent cord damage. Cease the attempt, re-oxygenate, and attempt with smaller ET size

VIDEO LARYNGOSCOPY (KING VISION):

- Choose the style of blade (standard or channeled) to be used
- Pre-oxygenate patient with BVM and high flow oxygen
- Auscultate lung sounds prior to intubation to establish a baseline
- Place the head in a "sniffing position". Flex the patient's neck forward and extend the patient's head backward. Placing a folded towel under the patient's shoulder and head may be desirable
    - In case of possible spine injury, use a modified approach that emphasizes stabilizing the neck in a **neutral** position by the application of gentle in-line immobilization (utilizing another rescuer) during the attempted intubation

CHANNELED BLADE	UNCHANNELED BLADE
The size #3 channeled blade is designed to be used with standard ETT sizes 6.0 to 8.0. **No stylet is needed, but use of ETTI in conjunction with channeled blade is recommended**.	The size #3 standard blade is used when integral guidance of the ETT is not indicated (for ETT sizes 6.0 to 8.0). **A stylet may be necessary; also consider use of ETTI.**
Lubricate the ETT, the guiding channel of the channeled blade **and** the distal tip of the Blade using a water soluble lubricant. DO NOT cover imaging element of the blade with lubricant.	Lubricate the distal tip of the standard blade. DO NOT cover imaging element of the blade with lubricant. ETT and stylet (ETTI) should be lubricated and the stylet (ETTI) pre-loaded into the ETT in the same manner as with other intubations where a stylet is used.

- Install the display into the blade. Listen for a "click" to signify that the display is fully engaged

with the blade. If patient's anatomy obstructs insertion of blade into mouth with display attached, attaching display may be postponed until insertion of blade has been accomplished following the guidelines below.

- POWER ON
- Insert blade into mouth
  - Open the patient's mouth using standard technique.
  - Suction the patient's airway prior to introducing the blade into the mouth as necessary.
  - Insert the blade into the mouth following the midline.
  - Take care to avoid pushing the tongue towards the larynx.
  - As the blade is advanced into the oropharynx, use an anterior approach toward the base of the tongue.
  - Watch for the epiglottis and direct the blade tip towards the vallecula to facilitate visualization of the glottis on the display's video screen.
- Place ETT

Advance the ETT **(Channeled Blade)**	Insert the ETT/Stylet **(Standard Blade)**
After visualization of vocal cords in the center of the King Vision display, advance the ETT slowly and watch for the cuff to pass through the vocal cords. **Note** that minor manipulation of the blade may be needed to align the ETT tip with the vocal cords.	After visualization of vocal cords on the King Vision display, insert the ETT with pre-loaded stylet into the mouth using a lateral approach. Once the ETT tip has reached the posterior pharynx, manipulate the ETT to direct its tip toward the vocal cords. Advance ETT tip just through the cords then retract the stylet prior to advancing the ETT into position in the trachea with the cuff below the cords. Fully remove the stylet.

- Confirm placement of tube using standard confirmation procedures outlined above.
  - Print and retain record of ETCO2 readings on cardiac monitor at time of tube placement and then upon transfer of patient care.
- Secure endotracheal tube using commercial tube holder or other method. Consider placement of OPA and/or C-Collar for limiting head motion to dislodge tube.

COMPLICATIONS AND HAZARDS:

- Esophageal intubation: common when you do not have direct visualization of the tube passing through the vocal cords. **Failing to recognize esophageal intubation is the most common and dangerous error**. If you cannot verify tube placement, remove the tube and oxygenate the patient until another intubation attempt can be made.
- Right bronchial intubation: if breath sounds are absent or diminished (usually on the left side) you have probably intubated the right main bronchus. Deflate the cuff on the ET tube and then pull the tube back very slowly until equal breath sounds are heard. Re-inflate the cuff and secure the tube
- Other complications that may arise include rupture of the trachea, pharyngeal-esophageal perforations, intubation of the pyriform sinus, and pneumothorax.
- Breaking the incisor teeth may be cause by too much pressure on them by the laryngoscope.
- Perforation with the stylet can be avoided by using stylets with a soft tip and not allowing the tip to protrude from the end of the ET tube.
- Tube size too large can lead to subluxation (incomplete or partial dislocation) of the arytenoid cartilage. If resistance is felt upon inserting the tube, then the tube is probably too large and should be removed.
- Vomiting and aspiration during traumatic intubation of patient with an intact gag reflex.
- Hypoxia and/or Hypercarbia due to prolonged intubation attempt(s).

NASOTRACHEAL INTUBATION

- Paramedic skill
- Perform per training and indications. See Procedure Guideline 17.2.15