

**INTERACTIVE SKILLS PROCEDURES***Airway and Ventilatory Management*

**Note:** Standard precautions are required whenever caring for the trauma patient.

**Note:** Scenarios are incorporated into the performance of some of these skills. The scenarios to be presented are included at the conclusion of the procedures. (See IX, Skills Scenarios.)

**I. OROPHARYNGEAL AIRWAY INSERTION**

- A.** This procedure is for temporary ventilation of the unconscious patient while preparing to intubate the patient.
- B.** Select the proper-sized airway. The correctly sized airway will extend from the corner of the patient's mouth to the external auditory canal.
- C.** Open the patient's mouth with either the chin-lift maneuver or the crossed-finger technique (scissors technique).
- D.** Insert a tongue blade on top of the patient's tongue far enough back to depress the tongue adequately, being careful not to gag the patient.
- E.** Insert the airway posteriorly, gently sliding the airway over the curvature of the tongue until the device's flange rests on top of the patient's lips. The airway must not push the tongue backward and block the airway.
- F.** Remove the tongue blade.
- G.** Ventilate the patient with a bag-valve-mask device.

**II. NASOPHARYNGEAL AIRWAY INSERTION**

- A.** This procedure is used when the patient would gag on an oropharyngeal airway.
- B.** Assess the nasal passages for any apparent obstruction (eg, polyps, fractures, hemorrhage).
- C.** Select the appropriately sized airway.
- D.** Lubricate the nasal pharyngeal airway with a water-soluble lubricant or tap water.
- E.** Insert the tip of the airway into the nostril and direct it posteriorly and toward the ear.
- F.** Gently insert the nasal pharyngeal airway through the nostril into the hypopharynx with a slight rotating motion, until the flange rests against the nostril.
- G.** Ventilate the patient with a bag-valve-mask device.

**III. BAG-VALVE-MASK VENTILATION—2-PERSON TECHNIQUE**

- A.** Select the appropriately sized mask to fit the patient's face.
- B.** Connect the oxygen tubing to the bag-valve device, and adjust the flow of oxygen to 12 L/minute.

- C. Assure that the patient's airway is patent and secured by previously described techniques.
- D. The first person applies the mask to the patient's face, ascertaining a tight seal with both hands.
- E. The second person ventilates the patient by squeezing the bag with both hands.
- F. The adequacy of ventilation is assessed by observing the patient's chest movement.
- G. The patient should be ventilated in this manner every 5 seconds.

#### **IV. ADULT OROTRACHEAL INTUBATION**

- A. Assure that adequate ventilation and oxygenation are in progress, and that suctioning equipment is immediately available in the event that the patient vomits.
- B. Inflate the cuff of the endotracheal tube to ascertain that the balloon does not leak, then deflate the cuff.
- C. Connect the laryngoscope blade to the handle, and check the bulb for brightness.
- D. Have an assistant manually immobilize the head and neck. The patient's neck must not be hyperextended or hyperflexed during this procedure.
- E. Hold the laryngoscope in the left hand.
- F. Insert the laryngoscope into the right side of the patient's mouth, displacing the tongue to the left.
- G. Visually identify the epiglottis and then the vocal cords.
- H. Gently insert the endotracheal tube into the trachea without applying pressure on the teeth or oral tissues.
- I. Inflate the cuff with enough air to provide an adequate seal. **Do not overinflate the cuff.**
- J. Check the placement of the endotracheal tube by bag-valve-to-tube ventilation.
- K. Visually observe chest excursions with ventilation.
- L. Auscultate the chest and abdomen with a stethoscope to ascertain tube position.
- M. Secure the tube. If the patient is moved, the tube placement should be reassessed.
- N. If endotracheal intubation is not accomplished within seconds or in the same time required to hold your breath before exhaling, discontinue attempts, ventilate the patient with a bag-valve-mask device, and try again.
- O. Placement of the tube must be checked carefully. A chest x-ray is helpful to assess the position of the tube, but it cannot exclude esophageal intubation.
- P. Attach a CO<sub>2</sub> colorimetric device to the endotracheal tube between the adapter and the ventilating device. Use of the colorimetric device provides a reliable means of confirming the position of the endotracheal tube in the airway.
- Q. Attach a pulse oximeter device to one of the patient's fingers (intact peripheral perfusion must exist) to measure and monitor the patient's oxygen saturation levels. Pulse oximetry is useful to monitor oxygen saturation levels continuously and provides an immediate assessment of therapeutic interventions.

**Airway and Ventilatory Management AIRWAY AND VENTILATORY MANAGEMENT****V. ADULT NASOTRACHEAL INTUBATION**

**Remember:** Blind nasotracheal intubation is contraindicated in the apneic patient and whenever severe mid-face fractures or suspicion of basilar skull fracture exist.

- A.** If a cervical spine fracture is suspected, leave the cervical collar in place to assist in maintaining immobilization of the neck.
- B.** Assure that adequate ventilation and oxygenation are in progress.
- C.** Inflate the cuff of the endotracheal tube to ascertain that the balloon does not leak, then deflate the cuff.
- D.** If the patient is conscious, spray the nasal passage with an anesthetic and vasoconstrictor to anesthetize and constrict the mucosa. If the patient is **unconscious**, it is adequate to spray the nasal passage only with a vasoconstrictor.
- E.** Have an assistant maintain manual immobilization of the head and neck.
- F.** Lubricate the nasotracheal tube with a local anesthetic jelly and insert the tube into the nostril.
- G.** Guide the tube slowly but firmly into the nasal passage, going up from the nostril (to avoid the large inferior turbinate) and then backward and down into the nasopharynx. The curve of the tube should be aligned to facilitate passage along this curved course.
- H.** As the tube passes through the nose and into the nasopharynx, it must turn downward to pass through the pharynx.
- I.** Once the tube has entered the pharynx, listen to the airflow emanating from the endotracheal tube. Advance the tube until the sound of the moving air is maximal, suggesting location of the tip at the opening of the trachea. While listening to air movement, determine the point of inhalation and advance the tube quickly. If tube placement is unsuccessful, repeat the procedure by applying gentle pressure on the thyroid cartilage. **Remember, intermittently ventilate and oxygenate the patient.**
- J.** Inflate the cuff with enough air to provide an adequate seal. Avoid overinflation.
- K.** Check the placement of the endotracheal tube by bag-valve-to-tube ventilation.
- L.** Visually observe chest excursion with ventilation.
- M.** Auscultate the chest and abdomen with a stethoscope to ascertain tube position.
- N.** Secure the tube. If the patient is moved, the tube placement should be reassessed.
- O.** If endotracheal intubation is not accomplished within 30 seconds or in the same time required to hold your breath before exhaling, discontinue attempts, ventilate the patient with a bag-valve-mask device, and try again.
- P.** Placement of the tube must be checked carefully. A chest x-ray may be helpful to assess the position of the tube, but it cannot exclude esophageal intubation.
- Q.** Attach a CO<sub>2</sub> colorimetric device to the endotracheal tube, between the adapter and the ventilating device. The use of this device provides a reliable means of confirming the position of the endotracheal tube in the trachea.
- R.** Attach a pulse oximeter device to one of the patient's fingers (intact peripheral perfusion must exist) to measure and monitor the patient's oxygen saturation levels. Pulse oximetry is useful to monitor oxygen saturation levels continuously, and provides an immediate assessment of therapeutic interventions.