Unit 12
Artificial Airways

GOAL

On completion of this unit, the student should comprehend the characteristics of artificial airways and the insertion procedures for simple artificial airways.

COMPETENCIES

1. Identify the structural design, tube markings and components of the following artificial airways:
   a. nasopharyngeal airway
   b. oropharyngeal airway
   c. oral/nasal endotracheal tube
   d. tracheostomy tube
   e. esophageal airway
2. Demonstrate insertion of the following simple artificial airways, including selection and assembly of necessary equipment:
   a. nasopharyngeal airway
   b. oropharyngeal airway
3. Describe the effect of endotracheal tube size and gas flow rate on ventilating pressure.
4. Correctly chart step #2.
5. Complete appropriate procedures in the clinical simulation lab.

EQUIPMENT

1. nasopharyngeal airways of various sizes
2. oropharyngeal airways of various sizes
3. nasal/oral endotracheal tubes of various sizes
4. tracheostomy tubes of various sizes
5. esophageal airway
6. intubation manikin
7. Xylocaine jelly
8. water-soluble lubricant
9. sterile 4 x 4 gauze pad
10. adhesive tape
EXERCISE A - ARTIFICIAL AIRWAY COMPARISON

1. Examine the artificial airways provided by your instructor. Note their size, shape, flexibility and structure. Is the airway a pharyngeal airway or an endotracheal airway? Use the spaces below to sketch each type of artificial airway.

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EXERCISE B - ENDOTRACHEAL AND TRACHEAL TUBE OBSERVATION

1. You will need an endotracheal tube and a tracheostomy tube.
2. Copy the markings from your tubes onto the drawings below. If your tubes contain additional parts not shown in the diagrams below, be sure to draw these parts in.
3. Label the following markings or parts if present on your tubes:
   a. cuff
   b. pilot balloon
   c. Murphy eye
   d. inner cannula
   e. outer cannula
   f. brand name
   g. 15 mm adaptor
   h. internal and external diameter
   i. radiopaque line
   j. depth markings
   k. mark indicating tube material is non-toxic
   l. flange
EXERCISE C - LARYNGEAL MASK AIRWAY (LMA)

1. Your instructor will provide you with an LMA. Examine it carefully and label the following parts on the drawing below:
   a. mask
   b. airway tube
   c. airway connector
   d. inflation tube
   e. inflation indicator balloon
   f. cuff
   g. aperture bars
   h. valve
EXERCISE D - SIMPLE AIRWAY PLACEMENT

1. Inserting an oropharyngeal airway on an adult manikin:
   a. Recognize airway obstruction.
   b. Wash hands.
   c. Remove any dentures or foreign objects from mouth.
   d. Position patient on his back.
   e. Select the proper size airway:
      1) Place the airway alongside the patient’s face.
      2) Determine proper length by noting the extension of the airway from center of mouth to angle of jaw.
   f. Hyperextend the patient’s neck using the head-tilt method.
   g. Open patient’s mouth using crossed fingers.
   h. Hold the airway so that the curve is opposite to the oral airway passage.
   i. Gently insert airway while simultaneously rotating 180° into position with the tip pointed down into the pharynx. Take care not to lacerate the palate as the airway is rotated.
   j. Note position of the airway:
      1) Flange should be resting against the patient’s lips; if beyond the lips, it is too large.
      2) Replace the airway if it is too large or too small.
   k. Assess effectiveness of relieving airway obstruction.
   l. Airway may be secured by a piece of tape across the top of the flange (without occluding the air passageway).
   m. Chart the above procedure on a charting form and approve it with your instructor.

2. Inserting a nasopharyngeal airway on an adult manikin:
   a. Recognize airway obstruction.
   b. Wash hands.
   c. Remove any dentures or foreign objects from mouth.
   d. Position patient on his back.
   e. Select the proper size airway:
      1) Place the airway alongside the patient’s face.
      2) Measure from tip of nose to tragus of ear plus 1 inch.
   f. Place water-soluble lubricant or Xylocaine jelly on a sterile 4 x 4 gauze pad.
   g. Coat the airway with the lubricant.
   h. Select the most patent nostril.
   i. Gently slide airway in nostril, parallel to the hard palate.
   j. Assess effectiveness of relieving airway obstruction.
   k. Assess patient’s acceptance of airway.
   l. Check for excessive bleeding in nasal passage.
   m. Chart the above procedure on a charting form and approve it with your instructor.
WORKSHEET

1. Which types of artificial airways can be used to:
   a. establish or maintain a patent airway?
   b. protect the lower airways from aspirated material?
   c. permit continuous mechanical ventilation?

2. Explain the function of the following parts of artificial airways:
   a. cuff
   b. inner cannula (tracheostomy tube)
   c. radiopaque line
   d. Murphy eye
3. Explain how an esophageal airway differs from an endotracheal airway.

4. Differentiate between a normal tracheostomy tube and a fenestrated tracheostomy tube.

5. How can the proper length for a nasopharyngeal airway be estimated?

6. Where will the tip of a properly positioned nasopharyngeal airway be resting?

7. What should the respiratory therapist do if a nasopharyngeal airway resists removal?