LESSON 4

ORAL, NASOPHARYNGEAL, AND NASOTRACHEAL SUCTIONING.

4-1. SUCTIONING

a. Suctioning is a common nursing activity performed for the purpose of removing accumulated secretions from the patient's nose, mouth, and/or tracheobronchial tree in order to maintain a patent (open) airway as well as to remove lung secretions that block gaseous exchange. Removal of these secretions can be carried out through the oropharyngeal (mouth and pharynx), nasopharyngeal (nose and pharynx), or nasotracheal (nose, pharynx, and trachea) routes. Artificial airways, such as an endotracheal tube (a tube inserted into the trachea through the nose or mouth) or a tracheostomy tube (a tube inserted through a surgical incision into the trachea), can also be used as routes for suctioning.

b. Suctioning is performed on patients who have lost control of their ability to swallow and to cough up secretions due to a stroke, unconsciousness, or disease process. The procedure should be performed ONLY when needed. Frequent suctioning causes trauma to the mucous linings of the respiratory tract and can result in hemorrhage and edema. Nasotracheal suctioning can also cause hypoxemia, infections in the lungs (pneumonia), atelectasis (collapsed lung), and cardiac arrest.

c. It is desirable to have the patient manage his own secretions. Postoperative patients must be turned and encouraged to cough and deep breathe frequently (usually every two hours) following surgery. This practice will be helpful in preventing postoperative complications such as pneumonia and reducing the need for suctioning.

d. When more than one route is used, either route may be performed first. Whenever the route is changed, however, the used catheter and gloves are discarded and a new catheter and new gloves are used for the new route. Sterile technique must be is used for all nasotracheal suctioning to prevent the introduction of "foreign" organisms (including numerous organisms normally found in the nose and pharynx) into the lungs.

4-2. PROCEDURES PERFORMED PRIOR TO SUCTIONING

a. Verify Need for Suctioning. The need for suctioning can be determined from the following sources.

(1) Physician's orders.

(2) Nursing Care Plan.

(3) The supervisor's directive.
(4) Local SOP.

(5) Personal observations. One or more of the following observations in a patient indicate a need for suctioning:

(a) Increased respirations accompanied by labored or difficult breathing.

(b) Moist, noisy, rattling, or gurgling sounds while breathing.

(c) Secretions drooling from the mouth and/or nose.

NOTE: The physician's orders, nursing care plan, or the supervisor's directive will dictate the frequency of suctioning, usually prn (as needed).

b. Perform a Patient Care Handwash. When suctioning, every effort must be made to prevent the introduction of pathogens into the lower airways. Clean technique and thorough handwashing are essential for suctioning of the oral and nasal cavities. Sterile technique is mandatory for deep suctioning in the tracheobronchial tree and suctioning through the endotracheal and tracheostomy tubes. Follow aseptic techniques for all suctioning of the airway in order to minimize the spread of microorganisms that are not normally found in the air passages.

c. Obtain the Necessary Equipment. Obtain the following equipment.

(1) Disposable suction equipment set. If such a set is not available, assemble the following:

(a) Sterile, disposable suction catheters. (Catheters are sized using the French scale: the smaller the number, the smaller the catheter. For example, 12 is smaller than 14 by this scale. These two catheter sizes are the most commonly used for suctioning the adult patient.)

(b) Liter flask of sterile saline or water.

(c) Sterile solution basin.

(d) Sterile gloves.

(2) Suction apparatus. Suctioning of the airway requires a source of vacuum. Most hospitals that have piped-in oxygen also have a piped-in vacuum source. When a piping system is not available, portable suction units must be used. Most portable suction used in hospitals units must be connected to an electrical source. Many portable units designed for field use, however, obtain their power from compressed gas (air, oxygen, or Freon) cylinders and do not need electrical power. Figure 4-1 shows two types of suction devices.
d. **Identify the Patient.** When you have orders to suction a patient, verify the patient's identity to make sure that you perform the procedure on the correct patient.

   (1) If the patient is conscious, ask him his name and check his bed card and hospital identification bracelet.

   (2) If the patient is unconscious, check the name on the bed card and on the hospital identification bracelet. Make sure that the name is the same on the card and the band.

   (3) In a field situation, check the patient's ID card or "dog tags."

e. **Explain the Procedure.** Explain the suctioning procedure to the patient to lessen his fears and gain his cooperation.

f. **Provide Privacy.** Place a screen or curtain around the patient's area or close the door if the patient is in a room.

g. **Position the Patient.** Place the patient in a semi-Fowler's position. This position is a semi-sitting position in which the patient manages secretions better and breathes easier. In some cases (such as spinal injuries), the patient will have to be suctioned without being moved.
h. **Check the Pressure on Suction Apparatus.**

(1) Turn on the suction apparatus.

(2) Place a thumb over the end of the suction tubing and observe the pressure gauge (figure 4-2).

(a) Suction pressure is usually expressed in inches (in) of mercury (Hg) on the portable unit and in millimeters (mm) of mercury (Hg) on the wall-mounted units. The recommended pressure settings for adult patients are 7 to 15 inches of Hg for the portable unit and 120 to 150 mm Hg for the wall-mounted unit.

(b) If the pressure is too low, the secretions cannot be removed. If the pressure is too high, the mucous lining may be forcibly torn away and pulled into the catheter openings.

(3) If the pressure is not within the recommended limits, notify the supervisor before continuing.

(4) Turn off the suction unit after the correct pressure has been verified.

![Figure 4-2. Checking pressure gauge of suctioning apparatus.](image-url)
i. **Prepare Materials.** Open the disposable suction set (if used) or prepare materials for suctioning.

   (1) Open the sterile solution basin on the bedside table.

   (2) Pour the sterile solution into the solution basin without contaminating the solution, basin, or sterile field.

   (3) Follow the package directions and open the suction catheter package to expose the suction part of the catheter.

   (4) Open the sterile gloves package. In a disposable kit, the catheter and a sterile glove may be wrapped together. If the gloves are wrapped separately from the suction catheter, open the catheter package first.

j. **Oxygenate the Patient.** Provide additional oxygen for the patient prior to suctioning in order to prevent further hypoxemia (oxygen deficiency in the blood). Suctioning removes available air and oxygen as well as removing accumulated secretions.

   (1) If the patient is on oxygen therapy, increase the percentage of oxygen to 100 percent for one minute.

   (NOTE: If the patient has a respiratory disease, check with the supervisor before increasing oxygen.)

   (2) If the patient is not on oxygen, have him take a minimum of five deep breaths.

   (3) If the patient is unable to breathe on his own, administer five breaths with a BVM system.

k. **Put on Sterile Glove(s).**

   (1) Some suction kits provide only one sterile glove. If only one sterile glove is available, put it on your dominant hand. Use the gloved hand to handle sterile items. The gloved hand must remain sterile throughout the procedure.

   (2) If two sterile gloves are available, put one glove on your nondominate hand. Then put the remaining glove on your dominate hand. Your gloved dominate hand will be used to handle sterile items and must remain sterile throughout the procedure. The glove on the other hand provides protection to you and is used to handle nonsterile items.

l. **Remove Catheter From Package.** Remove the sterile catheter from the package with the sterile (dominant) hand. Keep the catheter coiled to prevent contamination.
m. **Attach Catheter to Suction Tubing.** Attach the suction catheter to the tubing from the suction apparatus (figure 4-3). When performing this step, hold the suction catheter in the gloved dominate hand and hold the tubing from the suction apparatus in the nonsterile (ungloved) hand.

![Figure 4-3. Connecting a catheter to suction apparatus.](image)

n. **Test Patency of Catheter.**

1. Turn the suction apparatus on with the nonsterile hand.

2. Hold the catheter in the sterile hand and insert the tip in the basin of sterile solution.

3. Place the thumb of the nonsterile hand over the suction port and observe the fluid entering the drainage bottle. If no fluid enters the drainage bottle, the catheter is blocked. If this occurs, obtain another catheter and repeat the procedure.

**CAUTION:** Do not leave the catheter in the solution. Even antibacterial solutions can promote the growth of certain types of bacteria.)
4-3. SUCTIONING THE PATIENT

Suctioning should not be continuous for more than 10 to 15 seconds. Suctioning removes oxygen as well as secretions; therefore, longer periods of continuous suctioning may result in an oxygen deprivation that is too severe for the patient.

NOTE: If you hold your breath during the suctioning period, you will be more aware of the oxygenation level of the patient.) Procedures for suctioning are given in the following paragraphs.

a. **Oral Route.** The oral route is normally used with an alert, cooperative patient.

   (1) Tell the patient to cough. Coughing will help to bring up secretions to the back of the throat so they can be easily removed.

   (2) Insert the tip of the catheter into the patient's mouth without using suction.

      (a) Be aware that advancing the catheter too far into the back of the patient's throat may stimulate his gag reflex. This could lead to vomiting and aspiration of the stomach contents.

      (b) If an oropharyngeal airway is in place, insert the catheter alongside the airway, then back into the pharynx.

   (3) Apply suction by placing the thumb of the nonsterile hand over the suction port. Aspirate secretions from the back of the throat, along the outer gums and cheeks, and around the base of the tongue. Do not apply continuous suctioning for more than 10 to 15 seconds.

   (4) Withdraw the catheter using a rotating motion. This prevents sucking mucous membrane tissue into the catheter.

   (5) Clear the catheter by inserting the tip in the sterile solution and suction the solution through the catheter.

   (6) Repeat these procedures until all secretions have been aspirated.

NOTE: Allow the patient to rest between suctionings and reoxygenate the patient before each suctioning.

   (7) Discontinue suctioning when the patient's breathing efforts become less labored and difficult; and when the noisy, rattling, or gurgling sounds are no longer heard. In some patients, the complete absence of gurgling or rattling sounds cannot be achieved. If the sounds are still present after aspirations, notify the supervisor.
b. **Nasopharyngeal Route.** If the patient is uncooperative (clenches his teeth, bites, or chews the catheter), nasopharynx suctioning may be required to remove secretions from the back of the throat. This procedure is also used to remove secretions from the nose.

1. Estimate the maximum distance the catheter is to be inserted. Do this by measuring from the tip of the patient's ear to his nose.

2. Insert the suction catheter into one of the patient's nostrils without using suction.

   a. Generally, it is easier to insert a catheter into the right nostril than into the left, due to a lower incidence of septal deviation (a deformity of the wall separating the two nasal cavities, causing a partial or complete blockage of the nostril).

   b. If an obstruction is met, remove the catheter and try the left nostril.

   c. If an obstruction is still met, remove the catheter and obtain assistance from your supervisor or other appropriate personnel.

3. Advance the catheter quickly and gently about 3 to 5 inches (but no more than the estimated maximum distance) into the nostril without using suction.

4. Apply suction by placing the thumb of the nonsterile hand over the suction port. Suction for no more than 15 seconds.

5. Withdraw the catheter using a rotating motion. This prevents sucking mucous membrane tissue into the catheter.

6. Clear the catheter by inserting the tip in the sterile solution and suction the solution through the catheter.

7. Repeat these procedures until the secretions have been aspirated and a patent airway restored. Allow the patient to rest between suctionings and reoxygenate the patient before each suctioning.

c. **Nasotracheal Route.** Nasotracheal suctioning is similar to nasopharyngeal suctioning with deeper (trachea) suctioning being accomplished.

1. Estimate the distance the catheter is to be inserted. Do this by measuring from the patient's nose to the tip of his ear, then to his larynx.

2. Lubricate the tip of the catheter by dipping it into the basin of sterile solution.
(3) Instruct the alert, cooperative patient to flex his head and stick out the tongue. This helps to keep the patient from swallowing and makes the catheter insertion easier.

(4) Gently insert the suction catheter into the nasopharynx without suctioning. (Remember, it is usually easier to insert the catheter into the right nostril.) If the catheter cannot be inserted into the nasopharynx through either nostril, remove the catheter and obtain assistance from your supervisor or other appropriate personnel.

(5) Quickly and gently advance the catheter into the trachea (figure 4-4). The insertion process may cause the patient to cough. Mild coughing is usually not a problem and may actually help in the insertion process.

Figure 4-4. Inserting catheter using nasotracheal route.
A Patient sticking out tongue. B Insertion completed.

(6) Suction secretions by placing the thumb over the suction port. Suction the patient for approximately 15 seconds.

(7) Observe the patient throughout the procedure for color change or increased pulse rate. Pulse rate increases with hypoxemia. Listen for changing breath sounds. As secretions are removed, breathing should become quiet again. Discontinue suctioning if severe changes in color or pulse occurs.

(8) After suctioning, remove your thumb from the suction port and withdraw the catheter using a slow, rotating motion.

(9) Clear the catheter as required between suctionings. This is accomplished by inserting the tip of the catheter in the sterile solution, applying suction, and allowing the solution to run through the catheter until the catheter is clear of secretions.

(10) Repeat suctioning until all secretions have been aspirated. Allow the patient to rest between suctionings and reoxygenate the patient before each suctioning.
4-4. PROCEDURES PERFORMED AFTER SUCTIONING

a. **Remove Catheter and Glove.** After the suctioning is complete and the catheter has been removed, turn off the suction apparatus and disconnect the catheter from the suction tubing. Discard the catheter into the contaminated trash receptacle. Remove your glove(s) and discard into the contaminated trash receptacle.

b. **Make the Patient Comfortable.** Provide for the patient's comfort by straightening and tightening bed linens, placing the patient in the semi-Fowler's position, raising the bedside rails (if indicated), and placing the call bell/light within easy reach of the patient.

c. **Dispose of Used Items.** Discard other disposable items into the trash receptacle. Clean and store nondisposable items in accordance with the local SOP and replenish supplies as needed.

d. **Wash Hands.** Perform a patient care handwash.

e. **Record Procedure in the Nursing Notes.** Record the time, patient's respiration rate, description of respirations (labored, noisy, etc.), procedure used (oral, nasopharynx, or nasotracheal), and the type and amount of secretions obtained. If you cleared the catheter between suctionings, remember to subtract the amount of saline solution used from the total amount of fluid in the drainage bottle in order to arrive at the amount of secretions actually obtained.

Continue with Exercises
EXERCISES, LESSON 4

INSTRUCTION. The following exercises are to be answered by completing the incomplete statement or by writing the answer in the space provided at the end of the question.

After you have completed all the exercises, turn to "Solutions to Exercises" at the end of the lesson and check your answers.

1. A common nursing activity performed to removing accumulated secretions from the patient's nose, mouth, and/or tracheo-bronchial tree is known as __________________________.

2. Name five complications which can be caused from nasotracheal suctioning:
   ______________________________________________________________________
   ______________________________________________________________________
   ______________________________________________________________________
   ______________________________________________________________________
   ______________________________________________________________________

3. What two sizes of catheters are most commonly used for suctioning adult patients?
   ______________________________________________________________________

4. Why is it important to explain the procedure to the patient?
   ______________________________________________________________________
   ______________________________________________________________________

5. The position in which the patient manages secretions better and breathes easier is known as the ________________________________ position.
6. How can you check the pressure of the suctioning apparatus?

7. What is the recommended suction pressure setting for adult patients?
   a. On the portable unit, it is ________________________________.
   b. On the wall-mounted unit, it is______________________________.

8. If the pressure is not within the established limits, you should

9. List the steps necessary to test the patency of the catheter.

10. You are to perform an oral suctioning on a patient. The patient is uncooperative and clenches his teeth. What should you do?

11. The patient on whom you are performing oral suctioning is alert and cooperative. What can he do to help?
12. How do you clear the catheter?

____________________________________________________________________

____________________________________________________________________

13. For nasotracheal suctioning, how do you measure the maximum distance the catheter is to be inserted?

____________________________________________________________________

____________________________________________________________________

14. Which nostril usually allows easier entry of the catheter?

____________________________________________________________________

15. Observe the patient throughout the nasotracheal suctioning procedure for
____________________________________________________________________ or
____________________________________________________________________

16. You have two sizes of catheters available for nasotracheal suctioning--size 12 and size 14. You are told to use the larger of the two catheters. You should choose the:

  a. Size 12 catheter.
  b. Size 14 catheter.

**Check Your Answers on Next Page**
SOLUTIONS TO EXERCISES, LESSON 4

1. Suctioning. (para 4-1a)

2. Hemorrhage and edema.
   Hypoxemia.
   Infections in the lungs.
   Collapsed lung.
   Cardiac arrest. (para 4-2b)

3. Sizes 12 and 14 catheters. (para 4-2c(1)(a))

4. To lessen his fears and gain his cooperation. (para 4-2e)

5. Semi-Fowler's. (para 4-2g)

6. Place your thumb over the end of the suction tube and observe the pressure gauge. (para 4-2h(2))

7. a On the portable unit, it is 7 to 15 inches of Hg.
   b On the wall-mounted unit, it is 120 to 150 mm Hg. (para 4-2h(2)(a))

8. Notify the supervisor before continuing. (para 4-6h(3))

9. Turn on the suction apparatus with the ungloved hand. Hold the catheter in the gloved hand and insert the tip in a basin of sterile water. Place the thumb over the suction port and observe the saline entering the drainage bottle. (para 4-2n)

10. Insert the catheter into the patient's nose, without suction, 3 to 5 inches. Apply suction (no more than 15 seconds). Withdraw the catheter using a rotating motion. (para 4-3b)

11. Have him to cough and bring up secretions to the back of the throat so they can be easily removed. (para 4-3a(1))

12. Insert the tip in the sterile solution and suction the solution through the catheter. (para 4-3a(5))

13. Measure from the patient's nose to the tip of his ear, then to the larynx. (para 4-3c(1))

14. The patient's right nostril. (para 4-3c(3))

15. Color change or increased pulse rate. (para 4-3c(7))

16. b. (para 4-2c(1)(a))

End of Lesson 4