LESSON ASSIGNMENT

LESSON 4  Specimen Collection.

TEXT ASSIGNMENT  Paragraphs 4-1 through 4-7.

LESSON OBJECTIVES  When you have completed this lesson, you should be able to:

4-1. Identify the reasons for collecting samples of specimen.

4-2. Identify the procedures used to collect a sterile urine specimen from a male patient.

4-3. Identify the procedures used to collect a sterile urine specimen from a female patient.

4-4. Identify the procedures used to collect a midstream urine specimen.

4-5. Identify the procedures used to collect a 24-hour urine specimen.

4-6. Identify the presence of occult blood in a stool.

4-7. Identify the procedures used to collect a stool.

4-8. Identify the procedures used in collecting sputum.

SUGGESTION  Work the lesson exercises at the end of this lesson before beginning the next lesson. These exercises will help you accomplish the lesson objectives.
LESSON 4  
SPECIMEN COLLECTION  

4-1. OVERVIEW

A specimen is a sample or part of a thing, or of several things, taken to show or to determine the characteristics of the whole. The physician or laboratory specialist can determine causes of illnesses or conditions of patients by diagnosing samples. They can also provide preventive measures of certain illnesses by diagnostic process of cultures and samples. Specimen is often taken of urine, stool, blood, and for pathological examination of tissues, organs, and organisms.

4-2. COLLECTING A STERILE URINE SPECIMEN

a. General. A sterile urine specimen can be obtained either by inserting a straight catheter into the urinary bladder and removing urine or by obtaining a specimen from the port of an indwelling catheter using sterile technique. Urine from the dependent drainage bag should not be used for a specimen, since it is not fresh and would not reflect accurate test results. Residual urine, urine left in the bladder after voiding, can be measured at the time of catheterization. The patient voids, and catheterization is performed within 10 minutes. If more than 60 ml of urine remains in the bladder, this is residual urine and the patient may need to have an indwelling catheter inserted. The medical nurse must prepare the patient by explaining which type of urine specimen will be collected. It is important to relieve any anxiety by assuring the patient that there should be no discomfort during the procedure if the patient will remain relaxed: the patient should experience only mild pressure as the catheter is inserted and will feel nothing when urine is collected from the catheter port.

b. Important Points.

(1) Have all supplies ready for the patient to perform the procedure.

(2) Make certain the patient understands the proper procedure for collecting the urine specimen.

(3) Be certain the specimen is labeled correctly: patient's name, room number, date, physician, and type of specimen.

c. Procedure.

(1) Read physician's orders.

(2) Collect supplies.
(a) Sterile cotton balls.
(b) Antiseptic.
(c) Sterile specimen container.

3. Introduce yourself to the patient.

4. Identify patient by checking his identification band.

5. Explain the procedure to the patient.

6. Obtain the catheter port collection:

   (a) Clamp tubing just below catheter port for about 30 minutes (figure 4-1).
   (b) Return in 30 minutes and clean the port with alcohol prep.
   (c) Insert needle into port at 30-degree angle, and withdraw 5 to 10 ml of urine for a specimen (figure 4-2).

Figure 4-1. Clamp catheter port.

Figure 4-2. Insert needle into catheter port.
(d) Place urine in sterile specimen cup.

(e) Unclasp catheter.

(f) Label specimen, and send to laboratory with requisition.

(g) Document the procedure.

(7) Obtain straight catheter collection.

(a) Wash your hands and don sterile gloves, and prepare supplies, using sterile technique--wrap the edges of the sterile drape around the gloved hands.

(b) Place sterile drape under patient's buttocks (figure 4-3).

![Figure 4-3. Place sterile drape under buttocks.](image)

(c) Open the lubricant container; add antiseptic (usually iodine solution) to the cotton balls.

(d) Lubricate the catheter about 1.5 to 2 inches (3.5 to 5 cm).
d. Catheterize the Female Patient.

(1) To expose the meatus, place the thumb and forefinger of the nondominant hand between the labia minora. Spread and separate upward. Consider the gloved hand that has touched the patient to be contaminated (figure 4-4).

![Figure 4-4. Expose the meatus.](image)

(2) Maintain the position of the contaminated hand until urine is flowing.

(3) Pick up the forceps and secure a cotton ball saturated with antiseptic solution—use one cotton ball for each stroke.

(4) Bring the cotton ball down the center over the meatus towards the rectum; next cleanse each lateral area from superior to inferior.

(5) Deposit used cotton balls onto plastic cover.

(6) To insert a catheter into a female with sterile gloves pick up catheter and insert through urinary meatus 2 to 3 inches (5 to 7.5 cm). **DO NOT FORCE ENTRY OF THE CATHETER.** Discontinue the treatment if the patient has unusual discomfort or if there is continual resistance to the insertion of the catheter. Report the information promptly.

(7) When urine flows, place end of catheter in specimen cup.

(8) Place lid on urine cup and label; clean up supplies.

(9) Send specimen to lab with requisition and document the procedure.
e. Catheterize the Male Patient.

(1) To cleanse the penis, swab the center of the meatus outward in a circular manner. Continue, using a new cotton ball for each progressively larger circle (figure 4-5).

![Figure 4-5. Cleanse the penis.](image)

(2) To insert a catheter into a male, apply gentle traction and pull the penis straight up; slightly pinch the end of the penis and insert the catheter 15 to 20 cm (6 to 8 inches). To facilitate the more difficult passage through the male urethra, ask the patient to breathe deeply; then rotate the catheter slightly. **DO NOT FORCE ENTRY OF THE CATHETER.** Discontinue the treatment if the patient has unusual discomfort or if there is continual resistance to the insertion of the catheter. Report the information promptly.

(3) When urine flows, place end of catheter in specimen cup.

(4) Place lid on urine cup and label. Clean up supplies, send specimen to lab with requisition, and document the procedure.

4-3. COLLECTING A MIDSTREAM URINE SPECIMEN

a. General. A midstream specimen is a voided specimen collected under conditions of thorough cleanliness after approximately the first 30 ml of urine has been voided. The advantage of collecting a voided specimen in this manner is that if organisms appear in the urine, they are mostly from structures such as the bladder or kidneys rather than just surface contamination. Cleansing removes organisms from the urinary meatus. Voiding moves any residual organisms present in the urethra out with the beginning stream of urine.

b. Important Points. Specimens of urine should not be allowed to stand at room temperature before they are sent to the laboratory. Bacterial growth is likely to occur as well as alter other results of the urinalysis. The usual procedure is to store an aurum (gold) specimen in a refrigerator, if it is not taken directly to the laboratory. Specimens that are collected from multiple voidings are either refrigerated on the nursing unit or placed in a container with a chemical preservative.
c. **Procedure.**

1. Read physician's orders.
2. Collect supplies.
3. Introduce yourself to the patient.
4. Identify patient by identification band.
5. Explain procedure to patient.
6. Wash hands and don clean gloves.
7. If patient is able, allow patient to cleanse perineum with antiseptic solution. Separate the labia well on a female patient. Retract foreskin of an uncircumcised male. Use each cotton ball that is saturated with antiseptic solution one time only. If patient is unable to cleanse area, the nurse will assist with procedure.
8. Assist the patient.
   a. Begin to void into container about 30 ml; then place the sterile specimen container so the sides of the labia of the female do not touch;
   b. To stop flow, void a small amount into specimen cup; and
   c. Without stopping flow, finish voiding into toilet seat collector.
9. Secure the lid on the container.
10. Cleanse and return toilet seat collector, if applicable.
11. Label specimen appropriately.
12. Ensure that specimen is taken to laboratory with requisition.

4-4. **COLLECTING A TWENTY-FOUR HOUR URINE SPECIMEN**

a. **General.** Some tests require that the entire volume of urine from a 24-hour period be collected. The procedure for ensuring that the test can be performed accurately should be followed carefully.

   b. **Important Points.** Use strict sterile technique to prevent infection in the urinary system. Insert the catheter gently to prevent pain or discomfort, as catheterization should not be painful. Teach the patient to relax by deep breathing during catheterization. Answer the patient's questions about the procedure.
c. **Procedure.**

   (1) Read physician's order.

   (2) Wash hands.

   (3) Identify the patient.

   (4) Post "Do not disturb" signs on patient's door, bathroom door, and near patient's bed.

   (5) Explain procedure.

   (6) Instruct patient about the importance of collecting all urine for 24 hours.

   (7) Instruct patient not to place toilet tissue or fecal material in urine.

   (8) Have patient void when the 24-hour specimen collection is to begin; discard this voiding.

   (9) Place labeled container on ice if required. (Some agencies require refrigeration of all specimens. Others advocate that the urine container be placed on ice. For some collection procedures, such as the creatinine clearance test, refrigeration may not be necessary.)

   (10) Save all urine for the 24-hours, then place each voided specimen into the larger container with preservative.

   (11) Instruct patient to void a few minutes before the end of 24 hours; this urine is part of the 24-hour specimen.

   (12) Send specimen to lab promptly; be certain label includes date and time specimen started, patient's name, room number, and test ordered. If more than one container is necessary, make certain both are labeled and numbered.

4-5. **DETERMINING PRESENCE OF OCCULT BLOOD IN STOOL**

   a. **General.** The presence of blood in body waste is abnormal. Blood in the stool may be bright red, which indicates that the blood is fresh and that the site of bleeding is in the lower gastrointestinal tract. On the other hand, black-tarry-feces means the presence of old blood and that the site of bleeding is higher in the gastrointestinal tract. When blood is present in the stool but cannot be seen without the use of a microscope, it is referred to as **occult** or hidden. A **hemoccult test** detects occult blood in feces.
b. **Important Points.**

(1) Do not confuse hemorrhoidal bleeding with upper gastrointestinal bleeding.

(2) Meat-free diet may be ordered 3 days before the test.

4-6. **COLLECTING A STOOL**

a. **General.** Stool specimens are collected and examined for a variety of reasons including to determine the presence of infection or hemorrhage; to observe the amount, color, consistency, and presence of fats; and to identify parasites, ova, and bacteria. The medical nurse collects the feces, labels the specimen appropriately, and sends the specimen and laboratory request to the laboratory. Stool to be examined for parasites must be taken immediately to the laboratory in order for parasites to be examined under the microscope while alive. A stool specimen may also be collected from a colostomy or ileostomy.

b. **Important Points.**

(1) The medical specialist must know what type stool specimen is ordered and how to collect the specimen.

(2) Make certain the patient understands what is expected, and provide patient safety.

(3) A specimen to be examined for ova and parasites must be taken to the laboratory while still warm. Other stool specimens may be kept at room temperature.

4-7. **COLLECTING SPUTUM**

a. **General.** Sputum is mucus from the lung. A sputum specimen must come from deep in the bronchial tree. Expectoration from throat and mouth secretions cannot be used as a sputum specimen. Early morning is the best time to collect a sputum specimen because the patient has not yet cleared the respiratory passages. Many tests can be performed on sputum, such as a culture and sensitivity, cytological examination, and test for acid-fast bacillus. Some patients cannot expectorate a specimen and must have a pharyngeal suctioning to obtain sputum. Closed-method collection containers protect you from contamination from body fluids. The medical specialist explains the procedure and prepares the patient for the test.
b. **Important Points.**

(1) Oral hygiene should be provided after the procedure for patient comfort.

(2) Accuracy of test decreases if delivery of specimen to laboratory is delayed.

(3) Make certain the patient knows how to perform sputum collection.

(4) The nurse must be prepared to obtain the specimen by suctioning if the patient cannot cough.

c. **Procedure.**

(1) Read physician's orders.

(2) Collect supplies.

(3) Introduce yourself.

(4) Identify the patient by identification band.

(5) Explain procedure to patient.

(6) Wash hands and don gloves.

(7) Position patient in Fowler's position.

(8) Instruct patient to take three breaths and force cough into sterile container.

(9) Attach laboratory requisition.

*Continue with Exercises*
EXERCISES, LESSON 4

INSTRUCTIONS: Answer the following exercises by marking the lettered response that best answers the question or best completes the statement.

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

1. A specimen is a sample or part of a thing, or of several things, taken to show or to determine:
   a. The amount of impurities in a quantity of urine, stool, or blood.
   b. The kinds of impurities in the quantity of urine; stool; or blood; and the quality of stool, urine, or blood.
   c. The number or kinds of pathogenic organisms in a sample, or parts of tissues and organs.
   d. The characteristics of the whole unit or organism.

2. The patient may need to have an indwelling catheter inserted if he voids and more than _________ of residual urine remains in the bladder.
   a. 15 ml.
   b. 30 ml.
   c. 45 ml.
   d. 60 ml.

3. It is important to inform the patient that if he remains relaxed during the insertion of the catheter:
   a. The sharp pain will last only a short while.
   b. A mild sting can be expected.
   c. There should be no discomfort during the procedure.
   d. He will feel only mild pressure when urine is collected from the port of the catheter.
4. When collecting a sterile urine specimen, clamp just below the catheter for about _______ minutes.
   a. 15.
   b. 30.
   c. 45.
   d. 60.

5. When collecting a sterile urine specimen, slightly pinch the end of the penis and insert the catheter:
   a. 7.5 to 10 cm (3 to 6 inches).
   b. 15 to 20 cm (6 to 8 inches).
   c. 20 to 30 cm (8 to 11 inches).
   d. 25 to 45 cm (12 to 18 inches).

6. To insert the catheter into the female, with sterile gloves insert through urinary meatus:
   a. 1 to 2 inches (2.5 to 5 cm).
   b. 2 to 3 inches (5 to 7.5 cm).
   c. 3 to 5 inches (7.5 to 12 cm).
   d. 5 to 7 inches (12 to 17.5 cm).

7. Specimens of urine that are not taken directly to the laboratory are usually:
   a. Refrigerated.
   b. Discarded.
   c. Sealed in a sterile container.
   d. Shaken up.
8. The first step of the procedure for collecting a midstream urine specimen is:
   a. Identify the patient by identification band.
   b. Introduce yourself.
   c. Collect supplies.
   d. Read the physician's order.

9. When collecting a 24-hour urine specimen, post signs:
   a. On the patient's door, bathroom door, and on the stool.
   b. Near the bed, on the stool, and on the patient's door.
   c. On the stool, near the bed, and on the wall.
   d. On the patient's door, bathroom door, and near the patient's bed.

10. Bright red blood in the stool indicates that:
    a. The blood is fresh and the site of the bleeding is in the upper GI tract.
    b. The site of the bleeding is in the higher gastrointestinal tract.
    c. The blood is fresh and the site of the bleeding is in the lower GI tract.
    d. The blood is old and the site of bleeding is in the upper gastrointestinal tract.

11. The type of blood that can be found in the stool, but cannot be seen with the naked eye is called:
    a. Occult blood.
    b. Homocult.
    c. Gross blood.
    d. Edema.
12. Stool specimens are collected to determine the presence of:
   a. Infection.
   b. Bleeding.
   c. Fats.
   d. All of the above.

13. Stool specimens are collected to identify:
   a. Ova.
   b. Parasites.
   c. Bacteria.
   d. All of the above.

14. Sputum is:
   a. A sample of fecal material.
   b. Fluid from the uterus.
   c. Fluid from the lungs.
   d. Fluid from the mouth.

15. The patient who cannot produce sputum by himself must have the medical specialist nurse secure it by:
   a. Pumping.
   b. Suctioning.
   c. Thrusting.
   d. Catheterization.

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

1. d (para 4-1)
2. d (para 4-2a)
3. c (para 4-2a)
4. b (para 4-2c(7)(a))
5. b (para 4-2e(2))
6. b (para 4-2d(6))
7. a (para 4-3b)
8. d (para 4-3c(l))
9. d (para 4-4c(4))
10. c (para 4-5a)
11. a (para 4-5a)
12. d (para 4-6a)
13. d (para 4-6a)
14. c (para 4-7a)
15. b (para 4-7a)

End of Lesson 4