Promoting Urinary Elimination Ch. 30 pg. 560

Skill 30.1 Placing and Removing a Bedpan - written skill
Skill 30.2 Applying a Condom Catheter - written skill
Skill 30.3 Catheterizing the Female Patient - Skills test
Skill 30.4 Catheterizing the Male Patient - Skills test
Skill 30.5 Performing Intermittent Bladder Irrigation and Installation - written skill
Steps
Steps 30.1 Obtaining a Urine Specimen From an Indwelling Catheter - written skill
Steps 30.2 Removing an Indwelling Catheter- Skills Test
Steps 30.3 Continence Training- written skill

Chapter Objectives : Reminder! You must read prior to class . What I do not get to review in class you are responsible to know for your written & theory test.

Theory

1.  Summarize the structure and functions of the urinary system.
2.  Recognize the abnormal appearance of a urine specimen.
3.  Recommend three nursing measures to help patients urinate normally.
4.  Compare and contrast the purposes and principles of indwelling and intermittent catheterization.
5.  Summarize the rationale for using a continuous bladder irrigation system.
6.  Formulate different methods of managing urinary incontinence.

Clinical Practice

1.  Assess a patient's urinary status.
2.  Evaluate a urine dipstick test.
3.  Explain to a patient how to obtain a “clean catch” (midstream) specimen.
4.  Design a toileting regimen for an older adult.
5.  Prepare to insert an indwelling catheter using sterile technique.
6.  Manage catheter care on a patient.
7.  Formulate a plan to assist a patient in performing Kegel exercises.

Key Terms

Please take your time to review and learn the 26 key terms for this chapter as they will strengthen your theory, written and hands-on skill.

If you have any questions, please feel free to come see me during my office hours.

Overview of Structure and Function of the Urinary System

- **Learning Objective**: Describe the structure and function of the urinary system, including factors interfering with urinary elimination and age-related changes.

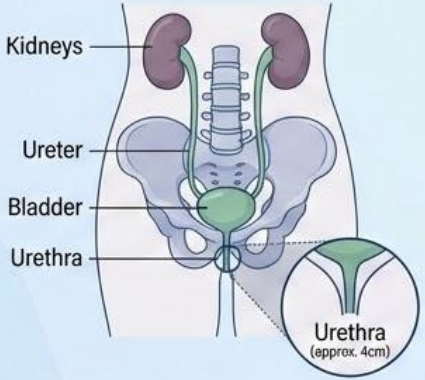
- **Learning Objective**: Describe the structures of the urinary system.

Which Structures Are Involved in Urinary Elimination?

The **kidneys** are bean-shaped; approximately 2½ inches wide, 5 inches long, and 1 inch thick ($6 \times 12 \times 3 cm^3$); and located at the level of L1 on each side of the spine (Fig. 30.1).

Structures of the Urinary System

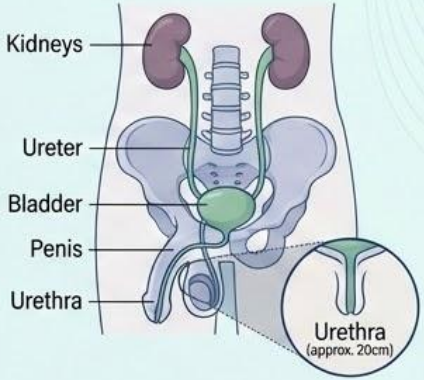
Female Urinary Tract

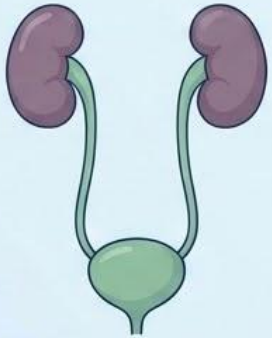


- **Urethra length:** 1½ - 2½ inches (4-6.5cm)
- Extends from bladder to urinary meatus (beneath clitoris, between labia)
- Internal and external sphincters control flow

Male Urinary Tract

- **Urethra length:** ~8 inches (20cm)
- Passes through penis to meatus at tip
- Shared pathway for urine and semen





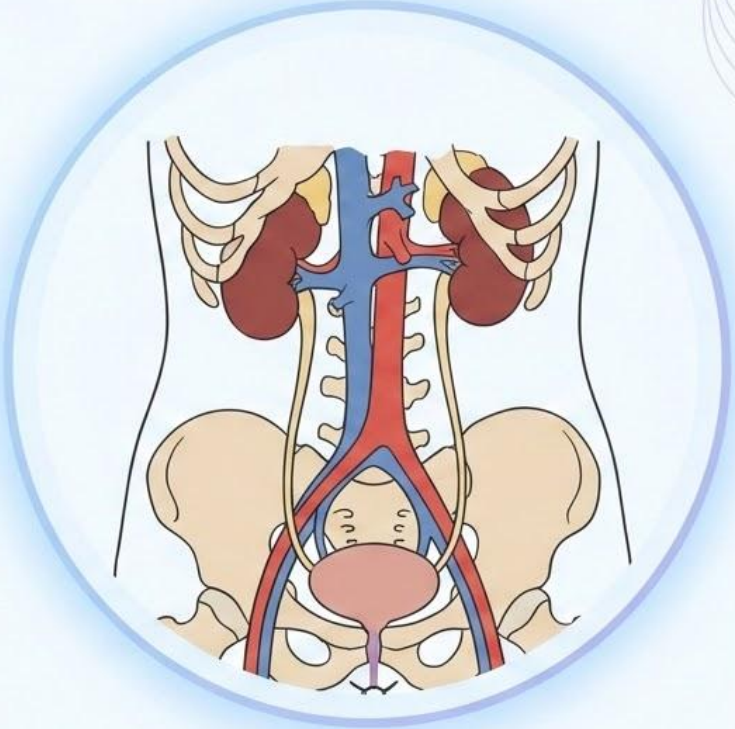
Kidneys: ~1 million nephrons each (working units). Glomerulus & tubules filter blood.

Ureters: 10–12 inches (25-30cm) long, connect kidneys to bladder.

Bladder: Hollow, muscular organ in lower pelvis.

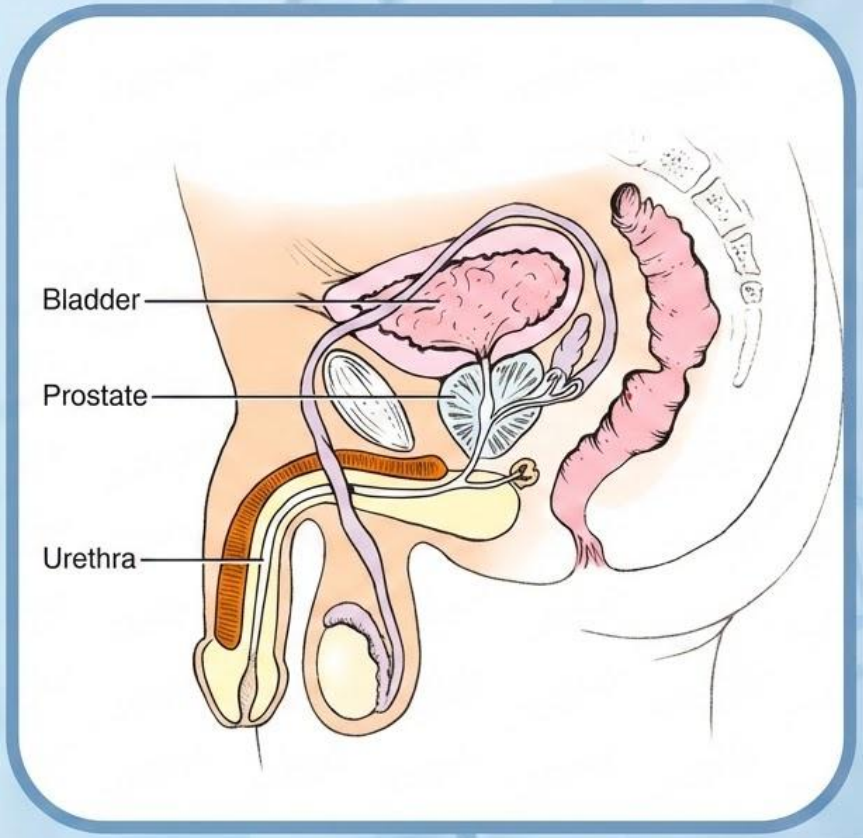
Female Urethra & Urinary Sphincters

- **Female Urethra:** Approximately 1½ to 2½ inches (4–6.5 cm) long.
- **Path:** Extends from bladder to urinary meatus.
- **Location:** Meatus is beneath clitoris, between labia folds.
- **Sphincter Control:** Internal and external urinary sphincters regulate urine flow.



Male Urethra & Urinary Meatus

- **Length:** Approximately 8 inches (20 cm) long.
- **Path:** Extends through the penis to the tip.
- **Exit Point:** The urinary meatus (Fig. 30.2).

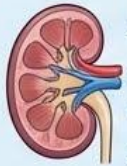


What Are the Functions of Urinary Structures for Elimination?

Learning Objective: Describe the functions of the urinary system.

• The kidneys filter blood through the nephrons, and metabolic waste and excess water are extracted. The kidneys regulate electrolytes in the body by excreting excess amounts and assist in the acid–base balance by retaining or excreting hydrogen ions (H+) and bicarbonate ions (). The waste products are diluted with water and excreted as urine. The tubules secrete, excrete, or reabsorb electrolytes, water, and other substances.

• The kidneys manufacture 1–1.5L of urine on average in 24 hours. Urine output is related to the amount of fluid intake and can vary considerably.



Filtration & Regulation (Kidneys & Nephrons)

- Filters blood, extracts metabolic waste & excess water.
- Regulates electrolytes by excreting excess.
- pH Assists in acid–base balance (retains/excretes H+ &
- Dilutes waste with water to form urine.
- Tubules secrete, excrete, and reabsorb substances.

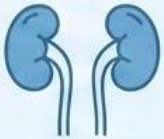
Urine Production & Output

1–1.5 L Average Daily Urine Production in **24 Hours**

Output is related to fluid intake and varies considerably.

Anatomy & Physiology of Lower Urinary Tract Elimination

Ureters & Bladder Storage



• Ureters carry uify urine from the kidneys to the bladder.

• The bladder stores urine and sends a signal to the spinal cord when it becomes full to signal the need for emptying. The signal usually occurs when the bladder contains between 250 and 400mL of urine.

• The bladder can hold 1000–1800mL of urine. The average urine output is 1000 to 1500mL a day.

• The urethra carries urine from the bladder to the outside of the body.

• The urinary meatus is the exit point for urination (expelling urine) and the entrance point for a catheter.

• The internal sphincter relaxes in response to the micturition (urination) reflex.

• Voluntary contraction of the external sphincter stops the expulsion of urine. Relaxing the external sphincter starts the flow of urine for excretion.

Bladder capacity: 1000–1800mL.
Average daily output: 1000–1500mL.

- • Internal sphincter relaxes reflexively (micturition reflex).
- External sphincter: voluntary contraction stops urine, relaxation starts flow.

What Factors Can Interfere With Urinary Elimination?

Learning Objective: Describe factors that can interfere with urinary elimination.

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What Factors Can Interfere With Urinary Elimination?

Learning Objective: Describe age-related changes that can interfere with urinary elimination.

Physiological Changes

Decrease in functioning nephrons & renal filtration rate...caused by aging, minor stress.

Decreased bladder muscle tone & capacity...causes nocturia, potential incontinence.

Incomplete bladder emptying & residual urine... risk of infection.

Hormonal & Lifespan Factors

Lower estrogen levels in women... tissue atrophy, risk of infection/incontinence.

Lifespan Considerations: Older Adult

Older Adult Male: Prostate hyperplasia... urinary retention, UTI risk. Report persistent retention for potential surgery.

Older Adult Infection Signs: Atypical presentation (no fever, low temp). Monitor for subtle mental status changes (alertness, orientation).

What Changes in the System Occur With Aging?

Learning Objective: Describe age-related changes that can interfere with urinary elimination.

General Age-Related Changes

- Decrease in functioning nephrons & reduced renal filtration rate. Minor body stress can cause decreased kidney function.

- Decreased bladder muscle tone & capacity causing nocturia. Potential incontinence (not normal part of aging).

- Incomplete bladder emptying & residual urine, predisposing to infection.

- Lower estrogen levels in women causing tissue atrophy in urethra, vagina, and bladder, predisposing to infection & incontinence.

Lifespan Considerations: Older Adult

Older Adult Male

Urinary retention likely due to prostate hyperplasia. Persistent retention may require prostate surgery to prevent kidney damage.

Older Adult - Infection Signs

May not manifest fever; temperature may be lower than normal. Subtle mental status changes (alertness, orientation) may be the first symptom. Monitor closely.

Normal Urinary Elimination

Normal Urinary Elimination

Learning Objective: Describe normal urinary elimination.

The frequency of urination varies. Infants void (excrete urine) from 5 to 40 times a day. The preschool child may void every 2 hours. The adult voids from 5 to 10 times a day. On average, the adult male voids 300–500mL each time, and the adult female voids 250mL. There should be an hourly urine output of at least 30mL. This reflects adequate kidney perfusion.

Infant
5-40 times/day

Preschool Child
every 2 hours

Adult
5-10 times/day

- Awakening
- After Meals

People usually have the urge to void on awakening in the morning, after each meal, at bedtime, and after drinking extra fluid. Urine production is decreased during sleep, and many people can sleep through the night without voiding, but voiding once during the middle of the night is considered normal.

- After Extra Fluid
- Decreased production during sleep. Voiding once during the middle of the night is considered normal.

Hourly Urine Output: at least 30mL (Reflects adequate kidney perfusion).

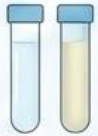
Characteristics of Normal Urine

Learning Objective: Describe characteristics of normal urine.

Color

- **Normal:** Shade of yellow, average straw-colored or amber. Darkens with concentration.
- **Abnormal:** Smoky red/dark brown (blood, myoglobin), Very dark amber (bilirubin).
- **Variations:** Medications, foods (beets), dyes.

Clarity



- **Normal:** Transparent or slightly cloudy.
- **Abnormal:** Cloudy (bacteria, large amounts of protein).

Odor

- **Normal:** Faint ammonia smell.
- **Abnormal:** Foul (infection),
  Acetone (ketones),
  Other (foods, vitamins).

Specific Gravity

- **Definition:** Thinness or thickness of urine.
- **Measurement:** Urinometer or chemical dipstick.
- **Normal Range:** 1.010 to 1.030 (affected by hydration status).

Health Promotion: How to Prevent Recurrent Cystitis

Cystitis and other UTIs may be avoided by:

FLUIDS & DIET

Increasing fluid intake to 2500–3000mL/day

Avoiding citrus fruits and juice (if prone to frequent reoccurrence) because they cause alkaline urine; bacteria grow more readily in alkaline urine

HYGIENE & HABITS

Always wiping the rectal area from front to back after a bowel movement. This is especially important in female patients

For the female patient, **avoiding wearing tight clothing** and **nylon pantyhose** that cause continual perineal moisture; by wearing cotton underwear

Bathing or showering daily (both females and males)

Emptying the bladder every 2–3 hours to prevent stasis and the potential for bacteria to multiply if present

SPECIFIC ACTIVITIES

Not sitting around in a wet bathing suit for extended periods

For the female patient, **avoiding the use of bubble baths** or feminine hygiene sprays

For the female patient, **emptying the bladder promptly after intercourse** and **drinking two glasses of water** to flush out microorganisms that may have entered the bladder

Alterations in Urinary Elimination

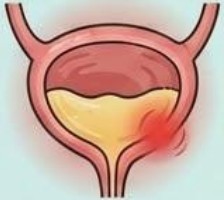
Overview & Learning Objective

Describe alterations in urinary elimination. Urine is normally sterile but provides a good medium for
Urine is normally sterile but provides a good medium for infectious organisms.

Common Causes

- Irritation
- Pathogenic bacteria (e.g., *E. coli*)
- Injury/Instillation
- Break in aseptic technique during catheter care

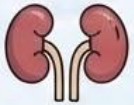
Focus on Cystitis (Bladder Inflammation)



Symptoms

- Frequency & Urgency
- Dysuria (painful urination)
- Burning
- Suprapubic pain/tenderness
- Foul-smelling urine
- Slight temperature elevation

Long-Term Risks & Goals



Recurrence Risks
Episodes of recurrent cystitis predispose to kidney infection and consequent kidney damage.

Healthy People 2030 Objective
Reduce the proportion of adults with chronic kidney disease.

Let's Review some of your key terms

Box 30.1 Alterations in Urinary Elimination Patterns

Anuria

Present when less than 100mL of urine is excreted in 24 hours. Caused by urinary suppression (kidneys not forming urine) or retention (urine not expelled).

Dysuria

(Painful or difficult urination) occurs when inflammation is present in the bladder or urethra, usually from infection or trauma.

Incontinence

(Involuntary release of urine) occurs with various pathologic conditions. Pelvic muscle (Kegel) exercises may help if due to decreased muscle tone.

Nocturia

Occurs when the person must get up to urinate during the night more than once or twice.

Oliguria

(Decreased urine output) occurs when output falls below 400 mL/24hours. May sign kidney failure, blockage, or retention.

Polyuria

(Excessive urination) occurs when output is greater than 1500 mL/24hours.
Associated with diabetes mellitus or diabetes insipidus.

Integrative Health Approaches

Cranberry Products to Prevent Bladder Infections

Recommended for prevention of UTIs.

Evidence-based practice indicates juice and tablets are particularly effective.

Probiotics for Urinary Tract Infections Across the Lifespan

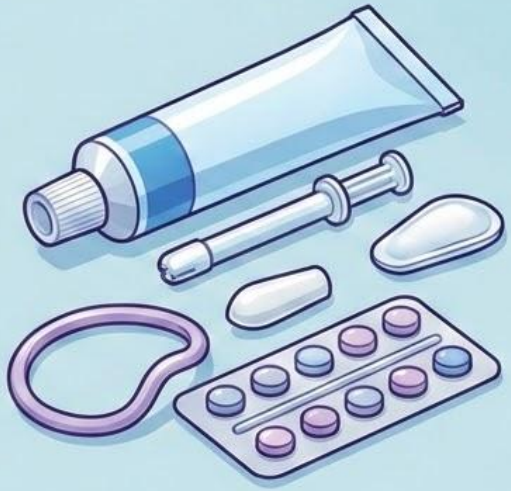
Promotes overall urinary microbiome health.

May be a better method than antibiotics for controlling UTIs (Kawalec & Zwolinska, 2022).

Lactobacillus crispatus vaginal suppositories may reduce recurrence in adult women (Shoureshi et al., 2023).

Vaginal Estrogen

Evidence-based practice indicates that if a postmenopausal woman experiences recurrent UTIs, she should be offered estrogen via vaginal creams, inserts, rings, or tablets to improve quality of life (Rosenblum, 2020).



Application of the Nursing Process/Clinical Judgment Measurement Model

Learning Objective: Apply the steps of the nursing process in the care of a patient with a problem of urinary elimination.

Assessment (Data Collection) - Recognize Cues

• **Learning Objective:** Determine the assessment of a patient with a problem of urinary elimination, including urine specimen collection.

Recognize Cues: Obtain a history of the patient's usual urinary elimination pattern. Inquire about any incidences of incontinence. Ask if there is a need to urinate frequently, burning when urinating, or a sense of urgency in finding a toilet. Does the patient frequently need to get up to urinate at night? Has the appearance of the urine changed? At what times of the day does the patient usually void? Does the bladder usually feel completely empty after urinating, or does the patient need to void again in less than 2 hours? How much fluid is taken in a 24-hour period? Is there a urinary catheter in place? Is there a history of urinary problems? What is the total 24-hour intake and output? Is it within expected ranges? Assess the patient's mobility to determine whether it is safe to allow ambulation to the bathroom unassisted. Note when the patient last voided. Each patient should void at least every 8 hours unless an indwelling catheter is in place. If voided amounts are small and intake is normal, gently palpate the bladder to see if it is distended. To do this, feel with the palm of the hand for a bulge indicating a full bladder above the symphysis pubis.

FIG. 30.3 Urine collection

Fracture Pan (left front) standard bedpan (right front) urinal (left rear) and in-toilet “nuns hat”)right rear

Urine Specimen Collection

Voided specimen for urinalysis

Instructions for Collection

- Use clean bedpan, urinal, or plastic “hat” in toilet.
- Provide patient privacy.
- Instruct female: Hold cup to surround urethra.
- Position: Slightly squatting or sitting.
- Collect approximately 1½ inches of urine.

Important Considerations

- Transport to laboratory within 5–10 minutes.
- Urine standing >15 minutes changes characteristics, affecting accuracy.

Box 30.2 for common abnormalities.

FIG. 30.4 Timing the reading of a urine dipstick.

Dipstick tests, containing chemical reagents, are routinely performed in most medical offices and outpatient clinics. They may test for a variety of components, including glucose, ketones, protein, blood, specific gravity, pH, nitrate, bilirubin, and leukocytes. To perform a dipstick test, follow the directions on the side of the bottle of test strips. The exact timing for checking each component is essential for accuracy of the result.

Box 30.2 Abnormalities Commonly Found in Urinalysis (Key terms) pg. 564

• Glycosuria (glucose in the urine) is present when there is too much glucose in the blood (hyperglycemia) or when the renal threshold for glucose is lowered for some reason.

• Proteinuria (protein in the urine) occurs at times of stress, when infection is present, after strenuous exercise, or when there is a disorder of the glomeruli.

• Hematuria (blood in the urine) occurs from bleeding somewhere in the urinary system.

• Pyuria (purulent exudate in the urine) occurs when there is a bacterial infection in the kidney or the bladder. Bacteria will be present in the urine in large numbers.

• Ketonuria (ketones in the urine) occurs when the patient is in ketoacidosis. This occurs in uncontrolled diabetes mellitus.

• Casts occur in increased numbers in the presence of bacteria or protein and indicate urinary calculi (stones) or kidney disease.

• Red blood cells in the urine greater than 0 to 2 cells/high-power field may indicate a stone, tumor, glomerular disorder, cystitis (bladder inflammation), or bleeding disorder.

• White blood cells in the urine mean there is an infectious or inflammatory process somewhere in the urinary tract.

• Bilirubin in the urine suggests liver disease or obstruction of the bile duct

Midstream (clean catch) urine specimen

Pg. 565 Patient Education

This procedure is used to obtain a specimen for a culture and sensitivity test when a UTI is suspected. The purpose is to obtain a specimen that is relatively free from external contamination.

How to Obtain a Midstream Urine Specimen

For the Female Patient

• Perform hand hygiene.

• Open the midstream kit and remove the lid of the specimen container, being careful not to touch the inside of the container. Place the lid upside down on the sink or counter.

• Sit on the toilet.

• Open the packets of cleaning swabs.

• With the index finger and thumb of the nondominant hand, spread the labia apart. The labia need to be held apart during cleaning and until the specimen is obtained.

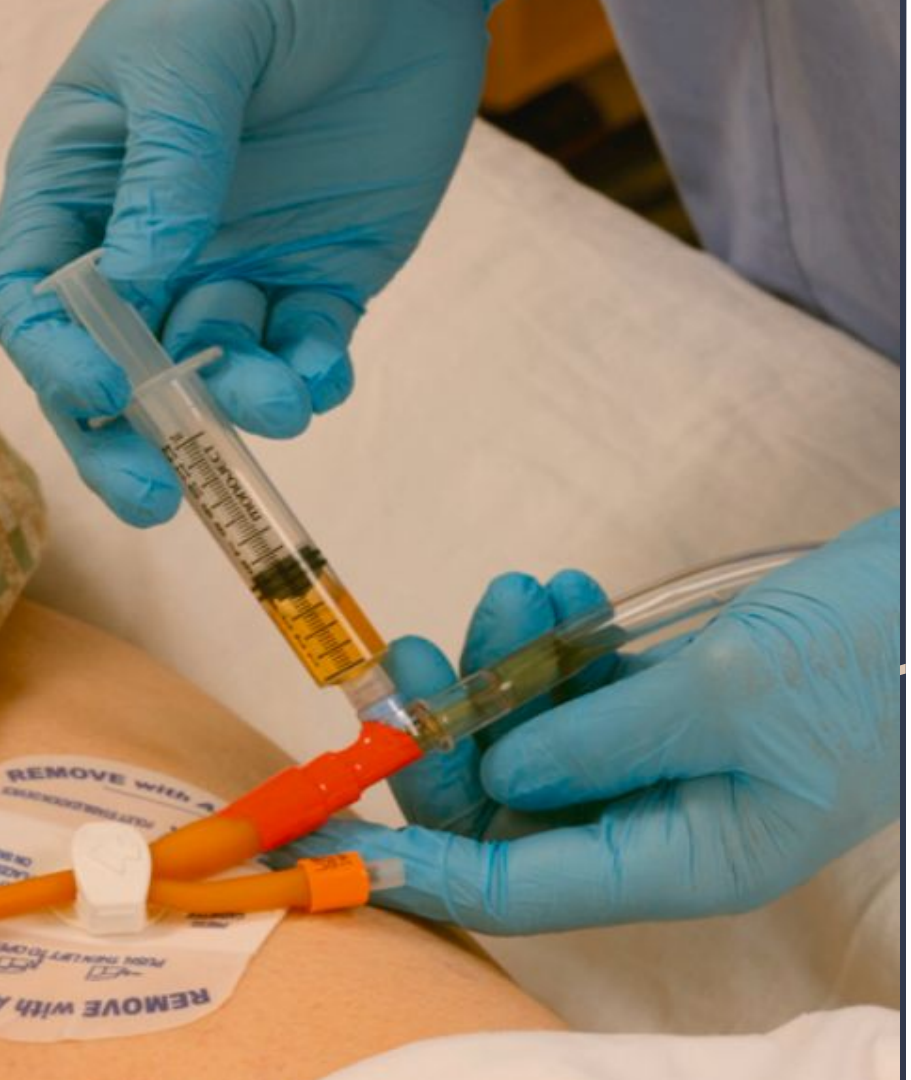
• Clean the right side of the area from front to back in one stroke; discard the swab.

• With a new swab, clean the left side of the area from front to back in one stroke; discard the swab.

For the Patient at Home

- After collecting the specimen, label the container with the name, date, time, and primary care provider’s name.

• Take the specimen to the medical office or laboratory or place it in a plastic bag and refrigerate until the specimen can be transported.



Specimen from an indwelling catheter

A specimen may be obtained from the self-sealing port of an indwelling catheter system (Fig. 30.5; Steps 30.1). Elaborated in next slide.

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FIG. 30.5 Aspirating urine from drainage port.

Steps 30.1 Obtaining a Urine Specimen From an Indwelling Catheter

If it is suspected that the patient is developing a urinary tract infection, the primary care provider may order a urine culture and sensitivity test. The specimen is taken from the port on the catheter or connecting tubing using sterile technique. The specimen should not be taken from the drainage bag or the tube used to empty the bag.

Review and carry out the Standard Steps in Appendix A.

Action (Rationale)

1. Clamp the tubing below the aspiration port with a clamp or double it over and secure with a rubber band. Note the time. Leave it clamped for 15–30 minutes per agency policy. (Ensures that there will be fresh urine near the port for the removal of the specimen.)

2. Perform hand hygiene and don gloves. Scrub the aspiration port of the drainage tubing with alcohol or antimicrobial swab. (Maintains asepsis and prevents contamination of catheter.)

3. Insert a 25-gauge needle (or a needleless connector) attached to a 5- to 10-mL syringe into the aspiration port at a 30- to 45-degree angle. (Use of small-bore needle and angle decreases coring. Needleless connectors are safer, but some aspiration ports may require a needle. Ask for assistance before starting the procedure.)

4. Aspirate 3mL of urine by gently pulling back on the plunger of the syringe. Remove the needle or connector from the port. Swab the aspiration port with the alcohol or antimicrobial pad. (Pulling hard on the plunger may collapse the catheter and prevent urine from flowing into the syringe.)

Urinary collection bag

This device is used to obtain a urine specimen from an infant or toddler. The skin is cleaned, and then the device is attached to the skin by an adhesive backing and placed so that it surrounds the genitalia. When urine sufficient for a specimen has been collected in the bag, the bag is carefully removed, and the urine is poured into a specimen container.

Strained specimen

If the patient is suspected of having a urinary stone, all urine is strained when voided. A fine sieve is typically used. If a stone is found, it should be saved and sent to the laboratory for analysis.

Data Analysis/Problem Identification

• Learning Objective: Recall problem statements for patients with problems of urinary elimination.

Analyze Cues and Prioritize Hypotheses: Problem statements commonly identified for patients with problems of urinary elimination are as follows:

• Altered urinary function

• Urinary retention

• Incontinence

• Altered body image

• Potential for infection

• Acute pain

• Chronic pain

• Potential for injury (to kidney from urine blockage)

• Altered self-care

• Potential for altered skin integrity

Planning

Learning Objective: Summarize considerations of planning care for patients with urinary elimination problems.

Generate Solutions: If a patient has been prone to UTIs, plan to increase fluids, unless contraindicated, and reinforce patient education regarding ways to prevent further UTIs. When you need a specimen, inform the patient in advance so that they are able to produce the urine. In planning care for your patient, remember to be culturally sensitive in helping your patient meet their toileting needs.

For the patient prone to urinary retention, note the amount of each voiding and palpate the bladder for distention if output falls below normal.

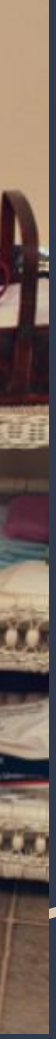


FIG. 30.6 Assistive Devices for toileting

Grab bars and raised toilet seat in home.If the patient needs assistive devices for toileting, place a bedpan and/or urinal in the bedside stand or obtain an order for the device needed. Discharge planning includes ensuring that arrangements are made before the patient goes home for devices such as grab bars by the toilet, a commode chair (chair with a container inserted to catch urine or feces), or a raised toilet seat

Older Adult

Plan additional time in your schedule; older adult patients ambulate at a slower pace and may need assistance with clothing fasteners before toileting.

Every patient who has an abnormality of urinary elimination should be placed on intake and output (I&O) recording. Place an I&O recording sheet by the patient's bed and record the I&O in the health record. All urine voided is recorded as output.

Please practice this in the clinical setting.

Why not insert an foley catheter immediately?

Keep in mind that urinary elimination is usually an independent function, and most people are embarrassed about needing assistance. The insertion of a catheter causes a disturbance in body image even if the catheter is temporary. Remember we should never resort to an invasive procedure as it may increase the risk of infection.

Implementation

Learning Objective: Select nursing interventions to assist patients with urinary elimination.

Take Action: Assisting patients with urinary elimination is a basic nursing function. Patients who can ambulate can be assisted to the bathroom to use the toilet. Others may use a commode chair for bowel or bladder elimination. It is usually placed by the bedside or a short distance away. The patient is transferred from the bed to the commode and then back again. The receptacle is emptied after each use. Patients who have difficulty with hip flexion or who have had a hip replacement will need to use a raised toilet seat. This is usually a frame device that fits over the toilet bowl and has a toilet seat attached to it at a higher point than usual.

An important Joint Commission National Patient Safety Goal is

To preemptively identify patients at risk for falls(Fall Risk)Patients who need assistance with toileting are likely to have physical or cognitive deficits that increase their fall risk. For example, a commode chair can tip over if an unsteady patient suddenly grabs one handle of the chair.

The older adult may experience incontinence because of mobility problems or neurologic deficits. Timed toileting can help keep these patients dry.

Patients on bed rest are provided with a bedpan for elimination (see Fig. 30.3).

Each patient has an individual bedpan stored in the bedside stand during the hospital stay. The female uses it for **both** urine and bowel elimination, whereas the male uses it for bowel elimination only. The bedpan should be covered if it must be carried outside the patient's room. Paper towels or a small hand towel may be used.

The fracture pan (see Fig. 30.3)

Used when patients are unable to sit on a regular sized bedpan. It is smaller in surface area and height compared with the regular bedpan. It is used for patients with musculoskeletal problems. The flat end with the wide rim is placed under the patient by separating the patient's legs and slipping the pan under the buttocks. The greater depth at the front of the pan helps keep the urine from spilling on the bed. Remove the pan carefully to avoid spilling urine. Skill 30.1 presents instructions on how to place and remove a bedpan. Let's turn to this skill and further discuss now.

A bariatric pan is available for patients

These have a weight capacity of 900–1200 lb. They come in wider and larger sizes with a nonstick surface and an anti-splash end. They can be tapered like the facture pan or bulky like the standard bedpan. Some are autoclavable and reusable. These are often easier to use than other bedpans and very effective for immobile patients.

For the ambulatory patient who needs urine output recorded, place a plastic “hat” device toward the front of the toilet bowl between the bowl and the seat. The inside is graduated to allow recording of the amount of output. After each voiding, empty, rinse, and replace the container so that it is ready for the next voiding.

Whatever method is used for urinary elimination, provide an opportunity for hand hygiene after toileting. Leave the patient comfortable, with side rails up and the call light within reach.

Assisting the Male With Use of Urinal

When a male requires assistance to use a urinal, the nurse assists the patient to stand beside the bed, if possible. The male urinal is a bottle with a round neck, a handle, rectangular sides, and a flat base (see Fig. 30.3). It may or may not have a lid. The patient who is confined to bed can use the urinal in any one of four positions: lying supine, lying on either the right or the left side, or lying in the Fowler position. Provide privacy by closing the door or curtain, donning gloves, lowering the side rail, and asking the patient to spread his legs. Hold the urinal by the handle and direct it at an angle between the legs so that the flat side rests on the bed. Lift the penis and place it well within the urinal. After urination, carefully remove the urinal and empty it immediately, measuring and recording the urine voided. Be certain that the penis is dry. Clean the urinal and return it to the proper place.

Sterile catheterized specimen

When a sterile specimen is ordered and the patient does not have an indwelling catheter in place, the patient is catheterized with a straight catheter (no balloon) that may be attached to a small collection bag, or the urine may be collected by placing the distal end of the catheter into a sterile specimen container.

24-Hour urine specimen

All urine voided during the 24-hour period is collected in the designated container and stored on ice if necessary. The laboratory analysis is done to determine the amount of a specified chemical that is excreted through the urine in a 24-hour period. If some urine is accidentally thrown out, the test is invalid and must be started over. Signs should be posted over the bed and over the toilet indicating that all urine is to be saved. The patient's bladder should be empty at the beginning and at the conclusion of the test. The patient empties the bladder just before beginning the collection, and that urine is discarded. At the ending time the patient voids, and that urine is added to the collection container. Check with the laboratory before beginning the test to be certain that the right container with preservative is on hand and to see whether the specimen must be kept cold during the 24-hour period (see Chapter 25).

Non - Invasives must do before deciding to catheterize

Helping a Patient Urinate

Patients often have difficulty urinating after surgery and anesthesia, childbirth, or other trauma to the perineum. All efforts are made to help the patient void naturally before resorting to catheterization (insertion of a tube into the bladder). Some methods of helping patients initiate the voiding reflex are:

• Run water in a nearby sink so that the patient hears the sound.

• Have the patient deep breathe, relax, and visualize a peaceful place with a bubbling brook. Encourage the patient to drink a cup of warm caffeinated coffee or tea.

• Help the male patient stand by the side of the bed (with a documented order).

• Have the female patient blow through a straw in a glass of water, causing bubbling, while sitting on the toilet or bedpan.

• Measure several cups of warm water, then pour the water over the perineum while the patient attempts to void. Subtract the measured amount from the total volume to determine how much the patient voided.

• With an order, gently but firmly use the Credé maneuver over the bladder (massage from the top of the bladder to the bottom by starting above the pubic bone and rocking the palm of the hand steadily downward). This is primarily used for patients with neurogenic urinary dysfunction.

• Obtain an order for a sitz bath and have the patient sit in the warm water. Encourage the patient to void while in the bath. Cleanse the perineum afterward.

Another non-invasive plan for your patient

When a patient cannot empty the bladder naturally for a period longer than 8 hours, a bladder scan may be performed using an ultrasound machine designed for that purpose (Fig. 30.7). If the bladder contains a large amount of urine, an order is obtained for catheterization. The bladder scan can also disclose the amount of residual urine in the bladder after voiding. This tells the primary care provider whether the bladder is emptying sufficiently. If needed, the care provider orders either a straight (“in-and-out”) catheterization or the insertion of an indwelling urinary catheter. Using a bladder scanner to determine the amount of urine in the bladder.

Other reasons for catheterization include:

• Preparing a patient for a surgical procedure or obstetric delivery.

• Keeping the genitalia and perineum clean after obstetric or surgical procedures.

• Dilating a urethral stricture (narrowed lumen).

• Splinting the urethra following surgery on the urethra (the catheter is inserted by the surgeon).

• Measuring the amount of residual urine in the bladder (also accomplished by using a portable ultrasound bladder scanner).

• Monitoring hourly urine output or obtaining exact measurements of total output.

• Performing irrigation or instillation and drainage of chemotherapeutic solutions into the bladder.

• Assisting with the re-toning of the bladder muscle after surgery on the bladder.

Yet another Non-invasive procedure for WOMEN

External Female Catheter System

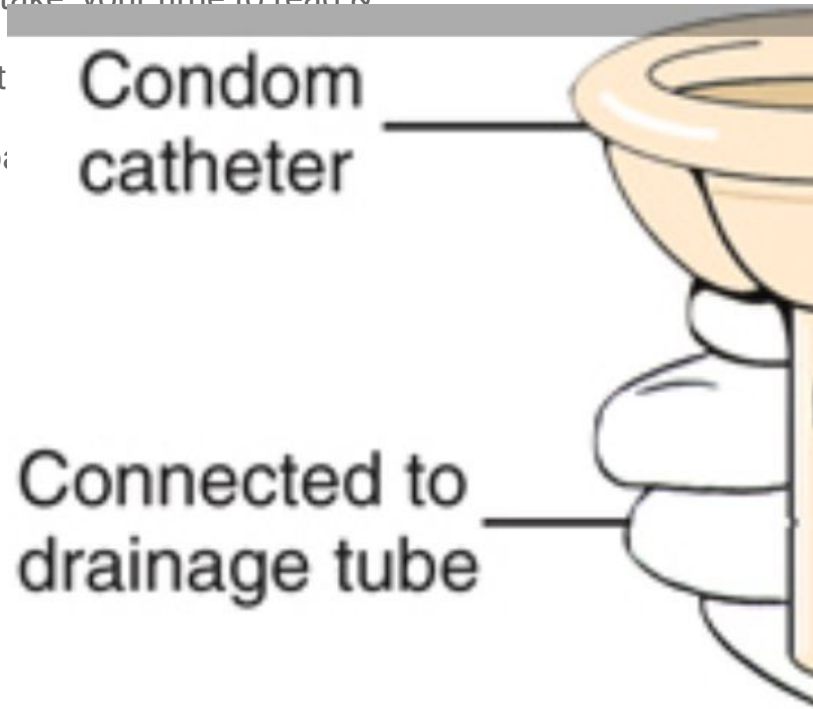
Females now have an alternative to indwelling urinary catheters. Several external catheter systems are used to assist with urinary incontinence or transitioning from indwelling urinary catheter to no catheter. These are suction device systems that are generally used when the patient is confined to bed or for overnight use. They have a fabric-encased tubing that is placed between the labia and connected to a suction device to continuously draw the urine away from the urinary meatus.

Male Non-invasive

Please take your time to read &

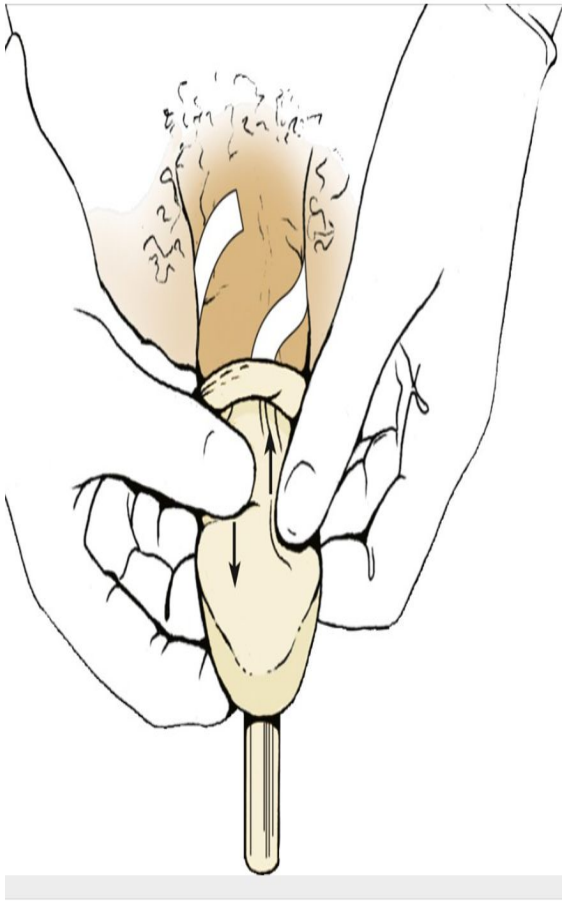
Underst

To prepa



Condom Catheters

Condom catheters should be considered as a measure to decrease the likelihood of CAUTI. Appropriate patients include incontinent men who can understand the purpose of the condom device and who do not have problems with postvoid residual or blockage at the base of the bladder



The Nurse's Role in Preventing Catheter-Associated Urinary Tract Infections (CAUTIs)

In performing catheterization and providing daily care, nurses should be aware that catheter-associated UTI (CAUTI) results in approximately one million cases per year in the United States (Werneburg, 2022). A CAUTI is defined as an infection of the urinary tract that occurs within 48 hours of catheterization or in a patient with an indwelling catheter. The duration of an indwelling catheter results in a 3%–7% daily risk for development of bacteriuria. In addition, Medicare and Medicaid no longer reimburse for this complication because CAUTI is viewed as an indicator of poor care (Shadle et al., 2021). Nursing interventions such as maintaining basic infection control procedures, including handwashing; using bladder ultrasounds; and placing condom catheters or other alternatives have been proven to reduce the number of UTIs. Another UTI-preventing intervention is the use of a checklist, which includes the reason for the catheter and the number of days that the catheter has been in place. Based on the checklist data, the nurses remind the care providers to consider removal of the catheter. Intermittent catheterization, condom catheters, and portable bladder ultrasound scanners are incorporated whenever possible.

Steps 30.3 Continence Training

When a patient is experiencing incontinence that is possibly correctable, continence training is implemented to try to correct the problem.

Action (Rationale)

1. Determine the cause of urinary incontinence and whether a continence program is appropriate. (Bladder training is not appropriate for all types of incontinence.)

2. Keep a record of actual voiding times for 3 days. (Provides data about patient's usual voiding times.)

3. Establish a 2-hour voiding schedule timed before patient's usual voiding times. (Having the patient void before the bladder overfills prevents incontinence.)

4. Encourage the intake of 2000–3000mL of fluid between awakening and 6:00 p.m. (Provides sufficient urine for hydration and scheduled voidings. Stopping liquids at 6:00 p.m. decreases nighttime incontinence.)

5. Toilet just before bedtime; do not awaken for toileting except before the time when the patient has been consistently incontinent during the night. (Empties bladder and prevents nighttime incontinence.)

Box 30.4 Types of Incontinence

Box 30.4 Types of Incontinence• Urge incontinence: Involuntary loss of urine in response to a strong sensation of need to empty the bladder (urinary urgency).

• Stress incontinence: Urethral sphincter failure, often associated with increased intra-abdominal pressure, as occurs with sneezing, laughing, coughing, and aerobic exercise.

• Mixed incontinence: A combination of different types such as stress and urge incontinence.

• Overflow incontinence: Poor contractility of the detrusor muscle of the bladder and obstruction of the urethra may be related to prostate enlargement in the male, pelvic surgery, constipation, medication, pregnancy, or genital prolapse or abnormality in the female.

• Functional incontinence: Caused by cognitive inability to recognize the urge to urinate, extreme depression, or dementia. Inability to reach the bathroom because of protective devices, side rails, or physical impairment can also result in this type of incontinence.

Assisting the Patient Who Is Incontinent

There are different types of incontinence: urge, stress, overflow, functional, and mixed (Tran & Puckett, 2023) (Box 30.4). The incontinent patient suffers a body image disturbance over the loss of a normal function. There is risk of skin breakdown from moisture and waste products in the urine, as well as worry over being wet and smelling of urine. There is also the risk of infection because urine is a medium for bacterial growth. Urinary incontinence may be temporary or permanent.

The management and treatment of incontinence are complex

Some patients may have more than one form of incontinence. For example, stress incontinence is often accompanied by urge incontinence. For some patients, better and quicker assistance to the toilet will resolve the problem. For others, continence training may help (Steps 30.3). During the night, incontinence briefs or external catheter systems with suction devices can be used for women. Absorbent pads similar to sanitary napkins and briefs can be used for women or men. A condom catheter can be used overnight for men.

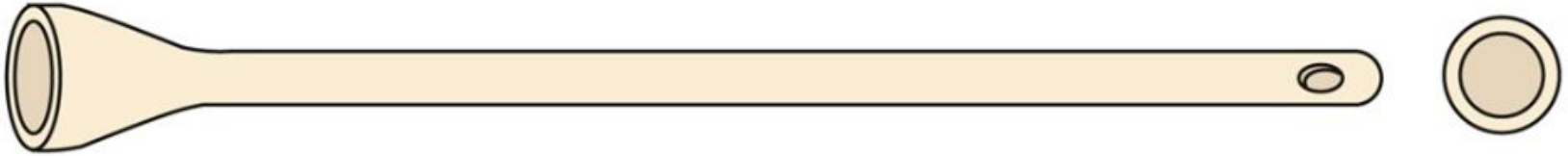
Intermittent Self-Catheterization

Intermittent self-catheterization is used for patients who regularly experience incontinence or urinary retention. In accordance with National Patient Safety Goals, patients should be taught and encouraged to participate in their care. Often these patients have a spinal cord problem that prevents proper function of the nerves that control the bladder and urinary sphincters.

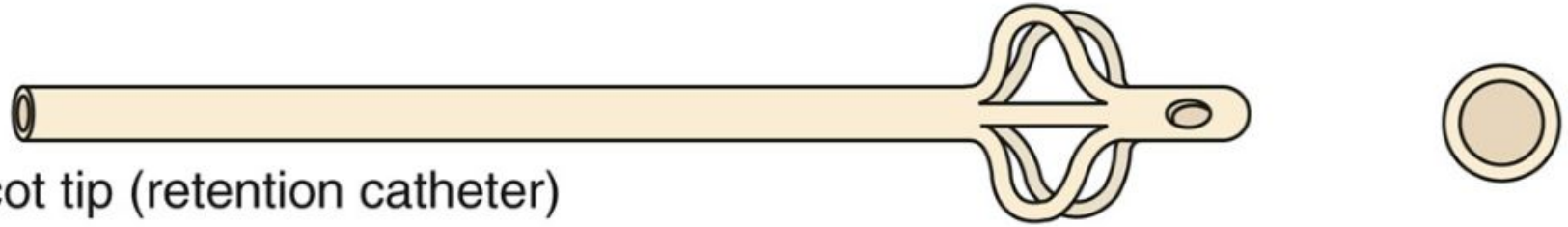
Clean Procedure

Self-catheterization, primarily performed outside the hospital, is considered a “clean” rather than a “sterile” procedure, and it does not require the use of a sterile catheter.

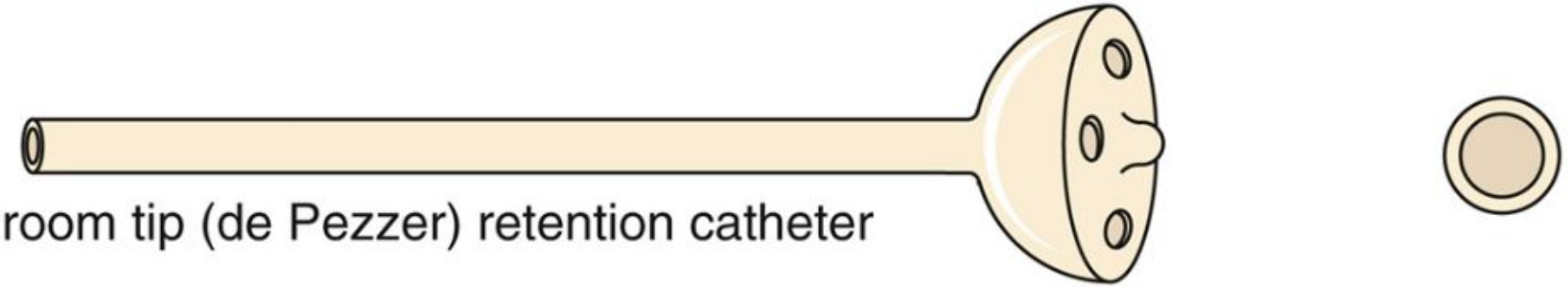
Single lumen



Straight, rounded tip

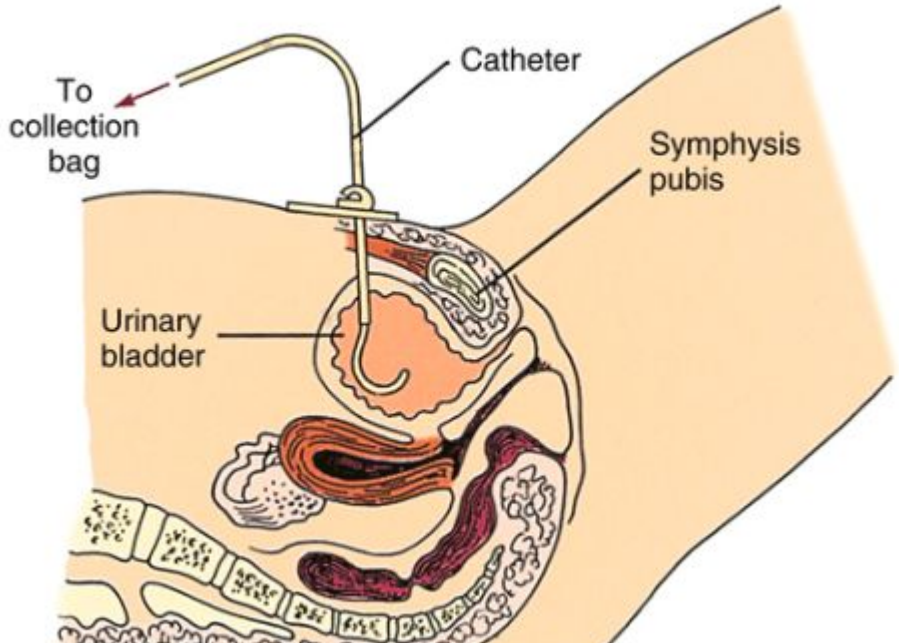


Malecot tip (retention catheter)



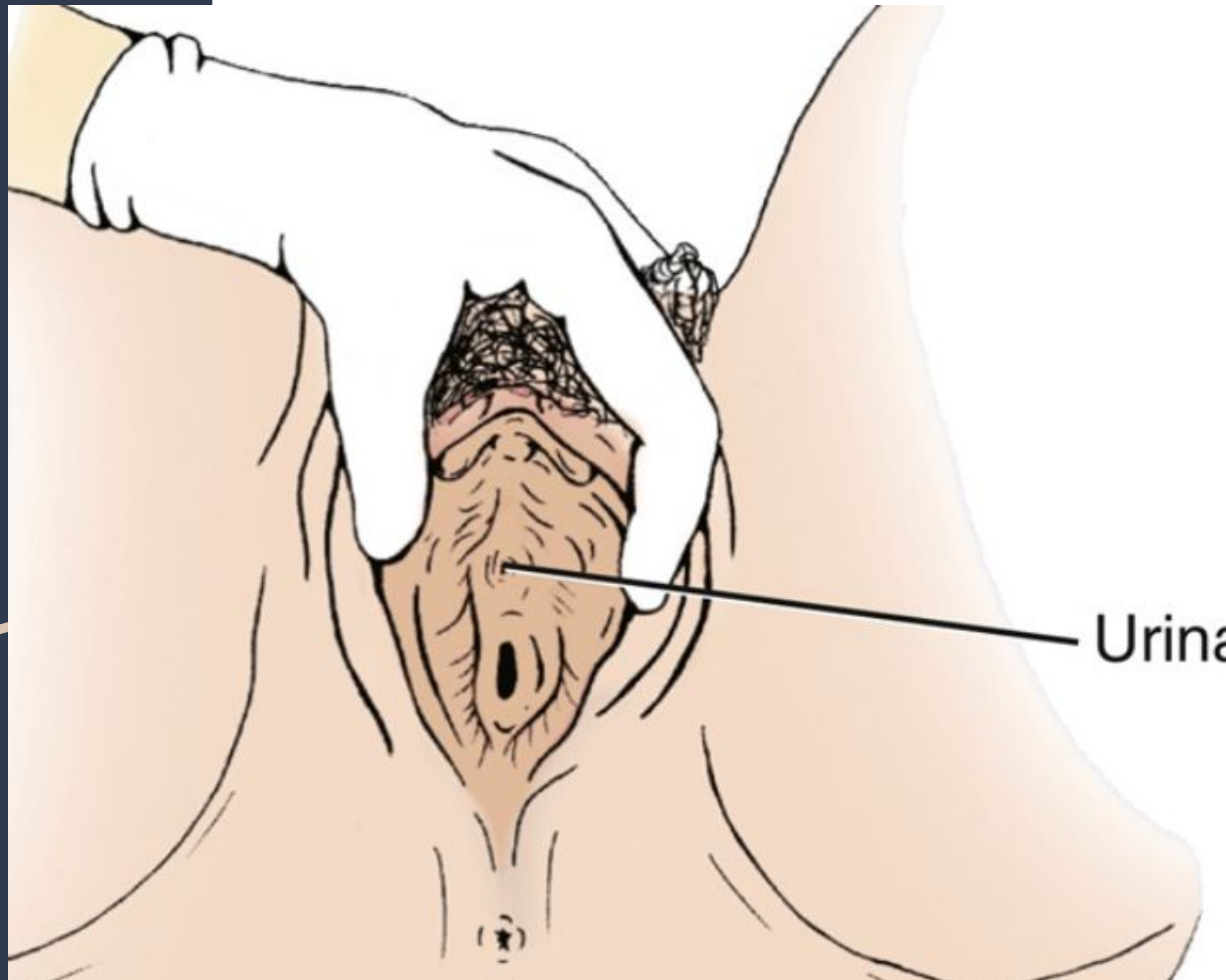
Mushroom tip (de Pezzer) retention catheter

FIG. 30.10 Suprapubic catheter.

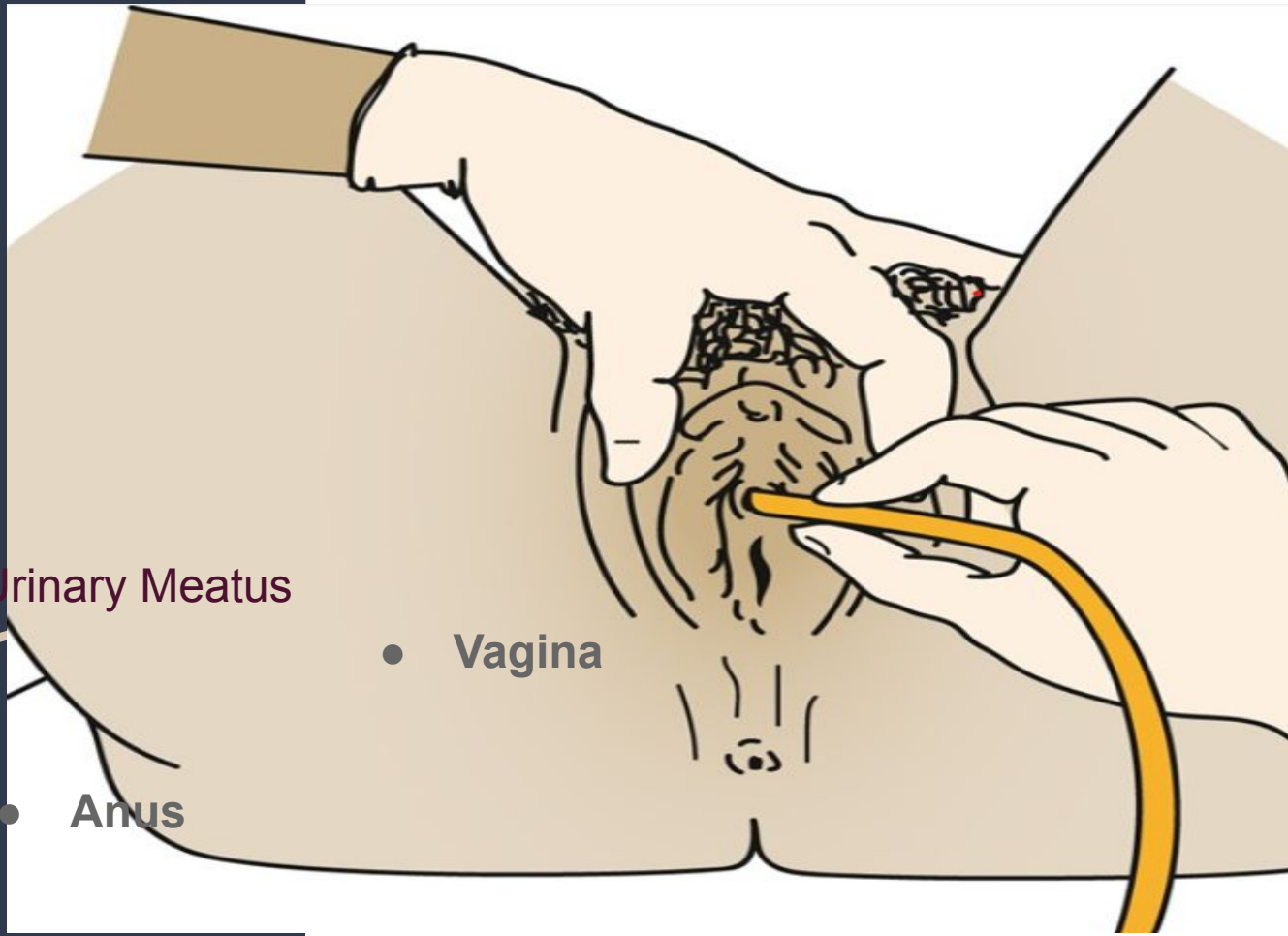


A suprapubic catheter may be used for urine drainage following gynecologic and bladder surgery. It is inserted through the abdominal wall by the surgeon. The suprapubic catheter is sutured to the skin at the time of insertion (Fig. 30.10).

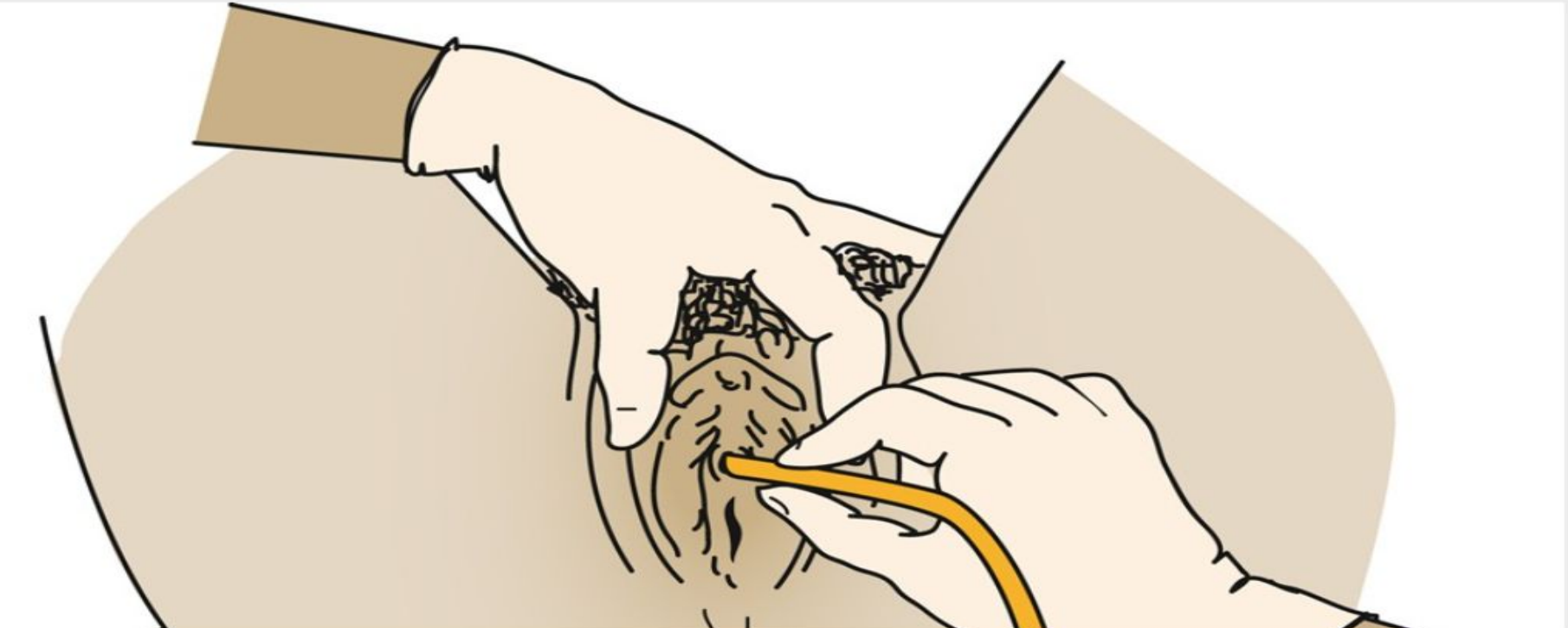
Locating the Female Urinary Meatus



Dominant hand stays sterile



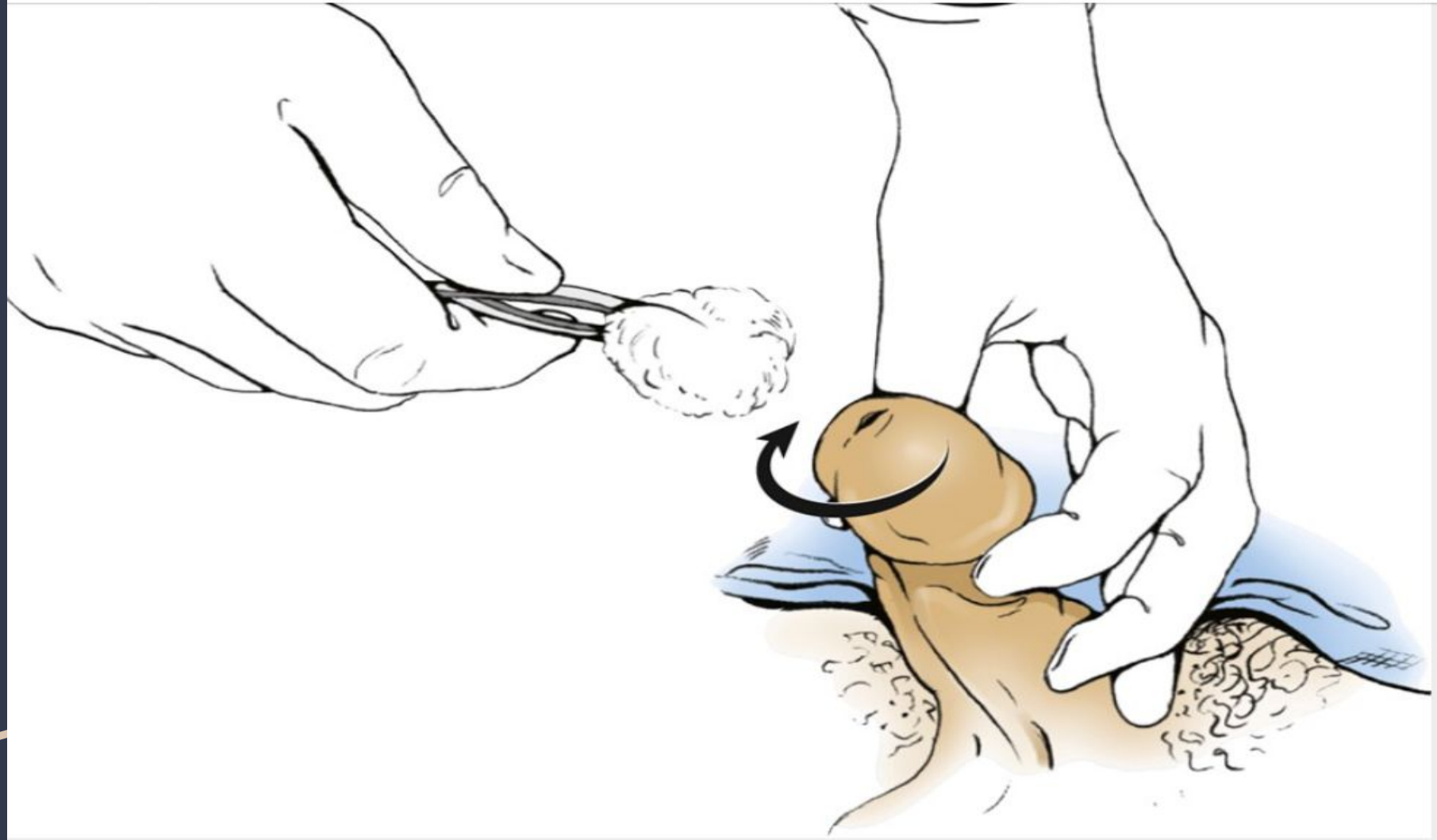
the catheter about 3 inches from the tip, lubricate it well, and gently insert it into the meatus while pointing the catheter slightly
he umbilicus. Insert it about 2–3 inches or until you visualize urine flow. After you see the urine flow, insert the catheter an additional
es. There may be slight resistance as the catheter passes the internal urethral sphincter. If urine does not flow, rotate the catheter
nd carefully insert it another inch further. Do not use force. If resistance is encountered, ask the patient to take a deep breath, and
d advance the catheter as the patient does so; this relaxes the sphincter. If the catheter has been inserted into the vagina by mistake,
here as a marker for the vaginal opening; perform hand hygiene and begin the procedure again with a sterile kit. *(Patient will feel a*
the catheter passes through the sphincter and may report the urge to urinate. Leaving the marker catheter in place ensures vaginal
is not repeatedly mistaken for urinary meatus.)

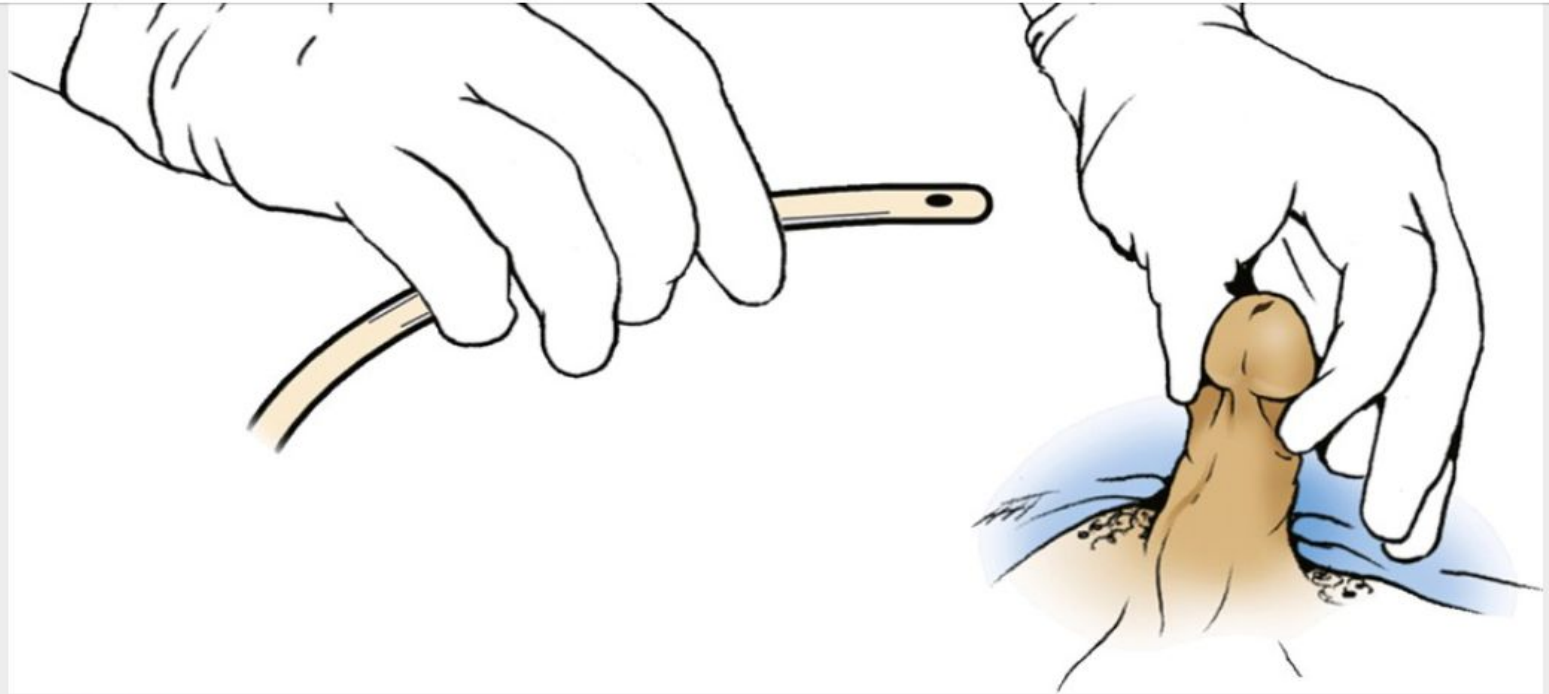


Lifespan Considerations

Older Adult

In the older adult female, the urinary meatus is sometimes found just inside the opening of the vagina. If the patient has difficulty with the dorsal recumbent position, place her on her side with the knees flexed and the upper leg supported by pillows, then approach the meatus from the rear (Fig. 30.9).

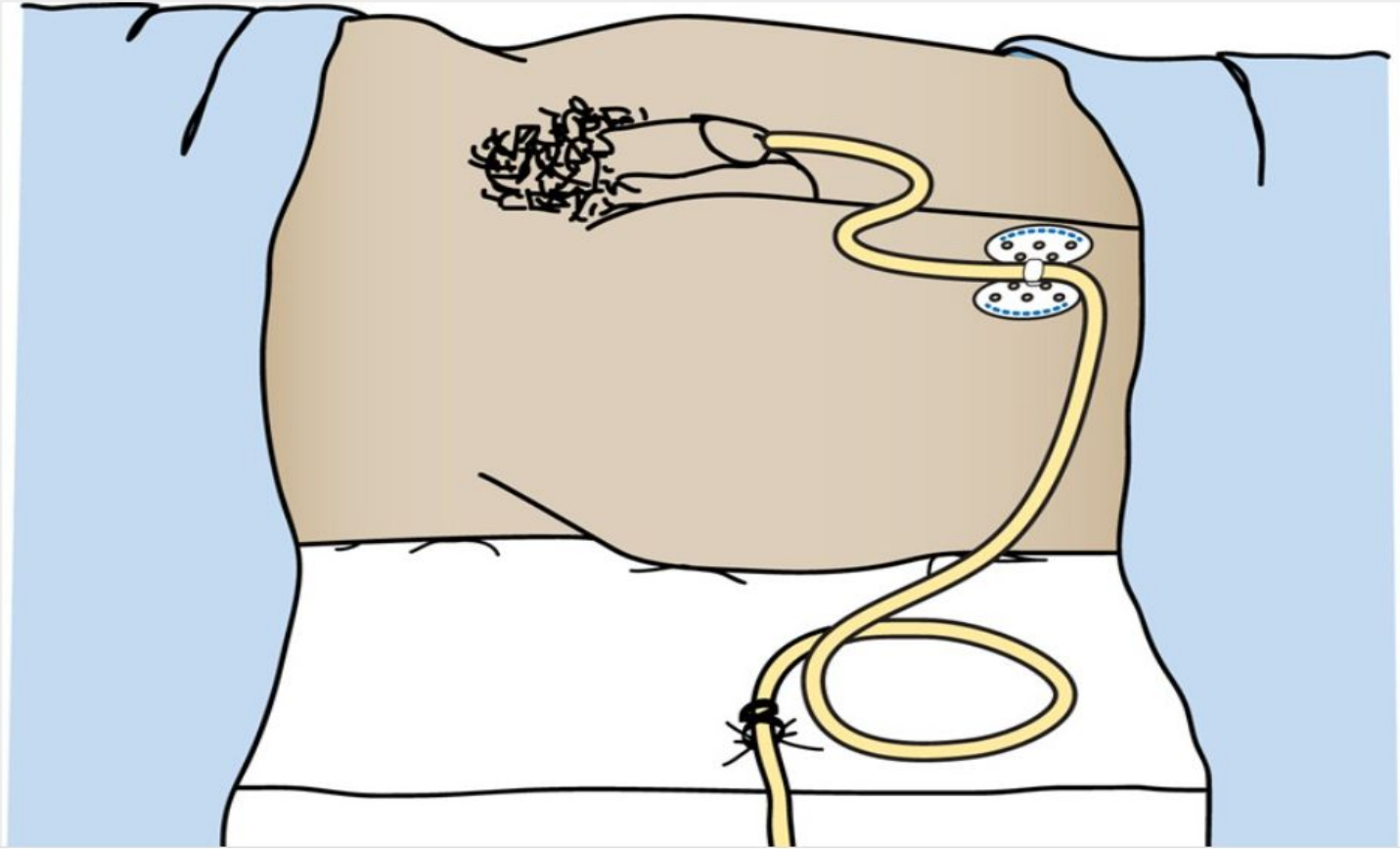




STEP 16

17. If resistance is met, pause and ask the patient to take a deep breath, then try to twist the catheter or instruct the patient to turn the feet soles inward and wiggle the toes to relax the muscles. If resistance persists and the catheter will not advance without difficulty, remove it, and notify the primary care provider. *(The internal sphincter relaxes with a deep breath. Forcing the catheter against resistance may cause trauma.)*
18. **After urine starts to flow, insert the catheter an additional 1 to 2 inches** and then hold the catheter in place, inject the contents of the prefilled syringe into the balloon, and detach the syringe while holding the plunger all the way down. *(If you do not hold the catheter in place, it can slip out of position. Filling the balloon keeps the catheter in the bladder. Releasing the plunger allows the water to flow back into the syringe.)*
19. Pull gently on the catheter to check that balloon is inflated. Then push catheter back in slightly. *(Relieves pressure on the internal sphincter.)*

22. Secure the catheter to the abdomen if it is to remain in place for an extended period. Alternatively, it may be positioned on top of the thigh for short-term use. *(Secures the catheter so that there is no tension on the internal urinary sphincter. Positioning catheter on the abdomen decreases pressure on the penoscrotal angle.)*



Closed Versus Open Irrigation

Evidence-based practice indicates that closed irrigation is preferable over opening the system to decrease risk for infection (Ackley et al., 2022).

When the drainage system must be opened for irrigation, strict asepsis must be maintained. Take special care not to contaminate the end of the drainage tubing or the end of the catheter.

Skill 30.5 Closed continuous bladder irrigation system

Let’s turn and further discuss this skill.

Bladder or catheter irrigation is performed when urine will not drain because debris is blocking the catheter. A bladder instillation is performed to place a medicated solution in the bladder. The catheter and drainage system should not be opened for irrigation unless all other methods have been considered.

Bladder Irrigation or Instillation

Irrigation or instillation (Skill 30.5) is performed on patients with indwelling catheters to:

- Wash out residual urine or sediment from the bladder
- Remove clots and stop oozing of blood after prostate or bladder surgery
- Soothe irritated bladder tissues and promote healing
- Ensure that the lumen of the indwelling catheter is open and draining
- Instill medication into the bladder

Continuous irrigation

Performed after prostate or bladder surgery via the three-way indwelling (Foley) catheter system where the irrigation solution is hooked up to the irrigation port of the catheter. The solution container is positioned on an IV pole. Using sterile technique, the solution is run through the tubing to remove air, and then the tubing is connected to the irrigation port of the catheter. When using a three-way catheter, consult the package instructions to determine which port should be attached to the irrigating solution and which port is designated for the drainage bag connection. (Note: The inner lumen with the largest diameter should be used for drainage because of the potential for clots or debris washed from the bladder.) The third port is for inflating the balloon and appears similar to a standard indwelling catheter port. Check the order for the flow rate. Generally, the irrigation solution is set to flow just fast enough to prevent clots from forming in the bladder (Fig. 30.11). The return should be pink to light red. The irrigation solution container is changed at least every 24 hours. All irrigation fluid is subtracted from the amount of output.

Nursing Assistants & Continence Training

Collaborative Care

Nursing Assistants' Role

- Plan time for patient & NA collaboration
- Instruct on timed interval toileting
- Work together as a team for accidents

Pelvic Floor Health

Kegel Exercises

- Reduces/stops incontinence
- Beneficial for both women & men (post-prostatectomy)
- Surgical procedures are an option

Pelvic Muscle (Kegel) Exercises to Correct Incontinence

1. Identify the Correct Muscles: Concentrate on stopping urine flow. Do not use abdominal, thigh, or buttock muscles. Do not hold your breath.

2. Perform the Exercise: Squeeze the identified muscle and hold for 10 seconds. Relax for 10 seconds. Build up to 10 seconds over 2 weeks.

3. Frequency & Repetitions: Do three times a day. Aim for 15 reps morning/afternoon, 20 at night. Or exercise for 10 minutes three times a day. Work up to 25 reps at one time.

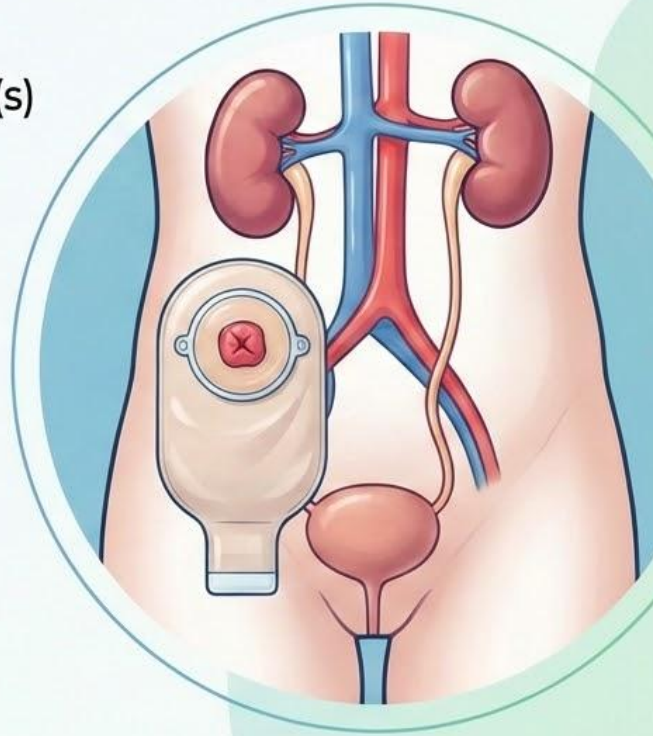
4. Results: It will take at least 2 weeks of consistent exercise to notice a difference. Within a month, expect a decrease in incontinence.

5. Post-Prostatectomy: Kegels might be recommended two to three sets per day before surgery but increased to 8–10 sets per day postoperatively.

Urinary Diversion Care

See pg 588 for details.

- **Urinary diversion:** Bladder removed or bypassed. Ureter(s) implanted into abdominal wall, bowel, or bowel pouch.
- **Urostomy:** Opening through which urine drains on abdominal wall.
- **Nursing responsibility:** Collection of draining urine and skin care around the urostomy.
- Urine drains constantly unless urostomy has internal pouch and valve.
- **During bag change:** Place dry gauze, paper towel, or washcloth over opening while cleaning skin.
- Apply skin barrier before attaching collection appliance due to irritating ammonia in urine.



Evaluation pg. 588

Determine whether patient outcomes related to urinary elimination problems were met using the evaluation step of the nursing process

Evaluating Patient Outcomes

- Normal urination without urgency, dysuria, or frequency
- Recording I&O and comparing data
- Noting perineal skin condition
- Fewer episodes of incontinence
- Checking urine appearance for normal characteristics

Verifying Patient Education

- Patient can describe measures to prevent UTIs
- Patient can successfully perform intermittent self-catheterization
- Patient/family knows how to care for catheter and empty collection bag
- Patient in long-term care receiving needed assistance

Nursing Care Plan 30.1 provides specific examples of evaluative statements.

Documentation pg. 589

General Urinary Elimination

- **Normal Voiding:** Document "voiding quantity sufficient and without verbalized complaints" if adequate.
- **Problems:** Document frequency, amount of output, and appearance of urine.

Incontinence

- **Voiding:** Note number of continent vs. incontinent voidings, time, and circumstances.
- **Skin Assessment:** Document perineal skin condition at least once a shift.

Catheterization (Indwelling)

- **Insertion/Procedure:** Note urine appearance, any problems, catheter size/type, and balloon water amount.
- **Daily Care:** Describe urine at least daily, including signs of infection or resolution.
- **Removal:** Document time, date, urine amount in bag, expected time for next void (within 8 hours), any voiding difficulties, and follow-up measures.

Bladder Irrigation/Instillation

- **Procedure:** Document amount instilled, aseptic technique maintained, dwell time, outflow amount and description, and any problems.

Other Documentation

- **Education & Tests:** Document all patient education, diagnostic tests, and specimens obtained.
- **Urostomy:** Document urostomy care, condition of the stoma, and surrounding skin.

Key Points (pg 589)

The kidneys, ureters, bladder, and urethra make up the urinary system, which functions to rid the body of waste and excess fluid. Fluid balance is a primary function of the kidneys.

Infection, severe dehydration, shock, destruction of tissue, blockage, pressure, and lack of neurologic innervation can interfere with proper functioning of the urinary system.

Kidney function and bladder muscle tone decrease with age. In males, the prostate gland can enlarge and may lead to urethral obstruction.

Urination is under voluntary control. The adult voids 5–10 times a day, ridding the body of an average of 1–1.5L of urine a day.

Symptoms of urinary dysfunction are dysuria, urgency, anuria, polyuria, oliguria, retention, and difficulty starting the urinary stream.

Urine specimens are obtained in different ways (e.g., clean catch, catheterization) for a variety of diagnostic tests (e.g., culture and sensitivity).

An indwelling urinary catheter is inserted for a variety of reasons (e.g., urinary stricture, bladder irrigation). The closed urinary catheter and drainage system should be kept intact and sterile.

It is best to perform closed intermittent irrigation, rather than opening the drainage system, to prevent microorganisms from entering the bladder.

There are different types of incontinence: urge, stress, overflow, functional, and mixed; interventions must be tailored to the cause.

When the patient has a urinary diversion, the focus is on collection of the urine and care of the skin around the urostomy.

Comparison of daily I&O is part of the evaluation process.

Additional Learning Resources