autonomic bladder: bladder no longer controlled by the brain because of injury or disease; void by reflex only

bacteriuria: condition that occurs when bacteria enter the bladder during catheterization, or when organisms migrate up the catheter lumen or the urethra into the bladder; bacteria in the urine

continent urinary reservoir: a surgical alternative that uses a section of the intestine to create an internal reservoir that holds urine, with the creation of a catheterizable stoma

cutaneous ureterostomy: a type of incontinent cutaneous urinary diversion in which the ureters are directed through the abdominal wall and attached to an opening in the skin

enuresis: involuntary urination; most often used to refer to a child who involuntarily urinates during the night

external condom catheter: soft, pliable sheath made of silicone material applied externally to the penis

functional incontinence: state in which a person experiences an involuntary, unpredictable passage of urine

hematuria: blood in the urine; if present in large enough quantities, urine may be bright red or reddish brown

ileal conduit: urinary diversion in which the ureters are connected to the ileum with a stoma created on the abdominal wall

indwelling urethral catheter: catheter that remains in place for continuous urine drainage; synonym for Foley catheter

intermittent urethral catheter: straight catheter used to drain the bladder for short periods (5–10 minutes)

Kegel exercises: repetitious contraction and relaxation of the pubococcygeal muscle to improve vaginal tone and urinary continence

micturition: process of emptying the bladder; urination; voiding

mixed incontinence: symptoms of urge and stress incontinence are present, although one type may predominate

nephrotoxic: capable of causing kidney damage

nocturia: excessive urination during the night

overflow incontinence: involuntary loss of urine associated with overdistention and overflow of the bladder

postvoid residual (PVR): urine that remains in the bladder after the act of micturition; a synonym for residual urine
reflex incontinence: emptying of the bladder without the sensation of the need to void

specific gravity: a characteristic of urine that can be determined with manufactured plastic strips or an instrument called a urinometer or hydrometer

stress incontinence: state in which the person experiences a loss of urine of less than 50 mL that occurs with increased abdominal pressure

suprapubic catheter: catheter inserted into the bladder through a small abdominal incision above the pubic area

total incontinence: continuous and unpredictable loss of urine, resulting from surgery, trauma, or physical malformation

transient incontinence: occurrence that appears suddenly and lasts for 6 months or less and usually is caused by treatable factors, such as confusion secondary to acute illness, infection, and as a result of medical treatment, such as the use of diuretics or intravenous fluid administration

urge incontinence: state in which a person experiences involuntary passage of urine that occurs soon after a strong sense of urgency to void

urinary diversion: surgical creation of an alternate route for excretion of urine

urinary incontinence: any involuntary loss of urine

urinary retention: inability to void although urine is produced by the kidneys and enters the bladder; excessive storage of urine in the bladder

urination: process of emptying the bladder; micturition; voiding

voiding: process of emptying the bladder; also called micturition or urination

Kidneys and Ureters
One of the more significant functions of the kidneys is to help maintain the composition and volume of body fluids. About once every 30 minutes, the body’s total blood volume passes through the kidneys for waste removal.

**NEPHRON:** The nephron is the basic structural and functional unit of the kidneys. There are about 1 million nephrons in each kidney. Each nephron consists of arterioles, capillaries, and tubules. Nephrons remove the end products of metabolism, such as urea, creatinine, and uric acid from the blood plasma and form urine. The nephrons maintain and regulate fluid balance through the mechanisms of selective reabsorption and secretion of water, electrolytes, and other substances. Empties into the renal pelvis.

**Bladder**

The urinary bladder is a smooth muscle sac that serves as a temporary reservoir for urine.

Detrusor muscle: is composed of three layers of muscle tissue: the inner longitudinal layer, the middle circular layer, and the outer longitudinal layer.

The urethra conveys urine from the bladder to the exterior of the body.

The urinary bladder muscle is innervated by the autonomic nervous system.

The bladder normally contains urine under very little pressure. As the volume of urine increases, the pressure increases.

**Urethra**

The urethra’s function is to transport urine from the bladder to the exterior of the body. The anatomy of the urethra differs in males and females. The male urethra functions in the excretory system and the reproductive system. It is about 5 1/2” to 6 1/4” (13.7 to 16.2 cm) long and consists of three parts: the prostatic, the membranous, and the cavernous portions (Fig. 36-3). The external urethral sphincter consists of striated muscle and is located just beyond the prostatic portion of the urethra. The external sphincter is under voluntary control.

In contrast, the female urethra is about 1 1/2” to 2 1/2” (3.7 to 6.2 cm) long. The external, or voluntary, sphincter is located in the middle of the urethra. No portion of the female urethra is external to the body, as in the male, although the muscle at the meatus is usually called the external sphincter.

**Act of Urination**

The process of emptying the bladder is known as urination, micturition, or voiding. The nerve centers for urination are situated in the brain and the spinal cord. Urinating, or voiding, is largely an involuntary reflex act, but its control can be learned.
People whose bladders are no longer controlled by the brain because of injury or disease also void by reflex only. This is called autonomic bladder.

The person feels a desire to void, usually when the bladder fills to about 150 to 250 mL in an adult.

Sometimes, increased abdominal pressure—such as occurs during coughing and sneezing—forces an involuntary escape of urine. This is a particular problem for some women because the urethra is shorter. Any involuntary loss of urine that causes such a problem is referred to as urinary incontinence.

**Frequency of Urination**
Except when fluid intake is very large, most healthy people do not void during normal sleeping hours.

The first voided urine of the day is usually more concentrated than other urine excreted during the day. Because the first urine of the day is not fresh, but rather an accumulation of a number of hours of kidney output, this urine may or may not be used as a specimen for certain tests.

Some people normally void small amounts at frequent intervals because they habitually respond to the first early urge to void.

Other people have habits of infrequent voiding. For example, some people go 8 to 12 waking hours or longer without urinating.

People who habitually urinate infrequently develop more urinary tract infections and kidney disorders than those who urinate at least every 3 to 4 hours.

*Urinary retention occurs when urine is produced normally but is not excreted completely from the bladder. Factors associated with urinary retention include medications, an enlarged prostate, or vaginal prolapse.*

**DEVELOPMENTAL FACTORS**

**Toilet training:** Voluntary control of the urethral sphincters occurs between 18 and 24 months of age. The child’s desire to train plays a large role in success. Toilet training should not begin until the child is able to:
- Hold urine for 2 hours
- Recognize the feeling of bladder fullness
- Communicate the need to void and control urination until seated on the toilet
Effects of Aging: Physiologic changes that accompany normal aging may affect urination in older adults. These changes include the following:

The diminished ability of the kidneys to concentrate urine may result in nocturia (urination during the night).

Decreased bladder muscle tone may reduce the capacity of the bladder to hold urine, resulting in increased frequency of urination.

Decreased bladder contractility may lead to urine retention and stasis, which increases the likelihood of urinary tract infection.

Neuromuscular problems, degenerative joint problems, alterations in thought processes, and weakness may interfere with voluntary control and the ability to reach a toilet in time.

Sedatives and tranquilizers may diminish awareness of the need to void.

Food and Fluid Intake

Sodium causes h2o retention

Alcohol produces a diuretic effect by inhibiting the release of antidiuretic hormone, increasing urine production

Certain foods may affect urine odor (asparagus)

Psychological Variables

For some people, voiding is a personal and private act—something one does not talk about. Needing assistance with a bedpan or urinal provokes great embarrassment and anxiety, especially when the bedpan is offered by a nurse of the opposite gender.

Stress can cause people to void less amounts (stage fright)

Activity and Muscle Tone

Among the many benefits of regular exercise are increased metabolism and optimal urine production and elimination

With long term immobility the bladder and sphincter muscles lose their tone and incontinence can occur

Indwelling urinary catheters lose bladder tone because the bladder muscle is not being stretched by the bladder filling with urine.

Child bearing can cause decrease bladder tone

Atrophy due to decreased estrogen levels as seen with menopause, and damage to muscles from trauma.

Pathologic Conditions

Certain renal or urologic problems can affect both the quantity and the quality of urine produced.

Diseases associated with renal problems include congenital urinary tract abnormalities, polycystic kidney disease, urinary tract infection, urinary calculi (kidney stones), hypertension, diabetes mellitus, gout, and certain connective tissue disorders.

Renal failure is a condition in which the kidneys fail to remove metabolic end products from the blood and are unable to regulate fluid, electrolyte, and pH balance.
Acute renal failure is a sudden decline in kidney function, and may be caused by conditions such as severe dehydration, anaphylactic shock, pyelonephritis, and ureteral obstruction. Chronic kidney disease is the end result of irreparable damage to the kidneys, developing slowly over many years. Chronic renal failure is caused by conditions such as diabetes, hypertension, and glomerulonephritis.

arthritis, Parkinson’s disease, and degenerative joint disease, may interfere with toileting. Cognitive deficits and certain psychiatric problems can interfere with a person’s ability or desire to control urination voluntarily.

Medications
Some medications can cause relaxation of the urinary muscles while other cause it to spasm.

Nephrotoxicity is a common adverse affect of most medications and can cause deficits in urination

Anticoagulants may cause hematuria (blood in the urine), leading to a pink or red color.
Diuretics can lighten the color of urine to pale yellow.
Phenazopyridine (Pyridium), a urinary tract analgesic, can cause orange or orange-red urine.
The antidepressant amitriptyline (Elavil) or B-complex vitamins can turn urine green or blue-green.
Levodopa (L-dopa), an antiparkinson drug, and injectable iron compounds can lead to brown or black urine.

Assessing
A comprehensive nursing assessment of the functioning of a patient’s urinary system includes the following:

Collection of data about the patient’s voiding patterns, habits, and difficulties and a history of current or past urinary problems

Physical examination of the bladder, if indicated, and urethral meatus; assessment of skin integrity and hydration; and examination of the urine

Correlation of these findings with the results of diagnostic tests and procedures for examining the urine and the urinary tract

Nursing History
In the nursing history, question the patient (or caregiver) about usual voiding habits and any current or past voiding difficulties.
With infants, assess the number of wet diapers per day that the infant produces. Newborns should have six to eight wet diapers per day
With young children, assess whether the child has achieved bladder control during both day and nighttime. Be sure to indicate on the nursing history and care plan the words that the child uses to indicate the need to void.
With older adults, decreased bladder tone may be a problem. Note on the nursing history any problems, how the person normally handles these problems, and your judgment of the adequacy of the solution.

Physical Assessment

The physical assessment of urinary functioning includes an examination of the urinary bladder, if indicated, urethral meatus, skin, and urine.

Assessment of the bladder may be indicated when patients experience difficulty voiding or other alterations in elimination.

bedside scanner is another way to assess the bladder. These portable bladder ultrasound devices create an image of the patient’s bladder and calculate urine volume present in the bladder.

URETHRAL ORIFICE
Inspect the urethral orifice for any signs of inflammation, discharge, or foul odor. In males, the meatus is at the tip of the penis. If the male patient is uncircumcised, retract the foreskin to visualize the meatus.

SKIN INTEGRITY AND HYDRATION

Because problems with urinary functioning may result in disturbances in hydration and excretion of body wastes, assess the skin carefully for color, texture, and turgor. Assess the integrity of the skin in the perineal area. Problems with incontinence may result in severe excoriation (abrasion of the epidermis).

Urine Characteristics

Assess the patient’s urine for color, odor, clarity, and the presence of any sediment.

Color

A freshly voided specimen is pale yellow, straw-colored, or amber, depending on its concentration. Urine is darker than normal when it is scanty and concentrated. Urine is lighter than normal when it is excessive and diluted.

Certain drugs, such as cascara, L-dopa, and sulfonamides, alter the color of urine.

Some foods can alter the color; for example, beets can cause urine to appear red.

Odor

Normal urine smell is aromatic. As urine stands, it often develops an ammonia odor because of bacterial action.

Some foods cause urine to have a characteristic odor; for example, asparagus causes urine to have a strong, musty odor.

Urine high in glucose content has a sweet odor.

Urine that is heavily infected has a fetid odor.

Turbidity

Fresh urine should be clear or translucent; as urine stands and cools, it becomes cloudy.

Cloudiness observed in freshly voided urine is abnormal and may be due to the presence of red blood cells, white blood cells, bacteria, vaginal discharge, sperm, or prostatic fluid.

pH

The normal pH is about 6.0, with a range of 4.6 to 8. (Urine alkalinity or acidity may be promoted through diet to inhibit bacterial growth or urinary stone development or to facilitate the therapeutic activity of certain medications.) Urine becomes alkaline on standing when carbon dioxide diffuses into the air.

A high-protein diet causes urine to become excessively acidic.

Certain foods tend to produce alkaline urine, such as citrus fruits, dairy products, and vegetables, especially legumes.

Certain foods such as meats tend to produce acidic urine.

Certain drugs influence the acidity or alkalinity of urine; for example, ammonium chloride produces acidic urine, and potassium citrate and sodium bicarbonate produce alkaline urine.

Specific gravity

This is a measure of the concentration of dissolved solids in the urine. The normal range is 1.015 to 1.025.

Concentrated urine will have a higher than normal specific gravity; diluted urine will have a lower than normal specific gravity. In the absence of kidney disease, a high specific gravity usually indicates dehydration and a low specific gravity indicates overhydration.

Constituents

Organic constituents of urine include urea, uric acid, creatinine, hippuric acid, indican, urope pigments, and undetermined nitrogen. Inorganic constituents are ammonia, sodium, chloride, traces of iron, phosphorus, sulfur, potassium, and calcium. Abnormal constituents of urine include blood, pus, albumin, glucose, ketone bodies, casts, gross bacteria, and bile.
Measuring Urine Output

In Patients Who Are Continent. Patients who have self-control over urination are continent. The procedure for measuring the urine output of a patient who is continent and voiding is as follows:

Ask the patient to void into a bedpan, urinal, or specimen hat, either in bed or in the bathroom. Urinary devices used to collect or measure urine are shown in Figure 36-5.

Pour the urine from the collection device into the appropriate measuring device provided by the agency. The devices are calibrated in milliliters. Collection devices may be calibrated for measurement, eliminating the need for an additional measuring device.

Place the calibrated container on a flat surface, such as a shelf, for an accurate reading. Reading at eye level, note the amount of urine voided and record it in the patient’s electronic record. Record the total amount voided during each shift. The total for the 24-hour period is usually calculated by the electronic record computer software. Alternately, the information may be recorded in a paper form at the bedside.

Discard the urine in the toilet unless a specimen is required. If a specimen is required, pour the urine into an appropriate specimen container.

Measuring Urine Output in Patients Who Are Incontinent.

Note the number of times the patient is incontinent and any notable urine characteristics, such as color and odor. Additional nursing interventions are required to collect urine for measurement. Use of scheduled toileting (assisting the patient to the toilet to attempt to void on a regular basis, such as every 2 hours) can assist in obtaining urine for measurement, for required laboratory specimens, and prevent incontinence. Urinary incontinence is discussed in more detail later in the chapter.

Measuring Urine Output in Patients With an Indwelling Catheter

Put on clean gloves. Place a calibrated measuring device beneath the urine collection bag at the bedside. To prevent the spread of infection, patients should have their own calibrated measuring device.

Place the drainage spout from the collection bag above, but not touching, the calibrated measuring device, and open the clamp. Allow the urine to flow from the collection bag into the measuring device.

Reclamp the drainage tube, wipe the spout of the tube with an alcohol pad, and replace the tube into the slot on the drainage bag. Proceed with measurement of urine as described earlier.

Specimen collection

Routine Urinalysis. A sterile urine specimen is not required for a routine urinalysis.

Clean-Catch or Midstream Specimen. A clean-catch specimen of urine is required in some situations. Most health care agencies specify that a clean-catch specimen be collected during midstream.

Sterile Specimen. Sterile urine specimens may be obtained by catheterizing the patient’s bladder or by taking the specimen from an indwelling catheter already in place.

When it is necessary to collect a urine specimen from a patient with an indwelling catheter, always obtain it from the catheter itself using the special port for specimens. A specimen from the collecting receptacle (drainage bag) may not be fresh urine and could result in an inaccurate analysis.

If urine is not present in the tube, clamp the tube below the access port briefly (not to exceed 30 minutes) to allow urine to accumulate. Clean the access port with an antiseptic swab, and carefully attach the
syringe to the port. Aspirate urine into the syringe, remove the syringe, release the clamp if one was used, and transfer the specimen to the appropriate container. Label the specimen with the patient’s name, date, and time of collection; then package and transport the specimen according to facility policy.

**Urine Specimens from a Urinary Diversion:** The preferred method is to catheterize the stoma. Remove the stoma appliance and clean the stoma site with warm water. Using sterile technique, insert the urinary catheter into the stoma site and advanced 2 to 2.25 inches. If there is resistance, rotate the catheter gently until it slides forward. If there is continued resistance, do not force the catheter any further (Williams). After collection of a sufficient amount of urine, remove the catheter and reapply the stoma appliance.

**24-Hour Urine Specimens:** Initiate a collection at a specific time (which is recorded) by asking the patient to empty the bladder. Discard this urine and then collect all urine voided for the next 24 hours. At the end of the 24 hours, ask the patient to void. Add this urine to the previously collected urine, and then send the entire specimen to the laboratory.

**Specimens From Infants and Children.** Plastic disposable collection bags are available for collecting urine specimens from infants and young children who have not achieved voluntary bladder control (Fig. 36-8). Follow the manufacturer’s instructions and take care when applying and removing the bag to avoid irritating the sensitive perineal skin.

**Urinary Functioning as the Etiology**

Difficulty with urination or changes in normal voiding patterns may affect other areas of human functioning. Examples of nursing diagnoses related to urinary problems include the following:

- Caregiver Role Strain related to incontinence of family member
- Impaired Skin Integrity (Actual, Risk for) related to incontinence
- Acute Pain related to bladder spasms, dysuria, urinary retention, cancer of the bladder, diagnostic procedures
- Disturbed Body Image related to urinary diversion
- Disturbed Sleep Pattern related to nocturia
- Toileting Self-Care Deficit related to parent’s lack of knowledge or motivation to toilet train child, neuromuscular impairment or musculoskeletal disorders, immobility, trauma or surgical procedures, confusion, disorientation

BOX 36-2( study this box)

**Outcome Identification and Planning**

When the patient is ambulatory and not experiencing difficulties with the urinary system, normal voiding is usually not a problem. Trauma or illness, however, may result in the patient’s need for nursing assistance with voiding. Nursing interventions should support planned patient outcomes. The patient will:

- Produce urine output about equal to fluid intake
- Maintain fluid and electrolyte balance
- Empty the bladder completely at regular intervals
- Report ease of voiding
- Maintain skin integrity

**MAINTAINING NORMAL VOIDING HABITS**

If the patient’s voiding habits are adequate, provide care or teach the patient to maintain these habits to ensure comfort and satisfactory urine output. Attention to the following variables is helpful:
Schedule: Some patients report urinating on demand in no apparent pattern. Others have inflexible patterns that have developed over the years and become anxious if these are interrupted. Some patients need assistance to urinate and may experience urgency. Nursing actions should support the patient’s usual urinating pattern as much as possible.

Urge to void: Assist the patient to void when the patient first feels the urge to void. Routinely delaying urination may result in difficulty initiating a stream and/or urinary stasis. Urinary stasis can contribute to the development of urinary tract infections.

Privacy: Many adults and children cannot urinate in the presence of another person. Unless the patient is extremely weak and requires assistance, provide privacy in the health care facility and in the home.

Position: Helping patients assume their usual voiding position may be all that is necessary to resolve an inability to urinate. Some male patients cannot use a urinal while lying down or sitting; encourage them to void while standing at the bedside unless this is contraindicated. Similarly, some female patients cannot void easily on a bedpan but respond favorably with a bedside commode.

Hygiene: Patients who are confined to bed find it difficult to perform their usual genital hygiene. Careful cleansing of the perineal and genital areas is needed for patient comfort and to prevent infection. This is easily accomplished for patients on bedrest by using warmed, moistened disposable washcloths and skin cleanser or by pouring warm, soapy water over the perineal area while the patient is still on the bedpan, followed by clear water. Families providing care for ill members at home may be taught this technique.

STRENGTHENING MUSCLE TONE

Weakening of the pelvic floor muscles is a common cause of urinary continence problems in women and men

Pelvic floor muscle training (PFMT) can improve voluntary control of urination and significantly reduce or eliminate problems with stress incontinence (Kegel exercise)

Caring for Patients with Urinary Tract Infections

Urinary tract infections (UTIs) are a leading cause of morbidity and health care expenditures in persons of all ages, accounting for up to 40% of infections reported by acute care hospital

Women are especially vulnerable to UTIs because the female urethra is shorter and in closer proximity to the vagina and rectum. UTIs can affect both the upper urinary tract, involving the kidneys and ureters (pyelonephritis) and lower urinary tract, involving the bladder and urethra (cystitis). Escherichia coli, bacteria commonly found in the gastrointestinal tract, are the most common causal organism

RISK FACTORS

Those at greatest risk for a UTI include the following:

Sexually active women: During intercourse, perineal bacteria can migrate into the urethra and bladder. Women who use diaphragms for contraception: The spermicide used with a diaphragm decreases the amount of normally protective vaginal flora.
Postmenopausal women: Urinary stasis, which is common at this age, provides an optimal environment for bacteria to multiply; in addition, decreased estrogen contributes to loss of protective vaginal flora.

People with an indwelling urinary catheter in place: Up to 80% of UTIs are associated with the presence of an indwelling urinary catheter. A catheter-associated urinary tract infection (CAUTI) increases hospital cost and is associated with increased morbidity and mortality. CAUTIs are considered by the Centers for Medicare and Medicaid Services to represent a reasonably preventable complication of hospitalization. As such, no additional payment is provided to hospitals for CAUTI treatment-related costs; Although a break in sterile technique during placement can lead to an infection, most pathogens are introduced via handling of the catheter and drainage device after placement.

People with diabetes mellitus: Glucose in the urine acts as a breeding ground for bacteria

**TREATMENT**

Various protocols are used to treat UTIs. A short-course antibiotic regimen (1 large dose vs. 3 or 7 days of smaller doses) usually eradicates infections of the lower urinary tract; longer antimicrobial therapy is required for upper UTIs. Patient education can help prevent UTI recurrence. Teaching the patient about measures that promote health and decrease the severity and incidence of UTIs is a major nursing responsibility. Instruct the patient to:

Drink eight to ten 8-oz glasses of water daily.
Observe the urine for color, amount, odor, and frequency. Report any sign of infection to your health care provider.
Dry the perineal area after urination or defecation from the front to the back, or from the urethra toward the rectum.
Drink two glasses of water before and after sexual intercourse and void immediately after intercourse.
Take showers rather than baths.
Wear underwear with a cotton crotch, and avoid clothing that is tight and restrictive on the lower half of the body.
Drink 10 oz of cranberry or blueberry juice daily. These juices contain chemicals that may help prevent bacteriuria (bacteria in the urine) by inhibiting bacteria from adhering to the bladder wall and urinary catheters (NKF, 2010). Daily cranberry juice should not be recommended for patients with a personal or family history of kidney stones

**Caring for an Incontinent Patient**

Urinary incontinence is more prevalent in women and increases with age.

Age-related changes do affect urinary function, but urinary incontinence can be treated and individualized interventions can help the patient lead a normal life. Of those who seek treatment, 80% are cured or have their symptoms improved notably.

Patients frequently turn to absorbent products for protection when they are incontinent of urine if they have not had this condition properly diagnosed and treated

Functional disability of the patient
Type and severity of incontinence
Gender
Availability of caregivers
Failure of previous treatment programs
Patient preference
TREATMENT

Noninvasive, low-risk behavioral interventions are the first line of therapy for urinary incontinence. Community settings are ideally suited for using many of these interventions. Nurses can identify patients who are incontinent and use these techniques or refer them to nurse or advanced practice continence experts in the community. All nurses caring for older adults need to be familiar with education about urinary incontinence. Many possible treatment interventions for urinary incontinence fall within the nurse’s scope of practice. (See Box 36-3 for a summary of behavioral and treatment

REASONS FOR URINARY CATHETERIZATION

Common reasons for urinary catheterization include:

Relieving urinary retention. Retention is often temporary and is common after surgery involving the lower abdomen, pelvis, bladder, or urethra, especially if ambulation is delayed, fluid intake is minimal, or episural analgesia is used for pain control. Any mechanical obstruction, such as swelling at the meatus, which can occur after childbirth, or an enlarged prostate in men, may cause retention. Some patients who are unable to use any other bladder management method, such as those with neurogenic bladder dysfunction related to a disability (e.g., spinal cord injury), require long-term use of an indwelling catheter. Obtaining a sterile urine specimen Obtaining a urine specimen when a specimen cannot be secured satisfactorily by other means. Examples include collecting an uncontaminated specimen from a woman who is menstruating or from an incontinent patient. Emptying the bladder before, during, or after surgery and before certain diagnostic examinations. Monitoring renal function of critically ill patients Increasing comfort for terminally ill patients

IMPORTANT CONSIDERATIONS ABOUT THE LOWER URINARY TRACT

When catheterization is planned, consider the following about the lower urinary tract: The bladder is normally a sterile cavity. The external opening to the urethra can never be sterilized. The bladder has defense mechanisms. It empties itself of urine regularly and maintains an acidic environment, which has antibacterial advantages. These help to maintain a sterile bladder under normal circumstances and also help in clearing an infection if it occurs. Pathogens introduced into the bladder can ascend the ureters and cause bladder and kidney infections. A healthy bladder is not as susceptible to infection as an injured one. A state of lowered resistance, present in many diseases and stressful situations, predisposes the patient to urinary infection.

HAZARDS OF URETHRAL CATHETERIZATION

Sepsis and trauma are the two major hazards of introducing an instrument such as a catheter into the bladder. The male urethra is especially vulnerable to injury because of its longer length.

Bacteria can enter the bladder when the catheter is inserted. When the catheter is left in place, the organisms may move up the catheter lumen or the space between the catheter and the urethral wall. This asymptomatic condition in which bacteria are present in the urine is known as bacteriuria.

PATIENT EDUCATION
Teach patients who have an indwelling catheter how the system functions and how they can assist with their care. Teaching points include keeping the tubing free of kinks, maintaining a constant downward flow of urine, maintaining an adequate fluid intake, and promptly reporting any unusual symptoms.

If the patient is ambulatory, connect the indwelling catheter to a smaller drainage bag that can be secured to the leg. Instruct the patient to do the following:

- Empty the leg bag at regular intervals. A full drainage bag may cause reflux of urine into the bladder or may pull away from its attachment on the leg.
- Wash hands before and after emptying the leg bag. Use an antiseptic solution to cleanse the connections.
- Care for the drainage bag daily, using a vinegar solution (1 part vinegar to 3 parts water). Clean the tubing and bag and allow to air dry before using again (SUNA, 2005a).

**Caring for a Patient Receiving Dialysis**

**Hemodialysis** involves a machine that does the work healthy kidneys normally perform by filtering harmful wastes, electrolytes, and fluid from the blood that would normally

**Peritoneal dialysis** involves using blood vessels in the abdominal lining (peritoneum) to fill in for the kidneys, with the help of a fluid (dialysate) washed in and out of the peritoneal space.

**Pay attention to interventions and processes. Be sure to read over the types of catheters and the processes.**