# Elimination

**Concept at-a-Glance**

**About Elimination, 000**

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## Concept Key Terms

- Anuria, 000
- Bladder incontinence, 000
- Bladder training, 000
- Blood urea nitrogen (BUN), 000
- Bowel incontinence, 000
- Constipation, 000
- Creatinine clearance, 000
- Credé's method, 000
- Defecation, 000
- Detrusor muscle, 000
- Diabetic, 000
- Diaphoresis, 000
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- Fecal impaction, 000
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- Feces, 000
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- Hyponatremia, 000
- Ileus, 000
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- Medication, 000
- Meconium, 000
- Nausea, 000
- Neurogenic bladder, 000
- Nocturna, 000
- Nocturnal enuresis, 000
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- Oliguria, 000
- Pekyloisia, 000
- Polyuria, 000
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- Reflux, 000
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## About Elimination

Elimination from the urinary tract is usually taken for granted. Only when a problem arises do most people become aware of their urinary habits and any associated symptoms. The process of elimination includes urinary elimination and bowel elimination.

Despite the fact that laxative advertisements on North American television serve to keep the issue of fecal elimination in the public consciousness, problems with elimination can be embarrassing to clients, and can cause considerable discomfort. Nurses frequently are consulted by or involved in assisting clients with fecal elimination problems. Because...

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Elimination from the urinary tract is usually taken for granted. Only when a problem arises do most people become aware of their urinary habits and any associated symptoms. The process of elimination includes urinary elimination and bowel elimination.

Despite the fact that laxative advertisements on North American television serve to keep the issue of fecal elimination in the public consciousness, problems with elimination can be embarrassing to clients, and can cause considerable discomfort. Nurses frequently are consulted by or involved in assisting clients with fecal elimination problems. Because...
incontinence becomes more prevalent with age, elders are some-
times preoccupied with their bladders. People who have had a
bowel movement once a day for 75 years can view missing one
day as a serious problem. ●

Urinary Elimination

Elimination habits depend on social, cultural, personal, and
physical factors. In North America, most people are accustomed
to privacy and clean (even decorative) surroundings while they
eliminate. Personal habits regarding elimination are affected by
the social propriety of leaving to urinate, the availability of a pri-
cate clean facility, and initial training. Elimination is essential to
health, and can be postponed for only so long before the urge
normally becomes too great to control.

NORMAL PRESENTATION

Urinary elimination depends on effective functioning of the up-
per urinary tract (kidneys and ureters) and the lower urinary
tract (urinary bladder, urethra, and pelvic floor).

Kidneys

The paired kidneys are situated on either side of the spinal col-
umm, behind the peritoneal cavity. The right kidney is slightly
lower than the left due to the position of the liver. The kidneys
are the primary regulators of fluid and acid-base balance in the
body. The functional units of the kidneys—the nephrons—
filter the blood and remove metabolic wastes. In the average
adult, 1,200 mL of blood, or about 21% of the cardiac output,
passes through the kidneys every minute. Each kidney contains
approximately 1 million nephrons. Each nephron has a
glomerulus, a tuft of capillaries surrounded by Bowman’s cap-
style. The endothelium of glomerular capillaries is porous, al-
lowing fluid and solutes to move readily across this membrane
into the capsule. Plasma proteins and blood cells, however, are
too large to cross the membrane normally. Glomerular filtrate
is similar in composition to plasma, as it is made up of water,
electrolytes, glucose, amino acids, and metabolic wastes.

From Bowman’s capsule, the filtrate moves into the tubule of the
nephron. In the proximal convoluted tubule, most of the wa-
ter and electrolytes are reabsorbed. Solutes, such as glucose,
are reabsorbed in the loop of Henle; however, in the same area,
other substances are secreted into the filtrate, concentrating the
urine. In the distal convoluted tubule, additional water and
sodium are reabsorbed under the control of hormones such as
antidiuretic hormone (ADH) and aldosterone. This controlled
reabsorption allows fine regulation of fluid and electrolyte bal-
ance in the body. When fluid intake is low, or the concentration
of solutes in the blood is high, ADH is released from the ante-
rior pituitary, more water is reabsorbed in the distal tubule, and
less urine is excreted. By contrast, when fluid intake is high, or
the blood solute concentration is low, ADH is suppressed.
Without ADH, the distal tubule becomes impermeable to wa-
ter, and more urine is excreted. Aldosterone also affects the
tubule. When aldosterone is released from the adrenal cortex,
sodium and water are reabsorbed in greater quantities, increas-
ing the blood volume and decreasing urinary output.

Ureters

Once the urine is formed in the kidneys, it moves through the
collecting ducts into the calyces of the renal pelvis and from
there into the ureters. In the adult, the ureters are 25–30 cm
(10–12 in.) long and about 1.25 cm (0.5 in.) in diameter. The up-
per end of each ureter is funnel-shaped as it enters the kidney. The
lower ends of the ureters enter the bladder at the posterior cor-
ers of the floor of the bladder. At the junction between the
ureter and the bladder, a flaplike fold of mucous membrane acts
as a valve to prevent backflow of urine up the ureters.

Bladder

The urinary bladder (vesicle) is a hollow, muscular organ that
serves as a reservoir for urine and as the organ of excretion. When
empty, it lies behind the symphysis pubis. In men, the bladder lies
in front of the rectum and above the prostate gland, in women, it
lies in front of the uterus and vagina. (Figures 4-3 and 4-4). The
wall of the bladder is made up of four layers: (a) an inner
mucous layer, (b) a connective tissue layer, (c) three layers of
smooth muscle fibers, some of which extend lengthwise, some
obliquely, and some more or less circularly; and (d) an outer
serous layer. The smooth muscle layers are collectively called the
detrusor muscle. The detrusor muscle allows the bladder to
expand as it fills with urine, and to contract as it releases urine to
the outside of the body during voiding (D’Amico & Barbarito,
2007). At the base of the bladder is the trigone, a triangular area
marked by the ureter openings at the posterior corners and the
opening of the urethra at the anterior inferior corner.

The bladder is capable of considerable distention because of
rugae (folds) in the mucous membrane lining, and because of
the elasticity of its walls. When full, the dome of the bladder
can extend above the symphysis pubis; in extreme situations, it
can extend as high as the umbilicus. Normal bladder capacity
is between 300 and 600 mL of urine.

Urethra

The urethra extends from the bladder to the urinary meatus
(opening). In the adult woman, the urethra lies directly behind
the symphysis pubis, anterior to the vagina, and is between 3
and 4 cm (1.5 in.) long. (See Figure 4-4) The urethra serves
only as a passageway for the elimination of urine. The urinary
meatus is located between the labia minora, in front of the
vagina and below the clitoris. The male urethra is approxi-
mately 20 cm (8 in.) long and serves as a passageway for semen
as well as urine. (See Figure 4-3) In men, the meatus is lo-
cated at the distal end of the penis.

In men and women both, the urethra has a mucous mem-
brane lining that is continuous with the bladder and the ureters.
Thus, an infection of the urethra can extend through the urinary
tract to the kidneys. Women are particularly prone to urinary
tract infections because of their short urethras and the proxim-
ity of the urinary meatus to the vagina and anus.

Pelvic Floor

The vagina, urethra, and rectum pass through the pelvic floor,
which consists of sheets of muscles and ligaments that provide
support to the viscera of the pelvis. (See Figures 4-3 and 4-4)

Figure 4–1 ■ Anatomic structures of the urinary tract.

Figure 4–2 ■ Nephrons of the kidneys.

Figure 4–3 ■ Female urogenital system.

Figure 4–4 ■ Male urogenital system.
 coughing, sneezing, or straining during defecation. The newborn’s kidneys are limited in their ability to concentrate urine, resulting in an increased urinary output of 5-25 times every 24 hours, with a volume of 25 mL/kg/day. After the first voiding episode, the newborn’s urine frequently is cloudy (because of mucous content) and has a high specific gravity, which decreases as fluid intake increases. Occasionally, pink stains (“brick dust specks”) appear on the diaper. These are caused by urates, and are innocuous. During early infancy, normal urine is straw-colored and almost odorless, although odor can occur when certain drugs are given, metabolic disorders exist, or infection is present.

#### FACTORS AFFECTING VOIDING

Numerous factors affect the volume and characteristics of the urine produced and the manner in which it is excreted.

#### Developmental Factors

**INFANTS** Urine output varies according to fluid intake but gradually increases to 250-500 mL a day during the first year. Infants are born without urinary control, and can urinate as often as 20 times a day. Most will develop urinary control between the ages of 2 and 5 years. Control during the daytime normally precedes nighttime control.

**PRESCHOOLERS** The preschooler is able to take responsibility for independent toileting. Parents need to realize that accidents do occur, and the child should never be punished or chastised for a toileting accident. Because children at this age often forget to wash their hands or flush the toilet, they need both reminders and appropriate adult modeling. Young children also need instruction in wiping themselves. Girls should be taught to wipe from front to back to prevent contamination of the urinary tract by feces.

**SCHOOL-AGE CHILDREN** The school-age child’s elimination system reaches maturity during this period. The kidneys double in size between ages 5 and 10 years. During this period, the child urinates 6-8 times a day. Enuresis, which is defined as the involuntary passing of urine when control should be established (about 5 years of age), can be a problem for some school-age children. About 10% of all 6-year-olds experience difficulty controlling the bladder. Nocturnal enuresis, or bed-wetting, is the involuntary passing of urine during sleep. It has many causes, but basically it occurs because the child fails to awaken when the bladder empties (Nield & Kamat, 2004, p. 409). Bed-wetting should not be considered a problem until after the age of 6 years. Nocturnal enuresis may be referred to as primary when the child has never achieved nighttime urinary control. The incidence of nocturnal enuresis declines as the child matures. Secondary enuresis is that which occurs after the child has achieved dryness for a period of six consecutive months. It is often related to another problem, such as constipation, stress.
**Variations**

The kidneys reach maximum size between 35 and 40 years of age. The ability to concentrate urine is minimal; therefore, urine appears light yellow.

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**Elders**

The excretory function of the kidneys diminishes with age, but usually not significantly below normal levels unless a disease process intervenes. Blood flow can be reduced by arteriosclerosis, impairing renal function. With age, the number of functioning nephrons decreases to some degree, impairing the kidney’s filtering abilities. Conditions that alter normal fluid intake and output, such as/us or surgery, can compromise the kidney’s ability to filter, maintain acid-base balance, and maintain electrolyte balance in elders. The amount of time these processes take to return to normal functioning also increases with age. The decrease in kidney function places the elder at higher risk for toxicity from medications when excretion rates are longer. The following conditions cause these changes with age that are related to the bladder. Complaints of urinary urgency and urinary frequency are common. In men, these changes often are due to an enlarged prostate gland; in women, they might be due to weakened muscles supporting the bladder, or weakness of the urethral sphincter. The capacity of the bladder and its ability to completely empty diminish with age. This explains both the need for elders to arise during the night to void (nocturnal frequency) and the increase in the retention of residual urine. Increasing retention of residual urine predisposes the elder to bladder infection. Table 4-2 shows a summary of the development changes affecting urinary output.

**Psychosocial Factors**

For many people, a set of conditions helps stimulate the micturition reflex. These conditions include privacy, normal position, sufficient time, and, occasionally, running water. Circumstances that do not allow for the client’s accustomed conditions can produce bladder muscle tension. When this happens, primary and secondary nocturnal enuresis might both be related to poor daytime voiding habits, and children should be taught to be aware of the sensation to void (Robson, Findlay, & Travers, 2005).

**Fluid and Food Intake**

The healthy body maintains a balance between the amount of fluid ingested and the amount of fluid eliminated. When the amount of fluid intake increases, the output normally increases. Certain fluids, such as alcohol, increase fluid output by inhibiting the production of antidiuretic hormone. By contrast, food and fluids high in sodium can cause fluid retention so that body sodium will be able to maintain the normal concentration of electrolytes. Some foods and fluids can change the color of urine: Beets can cause urine to appear red; foods containing carotene can cause the urine to exhibit a yellow discoloration.

**Medications**

Many medications, particularly those affecting the autonomic nervous system, interfere with the normal urination process, and can cause retention (Box 4-1). Diuretics (e.g., chlorothiazide and furosemide) increase urine formation by preventing the reabsorption of water and electrolytes from the tubules of the kidney into the bloodstream. Some medications can alter the color of the urine.

**Muscle Tone**

Good muscle tone is important to maintain the elasticity and contractility of the detrusor muscle so the bladder can fill adequately and empty completely. Clients who require use of a retention catheter for a long period can develop poor bladder muscle tone because continuous drainage of urine prevents the bladder from filling and emptying normally. Pelvic muscle tone also contributes to the ability to store and empty urine.

**Pathologic Conditions**

Some diseases and conditions can affect the formation and excretion of urine. Diseases of the kidneys can affect the ability of the nephrons to produce urine. Abnormal amounts of protein or blood-cells might be present in the urine, or the kidneys might virtually stop producing urine altogether, a condition known as renal failure. Heart and circulatory disorders, such as heart failure, shock, or hypertension, can affect blood flow to the kidneys, interfering with urine production. When abnormal amounts of fluid are lost through another route (e.g., vomiting or high fever), the kidneys might decrease water, and urinary output decreases.

Processes that interfere with the flow of urine from the kidneys to the urethra also affect urinary excretion. A urinary tract infection might cause irritation and bladder emptying. Opioids, such as hydrocodone (Vicodin) and morphine (Apo-Morphine), as well as other medications such as anticholinergic and antispasmodic medications, such as atropine and papaverine, can cause bladder hyperactivity and can cause retention of residual urine. Anticholinergic and antispasmodic medications, such as atropine and papaverine, can cause bladder hyperactivity and can cause retention of residual urine. Antidepressant and antipsychotic agents, such as phenothiazines and MAO inhibitors (e.g., clorgyline or Selegiline) also contribute to the ability to store and empty urine.

**Surgical and Diagnostic Procedures**

Some surgical and diagnostic procedures affect the passage of urine, as well as the urine itself. The urethra can swell after cystoscopy, and surgical procedures on any part of the urinary tract can result in some postoperative bleeding: as a result, the urine might be tinged red or pink for a time. Spinal anesthesia can affect the passage of urine because they decrease the client’s awareness of the need to void. Swelling in the lower abdomen due to surgery on structures adjacent to the urinary tract (e.g., the uterus) can also affect voiding.

**Age-related Changes in the Urinary System**

It is difficult to differentiate normal aging of the genitourinary system from the conditions associated to common conditions found in older people. It is prudent, therefore, to keep an open mind when discussing age-related changes. Renal function begins to decline around the age of 40, but does not create significant issues for an otherwise healthy individual until the ninth decade of life. At that time, decreased glomerular filtration rate, renal blood flow reduction, and response to sodium loss are marked. The renal function in an 85-year-old person is only about 50% of that of a 30-year-old person (Timiras & Timiras, 2005). The BUN/BUN (BUN) will increase (Esposito et al., 2007). In addition, the kidney’s ability to concentrate electrolytes will decrease even more than in the daytime. More urine is formed at night, potentially interrupting sleep patterns.

One very important consequence of these changes is impairment in the excretion of drugs and their metabolites, making older adults extremely susceptible to drug overdose and other adverse effects of medication, even within a normal dose range. This is of particular concern for the elder adult with multiple health impairments who requires a number of different types of pharmacologic therapies. Another consequence is an increased probability of hyperkalemia, particularly when potassium-sparing diuretics, ACE inhibitors, nonsteroidal anti-inflammatory drugs (NSAIDs), or beta blockers are used (Timiras & Timiras, 2007). The older adult’s decreased ability to concentrate urine results in an increased susceptibility to dehydration, a problem that is exacerbated by a decreased thirst response; therefore, the elderly person might not feel thirsty even when significantly dehydrated. In addition, an older adult who has concerns about incontinence might choose not to drink for fear of an incontinence accident. A fifth consequence of these changes in older adults is a decline in the ability to respond to a fluid overload by increasing urine production. Changes in the bladder and the urethra also occur with aging. The bladder becomes more fibrous, with subsequent decreased capacity and increased postvoid residuals (Huether & McCance, 2005). Autonomic regulation of the bladder via the nervous system decreases with age, affecting contraction of both the detrusor muscles and the external sphincter. The detrusor muscle, three layers of muscles that cover the bladder, become less contractile but also somewhat unstable. This means that the older adult is subject to the inability to completely empty the bladder, and to involuntary contractions of the bladder (Ouslander & Johnson, 2005). There is age-related weakening of the voluntary pelvic floor muscles important in controlling the release of urine from the urethra. These changes make older adults more likely to have difficulty delaying urination, and predispose them to urinary incontinence and urinary tract infection. Despite these many changes, it is important for the nurse to remember that even though there are anatomic and physiologic changes that make incontinence more probable with increased age, urinary incontinence is not a normal part of aging.

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**Box 4-1 Medications that Can Cause Urinary Retention**

- Anticholinergic and antispasmodic medications, such as atropine and papaverine
- Antidepressant and antipsychotic agents, such as phenothiazines and MAO inhibitors
- Antihypertensive medications, especially those containing pseudoephedrine (e.g., Claritin-D and Sudafed)
- Antihistamines, such as hydroxyzine (Atarax) and methylphenidate (Ritalin)
- Antiparkinsonism drugs, such as levodopa, trihexyphenidyl (Artane), and benztropine mesylate (Cogentin)
- Beta-adrenergic blockers, such as propranolol (Inderal)
- Opioids, such as hydrocodone (Vicodin)

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**TABLE 4-2 Changes in Urinary Elimination through the Life Span**

<table>
<thead>
<tr>
<th>Stage</th>
<th>Variations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fetuses</td>
<td>The fetal kidney begins to excrete urine between the 11th and 12th weeks of development.</td>
</tr>
<tr>
<td>Infants</td>
<td>Ability to concentrate urine is minimal; therefore, urine appears light yellow.</td>
</tr>
<tr>
<td>Adults</td>
<td>The kidneys reach a maximum size between 35 and 40 years of age. After 50 years, the kidneys begin to diminish in size and function. Function shrinkage occurs in the cortex of the kidney as individual nephrons are lost.</td>
</tr>
<tr>
<td>Elders</td>
<td>An estimated 50% of nephrons are lost by age 40.</td>
</tr>
</tbody>
</table>
Older adults tend to have higher basal levels of ADH than do younger adults, and the pituitary responds more vigorously to osmotic stimuli by secreting more ADH than in younger people (Timiras & Leary, 2007). ADH is released as a response to hypotension and hyponatremia (low blood volume); however, its action is blunted in elderly adults, requiring the release of more hormones to achieve the desired antidiuretic effect. In addition, the aging kidney is less responsive to circulating ADH, producing urine that is poorly concentrated and rich in sodium. This puts the older adult at increased risk of hyponatremia, an abnormally low concentration of sodium in the blood, which can be magnified with the use of diuretics.

### ALTERATIONS

Some diseases and conditions can affect the formation and excretion of urine. Diseases of the kidneys can affect the ability of the nephrons to produce urine. Abnormal amounts of protein or blood cells can be present in the urine, or the kidneys might virtually stop producing urine altogether, a condition known as renal failure. Heart and circulatory disorders such as heart failure, shock, or hypertension can affect blood flow to the kidneys, interfering with urine production. If abnormal amounts of fluid are lost through another route (e.g., vomiting or high fever), water interferes with urine production. If abnormal amounts of fluid take, it often indicates impaired blood flow to the kidneys or impending renal failure, and should be promptly reported to the primary care provider. Restoring renal blood flow and urinary output rapidly can prevent renal failure and its complications. Anuria refers to a lack of urine production.

Should the kidneys become unable to adequately function, some mechanism of filtering the blood is necessary to prevent illness and death. This filtering is done through the use of renal dialysis, a technique by which fluids and molecules pass through a semipermeable membrane according to the rules of osmosis. The two most common methods of dialysis are hemodialysis and peritoneal dialysis. In hemodialysis, the client’s blood flows through vascular catheters, passes by the dialysis solution in an external machine, and then returns to the client. In peritoneal dialysis, the dialysis solution is instilled into the abdominal cavity through a catheter, allowed to rest there while the fluid and molecules exchange, and then removed through the catheter. Both hemodialysis and peritoneal dialysis must be performed at frequent intervals until the client’s kidneys can resume the filtering function.

### ALTERED URINE PRODUCTION

Polyuria (drinking habits) is the production of abnormally large amounts of urine by the kidneys, often several liters more than the client’s usual daily output. Polyuria can occur after excessive fluid intake, a condition known as polydipsia, or can be associated with diseases such as diabetes mellitus, diabetes insipidus, and chronic nephritis. Polyuria can cause excessive fluid loss, leading to intense thirst, dehydration, and weight loss.

Polyuria and polydipsia are terms used to describe decreased urinary output. Oliguria is low urine output, usually less than 500 mL a day or 30 mL an hour for an adult. Although oliguria might occur due to abnormal fluid losses or a lack of fluid intake, it often indicates impaired blood flow to the kidneys or impending renal failure, and should be promptly reported to the primary care provider. Restoring renal blood flow and urinary output rapidly can prevent renal failure and its complications. Anuria refers to a lack of urine production.

### ALTERED URINARY ELIMINATION

#### Table 4–3

<table>
<thead>
<tr>
<th>Pattern</th>
<th>Selected Associated Factors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Polyuria</td>
<td>Ingestion of fluids containing caffeine or alcohol, prescribed diuretics, presence of thirst, dehydration, and weight loss, history of diabetes mellitus, diabetes insipidus, or kidney disease</td>
</tr>
<tr>
<td>Oliguria</td>
<td>Decrease in fluid intake, signs of dehydration, presence of hypertension, shock, or heart failure, history of kidney disease, signs of renal failure such as elevated blood urea nitrogen (BUN) and serum creatinine, edema/ hypertension</td>
</tr>
<tr>
<td>Frequency or nocturia</td>
<td>Pregnancy, increase in fluid intake, urinary tract infection</td>
</tr>
<tr>
<td>Dysuria</td>
<td>Urinary tract infection, infection, or injury, headaches, hematuria, pyuria (pus in the urine), and frequency</td>
</tr>
<tr>
<td>Enuresis</td>
<td>Family history of enuresis, difficult access to toilet facilities, home stresses, bladder inflammation or other disease, difficulties in independent toileting (mobility impairment), leakage when coughing, laughing, sneezing, cognitive impairment</td>
</tr>
<tr>
<td>Retention</td>
<td>Distended bladder on palpation and percussion, associated signs, such as pubic discomfort, restlessness, frequency, and small urine volume</td>
</tr>
</tbody>
</table>

### Urinary Assessment

#### Technique/Normal Findings

**Skin Assessment**

- Inspect the skin and mucous membranes, noting color, turgor, and exudations. The color of skin and mucous membranes should be even and appropriate to the age and race of the client; skin should be dry with no visible excretions.

**Abnormal Findings**

- Pallor of the skin and mucous membranes may indicate kidney disease with resultant anemia.
- Cyanosis of the skin may indicate dehydration.
- Edema (generalized or in the lower extremities) may indicate fluid volume excess. (Changes in skin turgor may indicate renal insufficiency with either excess fluid loss or retention.)
- An accumulation of urine on skin may indicate renal insufficiency with fluid volume excess.
Urinary Assessment (continued)

Abdominal Assessment

Inspect the abdomen, noting size, symmetry, masses or lumps, swelling, distention, guarding, or skin tightness. The abdomen should be slightly concave, symmetric, without distention or masses.

Urinary Meatus Assessment

This technique is not part of a routine assessment, but it is an important component in clients with health problems of the urinary system. Further discussion is included in Chapter 49.

For the male client: With the client in a sitting or standing position, compress the tip of the glans penis with your gloved hand to open the urinary meatus (Figure 27–6). No tenderness or pain should be noted. The urinary meatus should be midline and free of redness, lesions, or discharge.

For the female client: With the client in the dorsal lithotomy position, spread the labia with your gloved hand to expose the urinary meatus. The urinary meatus should be midline and free of redness, lesions, or discharge.

Kidney Assessment

See Box 27–1 for assessment guidelines for palpation and percussion of the kidneys.

Ascultate the renal arteries by placing the bell of the stethoscope lightly in the areas of the renal arteries, located in the left and right upper abdominal quadrants. Bruits are not normally heard over the renal arteries.

Percuss the kidneys for tenderness or pain. No tenderness or pain should be noted. If the kidneys are palpable or tender on light palpation; further palpation deferred. Urinary bladder below symphysis. Skin pale and oral mucous membranes dry. 4+ edema in ankles and feet. Eyelids swollen. Skin tight and shiny over abdomen and bilateral lower extremities. Abdomen distended and tender on light palpation; further palpation deferred. Urinary bladder not palpable. Urine output for past 24 hours is 15 mL.

Bladder Assessment

Percuss the bladder for tone and position. The bladder should be round or globular without distention.

Palpate the bladder below the symphysis pubis and abdomen for distention. The bladder is normally not palpable.

Urinary Assessment

 Fayetteville, NC: Pearson Education.

common in people who have poor external sphincter control and unstable bladder contractions. It is not a normal finding. Dysuria is voiding that is either painful or difficult. It can accompany a stricture (decrease in caliber) of the urethra, urinary infections, and injury to the bladder and urethra. Often clients will say they have to push to void, or that burning accompanies or follows voiding. The burning might be described as severe, like a hot poker, or more widespread, like sunburn. Often, urinary hesitancy (a delay and difficulty in initiating voiding) is associated with dysuria.

Adults and children can experience enuresis. Diurnal (day-time) enuresis can be persistent and pathologic in origin. It affects women and girls more frequently than boys and men. The occurrence of enuresis after voluntary bladder control has been successfully acquired should be reported to the primary care provider.

Impaired neurologic function can interfere with the normal mechanisms of urine elimination, resulting in a neurogenic bladder. The client with a neurogenic bladder does not perceive bladder fullness, and is unable to control the urinary sphincters. The bladder can become flaccid and distended or spastic, with frequent involuntary urination.

PHYSICAL ASSESSMENT

Physical assessment, an health assessment that collects subjective data, and diagnostic tests are all used to assess urinary system function. Box 4–2 shows sample documentation of an assessment of urinary system function.

Urine outputs below 30 mL per hour could indicate low blood volume or kidney malfunction. Nurses monitor urine output and should notify the primary provider if urine output averages less than 30 mL per hour over a 4-hour period.

URINARY ELIMINATION

Evaluation

How many times do you urinate during a 24-hour period? How often? What is the amount of urine, and a 24-hour collection for creatinine. Results of these tests include findings on physical examination data, to support diagnosis of various health problems, to evaluate the

VOIDING PATTERN

How many times do you urinate during a 24-hour period? Has this pattern changed recently? Do you need to get out of bed to void at night? How often?

DESCRIPTION OF URINE AND ANY CHANGES

How would you describe your urine in terms of color, clarity (clear, transparent, or cloudy), and odor (faint or strong)?

URINARY ELIMINATION PROBLEMS

What problems have you had or do you now have with passing your urine? Passage of small amounts of urine? Voids at intervals that are more frequent? Trouble getting to the bathroom in time or feeling an urgent need to void? Painful voiding? Difficulty starting urine stream? Frequent dribbling of urine or feeling of bladder fullness associated with voiding small amounts of urine? Reddish color of urine?

FACTORS INFLUENCING URINARY ELIMINATION

Medications. Do you take any medications that could increase urinary output or cause retention of urine? Note specific medication and dosage.

Fluid intake. What amount and kind of fluid do you take each day (e.g., six glasses of water, two cups of coffee, three cola drinks with or without caffeine)?

Environmental factors. Do you have any problems with toileting mobility, removing clothing, toilet seat too low, facility without grab bar? Stress. Are you experiencing any major stress? If so, what are the stressors? Do you think these affect your urinary pattern?

Diet. Have you had or do you have any illnesses that may affect urinary function, such as hypertension, heart disease, neurologic disease, cancer, prostate enlargement, or diabetes?

Diagnostic procedures and surgery. Have you recently had a cystoscopy or anesthesis?


Box 4–2 Sample Documentation

Assessment of Urinary System Function

Home visit made to 65-year-old woman with stage IV chronic kidney failure: Skin pale and oral mucous membranes dry. 4+ edema in ankles and feet. Eyelids swollen. Skin tight and shiny over abdomen and bilateral lower extremities. Abdomen distended and tender on light palpation; further palpation deferred. Urinary bladder not palpable. Urine output for past 24 hours is 15 mL.

The assessment interview conducted by the nurse provides critical information about urinary function. The nurse should be direct but polite, recognizing that discussing urinary function can be embarrassing to many clients. In addition to recording the client’s answers, the nurse should record any abnormalities she observes in the client, such as swelling and changes in skin integrity.

DIAGNOSTIC TESTS

The results of diagnostic tests of urinary system function are used to support the diagnosis of a specific disease, to provide information to identify or modify the appropriate medication or therapy used to treat the disease, and to help nurses monitor the client’s responses to treatment and nursing care interventions. Diagnostic tests to assess the structures and functions of the urinary system are described in the Diagnostic Tests feature and summarized in the bullet list that follows.

Urinary system tests include finding specific laboratory data, to support diagnosis of various health problems, to evaluate the
ability to empty the bladder of urine, and to evaluate renal function.

- The ability to empty the urinary bladder of urine may be evaluated by an ultrasonic bladder scan to evaluate for residual urine, uroflowmetry to measure the volume of urine voided per second, and cystometry (CMG) to evaluate bladder capacity, neuromuscular functions of the bladder, urethral pressures, and causes of bladder dysfunction.

- Radiologic examinations include intravenous pyelography, retrograde urography, and renal arteriography or angiography. These examinations are useful in visualizing (via x-ray film) the urinary tract to identify abnormal size, shape, and function of the kidneys, the kidney pelvis, and ureters; and to detect renal calculi (stones), tumors, or cysts.

- A cytoscopy allows direct visualization of the bladder wall and urethra. During this procedure, small stones can be removed, a sample of tissue may be taken for biopsy, and retrograde pyelography may be done at the same time. If a contrast dye is injected into the bladder, fistulas, tumors, or ruptures can be identified.

- Non-invasive tests include a renal ultrasound, computed tomography (CT) scan, magnetic resonance imaging (MRI), and renal scan. These tests are used to identify and evaluate kidney size and structure, as well as renal or perirenal masses and obstructions. In addition, a renal scan may be used to evaluate kidney blood flow, perfusion, and urine production. A kidney biopsy is done to obtain tissue to diagnose or monitor kidney disease. Regardless of the type of diagnostic test, the nurse is responsible for explaining the procedure and any special preparation needed, as well as assessing for medication use that might affect the outcome of the test. It is important that the nurse ensures that the patient fully understands the conditions under which the test will be administered, and which preparations the patient might need to take in advance (fasting, for example) for tests to be accurate and successful. The nurse also supports
**D I A G N O S T I C  T E S T S**

**Urinary System Disorders (continued)**

**NAME OF TEST** Creatinine clearance  
**PURPOSE AND DESCRIPTION** A 24-hour urine test to identify renal dysfunction and to monitor renal function.  
**Normal value:** 85–135/min.  
**NURSING CONSIDERATIONS** Assess medications; Phenothisin, steroids, and Thiazides can decrease creatinine clearance; aspirin, acid, steroids, d-cyclopenthylamid, and cisplatin could increase creatinine clearance. Levels of creatinine are elevated in hypothyroidism, hypertension, pregnancy, and exercise. Obtain appropriate specimen container. Ask the client to visit and discard first urination and refrain from voiding for several hours before the test to ensure a full bladder and a strong urge to void during testing. Tell the client he will be asked to urinate into a funnel.

**NAME OF TEST** Ultrasoundometry  
**PURPOSE AND DESCRIPTION** This test measures the volume of urine voided per second.  
**NURSING CONSIDERATIONS** Ask the client to increase fluid intake and refrain from voiding for several hours before the test to support the morning of the test. Instruct client to withhold food for eight hours prior to the test. (Clear liquids are allowed.)

**NAME OF TEST** Intravenous pyelogram (IVP)  
**PURPOSE AND DESCRIPTION** This radiologic examination is done to visualize the entire urinary tract to identify abnormal size, shape, and function of the kidneys, or to detect renal calculi (stones), tumors, or cysts. A radiopaque substance is injected IV and a series of x-rays taken.  
**CLIENT PREPARATION**  
- **Health Education** for the CLIENT and FAMILY
- **NURSING CONSIDERATIONS**

**NAME OF TEST** Retrograde pyelography  
**PURPOSE AND DESCRIPTION** This radiologic test is done to evaluate the structures of the ureters and kidney pelvis. It may be performed alone or in conjunction with a cystoscopy. A contrast dye is injected through a catheter into the ureters and kidney pelvis, and x-rays are taken.

**NAME OF TEST** Cystoscopy (cystogram), cystography  
**PURPOSE AND DESCRIPTION** Direct visualization of the bladder wall and urothelium is accomplished using a cystoscope. During the procedure, small renal calculi can be removed from the ureter, bladder, or urethra, and tissue biopsy can be done. This test also permits documentation of the cause of hematuria or UI. A stent may be inserted during the procedure to facilitate urinary drainage past an obstruction. A retrograde pyelogram may also be done during the cystoscopy. By instilling a contrast dye into the bladder (cystography), neuregenic bladder function, tumors, or ruptures can be identified.  
**CLIENT PREPARATION**  
- **Health Education** for the CLIENT and FAMILY

**NAME OF TEST** Renal angiogram or angiography  
**PURPOSE AND DESCRIPTION** This radiologic test is done to visualize renal blood vessels in order to detect renal artery stenosis, renal thrombosis or embolism, tumors, cysts, or aneurysms; to determine the causative factor for hypertension; and to evaluate renal circulation. A contrast medium is injected into the femoral artery.  
**NURSING CONSIDERATIONS** Assist for allergies to iodine, seafood, or other contrast dye from other x-ray procedures. A latex or rubber-based contrast medium may be used.  
**Health Education for the Client and Family**

**NAME OF TEST** Renal ultrasonogram  
**PURPOSE AND DESCRIPTION** This noninvasive test is conducted to detect renal or perirenal masses, identify obstructions, and diagnose renal cysts and solid masses. It is done by applying a conductive gel to the skin and placing a small external ultrasound probe on the client’s skin. Sound waves are recorded on a computer as they are reflected off tissues.  
**NURSING CONSIDERATIONS** No special developmental considerations are indicated.  
**NURSING CONSIDERATIONS** Assess the client for allergies to iodine, x-ray contrast dye, and seafood. Tell the client to remain n.p.o. for four hours prior to the test, and that laxatives or enemas might be ordered to remove gas or fecal material from the bowel.  
**NURSING CONSIDERATIONS** Pediatric clients might require sedation prior to testing to obtain cooperation.  
**NURSING CONSIDERATIONS** Patients who are claustrophobic might require minimal sedation or an “open” MRI.  
**NURSING CONSIDERATIONS** Pediatric clients might require sedation prior to testing to obtain cooperation.
client during the examination as necessary, documents the procedures as appropriate, and monitors the results of the tests. Blood levels of two metabolically produced substances, urea and creatinine, are routinely used to evaluate renal function. Both substances are normally eliminated by the kidneys through filtration and tubular secretion. Urea, the end product of protein metabolism, is measured as blood urea nitrogen (BUN). Creatinine is produced in relatively constant quantities associated with urinary elimination is to maintain the integrity of the urinary system, which eliminates excess fluid and wastes, thereby promoting homeostasis.

**CARING INTERVENTIONS**

The primary purpose for performing nursing interventions associated with urinary elimination is to maintain the integrity of the urinary system, which eliminates excess fluid and wastes, thereby promoting homeostasis.

Aseptic technique is essential whenever performing procedures that could introduce bacteria into the urinary tract. Handwashing, using sterile gloves, and maintaining a closed urinary collection system decrease the incidence of ascending bladder contamination and subsequent urinary tract infection. Maintaining aseptic technique throughout dialysis procedures is necessary to prevent infection in grafts, fistulas, and catheters. Consult your skills manual for step-by-step descriptions of the following caring interventions related to urinary elimination:

- Measuring Intake and Output
- External Urine Collection Systems
- Urinary Catheterization
- Bladder Irrigation
- Suprapubic Catheter Care
- Collecting Specimens from a Closed Urinary System
- Urinary Diversions
- Hemodialysis

**PHARMACOLOGIC THERAPIES**

Pharmacological therapy for urinary elimination can include diuretics to increase the production of urine; anticholinergic medications to reduce urinary frequency and treat incontinence related to urgency; or cholinergic medications to stimulate bladder contractions and promote urination, especially in clients with difficulty voiding.

There are four subclasses of diuretics, based on where and how they act in the kidney. Loop diuretics, as the name implies, work in the loop of Henle by blocking reabsorption of sodium and chloride. Thiazide diuretics act on the distal tubule to block sodium reabsorption and increase potassium and water excretion. Potassium-sparing diuretics work in the distal tubule, allowing sodium to be excreted while retaining much of the potassium to the body, thereby avoiding the large potassium losses seen with other types of diuretics. Finally, there is a miscellaneous group of diuretics that cannot be otherwise classified. The miscellaneous group includes carbonic anhydrase inhibitors and osmotic diuretics.

**Bowel Elimination**

Nurses frequently are consulted or involved in assisting clients with elimination problems. These problems can be embarrassing to clients, and can cause considerable discomfort. This is particularly true as we age. Young children are often happily obsessed with issues of elimination, proudly notifying any adult nearby when they have successfully used the toilet. Elders, however, can be extremely embarrassed discussing issues of incontinence with family members and caregivers, even when they are in considerable discomfort. Fortunately, this is one issue that might prompt elders to consult a physician more quickly, in hopes of preventing an embarrassing or uncomfortable situation in public. The prevalence of advertising for laxatives and bladder-control medications also can impact patient-doctor communication of this important issue.

**DIAGNOSTIC TESTS**

**Renal biopsy**

**PURPOSE AND DESCRIPTION**

A renal biopsy is done to obtain tissue to diagnose or monitor kidney disease. The test is usually done by inserting a needle through the skin into the lower lobe of the kidney. It can also be done with CT or ultrasound guidance.

**CLIENT PREPARATION**

- Informed consent is required for a kidney biopsy. Answer questions and provide additional information as needed.
- Maintain n.p.o. status from midnight before the procedure.
- Note hemoglobin and hematocrit prior to the procedure.
- If the procedure is to be performed at the bedside, obtain a biopsy tray and other necessary supplies.
- Following the procedure, apply a pressure dressing, and position the client supine to help maintain pressure on the biopsy site.
- Monitor closely for bleeding during the first 24 hours after the procedure:
  - a. Check vital signs frequently. Notify the physician of tachycardia, hypotension, or other signs of shock.
  - b. Monitor the biopsy site for bleeding.
  - c. Check hemoglobin and hematocrit, comparing with pre-procedure values.

**HEALTH EDUCATION FOR THE CLIENT AND FAMILY**

- Local anesthetics is used at the injection site. The procedure might be uncomfortable but should not be painful.
- When the needle is inserted, you will be instructed not to breathe, to prevent kidney motion.
- The entire procedure takes approximately 10 minutes.
- Avoid coughing during the first 24 hours after the procedure.
- Stress activity such as heavy lifting might be prohibited for approximately two weeks after the procedure.
- Any manifestations of complications, such as hematuria or urinary tract infection, to the physician.

**Developmental Considerations**

- No special developmental considerations are indicated.

**MEDICATIONS**

**Anticholinergic agents**

These reduce urgency and frequency by blocking muscarinic receptors in the detrusor muscle of the bladder, thereby inhibiting contractions and increasing storage capacity. They can be useful in relieving symptoms associated with voiding in clients with neurogenic bladder, restorative urinary bladder, and urethral incontinence.

**Commonly Prescribed Drugs**

- Oxybutynin

**Nursing Considerations**

- Monitor for constipation, dry mouth, urinary retention, blurred vision, and in the elderly mental confusion. Symptoms can be dose-related.
- Start with small doses for clients over the age of 70.
- Oxybutynin is contraindicated in clients with urinary retention, gastrointestinal, and bladder-rectal problems (partial or complete obstruction, diverticulum, or colonic ileus), or uncontrolled narrow-angle glaucoma.

**Cholinergic agents or parasympathomimetics**

These medications stimulate bladder contraction and facilitate voiding.

**Commonly Prescribed Drugs**

- Bethanechol chloride (Urecholine)

**Nursing Considerations**

- Do not administer to clients with gastrointestinal or urinary tract obstruction, asthma, bronchopulmonary disease, or Parkinson’s disease.
- Can increase serum AST, amylase, and lipase levels.
- Effect of medications is antagonized by anticholinergic agents such as antihistamines, antispasmodics, and sedatives.
- Overdose is treated with atropine sulfate.

**Diuretics**

Each type of diuretic works in a specific place within the nephron to increase fluid excretion and prevent fluid reabsorption.

- Thiazide, potassium-sparing, and miscellaneous-type diuretics

**Measuring Intake and Output**

- External Urine Collection Systems

**Diuretics:**

- Loop, thiazide, potassium-sparing, and miscellaneous-type diuretics
NORMAL PRESENTATION

The excreted waste products from the bowel are referred to as feces or stool. Individuals (especially children) might use very different terms for a bowel movement. The nurse might need to try several different common words before finding one the client understands. Defecation is the expulsion of feces from the anus and rectum. It is also called a bowel movement. The frequency of defecation is highly individual, varying from several times per day to two or three times per week. The amount defecated also varies from person to person.

Normal feces are made up of about 75% water and 25% solid materials. They are soft but formed. If the feces are propelled very quickly along the large intestine, there is inadequate time for most of the water in the chyme to be reabsorbed, and the feces will be more fluid, containing perhaps 95% water. Normal feces require a normal fluid intake; feces that contain less water may be hard and difficult to expel. Feces are normally brown, changeable in color and consistence, and contain occasional tiny exerted blood, which is derived from blood cells (a red pigment in bile). Another factor that affects fecal color is the action of bacteria such as Escherichia coli or staphylococci, which are normally present in the large intestine. The action of microorganisms on the chyme is also responsible for the odor of feces.

An adult usually forms 7–10L of flatus (gas) in the large intestine every 24 hours. The gases include carbon dioxide, methane, hydrogen, oxygen, and nitrogen. Some are swallowed with food and fluids taken by mouth; others are formed through the action of bacteria on the chyme in the large intestine; and other gas diffuses from the blood into the gastrointestinal tract.

Bowel Elimination and Pregnancy

During pregnancy, elevated progesterone levels cause smooth muscle relaxation, resulting in delayed gastric emptying and delayed defecation. As a result, the pregnant woman might complain of bloating and constipation. These symptoms are aggravated as the enlarging uterus displaces the stomach upward and the rectum and sigmoid are moved laterally and posteriorly. The cardiac sphincter also relaxes, and heartburn (pyrosis) can occur due to reflux, a backward flow of acidic secretions into the lower esophagus. Hemorrhoids frequently develop in late pregnancy from constipation and from pressure on vessels below the level of the uterus.

In the postpartum period, the bowel tends to be sluggish following birth because of the lingering effects of progesterone, decreased abdominal muscle tone, and bowel evacuation associated with the labor and birth process. A woman who has had an episiotomy, lacerations, or hemorrhoids might tend to delay defecation for fear of increasing her pain, or because she believes her stitches will be torn if she bears down. In refusing or eliminating for fear of increasing her pain, or because she associated with the labor and birth process. A woman who has had a cesarean or a difficult birth might benefit from stool softeners.

FACTORS AFFECTING DEFECATION

Defecation patterns vary at different stages of life. Circumstances of diet, fluid intake, activity, psychologic factors, lifestyle, medications and medical procedures, and disease also affect defecation.

Development

Newborns and infants, toddlers, children, and elders are groups within which members have similarities in elimination patterns.

NEWBORNS AND INFANTS

Trem newborns usually pass meconium within 8–24 hours of life, and almost always within 48 hours. Meconium is formed from the amniotic fluid and its contents, intestinal secretions, and shed mucosal cells. It is recognized by its thick, tarry black or dark green appearance. Transitional (thin brown to green) stools consisting of part meconium and part fecal material are passed for the next day or two, and then the stools become entirely fecal. Generally, the stools of a breastfed newborn are pale yellow (but can be pasty green). They are usually more liquid and more frequent than those of formula-fed newborns, whose stools are paler (Figure 4-6 b).

Frequency of bowel movement varies, but ranges from one every 2–3 days to as many as 10 movements daily. Totally breastfed infants often progress to stools that occur every 5–7 days. Mothers should be counseled that the newborn is not constipated as long as the bowel movements are soft. Several key factors to remember about physiologic adaptations to extraterrestrial life are:

- Periodic breathing might be present.
- Desired skin temperature 36–36.5º C (96.8–97.7º F) stabilizes 4–6 hours after birth.
- Desired blood glucose level reaches 60–70 mg/dL by the next postnatal day.
- Stools (progress from):
  - Meconium (tarry, black).
  - Transitional stools (thin, brown to green).
  - Breastfed infants (yellow-gold, soft or mushy).
  - Formula-fed infants (pale yellow, formed, and pasty).

Infants pass stool frequently, often after each feeding. Because the intestine is immature, water is not well absorbed, and the stool is soft, liquid, and frequent. When the intestine matures, bacterial flora increase. After solid foods are introduced, the stool becomes less frequent and firmer.

TODDLERS

Some control of defecation starts at 11⁄2–2 years of age. By this time, children have learned to walk, and void and muscular systems are sufficiently well developed to permit bowel control. A desire to control daytime bowel movements and to use the toilet generally starts when the child becomes aware of (a) the discomfort caused by a soiled diaper, and (b) the sensation that indicates the need for a bowel movement. Daytime control is typically attained by age 2 ½, after the process of toilet training.

SCHOOL-AGE CHILDREN AND ADOLESCENTS

School-age children and adolescents have bowel habits similar to those of adults. Patterns of defecation vary in frequency, quantity, and consistency. Some school-age children might delay defecation because of an activity such as play.

ELDERS

Constipation is the most common bowel-management problem in the elderly population (Maik, 2005). This is due, in part, to reduced activity levels, inadequate amounts of fluid and fiber intake, and muscle weakness. Many older people believe that regularity means a bowel movement every day. Those who do not meet this criterion often seek over-the-counter procedures to relieve what they believe to be constipation. Elders should be advised that normal patterns of bowel elimination vary considerably. For some, a normal pattern might be every other day; for others, twice a day. Adequate roughage in the diet, adequate exercise, and 6–8 glasses of daily fluid are essential preventive measures for constipation. A cup of hot water or tea at a regular time in the morning is helpful for some. Responding to the gastrocolic reflex (increased peristalsis of the colon after food has entered the stomach) is also an important consideration. For example, toasting is recommended 5–15 minutes after meals, especially after breakfast, when the gastrocolic reflex is strongest (Humphreys & Husseine, 1991, p. 23).

The older adult should be warned that consistent use of laxatives inhibits natural defecation reflexes, and is thought to cause rather than cure constipation. The habitual user of laxatives eventually requires larger or stronger doses because the effect is progressively reduced with continual use. Laxatives also interfere with the body’s electrolyte balance and decrease the absorption of certain vitamins. The reasons for constipation can range from lifestyle habits (e.g., lack of exercise) to serious malignant disorders (e.g., colorectal cancer). The nurse should evaluate any complaints of constipation carefully for each individual. A change in bowel habits over several weeks with or without weight loss, pain, or fever should be referred to a primary care provider for a complete medical evaluation.

DIET

Sufficient bulk (cellulose, fiber) in the diet is necessary to provide fecal volume. Bland diets and low-fiber diets are lacking in bulk, and therefore create insufficient residue of waste products to stimulate the reflex for defecation. Low-residue foods, such as rice, eggs, and lean meats, move more slowly through the intestinal tract. Increasing fluid intake with such foods increases their rate of movement.

Certain foods are difficult or impossible for some people to digest. This difficulty can result in digestive upset and, in some instances, the passage of watery stools. Irregular eating can also impair regular defecation. Individuals who eat at the same times every day usually have a regularly timed, physiologic response to the food intake, and a regular pattern of peristaltic activity in the colon.

Spicy foods can produce diarrhea and flatus in some individuals. Excessive sugar can also cause diarrhea. Other foods that may influence bowel elimination include the following:

- Gas-producing foods, such as cabbage, onions, cauliflower, bananas, and apples.
- Laxative-producing foods, such as bran, prunes, figs, chocolate, or dates.
- Constipation-producing foods, such as cheese, pasta, eggs, and lean meat.

FLUID

Even when fluid intake is inadequate or output (e.g., urine or vomitus) is excessive for some reason, the body continues to reabsorb fluid from the chyme as it passes along the colon. The colon becomes drier than normal, resulting in hard feces. In addition, reduced fluid intake slows the passage of chyme along the intestines, further increasing the reabsorption of fluid from the chyme. Healthy fecal elimination usually requires a daily fluid intake of 2,000–3,000 mL. If chyme moves abnormally quickly through the large intestine, however, there is less time for fluid to be absorbed into the blood, and soft or even watery feces will result.

ACTIVITY

Activity stimulates peristalsis, facilitating the movement of chyme along the colon. Weak abdominal and pelvic muscles are often ineffective in increasing the intra-abdominal pressure during defecation or in controlling defecation. Weak muscles can result from lack of exercise, immobility, or impaired neurologic functioning. Clients confined to bed are often constipated.

PSYCHOLOGIC FACTORS

Some people who are anxious or angry experience increased peristaltic activity, and subsequent nausea or diarrhea. In contrast, people who are depressed might experience slowed intestinal motility, resulting in constipation.
How a person responds to these emotional states is the result of individual differences in the response of the enteric nervous system to vagal stimulation from the brain. "Defecation Habits" Early bowel training can establish the habit of defecating at a regular time. Many people defecate after breakfast because the gastrocolic reflex causes mass peristaltic waves in the large intestine. If a person ignores this urge to defecate, water continues to be reabsorbed, making the feces hard and difficult to expel. When the normal defecation reflexes are inhibited or ignored, these conditioned reflexes tend to be progressively weakened. When habitually ignored, the urge to defecate is ultimately lost. Adults might ignore these reflexes because of the pressures of time or work. Hospitalized clients might suppress the urge because of embarrassment about using a bedpan, because of lack of privacy, or because defecation is too uncomfortable.

Medications Some drugs have side effects that can interfere with normal elimination. Large doses of certain tranquilizers and repeated administration of morphine or codeine cause constipation by decreasing gastrointestinal activity through their action on the central nervous system. Iron tablets, which have an astringent effect, act more locally on the bowel mucosa to cause constipation. A variety of other drugs cause diarrhea. Some medications directly affect elimination. Laxatives are medications that stimulate bowel activity, and so assist fecal elimination. Other medications soften stool, facilitating defecation. Certain medications suppress peristaltic activity, and may be used to treat diarrhea. Medications also affect the appearance of the feces. Any drug that causes gastrointestinal bleeding (e.g., aspirin products) can cause the stool to be red or black. Iron salts lead to black stool because of the oxidation of the iron; antibiotics can cause a gray-green discoloration; and antacids can cause a whitish discolored stool. A dark brown stool results from the oxidation of the iron; antibiotics can cause a gray-green discoloration; and antacids can cause a whitish discoloration of the stool. Pepsin-Bismol, a common over-the-counter drug, causes stools to be black. The stool color may be useful in diagnosing the cause of the bowel disorder. "Diarrhea and Incontinence"

Laxatives

Mucus, blood, and pus can be expelled with the stool. Medications that cause diarrhea are often used to treat constipation. Clients who experience discomfort when defecating (e.g., following herniorrhaphy surgery) often suppress the urge to defecate to avoid the pain. These clients can experience constipation as a result. Clients taking narcotic analgesics for pain also can experience constipation as a side effect of the medication. "Anesthesia and Surgery"

In general, anesthetics cause the colon to become more distensible and to lose its muscle tone. "Altering Effects of Digestion on Stool"

The gases formed in the large intestine are chiefly absorbed through the intestinal capillaries into the circulation. The gases formed in the large intestine are chiefly absorbed through the intestinal capillaries into the circulation. The gases formed in the large intestine are chiefly absorbed through the intestinal capillaries into the circulation. The gases formed in the large intestine are chiefly absorbed through the intestinal capillaries into the circulation. The gases formed in the large intestine are chiefly absorbed through the intestinal capillaries into the circulation. The gases formed in the large intestine are chiefly absorbed through the intestinal capillaries into the circulation. The gases formed in the large intestine are chiefly absorbed through the intestinal capillaries into the circulation. The gases formed in the large intestine are chiefly absorbed through the intestinal capillaries into the circulation. The gases formed in the large intestine are chiefly absorbed through the intestinal capillaries into the circulation.
Abdominal Assessment
Inspect abdominal contour, skin integrity, venous pattern, and aortic pulsation. Abdomen should be slightly concave with intact skin. There should not be distended veins or obvious aortic pulsations.

Auscultate all four quadrants of the abdomen with the diaphragm of the stethoscope. Begin in the lower right quadrant, where bowel sounds are almost always present. Normal bowel sounds (gurgling or clicking) occur every 3 to 15 seconds. Listen for at least 5 minutes in each of the four quadrants to confirm the absence of bowel sounds.

Auscultate the abdomen for vascular sounds with the bell of the stethoscope. No sounds (bruits, venous hum, or friction rub) other than bowel sounds should be auscultated.

Percuss the abdomen in all four quadrants (see Figure 25–3). Normally tympany is heard over the stomach and gas-filled bowels.

Palpate the abdomen in all four quadrants. Use a circular motion to move the abdominal wall over underlying structures. Feel for masses and note any tenderness or pain the client may have during this part of the exam. Palpate lightly at first (0.5 to 0.75 inch), then more deeply (1.5 to 2 inches) with caution. If a mass is palpated, ask the client to raise head and shoulders. There should be no abdominal masses or pain on palpation.

Palpate for rebound tenderness. Press the fingers into the abdomen slowly and release the pressure quickly. If rebound tenderness is present, there should be no abdominal masses or pain on palpation.

Inguinal Area Assessment
Inspect the inguinal area for bulges after asking the client to bear down. The inguinal area is normally free of bulges.

Bowel Assessment
Technique/Normal Findings
Abnormal Findings

| Generalized abdominal distention may be seen in gas retention or obesity. |
| Lower abdominal distention is seen in bladder distention, pregnancy, or ovarian mass. |
| General distention and an enlarged umbilicus are seen with ascites and/or tumors. |
| A scaphoid (sunken) abdomen is seen in malnourishment or when fat is replaced with muscle. |
| Swell (whitish-yellow stretch marks) are seen in obesity and during or after pregnancy. |
| Spigelian hernia may be seen in liver disease. |
| Dilated veins are prominent in cirrhosis of the liver, ascites, portal hypertension, or venous obstruction. |
| Pulitation is increased in aortic aneurysm. |
| Bowel sounds may be absent later in bowel obstruction, with an inflamed peritoneum, and/or following surgery of the abdomen. |
| Palpation of the abdomen may cause abdominal pain and involuntary muscle spasms. |
| Bruits (blowing sound due to restriction of blood flow through vessels) may be heard over constricted arteries. A bruit over the liver may be heard in hepatic carcinoma. |
| A venous hum (continuing medium-pitched sound) may be heard over a cirrhotic liver. |
| Friction rubs (rough grating sounds) may be heard over an inflamed liver or spleen. |
| Dimness is heard when the bowel is displaced with fluid or tumors filled with a fecal mass. |
| A mass in the abdomen may become more prominent when the head and shoulders are raised, as well as a ventral abdominal wall hernia. If the mass is no longer palpable, it is deeper in the abdomen. |
| In cases of peritoneal inflammation, palpation causes abdominal pain and involuntary muscle spasms. |
| Abnormal masses include aortic aneurysms, neoplastic tumors of the colon or uterus, and a distended bladder or distended bowel due to obstruction. |
| A rigid, boardlike abdomen may be palpated when the client has a perforated duodenal ulcer. |
| In peritoneal inflammation, pain occurs when the fingers are withdrawn. |
| Right upper quadrant pain occurs with acute cholecystitis. |
| Upper middle abdominal pain occurs with acute pancreatitis. |
| Right lower quadrant pain at McBurney's point occurs with acute appendicitis. |
| Left lower quadrant pain is seen in acute diverticulitis. |
| Bulges that appear in the inguinal area when the client bears down may indicate a hernia (a defect in the abdominal wall that allows abdominal contents to protrude outward). |

Abnormal Findings

| A bulge or mass may indicate a hernia. |

Perianal Assessment
Inspect the perianal area. Wearing gloves, spread the client's buttocks apart. Observe the area, and ask client to bear down as if trying to have a bowel movement. The perianal area should be intact without obvious lesions.

Palpate the anus and rectum. Lubricate the gloved index finger and ask the client to bear down. Touch the tip of your finger to the client's anal opening. Flex the index finger, and slowly insert it into the anus, pointing the finger toward the umbilicus (Figure 25–4 B). Rotate the finger in both directions to palpate any lesions or masses. There should be no masses in the anus or rectum.

| Swollen, painful, longitudinal breaks in the anal area may appear in clients with anal fissures. (These are caused by the passing of large, hard stools or by diarrhea.) |
| Dilated anal veins appear with hemorrhoids. |
| A red mass may appear with prolapsed internal hemorrhoids. |
| Doughnut-shaped red tissue at the anal area may appear with a prolapsed rectum. |
| Movable, soft masses may be polyps. |
| Hard, firm, irregular embedded masses may indicate carcinoma. |

Assessing Stool Characteristics

| Odor |
| Distinct foul odors may be noted with stools containing blood or extra fat in cases of colon cancer. |
| Consistency |
| Bloody or black stools due to bleeding from the sigmoid colon, anus, or rectum. Blood within the stool indicates bleeding from the colon due to ulcerative colitis, diverticulitis, or tumors. Black, tarry stools, called melena, occur with upper gastrointestinal bleeding. Oral iron may turn stools black and mask melena. |
| Clay-colored or whitish stools can result from bilious tract obstruction due to lack of bile in stool. |
| Greasy, frothy, yellow stools, called steatorrhea, may appear with fat malabsorption. |

Bowel Assessment (continued)

Technique/Normal Findings
Abnormal Findings

| Palpate the inguinal area with the gloved hand. Ask the client to shift weight to the left to palpate the right inguinal area and vice versa. Place your right index finger upward into the inguinal area and ask the client to bear down or cough. Bulging or masses are normally not palpable. |

Perianal Assessment
Inspect the perianal area. Wearing gloves, spread the client's buttocks apart. Observe the area, and ask client to bear down as if trying to have a bowel movement. The perianal area should be intact without obvious lesions.

Palpate the anus and rectum. Lubricate the gloved index finger and ask the client to bear down. Touch the tip of your finger to the client's anal opening. Flex the index finger, and slowly insert it into the anus, pointing the finger toward the umbilicus (Figure 25–4 B). Rotate the finger in both directions to palpate any lesions or masses. There should be no masses in the anus or rectum.

| Swollen, painful, longitudinal breaks in the anal area may appear in clients with anal fissures. (These are caused by the passing of large, hard stools or by diarrhea.) |
| Dilated anal veins appear with hemorrhoids. |
| A red mass may appear with prolapsed internal hemorrhoids. |
| Doughnut-shaped red tissue at the anal area may appear with a prolapsed rectum. |
| Movable, soft masses may be polyps. |
| Hard, firm, irregular embedded masses may indicate carcinoma. |

Assessing Stool Characteristics

| Odor |
| Distinct, foul odors may be noted with stools containing blood or extra fat in cases of colon cancer. |
| Consistency |
| Bloody or black stools due to bleeding from the sigmoid colon, anus, or rectum. Blood within the stool indicates bleeding from the colon due to ulcerative colitis, diverticulitis, or tumors. Black, tarry stools, called melena, occur with upper gastrointestinal bleeding. Oral iron may turn stools black and mask melena. |
| Clay-colored or whitish stools can result from bilious tract obstruction due to lack of bile in stool. |
| Greasy, frothy, yellow stools, called steatorrhea, may appear with fat malabsorption. |

FIGURE 4–7 A. Digital examination of the anus; and B, rectum.
### Physical Examination

Physical examination of the abdomen in relation to fecal elimination includes inspection, auscultation, percussion, and palpation, with specific reference to the intestinal tract. Auscultation precedes palpation because palpation can alter peristalsis. Examination of the rectum and anus includes inspection and palpation.

#### Inspecting the Feces

Observe the client’s stool for color, consistency, shape, amount, odor, and the presence of abnormal constituents.

- Diet: What foods do you believe affect defecation? What foods do you typically eat? Do you take meals at regular times?
- Fluid: What amount and kind of fluid do you take each day (e.g., glasses of water, two cups of coffee)?
- Exercise: What is your usual daily exercise pattern? The nurse should obtain specifics about exercise rather than asking whether it is sufficient; ideas of what is sufficient vary among individuals.
- Medications: Have you taken any medications that could affect the intestinal tract (e.g., antibiotics)? The nurse should note the name and specific dosage of all medications, as the client might not be aware which medications might affect elimination.
- Stress: Are you experiencing any stress? Do you think this affects your defecation pattern? How?

#### Presence and Management of Ostomy

- What is your usual routine with your colostomy/ileostomy?
- What type of appliance do you wear? Did you bring a spare with you?
- What problems, if any, do you have with it?
- How can the nurses help you manage your colostomy/ileostomy?

### Fecal Elimination

**Defecation Pattern**
- When do you usually have a bowel movement?
- Has this pattern changed recently?

**Description of Feces and Any Changes**
- Have you noticed any changes in the color, texture (hard, soft, watery), shape, or odor of your stool recently?

**Fecal Elimination Problems**
- What problems have you had or do you now have with your bowel movements (constipation, diarrhea, excessive flatulence, seepage, or incontinence)?
- When and how often do they occur?
- What do you think causes these problems (food, fluids, exercise, emotions, medications, disease, surgery)?
- What have you tried to solve the problems, and how effective was it?

**Factors Influencing Elimination**
- Use of elimination aids: What routines do you follow to maintain your usual defecation pattern? Do you use natural aids, such as specific foods or fluids (e.g., a glass of hot lemon juice before breakfast), laxatives, or enemas to maintain elimination?

#### Examples of questions to elicit this information are shown in the Assessment Interview. The number of questions to ask is adapted to the individual client, according to the client’s responses in the first three categories of the Assessment Interview. When obtaining data about the client’s defecation pattern, the nurse needs to understand that the time of defecation and the amount of feces expelled are as individual as the frequency of defecation. Often, the patterns individuals follow depend largely on early training and convenience.

### Bowel Assessment (continued)

#### Fecal Assessment

Inspect the client’s feces. After palpating the rectum, withdraw your finger gently. Inspect any focus on the glove. Note color and/or presence of blood. Also use gloved fingers to note consistency. Stool should be soft with no blood present, either on the stool or as occult blood.

Test the feces for occult blood. Use a testing kit such as Occultest or Hemoccult II. There should be no blood in the feces.

Note the odor of the focus. No distinctly foul odors should be present.

- A positive occult blood test requires further testing for colon cancer or gastrointestinal bleeding due to peptic ulcers, diverticulosis, or diverticulitis.
- Distinctly foul odors may be noted with stools containing blood or extra fat or in cases of colon cancer.


#### Fecal Examination

- Diet: What foods do you believe affect defecation? What foods do you typically eat? Do you take meals at regular times?
- Fluid: What amount and kind of fluid do you take each day (e.g., six glasses of water, two cups of coffee)?
- Exercise: What is your usual daily exercise pattern? The nurse should obtain specifics about exercise rather than asking whether it is sufficient; ideas of what is sufficient vary among individuals.
- Medications: Have you taken any medications that could affect the intestinal tract (e.g., antibiotics)? The nurse should note the name and specific dosage of all medications, as the client might not be aware which medications might affect elimination.
- Stress: Are you experiencing any stress? Do you think this affects your defecation pattern? How?

### Physical Examination

Physical examination of the abdomen in relation to fecal elimination includes inspection, auscultation, percussion, and palpation, with specific reference to the intestinal tract. Auscultation precedes palpation because palpation can alter peristalsis. Examination of the rectum and anus includes inspection and palpation.

### Inspecting the Feces

Observe the client’s stool for color, consistency, shape, amount, odor, and the presence of abnormal constituents.

### Fecal Assessment

Inspect the client’s feces. After palpating the rectum, withdraw your finger gently. Inspect any focus on the glove. Note color and/or presence of blood. Also use gloved fingers to note consistency. Stool should be soft with no blood present, either on the stool or as occult blood.

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### Fecal Elimination

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- What problems have you had or do you now have with your bowel movements (constipation, diarrhea, excessive flatulence, seepage, or incontinence)?
- When and how often do they occur?
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- What have you tried to solve the problems, and how effective was it?

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### Bowel Assessment (continued)

#### Fecal Assessment

Inspect the client’s feces. After palpating the rectum, withdraw your finger gently. Inspect any focus on the glove. Note color and/or presence of blood. Also use gloved fingers to note consistency. Stool should be soft with no blood present, either on the stool or as occult blood.

Test the feces for occult blood. Use a testing kit such as Occultest or Hemoccult II. There should be no blood in the feces.

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### Physical Examination

Physical examination of the abdomen in relation to fecal elimination includes inspection, auscultation, percussion, and palpation, with specific reference to the intestinal tract. Auscultation precedes palpation because palpation can alter peristalsis. Examination of the rectum and anus includes inspection and palpation.

### Inspecting the Feces

Observe the client’s stool for color, consistency, shape, amount, odor, and the presence of abnormal constituents.
**URINARY INCONTINENCE**

**DIAGNOSTIC TESTS**

<table>
<thead>
<tr>
<th>NAME OF TEST</th>
<th>Purpose and Description</th>
<th>Key Terms</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Urinalysis</strong></td>
<td>Examination of urine for abnormalities</td>
<td>Abnormal urinalysis, proteinuria, pyuria</td>
</tr>
<tr>
<td><strong>Cystoscopy</strong></td>
<td>Examination of the bladder lining</td>
<td>Cystitis, bladder stones, tumors</td>
</tr>
<tr>
<td><strong>Micturating Cystourethrogram (MCU)</strong></td>
<td>X-ray examination of the urinary tract</td>
<td>Bladder neck obstruction, vesicoureteral reflux</td>
</tr>
<tr>
<td><strong>Bladder Pressure-Flow Study</strong></td>
<td>Measurement of bladder function</td>
<td>Detrusor hypertrophy, bladder outlet obstruction</td>
</tr>
</tbody>
</table>

**URINARY TRACT INFECTION**

**DIAGNOSTIC TESTS**

<table>
<thead>
<tr>
<th>Name of Test</th>
<th>Purpose and Description</th>
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</tr>
</thead>
<tbody>
<tr>
<td><strong>Urinalysis</strong></td>
<td>Examination of urine for abnormalities</td>
<td>Proteinuria, pyuria, hematuria</td>
</tr>
<tr>
<td><strong>Midstream Urine Culture</strong></td>
<td>Cultures of urine specimens</td>
<td>Bacteriuria, urinary tract infection</td>
</tr>
<tr>
<td><strong>Urethral Swab</strong></td>
<td>Examination of the urethra</td>
<td>Urethritis, sexually transmitted infection</td>
</tr>
<tr>
<td><strong>Cystourethrogram</strong></td>
<td>X-ray examination of the urinary tract</td>
<td>Bladder neck obstruction, vesicoureteral reflux</td>
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</table>

**URINARY RETENTION**

**DIAGNOSTIC TESTS**

<table>
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<th>Key Terms</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Cystometrogram</strong></td>
<td>Measurement of bladder pressure</td>
<td>Detrusor hypertrophy, bladder outlet obstruction</td>
</tr>
<tr>
<td><strong>Urethral Pressure Profile</strong></td>
<td>Measurement of urethral closure pressure</td>
<td>Stress urinary incontinence, detrusor sphincter dyssynergia</td>
</tr>
<tr>
<td><strong>Bladder Scintigraphy</strong></td>
<td>Imaging of bladder function</td>
<td>Bladder outlet obstruction, neurogenic bladder</td>
</tr>
</tbody>
</table>

**OBSTETRIC URINARY INCONTINENCE**

**DIAGNOSTIC TESTS**

<table>
<thead>
<tr>
<th>Name of Test</th>
<th>Purpose and Description</th>
<th>Key Terms</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Voiding Cystourethrogram (VCUG)</strong></td>
<td>X-ray examination of the urinary tract</td>
<td>Bladder neck obstruction, vesicoureteral reflux</td>
</tr>
<tr>
<td><strong>Cystoscopy</strong></td>
<td>Examination of the bladder lining</td>
<td>Cystitis, bladder stones, tumors</td>
</tr>
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**OBESITY AND URINARY INCONTINENCE**

**DIAGNOSTIC TESTS**

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<tr>
<th>Name of Test</th>
<th>Purpose and Description</th>
<th>Key Terms</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Body Mass Index (BMI)</strong></td>
<td>Measurement of obesity</td>
<td>Obese, morbid obesity</td>
</tr>
<tr>
<td><strong>Energy Expenditure</strong></td>
<td>Measurement of physical activity</td>
<td>Sedentary, high physical activity</td>
</tr>
<tr>
<td><strong>Blood Pressure</strong></td>
<td>Measurement of blood pressure</td>
<td>Hypertension</td>
</tr>
</tbody>
</table>

**URINARY INCONTINENCE IN OLDER ADULTS**

**DIAGNOSTIC TESTS**

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**URINARY INCONTINENCE IN CHILDREN**

**DIAGNOSTIC TESTS**

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<td><strong>Bladder Pressure-Flow Study</strong></td>
<td>Measurement of bladder function</td>
<td>Detrusor hypertrophy, bladder outlet obstruction</td>
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**URINARY INCONTINENCE IN PREGNANCY**

**DIAGNOSTIC TESTS**

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<th>Purpose and Description</th>
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actual prevalence of urinary incontinence is nearly impossible to determine. Limitations in the availability of products to protect clothing and prevent detection contribute to clients’ not seeking evaluation of and treatment for incontinence.

**ETOLOGY AND PATHOPHYSIOLOGY**

**Pathophysiology**

Urinary incontinence requires a bladder that is able to expand and contract, and sphincters that can maintain a urethral pressure higher than that of the bladder. Incontinence results when the pressure within the urinary bladder exceeds urethral resistance, allowing urine to escape. Any condition causing higher-than-normal bladder pressures or reduced urethral resistance potentially can result in incontinence. Relaxation of the pelvic musculature, disruption of cerebral and nervous system control, and disturbances of the bladder and its musculature are common contributing factors.

Incontinence can be an acute, self-limited disorder, or it can be chronic. The causes can be congenital or acquired, reversible or irreversible. Congenital disorders associated with incontinence include epispadias (absence of the upper wall of the urethra) and meningomyelocele (a neural tube defect in the vertebral column). CNS or spinal cord disorders (a neural tube defect in meningomyelocele and augmentation of the bladder neck, a technique that brings the angle between the urethra, and augmentation of the bladder with bowel segments into the bladder). Common causes of incontinence include urinary tract infections, urethritis, pregnancy, hypercalcemia, volume overload, disorders such as diabetes, and psychologic causes (Morantz, 2005, p. 175). Urinary incontinence can be broken into two categories: acute and chronic.

**ACUTE**

Many factors can contribute to acute or reversible incontinence, including diabetes, stress, overactive bladder, and psychologic causes. Common causes of incontinence include urinary tract infections, urethritis, pregnancy, hypercalcemia, volume overload, disorders such as diabetes, and psychologic causes (Morantz, 2005, p. 175). Urinary incontinence can be broken into two categories: acute and chronic.

**CHRONIC**

There are different types of chronic incontinence, each having a different etiology, including stress, urge, reflex, retention with overflow, and functional incontinence.

**INTERDISCIPLINARY CARE**

Urinary incontinence management is directed at identifying and correcting the cause, if possible. The underlining disorder cannot be corrected, techniques to correct output can often be taught.

Evaluation for incontinence begins with a complete history, including the duration, frequency, volume, and associated circumstances of urination. A voiding diary is often used to collect detailed information. The history also includes information about chronic or acute illnesses, previous surgeries, and current medication use, both prescription and over the counter.

Physical assessment includes pelvic assessment, as well as evaluation of mental and neurologic status, mobility, and dexterity. Findings often associated with incontinence in women include weak abdominal and pelvic muscle tone, cystocele and urethrocèle, and atrophic vaginitis. In men, an enlarged prostate gland is the physical finding most commonly associated with incontinence.

**DIAGNOSTIC EVALUATION TOOLS**

An array of diagnostic tools exists to determine causes of incontinence. The physical, mental, and neurologic assessments mentioned above will help determine which of these tools should be used to determine the root of the patient’s incontinence.

- Urinalysis and urine culture using a clean-catch specimen are done to rule out infection and other acute causes of incontinence.
- Postvoiding residual (PVR) volume is measured to determine how completely the bladder empties with voiding.
- Cystometry or uroflowmetry is used to assess neuromuscular function of the bladder by evaluating detrusor muscle function, pressure within the bladder, and the filling pattern of the bladder. The client describes sensations and any urge to void as sterile water or saline is instilled into the bladder. Normally, the urge to void is perceived at 150-450 mL, and the bladder feels full at 300-500 mL. Bladder pressure and volume are recorded on a graph. When the bladder is full, the client voids, and intra vesical pressure is noted during voiding.
- Uroflowmetry is a noninvasive test used to evaluate voiding patterns. The uroflowmeter, contained in a funnel, measures the rate of urine flow, the continuous flow time, and the total voiding time.
- IVP may be ordered to evaluate structure and function of the upper and lower urinary tract.
- Cystoscopy or uroflowmetry may be ordered to identify structural disorders contributing to incontinence, such as an enlarged prostate or a tumor.

**TREATMENT MEDICATIONS**

Both stress and urge incontinence can improve with drug treatment. Drugs that contract the smooth muscles of the bladder neck can reduce episodes of mild stress incontinence.

When incontinence is associated with postmenopausal atrophic vaginitis, estrogen therapy can be effective. Effective options include systemic estrogens and local creams. Clients with urge incontinence may be treated with preparations that increase bladder capacity. The primary drugs used to inhibit detrusor muscle contractions and increase bladder capacity include oxybutynin ( Ditropan and the extended-release form, Ditropan XL), an anticholinergic drug; and tolterodine (Detrol and its generic equivalent), an anticholinergic agent. These drugs can be taken once or twice a day, and have fewer side effects than do less specific anticholinergic drugs. Drugs with anticholinergic effects are contraindicated for the client with acute glaucoma. Urinary retention is a potential side effect that must be considered when these drugs are used.

**SURGERY**

Surgery may be used to treat stress incontinence associated with cystocele or urethrocele and overflow incontinence associated with an enlarged prostate gland. Suspension of the bladder neck, a technique that brings the angle between the bladder and urethra closer, can be used to treat stress incontinence associated with urethrocèle in 80-95% of clients. A laparoscopic, vaginal, or abdominal approach may be used to perform this surgery.

Prostatectomy, using either the transurethral or suprapubic approach, is indicated for the client who is experiencing overflow incontinence as a result of an enlarged prostate gland and urethral obstruction. Other surgical procedures of potential benefit in the treatment of incontinence include implantation of an artificial sphincter, formation of a urethral sling to elevate and compress the urethra, and augmentation of the bladder with bowel segments to increase bladder capacity.

**COMPLEMENTARY THERAPIES**

Biofeedback and relaxation techniques can help reduce episodes of urinary incontinence. Biofeedback uses electronic monitors to teach conscious control over physiologic responses of which the individual is not normally aware. Developing awareness of perceptible information allows the client to gain voluntary control over urination. Biofeedback is widely used to manage urinary incontinence.

**TABLE 4-7: Types of Urinary Incontinence**

<table>
<thead>
<tr>
<th>Description</th>
<th>Pathophysiology</th>
<th>Contributing Factors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stress</td>
<td>Loss of urine with increased intra-abdominal pressure during sneezing, coughing, or lifting. Quantity of urine lost is usually small.</td>
<td>Relaxation of pelvic musculature, and weakness of urethra and surrounding muscles and tissues, lead to decreased urethral resistance.</td>
</tr>
<tr>
<td>Urge</td>
<td>Incontinent loss of urine associated with a strong urge to void.</td>
<td>Neurologic disorders such as stroke, Parkinson’s disease, multiple sclerosis, peripheral nervous system disorders</td>
</tr>
<tr>
<td>Overflow</td>
<td>Inability to empty bladder, resulting in overdistention and frequent loss of small amounts of urine.</td>
<td>Spinal cord injuries below T2, Diabetic neuropathy, Fecal impaction</td>
</tr>
<tr>
<td>Functional</td>
<td>Incontinence resulting from physical, environmental, or psychocultural causes.</td>
<td>Confusion or dementia, Physical disability or impaired mobility, Thyroid dysfunction, Depression, Regression</td>
</tr>
</tbody>
</table>

While an accurate diagnosis of stress urinary incontinence often is made based on clinical data, motor urge incontinence is generally more difficult to diagnose accurately without urodynamic testing. This presents a difficulty for nurses and other practitioners planning care for incontinent clients, when urologic testing is not feasible or readily available. A model developed by Gray et al. (2001) might be useful in addressing this problem in adults whose cognitive abilities are intact. By comparing client data with urodynamic testing results, this team of researchers identified factors predictive of motor urge incontinence. These factors included age, gender, and three key symp- toms: diurnal frequency, urge incontinence, and stress incontinence.

1. Identify incontinence patterns during daily activities (Box 21-3) to improve perineal muscle tone. Advise clients predictive of motor urge incontinence to decrease stress, urge, or mixed (stress and urge) incontinence.

2. Examine the client's activity patterns to identify lifestyle factors predictive of motor urge incontinence. These factors include age, gender, and three key symptoms: diurnal frequency, urge incontinence, and stress incontinence.

3. The clients in the Gray study lived independently in the community with no known or visible cognitive impairment. Can the data in this study be generalized to clients residing in a long-term care facility? Can the results be applied to all types of incontinence? Why or why not?

**EVIDENCE-BASED PRACTICE**

**Urinary Incontinence**

**Health Promotion**

Although urinary incontinence rarely causes serious physical effects, it frequently has significant psychosocial effects, and can lead to social isolation and impaired quality of life. A randomized, controlled trial comparing exercise to a control group revealed that exercise reduced the incidence of UI in women. The intervention, which included pelvic muscle exercises, dietary modification, and fluid management, was found to be effective in reducing the incidence of UI in men. A recent study examined the effects of bedtime repositioning on the incidence of UI in men. The intervention, which included pelvic muscle exercises, dietary modification, and fluid management, was found to be effective in reducing the incidence of UI in men.

**NURSING PROCESS**

**Physical examination:** Physical and mental status, including any physical limitations or impaired cognition; inspect, palpate, and percuss abdomen for bladder distention; inspect perineal tissues for redness, irritation, or tissue breakdown; observe for bulging of bladder into vagina when bearing down; assess pelvic muscle tone as indicated.

**BOX 4-3 Pelvic Floor Muscle (Kegel) Exercises**

1. **Identify the pelvic muscles with these techniques:** a. Stop the flow of urine during voiding, and hold for a few seconds. b. Tighten the muscles at the vaginal entrance around a glove or tampon. c. Tighten the muscles around the anus as though resisting defecation. d. Perform exercises by tightening pelvic muscles, holding for 10 seconds, relaxing for 5 seconds. Continue the sequence (tighten, hold, relax) for 10 repetitions. e. Keep abdominal muscles and breathing relaxed while performing exercises. f. Inhale, exercises should be performed twice per day, working up to four times a day.

2. **Encourage exercising at a specific time each day in conjunction with another daily activity (such as brushing or watching the news). Establish a routine, because these exercises should be continued for life.**

3. **Assistive devices, such as vaginal cones and biofeedback, might be useful for clients who have difficulty identifying or activating specific muscle groups.** Source: Liebrand, F., Burke, K. (2008). Responses to altered elimination (p. 377). Medical-surgical nursing: Critical thinking in client care (4th ed.). Upper Saddle River, NJ: Pearson Education.

**Nursing Diagnoses and Interventions**

In planning nursing care, consider the client’s mental status, mobility, motivation, and lifestyle. Behavioral techniques can be effective, but they require long-term commitment and the physical and mental capability to use them. Nursing care plans that focus on lifestyle changes can lead to improved quality of life and reduced risk of incontinence.

**Self-Care Deficit: Toileting**

Functional incontinence might be the predominant problem in an institutionalized older adult. Limited mobility, impaired vision, dementia, lack of access to facilities and privacy, and tight staffing patterns increase the risk for incontinence in previously continent residents. The primary problem in functional incontinence is an obstacle that interferes with the ability to respond normally to the urge to void. An immobilized client might wet the bed if a call light is not within reach, a client with Alzheimer’s disease might perceive the urge to void but be unable to get to the bathroom or respond by seeking a bathroom. For these clients, self-care deficit in toileting is a primary problem.

To assist clients with self-care, the nurse should:

- Assess physical and mental abilities and limitations, usual voiding pattern, and ability to assist with toileting. A thorough assessment allows planned interventions to address specific needs and promote independence.

- Provide assistive devices as needed to facilitate independence, such as raised toilet seats, grab bars, bedside commode, or nightlights. Fostering independence in toileting bolsters self-concept and maintains a positive body image.

- Plan a toileting schedule based on the client’s normal elimination patterns to achieve approximately 300 mL of urine output with each voiding. Allowing the bladder to fill to a point at which the urge to void is perceived and then emptying it completely helps maintain normal bladder capacity and bacteriostatic factors.

- Position for ease of voiding—sitting for males, and providing privacy, bladder control, and privacy. Fostering independence in toileting bolsters self-concept and maintains a positive body image.

- Adjust fluid intake so that the majority of fluids are consumed during the times of the day when the client is most able to remain continent. Unless fluids are restricted, maintain a fluid intake of at least 1.5–2.0 L per day. An adequate fluid intake is vital to promote hydration and urinary function. Overly concentrated urine can irritate the bladder, increasing incontinence.

- Assist with clothing that is easily removed (e.g., elastic-waisted pants or loose dresses). Velcro and zipper fasteners are easier to use and buttons. Clothing that is difficult to remove can increase the risk of incontinence in the client with mobility problems or impaired dexterity.

**Social Isolation**

Urinary incontinence increases the risk for social isolation due to embarrassment, fear of not having ready access to a bathroom, body odor, or other factors. Social isolation can, in turn, increase problems of incontinence because normal cues and relationships

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**Implications for Nursing**

Making specific suggestions about urinary tract symptoms facilitates accurate identification of the nursing diagnosis Urinary Incontinence. Accurate diagnosis is vital to planning and implementing appropriate care measures, and to achieving the desired outcome of care. Successful treatment promotes self-esteem and provides positive reinforcement for continuing planned strategies.
are lost, and the need to remain dry becomes less of a concern. To avoid sheer social isolation, the nurse should:

- Assess for reasons and extent of social isolation. Verify the degree of social isolation with the client or significant other.
- Do not assume that social isolation is only related to urinary incontinence. Other problems frequently associated with aging (such as a hearing deficit) could be primary or contribute to social isolation.
- Refer the client for urologic examination and incontinence evaluation. Clients who assume that urinary incontinence is a normal part of the aging process might not be aware of treatment options.
- Explore alternative coping strategies with the client, significant other, staff, and other health care team members. Protective pads or shields, good perineal hygiene, scheduled voiding, and clothing that does not interfere with toileting can enhance continence.

Community-Based Care

Because urinary incontinence is a contributing factor to the institutionalization of many older people, client and family teaching can have a significant impact on maintaining independence and residence in the community. Address possible causes of incontinence and appropriate treatment measures. Refer for urologic examination, if not already completed. Discuss fluid intake management, perineal care, and products for clothing protection.

Urinary Retention

When emptying of the bladder is impaired, urine accumulates, and the bladder becomes overstretched, a condition known as urinary retention. Retention results when relaxation and distention of the bladder causes poor contractility of the detrusor muscle, further impairing urination. If the problem persists, more serious problems such as hypothyroidism (enlargement of the thyroid) can result. Common causes of urinary retention include prosthetic hypertrophy (enlargement), surgery, and some medications. Clients with urinary retention can experience overflow voiding or incontinence, eliminating 25–50 mL of urine at frequent intervals. Assessment reveals a full, distended bladder that might be displaced to one side of the abdomen. Percussion of the lower abdomen reveals a dull tone, reflective of fluid in the bladder.

Severe urinary retention with resulting bladder distention impairs the ability of the vesicoureteral junction to prevent backflow of urine into the ureters (see Figure 28-1 on page 300). Reflux of urine from the distended bladder distends the ureters (hydronephrosis) and kidneys (hydropnephrosis). Hydropnephrosis impairs renal function, and acute renal failure can result.

INTERDISCIPLINARY CARE

Urinary retention is confirmed using a bladder scan or by inserting a urinary catheter (if emptying the bladder requires extraordinary force). An indwelling urinary catheter or intermittent straight catheterization can prevent urinary retention and overdistention of the bladder. Cholinergic medications such as Bethanechol (Urecholine), which promote detrusor muscle contraction and bladder emptying, may be used. A medication with no anticholinergic side effects may be substituted when these drugs are ordered for (or used by) a client with BPH or other mechanical obstruction of urine flow.

Impaired Urinary Elimination

Nursing measures to promote urination include placing the client in normal voiding position and providing for privacy. Additional measures include running water, placing the client’s hands in warm water, pouring warm water over the perineum, or giving a warm sitz bath.

In acute urinary retention, catheterization might be necessary to relieve bladder distention and prevent hypovolemia. Use a relatively small catheter (16 Fr. for a man, 14 Fr. for a woman). A couded-tipped catheter is passed more easily in the older man with an enlarged prostate. Using 2% lidocaine gel (10 mL injected into the male urethra or 6 mL injected into the female urethra) reduces discomfort during catheterization and the risk of catheter-associated infection, and promotes pelvic muscle relaxation (Bardley, 2005). Carefully observe the client as the distended bladder drains.

Home care for the client with urinary retention varies depending on the cause. Some clients may be taught intermittent self-catheterization. Nurses should instruct all clients who have experienced urinary retention to avoid over-the-counter drugs that affect micturition, especially those with an anticholinergic effect (allergy and cold medications, many nonprescription sleep aids). Other home care measures include double voiding (urinate, remain on the toilet for 2-5 minutes, then urinate again); scheduled voiding; or, when other measures fail, an indwelling catheter. When an indwelling catheter is necessary, teach the client and family to use clean technique when changing from overnight bag to leg bag, and to report signs of UTI to the primary care provider promptly.

PATHOLOGY

Urinary tract infection can lead to urethral stricture and a meatus. Acute inflammation associated with bladder calculi is removed, and measures to prevent their formation are instituted.

INTERDISCIPLINARY CARE

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NURSING PROCESS

Assessment

The preliminary assessment and identification of the symptom of urinary incontinence is truly within the scope of nursing practice. All clients should be asked about their voiding patterns. Elders who are continent while in their home, or who manage to contain their incontinence from others, do not consider themselves incontinent. Therefore, if asked if they are incontinent, they might deny it. However, if asking if they lose urine when they don’t want to might provide more accurate information.
Incontinence is a risk factor for low self-esteem and social isolation, as it can be physically and emotionally distressing to clients because it is considered socially unacceptable. Often, the client is embarrassed about dribbling or having an accident, and might restrict normal activities for this reason.

Incontinence increases risk for impaired skin integrity. Bed linen and the skin become saturated with urine, which irritates and macerates the skin. Prolonged skin dampness leads to dermatitis (inflammation of the skin) and subsequent formation of dermal ulcers.

Functional incontinence is a risk factor for self-care deficits in toileting.

Impaired urinary function associated with a disease process could put a client at risk for deficient fluid volume or excess fluid volume.

A client who has a urinary diversion ostomy could develop a disturbed body image.

Clients who require new self-care skills to manage (e.g., a new urinary diversion ostomy) could be at risk of deficient knowledge regarding management of their care.

An incontinent client who is being cared for by a family member for extended periods could be at risk for caregiver role strain as well as for deteriorating family relationships as a result of that strain.

Planning

Goals established for a client will depend on the diagnosis and defining characteristics. Examples of overall goals for clients with urinary elimination problems might include the following:

- Maintain or restore a normal voiding pattern.
- Regain normal urine output.
- Prevent associated risks such as infection, skin breakdown, diaphoresis, and lowered self-esteem.
- Perform toilet activities independently with or without assistive devices.
- Contain urine with the appropriate device, catheter, ostomy appliance, or absorbent product.

Appropriate preventive and corrective nursing interventions to reduce incontinence must be identified. Specific nursing activities associated with each of these interventions can be selected to meet the client’s individual needs. Examples of clinical applications of these using NANDA, NIC, and NOC designations are shown in Identifying Nursing Diagnoses, Outcomes, and Interventions, and in the Nursing Care Plan at the end of the exemplar.

Planning for Home Care

To provide for continuity of care, the nurse needs to consider the client’s needs for teaching and assistance with care in the home. Discharge planning includes assessment of the client’s and family’s resources and abilities for self-care, available financial resources, and the need for referrals and home health services. The above Home Care Assessment outlines an assessment of home care capabilities related to urinary elimination problems and needs.

Implementation

Independent nursing interventions for clients with urinary incontinence (UI) who are returning to their home or to a residential facility include: (a) a behavior-oriented continence training program that might consist of bladder training, habit training, prompted voiding, pelvic muscle exercises, and positive reinforcement; (b) meticulous skin care; and (c) for males, application of an external drainage device (condom-type catheter device). Other interventions include promoting adequate fluid intake, maintaining normal voiding habits, and assisting with toileting. Clients must be alert and physically able, or have caregivers who can assist with implementation of the plan of care, in order to follow a program.

Successful home care for a client will involve a combination of these strategies:

- Education of the client, family, and any nonfamily caregivers, including private nursing providers and respite caregivers.
- Bladder training, which requires that the client postpone voiding, resist or inhibit the sensation of urgency, and void according to a timetable rather than according to the urge to void. The goals are to gradually lengthen the intervals between urination to correct the client’s frequent urination, to stabilize the bladder, and to diminish urgency. This form of training may be used for clients who have bladder instability and urge incontinence. Delayed voiding provides larger voided volumes and longer intervals between voiding. Initially voiding may be encouraged every 2–3 hours except during sleep, and then every 4–6 hours. A vital component of bladder training is inhibiting the urge-to-void sensation. To do this, the nurse instructs the client to practice deep, slow breathing until the urge diminishes or disappears. This is performed every time the client has a premature urge to void.
- Habit training, also referred to as timed voiding or scheduled toileting, attempts to keep clients dry by having them void at regular intervals. With habit training, there is no attempt to motivate the client to delay voiding if the urge occurs. This approach can be effective in children who are experiencing urinary dysfunction. Biofeedback therapy, in which the child is taught to relax the pelvic floor, can also decrease incidents of wetting (Shei Dei Yang & Cheng Wang, 2005).
- Prompted voiding supplements habit training by encouraging the client to try to use the toilet (prompting) and reminding the client when to void.
- Pelvic muscle exercises. The following technique is sometimes used to teach pelvic muscle exercises (PME). Ask the client to think of the perineal muscles as an elevator. When

### NURSING CARE PLAN

**Urinary Elimination**

**NURSING DIAGNOSIS**

Impaired Urinary Elimination (retention and overflow incontinence) related to bladder neck obstruction by enlarged prostate gland (as evidenced by dysuria, frequency, nocturia, dribbling, hesitancy, and bladder distention)

**ASSESSMENT DATA**

**NURSING INTERVENTIONS*/SELECTED ACTIVITIES**

**RATIONALE**

Urinary Incontinence Care [0610]

- Monitor urinary elimination, including consistency, odor, volume, and color.
- Help the client select appropriate incontinence garment or pad for short-term management while more definitive treatment is designed.

**NURSING INTERVENTIONS*/SELECTED ACTIVITIES**

- Instruct Mr. Baker to limit fluids for 2–3 hours before bedtime.
- Instruct him to drink a minimum of 1,500 ml (six 8-ounce glasses) fluids per day.
- Limit ingestion of bladder irritants (e.g., cola, coffee, tea, and chocolate).

**RATIONALE**

- These parameters help determine adequacy of urinary tract function.
- Decreased fluid intake several hours before bedtime will decrease the incidence of urinary retention and overflow incontinence, and promote rest.
- Alcohol, coffee, and tea have a natural diuretic effect, and are bladder irritants.

Urinary Retention Care [0620]

- Instruct Mr. Baker or a family member to measure and record urinary output.
- Catherize for residual urine, as appropriate.

**RATIONALE**

- This serves as an indicator of urinary tract and renal function, and of fluid balance.
- An enlarged prostate compresses the urethra so that urine is retained. Catherization for residual urine provides information about bladder emptying.
- This helps maintain tautness of the bladder muscle by preventing overdistention and providing for complete emptying.
In addition to the effect of an enlarged prostate on the bladder, stool retention can place pressure on the bladder outlet, causing urinary retention. The nurse should assist the client to the bathroom and remain with them if they are at risk for falling. The bathroom should contain an easily accessible call signal to summon help if needed. Clients also need to be encouraged to use handheldrails placed near the toilet. For clients unable to use bathroom facilities, the nurse provides urinary equipment close to the bedside (e.g., urinal, bedpan, commode) and provides the necessary assistance to use them.

Evaluation

Using the overall goals and desired outcomes identified in the planning stage, the nurse collects data to evaluate the effectiveness of nursing activities. Examples of desired outcomes for the identified goals are listed in the Identifying Nursing Diagnoses, Interventions, and Outcomes box earlier in this concept.

If the desired outcomes are not achieved, the nurse should explore the reasons before modifying the care plan. For example, if the outcome “Remains dry between voidings and at night” is not met, examples of questions that need to be considered include:

- What is the client’s perception of the problem?
- Does the client understand and comply with the health care instructions provided?
- Is access to toilet facilities a problem?
- Can the client manipulate clothing for toileting? Are there adjustments that can be made to allow easier disrobing?
- Are scheduled toileting times appropriate?
- Is there adequate transition lighting for nighttime toileting?
- Are mobility aids such as a walker, elevated toilet seat, or grab bar needed? If currently used, are they appropriate or adequate? If assistance from a family member or caregiver is needed, is that available and appropriate?
- Is the client performing pelvic floor muscle exercises appropriately as scheduled?
- Is the client’s fluid intake adequate? Does the timing of fluid intake need to be adjusted (e.g., restricted after dinner)?
- Is the client restricting caffeine, citrus juice, carbonated beverages, and artificial sweetener intake?
- Is the client taking a diuretic? If so, when is the medication taken? Do the times need to be adjusted (e.g., taking second dose no later than 4 p.m.)?

Should continence aids such as a condom catheter or absorbent pads be considered or used?

The NOC for 4 desired outcomes and the NIC for 9 nursing interventions are listed in italics following the appropriate outcome or intervention. Outcomes, interventions, and activities selected are only a sample of those suggested by NOC and NIC, and should be further individualized for each client.

**Maintaining Normal Voiding Habits**

Prescribed medical therapies often interfere with a client’s normal voiding habits. When a client’s urinary elimination pattern is adequate, the nurse helps the client adhere to normal voiding habits as much as possible. (See Practice Guidelines)

**Assisting with Toileting**

Clients who are weakened by a disease process or impaired physically might require assistance with toileting. The nurse should assist these clients to the bathroom and remain with them if they are at risk for falling. The bathroom should contain an easily accessible call signal to summon help if needed. Clients also need to be encouraged to use handheldrails placed near the toilet. For clients unable to use bathroom facilities, the nurse provides urinary equipment close to the bedside (e.g., urinal, bedpan, commode) and provides the necessary assistance to use them.

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**Bladder: Incontinence and Retention**

**REVIEW**

**RELATE: LINK THE CONCEPTS**

The nurse administers an 85-year-old client with medical diagnosis of congestive heart failure, chronic renal failure, and diabetes mellitus. During the nursing history, the client says she takes her diuretic in the morning and then spends the next few hours in the bathroom because if she goes too far off she ends up “wetting her pants” and then has to “clean up the mess.” She says she is shy and that in the afternoon that she drinks several glasses of water but stops drinking fluids after 6 p.m. to avoid “wetting the bed.” The client’s skin turgor is poor, and assessment reveals potential dehydration.

Linking the concepts of Fluid and Electrolytes with the concept of Elimination:

1. What recommendations and client teaching should the nurse provide this client to prevent further dehydration?
2. What lab values should the nurse review in order to confirm potential dehydration?
3. What questions should the nurse ask this client to assess for frequency and severity of urinary incontinence?
4. What nursing diagnosis would you choose for this client?

**READY: GO TO COMPANION SKILLS MANUAL**

1. Applying an external (condom) catheter
2. Inserting a retention or straight urinary catheter
3. Collecting a 24-hour urine specimen
4. Collecting a urine specimen from an infant
5. Teaching clients to test for urine ketone bodies
6. Recording intake and output
7. Using a bladder scanner
8. Providing catheter care
9. Removing a retention catheter
10. Irrigating the bladder using a closed system or continuous irrigation system
11. Suprapubic catheter care
12. Obtaining urine specimens from an indwelling catheter system
13. Applying a urinary diversion pouch
14. Pouding and terminating hemodialysis

**REFLECT: CASE STUDY**

Mr. Justin Carcharo is a 26-year-old man who fractured his third thoracic vertebra when he fell while rock climbing. In preparation for transfer to a rehabilitation center, the doctor orders discontinuation of the client’s indwelling urinary catheter and p.o. straight catheterization to reduce urinary retention. The nurse asks assessment data will the nurse collect to determine the presence of urinary retention?

1. What assessment data will the nurse collect to determine the presence of urinary retention?
2. What signs and symptoms would the nurse recognize as indicative of the need for straight catheterization?
3. What nursing diagnosis would be appropriate for this client?
4. What client teaching will the nurse provide, related to urinary retention, prior to discharge if he is to provide safe home care for himself?
REFERENCES


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