Chapter 49
Care of the Patient with a Urinary Disorder

Urinary System Structures and Function
- Kidneys
- Ureters
- Bladder
- Urethra
- Nephron

Kidneys
- A normal body has two
- Primary function is excretion of waste
- Assist in regulating the body's water, electrolytes
- Responsible for the secretion of erythropoietin
- Play a key role in acid-base balance
Ureters

- Transport urine from the kidneys to the bladder

Bladder

- Collects and stores urine

Urethra

- Transports urine from the bladder to outside the body
Nephron

- Each kidney contains more than 1 million nephrons
- The nephron is the functional unit of the kidney
- It is responsible for filtering the blood and processing the urine
- Three major functions
  - Controlling body fluid levels by selectively removing or retaining water
  - Assisting with the regulation of the pH of the blood
  - Removing toxic waste from the blood

Three Phases of Urine Formation

- Filtration
- Reabsorption
- Secretion

Hormones that Affect Nephron Function

- Antidiuretic hormone (ADH) causes the cells of the distal convoluted tubules to increase their rate of water reabsorption
Normal Urine Measures

- Albumin: None
- Glucose: None
- Erythrocytes: None or trace
- Ketones: None
- Leukocytes: None or trace
- pH: 4.0-6.0
- Color: Yellow/Clear
- Clarity: Clear

Abnormal Urine Measures

- Albumin: possible renal disease, increased blood pressure, or toxicity of the kidney cells from heavy metals
- Glucose: most often indicates high blood glucose levels
- Erythrocytes: may indicate infection, tumors, or renal disease
- Ketones: occurs when too many fatty acids are oxidized
- Leukocytes: found in urine when there is an infection in the urinary tract
- pH: <4.0 to >6.0
- Color: Amber, orange
- Clarity: Cloudy

Effects of Aging on the Urinary System

- Loss of up to 50% of kidney filtering by age 70
- Bladder loses tone
- Perineal muscles relax
- Incomplete emptying of the bladder
Effects of Alterations in Urinary Function

- Disturbed body image
- Low self-esteem
- Anxiety

Pharmacologic Agents for Urinary Disorder

- Sulfamethoxazole—trimethoprim (Bactrim, Septra)
- Ciprofloxacin (Cipro)
- Amoxicillin or Ampicillin
- Nitrofurantoin (Furadantin, Macrodantin)
- Phenazopyridine (Pyridium)
- Levofloxacin (Levaquin)

Nutritional Therapy for Urinary Disorders

- Acid-ash
- Alkaline-ash
- Low sodium
- High protein
- Avoid caffeine
- Avoid alcohol
- Avoid spicy foods
Acid-Ash Foods

- Meats
- Whole grains
- Eggs
- Cheese
- Cranberries
- Prunes
- Plums

Alkaline-Ash Foods

- Milk
- Vegetables
- Fruits

Special Needs of the Patient with Urinary Dysfunction

- Medication regimens and dosages may need to be altered
- Diuretics to enhance urinary output
- Medications for UTI
- Nutritional considerations
  - Acid-ash
  - Alkaline-ash
  - Fluid intake
Special Considerations for the Patient with Urinary Dysfunction cont’d

- Catheters
  - Foley catheter
  - Robinson catheter
  - Ureter catheter
  - Texas (or condom) catheter
- Self-catheterization

Special Considerations for the Patient with Urinary Dysfunction cont’d

- Bladder training
- Kegel exercises
- Urinary incontinence
- Urinary appliances
- Chronic urinary tract infections

Alteration in Kidney Function Related to Specific Urinary Disorders

- Urinary retention
- Urinary incontinence
- Neurogenic bladder
- Urinary tract infections
- Urethritis
- Cystitis
- Interstitial cystitis
- Prostatitis
- Pyelonephritis
- Urinary obstruction
- Hydronephrosis
- Urolithiasis
- Renal tumors
Urinary Retention

- The inability to void
- Increased risk for infection
- Output should be monitored closely

Urinary Incontinence

- Loss of bladder control
- Stress incontinence
- Urge incontinence
- Overflow incontinence
- Mixed incontinence
- Functional incontinence
- Total incontinence

Neurogenic Bladder

- The loss of voluntary voiding control, resulting in urinary retention or incontinence
Urinary Tract Infection

- Presence of microorganisms in the urinary system structure
- Bacteria are the most common causative agent
- Many chronic health problems predispose the patient to a UTI

Urethritis

- Inflammation of the urethra
- Classified by the presence or absence of gonorrhea
- Nongonorrheal urethritis is called nonspecific urethritis (NSU)
- NSU may be caused by bacteria such as chlamydia or trichomonas
- Viral causes include herpes simplex

Cystitis

- Inflammation of the wall of the bladder
- Usually caused by
  - Urethrovesical reflux
  - Introduction of a catheter or similar instrument
  - Contamination from feces
- Can lead to the complication of obstruction
Interstitial Cystitis

- Interstitial cystitis (IC) is a chronic pelvic pain disorder with recurring discomfort or pain in the urinary bladder and surrounding region
- Pathophysiology is unknown
- It seems to be caused by a breach in the bladder’s protective mucosal lining that allows urine to seep through to the bladder wall, resulting in pain, inflammation, and small vessel bleeding
- Only about half of patients with IC recover fully

Prostatitis

- Infection of the prostate
- Can be caused by bacteria or other agents
- Prostatitis is difficult to cure and requires long periods of antibiotic treatment
- It is critical the patient take all of the prescribed antibiotics

Pyelonephritis

- Pyelonephritis is an inflammation of the structures of the kidney
- It is almost always caused by *Escherichia coli*
- The kidney becomes edematous and inflamed, and the blood vessels are congested
- Small abscesses may form in the kidney
- Treatment should occur early in the course of the disorder to prevent complications
Urinary Obstruction

- Obstruction can adversely affect function and alter structure
- Causes of obstruction include
  - Strictures
  - Kinks
  - Cysts
  - Tumors
  - Calculi
  - Prostatic hypertrophy
- Obstruction may lead to alterations in blood chemistry, infection, ischemia, or atrophy of renal tissue

Hydronephrosis

- Dilation of the renal pelvis and calyces
- Caused by obstructions in the lower urinary tract, the ureters, or the kidneys
- Potential causes may include renal calculi, tumors, strictures, vesicoureteric reflux, and scarring
- An obstruction generates pressure from accumulated urine
- This pressure may cause damage to the renal system

Urolithiasis

- Formation of calculi in the urinary tract
- Urolithiasis develops from minerals that have precipitated out of solution and adhere, forming stones that vary in size and shape
- Untreated, may lead to hydronephrosis
- Patient frequently experiences severe pain
Renal Tumors

- The majority of renal tumors are malignant adenocarcinomas
- Risk factors include history of dialysis, family history, hypertension, horseshoe kidney, polycystic kidney disease, and smoking

Urinary Disorders and Sexuality

- Encourage patient and family to verbalize feelings concerning sexuality
- Listen openly without judging
- Provide privacy

Community Resources for the Patient with a Urinary Disorder

- Support groups
- Home health
Nursing Diagnoses

- Impaired urinary elimination
- Impaired renal blood flow
- Pain
- Sexual dysfunction
- Altered body image
- Ineffective therapeutic regimen management