**Guided Lecture Notes, Chapter 37, The Urinary System**

Learning Objective 1. List the organs that make up the urinary system. (Refer to PowerPoint slides 2 to 17.)

* Describe the structure of the urinary system. Use an anatomic model or chart to point out the structures as you describe each one.
* Discuss the location and function of the kidneys.
* Discuss why the kidney is supplied with blood from the body’s aorta (the body’s largest artery) and why blood leaves the kidneys via the inferior vena cava (the body’s largest vein).
* Explain the meaning of the word *renal* with regard to the renal artery and the renal vein.
* Explain how the nephrons filter the blood that passes through the kidneys. Using an anatomic chart with an enlarged view of the nephron, describe how the blood moves through the nephron, forming filtrate. Explain that by the time the filtrate reaches the end of the filtration process, only excess fluid and waste substances remain. This fluid is called urine.
* Describe the location and function of the ureters.
* Explain the function of the trigone, which keeps the urine from flowing back into the ureters.
* Describe the location and function of the bladder. Explain that the bladder stores urine. Mention that the bladder is quite small when empty but becomes quite large when full.
* Explain the function of the urethra.
* Differentiate between the urethra in males and the urethra in females.
* Have learners refer to learning activities located at the end of the chapter.

Learning Objective 2. Describe the primary function of each organ of the urinary system. (Refer to PowerPoint slides 18 to 21.)

* Explain that the main function of the urinary system is to filter the blood and remove waste products and excess fluid from the body.
* Discuss when a person feels the urge to urinate and how urination occurs.
* Explain to students the importance of maintaining a constant pH level in the body.
* Explain that the kidneys help in maintaining the body’s homeostasis by keeping fluid levels within the body constant, regulating the levels of essential minerals, and regulating the acidity of the blood.
* Have learners refer to learning activities located at the end of the chapter.

Learning Objective 3. Discuss the effects of aging on the urinary system. (Refer to PowerPoint slides 22 to 27.)

* Explain the effects of aging on the urinary system, such as less efficient filtration, decreased muscle tone, enlargement of the prostate gland (in males), and increased risk for urinary tract infections.
* Explain how aging affects the number of functioning nephrons, reducing the efficiency of filtration.
* Explain how stress incontinence can occur as a result of aging.
* Describe the enlargement of the prostate gland in males and its symptoms and treatment.
* Discuss the factors that place an older person at greater risk for a urinary tract infection.
* Have learners refer to learning activities located at the end of the chapter.

Learning Objective 4. Describe various disorders that can affect the urinary system. (Refer to PowerPoint slides 28 to 56.)

* List some common disorders of the urinary system (infections, kidney stones, renal failure, and tumors).
* Explain that infections can affect any part of the urinary system.
* Discuss why an infection of the urethra is more common in males. List the causes of urethral infections.
* Discuss why bladder infections are more common in females, and how they are treated.
* Explain why a kidney infection can be life-threatening.
* Ask students if they, or someone they know, have ever had a kidney stone. Ask them to share with the class what it felt like.
* Describe how kidney stones are formed.
* List the factors that may increase an older person’s risk of developing kidney stones.
* Discuss the effect that kidney stones may have on the functioning of the urinary system.
* Discuss surgery and lithotripsy as common treatments for kidney stones.
* Differentiate between acute and chronic renal failure.
* Explain the common signs of renal failure that a nursing assistant might observe.
* Describe the process of dialysis that is used for people with renal failure. Explain that a person with acute renal failure may need dialysis treatment for only a short period of time, whereas a person with chronic renal failure must remain on dialysis for the rest of their life.
* Discuss the two types of dialysis procedures.
* Describe the fistulas, shunts, and catheters that may be present in a person who is having regular dialysis performed and the safety measures that should be taken to prevent clotting, damaging, or dislodging them.
* Explain the effect of tumors in the urinary system.
* Explain the causes and treatment of bladder tumors.
* Explain that a bladder tumor may necessitate surgical removal of the bladder and the creation of a urinary diversion.
* Describe how a ureterostomy is created.
* Describe how a urostomy is created.
* Bring a selection of ostomy appliances to class to show to the students.
* Have learners refer to learning activities located at the end of the chapter.

Learning Objective 5.Discuss the special care needs of people who have urinary system disorders. (Refer to PowerPoint slides 30, 38, 42 to 44, 46 to 50, and 57.)

* Discuss signs and symptoms that a nursing assistant may notice that could indicate a urinary tract infection.
* Discuss the nursing assistant’s role with regard to collecting and staining a person’s urine.
* Based on their understanding of renal failure and its causes and the dialysis procedures, ask the students to list their roles when caring for a person with renal failure.
* Based on the students’ understanding of an ostomy, ask them to list the care that they should take of a person with an ostomy.
* Have learners refer to learning activities located at the end of the chapter.

Learning Objective 6. List common diagnostic procedures that may be used to detect and diagnose urinary system disorders. (Refer to PowerPoint slide 58.)

* Explain that symptoms of urinary disorders are often nonspecific and difficult to diagnose without additional testing.
* List and describe the diagnostic tests that are used to identify a urinary system disorder, such as urinalysis, computed tomography (CT) scans, magnetic resonance imaging (MRI) scans, radiographs (x-rays), ultrasound, cystoscopy, and ureteroscopy.
* Have learners refer to learning activities located at the end of the chapter.