Medical Terminology

Chapter 8: The Urinary System
CHAPTER OBJECTIVES

This chapter covers the Urinary System, which is the body’s hydration and excretion service, and the combining forms, terms, and abbreviations used in building words that relate to it. Upon completion of this lesson, you should be able to:

• Name the parts of the urinary system and discuss their function
• Define combining forms used in building words that relate to the urinary system
• Identify the meaning of related abbreviations
• Name the common diagnoses, laboratory tests, and clinical procedures used in treating the urinary system
• Define the major pathological conditions, surgical terms and pharmacological agents relating to the urinary system
The principal function of the urinary system is to maintain the volume and composition of body fluids within normal limits. One aspect of this function is to rid the body of waste products that accumulate as a result of cellular metabolism, and, because of this, it is sometimes referred to as the excretory system. Although the urinary system has a major role in excretion, other organs contribute to the excretory function. The lungs in the respiratory system excrete some waste products, such as carbon dioxide and water. The skin is another excretory organ that rids the body of wastes through the sweat glands. The liver and intestines excrete bile pigments that result from the destruction of hemoglobin. The major task of excretion still belongs to the urinary system. If it fails the other organs cannot take over and compensate adequately.

The urinary system maintains an appropriate fluid volume by regulating the amount of water that is excreted in the urine. Other aspects of its function include regulating the concentrations of various electrolytes in the body fluids and maintaining normal pH of the blood.

In addition to maintaining fluid homeostasis in the body, the urinary system controls red blood cell production by secreting the hormone erythropoietin. The urinary system also plays a role in maintaining normal blood pressure by secreting the enzyme renin.
COMPONENTS OF THE URINARY SYSTEM

The urinary system includes the kidneys, ureters, urinary bladder, and urethra.

- The **kidneys** form the urine and account for the other functions attributed to the urinary system.

- The **ureters** carry the urine away from kidneys to the urinary bladder.

- The urinary **bladder** is the organ that stores urine.

- The **urethra** is a tubular structure that carries the urine from the urinary bladder to the outside of the body for disposal.

KIDNEYS

The kidneys are the primary organs of the urinary system. The kidneys are the organs that filter the blood, remove the wastes, and excrete the wastes in the urine. They are the organs that perform the functions of the urinary system. The other components are accessory structures to eliminate the urine from the body.
The paired kidneys are located between the twelfth thoracic and third lumbar vertebrae, one on each side of the vertebral column. The right kidney usually is slightly lower than the left because the liver displaces it downward. The kidneys, protected by the lower ribs, lie in shallow depressions against the posterior abdominal wall and behind the parietal peritoneum. This means they are retroperitoneal. Each kidney is held in place by connective tissue, called renal fascia, and is surrounded by a thick layer of adipose tissue, called perirenal fat, which helps to protect it. A tough, fibrous, connective tissue renal capsule closely envelopes each kidney and provides support for the soft tissue that is inside.

In the adult, each kidney is approximately 3 cm thick, 6 cm wide, and 12 cm long. It is roughly bean-shaped with an indentation, called the hilum, on the medial side. The renal hilum is the entry and exit site for structures servicing the kidneys: vessels, nerves, lymphatics, and ureters. Emerging from the hilum is the renal pelvis (a collection area), which is formed from the major and minor calyxes in the kidney. The smooth muscle in the renal pelvis funnels urine via peristalsis into the ureter. The renal arteries form directly from the descending aorta, whereas the renal veins return cleansed blood directly to the inferior
vena cava. The artery, vein, and renal pelvis are arranged in an anterior-to-posterior order.

The renal artery first divides into segmental arteries, followed by further branching to form interlobar arteries that pass through the renal columns to reach the cortex. The interlobar arteries, in turn, branch into arcuate arteries, cortical radiate arteries, and then into afferent arterioles. The afferent arterioles service about 1.3 million nephrons in each kidney.

A frontal section through the kidney reveals an outer region called the **renal cortex** and an inner region called the **medulla**. The **renal columns** are connective tissue extensions that radiate downward from the cortex through the medulla to separate the most characteristic features of the medulla, the **renal pyramids** and **renal papillae**. The papillae are bundles of collecting ducts that transport urine made by nephrons to the **calyces** of the kidney for excretion. The renal columns also serve to divide the kidney into 6–8 lobes and provide a supportive framework for vessels that enter and exit the cortex. The pyramids and renal columns taken together constitute the kidney lobes.
Nephrons are the “functional units” of the kidney; they cleanse the blood and produce urine. Each kidney contains over a million functional nephrons, which is why a person is able to survive with only one kidney. The principle task of the nephron population is to balance the plasma to homeostatic set points and excrete potential toxins in the urine. They do this by accomplishing three principle functions—filtration, reabsorption, and secretion.

The nephron includes a filter, called the glomerulus, and a tubule. The nephrons work through a two-step process. The glomerulus lets fluid and waste products pass through it; however, it prevents blood cells and large molecules, mostly proteins, from passing. The filtered fluid then passes through the tubule, which sends needed minerals back to the bloodstream and removes wastes. The final product becomes urine.

**Link to Learning:** Please read: National Institute of Diabetes and Digestive and Kidney Diseases: [The Kidneys and How They Work](http://cnx.org/content/col11496/latest/).
Please watch, Khanacademymedicine, How do the Kidneys Work? For an overview on what you have learned.
URETERS

Each ureter is a small tube, about 25 cm long, that carries urine from the renal pelvis to the urinary bladder. It descends from the renal pelvis, along the posterior abdominal wall, which is behind the parietal peritoneum, and enters the urinary bladder on the posterior inferior surface.

The wall of the ureter consists of three layers:

- The outer layer, the **fibrous coat**, is a supporting layer of fibrous connective tissue.
- The middle layer, the **muscular coat**, consists of the inner circular and outer longitudinal smooth muscle. The main function of this layer is **peristalsis**: to propel the urine.
- The inner layer, the **mucosa**, is transitional epithelium that is continuous with the lining of the renal pelvis and the urinary bladder. This layer secretes mucus, which coats and protects the surface of the cells.

BLADDER

The urinary bladder is a temporary storage reservoir for urine. It is located in the pelvic cavity, posterior to the symphysis pubis, and below the parietal peritoneum. The size and shape of the urinary bladder varies with the amount of urine it contains and with the pressure it receives from surrounding organs. The bladder is composed of numerous folds called rugae, which allow the bladder to expand as it fills.

There is a triangular area, called the trigone, formed by three openings in the floor of the urinary bladder. Two of the openings are from the ureters and form the base of the trigone. Small flaps of mucosa cover these openings and act as valves that allow urine to enter the bladder but prevent it from backing up from the bladder into the ureters. The third opening, at the apex of the trigone, is the opening into the urethra.

Link to Learning: Please watch: MedlinePlus: Bladder function — neurological control, for a brief overview of this relationship.

URETHA

The final passageway for the flow of urine is the urethra, a thin-walled tube that conveys urine from the floor of the urinary bladder to the outside. The opening to the outside is the external urethral orifice. The mucosal lining of the urethra is transitional epithelium. The wall also contains smooth muscle fibers and is supported by connective tissue.

The internal urethral sphincter surrounds the beginning of the urethra, where it leaves the urinary bladder. This sphincter is smooth (involuntary) muscle. Another sphincter, the external urethral sphincter, is skeletal (voluntary) muscle and encircles the urethra where it goes through the pelvic floor. These two sphincters control the flow of urine through the urethra.

The urethra is the only urologic organ that shows any significant anatomic difference between males and females; all other urine transport structures are identical.

In females, the urethra is short, only 3 to 4 cm (about 1.5 inches) long. The external urethral orifice opens to the outside just anterior to the opening for the vagina.

In males, the urethra is much longer, about 20 cm (7 to 8 inches) in length, and transports both urine and semen. The first part, next to the urinary bladder, passes through the prostate gland and is called the
prostatic urethra. The second part, a short region that penetrates the pelvic floor and enters the penis, is called the membranous urethra. The third part, the spongy urethra, is the longest region. This portion of the urethra extends the entire length of the penis, and the external urethral orifice opens to the outside at the tip of the penis.

**Link to Learning:** For an overview on what you have learned, please read: National Institute of Diabetes and Digestive and Kidney Diseases: The Urinary Tract and How it Works.
### Combining forms of the urinary system

<table>
<thead>
<tr>
<th>Root</th>
<th>Definition</th>
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<th>Definition</th>
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</thead>
<tbody>
<tr>
<td>bacteri/o</td>
<td>bacteria</td>
<td>olig/o</td>
<td>scanty</td>
</tr>
<tr>
<td>cali/o, calic/o</td>
<td>calyx (cup-like structure in kidney)</td>
<td>pyel/o</td>
<td>renal pelvis</td>
</tr>
<tr>
<td>cyst/o</td>
<td>urinary bladder</td>
<td>ren/o</td>
<td>kidney</td>
</tr>
<tr>
<td>glomerul/o</td>
<td>glomerulus (ball of capillaries)</td>
<td>trigon/o</td>
<td>trigone (triangular area of the bladder)</td>
</tr>
<tr>
<td>hydr/o</td>
<td>water</td>
<td>ur/o, urin/o</td>
<td>urine</td>
</tr>
<tr>
<td>lith/o</td>
<td>stone</td>
<td>ureter/o</td>
<td>ureter</td>
</tr>
<tr>
<td>meat/o</td>
<td>meatus (the opening of the urethra)</td>
<td>urethr/o</td>
<td>urethra</td>
</tr>
<tr>
<td>nephr/o</td>
<td>kidney</td>
<td>vesic/o</td>
<td>urinary bladder</td>
</tr>
</tbody>
</table>

### Word Building

#### Cyst/o = bladder
- Cyst/o + -algia = cystalgia  
  Bladder pain
- Cyst/o + -gram = cystogram  
  Record of the bladder
- Cyst/o + lith = cystolith  
  Bladder stone

#### Nephr/o = kidney
- Nephr/o + -itis = nephritis  
  Inflammation of the kidney
- Nephr/o + -lith = nephrolith  
  Kidney stone
- Nephr/o + -malacia = nephromalacia  
  Kidney softening
<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
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<tbody>
<tr>
<td>A/G</td>
<td>albumin/globulin</td>
</tr>
<tr>
<td>AGN</td>
<td>acute glomerulonephritis</td>
</tr>
<tr>
<td>ARF</td>
<td>acute renal failure</td>
</tr>
<tr>
<td>ATN</td>
<td>acute tubular necrosis</td>
</tr>
<tr>
<td>BNO</td>
<td>bladder neck obstruction</td>
</tr>
<tr>
<td>BUN</td>
<td>blood urea nitrogen</td>
</tr>
<tr>
<td>CAPD</td>
<td>continuous ambulatory peritoneal dialysis</td>
</tr>
<tr>
<td>Cath</td>
<td>catheter</td>
</tr>
<tr>
<td>CRF</td>
<td>chronic renal failure</td>
</tr>
<tr>
<td>ESRD</td>
<td>end stage renal disease</td>
</tr>
<tr>
<td>ESWL</td>
<td>extracorporeal shockwave lithotripsy</td>
</tr>
<tr>
<td>H2O</td>
<td>water</td>
</tr>
<tr>
<td>HD</td>
<td>hemodialysis</td>
</tr>
<tr>
<td>IVP</td>
<td>intravenous pyelogram</td>
</tr>
<tr>
<td>K+</td>
<td>potassium</td>
</tr>
<tr>
<td>KUB</td>
<td>kidney, ureter, bladder</td>
</tr>
<tr>
<td>mL</td>
<td>milliliter</td>
</tr>
<tr>
<td>Na+</td>
<td>sodium</td>
</tr>
<tr>
<td>pH</td>
<td>power of hydrogen concentration</td>
</tr>
<tr>
<td>PKU</td>
<td>phenylketonuria</td>
</tr>
<tr>
<td>RP</td>
<td>retrograde pyelogram</td>
</tr>
<tr>
<td>SG</td>
<td>specific gravity</td>
</tr>
<tr>
<td>UA</td>
<td>urinalysis</td>
</tr>
<tr>
<td>UC</td>
<td>urine culture</td>
</tr>
<tr>
<td>UTI</td>
<td>urinary tract infection</td>
</tr>
<tr>
<td>VCUG</td>
<td>voiding cystourethrography</td>
</tr>
</tbody>
</table>
TEST YOUR KNOWLEDGE

Combine the following word parts and then define the created word’s meaning. Click the image to compare your answers.

Answer:

1. Lith/o + -tripsy = ?
   1. Lithotripsy = surgical crushing of a stone
2. Nephr/o + -megaly = ?
   2. Nephromegaly = kidney enlargement
3. Pyel/o + -gram = ?
   3. Pyelogram = record of the renal pelvis
4. Ren/o + -al = ?
   4. Renal = pertaining to the kidney
5. Ur/o + -emia = ?
   5. Uремia = urine blood condition
6. Ureter/o + -ectasis = ?
   6. Ureterectasis = ureter dilation
Specialists in the urinary system include, **nephrologists**, who treat disorders of the kidneys and **urologists**, who treat disorders of the genitourinary tract, which includes kidneys, urinary bladder and urethra of both men and women and the prostate and testes in men.

A **urinalysis** is the most common test of the urinary system. It is the physical, chemical, and microscopic examination of urine. It involves a number of tests to detect and measure various compounds that pass through the urine. A urinalysis can help to detect a variety of kidney and urinary tract disorders, including chronic kidney disease, diabetes, bladder infections and kidney stones.

Different blood tests can be performed to assess a person’s kidney function.

- **Creatinine clearance test**: Creatinine (kree-AH-teh-nin) is a waste product that comes from the normal wear and tear on muscles of the body. Creatinine levels in the blood can vary depending on age, race and body size. High levels of creatinine in the blood indicate that the kidneys are not working properly. The level of creatinine in the blood rises, if kidney disease progresses.
• **Blood urea nitrogen (BUN) test.** Urea nitrogen (yoo-REE-uh NY-truh-jen) comes from the breakdown of protein in the foods you eat. As kidney function decreases, the BUN level rises.

• **Glomerular Filtration Rate (GFR)** This test is a measure of how well the kidneys are removing wastes and excess fluid from the blood. It may be calculated from the serum creatinine level using your age, weight, gender and body size. A low GRF is a sign that the kidneys are not working properly and can indicate that a treatment for kidney failure such as dialysis or a kidney transplant, will be needed.

Imaging tests may be used to visually diagnose stones, growths, abnormalities or obstructions.

• **Abdominal X-ray** is an imaging test to look at organs and structures in the abdomen. When the test is done to look at the bladder and kidney structures, it is called a **KUB** (kidneys, ureters, bladder) x-ray.

• **Abdominal Ultrasounds and MRIs** can be used to look at organs in the abdomen, including the liver, gallbladder, spleen, pancreas, and kidneys. The blood vessels that lead to some of these organs, such as the inferior vena cava and aorta, can also be examined.

• **CT scans** are a technique that uses contrast dye to picture the kidneys, urinary tract and structures that surround it. It may also be used to look for structural abnormalities and the presence of obstructions.
• **Cystoscopy** uses a cystoscope to look inside the urethra and bladder. A cystoscope is a long, thin optical instrument with an eyepiece at one end, a rigid or flexible tube in the middle, and a tiny lens and light at the other end of the tube. By looking through the cystoscope, the urologist can see detailed images of the lining of the urethra and bladder.

• **Intravenous pyelogram (IVP)** is an x-ray of the urinary tract. Contrast medium is injected into a vein in the person’s arm, travels through the body to the kidneys, and makes urine visible on the x-ray. The contrast medium also shows any blockage that may be present in the urinary tract.

• **Retrograde pyelogram** is a urologic procedure where the physician injects contrast into the ureter in order to visualize the ureter and kidney. The flow of contrast (up from the bladder to the kidney) is opposite the usual flow of urine, hence the *retrograde* name.

• **Shock wave lithotripsy** is when a machine called a lithotripter is used to crush the kidney stone. The lithotripter generates shock waves that pass through the person’s body to break the kidney stone into smaller pieces to pass more readily through the urinary tract.

• **Voiding (urinary) cystourethrogram (VCU, VCUG)** is an x-ray image of the bladder and urethra taken while the bladder is full and during urination, also called voiding. As the person lies on the x-ray table, a health care provider inserts the tip of a thin, flexible tube called a catheter through the urethra into the bladder. The bladder is filled with contrast medium to make it clearly visible on the x-ray images. The x-rays are taken from various angles while the bladder is full of contrast medium. The
A catheter is then removed and x-ray images are taken during urination. A VCUG can reveal abnormalities of the inside of the urethra and bladder and is usually used for children to detect vesicoureteral reflux—the abnormal flow of urine from the bladder back into the upper urinary tract. A VCUG can also show whether the flow of urine is normal when the bladder empties, blockages from an enlarged prostate in men, and an abnormal bladder position in women.

- **Kidney biopsy** is done in some cases to check for a specific type of kidney disease, see how much kidney damage has occurred and help plan treatment. To do a biopsy, the doctor removes small pieces of kidney tissue and looks at them under a microscope.

Dialysis is a treatment to filter wastes and water from your blood, allowing people with kidney failure to feel better and continue doing the things they enjoy. There are two types of dialysis:

- **Hemodialysis**, your blood goes through a filter outside your body and the clean blood is returned to the body.
- **Peritoneal dialysis** uses the lining or peritoneum of your abdominal cavity (the space in your body that holds the stomach, intestines, and liver) to filter your blood. It works by putting a special fluid into your abdomen that absorbs waste products from your blood as it passes through small blood vessels in the peritoneum. The fluid with the waste products is then drained away.
Please watch, National Kidney Disease Education Program, “What is Dialysis” for an overview of this treatment option.
Kidney and urinary tract disorders can involve one or both kidneys, one or both ureters, the bladder, or the urethra, and in men, the prostate, one or both testes, or the epididymis.

Most kidney diseases attack the nephrons. This damage may leave kidneys unable to remove wastes. Causes can include genetic problems, injuries, or medicines. You are at greater risk for kidney disease if you have diabetes, high blood pressure, or a close family member with kidney disease.

- **Atheroembolic renal disease (AERD)** occurs when small particles made of hardened cholesterol and fat spread to the small blood vessels of the kidneys.

- **Benign prostatic hyperplasia (BPH)** is an enlarged prostate. Severe BPH can cause serious problems over time, such as urinary tract infections, and bladder or kidney damage.

- **Chronic kidney disease (CKD)** means that your kidneys are damaged and can't filter blood as they should. This damage can cause wastes to build up in your body. It can also cause other problems that can harm your health. Diabetes and high blood pressure are the most common causes of CKD.

- **Cystitis** is inflammation of the bladder, often from an infection.
• **Diabetes insipidus** (DI) is a rare condition that leads to frequent urination and excessive thirst. The condition may be caused by problems with your pituitary gland and/or your kidneys.

• **Diabetic nephropathy** is kidney damage from diabetes. Diabetes can affect many parts of the body, including the kidneys. In healthy kidneys, many tiny blood vessels filter waste products from your body. The blood vessels have holes that are big enough to allow tiny waste products to pass through into the urine but are still small enough to keep useful products (such as protein and red blood cells) in the blood. High levels of sugar in the blood can damage these vessels if diabetes is not controlled. This can cause kidney disease, which is also called **nephropathy** (nef-rah-puh-thee). If the damage is bad enough, your kidneys could stop working.

• **End-stage renal disease (ESRD)** is the last stage of kidney disease.

• **Glomerulonephritis** (Bright’s Disease) is a group of diseases that cause inflammation and damage to the kidney's filtering units. These disorders are the third most common type of kidney disease.

• **Polycystic kidney disease** is an inherited disease which causes large cysts to form in the kidneys and damage the surrounding tissue.

• **Kidney stones** (**nephrolithiasis**) are a solid piece of material that forms in the kidney from substances in the urine. They may be as small as a grain of sand or as large as a pearl. Most kidney stones pass out
of the body without help from a doctor. But sometimes a stone will not go away. It may get stuck in the urinary tract, block the flow of urine and cause great pain.

• **Interstitial cystitis** is a chronic problem that causes bladder pain and frequent, urgent urination.

• **Nephroblastoma**, also call Wilms tumor, is a rare type of kidney cancer that causes a tumor on one or both kidneys.

• **Overactive bladder** is a condition in which the bladder squeezes urine out at the wrong time.

• **Urinary incontinence** is an uncontrollable loss of urine.

• **Urethral stricture** is a narrowing of the opening of the urethra.

• **Urethritis** is the inflammation of the urethra, sometimes caused by infection.

• **Urinary retention** is the inability to empty the bladder completely.

• **Urinary Tract Infections** (UTIs) are common infections, usually caused by bacteria, in the bladder or urethra.

**Link to Learning:** Please watch, MedlinePlus: [Kidney Stones](#) and [Enlarged Prostate Gland](#).

To learn more about the different Kidney and Urinary Tract Disorders, click [here](#).
SURGICAL TERMS

Depending on the severity of the disorder, a person may require surgery.

- **Catheterization**: involves placing a thin, flexible tube, called a catheter, into the bladder to drain urine.
- **Cystectomy**: the surgical removal of the urinary bladder.
- **Cystopexy**: surgical fixation of bladder to abdominal wall.
- **Cystoplasty**: surgical repair of the bladder.
- **Cystorrhaphy**: suturing of a damaged bladder.
- **Cystoscopy**: visual examination of urinary bladder using a cystoscope.
- **Lithotomy**: surgical incision for the removal of a stone.
- **Lithotripsy**: destruction of a kidney stone with the use of ultrasonic waves travelling through water.
- **Meatotomy**: an incision to the meatus to enlarge the opening.
- **Nephrectomy**: surgical removal of a kidney.
- **Nephrolithotomy**: surgical removal of kidney stone through an incision in the kidney.
• **Nephrolysis**: freeing of a kidney from adhesions.
• **Nephorrhaphy**: suturing of the kidney.
• **Pyelectomy**: surgical incision into the renal pelvis.
• **Pyeloplasty**: surgical repair of the renal pelvis.
• **Ureterectomy**: surgical removal of a ureter.
• **Ureteroplasty**: surgical repair of a ureter.
• **Urethorrhaphy**: suturing by a ureter.
• **Urethropexy**: surgical fixing of the urethra.
• **Urethrolasty**: surgical repair of the urethra.
• **Urethrorhaphy**: suturing of the urethra.
• **Urethrostomy**: surgical creation of a permanent incision into the urethra.
• **Urinary diversion**: a surgical procedure that reroutes the normal flow of urine out of the body when urine flow is blocked.
• **Urostomy**: an opening into the abdomen to the exterior of the body to allow the urine to come out.
PHARMACOLOGICAL TERMS

Common medications for urinary system disorders include:

- **ACE inhibitors**: slow kidney disease by lowering blood pressure.
- **Analgesics**: relieve pain.
- **Alpha blockers**: help relax the bladder or prostate in order to relieve urinary frequency or incontinence.
- **Antibiotics**: treat infections such as a UTI.
- **Antidiuretics**: aid in reducing urination.
- **Antispasmodic**: reduces muscle spasms which aids in relieving pain and reducing the urgency to urinate.
- **Diuretics**: increase urination.
- **Calcium channel blockers**: inhibit bladder muscle contraction.

Link to Learning: Please read: mykidney: [Medicines for Kidney Patients](#)
### PRONUNCIATION

Practice pronouncing each term, then click the audio icon to hear it.

<table>
<thead>
<tr>
<th>Term</th>
<th>Description</th>
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<tbody>
<tr>
<td><strong>Albuminuria</strong></td>
<td>The presence of albumin in the urine that is usually a symptom of disease of the kidneys.</td>
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<tr>
<td><strong>Anuria</strong></td>
<td>Absence of or defective urine excretion.</td>
</tr>
<tr>
<td><strong>Atresia</strong></td>
<td>Absence or closure of a natural passage of the body, as of the ureters or urethra.</td>
</tr>
<tr>
<td><strong>Cystocele</strong></td>
<td>Hernia of a bladder.</td>
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<tr>
<td><strong>Cystolith</strong></td>
<td>A urinary calculus; bladder stone.</td>
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<tr>
<td><strong>Dysuria</strong></td>
<td>Difficult or painful discharge of urine.</td>
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<tr>
<td><strong>Edema</strong></td>
<td>An abnormal excess accumulation of serous fluid in connective tissue or in a serous cavity; retention of fluid.</td>
</tr>
<tr>
<td><strong>Enuresis</strong></td>
<td>Involuntary release of urine, most often in reference to “bedwetting.”</td>
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<table>
<thead>
<tr>
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<tr>
<td><strong>Glomerulus</strong> (glo-MAR-you-los)</td>
<td>A small convoluted or intertwined mass (as of organisms, nerve fibers, or capillaries).</td>
</tr>
<tr>
<td><strong>Hematuria</strong> (he-ma-TU-ree-a)</td>
<td>The presence of blood or blood cells in the urine.</td>
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<tr>
<td><strong>Hydronephrosis</strong> (HI-dro-ne-FRO-sis)</td>
<td>The abnormal collection of urine due to blockage.</td>
</tr>
<tr>
<td><strong>Hypernephroma</strong> (HI-per-ne-FRO-ma)</td>
<td>A tumor of the kidney.</td>
</tr>
<tr>
<td><strong>Ketonuria</strong> (Ke-toe-NU-ree-a)</td>
<td>The presence of excess ketone bodies in the urine, usually indicative of diabetes or starvation.</td>
</tr>
<tr>
<td><strong>Meatus</strong> (me-A-tus)</td>
<td>A natural body passage.</td>
</tr>
<tr>
<td><strong>Micturition</strong> (mik-chu-RISH-en)</td>
<td>Urination.</td>
</tr>
<tr>
<td><strong>Nephritis</strong> (ne-FRI-tis)</td>
<td>Acute or chronic inflammation of the kidneys.</td>
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<tr>
<td><strong>Nephroma</strong> (ne-FRO-ma)</td>
<td>A malignant tumor of the renal cortex.</td>
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<th>Definition</th>
</tr>
</thead>
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<td>Nephrosis (ne-FRO-sis)</td>
<td>A non-inflammatory disease of the kidneys chiefly affecting function of the nephrons.</td>
</tr>
<tr>
<td>Nocturia (nok-TU-ree-a)</td>
<td>Frequently getting up and urinating during the night.</td>
</tr>
<tr>
<td>Oliguria (ol-i-GU-ree-a)</td>
<td>Reduced excretion of urine.</td>
</tr>
<tr>
<td>Proteinuria (pro-te-NU-ree-a)</td>
<td>The presence of excess protein in the urine.</td>
</tr>
<tr>
<td>Pyelonephritis (PIE-e-lo-ne-FRI-tis)</td>
<td>Inflammation of both the parenchyma of a kidney and the lining of its renal pelvis, especially due to bacterial infection.</td>
</tr>
<tr>
<td>Pyelitis (pie-e-LI-tis)</td>
<td>Inflammation of the lining of the renal pelvis of a kidney.</td>
</tr>
<tr>
<td>Pyuria (pie-YU-ree-a)</td>
<td>The presence of pus in the urine.</td>
</tr>
<tr>
<td>Uremia (yu-RE-me-a)</td>
<td>Accumulation in the blood of constituents normally eliminated in the urine that produces a severe toxic condition and usually occurs in severe kidney disease.</td>
</tr>
</tbody>
</table>

You have now completed chapter 8. To navigate back to the main Moodle page, click the back button in your browser.