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**18/MHS07/006**

**PHARMACOLOGY**

**PHS 212**

**QUESTION**

Discuss the diseases of the renal system

## **Diseases of the urinary system**

Different specialists treat urinary system ailments. Nephrologists treat [kidney diseases](https://www.livescience.com/34714-chronic-kidney-disease.html), while urologists treat problems with the urinary tract, including the kidneys, adrenal glands, ureters, bladder and urethra, according to the [American Urological Association](http://www.auanet.org/) (AUA). Urologists also treat the male reproductive organs, while gynecologists often treat urinary diseases or disorders in females, including yeast infections. Nephrologists and urologists often work with endocrinologists or oncologists, depending on the disease.

[**Urinary tract infections**](https://www.livescience.com/44121-urinary-tract-infection-symptoms-treatment.html)**(UTIs)** occur when bacteria enter the urinary tract; they can affect the urethra, bladder or even the kidneys. While UTIs are more common in women, they can occur in men. UTIs are typically treated with antibiotics, according to [Dr. Oscar Aguirre](http://denverurogyn.com/), a urogynecologist in Denver. In the United States, about 8.1 million people have a urinary tract infection each year, [according to the American Urological Association](http://www.urologyhealth.org/urologic-conditions/urinary-tract-infections-in-adults?article=47).

Incontinence is another common disease of the urinary system. "The most common bladder problems I see in my practice in women are frequent urges to urinate and leakage of urine," said S. Adam Ramin, urologic surgeon and founder of Urology Cancer Specialists in Los Angeles. "The most common bladder problems in men are frequent urination at nights and incomplete bladder emptying. This is usually due to an enlarged prostate causing obstruction of bladder emptying.", Most bladder control issues arise when the sphincter muscles of the urethra are too weak or too active. If the sphincter muscles are too weak, a cough or sneeze can cause urination. Sphincter muscles that are too active can trigger a sudden, strong urge to urinate with little urine in the bladder. These issues are diagnosed as urinary incontinence (UI). Women experience UI twice as often as men. It becomes more common with age.

Problems can come in the form of a pelvic prolapse, which can result in leakage and can be the result of a vaginal delivery. Then there is the overactive bladder, "which we see a lot and is not related to having children or trauma," Aguirre said. A third condition involves overflow, in which the bladder does not completely empty.

"Holding your urine for a short period of time, usually up to one hour, is typically okay," said Ramin. "However protracted and repeated holding of urine may cause over-expansion of bladder capacity, transmission of excess pressure into the kidneys, and the inability to completely empty the bladder. These problems in turn may lead to UTI [urinary tract infection], cystitis and deterioration of kidney function."

[**Interstitial cystitis**](https://www.livescience.com/7563-strange-source-bladder-pain-discovered.html)**(IC)**, also called painful bladder syndrome, is a chronic bladder condition, primarily in women, that causes bladder pressure and pain and, sometimes, pelvic pain to varying degrees, according to the Mayo Clinic. It can cause bladder scarring, and can make the bladder less elastic. While the cause isn't known, many people with the condition also have a defect in their epithelium, the protective lining of the bladder.

Prostatitis is a swelling of the prostate gland and, therefore, can only occur in men. Often caused by advanced age, symptoms include urinary urgency and frequency, pelvic pain and pain during urination, the Mayo Clinic noted. A simple kidney cyst is a rounded pouch or a closed pocket that is usually filled with fluid. In polycystic kidney disease (PKD), clusters of cysts form inside the kidneys and take the place of the normal tissue. The affected kidneys become enlarged and work poorly. PKD is an inherited condition that often leads to kidney failure, requiring dialysis or kidney transplantation. Acquired cystic kidney disease (ACKD) typically affects people already on dialysis from chronic kidney disease. In ACKD the kidneys do not enlarge and no other symptoms occur. Polycystic kidney disease (PKD or PCKD, also known as polycystic kidney syndrome) is a cystic genetic disorder of the kidneys. There are two types of PKD: autosomal dominant polycystic kidney disease (ADPKD), and the less-common autosomal recessive polycystic kidney disease (ARPKD). PKD is characterized by the presence of multiple cysts (hence,”polycystic”), typically in both kidneys. The cysts are numerous and are fluid-filled, resulting in massive enlargement of the kidneys. The disease can also damage the liver, pancreas, and, in some rare cases, the heart and brain. The two major forms of polycystic kidney disease are distinguished by their patterns of inheritance.

[**Kidney stones**](https://www.livescience.com/22470-summer-kidney-stones-prevention.html) are clumps of calcium oxalate that can be found anywhere in the urinary tract. Kidney stones form when chemicals in the urine become concentrated enough to form a solid mass, according to the Cleveland Clinic. They can cause pain in the back and sides, as well as blood in the urine. Many kidney stones can be treated with minimally invasive therapy, such as extracorporeal shock wave lithotripsy, which disintegrates the kidney stones with shock waves. The kidneys produce urine to eliminate waste. Kidney stones can form when mineral and acid salts in the urine crystallize and stick together. If the stone is small, it can pass easily through the urinary system and out of the body. A larger stone can get stuck in the urinary tract, however. A stuck kidney stone causes pain and can block the flow of urine.

**Kidney failure**, also called renal failure and chronic kidney disease, can be a temporary (often acute) condition or can become a chronic condition resulting in the inability of the kidneys to filter waste from the blood. Other conditions, such as diabetes and hypertension, can cause chronic kidney disease, according to the Mayo Clinic. Acute cases may be caused by trauma or other damage, and may improve over time with treatment. However, renal disease may lead to chronic kidney failure, which may require dialysis treatments or even a kidney transplant. In chronic kidney disease (CKD), the kidneys are damaged and unable to filter blood properly. This damage can lead to a build-up of waste substances in the body and to other problems, including kidney failure. The most common causes of CKD include diabetes, heart disease, and high blood pressure. A diseased kidney may look smaller and have a granular surface.