

UROGENITAL SYSTEM – Illnesses and disorders

The following are just a few of the many diseases and disorders that can affect the urinary system or its parts.

Kidney failure can be divided into two types. Acute (short-term) kidney failure appears most frequently as a complication of a serious illness such as heart failure, liver failure, dehydration, severe burns, and excessive bleeding. Acute kidney failure is a temporary condition that can be reversed with proper and timely treatment. Chronic kidney failure, which is long-term and irreversible, can be triggered by diabetes, hypertension, glomerulonephritis, and sickle cell anemia, among other conditions. Without proper treatment which removes wastes from the bloodstream, chronic kidney failure is fatal.

Dialysis is a process which is used to solve this situation. Small molecules in a solution are separated from large molecules in this process. It has come to play a crucial role in the health of humans. For some people, the term dialysis refers to a specific kind of medical treatment in which the dialysis machine takes on the functions of a human kidney. Dialysis machines have made possible the survival of thousands of people who would otherwise have died as a result of kidney failure.

The kidney dialysis machine was invented by Dutch-American surgeon Willem Johan Kolff in 1945. Since that time, many improvements have been made to the machine and to the procedure of removing wastes from the blood of people whose kidneys have ceased to function.

The most common dialysis treatment prescribed is known as hemodialysis. In short, during this procedure, two needles attached to tubes are inserted into veins in an individual's arm. Blood is drawn out of the person's body through one tube and pumped through the dialysis machine. Inside the machine, the blood is circulated on one side of a semipermeable membrane. This means that the membrane allows the passage of certain sized molecules (such as waste products) across it, but prevents the passage of other, larger molecules (such as blood cells). A special dialysis fluid containing mineral ions and other substances necessary to the body circulates on the other side of the membrane. As blood circulates in the machine, wastes and other unneeded substances in the blood are drawn out through the membrane. At the same time, the mineral ions and other chemicals in the dialysis fluid cross the membrane into the blood. The "cleansed" and chemically-balanced blood is then returned to the person's body through the second tube.

Most hemodialysis patients require treatment two to three times a week, and each treatment can last several hours.

Kidney stones are solid accumulations or material that forms in the tubal system of the kidneys. Kidney stones cause problems when they block the flow of urine through or out of the kidneys. When the stones move along the ureter, they cause severe pain.

Kidney stones are most common among white males over the age of thirty. The stones can be composed of a variety of substances, but the majority (about 80 percent) is formed from calcium salts that have separated from the urine to form crystals that combine to form larger stones. Some may grow as big as golf balls.

Increased blood levels of calcium caused by a diet heavy in meat, fish, and poultry can lead to the formation of kidney stones. Certain diseases—hyperthyroidism and some types of cancer—can also increase blood calcium levels.

Individuals who have kidney stones usually do not have symptoms until the stones pass into the ureter. Prior to this, some people may notice blood in their urine. Once the stone is in the ureter, however, most people will experience severe bouts of crampy pain that usually begins in the area between the lower ribs and the hip bone. Nausea, vomiting, and extremely frequent and painful urination may then occur.

Although most kidney stones will pass out of the body on their own, some will not. If a stone is too large to pass or is causing a serious obstruction, surgical removal of the stone may be necessary. In the past, open surgery to remove the stone was common. Now, however, physicians may use a machine to aim shock waves at the stone, either from outside or inside the body. The shock waves often crush the stone into smaller fragments, which may then pass on their own or may be removed surgically. In most cases, individuals with uncomplicated kidney stones will recover very well.

Urinary incontinence is the involuntary and unintentional passage of urine. Women are affected more frequently than men; approximately one out of every ten women under the age of sixty-five is affected. Older people, too, are more prone to the condition.

The inability to control urination can be caused by a wide variety of physical conditions. Any blockage at the bladder outlet that permits only small amounts of urine to pass; irritation of the bladder due to an infection; undue pressure placed on the bladder (such as in obese individuals); and the loss of muscle tone in the pelvic muscles, the bladder, or the urethral sphincter muscles—these are all just a few of the many causes of urinary incontinence.

Left untreated, incontinence can cause physical and emotional harm. Those people with long-term incontinence suffer from urinary tract infections and skin rash. Incontinence can also affect their self-esteem, causing depression and social withdrawal.

There are numerous treatment options for urinary incontinence, depending on the cause. The condition may not be stopped, but it can at least be improved. If weakened pelvic muscles are to blame, exercises to tone them can be performed. In certain people, especially older women, medications may help tighten pelvic muscle tone or the urethral sphincters. A balloon-like device may be inserted into a woman's urethra and inflated to prevent urine leakage. Surgery to raise and support the bladder neck and urethra may also be undertaken.

Urinary tract infections (UTIs) are inflammations of the urinary tract caused by a bacterial infection. UTIs have specific names, depending on the location of the inflammation. Inflammation of the urethra is known as urethritis. Inflammation of the urinary bladder is known as cystitis. When the bacterial infection spreads to the kidneys, the condition is known as pyelonephritis.

UTIs are much more common in women than in men, probably due to anatomy. In women, bacteria from fecal matter and vaginal discharges can enter the urethra because its opening is very close to the vaginal opening and the anus. Once an infection occurs in the urethra of a woman, the relative shortness of the urethra makes it easy for bacteria to gain entry to the bladder and multiply. In men who are not circumcised, the foreskin can harbor bacteria that can enter the urethra and cause UTIs. UTIs can also be sexually transmitted.

Sometimes, a UTI has no symptoms. When symptoms appear, they include pain or a burning sensation when urinating, frequent urination, or blood in the urine. In pyelonephritis, additional symptoms include fever and chills, aching pain on one or both sides of the lower back or abdomen, fatigue, nausea, vomiting, and diarrhea. If left untreated, pyelonephritis can last for months or years. Scarring of the kidneys and the possible loss of kidney function may result.

Typical treatment for all three types of UTIs is a course of antibiotics. An individual suffering from pyelonephritis may also require hospitalization if the disorder is severe. Given the appropriate antibiotic, UTIs usually go away quickly. Drinking plenty of fluids at the first sign of a UTI may help ward it off by diluting the bacteria present and flushing the urinary system.