

## **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 to remove 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.

**Benign prostatic hyperplasia (BPH)** is a condition in men that affects the prostate gland, which is part of the male reproductive system. The prostate is located at the bottom of the bladder and surrounds the urethra. BPH is an enlargement of the prostate gland that can interfere with urinary function in older men. It causes blockage by squeezing the urethra, which can make it difficult to urinate. Men with BPH frequently have other bladder symptoms including an increase in frequency of bladder emptying both during the day and at night. Most men over age 60 have some BPH, but not all have problems with blockage. There are many different treatment options for BPH.

Many disorders can also affect the male and female reproductive systems, preventing them from functioning properly. These conditions can range from mild to moderate to severe. Some are life-threatening.

**Sexually transmitted diseases** (also called STDs or **venereal diseases**) are infections transmitted through various forms of sexual activity. More than twenty-five STDs exist, caused by many different organisms. STDs can cause birth defects, blindness, brain damage, cancer, heart disease, infertility, mental retardation, and death.

Symptoms of STDs vary according to the virus or bacteria causing the disease and the body system affected. In general, a woman who has an STD may bleed when she is not menstruating. She may also have an abnormal vaginal discharge. In addition, vaginal burning, itching, and odor are common. A man afflicted with an STD may have a discharge from the tip of his penis. Urinating may also cause a painful or burning sensation. Both women and men may develop skin rashes, sores, bumps, or blisters near the mouth, genitals, or anal area.

**AIDS (acquired immune deficiency syndrome)** is perhaps the most deadly and frightening STD is. It is caused by the human immunodeficiency virus or HIV. The virus is transmitted between humans in blood, semen, and vaginal secretions. The two main ways to contract the virus are by sharing a needle with a drug user who is HIV-positive (infected with the virus) or by having unprotected sexual relations with a person who is HIV-positive.

Other common and potentially serious STDs include the following:

**Chlamydia** is caused by a microscopic organism that lives as a parasite in human cells. It is transmitted through vaginal intercourse. A common symptom for both men and women is frequent and painful urination. The disease can be successfully treated with antibiotics.

**Genital herpes** is an incurable infection caused by a virus that is similar to the one responsible for cold sores. The infection is marked by the formation of fluid-filled, painful blisters in the genital area. The virus stays in the body for life. It can be transmitted by oral and vaginal intercourse. Drugs are available to lessen symptoms and reduce outbreaks of the disease.

**Genital warts**, also called venereal warts, are caused by a virus that produces growths (warts) on the skin. In women, the growths occur on the genitals and on the walls of the vagina and cervix. In men, they develop in the urethra and on the shaft of the penis. The disease is transmitted by sexual contact. In addition to the visible warts, bleeding, pain, and odor are common symptoms. No treatment for genital warts is completely effective because it is necessary to destroy the skin infected by the virus.

**Gonorrhea**, commonly referred to as "the clap," is a highly contagious STD caused by bacteria. It is transmitted through vaginal and anal intercourse. In men, the disease begins as an infection of the urethra. In women, it will most likely infect the cervix. If left untreated, the disease can travel through the reproductive tract (causing sterility) and spread to the bloodstream, infecting the brains, heart valves, and joints. Symptoms of the disease in women include bleeding between menstrual periods, painful urination, abdominal pain, and a cloudy and yellow vaginal discharge. Symptoms in men include painful and frequent urination and a thick, cloudy discharge from the penis. Gonorrhea is usually treated with a variety of antibiotics, but the bacteria that cause it are developing an increased resistance to routine medications.

**Syphilis** is an infectious disease caused by a coil-shaped bacterium. Spread by vaginal and anal intercourse, syphilis has been a public health problem since the sixteenth century. It currently affects an estimated 50 million people worldwide. The earliest symptom in both women and men is a chancre sore in the mouth or on the genitals. The fluid in the sore is very infectious. Lymph nodes near the chancre swell in most people afflicted with the disease. As syphilis progresses, lymph nodes in the armpits, groin, and neck areas may also swell and skin lesions may erupt. If not treated, syphilis may cause damage years later to the heart and blood vessels, lungs, and central nervous system. The disease is usually treated with sufficiently large doses of antibiotics such as penicillin.

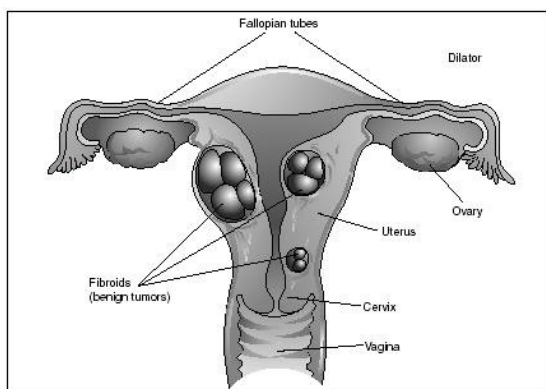
Other reproductive system disorders include the following:

**Vaginal yeast infections**, caused by a species of yeast found in virtually all normal people, are common infections in women. While not serious, they can be uncomfortable and irritating until treated.

**Impotence**, a condition in which a man is unable to maintain an erection, may be due to some physical or psychological problem. Again, this disorder does not threaten life, but it is a cause of concern to a man (and to his spouse or partner) as it prevents him from engaging in sexual intercourse.

**Uterine fibroids**, also called **myomas**, are benign (nonthreatening) growths of the muscle in the uterus. They are not cancerous, nor are they related to cancer. Uterine fibroids are extremely common. They usually develop in women between the ages of thirty and fifty. About 25 percent of the women in this age group have noticeable fibroids.

No one knows exactly what causes fibroids, which grow in three locations: in the uterine cavity, on the wall of the uterus, and on the outside of the uterus. Not all fibroids cause symptoms, but when they do, the symptoms include the following: heavy uterine bleeding, pelvic pressure and pain, and complications during pregnancy.



Even fibroids that do cause symptoms may not require treatment. When the fibroids grow large enough to cause serious problems, surgery may be necessary. The only real cure for fibroids is the surgical removal of the uterus, a procedure called a hysterectomy. If only the fibroids are removed and the uterus is repaired and left in place, the surgical procedure is called a myomectomy.

Uterine fibroids cannot be prevented. Luckily, many women who have fibroids have either no symptoms

or only minor symptoms. Unfortunately, fibroids tend to grow over time, and many women ultimately decide to have some form of treatment.

The following are some of the most serious diseases and disorders that can afflict the reproductive system. The organs of the male and female reproductive systems are often sites where tumors or other growths develop.

### **Breast cancer**

Breast cancer develops when cells of the breast become abnormal and grow uncontrollably, forming tumors. The cancer cells can invade and destroy surrounding tissue, then spread throughout the body by way of the blood or lymph vessels. Every woman is at risk for breast cancer. Regardless of family history, a woman's risk for developing this type of cancer increases as she ages. In fact, 80 percent of all breast cancers are found in women over the age of fifty.

A woman's chance for developing breast cancer increases if her mother or sister have had breast cancer, if she has gone through menopause late in life, if she did not breastfeed her children, or if she did not have children or had them late in life. However, more than 70 percent of women who get breast cancer have none of these risk factors.

The following are all indications of possible breast cancer: a lump in the breast, changes in the nipple of the breast, dimpled or reddened skin over the breast, and change in size or shape of the breast.

Breast cancer is detected by mammography (a low-dose X ray of the breast). It is recommended that women between the ages of forty-five and sixty-nine have a mammogram done once in two years. Treatment options for breast cancer include surgery, chemotherapy, and radiation. During surgery, surgeons may remove only a portion of a woman's breast, her entire breast and some underarm lymph nodes, or her entire breast along with all of the underarm lymph nodes and chest muscles. The extent of the surgery depends on the type of breast cancer, whether the disease has spread, and the woman's age and health. After the cancer has been removed, the physician may recommend the woman undergo chemotherapy (using a combination of drugs to kill any remaining cancer cells and shrink any tumors) or radiation therapy (using X rays or other high-energy rays to kill any remaining cancer cells and shrink any tumors) or a combination of both.

Breast cancer cannot be prevented, but it can be treated successfully if diagnosed from a mammogram at an early stage.

### **Ovarian cancer**

Ninety percent of all ovarian cancers develop in the cells that line the surface of the ovaries. The death rate due to this cancer is higher than that of any other cancer among women. Ovarian cancer can develop at any age, but more than half the cases occur in women who are sixty-five or older. It is difficult to diagnose ovarian cancer early because often there are no warning symptoms. Also, the disease spreads relatively quickly.

The actual cause of ovarian cancer is not known. In the early stages of ovarian cancer, there may be no noticeable symptoms. Later, a woman may experience pain or swelling in the abdomen, constipation, vomiting, loss of appetite, fatigue, and unexplained weight gain.

If cancer is detected, surgery is the main treatment. The type of surgery depends on the extent of the disease. In most cases, the ovaries, uterus, and fallopian tubes are completely removed. In rare cases,

only one ovary may be removed with the uterus and fallopian tubes left intact. After surgery, chemotherapy is usually administered.

### **Prostate cancer**

Prostate cancer is found mainly in men over the age of fifty-five. As men grow older, the chance of developing the disease increases. Although the cause of this type of cancer is unknown, evidence suggests that age, race, a high-fat diet, and increased blood levels of testosterone may play a part in the development of the disease.

Frequently, prostate cancer has no symptoms. When the tumor is enlarged or the cancer has spread, the following symptoms may appear: weak or interrupted urine flow, frequent urination (especially at night), difficulty starting urination, inability to urinate, pain or burning sensation when urinating, blood in the urine, persistent pain in the lower back, and painful ejaculation.

If prostate cancer is detected (either through a rectal examination or blood test), surgery to remove the prostate gland completely is the most common treatment. The seminal vesicles are also removed during the procedure. If the prostate cancer is detected at an early stage, radiation therapy may be used instead of surgery. Chemotherapy is sometimes used to treat prostate cancer that has recurred after initial treatments.

### **Testicular cancer**

Although testicular cancer is a rare type of cancer, it often grows very quickly. It is the most common type of cancer to occur in young males under the age of thirty. The cause of testicular cancer is unknown.

This type of cancer usually shows no early symptoms. A mass in the testes usually indicates testicular cancer, but this may not be true in every case. In advanced stages of the cancer, symptoms include lower back pain, difficulty in urinating, a cough, and breathing problems. Sometimes there is pain in the testes.

If testicular cancer is discovered, surgery to remove the mass is the first line of treatment. If the cancer has spread to other parts of the body, chemotherapy or radiation therapy or a combination of both may be used following surgery.