

Patient Education

Kidney Disease and Progression

Many people with reduced renal function have a kidney disease that will get worse. Health problems will develop and worsen as renal function declines. If your renal function drops below 15 percent, you cannot live long without some form of renal (kidney) replacement therapy—either dialysis or transplantation.

Why do kidneys fail?

Most kidney diseases attack the nephrons, the basic structural and functional unit of your kidneys, causing them to lose their filtering capacity.

Damage to the nephrons may happen quickly, as the result of injury, or poisoning, but most kidney diseases destroy the nephrons slowly and silently. Only after years, or even decades, will the damage become apparent. Most kidney diseases attack both kidneys at the same time.

The two most common causes of kidney disease are diabetes and high blood pressure. If your family has a history of any kind of kidney problems, you may be at risk for kidney disease.



Diabetes

Diabetes is a disease that prevents your pancreas from being able to produce enough insulin. Insulin is needed to maintain healthy glucose (sugar) levels in the blood. If glucose stays in your blood instead of breaking down, it can act like a poison. Over time, diabetes changes the blood vessels in the body, including the blood vessels that deliver blood to the kidneys. When the nephrons don't get enough blood, they are severely damaged. As a result, the blood can't pass through the kidneys and the nephrons can't filter waste from the blood, or perform their other functions.

Damage to the nephrons from unused glucose in the blood is called diabetic nephropathy. If you keep your blood glucose levels down, you can delay or prevent diabetic nephropathy. Monitoring your glucose (sugar) level and keeping your glucose (sugar) level in the normal range is the best way to prevent damage to the kidneys.

High Blood Pressure (Hypertension)

High blood pressure can lead to kidney disease. It can also be a sign that your kidneys are already impaired. The damaged vessels cannot filter waste from your blood like they are supposed to. The only way to know whether your blood pressure is high is to have a health professional measure it with a blood pressure machine. The result is expressed as two numbers. The top number, which is called the systolic pressure, represents the pressure when your heart is beating. The bottom number, which is called the diastolic pressure, shows the pressure when your heart is resting between beats.

Blood pressure for healthy adults should be around 120/70 (expressed as “120 over 70”). In order to get your blood pressure within the target range, your doctor may prescribe blood pressure medication.

Glomerulonephritis

Glomerulonephritis is a type of kidney disease that involves the glomeruli. The glomeruli are small, essential structures in the kidneys that supply blood flow to the small units in the kidneys that filter urine, called the nephrons.

Glomerulonephritis is when the glomeruli become inflamed and impair the kidney’s ability to filter urine. As a result, the nephrons can’t filter the blood and the kidneys can’t carry out their other functions. There are many causes of glomerulonephritis.

Polycystic Kidney Disease (PKD)

Polycystic kidney disease is a genetic disease in which many grape-like, fluid-filled cysts grow in the kidneys. These cysts slowly take over and replace much of the kidney. This causes reduced kidney function leading to kidney failure. Most patients with PKD have family members with PKD.

Kidney Infection (Pyelonephritis)

Pyelonephritis is an infection most often caused by a germ that travels from the bladder to the kidneys. Severe or frequent infections of this type can cause damage to the kidneys leading to kidney failure.

Kidney Stones

A kidney stone is a hard mass that develops when calcium oxalate or other chemicals in the urine form crystals that stick together. These crystals may grow into stones ranging in size from a grain of sand to a golf ball.

Kidney stones can form in the ureters (the tubes that carry urine from the kidneys to the bladder) and block the flow of urine. Then urine collects in the kidneys, which causes pressure and sometimes infection in the kidneys. Over time, this damages the kidneys and causes them to fail.

Systemic Lupus Erythematosus (Lupus)

Lupus is an “autoimmune” disease. The immune system, which usually protects the body from disease, turns against the body, causing harm to organs and tissues.

The immune system can cause inflammation and swelling of the blood vessels and organs of the body including the kidneys. If the kidneys become involved, they lose the ability to filter waste

out of the blood or carry out their other normal functions.

Other Causes of Kidney Disease

A disease does not always cause renal failure. Renal function can decline as the result of poisons, illegal drug use, or trauma, like a direct and forceful blow to your kidneys.

Types of Kidney Disease

What is Acute Kidney Injury?

Acute kidney injury occurs suddenly and is usually the result of an external insult such as accidental trauma, drug overdose, illness and/or severe blood loss. Acute renal failure may lead to permanent loss of kidney function; however, acute renal failure can often be reversed.

What is Chronic Kidney Disease?

Most kidney problems happen slowly over a long period of time. You may have “silent” kidney disease for years. Gradual loss of kidney function is called chronic kidney disease (CKD) or chronic renal insufficiency. Those with CKD often go on to permanent kidney failure. The damage that results from chronic kidney disease cannot be reversed.

What are the signs of chronic kidney disease?

When you are in the early stages of kidney disease, you usually do not feel sick at all. As kidney disease progresses you may feel one or more of the following symptoms.

Symptoms of chronic kidney disease

Kidney disease may affect individuals differently depending on the cause and the stage of your kidney disease. You may not experience all of the symptoms on this list, or you may feel a combination of these symptoms:

- Frequent thirst
- Urinating more or less often
- Passing very small amounts of urine
- Swelling in the hands, feet and face
- Puffiness around the eyes

- Unpleasant taste in the mouth and urine-like odor to the breath
- Feeling tired
- Trouble breathing or shortness of breath
- Loss of appetite
- High blood pressure
- Pale skin
- Dry, itchy skin
- Nausea and vomiting
- Headache
- Drowsiness or confusion
- Darker color to skin
- Muscle cramps
- Trouble Sleeping
- Inability to concentrate

What are the early stages of Kidney Disease?

In 2002, the National Kidney Foundation published treatment guidelines that identified five stages of CKD based on a declining glomerular filtration rate (GFR) measurement and the presence of kidney damage. It is understood that the GFR measurement is the best indicator of how well the kidneys are working. As the GFR number decreases, so does kidney function. Your doctor can calculate your glomerular filtration rate, meaning, how much kidney function you have, based on the results of your blood creatinine test, your age, race, gender and other factors.

The GFR chart shows the five stages of CKD as they relate to the GFR. Each stage of CKD is described in terms of how kidney function is affected. Then, the treatment stage recommends different actions based on the stage of kidney disease.