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Diabetes and kidney disease

Kidney disease or kidney damage often occurs over time in people with diabetes. This type of kidney disease is called diabetic nephropathy.

Causes

Each kidney is made of hundreds of thousands of small units called nephrons. These structures filter your blood, help remove waste from the body, and regulate fluid balance.

In people with diabetes, the nephrons slowly thicken and become scarred over time. The nephrons begin to leak, and protein (at first, albumin) passes into the urine. This damage can happen years before any symptoms of kidney disease begin. Some people who have type 2 diabetes that develops slowly already have kidney damage when they are first diagnosed with diabetes.

Kidney damage is more likely if you:

- Have uncontrolled blood sugar (glucose)
- Are obese
- Have high blood pressure
- Have type 1 diabetes that began before you were 20 years old
- Have family members who also have diabetes and kidney problems
- Smoke
- Are African American, Mexican American, or Native American

Symptoms

Often, there are no symptoms as the kidney damage starts and slowly gets worse. Kidney damage can begin 5 to 10 years before symptoms start.

People who have more severe and long-term (chronic) kidney disease may have symptoms such as:

- Fatigue most of the time
- General ill feeling
- Headache

- Irregular heartbeat
- Nausea and vomiting
- Poor appetite
- Swelling of the legs
- Shortness of breath
- Itchy skin
- Easily develop infections

Exams and Tests

Your health care provider will order tests to detect signs of kidney problems.

A urine test looks for a protein, called albumin, leaking into the urine.

- Too much albumin in the urine is often a sign of kidney damage.
- This test is also called a microalbuminuria test because it measures small amounts of albumin.

Your provider will also check your blood pressure. High blood pressure damages your kidneys, and blood pressure is harder to regulate when you have kidney damage.

A kidney biopsy may be ordered to confirm the diagnosis or look for other causes of kidney damage.

If you have diabetes, your provider will also check your kidneys by using the following blood tests every year:

- Blood urea nitrogen (BUN)
- Serum creatinine
- Estimated glomerular filtration rate (eGFR)

Treatment

When kidney damage is caught in its early stages, it can be slowed with treatment. Once larger amounts of protein appear in the urine, kidney damage will slowly get worse.

Follow your provider's advice to keep your condition from getting worse.

CONTROL YOUR BLOOD PRESSURE

Keeping your blood pressure under control (below 130/80 millimeters of mercury [mm Hg]) is one of the best ways to slow kidney damage.

- Your provider will prescribe blood pressure medicines known as ACE inhibitors or angiotensin II receptor blockers to protect your kidneys from more damage if your microalbumin test is too high on at least two measurements.
- If your blood pressure is in the normal range and you have microalbuminuria, you may still benefit from these medicines. Your provider can help you decide what is best for you.

CONTROL YOUR BLOOD SUGAR LEVEL

You can also slow kidney damage by controlling your blood sugar level through:

- Eating healthy foods
- Getting regular exercise
- Taking oral or injectable medicines as instructed by your provider
- Taking some diabetes medicines that are known to prevent the progression of diabetic nephropathy better than other medicines. Talk to your provider about which medicines are best for you.
- Checking your blood sugar level as often as instructed and keeping a record of your blood sugar numbers so that you know how meals and activities affect your level

OTHER WAYS TO PROTECT YOUR KIDNEYS

- Contrast dye that is sometimes used with an MRI, CT scan, or other imaging test can cause more damage to your kidneys. Tell the provider who is ordering the test that you have diabetes. Follow instructions about drinking lots of water after the procedure to flush the dye out of your system.
- Avoid taking a non-steroidal anti-inflammatory drug (NSAID), such as ibuprofen or naproxen for pain. Ask your provider if there is another kind of medicine that you can take instead. NSAIDs can damage the kidneys, more so when you use them every day.
- Your provider may need to stop or change other medicines that can damage your kidneys.
- Know the signs of urinary tract infections and get them treated right away.
- Having a low level of vitamin D may worsen kidney disease. Ask your provider if you need to take vitamin D supplements.
- Do not use tobacco.

Support Groups

Many resources can help you understand more about diabetes. You can also learn ways to manage your kidney disease.

More information and support for people with diabetes and their families can be found at :

- American Diabetes Association -- www.diabetes.org [<https://www.diabetes.org>]
- National Institute of Diabetes and Digestive and Kidney Diseases -- www.niddk.nih.gov/health-information/diabetes [<https://www.niddk.nih.gov/health-information/diabetes>]

Outlook (Prognosis)

Diabetic kidney disease is a major cause of sickness and death in people with diabetes. It can lead to the need for dialysis or a kidney transplant.

When to Contact a Medical Professional

Contact your provider if you have diabetes and you have not had a urine test to check for protein.

Alternative Names

Diabetic nephropathy; Nephropathy - diabetic; Diabetic glomerulosclerosis; Kimmelstiel-Wilson disease

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