



GOOD TO KNOW



Diabetes and Kidney Disease

If you have diabetes, you're at risk for kidney disease, also called diabetic nephropathy. In fact, diabetes is the leading cause of kidney failure. But there are things you can do to prevent, delay, or treat kidney disease, including keeping blood glucose (sugar) and blood pressure on target.

WHAT DO MY KIDNEYS DO?

Your kidneys clean your blood by constantly filtering it through millions of tiny blood vessels.

The filters in the kidneys perform two important functions:

- They remove unwanted substances from your blood, such as extra fluid and the waste products made by normal processes within the body. To prevent unwanted materials from building up in the blood and making you sick, your kidneys remove them and send them to your bladder. The waste products and extra fluid then leave the body in the urine.
- The filters keep needed materials in the blood, such as protein and minerals. The cleaned-up blood is returned to your bloodstream.

Your kidneys perform other functions as well, such as helping to regulate blood pressure, stimulating your bone marrow to produce red blood cells, and helping your bones and your blood absorb calcium.

HOW CAN DIABETES HURT MY KIDNEYS?

Frequent high blood glucose levels over years can lead to changes in how the kidneys function. High blood glucose causes extra blood to flow through the filters, making the kidneys work harder than usual. Many people with diabetes have high blood pressure. High blood pressure in the kidney's tiny blood vessels also puts added strain on the kidneys. High blood glucose and blood pressure

levels can lead to scarring inside the filters so they don't work as they should.

WHAT HAPPENS ONCE THE DAMAGE IS DONE?

Even though the filters aren't working properly, symptoms may not occur until most of the kidney's working capacity is lost. Before symptoms occur, substances such as protein leak through the walls of the filters instead of being retained. Protein then leaves the body in the urine.

HOW WILL I KNOW IF I HAVE KIDNEY PROBLEMS?

Because kidney damage can occur for years without symptoms, the best way to learn whether you have kidney problems is to have a sample of your urine checked once a year. This test, called a microalbumin (MY-kro-al-BYOO-min) test, can show whether your kidneys are leaking protein (also called albumin).

It's best to have this test when you're first diagnosed with type 2 diabetes and then once every year. Many people have protein in their urine when they're first diagnosed with type 2 diabetes or soon afterward because they may have had diabetes for years before it was detected. If diabetes is present, even if it hasn't been diagnosed, damage from high blood glucose levels can occur. If you have type 1 diabetes, you're unlikely to have kidney damage at diagnosis. But you'll need this test 5 years after diagnosis and every year after that.

This handout was published in *Clinical Diabetes*, Vol. 40, issue 3, 2022, and was adapted from the American Diabetes Association's Diabetes Advisor handout "Diabetes and Kidney Disease." Visit the Association's Patient Education Library at professional.diabetes.org/PatientEd for hundreds of free, downloadable handouts in English and Spanish. Distribute these to your patients and share them with others on your health care team. Copyright American Diabetes Association, Inc., 2022.

