



Diabetes, & High Blood Pressure, & Kidney Protection

WHAT IS THE FUNCTION OF THE KIDNEYS?

The kidneys are two fist-sized organs located in your back. To maintain life, you need at least one to work well. The work done by the kidneys is called renal function. The three major renal functions are to

- Remove waste and excess water from your body
- Maintain the body's chemical balance
- Produce hormones that regulate red blood cell production and blood pressure, and contribute to bone health

DID YOU KNOW?

If you have diabetes, keeping your blood glucose levels and blood pressure levels under control can help protect your kidneys.

WHAT CAUSES KIDNEY DISEASE?

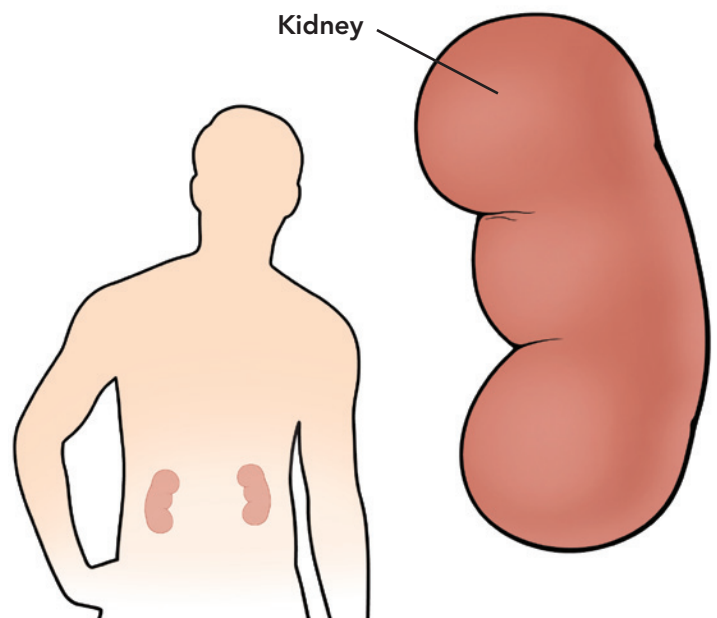
Diabetes is the most common cause of kidney failure in the United States. If your kidneys stop working, you will need special treatment such as dialysis (a method of filtering waste from the blood) or a kidney transplant to stay alive.

A frequent complication of diabetes is high blood pressure (hypertension). Constant high blood pressure also leads to gradual kidney damage and adds to the effects of diabetes. Advanced kidney disease is often permanent. For this reason, high blood pressure and diabetes should be identified and treated early.

Anyone can develop diabetes, high blood pressure, or kidney disease. However, people who are obese and people with a family history of any of these conditions have a higher risk.

HOW ARE DIABETES AND HYPERTENSION DIAGNOSED?

Diabetes is diagnosed by measuring blood sugar (glucose) levels. People who have glucose levels of 126 mg/dL or above have diabetes. A blood glucose level between 100 and 125 mg/dL is higher than normal and increases the risk of developing diabetes. Over time, uncontrolled blood glucose levels can lead to complications such as blindness, nerve damage, heart attacks, reduced blood circulation in the limbs, and kidney failure.



Hypertension is diagnosed by measuring blood pressure. People whose blood pressure is consistently 140/90 mm Hg or higher have high blood pressure,

HOW IS KIDNEY DISEASE DIAGNOSED?

Kidney damage is diagnosed with urine and blood tests. The earliest sign of kidney problems in people with diabetes is the presence of small amounts of protein in the urine. If not treated, this condition leads to more protein in the urine, then to gradual loss of kidney function, and finally to chronic (permanent) kidney disease. A urine test can detect these conditions.

Several blood tests can test the kidney's ability to filter and detoxify (clean) the blood. These include creatinine and blood urea nitrogen (BUN) tests.

HOW DO YOU PROTECT YOUR KIDNEYS?

Protecting your kidneys begins by knowing if you have any of the risk factors for kidney disease—obesity, high blood pressure, and/or diabetes. Therefore, periodic check-ups of body weight, blood pressure, and blood glucose can help spot problems early.

Doctors use different types of medications to treat high blood glucose levels in people with diabetes, including oral medications (pills) and insulin. It is important to keep glucose levels as close to normal as possible. Recommended glucose levels are below 130 mg/dL in the morning and 180 mg/dL after meals. The hemoglobin A1C blood test evaluates how well you are controlling your blood glucose levels over time. This is done usually every 3 to 6 months. A test result below 7 percent shows good glucose control.

In people with diabetes and hypertension, blood pressure should be less than 130/80 mm Hg. Several types of medications are used to lower blood pressure and protect kidney function.

HOW CAN YOU PROTECT YOUR KIDNEYS?

If you have risk factors for diabetes, high blood pressure, and/or kidney disease, talk with your doctor. Preventing and treating kidney disease will depend on your particular condition. For example, if you have diabetes your doctor may recommend a urine test at least once a year to check for protein in your urine, and blood tests to check your kidney function.

You can also protect your health by eating a healthy diet, exercising most days of the week, not smoking, and avoiding abuse of alcohol and other drugs. These include over-the-counter medications such as aspirin, acetaminophen, and ibuprofen. If you have high blood pressure, you should limit your intake of salt. If you have diabetes, you should limit carbohydrates. People with weakened kidney function may need to adjust their diets to also limit protein, cholesterol, and potassium.

Questions to ask your doctor

- Do I have diabetes, high blood pressure, and/or kidney disease?
- What treatment do I need for my medical conditions?
- What are the risks and benefits of each of my treatment options?
- Should I see a diabetes educator?
- Should I see an endocrinologist?

RESOURCES

- Find-an-Endocrinologist: www.hormone.org or call 1-800-HORMONE (1-800-467-6663)
- Find a diabetes educator (American Association of Diabetes Educators): www.diabeteseducator.org/DiabetesEducation/Find.html
- Hormone Health Network diabetes information: www.hormone.org/diabetes
- National Institute of Diabetes, Digestive, and Kidney Diseases (National Institutes of Health): www.niddk.nih.gov
- The American Diabetes Association: www.diabetes.org
- National Kidney Foundation: www.kidney.org

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The Hormone Health Network offers free, online resources based on the most advanced clinical and scientific knowledge from The Endocrine Society (www.endo-society.org). The Network's goal is to move patients from educated to engaged, from informed to active partners in their health care. This fact sheet is also available in Spanish at www.hormone.org/Spanish.

