

American
Kidney Fund


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Diabetes and Your Kidneys

Large Print Edition



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Diabetes: The #1 Cause of Kidney Failure



Your doctor told you that you have diabetes. You may have a lot of questions. This guide will help.

You will learn:

- What diabetes is
- How diabetes can hurt the kidneys
- What to ask your doctor
- How to stay healthy
- Where to find more help

While reading this guide, you may see a word that you don't know in bold. If so, turn to page 21 and look for the word in our glossary.

We know we can't answer all of your questions. So, write down any questions that you have and talk about them with your health care team.

What is Diabetes?

Diabetes is sometimes called “sugar.” It is a disease where your body has problems with a **hormone** called **insulin**. Insulin helps your body use the sugar you eat (also called **glucose**) for energy. When your body doesn’t use insulin the way it should, too much sugar stays in your blood. Too much sugar in your blood can damage parts of your body. There are two main types of diabetes:

Type 1 diabetes

- Your body does not make enough insulin.
- Insulin shots every day or an **insulin pump** are needed.
- This kind of diabetes is usually found in children or young adults.
- Only 5% of adults with diabetes have Type 1.



Type 2 diabetes

- Your body makes insulin, but it can’t use it well.
- A special diet, exercise, medicines and sometimes insulin shots are needed.
- This kind of diabetes usually starts after age 40, but it can start earlier.
- African Americans, Native Americans, Latin Americans and Asian Americans are more likely to have Type 2 diabetes.



How Can Diabetes Hurt My Kidneys?

Your kidneys are like a filter for your body. They keep some things in your body that you need, and they get rid of the wastes and things that you don't need.

The filters in your kidneys are full of tiny blood vessels (called **glomeruli**). High blood sugar can hurt these tiny blood vessels. When this happens, it is called diabetic kidney disease (or diabetic **nephropathy**).

Once the kidneys are hurt like this, they can't be fixed. If diabetic kidney disease is not treated early, it can lead to **kidney failure**. Kidney failure means that the kidneys don't work well enough to clean your blood. There is no cure for kidney failure. If you have kidney failure, you will need dialysis or a kidney **transplant** to live.

The good news is that diabetic kidney disease does not happen fast. Sometimes it takes many years. This means you have time to help protect your kidneys.

To learn more about kidney failure, dialysis or kidney transplant, call the American Kidney Fund's HelpLine at 866.300.2900 or visit <http://www.kidneyfund.org>

Important!

You will not be able to feel if your diabetes has hurt your kidneys. The only way to know is to be tested. Your doctor can do a few simple tests to check how well your kidneys are working. Keep reading to learn more about these tests.

Diabetes causes almost half of all kidney failure in the United States. You can help control it! Keep reading to learn how!

What Should I Ask My Doctor?

Your doctor is the best person to give you health advice. Sometimes your doctor may seem busy, but don't be afraid to ask questions. Here are some things you might want to ask:

1. What tests should I have?

There are a few tests that are important if you have diabetes. Ask your doctor how often you need these:

For Your Diabetes

Blood Glucose Test – a blood test that shows how much sugar (glucose) is in your blood. You can do this test at home using a blood glucose meter (also called a glucometer). Turn to page 10 for more information about this test.

Hemoglobin A1C – a blood test called “hemoglobin A1C” can tell how your blood sugar has been over the last 2 or 3 months. This test is like a “report card” of your blood sugar levels. Your doctor can tell you what your A1C should be. The goal for most people with diabetes is an A1C less than 7%.

For Your Kidneys

eGFR – (estimated Glomerular Filtration Rate) This is the best way to tell how your kidneys are working. Your doctor can get your eGFR from a simple blood test. Your doctor checks your blood for a chemical called **creatinine**. Then your doctor uses the result from that test to find your eGFR. Your doctor will also use your age, sex and race to figure out your eGFR.

The eGFR number that your doctor gives you can tell you how well your kidneys are working. Use the chart below to see what your eGFR may mean.

eGFR Result	What It May Mean
60 or More	Normal or Little Kidney Damage
30 to 59	Moderate Kidney Damage
15 to 29	Severe Kidney Damage
Less than 15	Kidney Failure (Dialysis or transplant may be needed soon.)

Based on the National Kidney Disease Education Program's "Suggestions for Laboratories"

For more information about eGFR and kidney disease, order the American Kidney Fund's brochure *Living Well with Chronic Kidney Disease*. Call our HelpLine at 866.300.2900 or visit <http://www.kidneyfund.org>



Blood Pressure – Diabetes and high blood pressure are very bad for your kidneys. High blood pressure makes you more at risk for kidney disease and heart

disease. A normal blood pressure is *less than* 120/80 (120 over 80). Ask your doctor how often you should get your blood pressure checked.

Urine Test – If your kidneys are damaged, they may let **protein** leak into your urine. This protein is called **albumin**. Your doctor can check some of your urine for protein. If protein is found in your urine, your doctor may say that you have “**microalbuminuria**,” “**proteinuria**,” or “**albuminuria**.” This can be an early sign of kidney disease. People with diabetes should have a urine test at least once a year. Here is what your results may mean:

Urine Test Result	What It May Mean
Less than 30 mg/g	Normal
Between 30 mg/g and 300 mg/g	Microalbuminuria
More than 300 mg/g	Proteinuria (also called albuminuria)

Based on the National Kidney Disease Education Program’s “Urine Albumin-to-Creatinine Ratio Quick Reference for Diabetes Educators.”

For the Rest of Your Body

Eye Exam – Just like your kidneys, your eyes have many tiny blood vessels. Diabetes can hurt these blood vessels, too. This can even cause you to go blind. Ask your doctor how often you should have your eyes checked.



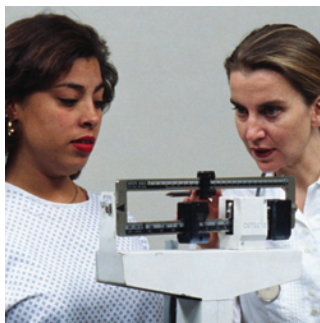
Foot Exam – Diabetes can hurt your body's nerves, too. This can keep you from feeling sores on your feet. Sometimes these sores don't heal and can get infected. Very bad infections on your feet can lead to **amputation**.

Dental Exam – Diabetes can also hurt your teeth and gums. See your dentist every 6 months.

2. Who else should be on my health care team?

Treating diabetes takes teamwork. Ask your doctor who else might be able to help you. Your doctor might refer you to a:

- Kidney Doctor
(called a Nephrologist)
- Eye Doctor
(called an Ophthalmologist)
- Foot Doctor
(called a Podiatrist)
- Dentist
- Dietitian (for help with what to eat)
- Diabetes Educator



3. Do I need to change what I eat?

What you eat can affect your diabetes. Ask your doctor or a dietitian if you need to change how much you eat these:

- Protein: meats, fish, eggs, milk, nuts, beans, etc.
- Carbohydrates: bread, pasta, cereal, rice, potatoes, sweets, some fruits, etc.
- Sodium: salt, cheese, fast food, bacon, pizza, chips, etc.
- Fats: butter, oil, mayonnaise, etc.

4. Should I take a medicine called an ACE Inhibitor or ARB?



Ask your doctor if these medicines are right for you. They are a special kind of blood pressure medicine. Your doctor may give you one of these even if you don't have high blood pressure. They may help prevent, slow or stop kidney damage. They can also help treat protein in your urine.

5. What signs should I watch for?

Many problems caused by diabetes can be treated if they are caught early. Ask what signs or symptoms you should be looking for.

Kidney disease often has no signs until it is very bad. That is why it is so important to be tested.

Tell your doctor if you:

- Feel sick to your stomach often
- Feel tired or dizzy often
- Have swelling in your feet, hands or face
- Have back pain
- Have bloody, foamy or dark-colored urine
- Need to urinate more or less than usual

How Can I Stay Healthy?

Your health care team is key, but YOU are the most important part. Here are some things you can do:

1. Test Your Blood Sugar at Home

What do I need for this?

You can test your blood sugar at home by using a blood glucose meter (also called a glucometer). You can get one of these at your local drug store, hospital or clinic. You can also order one online. Your health care team can help you find a meter that is right for you.

How do I do the test?

Your health care team can show you how and when to use your meter. Read the meter's instructions. Most meters will use a tiny pin (called a **lancet**) to prick your finger. This makes a tiny drop of blood. Put the drop of blood on a test strip that comes with the machine. The meter will show a number. This is your blood sugar level.



What should my blood sugar level be?

- Before eating, it should be 90-130
- After eating, it should be 80-180
- At bedtime, it should be 100-140

What should I do with these numbers?

Write your number down every time. Make sure to write down when you took the test. Share these numbers with your health care team. Here is an example:

	Day 1 Morning,	
	before breakfast –	101
●	Day 1 Morning,	
	2 hours after breakfast –	165
	Day 1 Late afternoon,	
	before dinner –	108
●	Day 1 Evening,	
	after dinner –	167
	Day 1 Bedtime –	126
●		

What should I do if my blood sugar is too high?

- Make sure to write down when you took the test and what you ate.
- Tell your doctor if it happens a lot.

What should I do if my blood sugar is too low?

- Eat a glucose tablet, raisins, hard candy or honey. You can also drink fruit juice, milk or a sugary soft drink.
- Check your blood sugar again in 15 minutes to make sure you are not still low.
- Tell your doctor if it happens more than once.

How do I pay for my supplies?

Medicare and some insurance plans will help cover most of the cost for your supplies. Talk to your health care team before you order.



2. Eat Right

What kind of foods should I eat?

Your doctor or dietitian can help you plan a diet. In general, do not eat foods high in fat, **saturated fat**, salt (sodium), or **cholesterol**. Eat foods that are high in **fiber**. Drink water instead of soda or juices high in sugar.



Should I eat less protein?

Eating too much protein can make your kidneys work harder. This can cause more kidney damage. But, since your body needs some protein, a careful balance is needed. Many people eat more protein than they need. *Ask your doctor how much protein you should eat.*

Here are some examples of protein in foods:

1 egg	= 7 grams protein
1 chicken thigh	= 14 grams protein
8 ounces milk	= 8 grams protein
1 slice bread	= 2 grams protein
1/2 cup corn	= 2 grams protein
1 cup rice	= 4 grams protein

3. Take Your Medicine

What medicines should I take?

Only your doctor can answer this question. Your doctor may give you some pills to help you control your diabetes. If so, make sure to ask how to take them. Also ask about any side effects you might get. Do not skip a pill or take an extra pill without talking to your doctor.



4. Control High Blood Pressure

What is normal blood pressure?

A normal blood pressure result is *less than* 120/80 (120 over 80). If your blood pressure is higher than normal a few times, you might have high blood pressure (also called **hypertension**).

What does high blood pressure have to do with my kidneys?

Your kidneys help control your blood pressure. But, high blood pressure can also hurt your kidneys. In fact, high blood pressure is the #2 cause of kidney failure. (Remember, diabetes is the #1 cause.) High blood pressure can also cause protein to be in your urine.

To learn more about high blood pressure, order the American Kidney Fund's brochure *High Blood Pressure and the Kidneys*. Call our HelpLine at 866.300.2900 or visit <http://www.kidneyfund.org>



5. Live Healthy

What else can I do to keep my kidneys healthy?

- Exercise. Exercise helps your body use insulin better. Talk to your doctor before starting any exercise program.
- Keep a healthy weight. Even losing just a few pounds can help lower your blood sugar.
- Stop smoking or using tobacco of any kind. Smoking increases your risk for many diseases. It can hurt your kidneys and put you at more risk for kidney failure. Your health care team can help you find a way to quit.
- Be careful with painkillers. Tell your doctor if you are using painkillers often. Some painkillers can hurt the kidneys.
- Treat bladder and kidney infections fast. Some infections can damage your kidneys. Tell your doctor right away if you think you have a problem.



Where Can I Find More Help?

American Kidney Fund

6110 Executive Boulevard
Suite 1010
Rockville, MD 20852
HelpLine: 866.300.2900
<http://www.kidneyfund.org>
Email: helpline@kidneyfund.org



Our toll-free HelpLine can help you find more information about diabetes, kidney disease, high blood pressure, dialysis, and kidney transplant. You can also order free brochures.

The American Kidney Fund also offers grants to low-income dialysis and kidney transplant patients.

American Association of Diabetes Educators

100 West Monroe Street, Suite 400
Chicago, IL 60603
Phone: 800.338.3633
<http://www.aadenet.org>

Get more information about diabetes. Find a diabetes educator in your area. Diabetes educators can teach you how to live a full and healthy life.

American Diabetes Association

Attn: National Call Center
1701 North Beauregard Street
Alexandria, VA 22311
800.342.2383 (800.DIABETES)
<http://www.diabetes.org>



Get more information about diabetes and diabetes research. Find information about what to eat, eye care and foot care. There are local chapters across the country.

American Association of Kidney Patients

3505 East Frontage Road
Suite 315
Tampa, FL 33607
800.749.2257
<http://www.aakp.org>

Get more information about kidney disease. Order or download their “Nutrition Counter” to help you plan your meals and learn what foods are high in protein, sodium, and calories.

Medicare

Centers for Medicare and Medicaid Services
7500 Security Boulevard
Baltimore, MD 21244-1850
800.633.4227 (800.MEDICARE)
<http://www.medicare.gov>

Learn how Medicare can help pay for your diabetes test supplies. The toll-free number is open 24 hours a day, 7 days a week.

National Kidney Foundation

30 East 33rd Street
New York, NY 10016
800-622-9010
<http://www.kidney.org>

Get information about diabetes and kidney disease. Find a chapter in your area.



National Institute of Diabetes and Digestive and Kidney Diseases

3 Information Way

Bethesda, MD 20392-3580

800.891.5390

<http://kidney.niddk.nih.gov>

Order brochures about kidney disease and diabetes. Call the toll-free number with your questions. The National Diabetes Information Clearinghouse is part of the National Institutes of Health.



Glossary

Albumin – a kind of protein made by your liver. This protein is found in your blood. If this protein is found in your urine, it may be an early sign of kidney disease.

Albuminuria – the medical name for when the protein albumin (300 mg/g or more) is found in your urine. This may be an early sign of kidney disease.

Amputation – removing a body part (like a foot, hand, leg or arm) through surgery.

Cholesterol – a kind of fat found in food from animal sources. Many fast food items (French fries, cheeseburgers, etc.), eggs, meats, and whole-milk products like milk, cheese, and ice cream are high in cholesterol. High cholesterol levels in your blood are bad for your heart and blood vessels.

Creatinine – a waste product from meat protein in the diet and muscle use. Creatinine is removed from the blood by healthy kidneys, and leaves the body in urine. When kidneys do not work correctly, creatinine levels in the blood increase.

Dialysis – a way of cleaning wastes from the blood artificially. This job is normally done by the kidneys. If the kidneys fail, the blood must be cleaned artificially with special equipment. The two major forms of dialysis are hemodialysis and peritoneal dialysis.

Fiber – sometimes called “roughage.” It is the part of plants that your body cannot digest. It is found in fruits, vegetables, and whole grain breads.



Glomeruli – the tiny blood vessels in the kidneys that filter the body’s blood. Wastes and extra fluid are filtered out into urine.

Glucose – the main sugar found in your blood. Your body turns many of the foods you eat into glucose. It is also your body’s main source of energy.

Hormone – a natural chemical made by a part of the body and released into the blood. Hormones control certain body functions.

Hypertension – high blood pressure. This is the force of your body’s blood against the walls of your blood vessels. Blood pressure that stays above normal is called hypertension or high blood pressure. High blood pressure is the second leading cause of kidney failure. Kidney disease can also cause high blood pressure.

Insulin – a hormone made by your pancreas. It helps your body turn the sugar you eat into energy.

Insulin pump – a special device that gives your body quick doses of insulin. The pump works 24 hours a day through a tiny tube placed under the skin. If you have Type 1 diabetes, ask your doctor if this would be right for you.

Kidney failure – when the kidneys can't work well enough to clean your blood. There is no cure. A person with kidney failure must have dialysis or a kidney transplant to live.

Lancet – a small, needle-like blade used to prick the skin. The prick makes a tiny drop of blood. The drop of blood can be used to test blood sugar in a blood glucose meter.

Microalbuminuria – the medical name for when a small amount of the protein albumin is found in your urine (between 30 mg/g and 300 mg/g). This can be an early sign of kidney disease.

Nephropathy – the medical word for kidney damage.

Protein – a building block of many of your body's cells. It makes up most of your body's muscle. It is also found in your hair and skin.

Proteinuria – the medical name for when protein (300 mg/g or more) is found in your urine. This may be an early sign of kidney disease.

Saturated fat – a kind of fat in foods. It is found in red meat, butter, creams, animal fats, whole milk cheese and many fast food items. Eating too much saturated fat can put you at risk for heart disease, high cholesterol and strokes.

Transplant – to move an organ from one body to another. A kidney transplant may come from a living donor or from someone who has just died. A pancreas transplant can only come from someone who has just died.

Urine – a liquid waste that is filtered from the blood by the kidneys.



We are grateful to the following health professionals for their review and contributions to this guide:

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