

# Diabetes Complications

## What is diabetes?

If you have [diabetes](#), your blood glucose, or [blood sugar](#), levels are too high. Glucose comes from the foods you eat. A hormone called insulin helps the glucose get into your cells to give them energy. With [type 1 diabetes](#), your body does not make insulin. With [type 2 diabetes](#), your body does not make or use insulin well. Without enough insulin, the glucose stays in your blood.

## What health problems can diabetes cause?

Over time, having too much glucose in your blood can cause complications, including:

- [Eye disease](#), due to changes in fluid levels, swelling in the tissues, and damage to the blood vessels in the eyes
- [Foot problems](#), caused by damage to the nerves and reduced blood flow to your feet
- [Gum disease](#) and other dental problems, because a high amount of blood sugar in your saliva helps harmful bacteria grow in your mouth. The bacteria combine with food to form a soft, sticky film called plaque. Plaque also comes from eating foods that contain sugars or starches. Some types of plaque cause gum disease and [bad breath](#). Other types cause [tooth decay](#) and cavities.
- [Heart disease](#) and [stroke](#), caused by damage to your blood vessels and the nerves that control your heart and blood vessels
- [Kidney disease](#), due to damage to the blood vessels in your kidneys. Many people with diabetes develop [high blood pressure](#). That can also damage your kidneys.
- [Nerve problems](#) (diabetic neuropathy), caused by damage to the nerves and the small blood vessels that nourish your nerves with oxygen and nutrients
- Sexual and [bladder](#) problems, caused by damage to the nerves and reduced blood flow in the genitals and bladder
- [Skin conditions](#), some of which are caused by changes in the small blood vessels and reduced circulation. People with diabetes are also more likely to have infections, including [skin infections](#).

## What other problems can people with diabetes have?

If you have diabetes, you need to watch out for blood sugar levels that are [very high](#) (hyperglycemia) or [very low](#) (hypoglycemia). These can happen quickly and can become dangerous. Some of the causes include having another illness or infection and certain medicines. They can also happen if you don't get the right amount of [diabetes medicines](#). To try to prevent these problems, make sure to take your diabetes medicines correctly, follow your [diabetic diet](#), and check your blood sugar regularly.

Diabetes care: 10 ways to avoid complications

Diabetes care is a lifelong responsibility. Consider 10 strategies to prevent diabetes complications.

Diabetes is a serious disease. Following your diabetes treatment plan takes round-the-clock commitment. But your efforts are worthwhile. Careful diabetes care can reduce your risk of serious — even life-threatening — complications.

Here are 10 ways to take an active role in your diabetes care and enjoy a healthier future.

Members of your diabetes care team — primary care provider, diabetes care and education specialist, and dietitian, for example — can help you learn the basics of diabetes care and offer support along the way. But it's up to you to manage your condition.

Learn all you can about diabetes. Make healthy eating and physical activity part of your daily routine. Maintain a healthy weight.

Monitor your blood sugar, and follow your health care provider's instructions for managing your blood sugar level. Take your medications as directed by your health care provider. Ask your diabetes treatment team for help when you need it.

Avoid smoking or quit smoking if you smoke. Smoking increases your risk of type 2 diabetes and the risk of various diabetes complications, including:

Reduced blood flow in the legs and feet, which can lead to infections, nonhealing ulcers and possible amputation

Worse blood sugar control

Heart disease

Stroke

Eye disease, which can lead to blindness

Nerve damage

Kidney disease

Premature death

Talk to your health care provider about ways to help you stop smoking or using other types of tobacco.

Like diabetes, high blood pressure can damage your blood vessels. High cholesterol is a concern, too, since the resulting damage is often worse and more rapid when you have diabetes. When these conditions team up, they can lead to a heart attack, stroke or other life-threatening conditions.

Eating a healthy, reduced-fat and low salt diet, avoiding excess alcohol, and exercising regularly can go a long way toward controlling high blood pressure and cholesterol. Your health care provider may also recommend taking prescription medication, if necessary.

Schedule two to four diabetes checkups a year, in addition to your yearly physical and routine eye exams.

During the physical, your health care provider will ask about your nutrition and activity level and look for any diabetes-related complications — including signs of kidney damage, nerve

damage and heart disease — as well as screen for other medical problems. He or she will also examine your feet for any issues that may need treatment.

Your eye care specialist will check for signs of retinal damage, cataracts and glaucoma.

Diabetes increases your risk of getting certain illnesses. Routine vaccines can help prevent them. Ask your health care provider about:

**Flu vaccine.** A yearly flu vaccine can help you stay healthy during flu season as well as prevent serious complications from the flu.

**Pneumonia vaccine.** Sometimes the pneumonia vaccine requires only one shot. If you have diabetes complications or you're age 65 or older, you may need a booster shot.

**Hepatitis B vaccine.** The hepatitis B vaccine is recommended for adults with diabetes who haven't previously received the vaccine and are younger than 60. If you're age 60 or older and have never received the hepatitis B vaccine, talk to your health care provider about whether it's right for you.

**Other vaccines.** Stay up to date with your tetanus shot (usually given every 10 years). Your doctor may recommend other vaccines as well.

Diabetes may leave you prone to gum infections. Brush your teeth at least twice a day with a fluoride toothpaste, floss your teeth once a day and schedule dental exams at least twice a year. Call your dentist if your gums bleed or look red or swollen.

High blood sugar can reduce blood flow and damage the nerves in your feet. Left untreated, cuts and blisters can lead to serious infections. Diabetes can lead to pain, tingling or loss of sensation in your feet.

To prevent foot problems:

Wash your feet daily in lukewarm water. Avoid soaking your feet, as this can lead to dry skin.

Dry your feet gently, especially between the toes.

Moisturize your feet and ankles with lotion or petroleum jelly. Do not put oils or creams between your toes — the extra moisture can lead to infection.

Check your feet daily for calluses, blisters, sores, redness or swelling.

Consult your doctor if you have a sore or other foot problem that doesn't start to heal within a few days. If you have a foot ulcer — an open sore — see your doctor right away.

Don't go barefoot, indoors or outdoors.

If you have diabetes and other cardiovascular risk factors, such as smoking or high blood pressure, your doctor may recommend taking a low dose of aspirin every day to help reduce your risk of heart attack and stroke. If you don't have additional cardiovascular risk factors, the risk of bleeding from aspirin use may outweigh any of its benefits. Ask your doctor whether daily aspirin therapy is appropriate for you, including which strength of aspirin would be best.

Alcohol can cause high or low blood sugar, depending on how much you drink and whether you eat at the same time. If you choose to drink, do so only in moderation, which means no more than one drink a day for women and two drinks a day for men.

Always drink with a meal or snack, and remember to include the calories from any alcohol you drink in your daily calorie count. Also, be aware that alcohol can lead to low blood sugar later, especially for people who use insulin.

If you're stressed, it's easy to neglect your usual diabetes care routine. To manage your stress, set limits. Prioritize your tasks. Learn relaxation techniques.

Get plenty of sleep. And above all, stay positive. Diabetes care is within your control. If you're willing to do your part, diabetes won't stand in the way of an active, healthy life.

## **Steps to Prevent or Delay Nerve Damage**

There's a lot you can do to prevent or delay nerve damage. And, if you already have diabetic neuropathy (nerve damage), these steps can prevent or delay further damage and may lessen your symptoms.

### **Keep Your Blood Glucose (Blood Sugar) Levels in Your Target Range**

Meal planning, physical activity and medications, if needed, all can help you reach your target range. There are two ways to keep track of your blood glucose levels:

- Use a blood glucose meter to help you make decisions about day-to-day care.
- Get an A1C test (a lab test) at least twice a year to find out your average blood glucose for the past 2 to 3 months.

Checking your blood glucose levels will tell you whether your diabetes care plan is working or whether changes are needed.

- Report symptoms of diabetic neuropathy.
- If you have problems, get treatment right away. Early treatment can help prevent more problems later on. For example, if you take care of a foot infection early, it can help prevent amputation.
- Take good care of your feet. Check your feet every day. If you no longer can feel pain in your feet, you might not notice a foot injury. Instead, use your eyes to look for problems. Use a mirror to see the bottoms of your feet. Use your hands to feel for hot or cold spots, bumps or dry skin. Look for sores, cuts or breaks in the skin. Also check for corns, calluses, blisters, red areas, swelling, ingrown toenails and toenail infections. If it's hard for you to see or reach your feet, get help from a family member or foot doctor.

- Protect your feet. If your feet are dry, use a lotion on your skin but not between your toes. Wear shoes and socks that fit well and wear them all the time. Use warm water to wash your feet, and dry them carefully afterward.
- Get special shoes if needed. If you have foot problems, Medicare may pay for shoes. Ask your health care team about it.
- Be careful with exercising. Some physical activities are not safe for people with neuropathy. Talk with a diabetes clinical exercise expert who can guide you.

## What is the link between diabetes, heart disease, and stroke?

High blood glucose from diabetes can damage your [blood vessels](#) and the nerves that control your heart and blood vessels. Over time, this damage can lead to heart disease.<sup>1</sup>

People with diabetes tend to develop heart disease at a younger age than people without diabetes. Adults with diabetes are nearly twice as likely to have heart disease or stroke as adults without diabetes.<sup>2,3</sup>

The good news is that the steps you take to manage your diabetes also help [lower your chances of having heart disease or stroke](#).

## What else increases my chances of heart disease or stroke if I have diabetes?

Your risk for heart disease is greater if you are male rather than female, whether you have diabetes or not.<sup>2</sup> If you do have diabetes, other factors add to your chances of developing heart disease or having a stroke.

### Smoking

Smoking raises your risk of developing heart disease. If you have diabetes, it is important to stop smoking, because both smoking and diabetes narrow blood vessels. Smoking also increases your chances of developing other long-term problems such as

- [lung disease](#) NH external link
- lower leg infections and [ulcers](#)

- foot or leg [amputation](#)

## High blood pressure

If you have [high blood pressure](#) NIDDK external link, your heart works harder to pump blood. High blood pressure can strain your heart, damage blood vessels, and increase your risk of heart attack, stroke, and eye or kidney problems. Have your blood pressure checked regularly and work with your doctor to control or lower high blood pressure.

## Abnormal cholesterol levels

[Cholesterol](#) NIDDK external link is a type of fat, produced by your [liver](#) and found in your blood. You have two kinds of cholesterol in your blood: LDL and HDL.

LDL, often called “bad” cholesterol, can build up and clog your blood vessels. High levels of LDL cholesterol raise your risk of developing heart disease. HDL is sometimes called “good cholesterol.” Higher levels of HDL is linked to lower risk for heart disease and stroke. To improve LDL and HDL levels, limit the amount of fat in your eating plan, eat more plant-based foods, and get regular physical activity.

Another type of blood fat, [triglycerides](#), also can raise your risk of heart disease when the levels are higher than recommended by your health care team.

## Obesity and belly fat

Being [overweight or having obesity](#) can make it harder to manage your diabetes and raise your risk for many health problems, including heart disease and high blood pressure. If you are overweight, a healthy [eating plan](#) with fewer calories and more physical activity often will lower your blood glucose levels and reduce your need for medicines.

Excess belly fat around your waist, even if you are not overweight, can raise your chances of developing heart disease.

You have excess belly fat if your waist measures

- more than 40 inches and you are a man
- more than 35 inches and you are a woman

## **Chronic kidney disease**

Heart disease is closely linked with chronic kidney disease, a condition in which your kidneys are damaged and can't filter blood the way they should. Having diabetes is a risk factor for developing kidney disease, which affects about 40% of people with diabetes. Other risk factors for developing kidney disease are high blood pressure and a family history of kidney failure.

If you have risk factors, get tested for kidney disease and protect your kidneys by making healthy food choices, being more active, aiming for a healthy weight, and managing health conditions that cause kidney damage.

## **Family history of heart disease**

A family history of heart disease may add to your chances of developing the condition. If one or more of your family members had a heart attack before age 50, you have double the chance of developing heart disease compared with people who have no family history of the disease.<sup>4</sup>

You can't change whether heart disease runs in your family. But if you have diabetes, it's even more important to take steps to protect yourself from heart disease and decrease your chances of having a stroke.

## **How can I lower my chances of a heart attack or stroke if I have diabetes?**

Taking care of your diabetes is important to help you protect your heart. You can substantially lower your chances of having a heart attack or stroke by taking the following steps to keep your heart and blood vessels healthy.<sup>5</sup>

## **Manage your diabetes ABCs**

Know your diabetes ABCs to help you manage your blood glucose, blood pressure, and cholesterol. Stop smoking if you have diabetes to lower your chances of developing heart disease.

### **A is for the A1C test**

The [A1C test](#) shows your average blood glucose level over the past 3 months. This is different from the blood glucose checks you do every day. The higher your A1C number, the higher your blood glucose levels have been during the past 3 months. High levels of blood glucose can harm your heart, blood vessels, kidneys, feet, and eyes.

The A1C goal for many people with diabetes is below 7%. Some people may do better with a slightly higher A1C goal. Your A1C goals may also change as you get older and your lifestyle changes. Ask your health care team what your goal should be.

### **B is for blood pressure**

Blood pressure is the force of your blood against the wall of your blood vessels. If your blood pressure gets too high, it makes your heart work too hard. High blood pressure can cause a heart attack or stroke and damage your kidneys and eyes.

The blood pressure goal for most people with diabetes is below 140/90 mm Hg. Ask what your goal should be.

### **C is for cholesterol**

A buildup of cholesterol, a form of fat found in your blood, can cause a heart attack or stroke. Ask your health care team what your cholesterol numbers should be. If you are over 40 years old, you may need to take medicine, such as a [statin](#) NB: external link, to lower your cholesterol levels and protect your heart. Some people with very high LDL (“bad”) cholesterol may need to take medicine starting at a younger age.

[Learn about getting your cholesterol checked](#) External link

### **S is for stop smoking**



Quitting smoking is especially important for people with diabetes because both smoking and diabetes narrow blood vessels, so your heart has to work harder. E-cigarettes aren't a safe option either.

If you quit smoking

- you will lower your risk for heart attack; stroke; nerve, kidney, and eye disease; and amputation
- your blood glucose, blood pressure, and cholesterol levels may improve
- your blood circulation will improve
- you may have an easier time being physically active

If you smoke or use other tobacco products, stop. Ask for help so you don't have to do it alone. You can start by calling the National Quitline at 1-800-QUITNOW or 1-800-784-8669. For tips on quitting, go to [Smokefree.gov](https://www.smokefree.gov) external link

Ask your health care team about your goals for A1C, blood pressure, and cholesterol, and what you can do to reach these goals. To improve your diabetes self-management skills, you may want a referral to a diabetes educator or a [registered dietitian](#).

[Medicare, some private insurers, and other organizations](#) will provide financial assistance for some of these services.

You can keep track of your ABCs with a [diabetes record form](#). You can use it when you meet with your health care team in person or remotely. Talk with your team about your goals and how you are doing, and whether you need to make any changes to your diabetes care plan.