

Type 2 diabetes

Noninsulin-dependent diabetes; Diabetes - type 2; Adult-onset diabetes

Last reviewed: June 28, 2011.

Type 2 diabetes is a lifelong (chronic) disease in which there are high levels of sugar (glucose) in the blood. Type 2 diabetes is the most common form of diabetes.

See also:

- [Diabetes](#)
- [Gestational diabetes](#)
- [Type 1 diabetes](#)
- [Metabolic syndrome](#)

Causes, incidence, and risk factors

Diabetes is caused by a problem in the way your body makes or uses insulin. Insulin is needed to move blood sugar (glucose) into cells, where it is stored and later used for energy.

When you have type 2 diabetes, your fat, liver, and muscle cells do not respond correctly to insulin. This is called insulin resistance. As a result, blood sugar does not get into these cells to be stored for energy.

When sugar cannot enter cells, high levels of sugar build up in the blood. This is called hyperglycemia.

Type 2 diabetes usually occurs slowly over time. Most people with the disease are overweight when they are diagnosed. Increased fat makes it harder for your body to use insulin the correct way.

Type 2 diabetes can also develop in people who are thin. This is more common in the elderly.

Family history and genes play a large role in type 2 diabetes. Low activity level, poor diet, and excess body weight around the waist increase your risk. See also: [Type 2 diabetes](#) for a list of risk factors.

Symptoms

Often, people with type 2 diabetes have no symptoms at first. They may not have symptoms for many years.

The early symptoms of diabetes may include:

- Bladder, kidney, skin, or other infections that are more frequent or heal slowly
- Fatigue
- Hunger
- Increased thirst
- [Increased urination](#)

The first symptom may also be:

- [Blurred vision](#)
- [Erectile dysfunction](#)
- Pain or numbness in the feet or hands

Signs and tests

Your health care provider may suspect that you have diabetes if your blood sugar level is higher than 200 mg/dL. To confirm the diagnosis, one or more of the following tests must be done.

Diabetes blood tests:

- [Fasting blood glucose level](#) -- diabetes is diagnosed if it is higher than 126 mg/dL two times
- [Hemoglobin A1c test](#) --
 - Normal: Less than 5.7%
 - Pre-diabetes: 5.7% - 6.4%
 - Diabetes: 6.5% or higher
- [Oral glucose tolerance test](#) -- diabetes is diagnosed if glucose level is higher than 200 mg/dL after 2 hours

Diabetes screening is recommended for:

- Overweight children who have other risk factors for diabetes, starting at age 10 and repeated every 2 years
- Overweight adults (BMI greater than 25) who have other risk factors
- Adults over age 45 every 3 years

You should see your health care provider every 3 months. At these visits, you can expect your health care provider to:

- Check your blood pressure
- Check the skin and bones on your feet and legs
- Check to see if your feet are becoming numb
- Examine the back part of the eye with a special lighted instrument called an ophthalmoscope

The following tests will help you and your doctor monitor your diabetes and prevent problems:

- Have your blood pressure checked at least every year (blood pressure goals should be 130/80 mm/Hg or lower).
- Have your hemoglobin A1c test (HbA1c) every 6 months if your diabetes is well controlled; otherwise every 3 months.
- Have your cholesterol and triglyceride levels checked yearly (aim for LDL levels below 70-100 mg/dL).
- Get yearly tests to make sure your kidneys are working well ([microalbuminuria](#) and [serum creatinine](#)).
- Visit your eye doctor at least once a year, or more often if you have signs of [diabetic eye disease](#).
- See the dentist every 6 months for a thorough dental cleaning and exam. Make sure your dentist and hygienist know that you have diabetes.

Treatment

The goal of treatment at first is to lower high blood glucose levels. The long-term goals of treatment are to prevent problems from diabetes.

The main treatment for type 2 diabetes is exercise and diet.

LEARN THESE SKILLS

You should learn basic diabetes management skills. They will help prevent problems and the need for medical care. These skills include:

- How to test and record your blood glucose (See: [Blood glucose monitoring](#))
- What to eat and when
- How to take medications, if needed
- How to recognize and treat low and high blood sugar
- How to handle sick days
- Where to buy diabetes supplies and how to store them

It may take several months to learn the basic skills. Always keep learning about diabetes, its complications, and how to control and live with the disease. Stay up-to-date on new research and treatments.

MANAGING YOUR BLOOD SUGAR

Self testing means that you check your blood sugar at home yourself. Checking your blood sugar levels at home and writing down the results will tell you how well you are managing your diabetes.

A device called a glucometer can give you an exact blood sugar reading. There are different types of devices. Usually, you prick your finger with a small needle called a lancet. This gives you a tiny drop of blood. You place the blood on a test strip and put the strip into the device. Results are given in 30 - 45 seconds.

A health care provider or diabetes educator will help set up an at-home testing schedule for you. Your doctor will help you set your blood sugar goals.

- Most people with type 2 diabetes only need to check their blood sugar once or twice a day.
- If your blood sugar levels are under control, you may only need to check them a few times a week.
- You may test yourself when you wake up, before meals, and at bedtime.
- You may need to test more often when you are sick or under stress.

The results of the test can be used to change your meals, activity, or medications to keep your blood sugar levels in the right range. Testing can identify high and [low blood sugar](#) levels before you have serious problems.

Keep a record of your blood sugar for yourself and your health care provider. This will help if you are having trouble managing your diabetes.

DIET AND WEIGHT CONTROL

Work closely with your doctor, nurse, and dietitian to learn how much fat, protein, and carbohydrates you need in your diet. Your meal plans should fit your daily lifestyle and habits, and should try to include foods that you like.

Managing your weight and eating a well-balanced diet are important. Some people with type 2 diabetes can stop taking medications after losing weight (although they still have diabetes).

See also:

- [Diabetes diet](#)
- [Snacking when you have diabetes](#)

Very overweight patients whose diabetes is not well managed with diet and medicine may consider bariatric (weight loss) surgery.

See:

- [Gastric bypass surgery](#)
- [Laparoscopic gastric banding](#)

REGULAR PHYSICAL ACTIVITY

Regular exercise is important for everyone. It is even more important you have diabetes. Exercise in which your heart beats faster and you breathe faster helps lower your blood sugar level without medication. It also burns extra calories and fat so you can manage your weight.

Exercise can help your health by improving blood flow and blood pressure. Exercise also increases the body's energy level, lowers tension, and improves your ability to handle stress.

Ask your health care provider before starting any exercise program. People with type 2 diabetes must take special steps before, during, and after intense physical activity or exercise. See also: [Diabetes and exercise](#)

MEDICATIONS TO TREAT DIABETES

If diet and exercise do not help keep your blood sugar at normal or near-normal levels, your doctor may prescribe medication. Since these drugs help lower your blood sugar levels in different ways, your doctor may have you take more than one drug.

Some of the most common types of medication are listed below. They are taken by mouth or injection.

- Alpha-glucosidase inhibitors (such as [acarbose](#))
- Biguanides ([Metformin](#))
- Injectable medicines (including exenatide, mitiglinide, pramlintide, [sitagliptin](#), and [saxagliptin](#))
- Meglitinides (including [repaglinide](#) and nateglinide)
- Sulfonylureas (like [glimepiride](#), [glyburide](#), and [tolazamide](#))
- Thiazolidinediones (such as [rosiglitazone](#) and [pioglitazone](#)). ([Rosiglitazone](#) may increase the risk of heart problems. Talk to your doctor.)

These drugs may be given with insulin, or insulin may be used alone. You may need insulin if you continue to have poor blood glucose control. It must be injected under the skin using a syringe or insulin pen device. It cannot be taken by mouth. See also: [Type 1 diabetes](#)

It is not known whether hyperglycemia medications taken by mouth are safe for use in pregnancy. Women who have type 2 diabetes and become pregnant may be switched to insulin during their pregnancy and while breast-feeding.

PREVENTING COMPLICATIONS

Your doctor may prescribe medications or other treatments to reduce your chances of developing eye disease, kidney disease, and other conditions that are more common in people with diabetes.

See also:

- [Diabetes -- preventing heart attack and stroke](#)
- [Long-term complications of diabetes](#)

FOOT CARE

People with diabetes are more likely to have foot problems. Diabetes can damage nerves, which means you may not feel an injury to the foot until you get a large sore or infection. Diabetes can also damage blood vessels.

Diabetes also decreases the body's ability to fight infection. Small infections can quickly get worse and cause the death of skin and other tissues.

To prevent injury to your feet, check and care for your feet every day. See also: [Diabetes foot care](#)

Support Groups

For more information, see [diabetes resources](#).

Expectations (prognosis)

After many years, diabetes can lead to serious problems with your eyes, kidneys, nerves, heart, blood vessels, or other areas in your body.

If you have diabetes, your risk of a heart attack is the same as that of someone who has already had a heart attack. Both women and men with diabetes are at risk. You may not even have the normal signs of a heart attack.

If you control your blood sugar and blood pressure, you can reduce your risk of death, stroke, heart failure, and other diabetes problems.

Some people with type 2 diabetes no longer need medicine if they lose weight and become more active. When they reach their ideal weight, their body's own insulin and a healthy diet can control their blood sugar levels.

Complications

After many years, diabetes can lead to serious problems:

- You could have eye problems, including trouble seeing (especially at night), and light sensitivity. You could become blind.
- Your feet and skin can develop sores and infections. After a long time, your foot or leg may need to be removed. Infection can also cause pain and itching in other parts of the body.
- Diabetes may make it harder to control your blood pressure and cholesterol. This can lead to a heart attack, stroke, and other problems. It can become harder for blood to flow to your legs and feet.
- [Nerves in your body can get damaged](#), causing pain, tingling, and a loss of feeling.
- Because of nerve damage, you could have problems digesting the food you eat. You could feel weakness or have trouble going to the bathroom. Nerve damage can make it harder for men to have an erection.
- High blood sugar and other problems can lead to [kidney damage](#). Your kidneys may not work as well, and they may even stop working.

Infections of the skin, female genital tract, and urinary tract are also more common.

To prevent problems from diabetes, visit your health care provider or diabetes educator at least four times a year. Talk about any problems you are having.

Calling your health care provider

Call 911 right away if you have:

- Chest pain or pressure
- Fainting or [unconsciousness](#)
- Seizure
- Shortness of breath

These symptoms can quickly get worse and become emergency conditions (such as [convulsions](#) or hypoglycemic coma).

Call your doctor if you have:

- Numbness, tingling, or pain in your feet or legs
- Problems with your eyesight
- Sores or infections on your feet
- Symptoms of high blood sugar (being very thirsty, having blurry vision, having dry skin, feeling weak or tired, needing to urinate a lot)
- Symptoms of low blood sugar (feeling weak or tired, trembling, sweating, feeling irritable, having trouble thinking clearly, fast heartbeat, double or blurry vision, feeling uneasy)

Prevention

You can help prevent type 2 diabetes by keeping a healthy body weight and an active lifestyle.

Stay up-to-date with all your vaccinations and get a flu shot every year.

Source: <http://www.ncbi.nlm.nih.gov/pubmedhealth/PMH0001356/>