



# Symptoms & Causes of Diabetes

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## What are the symptoms of diabetes?

Common symptoms of **diabetes** include

- [increased urination](#)
- feeling very thirsty
- feeling very hungry, even after you have eaten
- blurred vision
- fatigue
- sores that do not heal
- frequent infections, such as [urinary tract infections](#), [skin infections](#) [NIH](#) [↗](#), or [yeast infections](#) [NIH](#) [↗](#)

There are different types of diabetes. People with any type of diabetes can have these symptoms. Some other symptoms, and how quickly the symptoms develop, depend on the type of diabetes that you have. Talk with your primary health care professional about any symptoms you are having and ask if you should be [tested for diabetes](#). Your primary health care professional may be a doctor, physician assistant, or nurse practitioner.

## Type 1 diabetes symptoms


In addition to some of the common diabetes symptoms listed above, people with [type 1 diabetes](#) may also have an unexplained weight loss. Most people don't know they have type 1 diabetes until they develop diabetes symptoms.

Symptoms of type 1 diabetes usually develop quickly, over a few days or weeks. Type 1 diabetes is often diagnosed in children and young adults, but it can begin at any age. Children with type 1 diabetes

typically develop symptoms over a short period of time. Common symptoms of type diabetes in children include

- having to urinate more often
- eating more but losing weight
- feeling very thirsty

These symptoms are less common in adults with type 1 diabetes. For some adults, symptoms of type 1 diabetes may develop slowly and seem more like [type 2 diabetes](#). Some adults who develop diabetes may need special tests to find out what type of diabetes they have. Talk with your health care professional about the type of diabetes you may have. They can help you understand its causes and treatments.

Sometimes, people find out they have type 1 diabetes when they have signs and symptoms of a condition called [diabetic ketoacidosis \(DKA\)](#) . Symptoms of DKA may include



- feeling very tired
- having trouble breathing
- having fruity-smelling breath
- fainting from [dehydration](#)
- having pain in your [abdomen](#), [nausea](#), or [vomiting](#)

If you have type 1 diabetes, your body doesn't have enough [insulin](#) to use blood glucose—also called blood sugar—for energy. Your body will begin to use [fat](#) as a source of energy instead. This process produces substances called [ketones](#). High levels of ketones can cause DKA, which is a medical emergency that needs to be treated right away.

DKA usually affects people with type 1 diabetes. People with type 2 diabetes may also develop DKA if their body doesn't produce enough insulin.

## Type 2 diabetes symptoms

Symptoms of type 2 diabetes can develop slowly, over several years. Many people with type 2 diabetes have no symptoms, or symptoms can be so mild that people might not even notice them. In addition to the common symptoms of diabetes listed above, people may find out they have type 2 diabetes when they develop symptoms of other [health problems from diabetes](#). These include

- pain, numbness, or tingling in the feet or hands
- sexual problems
- [chest pain](#)  
- vision loss



Vision loss can be a symptom of diabetes.

## Gestational diabetes symptoms



**Gestational diabetes** is a type of diabetes that may develop when you are pregnant. Most people with this type of diabetes have no symptoms. If you do have symptoms of gestational diabetes, they may be mild, such as being thirstier than usual or having to [urinate](#) more often.

People with a history of gestational diabetes are at higher risk of developing type 2 diabetes later in life. If you have a history of gestational diabetes, your health care professional may recommend regular testing for type 2 diabetes.

## What causes type 1 diabetes?

Type 1 diabetes develops when the body's [immune system](#) NIH destroys the cells in the [pancreas](#) that make insulin. These cells are called beta cells. Genes and factors in the environment—the places where people live, play, work, study, and gather—may trigger the immune system to destroy beta cells in type 1 diabetes.

Insulin is a [hormone](#) that helps blood glucose get into the body's cells to be used as energy. When your body doesn't have enough insulin, glucose in your blood can't get into the cells. As a result, your cells lack energy, your blood glucose level rises, and you develop diabetes.




Studies such as [The Environmental Determinants of Diabetes in the Young \(TEDDY\)](#)  are trying to learn more about the causes of type 1 diabetes. [Type 1 Diabetes TrialNet](#)  and other groups are working to find treatments that may prevent or slow the development of type 1 diabetes in people who are at risk for getting the disease.

## What causes type 2 diabetes?

Type 2 diabetes is the most common form of diabetes. Type 2 diabetes develops when your pancreas doesn't produce enough insulin, and your body has trouble using insulin, a condition called [insulin resistance](#). Insulin resistance is when the cells in your muscles, fat, and [liver](#) don't respond well to insulin. When there isn't enough insulin to balance blood glucose levels, they begin to rise.

When blood glucose levels are higher than normal but not high enough to be diagnosed as type 2 diabetes, you have a condition called [prediabetes](#). You have type 2 diabetes when health care professionals diagnose your blood glucose [level](#) as being too high.

Researchers don't fully know what causes problems with insulin production and insulin resistance in type 2 diabetes. However, people are more likely to develop type 2 diabetes if they

- have [overweight](#), [obesity](#), or a large waist size.
- are age 35 or older. Children and teens can also develop type 2 diabetes, but the risk increases as a person gets older.
- have a family history of type 2 diabetes.
- are African American, American Indian, Asian American, Hispanic, Latino, or Pacific Islander.
- are not physically active, because of a job that requires sitting for long periods of time or because of difficulty moving their body.
- [smoke](#) , including tobacco products and [e-cigarettes](#) , or are exposed to [secondhand smoke](#) .
- have prediabetes.
- have a history of gestational diabetes, a type of diabetes that develops during pregnancy, or gave birth to a baby weighing 9 pounds or more.

You can't change some of these risk factors, such as your age, family history, or race. However, you may be able to change some risk factors and [prevent or delay type 2 diabetes](#) by maintaining a healthy weight, being physically active, and stopping smoking.





You may be able to prevent type 2 diabetes by maintaining a healthy weight and being physically active.

## What causes gestational diabetes?

Gestational diabetes occurs when your body can't make the extra insulin that you need during pregnancy. Scientists believe that substances made in your body, called hormones, may play a role in causing this form of diabetes.

Changes to hormones during pregnancy can make it harder for blood glucose to enter the cells in your body. This causes insulin resistance. In most pregnancies, the pancreas can make enough insulin to overcome these changes. If the pancreas can't make enough insulin, you'll develop gestational diabetes.

You're more likely to develop gestational diabetes if you have certain risk factors, such as

- having overweight or obesity
- gaining too much weight during pregnancy
- having a family history of gestational diabetes, type 2 diabetes, or both

## What else can cause diabetes?

Other causes of diabetes may include

- diseases caused by changes in your [genes](#), also called gene variants
- [endocrine diseases](#)
- damage to or removal of the pancreas

- taking certain medicines

## Diseases caused by changes in your genes

**Gene variants** [NIH](#) are changes to certain genes. Some gene variants can cause diseases that can affect the pancreas and lead to diabetes.

### Monogenic diabetes

**Monogenic diabetes** is a group of rare forms of diabetes caused by a variant, or change, in a single gene. Parents may pass these gene variants to their children. In some cases, a person may be the first one with the variant in the family. Most forms of monogenic diabetes reduce the amount of insulin your pancreas can make.

### Cystic fibrosis

**Cystic fibrosis** [NIH](#) is a genetic disease that leads to swelling and scarring in the pancreas. This scarring can prevent the pancreas from making enough insulin.

### Hemochromatosis

**Hemochromatosis** is a genetic condition that causes your body and organs to build up harmful levels of **iron** [NIH](#). If the disease is not treated, high levels of iron may damage your pancreas and other organs.

## Endocrine diseases

Some endocrine diseases make the body produce too much of certain hormones. High levels of these hormones may cause insulin resistance or diabetes. Endocrine diseases that may cause insulin resistance or diabetes include

- **Cushing's syndrome**, which can cause the body to produce too much **cortisol**—often called the “stress hormone”
- **acromegaly**, which can cause the body to produce too much growth hormone
- **hyperthyroidism**, which can cause the body to produce too much thyroid hormone
- **hypothyroidism**, which can cause the body to produce too little thyroid hormone

## Damage to or removal of the pancreas

The pancreas can be damaged by injury or diseases such as inflammation of the pancreas, also called **pancreatitis**. Diabetes may be the first sign of **pancreatic cancer** [NIH](#) in older people without diabetes risk factors who develop diabetes. A damaged pancreas may make less insulin and lead to diabetes. In some cases, your pancreas may need to be removed. Without a pancreas, your body can't produce insulin. You'll develop diabetes and will have to take insulin.

## Taking certain medicines

Certain medicines may harm the pancreas or affect the way insulin works in the body. Some of these medicines may include

- [antipsychotics](#) [NIH](#) that are used to treat certain mental health problems
- antiseizure medicines that are used to treat [epilepsy](#) [NIH](#)
- [beta-blockers and diuretics](#) [NIH](#) that are used to treat high blood pressure
- [glucocorticoids](#) [NIH](#) that are used to treat certain inflammatory diseases
- [immunosuppressants](#) that are used after an organ transplant
- [niacin](#) [NIH](#), a type of vitamin B that is sometimes used to treat high blood cholesterol

Statins, which are medicines to reduce LDL (“bad”) cholesterol levels, can slightly increase the chance that you’ll develop diabetes. However, statins help protect you from [heart disease](#) [NIH](#) and [stroke](#) [NIH](#). For this reason, the strong benefits of taking statins outweigh the small chance that you could develop diabetes.

If you take medicines for these conditions, you may want to ask your primary health care professional if your medicines could affect your risk of developing diabetes.

## Clinical Trials for Symptoms and Causes of Diabetes

NIDDK conducts and supports clinical trials in many diseases and conditions, including diabetes. The trials look to find new ways to prevent, detect, or treat diseases and improve quality of life.

### What clinical trials study symptoms and causes of diabetes?

Clinical trials—and other types of [clinical studies](#) [NIH](#)—are part of medical research and involve people like you. When you volunteer to take part in a clinical study, you help doctors and researchers learn more about disease and improve health care for people in the future.

Researchers are studying many aspects of symptoms and causes of diabetes, such as

- tests and treatments for rare and uncommon types of diabetes
- body changes in people who develop diabetes after having pancreatitis

[Find out if clinical trials are right for you](#) [NIH](#).

Watch a video of NIDDK Director Dr. Griffin P. Rodgers explaining the importance of participating in clinical trials.

## Why Should I Join a Clinical Trial?



## What clinical trials about symptoms and causes of diabetes are looking for participants?



You can find clinical studies on symptoms and causes of diabetes at [ClinicalTrials.gov](https://clinicaltrials.gov) [NIH](#) . In addition to searching for federally funded studies, you can expand or narrow your search to include clinical studies from industry, universities, and individuals; however, the National Institutes of Health does not review these studies and cannot ensure they are safe for you. Always talk with your primary health care professional before you participate in a clinical study.

## What have we learned about symptoms and causes of diabetes from NIDDK-funded research?



NIDDK has funded many research projects to learn more about symptoms and causes of diabetes.

- [NIDDK-supported research](#) helped scientists find genes linked to type 1 diabetes and new ways to identify people with type 1 diabetes before they develop symptoms.
- NIDDK also supported research to test medicines in people with type 1 diabetes before symptoms develop and before they require insulin-replacement therapy. In 2022, this research led to the U.S. Food and Drug Administration [approval of a medicine](#) (PDF, 101.1 KB) that may slow damage to the pancreas in early stages of type 1 diabetes.
- The [Diabetes Prevention Program \(DPP\)](#) studied how to prevent or delay disease in people at high risk of developing type 2 diabetes. The study found that participants who did regular physical activity and lost 5% to 7% of their body weight lowered their chance of developing type 2 diabetes.
- NIDDK funds the [Glycemic Observation and Metabolic Outcomes in Mothers and Offspring \(GO MOMS\)](#) study, which is investigating ways to improve gestational diabetes screening and diagnosis by better understanding blood glucose levels throughout pregnancy. GO MOMs will set the foundation for future ways to screen, diagnose, and treat high blood glucose levels during pregnancy.



- NIDDK supports the [Rare and Atypical Diabetes Network \(RADIANT\)](#)  study, which is looking at ways to identify and define rare and atypical forms of diabetes.
- NIDDK formed the [Type 1 Diabetes in Acute Pancreatitis Consortium \(T1DAPC\)](#)  to study type 1 diabetes and other types of diabetes that are related to acute pancreatitis. As part of this group, the Diabetes Related to Acute Pancreatitis and Its Mechanisms (DREAM) study is looking at people with recent acute pancreatitis to see how many develop diabetes.

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