

# What Is Type 1 Diabetes?



Type 1 diabetes is a condition in which your immune system destroys insulin-making cells in your pancreas. These are called beta cells. The condition is usually diagnosed in children and young people, so it used to be called juvenile diabetes. A condition called secondary diabetes is like type 1, but your beta cells are wiped out by something else, like a disease or an injury to your pancreas, rather than by your immune system.

Both of these are different from type 2 diabetes, in which your body doesn't respond to insulin the way it should.

## Type 1 Diabetes Symptoms

Signs are often subtle, but they can become severe. They include:

- Extreme thirst
- Increased hunger (especially after eating)
- Dry mouth
- Upset stomach and vomiting
- Frequent urination
- Unexplained weight loss, even though you're eating and feel hungry
- Fatigue

- Blurry vision
- Heavy, laboured breathing (your doctor may call this Kussmaul respiration)
- Frequent infections of your skin, urinary tract, or vagina
- Crankiness or mood changes
- Bedwetting in a child who's been dry at night

Signs of an emergency with type 1 diabetes include:

- Shaking and confusion
- Rapid breathing
- Fruity smell to your breath
- Belly pain
- Loss of consciousness (rare)

## Type 1 Diabetes Causes

Insulin is a hormone that helps move sugar, or glucose, into your body's tissues. Your cells use it as fuel.

Damage to beta cells from type 1 diabetes throws the process off. Glucose doesn't move into your cells because insulin isn't there to do the job. Instead, it builds up in your blood, and your cells starve. This causes high blood sugar, which can lead to:

- **Dehydration.** When there's extra sugar in your blood, you pee more. That's your body's way of getting rid of it. A large amount of water goes out with that urine, causing your body to dry out.
- **Weight loss.** The glucose that goes out when you pee takes calories with it. That's why many people with high blood sugar lose weight. Dehydration also plays a part.
- **Diabetic ketoacidosis (DKA).** If your body can't get enough glucose for fuel, it breaks down fat cells instead. This creates chemicals called ketones. Your liver releases the sugar it stores to help out. But your body can't use it without insulin, so it builds up in your blood, along with the acidic ketones. This mix of extra glucose, dehydration, and acid build-up is known as ketoacidosis and can be life-threatening if not treated right away.
- **Damage to your body.** Over time, high glucose levels in your blood can harm the nerves and small blood vessels in your eyes, kidneys, and heart. They can also make you more likely to get hardened arteries, or atherosclerosis, which can lead to heart attacks and strokes.

There's no way to prevent type 1 diabetes. Doctors don't know all the things that cause it. But they know that your genes play a role.

They also know that you can get type 1 diabetes when something around you, like a virus, tells your immune system to go after your pancreas. Most people with type 1 diabetes have signs of this attack, called autoantibodies. They're there in almost everyone who has the condition when their blood sugar is high.

Type 1 diabetes can happen along with other autoimmune diseases, like Graves' disease or vitiligo.

## Type 1 Diabetes Risk Factors

Only about 5% of people with diabetes have type 1. It affects males and females equally. You're at higher risk of getting it if you:

- Are younger than 20
- Are white
- Have a parent or sibling with type 1

## Type 1 Diabetes Diagnosis

If your doctor thinks you have type 1 diabetes, they'll check your blood sugar levels. They may test your urine for glucose or chemicals your body makes when you don't have enough insulin.

## Type 1 Diabetes Treatment

People who have type 1 diabetes can live long, healthy lives. You'll need to keep a close eye on your blood sugar levels. Your doctor will give you a range that the numbers should stay within. Adjust your insulin, food, and activities as necessary. Everyone with type 1 diabetes needs to use insulin shots to control their blood sugar.

When your doctor talks about insulin, they'll mention three main things:

- "Onset" is how long it takes to reach your bloodstream and begin lowering your blood sugar.
- "Peak time" is when insulin is doing the most work in terms of lowering your blood sugar.
- "Duration" is how long it keeps working after onset.

Several types of insulin are available.

- **Rapid-acting** starts to work in about 15 minutes. It peaks about 1 hour after you take it and continues to work for 2 to 4 hours.
- **Regular or short-acting** gets to work in about 30 minutes. It peaks between 2 and 3 hours and keeps working for 3 to 6 hours.
- **Intermediate-acting** won't get into your bloodstream for 2 to 4 hours after your shot. It peaks from 4 to 12 hours and works for 12 to 18 hours.
- **Long-acting** takes several hours to get into your system and lasts about 24 hours.

Your doctor may start you out with two injections a day of two types of insulin. Later, you might need more shots. Most insulin comes in a small glass bottle called a vial. You draw it out with a syringe that has a needle on the end and give yourself the shot. Some kinds come in a prefilled pen. Another kind is inhaled. You can also get it from a pump, a device you wear that sends it into your body through a small tube. Your doctor will help you pick the type and the delivery method that's best for you.

## Lifestyle Changes

Exercise is an important part of treating type 1. But it isn't as simple as going for a run. Exercise affects your blood sugar levels. So you have to balance your insulin dose and the food you eat with any activity, even simple tasks around the house or yard.

Knowledge is power. Check your blood sugar before, during, and after an activity to find out how it affects you. Some things will make your levels go up; others won't. You can lower your insulin or have a snack with carbs to keep it from dropping too low.

If your blood sugar is high -- above 240 mg/dL -- test for ketones, the acids that can result from high sugar levels. If they're OK, you should be good to go. If they're high, skip the workout.

You'll also need to understand how food affects your blood sugar. Once you know the roles that carbs, fats, and protein play, you can build a healthy eating plan that helps keep your levels where they should be. A diabetes educator or registered dietitian can help you get started.

# Type 1 Diabetes Complications

Type 1 diabetes can lead to other problems, especially if it isn't well-controlled. Complications include:

- **Cardiovascular disease.** Diabetes can put you at higher risk of blood clots, as well as high blood pressure and cholesterol. These can lead to chest pain, heart attack, stroke, or heart failure.
- **Skin problems.** People with diabetes are more likely to get bacterial or fungal infections. Diabetes can also cause blisters or rashes.
- **Gum disease.** A lack of saliva, too much plaque, and poor blood flow can cause mouth problems.
- **Pregnancy problems.** Women with type 1 diabetes have a higher risk of early delivery, birth defects, stillbirth, and preeclampsia.
- **Retinopathy.** This eye problem happens in about 80% of adults who have had type 1 diabetes for more than 15 years. It's rare before puberty, no matter how long you've had the disease. To prevent it -- and keep your eyesight -- keep good control of blood sugar, blood pressure, cholesterol, and triglycerides.
- **Kidney damage.** About 20% to 30% of people with type 1 diabetes get a condition called nephropathy. The chances go up over time. It's most likely to show up 15 to 25 years after the onset of diabetes. It can lead to other serious problems like kidney failure and heart disease.
- **Poor blood flow and nerve damage.** Damaged nerves and hardened arteries lead to a loss of feeling in and a lack of blood supply to your feet. This raises your chances of injury and makes it harder for open sores and wounds to heal. When that happens, you could lose a limb. Nerve damage can also cause digestive problems like nausea, vomiting, and diarrhoea.

You can take steps to keep from getting complications.

- Do your best to keep your blood sugar under control.
- Monitor your blood pressure and cholesterol.
- Eat well and exercise.
- If you smoke, quit.
- Take care of your feet and teeth.
- Have regular medical, dental, and vision exams.