



Type 2 Diabetes: What Is It?

What Is Diabetes?

Diabetes is a disease that affects how the body uses glucose, the main type of sugar in the blood.

What Happens in Diabetes?

Our bodies break down the foods we eat into glucose and other nutrients we need, which are then absorbed into the bloodstream from the gastrointestinal tract. The glucose level in the blood rises after a meal and triggers the pancreas to make the hormone insulin and release it into the bloodstream. But in people with diabetes, the body either can't make or can't respond to insulin properly.

Insulin works like a key that opens the doors to cells and lets the glucose in. Without insulin, glucose can't get into the cells (the doors are "locked" and there is no key) and so it stays in the bloodstream. As a result, the level of sugar in the blood remains higher than normal. High blood sugar levels are a problem because they can cause a number of health problems.

What Is Type 2 Diabetes?

The two types of diabetes are **type 1** and **type 2**. Both make blood sugar levels higher than normal but they do so in different ways.

Type 1 diabetes happens when the immune system attacks and destroys the cells of the pancreas that produce insulin. Kids with type 1 diabetes need insulin to help keep their blood sugar levels in a normal range.

Type 2 diabetes is different. A person with type 2 diabetes still produces insulin but the body doesn't respond to it normally. Glucose is less able to enter the cells and do its job of supplying energy (a problem called insulin resistance). This raises the blood sugar level, so the pancreas works hard to make even more insulin. Eventually, this strain can make the pancreas unable to produce enough insulin to keep blood sugar levels normal.

People with insulin resistance may or may not develop type 2 diabetes — it all depends on whether the pancreas can make enough insulin to keep blood sugar levels normal. High blood sugar levels that happen a lot are a sign that a person has developed diabetes.

Who Gets Type 2 Diabetes?

No one knows for sure what causes type 2 diabetes. But many kids who develop it have at least one parent with diabetes and a family history of the disease, so there seems to be a genetic risk.

Most people with type 2 diabetes are overweight. Excess fat makes it harder for the cells to respond to insulin, and not being physically active makes this even worse. Type 2 diabetes used to mostly affect adults, but now more and more U.S. kids and teens, especially those who are overweight, are developing the disease.

Also, kids in puberty are more likely to have it than younger kids, probably because of normal rises in hormone levels that can cause insulin resistance during this stage of fast growth and physical development.

What Are the Signs & Symptoms of Type 2 Diabetes?

The symptoms of type 2 diabetes aren't always obvious and they can take a long time to develop. Sometimes, there are no symptoms. It's important to remember that not everyone with insulin resistance or type 2 diabetes develops these warning signs, and not everyone who has these symptoms necessarily has type 2 diabetes.

But kids or teens who develop type 2 diabetes may:

- **Need to pee a lot.** The kidneys respond to high levels of glucose in the blood by flushing out the extra glucose in urine (pee). Kids with high blood sugar levels need to pee more often and make more pee.
- **Drink a lot of liquids.** Because they're peeing so often and losing so much fluid, they can become very thirsty and drink a lot in an attempt to keep the levels of body water normal.
- **Feel tired often.** This is because the body can't use glucose for energy properly.

How Is Type 2 Diabetes Diagnosed?

Doctors can determine if a person has type 2 diabetes by testing blood samples for glucose. Even if a child or teen doesn't have any symptoms of type 2 diabetes, doctors might test blood sugar in kids who are more likely to get it — like those who are overweight.

Sometimes doctors may do another blood test, called the glycosylated hemoglobin (hemoglobin A1c or HbA1c) test, to check for diabetes in children at higher risk for getting type 2 diabetes. This test shows how blood sugar levels have been running over the past few months.

If diabetes is suspected or confirmed, the doctor may refer you to a pediatric endocrinologist, a doctor who specializes in the diagnosis and treatment of diseases of the endocrine system (such as diabetes and growth disorders) in kids.

How Is Type 2 Diabetes Treated?

Kids and teens with type 2 diabetes use diet, exercise, and medicines that improve the body's response to insulin to control their blood sugar levels. Some may need to take insulin shots or use an insulin pump too.

What Problems Can Happen With Type 2 Diabetes?

Sometimes, kids and teens with type 2 diabetes, insulin resistance, or obesity might develop thick, dark, velvet-like skin around the neck, armpits, groin, between fingers and toes, or on elbows and knees — a cosmetic skin condition called acanthosis nigricans. This skin darkening can lighten over time with improvement in insulin resistance.

Polycystic ovary syndrome (PCOS) in girls is also often associated with insulin resistance. This hormone problem can make the ovaries become enlarged and develop cysts (fluid-filled sacs). Girls with PCOS might have irregular periods, might stop having periods, and may have excess facial and body hair growth. It also can cause fertility problems.

People with insulin resistance or type 2 diabetes are also more likely to develop hypertension (high blood pressure) or abnormal levels of blood fats (cholesterol and triglycerides). When these problems cluster together, it's called **metabolic syndrome**. People with metabolic syndrome are at risk for heart disease, stroke, and other health problems.

Diabetes also can cause heart disease and stroke, as well as other long-term complications, including eye problems, kidney disease, nerve damage, and gum disease. While these problems don't usually show up in kids or teens who've had type 2 diabetes for only a few years, they can affect them in adulthood, particularly if their diabetes isn't well controlled.

What's New in the Treatment of Type 2 Diabetes?

Doctors and researchers are developing new equipment and treatments to help kids deal with the special problems of growing up with diabetes.

Some kids and teens already use new devices that make blood glucose testing and insulin injections easier and more effective. One of these is the insulin pump, a mechanical device that can be programmed to deliver insulin more like the pancreas does.

Researchers are also testing ways to stop diabetes before it starts. For example, scientists are studying whether diabetes can be prevented in those who may have inherited an increased risk for the disease.

How Can I Help My Child?

Diabetes is a chronic condition that needs close attention. You'll be your child's most important partner in learning to live with it.

Kids or teens with type 2 diabetes may need to:

- Get to and maintain a normal body weight.
- Monitor blood sugar levels regularly.
- Eat a healthy diet, as determined by the care team.
- Get regular physical activity to achieve a healthy weight and allow insulin to work more effectively.
- Take insulin or other medicines that help the body respond to insulin more effectively.
- Work closely with their doctors and diabetes health care team to get the best possible diabetes control.
- Be watched for signs of complications and other diabetes-related health problems.

Living with diabetes is a challenge for anyone, but kids and teens often have special issues to deal with. Young kids might not understand why they need blood tests and medicines. They might be scared, angry, and uncooperative.

Teens may feel different from their peers and want a more carefree lifestyle than their diabetes allows. Even when they faithfully follow their treatment schedule, they might feel frustrated if the natural body changes of puberty make their diabetes somewhat harder to control.

Having a child with diabetes may seem overwhelming at times, but you're not alone. If you have questions or problems, reach out to the diabetes health care team — they can help with medical issues, and are there to support and help you and your child.

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