CONDITION

Type 2 diabetes in children

Type 2 diabetes is a long-term condition in which a child's blood sugar stays too high because insulin does not work well enough.

WHAT IT IS
Long-term difficulty controlling blood sugar

BODY SYSTEM
Hormones and blood sugar control

MAIN SYMPTOMS
Increased thirst, frequent urination, tiredness, unexplained weight loss

WHAT CAUSES IT
Insulin resistance, genetics, and reduced insulin production

HOW IT IS DIAGNOSED
A1C, fasting glucose, random glucose, or glucose tolerance testing

MAIN TREATMENT
Family-based lifestyle support and blood-sugar-lowering medicines

CAN IT BE CURED?
No, remission is possible but relapse can occur

IS IT AN EMERGENCY?
Sometimes, with vomiting, breathing difficulty, or confusion

LONG-TERM OUTLOOK
Usually manageable, but early complications can occur

Overview

Type 2 diabetes is a long-term condition that causes too much glucose, or sugar, to remain in the blood. It is sometimes called youth-onset type 2 diabetes when it begins during childhood or adolescence.

The body uses a hormone called insulin to move glucose from the blood into cells, where it can be used for energy. In type 2 diabetes, cells do not respond well to insulin. This is called insulin resistance. Over time, the pancreas may also become unable to make enough insulin.

Type 2 diabetes is not the same as type 1 diabetes. In type 1 diabetes, the immune system destroys the cells that make insulin. The two conditions can cause similar symptoms, so testing is needed to tell them apart. Less common inherited forms of diabetes can also occur in children.

Early diagnosis matters because high blood sugar can affect the eyes, kidneys, nerves, heart, and blood vessels. These problems may begin earlier in people whose diabetes starts during childhood. Treatment can lower blood sugar and reduce these risks.

A child and family have not "failed" if type 2 diabetes develops. Genes, puberty, access to food, opportunities for physical activity, sleep, medicines, stress, and other health conditions can all contribute.

Symptoms

Some children have no noticeable symptoms. Diabetes may be found during testing for another concern.

When symptoms occur, they may include:

Some children develop dark, thickened, velvety-looking skin, often around the neck, armpits, or groin. This is called acanthosis nigricans. It can be a sign of insulin resistance, but it does not confirm diabetes.

High blood sugar can sometimes lead to a serious shortage of insulin. This may cause diabetic ketoacidosis, known as DKA, or a severe dehydration condition called hyperosmolar hyperglycemic state. Either condition needs emergency treatment.

- Being very thirsty
- Urinating more often, including new bed-wetting
- Feeling unusually tired
- Blurred vision
- Unexplained weight loss
- Frequent skin, urinary, or yeast infections
- Cuts or sores that heal slowly

Causes and risk factors

Type 2 diabetes develops when insulin resistance and reduced insulin production occur together. Puberty naturally makes the body less sensitive to insulin, which helps explain why the condition often appears during adolescence.

A child is more likely to develop type 2 diabetes if they have:

Type 2 diabetes is diagnosed more often in some racial and ethnic groups. This pattern reflects

a complex mix of ancestry, social conditions, unequal access to preventive care, food environments, stress, and other factors. A child's background alone does not determine whether they will develop diabetes.

Body size is only one part of risk. Not every child with a larger body develops diabetes, and type 2 diabetes can occur in children who do not have obesity.

- A parent or sibling with type 2 diabetes
- Overweight or obesity, especially around the abdomen
- Signs of insulin resistance
- Little opportunity for regular physical activity
- Exposure to diabetes during pregnancy
- Polycystic ovary syndrome, or PCOS
- High blood pressure or unhealthy cholesterol levels
- A medicine or medical condition that raises blood sugar

Diagnosis

A healthcare professional diagnoses diabetes using blood tests. The diagnosis may be based on one of the following results:

A1C estimates average blood sugar over roughly the previous two to three months. A fasting test is taken after no calories for at least eight hours. During a glucose tolerance test, blood sugar is checked after drinking a measured glucose drink.

When there are no clear symptoms or immediate concerns, an abnormal result is usually confirmed with repeat testing. A1C can be less reliable with some blood disorders, recent blood loss, pregnancy, kidney problems, or differences in red blood cell turnover.

Further tests may check for antibodies linked to type 1 diabetes and measure ketones, which are acids produced when the body cannot use glucose properly. Testing may also be considered for an inherited form called monogenic diabetes, especially when the family pattern or test results are unusual.

The care team will usually check blood pressure, cholesterol, kidney function, liver health, and other possible complications. An eye examination may also be arranged.

- An A1C of 6.5% or higher
- A fasting plasma glucose of 126 mg/dL or higher

- A two-hour glucose of 200 mg/dL or higher during an oral glucose tolerance test
- A random plasma glucose of 200 mg/dL or higher with typical symptoms

Treatment and management

Treatment aims to keep blood sugar in a safer range while supporting normal growth, school, sleep, emotional health, and family life. The plan should be practical for the child's age, culture, daily routine, and access to food and activity.

Food support focuses on regular, balanced meals rather than punishment or extreme restriction. Helpful changes may include choosing water instead of sugary drinks, eating more high-fibre foods, and paying attention to portions. A dietitian experienced in childhood diabetes can help the family make changes without harming growth or creating shame around food.

Physical activity improves how the body responds to insulin. Enjoyable activities are more likely to continue than exercise used as a penalty. Sleep and reduced sedentary time also form part of management.

Many children need medicine from the time of diagnosis. Options may include:

Which medicines are suitable depends on age, symptoms, blood sugar levels, kidney health, local approval, and other factors. Insulin may be needed immediately when blood sugar is very high, ketones are present, or it is not yet clear whether the child has type 1 or type 2 diabetes. Needing insulin is not a sign of failure.

Metabolic or bariatric surgery may be considered for selected adolescents with severe obesity and significant health risks. It requires assessment by an experienced multidisciplinary team and long-term follow-up.

Blood sugar may be checked with finger-prick testing or a continuous glucose monitor. A1C is usually measured regularly. Follow-up also includes growth, blood pressure, cholesterol, kidneys, eyes, nerves, liver health, menstrual health, sleep, and emotional wellbeing.

- Metformin, which improves insulin sensitivity and reduces glucose production by the liver
- Insulin, which replaces or adds to the body's insulin
- GLP-1 medicines, which can lower blood sugar and affect appetite
- SGLT2 medicines, which help the kidneys remove glucose through urine

Complications

High blood sugar can gradually damage small and large blood vessels. Because youth-onset type 2 diabetes can progress quickly, complications may appear during adolescence or early adulthood.

Possible long-term complications include:

Type 2 diabetes is also linked with sleep apnea, PCOS, and emotional concerns such as depression, anxiety, diabetes distress, or disordered eating. Diabetes distress means feeling overwhelmed or worn down by the demands of care.

Treatment can also cause problems. Insulin and some other medicines may cause low blood sugar, known as hypoglycemia. Symptoms can include shakiness, sweating, hunger, irritability, confusion, or weakness. Severe low blood sugar can cause a seizure or loss of consciousness.

Regular screening is routine care, not a sign that damage has already occurred. Finding changes early often creates more options for treatment.

- Kidney damage, which may cause protein to leak into urine
- Diabetic retinopathy, which damages blood vessels in the eye
- Nerve damage, often beginning with numbness, pain, or tingling
- High blood pressure and unhealthy cholesterol levels
- Heart and blood vessel conditions later in life
- Fat buildup and inflammation in the liver

Prevention

Type 2 diabetes cannot always be prevented. Genetic risk, puberty, medical conditions, medicines, and social circumstances are not fully controllable.

For children at increased risk, sustainable family changes may lower risk or delay diabetes. These include regular activity, enough sleep, water instead of sugary drinks, and balanced meals with vegetables, fruit, whole grains, and protein. Changes are usually easier when the whole household takes part and the focus stays on health rather than appearance.

Children should not be placed on restrictive weight-loss diets without appropriate professional support. Screening may be offered to children with risk factors, particularly around puberty. Screening does not prevent diabetes, but it can identify high blood sugar before severe symptoms develop.

Living with it and what to expect

Type 2 diabetes usually needs lifelong monitoring. Blood sugar may improve greatly with treatment, and some children may reach remission. Remission means glucose stays below the diabetes range for a period without glucose-lowering medicine. It is not considered a permanent cure because high blood sugar can return.

Insulin production may decline over time, so a treatment that once worked may stop being enough. Adding or changing medicine is a response to the condition's course, not evidence that the child or family did something wrong.

Daily care may include taking medicine, checking glucose, planning meals, and attending appointments. A written school diabetes plan can explain access to water, toilets, glucose checks, medicine, snacks, and treatment for low blood sugar. Children should be able to join school trips, sports, and other activities with suitable planning.

Mental health is part of diabetes care. Weight stigma, bullying, fear of complications, and the work of daily management can be difficult. Support from family, the diabetes team, school staff, counsellors, or peer groups may help.

Many young people with type 2 diabetes attend school, build relationships, play sports, travel, and work. The amount of daily management can change over time, but regular medical follow-up remains important even when the child feels well.

When to get medical help

Arrange a routine appointment if a child has increased thirst, frequent urination, unexplained tiredness, blurred vision, repeated infections, or unexplained weight loss. These symptoms have many possible causes, but blood sugar testing may be needed.

Contact the diabetes care team promptly if glucose readings remain above the child's agreed range, medicines are repeatedly missed because of side effects or access problems, or low blood sugar keeps happening. Illness, vomiting, reduced drinking, or ketones also require advice based on the child's sick-day plan.

Seek emergency care now if a child has:

These signs may indicate DKA, severe dehydration, or severe hypoglycemia.

- Trouble breathing or deep, rapid breathing
- Repeated vomiting or severe abdominal pain

- Fruity-smelling breath
- Severe dehydration or inability to keep fluids down
- Marked drowsiness, confusion, or difficulty waking
- A seizure or loss of consciousness
- Severe low blood sugar that does not respond to emergency treatment

Common questions

Can type 2 diabetes in a child go away?

Blood sugar can sometimes improve enough to reach remission, especially after effective treatment and major metabolic changes. Remission is not a cure. Glucose can rise again, so ongoing checks are still needed.

Does my child have type 2 diabetes because of their weight?

No single factor causes type 2 diabetes. Body fat can increase insulin resistance, but genes, puberty, family history, sleep, medicines, health conditions, and a child's environment also contribute. Blame does not help treatment.

Will my child need insulin forever?

Not always. Some children need insulin only at diagnosis while blood sugar is very high or while the diabetes type is being confirmed. Others need it longer term because their pancreas cannot make enough insulin. The treatment plan may change over time.

Can a child with type 2 diabetes eat sugar?

Diabetes does not require a completely sugar-free diet. Sugary drinks and foods can raise blood glucose quickly, so portions and frequency matter. A balanced eating plan should still allow flexibility and support normal growth.

Is type 2 diabetes worse in children than in adults?

Youth-onset type 2 diabetes can progress faster than type 2 diabetes that begins later in life. Complications may therefore appear at a younger age. Early treatment and consistent follow-up can reduce risk.

Can my child still play sports?

Usually, yes. Physical activity is encouraged and can improve insulin sensitivity. Children taking insulin or medicines that can cause low blood sugar may need glucose checks, fast-acting carbohydrate, and an activity plan.

Sources

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