HEALTH BASICS

Diabetes in children: preventing low blood sugar

A practical guide to reducing low blood sugar in children using insulin.

WHAT IT IS
Steps that reduce low blood sugar during diabetes care

WHERE IT COMES UP
Insulin use, meals, exercise, illness, sleep, and school

WHY IT MATTERS
Helps protect the brain and keep daily activities safer

WHAT IT IS NOT
Not a disease or diagnosis

WHO TO ASK
Your child's diabetes care team

HOW IT IS CHECKED
Blood glucose meter or continuous glucose monitor

Overview

Low blood sugar, also called hypoglycaemia , can happen when a child with diabetes has more insulin than their body needs at that time. It is most common in children who take insulin, including children with type 1 diabetes and some with type 2 diabetes.

Preventing low blood sugar is part of diabetes care. It is not a separate disease or diagnosis. Prevention means matching insulin with food, activity, illness and changing daily routines. It also means noticing glucose trends early and having a clear plan for treating a low.

A glucose level below 70 mg/dL, or 3.9 mmol/L, is generally considered low. Your child's diabetes team may set specific alert levels or instructions based on their age, treatment and ability to notice or describe a low.

Not every episode can be prevented. Growth, activity, stress, appetite and insulin needs can change quickly in children. The aim is to reduce avoidable lows and make sure adults know how to respond safely.

How it works

Insulin moves glucose from the blood into the body's cells, where it is used for energy. If insulin lowers the blood glucose more than intended, the brain and body may not have enough readily available glucose.

Several factors can shift the balance:

Exercise can lower glucose during activity or several hours later. This delayed effect can contribute to lows overnight. The risk may be greater after long, intense or unfamiliar activity.

Glucose can be checked with a finger-stick blood glucose meter. A continuous glucose monitor , or CGM, measures glucose in the fluid under the skin and shows trends. Some CGMs can alert families when glucose is falling or predicted to become low.

CGM readings can lag behind blood glucose, especially when levels are changing quickly. If a reading does not match how your child feels, follow the device instructions and diabetes plan. This may include confirming the result with a blood glucose meter.

Some insulin pumps can reduce or pause insulin when a sensor predicts a low. These systems can lower risk, but they do not remove it. Sensors, infusion sets and pump settings still need attention.

- Taking too much insulin or taking it earlier than planned
- Eating less carbohydrate than expected
- Delaying or missing a meal after insulin
- Vomiting or being unable to finish food
- Being more active than usual
- Drinking alcohol, which may apply to some teenagers
- Having changing insulin needs during growth, puberty or illness

Why it matters for your health

The brain relies heavily on glucose. A low can affect concentration, mood, coordination and the ability to make decisions. Younger children may not understand or explain what they are feeling.

A child who is awake may seem hungry, shaky, sweaty, pale, irritable or unusually tired. They may have a headache, feel dizzy or struggle to focus. Some children have few warning signs.

Preventing lows can help a child take part more safely in school, sport, sleepovers and other activities. It can also reduce fear around insulin treatment and overnight glucose levels.

Repeated lows may make warning signs harder to notice. This is called impaired awareness of

hypoglycaemia . It should be discussed with the diabetes team because insulin targets, alerts or routines may need review.

Avoiding all lower readings by keeping glucose consistently high is not a safe solution. High glucose has its own health risks. The diabetes team can help set targets that balance these concerns.

What can go wrong

Hypoglycaemia is a glucose level below the recommended range. It usually needs prompt treatment with fast-acting carbohydrate according to the child's personal plan.

Severe hypoglycaemia means the child needs another person's help because they cannot safely treat themselves. They may be confused, have a seizure, lose consciousness or be unable to swallow.

Nocturnal hypoglycaemia occurs during sleep. It may follow evening exercise, an insulin dose that is too high for current needs, reduced food intake or other changes. CGM alerts may help, but alert settings should be practical and individualised.

Impaired awareness of hypoglycaemia means the usual early warning signs are weak or absent. A child may not recognise a low until thinking or coordination is affected.

Some situations can resemble a low even when glucose is not low. Anxiety, dehydration, heat and a rapid fall from a high glucose level can cause similar feelings. Check glucose when possible rather than guessing.

A child who is unconscious, having a seizure or unable to swallow needs emergency care. Do not give food or drink by mouth. Give glucagon if it is available and you have been shown how to use it, place the child on their side, and call emergency services. Follow the child's emergency plan.

Recurring lows without emergency symptoms need routine but timely follow-up. Contact the diabetes team if lows are frequent, occur overnight, happen without warning or repeatedly follow the same activity or insulin dose. Do not make major insulin changes without the plan or support needed to do so safely.

What you can do

Keep a written low-glucose plan that covers early treatment, glucose rechecking and when to use glucagon. Make sure it follows your child's current diabetes instructions. Many plans

advise rechecking about 15 minutes after fast-acting carbohydrate, but the amount and next steps may be different for a young child.

Keep measured sources of fast-acting carbohydrate where they are likely to be needed. Examples include glucose tablets, glucose gel or a suitable sugary drink. Foods containing substantial fat, such as chocolate, usually act more slowly.

Ask the diabetes team:

Review patterns rather than treating each low as an isolated event. Record the time, glucose result, insulin, recent food, activity and treatment. CGM and pump reports may also reveal repeated drops after certain meals, sports or overnight.

Make sure school, childcare and activity staff have the supplies, written instructions and training required for your child. Plans should explain glucose checks, low treatment, glucagon use and when to contact you or emergency services.

Check that glucagon is accessible and not expired. Adults who spend time with your child should know where it is and how the specific product works. Medical identification can also tell others that your child has diabetes.

Routine follow-up is the right time to review glucose targets, CGM alerts, insulin-to-carbohydrate settings and activity plans. Ask for an earlier review if your child's appetite, activity, growth or daily schedule has changed.

- What glucose level should trigger treatment?
- How much fast-acting carbohydrate should your child receive?
- When should glucose be checked again?
- How should insulin or food change around exercise?
- What should happen if your child vomits after insulin?
- When should a meter confirm a CGM reading?
- Which glucagon product is appropriate, and how is it used?

Common questions

Should a child eat a bedtime snack every night?

Not necessarily. The answer is based on insulin treatment, evening activity, glucose trends and the child's plan. A routine snack that is not needed may lead to high glucose. Ask what bedtime readings or situations call for food.

Can exercise cause a low much later?

Yes. Activity can increase insulin sensitivity for several hours. Glucose may fall during exercise, afterwards or overnight. Tracking the type and timing of activity can help the diabetes team adjust the plan.

Can a child sleep through a low?

Yes. Warning signs may not wake a child or caregiver. CGM alerts can help, but they are not perfect. Repeated overnight lows need review rather than repeated treatment alone.

Should insulin be skipped if glucose is low?

Do not use a general rule. Insulin decisions depend on the insulin type, meal, glucose trend and whether the child uses injections or a pump. Follow the child's written plan or contact the diabetes service for specific advice.

What if the child refuses food after receiving insulin?

Use the instructions in the child's plan and monitor glucose closely. If vomiting, inability to eat or repeated lows make the plan difficult to follow, contact the diabetes team promptly. Emergency help is needed if the child cannot swallow, has a seizure or becomes unconscious.

Sources

- American Diabetes Association Professional Practice Committee. 6. Glycemic Goals and Hypoglycemia: Standards of Care in Diabetes-2024 . Diabetes Care . 2024;47(Supplement 1):S111-S125.
- American Diabetes Association Professional Practice Committee. 14. Children and Adolescents: Standards of Care in Diabetes-2024 . Diabetes Care . 2024;47(Supplement 1):S258-S281.
- Abraham MB, Karges B, Dovc K, and colleagues. ISPAD Clinical Practice Consensus Guidelines 2022: Assessment and management of hypoglycemia in children and adolescents with diabetes . Pediatric Diabetes . 2022;23(8):1322-1340.
- National Institute of Diabetes and Digestive and Kidney Diseases. Low Blood Glucose (Hypoglycemia) . U.S. National Institutes of Health.
- Centers for Disease Control and Prevention. Treatment of Low Blood Sugar (Hypoglycemia) . U.S. Department of Health and Human Services.