

What is ketotic hypoglycemia?

Hypoglycemia is a condition where your blood sugar is under normal ranges. While this is a common problem in patients with diabetes, it can happen in people without diabetes. People with low blood sugars can have symptoms such as sluggishness, tiredness, irritability, shakiness, unconsciousness, or seizures. While some children may start having some of these symptoms with blood sugar levels under 70 mg/dl, some children may not have any symptoms until they have even lower blood sugars. Once blood sugar is under 50 mg/dl, most children develop some symptoms. While older kids may say they do not feel right, toddlers and infants cannot tell you about their symptoms yet and need closer observation.

What happens to your body when your sugar is low?

When a child's body does not have enough sugar for energy, the body initially breaks down fat and then protein to use for energy. When fat is used for energy, then you develop ketones which are a type of acid. While small amounts of ketones are fine, high levels could be dangerous. The ketone level can be measured in blood and urine. When a child has a low blood sugar along with high ketones, this is called ketotic hypoglycemia (KH).

Children with KH develop both low blood sugar and high levels of ketones after fasting 6–12 hours. Children with elevated ketones can sometimes be less hungry and may start vomiting as a result of the ketones. Fruity or acetone smelling breath can be present when ketones are high. KH may be seen as early as infancy, and most children outgrow this condition by 5–6 years of age. Children who still have hypoglycemia after this age are more likely to have a more serious medical problem.

How is ketotic hypoglycemia diagnosed?

If a young child has documented hypoglycemia and elevated ketones, KH is confirmed. In most cases this is a benign condition which improves over time with age. Rarely KH can be due to more serious conditions such as a genetic disease or other hormone issues which require more immediate

treatment. In these conditions, ketones can be detected in a child's blood rapidly within 2–3 hours of not eating. Also, patients with this rare type of KH usually have other concerns such as developmental delays, enlarged liver, or growth issues.

KH is usually associated with prolonged fasting or a recent illness along with vomiting, diarrhea and poor eating. Sometimes a child may need to be admitted to the hospital for hydration and blood sugar monitoring. Ketones and hypoglycemia resolve once the child starts eating and drinking and the underlying illness improves.

Repeated episodes of KH are suggestive of a concerning underlying process. In some cases, doctors may not know exactly what is causing KH, but the severity of symptoms still requires treatment and close follow up.

How is ketotic hypoglycemia treated?

If you suspect your child may be having an episode of hypoglycemia, check your child's blood sugar. If blood sugar is lower than recommended by your doctor, your child should be given a simple sugar such as juice, milk, candy or other sugar-containing food or drink to raise the blood glucose rapidly. The child's blood sugar should increase within 15–20 minutes after eating or drinking something containing sugar. If your child's blood sugar does not improve or your child cannot eat or drink because of vomiting, tiredness, or seizures, then your child should be brought to the closest emergency room for evaluation and treatment. It is important to have a plan in place to allow for faster treatment.

How is ketotic hypoglycemia prevented?

A child who has had one spell of ketotic hypoglycemia may have another one. You can do several things, as suggested by your pediatric endocrinologist, to reduce the risk of another spell:

1. Limit how long your child is allowed to fast. For example, sleeping in on weekends without eating breakfast may need to be limited. Some children may need a bedtime snack with carbs combined with

protein or healthy fat, such as peanut butter crackers, or cornstarch to keep blood sugar steady overnight.

2. If your child is ill, it is important to offer sips of sugar-containing beverages to avoid long periods of time without sugar. If your child is active, this may also trigger hypoglycemia. It is important to keep hydrated when active. Snacks before, during, and after activity can also prevent hypoglycemia.
3. Check blood sugar levels during illnesses to be sure it is staying above the level recommended by your doctor. Cake icing, regular soda, juice, and popsicles are examples of sugars that can help maintain blood glucose levels and decrease the risk for developing high ketones.