

# Ketone testing for children with diabetes

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## What are ketones?

Ketones are the chemicals (or acids) that form when body fat is used as a fuel source instead of glucose (or sugar). As fats break down, ketones appear in the blood and urine. When ketone levels become high, it can lead to a serious condition called diabetic ketoacidosis, or DKA.

Body fat is used for energy when someone with diabetes:

- Does not get enough insulin to move glucose into the cells.
- Has an illness like a fever, stomach virus or the flu.
- Does not eat enough carbohydrates (carbs) to provide needed energy.

## What is DKA?

Diabetic ketoacidosis (DKA) means there is too much acid in the body caused by a high level of ketones.

- If not treated, this can cause trouble breathing, confusion, coma and death.
- Finding ketones in the blood or urine **early** is important.

## What are the warning signs of DKA?

Warning signs can include any of these:

- Dry mouth and skin
- Increased thirst and urination
- Nausea and vomiting (throwing up)
- Stomach cramps or pain
- Sweet, fruity smell on the breath
- Extreme weakness and tiredness
- Deep, heavy breathing
- Pain in the back or side

## What are the main causes of DKA?

The 2 main causes of DKA are:

- **Illness**
  - The stress of illness causes the body to make stress hormones. These hormones can raise blood glucose and blood ketone levels.
  - DKA happens more quickly if your child also has vomiting or diarrhea (loose stools). This can lead to dehydration, which can cause ketones levels to rise.
  - It is important to have insulin during times of illness. Your child's insulin may need to be adjusted if they cannot eat. Call your child's diabetes doctor for direction.
- **Forgetting to take insulin or not getting enough insulin**
  - Missing insulin shots is one of the main reasons people have DKA.
  - If you have an insulin pump and the tubing gets kinked or the pump stops working, you will not get enough insulin. When this happens, you will quickly start making ketones.

**In case of an urgent concern or emergency, call 911 or go to the nearest emergency department right away.**

# Ketone testing for children with diabetes, continued

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## When should I test my child for ketones?

Test your child for ketones:

- Any time your child's blood glucose level is 300 mg/dl or higher.
- If your child wears an insulin pump, anytime their blood glucose level is more than 250 mg/dL.
- If your child has nausea or vomiting.
- If your child is sick in any way – even if their blood sugar is normal or low.

## When my child has symptoms, how do I test for ketones?

There are 2 ways to check for ketones – a urine test and a blood test.

- A ketone urine test is easy to do and does not cost much. It uses a “dip-and-read” urine test strip. Your nurse or diabetes educator will show you how to use it. Basic guidelines include:
  - Dip the test strip into a sample of fresh urine. (Have your child go to the bathroom every 2 hours or more often if needed.)
  - Begin timing, and wait the required number of seconds instructed on the container.
  - Compare the color of the strip to the chart on the container.
  - If the color changes, there are ketones in the urine.
- Home blood glucose monitors also test for ketones. If you would like to learn more about this method, talk with your child's diabetes educator or doctor.

## What should I do if my child has ketones in their urine or blood test?

- If you find **trace or small ketones**, have your child drink water or other calorie-free fluids. Check for ketones again in 2 to 4 hours to make sure they are decreasing.
- If you find **moderate or large ketones**, call your child's doctor **right away**. Follow your doctor's advice about what to do **for moderate or large ketones**.

## When should I call the doctor?

Call your child's doctor **right away** at 404-785-KIDS (5437) if:

- The urine ketone test results show a moderate or large amount of ketones.
- Your child vomits more than 1 time.
- Your child has signs of DKA.

**This teaching sheet contains general information only. Talk with your child's doctor or a member of your child's healthcare team about specific care of your child.**

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