



about ketones

A Quick Guide to Ketones

What are ketones?

Ketones are substances that are formed when your body burns fat for fuel. This can occur when your body doesn't have enough insulin to help you use glucose to produce energy, as in type 1 diabetes. When the glucose can't get into the cells to produce energy because there is not enough insulin to transport it, the glucose builds up in your blood. Your body then starts to burn fat to get the energy it needs. As the ketones build up in your blood stream, they begin to spill into the urine.

How will I know if I have ketones in my urine?

You can test your urine to see if your body is making ketones. A simple test using a ketone test strip that you dip into a urine sample will let you know if you are "spilling ketones" in your urine. The test will let you know if your urine is negative for ketones or if there is a small, moderate or large amount. You can purchase the urine and blood ketone testing strips at your local pharmacy without a prescription. Check with your insurance carrier to see if they will cover any of the cost. Ask a member of your diabetes team to teach you how to test your urine for ketones. There is a blood glucose meter that can also test your blood for ketones. Talk to your health care provider or diabetes educator to see if this method is right for you.

When do I need to test for ketones?

You should test your urine for ketones:

- When you are sick or have an infection or injury, are nauseated, vomiting or have abdominal pain or are under stress.
- If you have type 1 diabetes and your blood glucose is high, usually greater than 240 mg/dL or at a level determined by your health care provider. If you have type 2

diabetes, ask your health care team if and when you need to check ketones. All people with diabetes should follow their health care provider's recommendations for ketone testing.

- If you are pregnant and have type 1, type 2 or gestational diabetes you should check your urine for ketones as directed by your physician or health care provider.

What does it mean if I have ketones in my urine?

With diabetes, the production of ketones means your diabetes is out of control or you are getting sick. Small to trace amounts of ketones in your urine means that you are starting to build up ketone bodies in your blood and you should continue to check every few hours. Moderate to large amounts of ketones in your urine are a dangerous sign and should be taken very seriously. It is also important to know if your blood glucose is running high. If your blood glucose is high and you have moderate to large amounts of ketones in your urine, you may be developing a serious and potentially life-threatening condition called *ketoacidosis* and you need to call your health care provider immediately.

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What should I do if there are ketones in my urine?

It is best to have a plan in place so that you know when your health care provider wants to be notified.

Always notify your health care provider if:

- Your urine shows moderate ketones and you're not sure when your health care provider wants to be notified.
- Your urine shows a large amount of ketones and your blood glucose is high
- You have vomited more than twice in four hours and your urine tests show large ketones

Drinking water or sugar free fluids can help to flush out the ketones but you still need to contact your health care provider. Continue to take your insulin and test your blood glucose and urine ketones as directed. Remember, even after your blood glucose comes down, you can continue to spill ketones in your urine.

Important Note:

Do not exercise if your blood glucose is high and you are showing ketones in your urine. This is an indication that your blood glucose is out of control and you may need additional treatment.

How will I know if I have ketoacidosis?

Diabetic ketoacidosis (DKA) is **serious** and needs **immediate attention**.

Some of the first symptoms that may occur are:

- High blood glucose and high levels of ketones in your urine
- Excessive thirst or urination

Followed by:

- Fatigue or weakness
- Dry, flushed skin
- Nausea, vomiting and stomach pain or flu-like symptoms
- Deep slow breathing or difficulty breathing
- Confusion
- Fruity odor to your breath

If you have any of the above symptoms, call your health care provider *immediately* or go to the nearest hospital emergency room.

Don't delay treatment; this is a very serious condition that can lead to coma and death.



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