

# DIABETES AND KETONE TESTING

The body typically uses glucose (blood sugar) for energy. Insulin is required to allow glucose to enter cells, otherwise the body alternatively begins to burn stored fat. That process leads to the production of acid in the blood called ketones. With diabetes, ketones can lead to a condition called Diabetic Ketoacidosis (DKA).

## What is Diabetic Ketoacidosis?

DKA is a life-threatening problem that occurs when the body breaks down fat at a rate that's much too fast. When ketones are in your blood for a while, acid levels build up and can make you very sick.

Symptoms of DKA include:

severe abdominal pain      nausea/vomiting      fruity-smelling breath      flushed skin  
increased thirst      confusion      difficulty breathing      fatigue/sleepiness

Contact your diabetes care team if you develop ketones and any of the above symptoms because you may require IV fluids and additional insulin.

## What causes ketones?

For people living with diabetes, the most common causes of ketones include illness or lack of insulin (missed insulin injections, using spoiled insulin, or pump problems such as a kinked or clogged infusion set, etc.).

## When and how to check for ketones?

Anyone with type 1 diabetes should test for ketones during any illness, when glucose is above 240 several times in a row, or if an insulin dose was missed. Check for ketones using either urine ketone strips or a blood ketone meter. When checking urine, follow the instructions on the bottle of urine ketone strips and compare the strip to the color scale on the bottle. If using a blood ketone meter, follow the instructions included with the meter.

## What do the test results mean?

Urine Ketones	Blood Ketones (mmol/L)
Negative/Trace to Normal	Less than 0.6 to Normal
Small to Moderate	0.6 to 1.5
Large	1.6 to 3

Above normal ketone levels indicate your body has been burning fat for energy and you're at risk for developing DKA. If you should develop above normal ketones, immediately call your diabetes care team to receive further instructions.

### UMASS MEMORIAL DIABETES CENTER OF EXCELLENCE

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## Diabetes

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