MICHIGAN MEDICINE
UNIVERSITY OF MICHIGAN

Special Considerations for Sick Days with Type 1 Diabetes: Diabetic Ketoacidosis (DKA)

- DKA occurs when there is not enough insulin available to meet the body's needs.
- When the body does not have enough insulin, sugar cannot be used for energy. The body uses fat instead, producing dangerous levels of ketones.
- Ketones are an acid made when the body is breaking down fat. Small amounts of ketones may be normal if someone is fasting for many hours. However, if a person's body is breaking down lots of fat because they don't have enough insulin, ketones start to rise in the blood and then spill over into the urine. You can measure these "urine ketones". If urine ketones are "large" that suggests very high levels of ketones in the blood. These high levels of ketones can cause the blood to become acidic - "Diabetic Ketoacidosis".
- DKA is the cause of 85% of admissions to the hospital for someone with known diabetes. It is a very dangerous complication of Type 1 diabetes and can lead to coma or even death. The good news is that DKA is 98% preventable!

How DKA Develops:

Lack of insulin → Higher blood sugars → Dehydration develops → Fat broken down for energy → Ketones in blood → Ketones in urine → Diabetic Ketoacidosis

Prevention/Treatment:

- Check ketones if you are sick or your blood sugar is over 300mg/dL
- Increase fluid intake if you are sick or your blood sugar is over 300m/gL
- Take your insulin - extra insulin (along with about 10-15g of carbs) is needed with ketones; call for help.

Possible Causes:	Symptoms:
• Stress • Illness • Lack of insulin • Dehydration • Insulin pump problems • Chronic high blood sugars	• Upset stomach or pain • Vomiting • Fatigue/drowsiness • Sweet/fruity breath • Shortness of Breath or Deep Breathing: **Go to ER!**

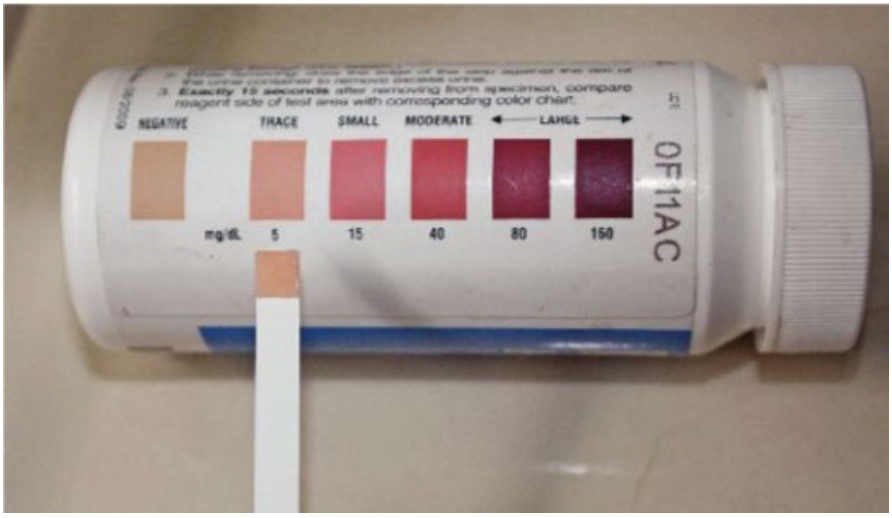
When should I test my urine for ketones?

- Your fasting blood sugar is over 300
- You have 2 consecutive blood sugars over 300
- You are sick and have a blood sugar over 250

How to test urine for ketones:

When you are ready to test, follow these steps:

1. You can either pass the test end of the strip through your urine as you urinate (be sure to wet it entirely), or collect urine in a clean, dry container and dip the test strip in.
2. Shake off excess drops of urine.
3. Wait 15 seconds or whatever time is stated on the brand of test strips you are using.
4. Compare the color on your strip to the color array on the side of the bottle.



Any color other than the original beige means there are some ketones in your urine. The closer the color is to deep purple, the more ketones there are in your body.