Ketones

What are Ketones?

Ketones and ketoacids are alternative fuels for the body that are made when glucose is in short supply. They are made in the liver from the breakdown of fats.

Ketones are formed when there is not enough sugar or glucose to supply the body's fuel needs. A combination of low insulin, and relatively normal glucagon and epinephrine levels causes fat to be released from the fat cells. The fats travel through the blood circulation to reach the liver where they are processed into ketone units. The ketone units then circulate back into the blood stream and are picked up by the muscle and other tissues to fuel your body's metabolism. In a person without diabetes, ketone production is the body's normal adaptation to starvation. Blood sugar levels never get too high, because the production is regulated by just the right balance of insulin, glucagon and other hormones.

However, in an individual with diabetes, dangerous and life-threatening levels of ketones can develop. When there is not enough insulin, the fat cells keep releasing fat into the circulation, and the liver keeps making more and more ketones and ketoacids. The rising ketoacid levels make the blood pH too low (Diabetic Keto-Acidosis), which is an emergency medical situation and may require medical attention.

When to test for Ketones?

As a general rule, test for ketone whenever sick or when blood sugars are above a 14.

How to test for Ketones?

There are two ways to test for ketones, blood and urine.

To test using blood, follow these steps:

1. Locate the freestyle ketone reader in the diabetes case.
2. Along with the reader there will be a strip of test strips individually wrapped in foil.
3. Unwrap one and insert it into the reader. Wait until a blood drop appears.
4. Use the lancet to poke finger. You will need to press out a lot of blood for this test.
5. Touch the blood to the end of the test strip until you hear a beep. A count down from 10 will now appear on the screen.
6. **A reading will appear between 0.0 and greater than 1.5.**
    a. 0.0 – 0.6 = Normal – Don't need to do anything
    b. 0.6 – 1.5 = Small – Treat with normal high insulin dosage
    c. 1.5 – 3.0 = Moderate – Treat with 50% more insulin (ie. If a regular correction calls for 1.4 units, give 1.4 units x 1.5 = 2.1 units)
    d. Greater than 3.0 – High – Treat with 50% more insulin (ie. If a regular correction calls for 1.4 units, give 1.4 units x 1.5 = 2.1 units). CALL or GO TO LOCAL HOSPITAL your child may be in DKA