



## Feeling crook?

A common cold or more serious bug can also play havoc with blood sugar levels. **Hangovers** and anything unusual which has you on the couch not wanting to eat and significantly changing your daily activities can all lead to your diabetes needing some special attention.

Senior Pharmacist at The Alfred Hospital, Melbourne and Reality Checker Karen Hirth, provides the following advice for dealing with colds and 'flu.

- **Give in.** If you need extra insulin for the term of your bug invasion it's not the end of the world, despite the fact you may be eating very little. Do lots of blood tests. And work with your diabetes team to increase insulin doses to keep your blood sugars under control.
- **Drink Up!** Keep your body hydrated by drinking lots of water.
- **Eat.** I don't mean to sound like your mother but if you want to get better faster, eat soups with lots of vegies, fruits and custards and throw in some protein too.
- **Try to avoid:** bombarding the body with massive doses of vitamin C. If your body is not used to it, massive doses can cause really bad diarrhoea. Lovely!

- **Pills and potions.** If it makes you feel better go for it, but remember almost all currently available agents treat the symptoms not the cause, ie: you will not get better faster. Some medicines can add to high blood glucose levels. Ask the pharmacist to recommend a suitable cold and 'flu medication.
- **Check Ketones.** Ketones are chemicals in the blood produced when an alternative source of energy to glucose is required and fat is broken down. Combined with high blood glucose levels, this can be dangerous and lead to Ketoacidosis.

## KETONES & AVOIDING A HOSPITAL VISIT

When you are ill, have an infection or your sugars have been high for any reason for a long period, you need to look out for a very dangerous condition: Ketoacidosis. But what is it?

Let's go back a step. Some things called **Ketones** are produced when the body is burning fat to get energy. This happens naturally, of course, if we are exercising to lose weight. However, if it happens too much too fast, it is not natural. Moderate or large amounts of ketones in your body are very dangerous. They upset the chemical balance of the blood.

### **Ketones in the blood can lead to a condition called Ketoacidosis,**

also known as DKA, which just stands for diabetic ketoacidosis. DKA involves having to go to hospital to be rehydrated and monitored while the ketones in your body reduce to a safe level. Many people with Type 1 diabetes have never in 20 or more years had an episode of ketoacidosis. But you may already know what it is, as it can happen when people's Type 1 diabetes is undiagnosed and you might have been unlucky enough to have had it already.

Unfortunately, DKA is life threatening, so you need to understand what it is and what to look out for.

### **What causes ketones and DKA? What should I look out for?**

#### **1. Not getting enough insulin.**

Maybe you forgot or made a mistake with your insulin doses. Or your body is fighting an infection, a flu or another illness, so needs more insulin than usual. If there is not enough insulin available, your body cannot access sugars in your blood for energy, so your body begins to break down body fat for the energy it needs to function.

**2. Not enough food.** When people are sick, they often do not feel like eating. Again your body needs energy and because there is no other food for it to break down, it starts breaking down body fat. Ketones are produced from this process. The same may happen if a person who is not ill simply does not eat, for example, they simply skip a meal, or if they have an eating disorder.

**3. Hypoglycaemia (low blood glucose).** When blood glucose levels fall too low, the body must use fat to get energy. If testing shows high ketones in the morning, you may have had a hypo while asleep.

#### **4. Changes during pregnancy.**

Women with Type 1 diabetes who are pregnant are at high risk of producing ketones. The rapid changes in your body during pregnancy and changing insulin needs can mean that your body is not getting enough insulin or food. As explained in Points 1 and 2, both of these scenarios can lead to ketones.

**Ketones are NOT an infection.** An infection can give you ketones, as explained at point 1 above, but ketones are not a type of infection. Antibiotics will not fix ketones.

#### **Ketones and DKA are NOT related to kidney function.**

The small particles that blood tests look for when someone's kidneys aren't filtering properly are called microalbuminuria. The presence or absence of ketones in your urine does not indicate anything about your kidney function. The two things are entirely different.

#### **Do I have ketoacidosis/DKA?**

When ketones are moderate or high and the chemical balance of your blood is upset, you will know about it! The symptoms of ketoacidosis include nausea, vomiting and abdominal pain. Some people also experience fast and heavy beating of their heart. It is scary. You are clearly unwell. And you should speak to your doctor or go to hospital immediately.

## Catch it early. Stay out of hospital.

Ketones can be tested at home with a simple blood or urine test.

Urine tests are done with testing strips available from your chemist or your NDSS outlet, the same way you buy blood testing strips. You pee on the strip, wait as indicated, and check the colour against a chart on the container. This is cheap and easy, but is not very accurate and only shows the ketones that were in your body 2-4 hours earlier.

Blood testing of ketones has recently become available. The Optium and Optium Xceed blood glucose monitors are the only meters which allows this function (as well as doing regular blood glucose testing). You will need different testing strips to your normal ones for blood tests, but otherwise, it is quite simple to use the Optium monitors.

You should test for ketones when:

- You are ill
- You are under stress
- Your blood glucose levels are consistently high eg. above 16.7 mmol/L.

## I have ketones. What do I do now?

<b>Ketone test result</b>	<b>Action required</b>
<i>Blood test:</i> Less than 0.6 mmol/l	<ul style="list-style-type: none"><li>• This is the normal, low level.</li><li>• No action is required.</li></ul>
<i>Urine test:</i> Low / Trace	
<i>Blood test:</i> 0.6 - 1.5 mmol/l	<ul style="list-style-type: none"><li>• This indicates the beginning of a problem.</li><li>• Your endocrinologist or diabetes educator will have provided you with instructions to follow if you are showing ketones - do this now.</li><li>• Their instructions may have included regular (half-hourly) monitoring of blood glucose, increasing or adding insulin doses carefully until your blood sugar levels drop. Also drink plenty of water to stay hydrated.</li></ul>
<i>Urine test:</i> Moderate	
<i>Blood test:</i> More than 1.5 mmol/l	<ul style="list-style-type: none"><li>• You may be at risk of DKA.</li><li>• Call diabetes team immediately for advice.</li></ul>
<i>Urine test:</i> High	<ul style="list-style-type: none"><li>• If you cannot contact your diabetes team, call your nearest big public hospital and ask to speak to the endocrinologist, diabetes nurse or registrar on call.</li><li>• If this still fails, you need to go to the emergency unit of your nearest hospital.</li></ul>

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