

# Diabetic Ketoacidosis (DKA)

## Information for patients and families

### What is DKA?

When you have type 1 diabetes, and do not have enough insulin in your body, you are at risk of getting diabetic ketoacidosis (DKA):

- When there is not enough insulin, your body has to burn fat for energy. This creates ketones, which can make your blood acidic.
- DKA happens when the acid levels in your blood get too high.

If not treated, DKA can be very dangerous. It can lead to a loss of consciousness, coma and even death.

**Sometimes it is hard to tell the difference between being sick and being in DKA because the symptoms are very similar.** This is why it is important to know the warning signs and take action if needed.

### What are the symptoms of DKA?

- Frequent urination (peeing often)
- Dry mouth
- Dehydration
- Thirst
- Nausea
- Vomiting
- Pain in belly
- Fast breathing (with fruity smelling breath)
- Confusion
- Feeling tired

## What can cause DKA?

### 1. Illness or traumatic stress

- The hormones released during illness or stress can cause blood sugars to rise
- When people feel sick, they often eat less and take less insulin. But when you are sick you need more insulin, even when eating less

### 2. Missed insulin doses

### 3. Insulin pump failure

- If you are on an insulin pump, you are at greater risk of DKA
- If you stop getting insulin, DKA can happen in as little as 4 hours

### 4. Damaged insulin

- Insulin that has been out of the fridge too long, frozen, or exposed to hot temperatures may not work

## How do I prevent DKA?

### 1. Do not miss insulin doses

### 2. Take action if your insulin pump stops working

- Give insulin injections with an insulin pen or syringe
- Use your pump failure plan (see handout)

### 3. Do not exercise when your blood sugar is over 16 mmol/L

- Exercising when there is not enough insulin in your body can cause blood sugars to go even higher

#### 4. **Have a sick day plan**

- You may need more insulin to bring down blood sugars when you are sick
- When you are sick, continue checking blood sugar and ketones every 4 hours, even at night
- Use rapid insulin to correct high blood sugars, then:
  - Re-check your blood sugar in 2 hours to make sure it is coming down
  - If your blood sugar is not coming down, correct again with more rapid insulin
  - If after another 2 hours, your blood sugar has still not come down, consider going to the Emergency Department
- Stay hydrated (drink 250 millilitres / 1 cup) of **sugar free** fluids every hour

#### **When should I test for ketones?**

- If your blood sugar is above 16 mmol/L on two tests in a row, check your blood or urine for ketones
- If blood ketones are ever **higher than 3 mmol/L, go to the Emergency Department** right away
- For instructions on how to adjust insulin when you have ketones, please see one of the following handouts from the St. Michael's Diabetes Clinic:
  - Sick Day Management for people with Type 1 Diabetes
  - Sick Day Management for people with Type 1 Diabetes on a pump

## When should I go the Emergency Department?

- If blood ketones are higher than 3mmol/L at any time
- If you are not able to keep your blood sugars above 4 mmol/L
- If you take extra insulin, but your blood sugars do not go down
- If you vomit 2 or more times in 12 hours
- If you are vomiting or have diarrhea and cannot eat or drink anything for 4 hours
- If you are sick for more than 24 hours or you start to feel worse
- If you get symptoms of diabetic ketoacidosis: abdominal pain, nausea, vomiting or difficulty breathing

St. Michael's cares about your health. For reliable health information, visit our Patient and Family Learning Centre, Room 6-004, 6th floor Cardinal Carter Wing, or find us online at [www.stmichaelshospital.com/learn](http://www.stmichaelshospital.com/learn)

This information is not intended as a substitute for professional medical care. Ask your healthcare provider about this information if you have questions.

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