



NHS Tayside Diabetes Managed Clinical Network Patient Information Leaflet

What is Diabetic Ketoacidosis (DKA)?

DKA is a medical emergency and requires immediate treatment in hospital. It is a serious complication of diabetes caused by a shortage of insulin and a build up of ketones. In some cases it can be fatal.

What is insulin?

Insulin is a hormone produced in the body by cells in the pancreas. Insulin regulates the use and storage of sugar, fats and protein in the body.

In Type 1 diabetes the body does not produce insulin so it is vital to have lifelong treatment with insulin. When the body does not have insulin, the blood sugar level rises, but this sugar cannot be transported into the body cells to provide energy. The body then thinks and acts as if it is starving and breaks down muscle and fat to try to produce energy.

What are ketones?

Ketones are made in the liver from the breakdown of fats. This is part of the body's normal reaction to starvation.

Why does ketoacidosis develop?

In Type 1 diabetes, when there is not enough insulin in the body the liver continues to make more and more ketones. The rising ketone level makes the blood acidic. Lack of insulin also causes a high blood sugar level. If untreated, this situation can lead to the development of **Diabetic Ketoacidosis** which can be life threatening. This situation can happen very quickly if there is another illness present, for example, an infection or heart attack.

What are the signs and symptoms of DKA?

- High blood sugar levels. Sugar stays in the blood as it can't move into the body cells without adequate insulin. Sometimes during illness blood sugar

levels may not be high, for example in severe vomiting, but ketones may be present.

- Positive blood or urine ketones are the most important sign that tells you the body is short of insulin. Optium meters are used to test the blood for ketones. Ketostix are used to test the urine for ketones.
- Passing urine frequently. The body tries hard to get rid of excess sugar and ketones in the urine. This increases the risk of becoming dehydrated.
- Nausea (feeling sick) and/or vomiting. This increases the risk of becoming dehydrated.
- Breathlessness. The body tries to get rid of excess ketones in the breath by over breathing. Ketones cause the breath to smell 'fruity' like nail polish remover.
- Abdominal pain.
- Severe dehydration.
- Drowsiness or deterioration in consciousness.

What causes DKA?

- New onset of Type 1 diabetes.
- When doses of insulin are missed.
- When doses of insulin are not sufficient.
- When the body suddenly needs more insulin than usual, for example during other illness or infection.

How to reduce the risk of DKA and manage your diabetes during illness

- Always keep a copy of sick day rules for reference for when you are unwell.
- Ensure you have a reliable blood glucose meter and 'in date' test strips.
- Keep supplies of new (unopened) ketone urine testing strips for use during illness.
- Optium meters are available to test blood ketones .
- Keep contact details of Diabetes Specialist Nurses, GP, Out of Hours Services e.g. NHS 24 (Tel: 08454 24 24 24)

Diabetes Specialist Nurses (Monday – Friday 9am – 5pm)

Dundee Team Tel: 01382 632293

Perth & Kinross Team Tel: 01738 473476

Angus Team Tel: 01241 447811

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