

Diabetic Ketoacidosis (DKA)

Insulin is a hormone that is vital in regulating a number of body chemical processes. Its main job is as a 'key' to allow glucose out of the blood stream and into the body cells where it is used for energy. Insulin is usually produced by the pancreas, but people with type 1 diabetes do not have the ability to make insulin and must instead inject insulin using a pen device or an insulin pump.

Sometimes people with type 1 diabetes do not have enough insulin in their bodies. Reasons for the lack of insulin could include:

- Insulin doses being missed
- Insulin delivery being somehow impaired (e.g. a broken insulin pen or an insulin pump failure)
- Having a much higher insulin need than usual such as when they are ill and including when people are not eating or drinking much. Even on their usual doses of insulin, it may not be enough in this circumstance to control body chemistry.



When the insulin levels in the body are very low, the glucose remains trapped in the bloodstream and the cells then do not get the energy they need. The body detects the lack of energy in the cells and tries to fix things by breaking down fat instead. In doing this it produces chemicals called **ketones** which are acidic (hence the name 'diabetic ketoacidosis') and they are poisonous.

Ketone levels can be measured on many blood glucose machines including the scanner, which comes as part of the Freestyle Libre device. People simply use an alternative testing strip, which should be on their prescription so they always have some to hand.

Overview:

This leaflet is for relatives, partners and friends of people who have been diagnosed with type 1 diabetes to help understand what to do in a diabetes related emergency.

The majority of people with type 1 diabetes will be able to manage and care for their diabetes without ever experiencing a diabetes related medical emergency. However, it is important to know what to do in the unlikely event that one of these emergencies happen as this could save a life.

Diabetes related emergencies could happen when the blood Glucose levels are too high or too low.

Blood ketone levels

Ketone level	What does it mean?
Under 0.6	Ketone levels are normal
0.6-1.5	Ketones are present, but low
Over 1.5	High ketone levels

DKA is a true emergency and always needs to be addressed quickly when it occurs.

So, let's explore what happens when DKA develops. Please note that not every patient will experience all the symptoms so the overall picture should be looked at alongside the ketone levels.

Please let us know if you have any comments about this leaflet by contacting

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GIG
CYMRU
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University Health Board

When someone you love has
type 1 diabetes:
Knowing what to do in an
emergency



In Memory of Alastair (Ali) Thomas 1983-2018,

A professional singer who loved life and his two young children.

He died from DKA.

This page is designed to be torn off and placed somewhere prominent as a reminder about DKA eg on the fridge door.

DKA IS DANGEROUS AND MUST NEVER BE IGNORED. IT CAN KILL WITHIN HOURS.

IF PEOPLE ARE NOT CLEARLY MANAGING IT SUCCESSFULLY OR YOU HAVE ANY DOUBTS HELP THEM OR GET THEM HELP.

YOU CAN GET HELP FROM YOUR LOCAL DIABETES CENTRE (IN HOURS) OR THE LOCAL HOSPITAL EMERGENCY DEPARTMENT (ED) 24/7

VOMITING WITH OR WITHOUT DROWSINESS/CONFUSION ARE BAD SIGNS. IF THEY OCCUR TAKE THEM DIRECTLY TO ED OR CALL 999 WITHOUT DELAY.

LOCAL DIABETES CENTRE TELEPHONE NO.

The early symptoms of DKA usually include...

The three Ts

Toilet



Passing lots of urine (due to the high blood glucose)

Thirsty



Feeling very thirsty and drinking lots (due to dehydration from passing so much urine)

Tired



Tiredness (due to dehydration and the body not being able to move the glucose from the blood into the cells for energy)

In this stage the blood glucose is usually more than 14 and the ketones between 0.6 and 1.5

In the early stages DKA can often be managed at home, usually with extra short acting insulin taken every couple of hours. However, the person living with diabetes will be feeling unwell and may require help to do this. They may also require help in *recognising* when they aren't coping and need professional advice.

If you are in any doubt, get professional help via:

Calling the local diabetes centre (if the patient is known there and it is within normal working hours).



Taking the patient to the local emergency department (Casualty)



Calling 999 if you or they are unable to travel safely



As DKA progresses the symptoms do too and usually include...



Nausea and Vomiting



Dehydration



Deep rapid Breathing



Pear drop smelling breath



Drowsiness and eventually unconsciousness

In this stage, the blood glucose can be very high and the blood ketones be greater than 1.5

If any of the above happen, immediate medical advice is always required!

Note: The dehydration from DKA can be very severe. Severe dehydration causes a serious drop in blood pressure (known as 'shock') and in addition, the body salt levels (mainly sodium and potassium) can become seriously deranged putting the heart at risk from dangerous rhythm disturbances.

Remember: It is ESSENTIAL that DKA is treated as quickly as possible every time.