

# Diabetes Care for You

## Sick day rules

Ketone testing and illness management in Type 1 Diabetes  
and other risk groups

A decorative graphic at the bottom of the page featuring overlapping teal and green curved bands. In the center, there is a stylized heart shape formed by two overlapping loops, one teal and one green.

*Excellent care at the  
heart of the community*

<b>Reader Box</b>	
<b>Description</b>	Information on sick days rules and ketone testing
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<b>Primary audience</b>	Patients with type 1 diabetes
<b>Secondary audience(s)</b>	Patients in other groups at risk of diabetic ketoacidosis
<b>Notes</b>	

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# Ketone testing and illness management

## Diabetic ketoacidosis

Ketones develop when the body's cells are unable to use glucose as energy, and instead break down fat as an alternative source of energy.

This can happen if you do not have enough insulin for your body's requirement (illness increases the amount of insulin that your body needs). If ketone levels become elevated you can become very unwell, and you may develop diabetic ketoacidosis. Signs and symptoms of diabetic ketoacidosis can include lethargy, thirst, passing large amounts of urine, nausea, vomiting, abdominal pain, breathlessness, and a reduced level of consciousness.

## General information during illness

- CONTINUE normal diabetes medications including insulin. If you are taking other oral medication such as metformin or SGLT-2 inhibitors (e.g. dapagliflozin, empagliflozin) and feel nauseous you can stop it temporarily until you feel better
- NEVER omit basal insulin (e.g. Abasaglar, Lantus, Levemir, Humulin I, Toujeo Tresiba)
- MONITOR blood glucose level at least every four hours
- KEEP DRINKING, ensuring a regular intake of sugar-free fluids. Aim for hourly drinks and for a minimum of 100ml per hour, or 2.5-3.5 litres a day
- Aim to eat as normally as you can. If you are unable to do so, eat small amounts of food containing carbohydrate every 1-2 hours, e.g. soup and bread, toast, cereal, yoghurt, rice pudding, ice cream
- If you can only manage fluids you will need to ensure that you have carbohydrate fluids in addition to your sugar-free fluids, e.g. fruit juice, Lucozade, milk, non-diet cola/lemonade, Complan, Build Up
- If you have moderate urinary ketone or blood ketone of more than 1.5 mmol/l then monitor ketones and blood glucose every 1-2 hours (blood ketone testing is a more reliable test but urinary ketone testing can be undertaken if you do not have access to a blood testing device or strips)

## When to test for blood ketones

- If your blood glucose level is above 13mmol/l on two consecutive blood tests 60-120 minutes apart
- If your blood glucose levels are above 13mmol/l and you feel unwell
- If your blood glucose levels are above 13mmol/l and you are planning to exercise or are pregnant

**If you are unsure of the action to take, or your levels are not improving, please contact your GP or a member of Diabetes Care for You on 0300 303 8066.**

Blood ketone result	Action	Additional rapid insulin required
<p><b>Less than 0.6mmol/l</b> or <b>(urine ketones = negative 0)</b></p>	<p>This level is normal. Continue to monitor blood glucose and ketone levels every four hours during illness.</p>	<p>None</p>
<p><b>0.6—1.5 mmol/l</b> or <b>(urine ketones = trace)</b></p>	<p>Continue with regular basal insulin and take additional dose of rapid acting insulin recheck your blood glucose and ketone level after 2-4 hours.</p>	<p>10% of total daily dose of insulin = units rapid every four hours until ketones are reduced and capillary blood glucose (CBG) is in target.</p>
<p><b>1.5—3.0 mmol/l</b> or <b>(urine ketones moderate +/++)</b></p>	<p>Continue with regular basal insulin and take additional dose of rapid-acting insulin. Retest blood glucose and ketones in 1-2 hours.</p>	<p>20% of total daily dose of insulin = units rapid every four hours until ketones are reduced and CBG is in target</p>
<p><b>More than 3.0 mmol/l</b> or <b>(urine ketones large +++/++++)</b></p>	<p>Contact your GP, NHS 111 or DCFY immediately.</p> <p>Ensure that you are drinking sugar-free fluids every hour.</p> <p>Give additional dose of rapid-acting insulin.</p>	<p>20% of total daily insulin dose = units rapid and call for expert medical advice.</p>

Please note that this guidance differs from the guidance provided by Trend UK

### If any of the following happen urgent hospital admission is required

- Unable to swallow or keep down fluids
- Persistent vomiting
- Persistent high blood glucose levels, despite corrective dosing
- Persistent increasing levels of ketones, despite corrective dosing
- Abdominal pain, breathlessness, change in level of consciousness

## Calculating bolus insulin doses

To calculate the percentage required for an additional dose of rapid insulin add **all** insulin doses for the previous 24 hours together and then determine 10 or 20% of that total number.

Total daily dose (units)	10% of total daily dose (units)
15	1.5
20	2
25	3
30	3
35	4
40	4
45	5
50	5
55	6
60	6
65	7

Total daily dose (units)	20% of total daily dose (units)
15	3
20	4
25	5
30	6
35	7
40	8
45	9
50	10
55	11
60	12
65	13

If ketone levels and/or blood glucose levels are not improving after two additional doses of rapid insulin, then you should contact your GP or Diabetes Nurse, or attend A&E.

**If you are unable to keep fluids down and/or you are vomiting then please attend A&E.**

This information booklet is aimed at patients who are at risk of ketosis and will only be provided to you following a discussion with a healthcare professional from Diabetes Care for You.

## Get the best from your NHS

Our Patient Advice and Liaison Service (PALS) can help patients, families and carers with questions, comments or concerns about NHS services.

If you need advice about our services, facilities or staff, or would like to make a comment, please contact:

### PALS:

PALS, Sussex Community NHS Foundation Trust,

Brighton General Hospital,

Elm Grove,

Brighton.

BN2 3EW

01273 242292

[sc-tr.pals@nhs.net](mailto:sc-tr.pals@nhs.net)

Please ask any member of the team caring for you if you need help understanding this leaflet, or if you need the information provided in an alternative format. This includes translations, large print, Braille, easy read, on audio tape, or via email.