



York and Scarborough
Teaching Hospitals
NHS Foundation Trust

Diabetes – How to manage illness

For adults with Type 1 diabetes on a basal
bolus insulin regime

① For more information, please contact:

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Wigginton Road, York, YO31 8HE

Telephone 01904 726510

or

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Contents	Page
What happens to my diabetes when I am ill?.....	4
What is Diabetic Ketoacidosis (DKA)?.....	5
How can I prevent DKA?	6
Insulin adjustment when ill.....	7
No ketones – Minor Illness	8
Ketones present – Severe Illness	9
Calculating Total Daily Dose (TDD) of insulin	11
Table for use as a guide to help calculate either 10% or 20% of your TDD	12
Food and fluid intake during illness.....	13
What if things are not improving?	14
Tell us what you think of this leaflet	15
Teaching, training and research.....	15
Patient Advice and Liaison Service (PALS).....	15

What happens to my diabetes when I am ill?

When you are ill your blood glucose levels tend to increase even if you are unable to eat or are being sick. When you are ill your body becomes more resistant to the insulin you inject. This means your blood glucose levels can rise and there is a risk of developing Diabetic Ketoacidosis (DKA), a potentially life-threatening condition.

Although you may not feel like it, it is very important to monitor your diabetes closely to prevent such conditions occurring.

What is Diabetic Ketoacidosis (DKA)?

When blood glucose levels continue to rise it is due to a lack of insulin. Without treatment this leads to a serious condition called diabetic ketoacidosis, which requires urgent hospital treatment.

If there is not enough insulin, carbohydrate cannot be used to provide essential energy so the body breaks down its fat stores to use for energy instead.

This leads to the production of ketones (a type of acid), which are dangerous at high levels.

Ketones can be detected in the urine or blood.

As ketone levels increase you may feel very unwell, start vomiting or become short of breath or drowsy or confused. If left untreated it can be extremely dangerous.

How can I prevent DKA?

- Never stop taking your background or long-acting insulin - your body needs insulin all the time; we cannot survive without an adequate insulin supply
- Act immediately - do not wait for your diabetes to become out of control
- Make sure you always have access to ketone testing strips (either blood or urine) which have not reached their expiry date
- If you feel unwell, or your blood glucose levels are regularly above 13mmol/l, follow the advice on pages 7 - 10 'Insulin adjustments when ill' and page 13 'Food and fluid intake when ill'
- Avoid strenuous exercise if ketones raised (above 1.5mmol/l in the blood; '+' or more in the urine)

Insulin adjustment when ill

If you are feeling unwell, or your blood glucose levels are regularly above 13mmol/l, test your blood or urine for ketones and follow the guidance as indicated below:

- If ketones are less than 1.5mmol/l (blood) or 'Trace' or negative (urine), follow guidance on page 8
- If ketones are above 1.5mmol/l (blood) or '+' or above (urine), follow guidance on page 9

No ketones – Minor Illness

If blood ketone levels are **less than 1.5 mmol/l** ('Trace' or negative in urine), this is classed as a **Minor Illness**. Blood glucose is usually within target or slightly elevated.

Insulin Adjustment

- Test blood glucose and ketones **every four hours**
- Take usual dose of quick-acting insulin with meals if eating, plus corrective insulin if blood glucose raised
- Use extra quick-acting insulin as you normally would to reduce blood glucose, even if not eating.
- You may only need long-acting (background) insulin if not eating - give the usual dose.
- **If ketones rise to 1.5mmol/l or above, follow Severe Illness guidance on page 9**

Ketones present – Severe Illness

If blood ketone levels are **1.5mmol/l or higher** ('+' or more in urine) this is classed as a **Severe Illness**.
Blood glucose is usually above 13mmol/l.

Insulin adjustment

- Test blood glucose and ketones **every two hours** (through the night as well as during the day)
- Calculate total daily dose from previous day
- Give additional quick-acting insulin as indicated in boxes on page 10

Abbreviations/terms used in guidance:

QA: Quick-Acting insulin e.g. Humalog, Novorapid, Apidra or Fiasp, usually taken with meals

BI: Background Insulin, or long-acting Insulin e.g. Lantus, Levemir, Tresiba or Toujeo

TDD: Total Daily Dose – Total amount of insulin taken usually in a day (i.e. all quick-acting insulin taken with meals and background insulin doses added together).

Ketones
1.5 - 3.0mmol/l
(blood)

+ to ++ (urine)



Give 10% TDD as
QA insulin every 2
hours

(as well as usual
QA insulin with
meals and usual
BI)

If ketone levels
increase to above
3mmol/l, follow
guidance on right-
hand flow-chart →

Once ketones
reduce to less than
1.5mmol/l (or
negative/trace
urine), follow Minor
Illness guidance on
page 8

Ketones
above 3mmol/l
(blood)

+++ to +++++ (urine)



Give 20% TDD as
QA insulin every 2
hours

(as well as usual QA
insulin with meals
and usual BI)

Once ketones
reduce to 1.5 –
3.0mmol/l (or less
than +++ urine),
follow guidance on
left-hand flow-chart
←

Or Minor Illness
guidance on page 6
if less than
1.5mmol/l (or
negative/trace urine)

Calculating Total Daily Dose (TDD) of insulin

Total Daily Dose (TDD) is the total amount of insulin you take in a typical day. This includes background (BI) and quick acting (QA) insulin.

Example of how to calculate TDD:

Previous days total amount of QA insulin = 26 units.

Previous days total amount of BI insulin = 24 units.

Total Daily Dose (TDD) 26 units + 24 units = 50 units

Suggestion: make a note of your total daily dose of insulin from yesterday (or a typical day) here and using table on page 12 calculate 10% and 20% of this dose:

My TDD =

10% =

20% =

Table for use as a guide to help calculate either 10% or 20% of your TDD

TDD	10%	20%
15-20	2	3
25	3	5
30	3	6
35	4	7
40	4	8
45	5	9
50	5	10
55	6	11
60	6	12
65	7	13
70	7	14

Food and fluid intake during illness

During illness you may not wish to eat normal meals. If this is the case, try to have alternative food or drinks that contain carbohydrate and are easy to digest, e.g. ice cream/milky drinks/soup. Having some carbohydrate may help reduce further ketone formation.

Sip sugar-free fluids (at least 100ml each hour) to reduce the risk of dehydration.

If you are unable to eat, use sugary drinks such as fruit juice or full sugar cola to treat any hypos.

If you feel sick, you do not need to eat until you feel well enough to try, but keep sipping fluids to prevent dehydration.

What if things are not improving?

Seek urgent medical attention if:

- you continue to vomit and/or are unable to keep fluids down
- your ketone levels do not improve despite having more than two increased insulin doses
- you become drowsy or confused
- you or your carers feel unable to manage your diabetes
- you are feeling more unwell

You may need to seek medical advice to treat the cause of your illness.

This leaflet is not a comprehensive and detailed guide; if you have any questions or require further explanation please do not hesitate to ask a member of your diabetes team.

Tell us what you think of this leaflet

We hope that you found this leaflet helpful. If you would like to tell us what you think, please contact: the Diabetes and Endocrinology Department at The York Hospital (Telephone 01904 726510) or Scarborough Hospital (Telephone 01723 342274).

Teaching, training and research

Our Trust is committed to teaching, training and research to support the development of health and healthcare in our community. Healthcare students may observe consultations for this purpose. You can opt out if you do not want students to observe. We may also ask you if you would like to be involved in our research.

Patient Advice and Liaison Service (PALS)

PALS offers impartial advice and assistance to patients, their relatives, friends and carers. We can listen to feedback (positive or negative), answer questions and help resolve any concerns about Trust services.

PALS can be contacted on 01904 726262, or email pals@york.nhs.uk.

An answer phone is available out of hours.

Leaflets in alternative languages or formats

Please telephone or email if you require this information in a different language or format, for example Braille, large print or audio.

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或發電

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