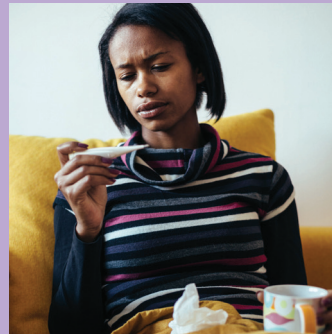


Diabetes Research &
Wellness Foundation



Managing DIABETES when you are ILL

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Diabetes and illness

Good general health and glucose (sugar) control in diabetes are important to help reduce the risk of becoming ill. Keeping glucose within reasonable levels when ill may result in illness not being as severe or prolonged as it could be. It is advisable that people with diabetes prepare 'sick day' care plans. This is because their diabetes management in illness may need to be personalised and the use of such plans could reduce the chance of needing hospital care. If you are using insulin, it is also important that you always have enough supplies (and in date), as well as glucose testing strips and for type 1 diabetes, ketone testing equipment.

There are short-term situations when diabetes can become unstable. The stress of illness in diabetes means that glucose levels can double or treble, even *without* eating. It is important that people know what to do in the event of unexplained, persisting high glucose levels. Medications should be continued unless advised otherwise by care providers. **Insulin should NEVER be stopped** (as the body **always** needs it (**figure 1**)) though dose adjustments may be needed. People should maintain contact with their family, friends, carers and diabetes team when unwell.

This leaflet offers guidance in promoting safe diabetes control in situations where glucose levels may rise unexpectedly.

Managing type 1 diabetes when you are ill (sick day rules)

Rest: Strenuous activity should be avoided as this can *increase* the glucose level in illness.

Eating and drinking: Glucose is needed to provide energy and insulin permits its uptake by the body for use. Diabetes control could be adversely affected by not eating *any* food. Try eating little and often. If you can't eat solid foods try replacing with one of:

- 100ml cola/lemonade (not diet) or fruit juice
- 1 scoop of ice cream
- 1 yogurt
- 200ml milk
- 200ml soup (thick, creamy)

Be prepared – make sure you have sugary fluids at home in case you don't feel like eating. It is easy to become dehydrated when you are ill so it is important to drink plenty of sugar free fluids during the day (**figure 2**).

Alcohol should be avoided when unwell as it can increase the risk of dehydration.

1



Figure 1 People with diabetes must never stop insulin when ill, even if not eating.

2



Figure 2 Aim to drink 100ml/hour when ill.

Ketones: Persistently elevated glucose levels in illness suggest a shortage of insulin, which can increase the risk of ketone production. High ketone levels may cause abdominal pain and vomiting. Urine ketones should be tested for on each trip to the toilet when glucose levels are persistently above 14mmol/L. Alternatively, with the appropriate meter, blood ketones could be measured every 2 hours.

Insulin: Doses may need adjusting, depending on the trend seen on blood glucose testing. Insulin must never be stopped as illness often increases the dose needed. Glucose testing should be 2-4 hourly, day and night. Patients should consider taking a supplementary 10% of their **total** daily insulin dose as rapid acting insulin (if usually using this) every four hours to lower glucose levels if needed. This additional insulin can also help reduce the risk of ketone production by the body.

If you are an insulin pump user and are finding that you are having to do repeated correction doses when you are ill, you should consider temporarily increasing your basal rate by 50% and continue to test blood glucose every 2 hours. Additional doses of rapid acting insulin administered by insulin pen may also be needed. You should seek further advice from your usual insulin pump team if concerned.

If able to take fluids easily, maintain glucose levels between 6-14mmol/L and remain ketone negative on testing, then home care is appropriate. Feeling unwell, with urine ketones persistently above '+2' or blood ketones above 1.5mmol/L strongly indicate that diabetic ketoacidosis, (an emergency state associated with a relative lack of insulin) is developing. Healthcare advice should be sought urgently in this situation (see 'Calling for support' section).

Managing type 2 diabetes when you are ill (sick day rules)

Again, acute illnesses such as diarrhoea and vomiting can be associated with dehydration, being unable to take usual diabetes tablets and increased glucose levels. Try to ensure you are familiar with how your usual diabetes treatments work in the body to control glucose levels.

Rest, eating and drinking: Advice as for type 1 diabetes.

Tablets: In particular, be aware that:

- *Gliclazide* and other tablets similar to it can increase the risk of sugar levels falling too low (hypo, or hypoglycaemia - low blood glucose) when not eating. Dose reduction may be needed, seek advice if unsure.
- *Metformin* is known to cause 'tummy trouble', even in well patients. Withholding it in 'at risk' states for dehydration (e.g., vomiting or diarrhoeal illnesses) should be considered, especially if you are known to have pre-existing kidney problems. It is advisable to inform your diabetes team in this situation, as extra glucose monitoring or kidney function blood tests may be needed.
- '*Flozin*' tablets are associated with a risk of developing diabetic ketoacidosis (DKA) with near normal glucose levels in illness. It is advisable to stop these during periods of illness (such as nausea, vomiting or abdominal discomfort) and dehydration. Healthcare advice should be sought when unwell on these tablets as ketone testing to exclude DKA may be needed.

Non-insulin injections should be suspended if experiencing nausea, vomiting or abdominal pain and healthcare advice sought.

Sick day emergency kit

Useful items to keep at home would include: small cartons of long life orange juice, fun-size jelly baby packs, unopened 'in date' testing strips and urine ketone sticks, as well as foods like soup or ice cream. Dextrose gel is also useful to have and glucagon could be considered where appropriate.

Calling for support (NHS 24, GP, diabetes team) or going to the Emergency Department (outside normal working hours) is mandatory in type 1 or type 2 diabetes, if you are:

- Unsure of what to do
- Unable to keep food down for over 4 hours
- Experiencing continuous diarrhoea and vomiting, with/without fever
- Experiencing persistent glucose level above 15mmol/L
- Known to have type 1 diabetes, with ketone levels above '+2' in your urine or above 1.5mmol/L on blood testing
- Increasingly drowsy, have stomach ache or shortness of breath
- Experiencing symptoms for more than 24-48 hours

Serious illness in diabetes (e.g. diabetic ketoacidosis, or a severe foot infection) requires hospital based care. It is not unusual for people who usually use diabetes tablets to be temporarily managed with insulin in hospital (and possibly afterward for a time), as this can control high glucose levels more quickly and can contribute to an earlier recovery. Certain treatments, such as steroids (and possibly antibiotics) may also increase glucose levels; so more insulin may be needed.

Hospital tests and day case procedures

When these are arranged, it is advisable that you remind medical staff that you have diabetes, so appropriate guidelines can be followed. It is likely that you will be required to be 'nil by mouth' and need to reduce insulin or tablet doses - always seek clarification on this. Some units would arrange for you to have an intravenous glucose and insulin drip to keep glucose levels stable. You would usually be first on a list or given special instructions beforehand. Contact your diabetes team if treatment needs attention (e.g., dose adjustment) well before these procedures are due. This could be a face-to-face appointment or contact by telephone or email.

For any hospital admission, it is worth bringing your usual hypo snacks with you, in case there are delays. A list of all current medications is also useful.

Reduce the risk of dehydration by taking appropriate fluids beforehand, particularly if you need to take agents to empty your bowels (e.g. Picolax) or be 'nil by mouth'. Certain tests might require a scan to be performed, for which a dye may be injected into the veins. In this case, metformin may need to be withheld for at least 24 hours beforehand and not taken again for at least 48 hours after. Guidance should be provided for you before such a test. Some medication may also have to be stopped and alcohol avoided before and after a procedure or operation until eating and drinking properly. Consult with a healthcare professional to clarify what medication should be stopped and what could be safely continued.

Aim to resume other normal medications as soon as possible after procedures. The glucose level might be higher than usual for around 24 hours. Seek advice if it remains uncontrolled over 24-48 hours later.

Managing illness with diabetes while on holiday/abroad

- Plan your trip well and take out appropriate insurance.
- Check blood glucose levels regularly, as increased physical activity and heat levels can increase the risk of hypos.
- Wear plenty of sun block to avoid sunburn, as this can harm your body and cause elevated blood glucose levels.
- Take great care of your feet - don't walk barefoot and seek help early if problems arise.
- Keep fluid levels up whilst avoiding excess caffeine and alcohol in high temperatures, as these can increase the risk of dehydration.

Keep medication and supplies as cool as possible. Extreme temperatures can affect insulin and other supplies, causing them to become less active. Be alert for signs of heat exhaustion. These include: profuse sweating, muscle cramps, tiredness, dizziness, headache and/or fainting. Seek medical attention immediately if any of these happen.

Top tips to manage diabetes when you are ill – Summary

- Produce an illness management plan with your diabetes or usual healthcare team early.
- Have your flu jab when advised.
- Avoid dehydration - keep up your fluid intake, get help **early** if you cannot.
- Check blood glucose levels every 2-4 hours.
- Seek help *promptly* if unable to self manage your illness, particularly with rising blood glucose levels.
- Seek medical help *urgently* if you feel ill, abnormally drowsy, short of breath, have pain or prolonged vomiting.
- With type 1 diabetes, **never stop insulin** during acute illness.
- In type 1 diabetes, test for blood or urine ketones every 2-4 hours and if positive, consider taking additional insulin.
- Seek help for suspected skin or foot infections **early**.

More information

If too unwell to self-manage, then contacting your GP, diabetes nurse, out of hours care service, at the following links and telephone numbers, or attending the Emergency Department is strongly advised.

England

Freephone: **111**, 24 hour helpline. NHS 111 service website: **111.nhs.uk**

Scotland

Freephone: **111**, 24 hour helpline. NHS 24 website: **www.nhs24.scot**

Wales

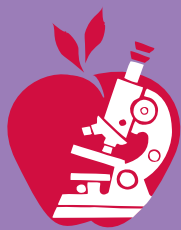
Freephone NHS Direct Wales on **0845 46 47**. NHS Wales Direct website: **www.nhsdirect.wales.nhs.uk/contactus/feelingunwell/**

Northern Ireland

GP out of hours information service website: **www.nidirect.gov.uk/out-of-hours**

Or you can visit the NHS Choices website: **www.nhs.uk**

DRWF has diabetes awareness jewellery and medical check-up cards that can be carried at all times by people with diabetes. These can be ordered by visiting **www.drwf.org.uk**, by calling **023 9263 7808**, or by emailing **enquiries@drwf.org.uk**



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Staying well until a cure is found...

The Diabetes Research & Wellness Foundation works towards educating, informing and reminding you of the best and healthiest choices to make. Contact us to join the Diabetes Wellness Network and request the full series of diabetes information leaflets.



Source references can be provided on request.
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