

# Managing Type 1 Diabetes

## High Glucose & Illness



Sickness is an unavoidable part of everyday life. The body's natural response to illness can cause higher blood glucose levels due to the release of stress hormones. During illness, you will need to check your blood glucose levels more often and you may need more insulin than usual.

It is important to keep your body supplied with both carbohydrate and insulin to keep blood glucose levels normal (4-7mmol/l) and prevent body fat being used as an energy source.

Using body fat as an energy source can lead to a build-up of ketones (a waste product of fat breakdown) and high blood glucose levels can cause you to pass urine more often, causing dehydration. These increase your risk of developing Diabetic Ketoacidosis (DKA).

Following the advice in this leaflet should help to stop blood glucose and ketone levels rising and help you to recover from your illness as quickly as possible.



Shropshire Community Health  
NHS Trust



The Shrewsbury and  
Telford Hospital  
NHS Trust

**Never stop the insulin.** Even if you are eating less than normal, your body needs insulin to use glucose and to get rid of ketones.

**Try not to miss meals.** If you do not want to eat solid food, try to replace it with liquids that contain the same amount of carbohydrate you would normally eat at that mealtime.

If you have an illness that makes it difficult to eat e.g. gastroenteritis or tonsillitis, you may need to eat/drink small amounts of carbohydrate (10-15grams) with insulin, every 1-2 hours.

**Check your blood glucose** more frequently e.g. every 2 hours including throughout the night.

**Check your blood ketone levels.** Give additional fast acting insulin (eg. Novorapid) every 2 hours if blood glucose is above target. **(See Table)**. It is unlikely that you would get a ketone reading above 5mmols, if you do, please check that you are using the correct strip for measuring ketones in your meter.

If ketones are present when blood glucose is low, they are called 'starvation' ketones and respond to drinking extra fluids containing sugar. Monitor blood glucose very closely as extra insulin may be required when blood glucose starts rising.

## Useful Tip

Consider keeping a sick day box which can contain some of the following items:

Full sugar drinks, sweets, glucotabs, lift, full sugar jelly pots, ice lollies, milkshakes, along with extra supplies of blood and ketone testing strips.



## References:

Patient Advice for Management of Type 1 Diabetes Mellitus during illness in children and young people under 18 years (Sick Day Rules). Association of Children's Diabetes Clinicians (ACDC). Version 4, Feb. 2018, Review 2021. Authors: SM Ng, A Soni, JC Agwu, JA Edge, JH Drew, C Moudiotis, NP Wright, M Kershaw, C Gardner, L Connellan, W Assam

## Contact details

### Monday to Friday 9am-5pm

- Diabetes doctors can be reached via the paediatric secretaries on **01952 641222**, ext. **5980** or **5981**
- Diabetes nurses on **01743 450855 option 2**, text via **ChatHealth 07312 263102** or email **Shropcom.pdsn@nhs.net**
- Diabetes Dietician on **01952 641222** extension **4874**

### In an emergency/out of hours

In an emergency during working hours when you cannot reach one of the team above or for out of hours support i.e. after 5pm or at weekends.

All patients requiring advice should contact the Princess Royal Hospital switchboard on **01952 641222** and ask to speak to the paediatric registrar for diabetes advice.

**Keep well hydrated** by drinking plenty of fluids, aim for 100-200ml every hour.

Water, or sugar-free fluids are probably the best in most cases. If blood glucose levels are low, have drinks that contain sugar, or eat carbohydrates if possible.

Avoid carbonated drinks if possible

If you are vomiting (being sick) all of your food and drinks, contact the diabetes team or children's ward for advice immediately.

Try to get lots of rest as exercise makes ketoacidosis (ketones in your blood) worse.

Inform the diabetes team early to seek advice.

**If blood ketones are higher than 0.6mmol/l contact your diabetes team (contact details below) immediately for management advice. If blood ketones are higher than 3mmol/l, the team will ask you to attend the children's assessment unit at The Princess Royal Hospital, Telford.**

<b>Negative ketones</b> <0.6mmol/l (Blood)	<b>Small to moderate ketones</b> 0.6 – 1.5mmol/l (Blood)	<b>Moderate to large ketones</b> >1.5mmol/l (Blood)
Take a correction dose (CD) to correct high blood glucose (BG) in addition to normal bolus for carbohydrates eaten	<b>Give:</b> 10% of your total daily dose (TDD) of insulin as additional fast acting insulin OR 0.1 units/kg body weight as additional fast acting insulin	<b>Give:</b> 20% of your total daily dose (TDD) of insulin as additional fast acting insulin. OR 0.2 units/kg body weight as additional fast acting insulin
Then: •Re-check BG and ketones in two hours	Then: • Monitor fluid intake and ensure you are drinking enough fluids to keep well-hydrated • Re-check BG & ketones in two hours (see below)	Then: • Monitor fluid intake and ensure you are drinking enough fluids to keep well-hydrated • Re-check BG & ketones in two hours (see below)
If your BG is going down that is a good sign but monitor closely throughout the day. <b>If BG is increasing but ketones less than 0.6 mmol/l:</b> •Take another correction dose using a pen If ketones 0.6 – 1.5mmol/l, follow <b>orange</b> column advice If ketones >1.5mmol/l, follow the <b>red</b> column advice	If ketones less than 0.6mmol/l follow <b>green</b> column advice <b>If BG is increasing but ketones still 0.6 – 1.5mmol/l:</b> • Continue to give 10% of TDD or 0.1 Units/kg as additional fast acting insulin every 2 hours using a pen • Give usual boluses for food • Re-check BG and ketones every 2 hours even through the night! If ketones increase to >1.5mmol.l, follow the <b>red</b> column advice	If ketones less than 0.6mmol/l follow <b>green</b> column advice <b>If BG is increasing but ketones have reduced to 0.6 – 1.5mmol/l,</b> follow <b>orange</b> column advice If ketones are still >1.5mmol/l: • Give another 20% TDD or 0.2units/kg as additional fast acting insulin every 2 hours using a pen • Give usual boluses for food • If vomiting with high ketones, go to Accident and Emergency

If the advice regarding correction doses is difficult to calculate, consider adding 20-25% to your insulin dose, possibly by using a setting on your blood glucose meter **OR** consider doubling your correction dose.

### Sick day rules for pump patients

- Same principles apply for pump patients with regards to glucose testing and diet and fluid intake.
- In addition, even if unwell and blood glucose levels are high, standard checks on the pump should be made for occlusions, disconnection and battery failures.
- Give correction doses through the pump if blood ketone levels are less than 0.6mmol/l. If one correction dose given via the pump has no effect in 1 hour, repeat the correction dose with insulin pen.
- If blood ketones are higher than 0.6mmol/l, give additional fast acting insulin using an insulin pen, following the advice in table 1 above and change your cannula and insulin in the pump.
- When blood glucose levels are rising in an unwell child, needing frequent additional insulin doses, think about using an increased temporary basal rate in addition to giving correction boluses every 2 hours as required. Try increasing basal rate by 30% every 2 hours until target blood glucose of 4-7mmol/l is achieved. Leave temporary basal rate running at this level, but if blood glucose levels fall too low, reduce basal rate in 30% steps every 2 hours until basal rates are back to normal settings.
- If you use a pump which automatically adjusts your basal insulin and gives automatic correction doses, you will not be able to set up a temporary basal rate. Your pump will make the necessary adjustments itself, but if your blood ketone levels rise to 0.6mmol/l or above you should give yourself a correction dose by an insulin pen and contact your diabetes team immediately for advice.