

Should you feel unwell, you may note that your blood glucose levels are elevated and you could be at risk of developing ketones.

You should follow the advice below:

- 1) Test blood glucose levels (or scan if using the freestyle libre) every 2 hours, with additional insulin given **by pen** until blood glucose levels normalise. Remember capillary blood glucose tests provide the most accurate levels, so it is worthwhile checking capillary glucose levels to ensure there is no discrepancy between meter and libre.
- 2) If blood glucose levels more than 14mmol/l, check blood ketone level. We advise testing blood ketone levels rather than urine sticks for increased accuracy

Ketones 0.6-1.5mmol/l:

Take 10% of your total daily dose (TDD) of insulin every 2 hours by pen injection. Your total daily dose can be found in the history section of your insulin pump (10% : Multiply TDD by **0.1**) (eg: if your total daily dose is **20 units** –10% of TDD will be 20×0.1 - **2 units**. Please use a calculator)

Ketones 1.5 to 3mmol/l:

Take 15% of your TDD of insulin every 2 hours by pen injection (15% : Multiply TDD by **0.15**)

Ketones more than 3mmol/l :

Take 20% of your TDD of insulin every 2 hours by pen injection (20% : Multiply TDD by **0.2**)

- 3) Ensure you change your infusion site, set, reservoir and insulin
- 4) Drink plenty of non carbohydrate fluids such as water or sugar free squash until glucose levels are less than 14mmol/l.

Seek medical help if vomiting, abdominal pain or ketones levels are not settling.

Key Safety Rules

- It is essential that blood glucose levels are recorded in the pump at least 4 times a day and test for ketones when glucose levels are more than 14mmol/l
- Infusion set changes are best done in the morning and should stay in place for no more than three days. Test glucose levels 1-2 hours after new set introduced to ensure successful change
- If following a correction dose, blood glucose levels do not come down as expected then suspect an insulin pump delivery issue. If you are uncertain that the insulin pump is working properly then change to insulin pens.
- Always carry adequate supplies of insulin consumables, with rescue insulin, pens, blood glucose and ketone testing equipment. Also check that all consumables are in date.
- Once ketones have settled back to normal (0.6mmol/l or below) then you may benefit from a temporary basal rate increase while blood glucose values are elevated through illness

Type 1 diabetes on Insulin pump and feeling unwell

Check blood glucose and ketones. Do you have an issue with insulin delivery?

No Ketones
(less than 0.6 mmol/l)
MINOR ILLNESS

Ketones Present (more than 0.6 mmol/l)
Blood glucose is usually raised (above 14 mmol/l)
SEVERE ILLNESS

Sip sugar-free fluids (at least 100 ml/ hr)

Test blood glucose and ketones every 2-4 hours

Test blood glucose and ketones every 2 hours

- if eating, use your bolus advisor (using your usual insulin: carbohydrate ratio and insulin sensitivity)
- if blood glucose is raised, even if you are not eating, take corrective bolus of insulin using bolus advisor
- when you are unwell you may need larger insulin boluses to reduce blood glucose. Override the bolus advisor.
- Despite correction, if glucose level remains persistently above target, consider setting a temporary increase of 10 – 20% in basal rate
- If you are not eating and blood glucose is in target range, you may only need your usual basal insulin

Determine your Total Daily Dose (TDD) from the history section on your pump

Ketones
0.6 -1.5mmol/l

Ketones
1.5 -3.0mmol/l

Ketones
More than 3.0mmol/l

Give 10% TDD ($TDD \times 0.1$)
as bolus insulin every 2 hours **Plus** usual Insulin :
carbohydrate ratio if eating

Override the bolus advisor

and

↑basal by 10%

Give 15% TDD ($TDD \times 0.15$)
as bolus insulin every 2 hours **Plus** usual Insulin :
carbohydrate ratio if eating

Override the bolus advisor

and

↑basal by 30%

Give 20% TDD ($TDD \times 0.20$)
as bolus insulin every 2 hours **Plus** usual insulin :
carbohydrate ratio if eating.

Override the bolus advisor **and**

↑basal by 50% or more if required

If you continue to vomit, are unable to keep fluids down, or unable to control your blood glucose or ketones you must go to the hospital as an emergency.

You must never stop taking insulin. If you suspect a pump delivery problem switch to insulin pens