

Staying safe on an insulin pump



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Insulin pump therapy is a safe and effective way of treating diabetes. However due to the way the insulin is delivered, problems may get worse more quickly than when using an insulin pen for injections. Therefore it is important that the safety guidelines in this leaflet are followed. The following areas will be addressed:

- 1. Blood glucose testing**
- 2. Cannula care**
- 3. Reasons for high blood glucose levels**
- 4. Managing high blood glucose**

1. Blood Glucose testing

- In order to continue funding for pump therapy you must test your blood glucose at least 4 times per day. This is the best and quickest way of noticing potential problems.
- If blood glucose levels are above 14mmol/L see guidance below.
- Never go to bed with an unexplained blood glucose of more than 14mmol/L, problems can escalate quickly overnight.

2. Cannula Care

- Good cannula care is essential to make sure the insulin is delivered correctly.
- Change metal cannula every 2 days, sooner if required.
- Change plastic cannula every 2-3 days, sooner if required.
- Remember to test your blood glucose before and 2 hours after changing a cannula.

- Do not change cannula just before bed.
- Changing a cannula before a meal is best so you can check whether the bolus has been effective.
- Remember to always carry a spare cannula / set and an insulin pen in case the cannula or pump fails unexpectedly.

3. Reasons for high blood glucose levels

There are many reasons why blood glucose levels can be high, consider the following potential causes, including:

General causes

- Too little insulin.
- Illness.
- Hormonal changes.
- Medication e.g. steroids.
- Reduced activity.
- Stress, anger or anxiety.
- Reduced effectiveness of insulin (for example if the insulin has become too hot or cold).

Infusion set

- Cannula inserted into a lumpy injection area.
- Infusion set empty / not primed.
- Air bubbles in cannula / tubing / cartridge.
- Cannula blocked (pump may not alarm).
- Infusion set bent or not correctly inserted.
- Infusion set leaking or not correctly connected.
- Cannula not changed often enough as per cannula care guidelines.

- Cannula moved out of position – this can occasionally happen, especially at night.

Insufficient Insulin given

- Missed dose at mealtime.
- Insufficient dose for carb intake.
- Insulin for snacks not given.
- Not testing often enough to inform insulin adjustment.
- Not correcting high blood glucose level.
- Not entering correct blood glucose level into pump.
- Too much carbohydrate following a hypo.

Pump problems

- Insulin pump accidentally left in SUSPEND mode.
- Pump not reconnected following disconnection.
- Basal rate too low.
- Cartridge empty.
- Battery flat.
- Pump failure.

4. Managing high blood glucose

If your blood glucose is higher than 14mmol/L twice in a row (in a 3-4 hour period) check your pump and infusion set.

If you find a logical cause for the high blood glucose, take your normal correction dose through the pump. See 'reasons for high blood glucose levels' above.

If you cannot find a logical cause for the high blood glucose, check for ketones.

If you have **two** unexplained blood glucose levels over 14mmol/L, ALWAYS:

- Check for ketones.
- Take your correction dose by syringe or pen.
- Change your infusion set.

Managing ketones

If you don't have a blood ketone monitor please request one from your diabetes team.

Blood ketones 0.0 – 0.6mmol/L:

- Give your insulin correction dose through your pump.
- Recheck blood glucose and ketones in 2 hours.
- If your blood glucose is falling, this is a good sign, but continue to monitor your levels closely throughout the day.
- If they are NOT falling, take another correction dose (this time by syringe or pen) and continue to monitor.
- If after 24 hours blood glucose remains above 14.0mmol/L, contact DSNs or seek medical help,

HOWEVER – IF KETONES RISE, SEE BELOW

Blood ketones 0.6 – 1.4mmol/L or above:

- Give double your usual correction dose by syringe or pen.
- Change your insulin and infusion set.
- Begin to drink plenty of water, aim for 1 medium glass every $\frac{1}{2}$ hour.
- Recheck blood glucose and ketones in 2 hours.

- If your blood glucose and ketone levels are falling, you must continue to monitor to be sure the new infusion set is working.

Blood ketones not coming down despite previous advice or ketones more than 1.5mmol/L:

- Take another correction dose, call the Diabetes Team AND seek urgent medical advice.

References

<https://www.nice.org.uk/Guidance/TA151>

<https://www.animas.com/diabetes-education-and-training>

Contact details

Address:

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Southmead Hospital
Brunel building
Bristol, BS10 5NB

Telephone:

0117 414 6430 (Secretary, 08:30am to 16:30pm)
0117 950 5050 (Switchboard, ask for bleep 9315)
0117 414 6413 (Lynn Sawyer, specialist dietitian)
0117 414 6428 (Julie Emsley, specialist nurse)
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www.nbt.nhs.uk/diabetes

**PATIENT
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 **www.nbt.nhs.uk/diabetes**

If you or the individual you are caring for need support reading this leaflet please ask a member of staff for advice.

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