Sick day management for children and young people with Type 1 diabetes

Royal United Hospitals Bath
NHS Foundation Trust

1. **NEVER stop taking insulin.**
2. **Check blood ketone levels** when child is ill even if glucose is in target.
3. **Give insulin correction every 2-3 hours** if glucose above target.
4. **Repeat glucose and ketone levels** 2 hours after giving insulin.
5. **Check glucose more frequently** e.g. every 2 hours including overnight.
6. **Seek advice early if ketones remain high or if concerned.**

Drink plenty of fluids: 100-200ml every hour while awake and when doing glucose checks at night (every 2 - 4 hours).

You may need to contact your GP or pharmacist to treat underlying illness.

Insulin Pump: Ensure pump is delivering insulin. Check for occlusions, disconnections or battery faults. If in doubt change infusion set.

	Acceptable ketone levels (less than 0.6mmol/L	Moderate ketone levels (0.6-1.4mmol/L)	High ketone levels (1.5mmol/L or above)
Glucose level below 10mmol/L	Normal correction dose PLUS insulin for carbohydrate if eating	**Normal** correction dose PLUS insulin for carbohydrate Encourage child to have food or drink high in carbohydrate to help stop ketone production	**or**
Glucose level 10mmol/L - 13.9mmol/L	Normal correction dose PLUS insulin for carbohydrate if eating	**Normal** correction dose PLUS insulin for carbohydrate if eating	**DOUBLE** correction dose PLUS insulin for carbohydrate if eating
Glucose level above 14mmol/L	Normal correction dose PLUS insulin for carbohydrate if eating	**DOUBLE** correction dose PLUS insulin for carbohydrate if eating	**DOUBLE** correction dose PLUS insulin for carbohydrate if eating

Insulin Pumps

Give correction doses through the pump if blood ketone levels are less than 0.6mmol/L.

If blood ketones are higher than 0.6mmol/L, or if glucose levels not falling, give the insulin using an insulin pen. Then change the cannula/infusion set and resume regular corrections on pump therapy.

Reasons to change hybrid closed loop pumps to manual mode:

- If ketones above 0.6mmol/L
- If glucose levels above 14mmol/L and not falling
- or having frequent hypos

If in manual mode (or standard pump therapy) with frequent insulin correction doses, consider higher temporary basal rates.

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Always look out for signs of **Diabetic Ketoacidosis (DKA)**: vomiting, abdominal pain, heavy laboured breathing, panting or feeling drowsy. If any of these are present with high ketone levels, **RING 999** for urgent hospital care.

Raised blood ketone levels explained

Raised blood ketones with blood glucose ABOVE 10mmol/L

When the blood glucose is above 10mmol/L, we have to assume that the ketones are due to levels of insulin being too low. In this case double correction doses are needed to clear the ketones.

Raised blood ketones with blood glucose BELOW 10mmol/L

If you have an illness that makes it difficult to eat e.g. a stomach upset or gastroenteritis the body may produce ketones. This is because when you don't eat the body produces ketones for energy; these are called 'starvation ketones'. To help stop making these ketones, have food or drink high in carbohydrate, e.g. toast, crackers, full sugar jelly or sips of Ribena, with insulin. Aim for 10-15g carbohydrate every 1-2 hours. See Sick Day Box information below for examples.

If frequent vomiting, ensure that initial sips of sugary drinks or mouthfuls of food are tolerated before giving usual bolus insulin. Seek advice (contact below) if frequent hypoglycaemia (hypo), or hypo treatment not tolerated.

How to check for blood ketones?

1. Check you are using the correct strip.
2. Insert the strip (piano keys end) . Apply blood
3. Hold blood to strip.

Sick Day Box

Examples of high carbohydrate food & drinks if food intake is minimal and you are seeing blood glucose levels 4mmol/L or lower.

Preventing dehydration

More frequent drinks of water and other sugar-free drinks will help to flush the ketones out and prevent dehydration. Aim 100-200ml every hour. If vomiting or diarrhoea, include some fluids with salt in them e.g. clear soup, sports drinks with electrolytes or Dioralyte®.

CONTACT DETAILS

Mon-Fri 9am—5pm: **Paediatric diabetes team office** 01225 825331

Out-of-hours: **Paediatric registrar on-call** via the RUH Switchboard: 01225 428331

In an emergency you may need to call an ambulance e.g. if acute signs of DKA.

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