

Hyperglycaemia & Sick Day Rules: Multiple Daily Injections

Glucose 14 mmol/L or higher for more than 2 hours, or feeling unwell?

***If you are vomiting and unable to keep fluids down, ketones are more than 3.0mmol/L, and you can't keep glucose in target, there is a high risk of DKA so you must go to hospital as an emergency.**

Check blood glucose and ketones

1: If blood ketones are less than 0.6mmol/L

Check sensor glucose matches blood glucose.

1: Give normal correction dose or 5% of TDD of fast acting insulin via INSULIN PEN.
If TDD unavailable give **0.05 units/kg** of body weight as a correction dose.
Give in addition to insulin required for food.

Recheck blood glucose and ketones in **2 hours**.

Glucose <14 mmol/L
Ketones <0.6 mmol/L

No further action is required. Continue with usual insulin doses.

Glucose >14 mmol/L
Ketones <0.6 mmol/L

Give another correction injection as above.

Glucose >14 mmol/L
Ketones 0.6 mmol/L or above.

2: If blood ketones are between 0.6-1.5mmol/L

Calculate (look up) average Total Daily Dose (TDD)

See previous day/14 day history on bolus calculator/app or can be found on last clinic letter.

2: Give 10% of TDD of fast acting insulin as a correction dose via INSULIN PEN.
If TDD unavailable give **0.1 units/kg** of body weight as a correction dose.
Give in addition to insulin required for food.

3: If blood ketones are above 1.5mmol/L*

3: Give 20% of TDD of fast acting insulin as a correction dose via INSULIN PEN.
If TDD unavailable give **0.2 units/kg** of body weight as a correction dose.
Give in addition to insulin required for food.

Recheck blood glucose and ketones in **2 hours**

Blood ketones less than 0.6mmol/L

Give usual correction.
Recheck blood glucose and ketones **2 hourly** until ketones are less than **0.6mmol/L** on 2 consecutive checks and blood glucose is less than **14mmol/L**.

No further action is required. Continue with usual insulin doses.

Blood ketones between 0.6-1.5mmol/L

Give **10%** of TDD as a correction.
Give in addition to insulin required for food.

Blood ketones above 1.5mmol/L*

Give **20%** of TDD as a correction.
Give in addition to insulin required for food.

Continue to cycle through flowchart every **2 hours** (even through the night).

If you have been trying to resolve ketones and hyperglycaemia for more than 4 hours with no improvement please seek help.
Admission is required if:
 ! Ketones continue rising above 1.5mmol/L despite above management.
 ! Ketones are above 3mmol/L with vomiting or glucose above 14mmol/L. DKA risk is high.
 ! Vomiting or can't keep fluids down.

If ketones are above 0.6mmol/L when glucose is between 3.9-5.5mmol/L, these are most likely 'starvation ketones' and usually respond to consuming carbohydrates with insulin.
If fluids are not tolerated, admission may be required.

The following 'Sick Day Rules' should be followed alongside the flowchart:

Insulin

- Never stop or omit insulin (doses may need to be adjusted depending on glucose and ketone levels).
- Insulin is required to switch off ketone production.
- Give fast acting insulin every 2 hours if blood glucose is above target and/or blood ketones remain above 0.6mmol/L (follow flowchart for doses).

Blood glucose and ketones checking

- Check glucose and ketones more frequently in illness e.g. every 2 hours including through the night.
- Check blood ketones regardless of blood glucose level when unwell.
- Follow sick day rules advice until ketones are below 0.6mmol/L for 2 consecutive checks.

Fluids

- If refusing to eat, sugary fluids can be given with insulin.
- Keep well hydrated by drinking plenty of sugar-free fluids for normal or high glucose levels (e.g. at least 50mls/hr for pre-school, at least 100ml/hr for teens).
- Give insulin for fluid containing carbohydrates, unless blood glucose levels are less than 5.5mmol/L or hypo.