

Children and Young People's Diabetes Service





How to manage high blood glucose levels without ketones

Why should you treat high blood glucose levels?

Correcting high blood glucose levels is needed to help achieve good diabetes control. Left untreated the blood glucose level may be high for hours, this can make you feel unwell and if high blood glucose levels happen often will cause a high HbA1c. A correction dose is an extra dose of fast acting insulin given to lower the blood glucose level back to target.

What should your blood glucose levels be?

It is recommended that your blood glucose levels should be

-  4-6mmol/L on waking
-  4-7mmol/l before meals
-  Below 9mmol/L 2 hours after meals
-  Below 7 mmol/L before bed

If your blood glucose level is above target you should take some extra fast acting insulin (Novorapid, Humalog or Apidra) as a **correction dose**.

If the blood glucose level is above 14mmol/L you need to check for blood ketones. If ketones are greater than 0.6mmol/L follow your sick day rules.

If you notice a pattern of high blood glucose levels you should think about what may be causing the high blood glucose levels and make changes to your diabetes management. You can contact the diabetes team for help adjusting your insulin doses if needed.



How to work out a correction dose?

Calculating your insulin sensitivity factor

You need to calculate your insulin sensitivity factor to work out your correction doses. To do this you need to know how much insulin you usually take a day.

1. Calculate your average Total Daily Dose (TDD) of insulin over about 4 days
2. Divide 100 by your TDD
3. This is the amount 1 unit of insulin will lower your blood glucose level. This is your insulin sensitivity factor

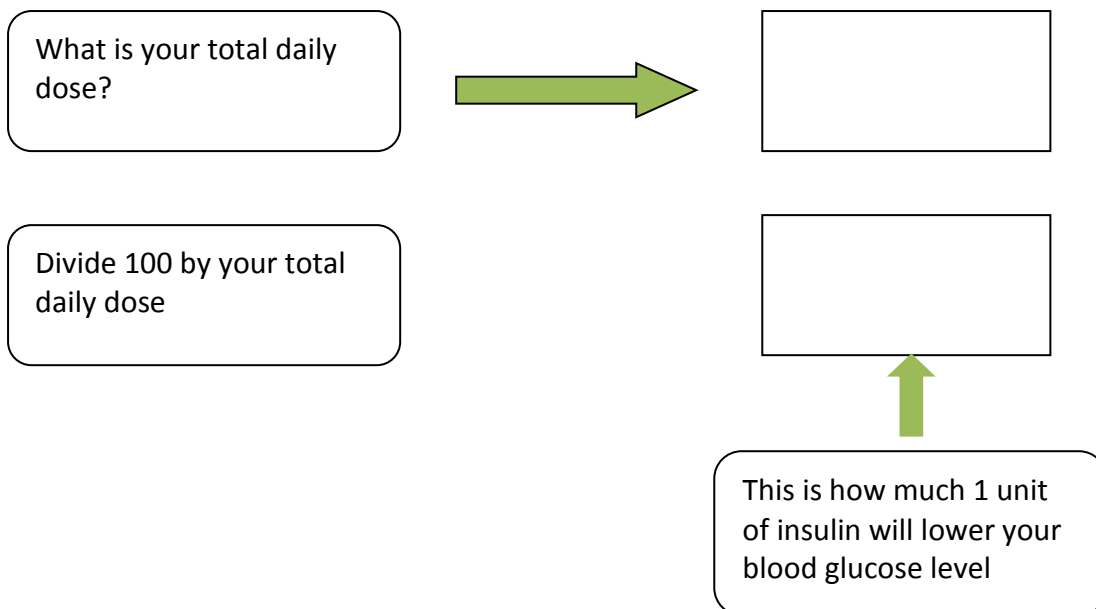
You will need to check your insulin sensitivity factor whenever the amount of insulin you take changes, for example

-  If your long acting insulin dose changes
-  If your insulin to carbohydrate ratio changes

Use this chart to help you calculate your total daily dose

Insulin given	Day 1	Day 2	Day 3	Day 4		
Long acting insulin dose					Keep a record in your blood glucose diary of the amount of insulin taken at different times of the day	
Breakfast						
Lunch						
Tea						
Snacks						
Total					Add the totals together	
					Divide by 4 to find your average TDD	

To calculate your insulin sensitivity factor



The amount of insulin you need to 'correct' your blood glucose level will depend on how sensitive you are to the insulin. Different things will affect your insulin sensitivity. These include;

- ✚ How well you are
- ✚ Whether you have ketones
- ✚ How stressed you are feeling
- ✚ How active you have been
- ✚ How much active insulin is in your body

What is active insulin?

This is insulin that is still working from a previous injection. It may also be called insulin on board. If you use a smart blood glucose meter this will take active insulin into account each time it calculates a correction dose.

If you do not use a smart meter with a bolus advisor you should not give a correction dose within **2hours** of a previous injection of fast acting insulin.

Calculate your correction dose by

- A** set your target blood glucose level
- B** work out how much you need to drop your blood glucose by; current BG level minus your target
- C** divide the amount you want your BG to drop by your sensitivity factor

Example if your target blood glucose level is 6mmol/L and your blood glucose is 16mmol/L and your insulin sensitivity is 1 unit will lower your blood glucose by 2mmol/L

$$\begin{aligned} \mathbf{A} &= \mathbf{6} \\ \mathbf{B} &= 16 \text{ minus } 6 = \mathbf{10mmol} \\ \mathbf{C} &= 10 \text{ divided by } 2 = \mathbf{5 \text{ units}} \end{aligned}$$

Your correction dose would be 5 units of fast acting insulin.

When to give a correction dose:

You can give a correction dose whenever you find a blood glucose level above target before a meal and above 9mmol/L 2hours after a meal.

Always check your blood glucose level 2hours after taking a correction dose. If after 2 hours the blood glucose remains above target you can repeat the correction dose.

- If a correction dose is required at mealtimes and the usual insulin is mixed insulin e.g. Novomix 30, Mixtard 30, Humalog Mix 25, Humalog Mix 50 give an extra injection of Novorapid/ Humalog / Apidra.
- Sometimes you may choose to give a reduced correction dose, for example before bed or after strenuous exercise or if you have over treated a low blood glucose level (hypo).

You can contact the diabetes team by email for advice about diabetes management diabetes@alderhey.nhs.uk or you can call us.

This information can be made available in other languages and formats if requested.

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