

Adjusting Insulin doses on multiple daily injections based on Blood Glucose levels

Patient information leaflet

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**If you need this leaflet in a different language or accessible format
please speak to a member of staff who can arrange it for you.**

اگر به این بروشور به زبان دیگر یا در قالب دسترس پذیر نیاز دارید،
لطفاً با یکی از کارکنان صحبت کنید تا آن را برای شما تهیه کند.

Jeśli niniejsza ulotka ma być dostępna w innym języku lub formacie,
proszę skontaktować się z członkiem personelu, który ją dla Państwa przygotuje.

Dacă aveți nevoie de această broșură într-o altă limbă sau într-un format accesibil,
vă rog să discutați cu un membru al personalului să se ocupe
de acest lucru pentru dumneavoastră

如果您需要本传单的其他语言版本或无障碍格式，请联系工作人员为您安排。

إذا احتجت إلى هذه النشرة بلغة أخرى، أو بتيسيق
يسهل الوصول إليه، يرجى التحدث إلى أحد الموظفين لترتيب ذلك لك.

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Adjusting insulin doses to keep blood glucose levels within target range is part of looking after diabetes. You may need to adjust insulin doses according to changes to food intake, lifestyle and activity levels.

To adjust your insulin doses you need to:

- Know your blood glucose targets.
- Identify a pattern over 3 or more days.
- Know which insulin dose to change.
- Only make one change at a time.
- Only make small adjustments, especially without discussion with the paediatric diabetes team.
- Always deal with lows first.

When should the blood glucose be checked?

If you wear a continuous glucose monitor (CGM, for example Dexcom or Libre), this will regularly check your glucose levels.

If you wear a CGM, you should regularly review your glucose profile rather than performing finger pricks. Ask the Paediatric Diabetes Team if you need help reviewing this information.

If you do not have a CGM or your CGM is not working you will need to perform regular blood glucose checks. These need to be checked before and 2 hours after meals, before bed and between 2am and 3am at overnight.

Regular checking and adjustment of insulin doses will help you to achieve optimal diabetes control. Because children and teenagers grow and change you need to review insulin doses regularly.

Following changes to insulin doses, review the blood glucose levels over 3-5 days before making further changes. Then check your other meals and make changes as needed.

Special Instructions

Any condition specific danger signals to look out for:

- Symptoms related to hypoglycaemia.
- Please refer to relevant patient information leaflet on how to manage the symptoms and condition.

This leaflet has been written to help manage diabetes at home. Do not rely on this leaflet alone for information about your child's treatment.

If you require any further information, please telephone and ask for your paediatric diabetes specialist nurse.

The Diabetes team are here to support you: if you have any questions contact the Diabetes team on:

Ormskirk:

- Paediatric Diabetes Office:
01695 656 766 or 01695 656 867.
- Children's Ward: ODGH: 01695 656 912.

Whiston:

- Whiston Hospital: 0151 430 1404.

Changing your rapid acting insulin doses

Your dose of rapid acting insulin will be based on the amount of carbohydrates within a meal or snack. 1 unit of insulin covers a certain amount of carbohydrates, this is called the insulin to carbohydrate ratio (ICR). This may be different at different meals or times of day.

Your ICR for your fast acting insulin may need to change if your blood glucose levels are rising or falling too much 2 hours after eating.

Try and check your blood glucose level before a meal and 2 hours after a meal.

If you have a pattern of blood glucose levels above or below target (less than 3.9mmol/L or above 9mmol/L) 2 hours after eating you should change your ICR.

- Weakening the ICR reduces the insulin dose with a meal, you should do this if you have a low blood glucose after a meal.
- Strengthening the ICR increases the insulin dose with a meal, you should do this if you have a high blood glucose after a meal.

Increase or decrease your ratio in small increments and review the blood glucose levels over 3-5 days before making further changes. Please speak to the diabetes team for support with this.

Blood glucose targets

Before meals/snacks	4 - 8 mmol/L
2 hours after meals/snacks	Below 9 mmol/L
Before bed	5 - 8 mmol/L

Your blood glucose should be within the above target ranges as much as possible.

When blood glucose levels are generally in target range, mild hypos will happen about once a week, for example with unexpected exercise. It is normal for insulin requirements to change during illness.

Lumpy injection sites can alter absorption of insulin, therefore it is important that you avoid using these sites– see insulin administration leaflet for more information.

Which insulin, which result?

On multiple daily injections you will be using 2 different types of insulin. Rapid acting insulin with food and a long acting background insulin. You need to be able to adjust both of these different insulin types.

Your long acting insulin (Lantus, Levemir or Tresiba) is the insulin your body needs to control your blood glucose levels across the day.

Your meal time rapid acting insulin (Novorapid, Humalog or Apidra) is usually adjusted if your 2 hour post meal blood glucose is above or below target.

If you have to give regular correction doses at meal times you need to review your insulin doses at meal times.

If blood glucose levels at the same time of day are not in range for 3 or more days in a row, you may need to adjust an insulin dose.

If you are unsure about making changes please contact a member of the paediatric diabetes team for advice/support.

If you make any changes to insulin doses, review the blood glucose levels over 3-5 days before making further changes.

The Effects of insulin on glucose readings		
Insulin	Affects	Blood glucose reading
Long acting insulin eg Lantus or Levemir	→	Blood glucose levels overnight and in the morning before breakfast
Breakfast rapid acting	→	Blood glucose level 2 hours after breakfast & before lunch
Lunch/midday rapid acting	→	Blood glucose 2 hours after lunch and before evening meal
Evening meal rapid acting	→	Blood glucose 2 hours after evening meal and before bed/supper

Other questions to ask before making changes

- Could the high or low blood glucose level be due to changes in activity levels?
- Could a high glucose level 2 hours after a meal be caused by carbohydrate counting mistakes?
- Could pre meal high blood glucose levels be due to snacks that have not been covered with insulin?
- Could a pre breakfast high blood glucose level be caused by supper without insulin?
- Could a low pre breakfast be caused by exercise/activity the day before?
- Are rapid acting insulin doses being given 15 minutes before eating?

Changing your long acting insulin doses

Your long acting dose should be adjusted if you have pattern of 3 or more high or low readings before breakfast.

- If your readings are high, increase the dose of long acting insulin.
- If the readings are low, decrease the long acting insulin dose.

Use the below table to calculate the new dose of long acting insulin. Change your dose based on your current dose of long acting insulin.

Current long acting insulin dose	Increase or decrease by
Less than 5 units	0.5 units
Between 5 and 10 units	1 unit
Between 10.5 and 20 units	2 units
More than 20 units	3 units