Adjusting your bolus Insulin

Name of my bolus insulin	Name of my device

My target glucose range is: mmol/L pre meals mmol/L pre bed

Bolus insulin is a rapid-acting insulin designed to mimic the bursts of insulin your body used to produce in response to food containing carbohydrates. It starts to work very quickly and lasts for about 4 hours. The dose needed will change according to the different amounts of carbohydrates in your meals. Please remember to only take bolus insulin with meals containing carbohydrate.

Regularly checking your glucose levels before a meal and comparing them to 4 hours after a meal will help you see how effectively your bolus insulin is working. If your result remains within a 2.0-3.0 mmol/L difference, then your dose is correct.

The step-by-step approach to bolus insulin dose adjustment

1. Which glucose reading is out of your target range?

2. Exclude other causes for above or below target glucose, such as a larger or smaller portion of carbohydrates, illness, snacks, physical activity, alcohol, and missed diabetes medication.

3. Is there a consistent pattern where your glucose readings are above or below your target range at the same time of day on 3 - 4 consecutive days?

4. Which bolus insulin dose is responsible?

(Look back at the bolus insulin dose given with the previous meal; for example, if your pre-lunch glucose levels are consistently outside your target range, you may need to increase/ decrease your breakfast insulin dose).

5. Adjust your bolus insulin doses as per the tables below.

For people administered fixed bolus insulin doses at meals times

Mealtime dose	Pattern in mealtime glucose values below your target	Pattern in mealtime glucose readings above your target
≤10 units	Decrease by 1 unit	Increase by 1 unit
>11–19 units	Decrease by 2 units	Increase by 2 units
≥20 units	Decrease by 3 units	Increase by 3 units

If you are Carbohydrate counting, please see overleaf for an insulin to carbohydrate ratio adjustment table.

Information for Patients

Find your Insulin to carbohydrate ratio (ICR) in the table below and adjust up or down as suggested. For example, if your breakfast ICR ratio is 1 unit to 10g of Carbohydrate and your pre-lunch readings are consistently above your target range you can increase your breakfast ICR to 1.5 units to 10g.

Insulin to carbohydrate ration (ICR) Mealtime dose	**Pattern of mealtime glucose readings below your target**	**Pattern of mealtime glucose readings above your target**
1 unit/10 g	Decrease to 0.5 unit/10 g	Increase to 1.5 unit/10g
1.5 unit/10g	Decrease to 1 unit/10g	Increase to 2 unit/10g
2 unit/10g	Decrease to 1.5 unit/10g	Increase to 2.5 units/10g
2.5 units/10g	Decrease to 2 unit/10g	Increase to 3 units/10g
3 units/10g	Decrease to 2.5 units/10g	Increase to 3.5 units/10g

6. Review your glucose over 3 to 4 days after the change - has the insulin dose adjustment been effective?

7. Repeat the process from step 1 until target glucose consistently achieved.

Only make **one** dose adjustment at a time every 3-4 days. You will know when you have made the correct changes as your glucose levels will stay within your target range without experiencing regular hypos (when your glucose falls to below 4 mmol).

For further advice contact your GP or Diabetes Team.

What is hypoglycaemia?

Hypoglycaemia, or a 'hypo', occurs when the level of glucose in your blood drops too low. A blood glucose level of below 4.0 mmol/L is a hypo. Some people may experience hypoglycaemic symptoms at higher blood glucose levels.

What are the signs?

Signs of hypoglycaemia include hunger, irritability, blurred vision, trembling, feeling drowsy, sweating heavily, tingling of the lips, difficulty concentrating, slurred speech, and looking pale.

If left untreated, a severe hypo can lead to unconsciousness. If you are unable to wake up a person with diabetes, call 999 immediately.

How to treat a hypo

1. At the first signs of a hypo, you should test your blood glucose level to confirm hypoglycaemia. If you are using a CGM device (Libre or Dexcom) please confirm that you are experiencing a hypo by using a manual (finger prick) test with a glucose meter.

2. If your blood glucose level is below 4.0 mmol/L, have 15-20g of a fast-acting carbohydrate.

Examples of hypo treatments include:

- 200ml (a small carton) of smooth orange juice
- 60 ml Glucojuice or Lift, 5 glucotabs or 6 dextrose tablets

- A glass of full sugar (not diet) fizzy drink. Check the amount of carbohydrate per 100ml as these vary. You may need more than 200ml
- Sweets: 4-5 jelly babies, or 8- 10 jellybeans

Wait 10-15 minutes and re-test your blood glucose level.

If your level is still low, take another 15-20g fast-acting carbohydrate and re-test after another 10-15 minutes. If your level is 4.0 mmol/L or higher, you should then eat some longer-acting carbohydrate. If it is not a mealtime, have a snack of 15-20g of longer-acting carbohydrate to make sure your glucose level does not drop again before your next meal.

This could be one of the following:

A piece of fruit, a slice of bread or toast, a pot of yogurt, a small bowl of breakfast cereal, half a pint of milk, a medium slice of malt loaf, two digestive biscuits.

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