

How to adjust your insulin dose with basal bolus regime

Introduction

This leaflet will explain how to safely adjust your insulin dose. We advise you test your blood glucose levels before each meal and bedtime to be able to make the most accurate insulin adjustments.

The ideal blood glucose levels are:

Before breakfast	5 to 7mmol/l
Before other meals	4 to 7mmol/l
Before bedtime	8 mmol/l – if it is lower, have a snack unless you are confident your basal insulin dose is correct

The targets may be different for you based on individual situations such as, loss of hypo awareness, pregnancy or if you use an insulin pump.

Things to consider before adjusting your insulin

- Hypoglycaemia - if you experience frequent hypos, you must establish the cause of the lows. Please speak to us if you have any questions (the contact details are at the end of this leaflet).
- Exercise - different types of activity can impact blood glucose levels. You may find that some types of activity cause your blood glucose levels to rise or fall, consider this when adjusting your insulin.
- Illness - blood glucose levels may be affected by illness. If you are unwell, follow the sick day rules and test for ketones.
- Injection technique - erratic blood glucose levels can be caused by insulin not being absorbed properly. This happens if you develop fatty lumps under the skin (lipohypertrophy). Rotating injection sites can reduce the risk of this. Please speak to the team for more information.

Reference No.

GHP11290_01_22

Department

Diabetes

Review due

January 2025

Adjusting your BASAL (long-acting) insulin dose

It is important that your basal insulin dose is correct before adjusting other insulin doses. Basal insulin should keep the blood glucose stable overnight and in-between meals. It is usually given once a day, but in certain circumstances can be given twice a day. The insulin must be given at the same time each day (or at regular 12 hour intervals if twice a day). The blood glucose level before bedtime and before breakfast should be within 1 to 3mmol/l of each other. Ideally the before bed reading should be taken 2 to 4 hours after eating/giving rapid insulin.

Before adjusting the basal insulin, consider if you are experiencing nocturnal hypoglycaemia (overnight hypos) or dawn phenomenon. To rule this out, check your blood glucose level in the early hours i.e. 2:00 to 3:00am. Dawn phenomenon is an increase in the blood glucose in the early hours of the morning caused by the body's release of certain hormones.

Use the following examples to support with adjustments

If your blood glucose increases overnight

Increase the basal insulin by 10% (or see dosing table below) and check again after 3 days. If using a twice a day basal insulin, increase the evening basal insulin by 10% (or see dosing table) and review after 3 days.

Dosing table	
Current Insulin dose	Dose change
Less than 10 units	Increase or decrease by 1 unit
Between 10 and 39 units	Increase or decrease by 2 units
More than 40 units	Increase or decrease by 4 units

**Patient
Information**

	Before breakfast	Before lunch	Before evening meal	Before bed
Day 1	-			8.5
Day 2	11.8 ←			9.2
Day 3	13.5 ←			-

If your blood glucose reduces overnight (or you think you are experiencing nocturnal hypoglycaemia)

Reduce the basal insulin by 10% (or see dosing table) and review after 3 days. If using a twice a day basal insulin reduce the evening basal insulin by 10% (or see dosing table) and review after 3 days.

	Before breakfast	Before lunch	Before evening meal	Before bed
Day 1	-			8.5
Day 2	3.1 ←			9.2
Day 3	5.1 ←			-

If your blood glucose levels are stable but above target across the day

Increase basal insulin by 10% (or see dosing table). If using a twice a day basal insulin increase the morning and evening basal insulin by 10% (or see dosing table).

	Before breakfast	Before lunch	Before evening meal	Before bed
Day 1	15.4	13.7	14.3	11.8
Day 2	11.8	15.1	13.6	14.2
Day 3	13.5	14.5	11.7	12.1

Patient
 Information




Adjusting your BOLUS (mealtime) insulin dose

Rapid acting insulin should be given before you eat (ideally 5 to 15 minutes before), to reduce the post meal spike (a 3mmol/l rise is to be expected). If your blood glucose is within target 3 to 4 hours after you have eaten, you are having the correct amount of mealtime insulin. Carbohydrate counting can improve the accuracy of your bolus insulin doses, please contact the team if you would like to learn how to do this.

If the blood glucose levels are increasing between meals

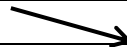
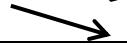
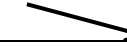
You need to increase the insulin taken with the meal before the rise. For example, if the lunchtime glucose levels are consistently above target; increase the breakfast insulin dose by 10% (or see dosing table).

If you have had a snack between meals, or have exercised, consider the impact of this on your blood glucose levels before increasing insulin doses.

	Before breakfast	Before lunch
Day 1	5.4 	13.7
Day 2	6.8 	15.1
Day 3	5.5 	14.5

If the blood glucose levels are dropping between meals

You need to reduce the insulin taken with the meal before the drop. For example, if the evening meal glucose levels are below target or a lot lower than the before the lunchtime reading; consider reducing the lunchtime insulin dose by 10% (or see dosing table).

	Before lunch	Before evening meal
Day 1	8.4 	4.7
Day 2	7.8 	3.1
Day 3	9.5 	4.5

**Patient
Information**

Contact information

Diabetes Specialist Nurses

Gloucestershire Royal Hospital

Tel: 0300 422 8613

Cheltenham General Hospital

Tel: 0300 422 4266

Please leave a message with your name, date of birth/hospital number and telephone number and we will aim to call you within 48hours.

Email: ghn-tr.diabetesnurses@nhs.net

Diabetes Specialist Dietitians

Email: ghn-tr.diet.diabetes@nhs.net

Tel: 0300 422 8529

Content reviewed: January 2022