

# Testing your background (basal) insulin dose for type 1 diabetes

Diabetes Service

Information for Adult Patients

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## What is basal insulin?

People with type 1 diabetes must take insulin to control blood sugar levels at different points during the day. There are different types of insulin that take effect at different speeds and last for varying lengths of time. They are combined to control type 1 diabetes.

Timing and type are important when managing blood sugar with insulin for example, after meals, a fast-acting insulin is needed. This deals with the sudden rise in blood glucose.

Slow or long-acting insulin reaches the bloodstream several hours after injection. This is also known as background or **basal** insulin. This means it works throughout the day to give your body the insulin it needs whether you eat or not. Its job is to keep your glucose levels stable between meals and overnight and provide you with 24 hours of insulin cover.

There are different types and brands of basal insulin and it is taken either 1 or 2 times a day. These include:

- Levemir
- Lantus
- Abasaglar
- Tresiba
- Toujeo
- Humulin I

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## Why do I need to test the dose of basal insulin?

If your basal insulin dose is too high or low, it may be pushing your glucose levels up or pulling them down. When the basal insulin dose is right, your diabetes can be much easier to manage.

## How do I do a basal test?

Doing a basal test involves having a carbohydrate free meal at lunch time, or you can think about delaying a meal or fasting. You will then need to check what effect this has on blood glucose levels, when only the basal insulin is working.

If the basal dose is correct, testing should show the blood glucose level staying stable.

## How do I check whether my morning basal insulin dose is correct?

It is important the background insulin dose is right when trying to achieve good diabetes control.

1. Take your usual dose of basal insulin at your normal time
2. Check your blood glucose before breakfast.
3. Eat your breakfast and take your mealtime insulin with this meal as usual.
4. Do not snack between breakfast and lunch.
5. Leave at least 4 hours after your breakfast and lunch. Check your blood glucose before lunch.
6. Eat a carbohydrate free lunch (for example, an omelette or chicken/cheese salad or chicken breast and vegetables).
7. Do not inject rapid acting insulin with your lunch and do not give any correction doses at lunch or between meals.
8. Try not to be more active than normal.
9. Do not snack between lunch and evening meal.
10. Check your blood glucose level before your evening meal.

**Repeat the above on 2 to 3 separate occasions and look for a pattern in your test results.**

Or instead of step 6 you could have your usual lunch later than normal. Try delaying lunch by around 3 hours or missing lunch.

If you want to miss lunch altogether follow the steps as above. Ensure you check your blood glucose around the time you would normally eat lunch.

**If you have blood glucose readings less than 4mmol/l (hypoglycaemia) stop the basal dose of insulin, you should test and treat the hypoglycaemia.**

## What does the result mean?

If your readings have gone up on each occasion, increase your morning basal insulin by 10%. Repeat the above experiment after a few days once the new dose has settled in.

If your readings have dropped on both occasions, decrease your morning basal insulin by 10% and repeat the above experiment after a few days once the new dose has settled in.

Date	Before breakfast	Before lunch (carb free)	Before evening meal	Before bed
Monday 2nd	7.3	8.4	11	7.9
Tuesday 3rd	8.1	9.2	12.1	8.7

## How to check whether my evening basal insulin dose is correct?

Date	Before breakfast	Before lunch (carb free)	Before evening meal	Before bed
Monday 2nd	7.3	8.4	6.2	7.9
Tuesday 3rd	8.1	18.2	15.1	

It is important the basal insulin dose is right when trying to achieve good diabetes control.

The correct dose of insulin should hold your blood glucose steady overnight. You should not have to have a snack before bed if you do not wish to.

1. Take your usual dose of basal insulin at night.
2. Try to make sure your evening meal is at least 4 hours before the time you go to bed.
3. Eat your evening meal and take your rapid insulin with this meal as usual.
4. Do not snack between your evening meal and bed time.
5. Try not to be more active than usual.
6. Check your blood glucose before bed.
7. Do not take a correction dose of rapid insulin before bed (even if you have a high blood glucose reading).
8. Check your blood glucose level at 3 to 4 am.
9. Check the blood glucose level the next morning before breakfast.

**Do this on 2 to 3 separate occasions and look for a pattern in your test results**

## What does the result mean?

If your blood glucose readings have gone up steadily through the night, and have done this on each occasion, then increase your evening basal insulin by 10%. Repeat the above experiment after a few days once the new dose has settled in.

Date	Before breakfast	Before lunch	Before evening meal	Before bed
Monday 2nd	7.3	8.4	7.4	7.9
Tuesday 3rd	10.3	7.3	8.2	9.6
Wednesday 4th	14.1	8.7	6.9	

If your readings have stayed stable between bed time and 3 to 4am, but then gone up before breakfast, this is what we call the 'dawn rise'. Do not adjust your background insulin. Discuss this with your diabetes team at your next appointment.

If your blood glucose readings have dropped on both occasions, decrease your evening basal insulin by 10% and repeat the above experiment after a few days once the new dose has settled in. If you have hypoglycaemia overnight, do not wait for a pattern. Immediately reduce your evening basal insulin dose by 20% the next evening.

Date	Before breakfast	Before lunch	Before evening meal	Before bed
Monday 2nd	7.3	8.4	7.4	7.9
Tuesday 3rd	4.1			

## Contact details

For further support please contact your normal diabetes care provider.

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