NHS
West Suffolk
NHS Foundation Trust

Patient information

Testing basal and bolus settings of your insulin pump

Children and Young People's Diabetes Service

This information will outline how you can test the basal rate and bolus settings on your insulin pump.

These records are designed to help you to see how well your background or basal insulin is working.

The principle is to test your basal rates in sections of the day, so that you only need to fast for part of the day, for each basal rate testing period.

A 'fast' will start 4 hours after the last meal or insulin bolus.

It is often a good idea to start testing your basal rates overnight before moving on to the first part of the day, the middle part of the day and then the end of the day.

For each part of the day, once you have carried out basal rate testing on a couple of different days, take a look at how your blood sugars have responded to fasting.

If your background or basal insulin is working well, your blood glucose levels should remain stable when you miss a meal. The aim is to keep all blood glucose levels between 4 - 7 mmol/l, during your fasting period.

If your blood glucose levels change from one interval to the other by 1.5 – 2mmol/L or over, then you may need to change your basal rates.

Adjust basal rates 2 hours prior to the blood glucose level being out of target. For example if your blood glucose levels tend to rise by over 3mmol/L at 1200 then increase your basal rate at 1000.

Suggested basal rate adjustments:

A suggested basal rate adjustment is a 10% change in basal rate, at the specified time block.

Avoid testing basal rates:

- if you have taken strenuous exercise over the previous 24hr period.
- if you have an infection and feel unwell

Whilst testing basal rates you should try to miss meals and avoid eating anything at all.

Only miss one meal in any day.

If you find it too difficult to miss meals, you can do the test by having carbohydrate free meals or snacks.

You can eat or drink unlimited amounts of the following while testing your basal rates:

Mushrooms
Sticks of celery
Rocket salad
Broccoli florets
Pak choi
Olives
Black tea or coffee
Bovril®
Sugar free cordial
Sugar free fizzy drinks
Sugar free chewing gum
Sugar free jelly

You can eat **some** of the following foods while testing your basal rates, but because protein in large quantities can have an effect on blood glucose, they must be limited.

You can eat 2 portions of the quantities below during any basal rate testing period:

1 rasher of bacon
1 average frankfurter (no bun or sauce)
1 salami stick (25g)
30g plain sliced ham, beef, pork or chicken
25g corned beef
1 egg
50g feta cheese or mozzarella
1 individual cheese e.g. Cheese string, Babybel®

25g tinned tuna in brine or spring water
50g tinned salmon, pilchards, crabmeat or mackerel in brine
50g prawns
25g smoked or fresh salmon
30g smoked or fresh mackerel

If you have a blood sugar below 4mmol/l during the fast, you need to stop and treat the low blood sugar. Abandon the tests for that day.

If you have a blood sugar above 14mmol/l during the fast, you need to check blood ketones.

If blood ketones are under 0.6mmols (normal) DO NOT correct the high blood sugar and continue to do the fasting tests.

If ketones are raised (over 0.6mmols) Give the correction insulin and abandon the tests for that day.

Start testing 4 hours after your evening meal.

If you are using the Freestyle Libre or Continuous Glucose Monitoring (CGM) you do not need to do blood glucose tests, please let the team know which days you have completed fasting tests, so we can review your data.

Overnight Fasting Profiles

Record pre-bed glucose levels if you go to bed earlier than midnight i.e. if you eat your evening meal at 6.00pm - start testing at 10.00pm. Omit bedtime snack.

Time of last meal:

Please record your blood glucose levels in the boxes marked with an asterisk *

Date	Time	Pre-bed	Midnight	1.00am	2.00am	3.00am	4.00am	5.00am	6.00am	7.00am	8.00am
No food or carbohydrate free food only											
		*	*		*		*		*		*
		*		*		*		*		*	

Morning Fasting Profiles

- Do not eat from midnight until 12 noon the next day
- Miss breakfast or have carbohydrate free meal / snack
- Record pre bed glucose levels if you go to bed earlier than midnight

Time of last meal:

Please record your blood glucose levels in the boxes marked with an asterisk *

Date	Time	Pre-bed	6.00am	7.00am	8.00am	9.00am	10.00am	11.00am	Midday
No food or carbohydrate free food only									
		*	*		*		*		*
		*	*		*		*		*

Lunchtime Fasting Profiles

- Have breakfast just before 8.00am
- Miss lunch or have carbohydrate free meal / snack
- Have dinner containing carbohydrates after 6.00pm

Time of breakfast:
Carbohydrate content of breakfast:
Insulin bolus given for breakfast:

Please record your blood glucose levels in the boxes marked with an asterisk *

Date	Time	Pre-breakfast	8.00am	9.00am	10.00am	11.00am	12.00pm	1.00pm	2.00pm	3.00pm	4.00pm	5.00pm	6.00pm
No food or carbohydrate free food only													
		*	*		*		*		*		*		*
		*	*		*		*		*		*		*

Evening Fasting Profiles

- Have lunch just before midday
- Miss dinner or have carbohydrate free meal
- Meal with carbohydrate after 8.00pm

Time of lunch:
Carbohydrate content of lunch:
Insulin bolus given for lunch:

Please record your blood glucose levels in the boxes marked with an asterisk *

Date	Time	11.00am	12.00pm	1.00pm	2.00pm	3.00pm	4.00pm	5.00pm	6.00pm	7.00pm	8.00pm	9.00pm	
No food or carbohydrate free food only													
		*	*		*		*		*		*		
		*	*		*		*		*		*		

To check insulin: carbohydrate ratios:

- Check blood glucose before a meal
- Deliver calculated bolus before meal (Novorapid and Humalog insulin is recommended to be injected/delivered 15 minutes prior to food. Fiasp can be injected just before eating.)
- Test blood glucose 2 - 3 hours after the meal has been eaten. If this reading is consistently above 9mmols (for 3 consecutive days) consider changing carbohydrate ratio to give more insulin for that meal.
- Test blood glucose 2 - 3 hours after the meal has been eaten. If this reading is consistently below 5mmols (for 3 consecutive days) and at the next meal the reading is low (under 4mmols) consider changing carbohydrate ratio to give less insulin for that meal.
- Please contact the diabetes team if you would like advice on how much to increase or decrease your carbohydrate ratios by.

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tds@wsh.nhs.uk (Transition service 17 – 19 years)

Some useful numbers:

Dietitians	01284 713609
Paediatric Diabetes Nurses	01284 713612
Adolescent Diabetes Team	01284 713311

Adapted with kind permission, from literature produced by the Paediatric Diabetes Team of the Oxford Children's Hospital, Oxford.