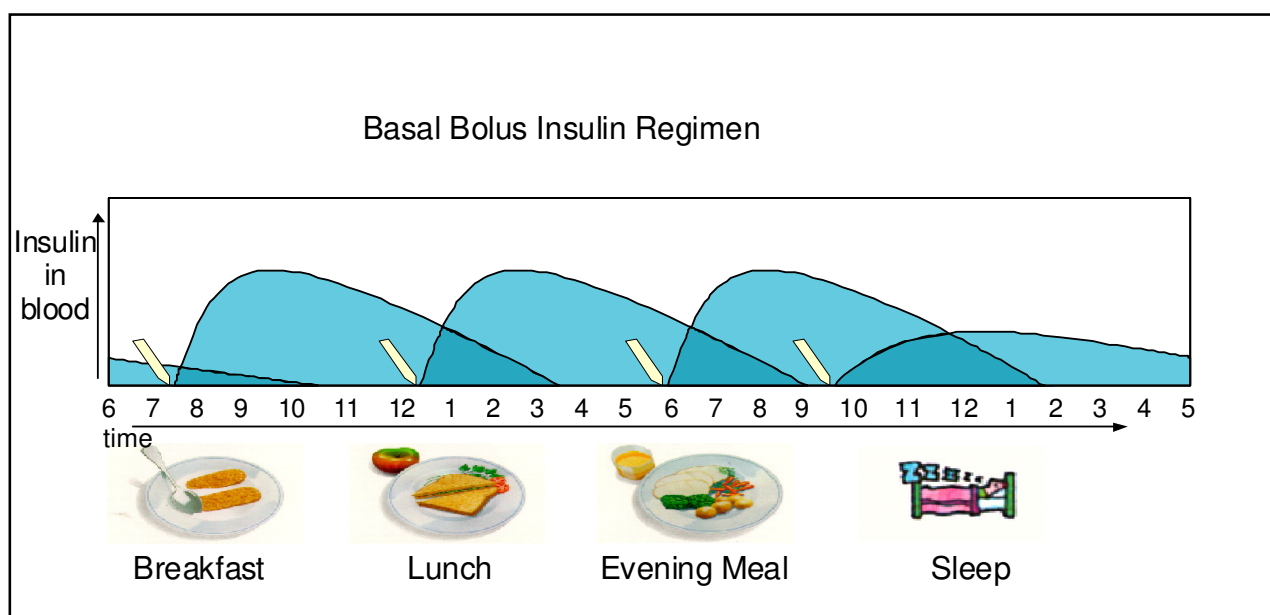




NHS Tayside Diabetes Managed Clinical Network Patient Information Leaflet

Basal Bolus Regimen Insulin Adjustment (Multiple Daily Injection)



What is basal (long acting) insulin?

Your body needs a basic amount of insulin all the time - day and night - even between meals. This is called 'basal' insulin. It helps control your blood sugar at times when you are not eating but when your body still needs energy. Basal insulin is usually given once per day.

The amount of insulin you require can vary due to changes in the food you eat and activity or exercise you undertake. This leaflet is designed to give you information about the action of insulin, and how and when to adjust insulin doses.

Types of basal (long acting) insulin

Intermediate acting insulin – e.g. Insulatard or Humulin I

Long acting insulin – e.g. Glargine (Lantus) or Detemir (Levemir)

What is bolus (short acting) insulin?

Bolus insulin is usually given before a main meal. When you eat a meal your blood sugar level rises as carbohydrate food is turned into sugar. Insulin helps sugar move from the blood stream into the body cells to make energy. You need 'bolus' insulin to cope with the rise in sugar level after meals.

Types of bolus insulin

Short acting insulin such as Actrapid or Humulin S should be given 20 minutes before a main meal.

Rapid acting insulin such as Novorapid, Humalog, and Apidra can be given immediately before or immediately after main meals.

Insulin Adjustment

- Before adjusting your insulin check the pattern in your blood sugar levels – it is useful to check blood sugar levels before each injection for 2-3 days before adjusting insulin
- Ideally blood sugar levels should be between 4-7mmol/L before meals (your personal targets can be discussed with your diabetes healthcare professional)
- During illness you may need to increase your insulin urgently (*link to sick day rules leaflet*)
- Insulin can be adjusted in advance if you anticipate changes in your dietary intake or activity
- Insulin adjustment before, during and/or after exercise may be required – your personal adjustment guidelines can be discussed with your healthcare professional

Why are my blood sugar levels sometimes high?

A temporary high blood sugar level from time to time is impossible to avoid in everyday life. Reasons for high blood sugar levels include:

- infection
- certain foodstuffs
- stress
- steroid therapy

- missed insulin
- insufficient insulin
- problem with injection technique or sites for example lipodystrophy, lumpy areas under injection sites)

GENERAL GUIDELINES ABOUT INSULIN ADJUSTMENT FOR HIGH BLOOD SUGARS

Identify and address the cause of high blood sugar level if possible. If the pattern of blood sugar level is still above 7mmol/L before mealtime increase your insulin dose.

If blood sugar level is:

- **high** at lunchtime **increase** the breakfast insulin dose
- **high** at teatime **increase** the lunchtime insulin dose
- **high** at suppertime **increase** the evening meal insulin dose
- **high** at breakfast time **increase** basal insulin dose

Increase the insulin dose by 10%. For example:

If you normally take 10 units of insulin then increase the dose by 1 unit to 11 units
If you normally take 20 units of insulin, increase the dose by 2 units to 22 units.

Contact the Diabetes Specialist Nurses if you need advice.

Why are my blood sugar levels sometimes low?

Reasons for low blood sugar levels include:

- missed or delayed meals
- not enough or no carbohydrate for example bread, pasta, rice, potato, cereal type foodstuffs) in meals
- too much insulin
- increased exercise, unexpected exercise
- alcohol
- problem with injection technique or sites for example lipodystrophy, lumpy areas under injection sites)

GENERAL GUIDELINES ABOUT INSULIN ADJUSTMENT FOR LOW BLOOD SUGARS

If you have **unexplained** 'hypo' (blood sugar below 4mmol/L) then reduce your insulin dose. The dose of insulin given **before** the 'hypo' should be reduced.

If you know the reason for the low blood sugar level then take action to prevent it from happening again.

If blood sugar level is:

- **low** at lunchtime **reduce** the breakfast insulin dose.
- **low** at teatime **reduce** the lunchtime insulin dose
- **low** at suppertime **reduce** the evening meal insulin dose
- **low** at breakfast time **reduce** basal insulin dose

Reduce your insulin dose by 10%. For example:

If you normally take 10 units of insulin, reduce the dose by 1 unit to 9 units

If you normally take 20 units of insulin, reduce the dose by 2 units to 18 units

Contact the Diabetes Specialist Nurses if you need advice

What if my blood sugar level is low (below 4mmol/L) and my insulin injection is due?

Have some quick acting carbohydrate e.g. 50mLs of lucozade or 3 glucose tablets to increase your blood sugar level first, then take your insulin and meal as usual. Follow insulin adjustment guidelines for low blood sugars to prevent the problem happening again.

Do not tolerate hypoglycaemia on a regular basis. Ask for help from your healthcare professional.

Diabetes Specialist Nurses

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