

Further Carbohydrate Counting

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Insulin dose adjustment

One example of an insulin bolus with food is to take **1 unit for every 10g carbohydrate or 1 unit per CP (Carbohydrate Portion)**.

The actual amount will be worked out on an individual basis and takes into account your insulin sensitivity. You can give this bolus at the beginning or end of the meal. To see if your doses of insulin are correct for your carbohydrate intake it important to check your blood glucose regularly prior to meals; it should be within the targets shown below.

| Ideal Target Blood Glucose | |
|----------------------------|------------------|
| Fasting | 5.5 – 7.5mmol/l |
| Pre-meal | 4.5 – 7.5mmol/l |
| Bedtime | 6.5 – 8.00mmol/l |

You can give extra units of insulin to correct a high blood glucose that is above these targets at meal times.

**Corrective dose of 1 unit will lower your blood glucose by 2-3 mmol/l
(If your insulin ratio is 1u/10g Carbohydrate)**

For example, if your blood sugar is out of target pre-meal (e.g. 12 mmol/l, you could give an extra 1-2 units of insulin in addition to the insulin required for the carbohydrate in the meal).

You may also need to adjust your insulin at other times, e.g. special occasions, if hyper (high) or hypo (low), during illness, when taking exercise or after drinking alcohol. You may also find that you can miss or delay a meal.

Still unsure?

If you are unsure of how much you are going to eat in a meal, it is better to finish the meal, then count the carbohydrate/CP total and then give the correct insulin.

If you are eating out and are unsure of the content of the food or how many courses you are going to eat you can split your insulin dose. Give enough to go with your main course (once you can see how much carbohydrate it contains) and then with dessert or even at the end of the meal.

Does food containing carbohydrate always require insulin?

Yes, but with large meals you don't always need to double your insulin. Meals containing more than 50g of carbohydrate may be more slowly processed by the body thus causing a slower rise in blood glucose

levels. It would be best to inject slightly less than the calculated insulin quantity or administer 2 bolus doses for the meal rather than one large bolus.

This should help give you better control. Try giving 50% of estimated dose at the beginning of the carbohydrate meal, then follow-up with the next 50% within 1 hour.

Snacks

You can choose to have snacks. With snacks larger than 15g carbohydrate, give insulin unless the snack is to treat a hypo or to compensate for exercise. If having snacks close to bedtime, do not take extra insulin as this may increase the risk of night time hypos. It may help to keep late evening snacks to fewer than 15g and keep larger snacks for early evening when you can take extra insulin. Remember, as your quick acting insulin lasts for approximately 4 hours if you snack close to your mealtime you may end up with insulin overlapping leaving you at greater risk of hypos.

Skipping meals

It is possible to do this when your background insulin has been given correctly. A bolus is only given when carbohydrate is eaten/drunk. It is not healthy to skip meals too often. Remember the importance of an overall well balanced diet

What about Protein Foods?

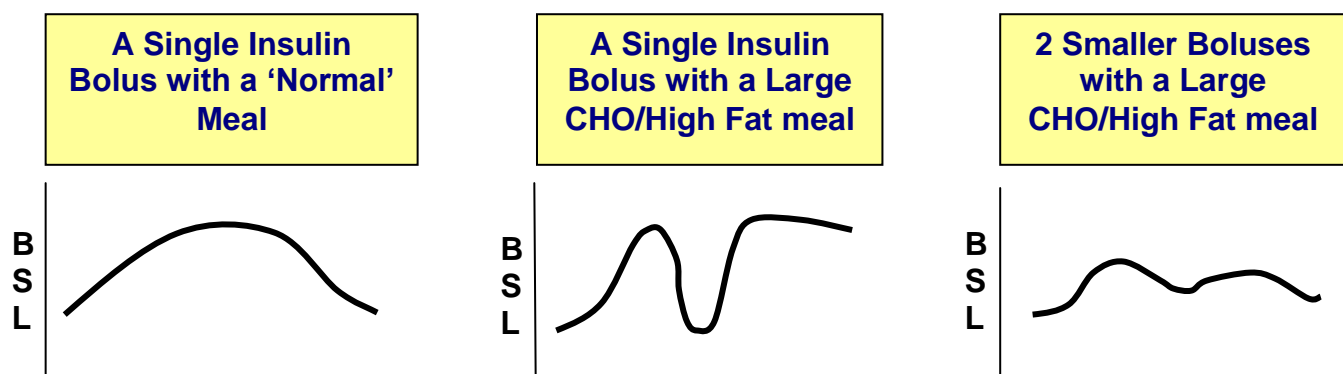
Protein foods (meat, fish, eggs, cheese) are unlikely to alter your blood glucose level, but you will need to count the protein if it has been processed with added flour (sauces, sausages), breadcrumbs (fish fingers) or pastry (meat pie, quiche, sausage roll). Check food labels for information. Some predominantly carbohydrate foods also contain fat and protein. Milk, yoghurt, and pasties and pies are examples of this.

What about High Fat/ High Carbohydrate meals?

Fat can slow the digestion of a meal and make your blood glucose levels rise more gradually over following the few hours. Similarly, meals with more than 50g carbohydrate may digest more slowly. High fat foods could include fish & chips, hamburger & fries, oily Chinese, Indian or Italian pasta meals. Whilst high carbohydrate meals can be healthy, high fat foods should be limited or recipes modified as they are high in calories and can contribute to weight gain and heart disease.

One single bolus dose of insulin may reduce your blood glucose level too quickly, risking hypoglycaemia followed by a high reading. This is because the rest of the meal is being digested and glucose continues to be released into your blood stream.

In this situation it may be best to give two smaller boluses with a high fat meal or with a large carbohydrate intake as previously described (see the following graphs). The effect may also be seen with a high fibre meal such as lots of beans or pulses.



And Alcohol?

Alcohol is made by fermenting either sugar or starch. Pure alcohol alone does not raise the blood glucose; it is the remaining starch or sugar, fruit and addition of sugar-based flavours that increase the carbohydrate content of the drink.

Giving a normal bolus for this carbohydrate is not usually recommended because of the risk of hypoglycaemia.

Remember! Alcohol can affect the ability to recognise a hypo and can impair reasoning. Care needs to be taken when calculating insulin doses for alcohol.

Gaining weight

Some people are anxious that the concept of 'Food freedom' will encourage an unhealthy diet and excessive weight gain. Achieving good blood glucose control is the key to being healthy when you have diabetes and the process of carbohydrate counting will help you to achieve this.

You may also want to consider the fat, fibre and overall nutrient content of your diet. Speak to your dietitian if you have concerns about this.

Weight gain or loss is determined by balancing food and exercise.

Potential Reasons for Weight Gain

- Eating more/larger servings
- Eating higher calorie goods (chocolate, biscuits etc)
- Forgetting about healthy eating principles
- Feel better – more exercise – muscle vs. fat
- More insulin

Potential Reasons for Weight Loss

- Less insulin
- Fewer snacks – less insulin
- Skipping meals/smaller servings
- Eating to hunger rather than to treat hypos
- Feel well – more exercise



If you require a special edition of this leaflet

This leaflet is available in large print, Braille, on audio tape or disk and in other languages on request. Please contact:

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