A young boy with short brown hair, wearing a blue cardigan over a white collared shirt, is smiling broadly while holding a red apple. In the foreground, two young girls are also smiling. The girl on the left has brown hair and is eating a green grape. The girl on the right has dark curly hair and is eating a red fruit, with some juice smeared on her chin. The background is plain white.

Food for Life

Diabetes Best Ideas

Food For Life



By Alison Johnston and Anne Morrice



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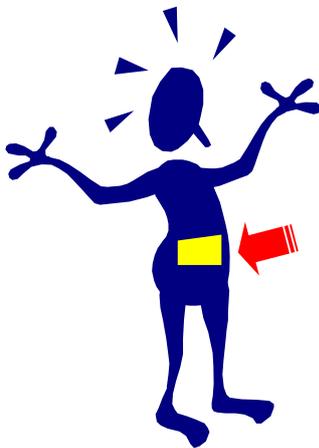


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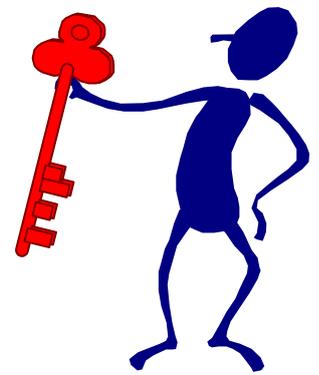
What is Diabetes and Why is Food Important?

Diabetes occurs when part of the body, called the pancreas, stops working properly. The pancreas is a gland that lies behind the stomach. It makes many different substances, one of which is insulin. Insulin is produced in cells called beta cells, and enables the body to use sugar (or glucose) for energy. Insulin also helps the body to store glucose for use at a later time.



In normal health, the pancreas produces the correct amount of insulin to keep blood glucose at the right level. Insulin works like a “key”, unlocking the “door” and allowing glucose to pass from the blood stream into the cells of the body. Here it is used either to supply the cells with the energy they need, or to be stored away for use later.

In type 1 diabetes, the pancreas fails to make enough insulin and unfortunately will sooner or later stop producing insulin altogether. We don't yet know why, but the body's immune system attacks its own pancreas beta cells until no more insulin is produced.



Without insulin, the amount of glucose in the blood rises, and the body tries to remove the unused glucose into the urine. More urine is passed, and so the person needs to drink more to replace the extra fluid lost. This is why in untreated diabetes, children frequently run to the toilet, feel very thirsty and tired, and lose weight.

Now that you or your child has diabetes, you are likely to ask many questions. Some of these will be about the kinds of foods that may be eaten, as food intake is a vital part of good diabetes care.



The recommended eating plan for children with diabetes is simply healthy eating. Foods that are good choices are the same foods that we should all be trying to eat. This can be the opportunity for the entire family to adopt healthier eating habits.

Working with the dietitian and learning about what and how much to eat is important for three main reasons. Firstly, the food and insulin should work together to aim to get blood glucose levels between 3.9 and 6.9 mmol/l. Secondly, your intake of food and having the correct amount of insulin will make sure that you grow and develop as well as you would without diabetes. Lastly, we want to ensure that you are not only fit, well and healthy now but also into old age.

Diet forms a major part of controlling diabetes, however there is nothing that you ate and enjoyed before you had diabetes that you cannot have now. Most people think of a “diet” as a means of losing weight, but we use the term to describe someone's food choices and eating pattern. All people should eat healthy foods, and this is especially important for someone with diabetes. Ideally this choice will include plenty of bread, potatoes, rice, and pasta, and at least five portions of fruit and vegetables every day. A moderate amount of protein should also be eaten for example, meat and fish, and only a small amount of fats, oils and butter. “Special” diabetic foods are not recommended. Sweet foods can be included too.



Why are “diabetic” foods not recommended?

- they are not necessary.
- they are expensive.
- they make people feel different.
- many contain a sugar substitute that has laxative effect, causing diarrhoea and tummy ache.
- remember some sweeteners can *also* raise the blood sugar level!
- they can contain carbohydrate and are often high in fat and calories.
- they often don't taste as good as the food they are replacing.

What about sweets?

You do not get type 1 diabetes from eating too many sweets.

Sweets are not banned but can be eaten in moderation at certain times. The best time to include sweets is at the end of a main meal when the other foods will slow down the rate of absorption of carbohydrate into the blood or before exercise when extra carbohydrate is needed.

At the beginning

Newly diagnosed children tend to be extremely thirsty. Water can be taken freely as can diet and low calorie squashes or fizzy drinks. This thirst will settle once the blood glucose is under control. Children may also have a huge appetite in the few weeks after diagnosis. Don't worry - this is quite normal. It is the body's way of regaining lost weight. The appetite usually returns to 'normal' within a month or so.

The diagnosis can be an opportunity for all the family to look at their eating habits and adopt healthier ones if necessary. The family should aim to eat plenty fruit and vegetables and have grilled, boiled or baked foods in preference to fried foods. Cutting down on fatty foods and sugary foods is good for everyone.

How often should we speak with the dietitian?

As often as you like – they will always be pleased to discuss any aspects of food. Practical advice can be given on a whole range of things e.g. toddler food fads, fussy eaters or snack ideas.

It is the dietitian's job to translate up-to-date theory about how people should eat to improve health into practical advice. Different stages of childhood will need different dietary considerations. The food that a toddler requires is not the same as a teenager's nutritional needs. These different stages will have implications for the diet as will various situations. It is important to see the dietitian regularly, who can offer advice about a whole range of aspects of looking after diabetes, for example, what to do about eating out, exercise, holidays, school, illness and what to do if someone is struggling to eat as they feel they should or is becoming overweight.

If you have any questions at any stage, please contact your dietitian.



What is Healthy Eating?

Food for people with diabetes is the SAME as that recommended for *everyone*.

Some tips for healthy eating!

- regular meals: starting the day with breakfast.
- plenty of fruit and vegetables. Aim for a minimum of 5 portions of fruit and vegetables each day. These foods are rich in vitamins and antioxidants.
- snacks between meals should consist mainly of fruit.
- eat lots of starchy carbohydrates (around half the total calories eaten should be from carbohydrate), especially those high in fibre.
- sweet foods are not forbidden and your dietitian will discuss how to include these in your diet.
- foods with a low glycaemic index (GI, see p39) should be encouraged as these raise the blood glucose more slowly and fill you up for longer.
- small amounts of fatty and fried foods. Grilling, baking, or boiling are healthier methods of cooking. Food labels can be misleading as foods advertised as being “Low Fat” are sometimes higher in sugar and calories! The sugar content is often not the total carbohydrate content (refer to food labelling).
- monounsaturated fats e.g. olive oil and polyunsaturated fats e.g. sunflower oil and spreads made from these are a healthier option, but remember the calories are just the same as in butter or lard! There are low calorie sprays available that can be used for ‘frying’ too.
- include oily fish such as mackerel, sardines or salmon once or twice per week.
- drink plenty of water.
- SALT intake should be kept to a minimum as too much is bad for your health. It is unnecessary to add further salt at the table if it has been used in cooking. The maximum amount of salt recommended for an adult is 6 g per day. Did you know that some packets of crisps contain almost 3 g? Many convenience and processed foods are high in salt.

What type of milk should be used?

Milk is a good food. For babies, breast milk or modified infant formula (baby milk) should be used until 1 year of age. Thereafter full cream milk should be the choice until the child is at least 2 years old. If the diet is well balanced, semi-skimmed milk may be introduced after this. Fully skimmed milk can be used over the age of 5 years. Skimmed and semi-skimmed milk are lower in fat but just as high in calcium as full cream milk.

Types of Foods

Protein, fat, and carbohydrate are the three important sources of energy from food. **Sugar** is a form of carbohydrate – literally a food made from carbon and water. Not all carbohydrate is sugar, however, and there are other forms such as starch.

Protein

Meat
Fish
Chicken
Eggs
Cheese

Fat

Butter
Oil
Cream
Mayonnaise
Lard

Carbohydrate*

Sugar
Bread
Biscuits
Fruit
Some vegetables

Milk is an all-round good food and contains protein, fat *and* carbohydrate.

* Carbohydrate needs *insulin* to be used properly by the body.

Protein

Protein-rich foods are essential for body growth and repair, and include chicken, meat, fish, cheese, eggs, milk, beans, lentils, and soya beans / tofu.

Fat

Fat provides energy. Eating too much fat causes serious health problems.

Fatty foods include butter, margarine, lard, dripping, vegetable oil, suet, fried foods, cream, cream cheese, full fat cheese such as cheddar, fat on meat, pâté, fatty bacon, mayonnaise, and salad cream.

Many low fat alternatives are available, such as low fat mayonnaise, dressings and spreads. Try these alternatives in addition to reducing the overall amount of fat in your diet.

You may know that saturated fats are more harmful than unsaturated fats – saturated and unsaturated are terms used to describe the composition of the fats. Fish and vegetable oils are particularly high in unsaturated fats while other animal fat is high in saturates. It is recommended that one or two portions of oily fish, for example sardines, mackerel or salmon be included in your diet each week.

Fat is very high in calories. Olive oil and margarine have the same calorie content as lard and butter. A gram of carbohydrate contains 4 calories of energy while a gram of fat contains 9 calories. This has big implications for daily calorie intake e.g. an apple and a small bag of crisps each contain similar amounts of carbohydrate but the apple has 50 calories while the crisps contain 150. For those watching their weight remember a reduction in all types of fat is necessary. Look for lower calorie and low fat alternatives.



Carbohydrate

Carbohydrate is found in starchy and sugary foods, and all such foods are eventually digested into simple sugars.

It is better to have most of the carbohydrate in food as starches, particularly those with a low glycaemic index (p24) or high fibre starches, rather than sugars. **Starchy carbohydrates** are a good source of energy and help to make you feel full for longer.

Sugary carbohydrates cause the blood glucose to rise quickly, and so these should not be eaten very often. Some examples are:

Starchy Carbohydrate	Sugary Carbohydrate
<ul style="list-style-type: none">• Bread, rolls• Pasta• Rice• Potatoes• Cereals• Porridge• Lentils• Beans	<ul style="list-style-type: none">• Sugar• Sweets, chocolate and cake• Sugary drinks• Jam, honey, marmalade• Sugar-coated breakfast cereal• Sweet puddings

Fructose and **lactose** are other simple sugars found naturally in some foods. They have nutritional value and will raise the blood glucose. These sugars can cause confusion when looking at nutrition information on food labels. Nutrition information is generally given 'per 100g' and or 'per portion'. The carbohydrate is sometimes listed as 'total carbohydrate' but often this is detailed further into 'of which sugars' and 'of which starches'. Fructose and lactose will be included in 'of which sugars' along with sucrose (table sugar). This means that 'healthy' food such as milk or a banana will appear to be full of sugar, which they are but they contain lots of other nutrients too. On the other hand many foods which are high in sucrose (table sugar), such as sweets and sugary drinks, are full of 'empty calories'. They don't provide the diet with any other goodness such as vitamins, minerals or fibre. It is the type of sugar that is important.

Fructose

This is found in fresh, tinned and dried fruit and in natural fruit juice. Although this will also increase your blood glucose level fruits contain healthy fibre, vitamins and antioxidants. This makes fruits a healthier alternative to other sugary snacks.

There is no real advantage to buying granulated fructose as a sweetener as it is fairly expensive.

Lactose

This is found in milk and dairy products such as yoghurts, fromage frais and ice-cream. These foods will also raise blood glucose levels. They are important for providing the body with protein and calcium.

What happens to carbohydrate?

When carbohydrate foods are eaten, they are digested and broken down to the sugar, *glucose* (blood sugar = blood glucose). The glucose is absorbed into the blood stream pushing the blood glucose levels up.

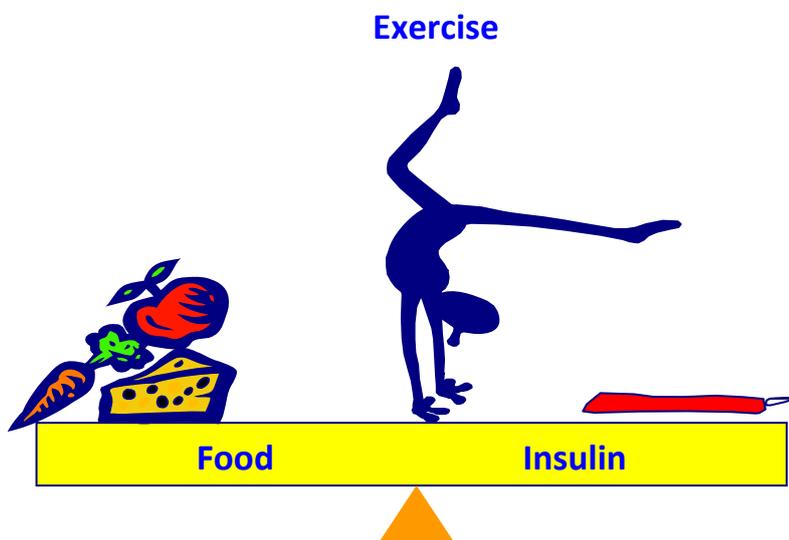
In normal health, the pancreas produces just the correct amount of insulin to bring the blood glucose back to the right level. Insulin works like a key, unlocking the “door” and allowing glucose to pass from the blood stream into the cells of the body. Here it is used to supply the cells with the energy they need, or to be stored away for use later. Without insulin the glucose stays in the blood then leaks out into the urine, so that the body doesn’t get the benefit of it. This is why in untreated diabetes, children frequently ‘run to the toilet’, feel very thirsty and tired, and lose weight.

To control diabetes insulin has to be given and attention paid to whatever foods are eaten. This includes carefully counting the carbohydrate content of the food.

So remember ...

Carbohydrate puts the blood glucose UP
Insulin puts the blood glucose DOWN

Usually insulin is made by the pancreas on a supply and demand basis - we make only as much as we need. When someone gets diabetes, instead of the pancreas making insulin, the insulin is given as an injection. This needs to be balanced. The **carbohydrate** in the food needs to be counted and the appropriate dose of insulin is then taken to cover this. This insulin should be taken before the food is eaten.



Healthy eating advises regular meals starting the day with breakfast and small snacks. Breakfast is essential for best performance at nursery, school and play whether you have diabetes or not. It also means that you are less likely to eat unhealthy snacks during the day and over the evening.

A snack before going to bed is advisable. Small carbohydrate snacks generally do not require an insulin injection, however larger snacks may.

Miscellaneous Foods with Little or No Carbohydrate

Foods which contain no carbohydrate can be eaten freely. Remember that the foods that contain proteins and fats do not cause a rise in blood glucose. Some foods contain very small amounts of carbohydrate and only need to be counted in large quantities.



Vegetables

Most fresh, frozen or salad vegetables *except* potatoes, beans and pulses.

Soup

Homemade soup (without lentils and pulses, rice, pasta or potato), made with stock.

Drinks

Water (tap or bottled), soda water, flavoured, low-sugar water, tea, coffee, sugar-free squash, sugar-free or diet fizzy drinks.

Miscellaneous

Pepper, herbs, spices, garlic, curry powder, mustard, vinegar, Oxo, Bovril, Marmite, gelatine, food colouring, food essence, pickled onions, gherkins, sugar-free gum, sugar-free jelly.

What about artificial sweeteners?

These have a place. Sweeteners can be found in many diet drinks and yoghurts. However, breakfast cereals, tea and coffee are best taken without sweeteners as they tend to encourage a sweet tooth. Some foods may taste better with a little added sweetener or fruit, such as stewed raspberries.

Sweeteners, such as the following, may be used:

- Aspartame e.g. Canderel or Nutrasweet
- Sucralose e.g. Splenda
- Saccharine e.g. Sweetex
- AcesulfameK e.g. Hermesetas Gold
- Stevia e.g. Truvia
- Many supermarkets have equivalent sweeteners sold under their own brand name

Sweeteners can be used in stewed fruits, milk puddings and drinks. Splenda can be used according to the directions in cooking or baking. It is better to add other sweeteners after cooking for best flavour. They are not as good for baking as they have no bulk and the baking will not rise. To increase the fibre try using wholemeal flour, or half white flour and half wholemeal, and reducing the sugar in your usual recipes.

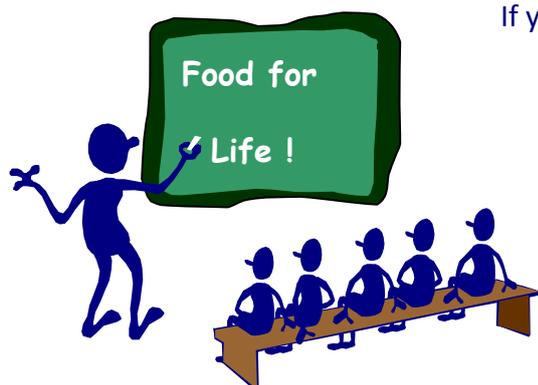
Remember that sweeteners such as fructose, mannitol and sorbitol may cause diarrhoea and a sore tummy. These sweeteners are not free of calories and can raise the blood glucose level. Watch out for these sweeteners in many sugar free sweets and chocolates now commonly sold in supermarkets.

Low Sugar Choices

Low Sugar & Sugar-free Ideas	Sugary Carbohydrates
<p>PREFERRED OPTION</p> <p>Sugar free diet drinks: water, low calorie flavoured water, low calorie / diet fizzy drinks, low calorie squash, tea, herbal tea, coffee, sugar free milk shakes. Sugar free ice-lollies made with low sugar juice.</p>	<p>RESTRICT</p> <p>Sweetened drinks: squash, fizzy drinks, Lucozade, milk shake syrups or milk shake powders.</p>
<p>Plain biscuits: Hobnobs, Garibaldies, fig rolls, digestives, crackers, oatcakes, rice cakes, cheese biscuits. Scones, pancakes, crumpets. Sugar-free gum.</p>	<p>Sweets, chocolate, peppermints, marzipan, sweet & chocolate biscuits, iced buns, cakes, chewing gum.</p>
<p>Low sugar spreads: reduced sugar/low sugar jam or pure fruit spread, peanut butter, beef extract.</p>	<p>Jam, marmalade, lemon curd, syrup, honey, treacle.</p>
<p>Low-sugar and sugar free pudding: instant puddings, low sugar mousses, “low fat, low sugar” tinned milk puddings or in small cartons e.g. custard, rice, sugar free jelly, tinned fruit in natural juice, fresh fruit, natural yoghurt and fruit yoghurts, diet yoghurts, diet fromage frais, low sugar ice lollies</p>	<p>Sweet puddings: sponge puddings, pies, tarts, cheesecake, trifle, instant and tinned puddings including custard and rice, jelly, thick ‘n creamy yoghurt, fromage frais, tinned fruit in syrup, sweetened condensed milk, ice lollies</p>
<p>Cereals: a high fibre cereal e.g. any with wheat or bran in the name e.g. Bran Flakes, porridge, Shredded Wheat, Weetos and Weetabix. Other cereals: Special K, Cheerios, cornflakes, rice krispies.</p>	<p>Sugar coated breakfast cereal: frosted flakes, Coco Pops, Ricicles.</p>
<p>Non-sugar Sweeteners: aspartame, sucralose, saccharine, acesulfame, stevia sweeteners.</p>	<p>Sugar including glucose, dextrose.</p>



Eating Plan



If you think that the whole family could improve their diets, now would be the ideal opportunity to make a new start. However, if you are already eating healthily there should be no reason to make huge changes. Now that you have diabetes, the main difference is that you will have to **count how much carbohydrate is in your food**. You need to know this because the amount of fast acting insulin that you take at meal times depends on the amount of carbohydrate eaten. The more carbohydrate you eat the more insulin you will need. **The insulin dose is worked out to match the carbohydrate eaten to produce on target blood glucose – just as the pancreas would do.** Smaller snacks do not require insulin but some children and young people like to eat more at bedtime for instance and they will take insulin with these larger carbohydrate content snacks.

You will be asked to keep a food diary for the first few days so that this can be studied along with the blood glucose results and insulin doses. This is necessary to help make decisions about altering insulin doses and is useful to help you quickly learn about carbohydrate counting. The insulin dose should keep the blood glucose results steady.

So how do you count carbohydrate?

The first thing to ask is, 'Does the food contain carbohydrate?' If it does then the amount of carbohydrate should be calculated. If you are eating more than one carbohydrate containing food at a time then the amount in each should be added together to find out the total.

At the back of this book there is a list of foods with their carbohydrate content to start you off. There is also a section about counting the content of your own portion of food using nutrition information on labels (p 20). There are many resources available including internet sites, phone apps and information leaflets to help too.

It is important to count carbohydrate accurately. If you overestimate how much carbohydrate is in a meal your blood glucose is likely to be low afterwards and if you underestimate it is likely to be high, providing the insulin dose is correct. Your dietitian will help you, anytime, with carbohydrate counting, discussing food choices and giving advice about topics such as managing exercise or eating out.



Food Diary and Counting Carbohydrate

Meal	Time	Food	Carbohydrate (g)	Total
Breakfast	7.45	2 weetabix	$2 \times 13 = 26$	61
		300mls milk (150ml in cereal and 150ml to drink)	15	
		banana	20	
		low calorie squash	0	
Morning Snack	10.20	1 packet cheese and onion crisps	16	
Lunch	12.30	1 roll	23	54
		butter,	0	
		ham, cucumber	0	
		diet yoghurt	12	
		small apple	10	
		Hobnob	9	
		water	0	
Afternoon Snack	15.15	10 grapes	$10 \times 1 = 10$	20
		2 tangerines	$2 \times 5 = 10$	
		sugar free squash	0	
Dinner	17.30	1 ladle of thick soup	10	48
		$\frac{1}{2}$ slice bread	$1/2 \times 16 = 8$	
		mince	0	
		2 scoops of potato	$10 \times 2 = 20$	
		broccoli	0	
		1 scoop of vanilla ice-cream	10	
		sugar free jelly	0	
		glass of water	0	
Evening Snack	19.00	celery sticks	0	
		carrot sticks	0	
Supper	20.30	1 slice of toast Cheese	16 0	16

Tips on filling in your food diary

1. Write down **everything** that you eat and drink, not just the foods that you think have carbohydrate in them.
2. Be as accurate as you can with your portion size.
3. Write down the carbohydrate content of each item of food, not just the total. For example if you have two tangerines – write down $2 \times 5g = 10g$ carbohydrate.
4. Remember that the more accurate you are with carbohydrate counting the more likely your blood glucose results will be in target.

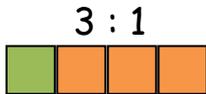
Food Diary

Meal	Time	Food	Carbohydrate (g)	Total
Breakfast				
Morning Snack				
Lunch				
Afternoon Snack				
Dinner				
Evening Snack				
Supper				

Carbohydrate Ratio

What is a Ratio?

A ratio compares values. It says how much of one thing there is compared to another thing (either a number or a measure) that have the same unit.



There are 3 orange squares to 1 green square.

Ratios can be shown in different ways: Using the ':' to separate the values - 3:1. Or instead of the ':' you can use the word 'to' - 3 to 1.

A rate is a ratio between two quantities of different units, like miles and hours, pounds and kilos or carbohydrate and insulin.

This may sound complicated at first and remind us of a maths class. Yet, we use ratios and rates every day without realising it. If we know potatoes cost £0.50 for a kilo, we can work out how much 2 kilos or half a kilo would cost. (Answers £1 and £0.25)

What is a Carbohydrate Ratio (Carb Ratio)?

Carb ratio is the amount of carbohydrate eaten that is needed to match the amount of rapid acting insulin taken in order to keep the blood glucose stable. This would ideally be in the target range 3.9-6.9mmol/l. We talk about this in terms of grams of carbohydrate for every 1 unit of insulin shortened to g/u.

For example if your carb ratio is 10g/u it means that for every 10 grams of carbohydrate eaten you will need 1 unit of insulin.

So if you want to eat 60g of carbohydrate you can find out how much insulin to take by dividing the amount by your carb ratio:

60 (g carbohydrate) divided by 10 (g/u) = 6.
You would need 6 units (carbohydrate dose).

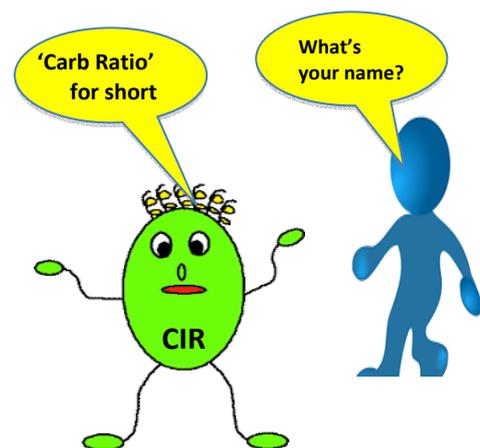
The more carbohydrate you eat the more insulin you will need to keep your blood glucose in the target range and so if you eat less carbohydrate you will need less insulin.

It's common for people to need different carb ratios at different times of day. So you might use a ratio of 10g/u at breakfast, but 15g/u at lunch and 12g/u at your evening meal.

If you were going to eat 90 grams at your evening meal, you would divide 90 by 12 find out that you need to take 7.5 units.

If you are eating a larger carbohydrate containing snack, you may need to take some rapid acting insulin to cover this. A carb ratio can be worked out.

For this to work properly it is important to count carbohydrate accurately.



Names: Carbohydrate to insulin ratio,
Carbohydrate : insulin ratio, CIR, Carb Ratio

What if you don't know your Carbohydrate Ratio?

That's easy! Think of each meal in turn.

How much carbohydrate do you take at breakfast? How much insulin do you take with it? You can use this to work out your ratio.

For example, David usually has 40 grams of carbohydrate at breakfast and takes 8 units of insulin with this. He has 40g per 8 units. Thinking of it like this, however, doesn't make it easy for him to change how much he eats. But if 40g needs 8 units, he can work out how much carbohydrate he would need for 1 unit.



Using this process, David's carb ratio works out at 5 g/u.

So if he was going to eat 55g at breakfast, the sum he would use is:

$$55 \text{ g} \div 5 \text{ g/u} = \text{a carbohydrate dose of 11 units}$$

Is Your Carb Ratio Right for You?

Something called "paired readings" is used to check if the carb ratio is correct.

If you were to measure your blood glucose just before you eat a meal and then again about 2 hours later these two measurements are called a paired reading. What you're looking for is how the glucose changes between the two measurements or if it has stayed the same.

Let's say your blood glucose is within the target range before your meal and 2 hours later it hasn't changed much. If it's within 2 mmol/l up or down, the carb ratio used worked well.

But what if the blood glucose has gone up or down by more than 2 mmol/l? Assuming you have counted the amount of carbohydrate correctly, it might mean that the carb ratio needs to change.

Note that exercise, hypos or illness can affect the blood glucose results. Fatty foods can too. Meals high in fat (such as pizza, pasta in a cream sauce or fish and chips) will slow the blood glucose rise after a meal. If you find this is the case, you may need to take your **carbohydrate dose** of insulin during or after the meal.



If the blood glucose goes up, what does this mean?

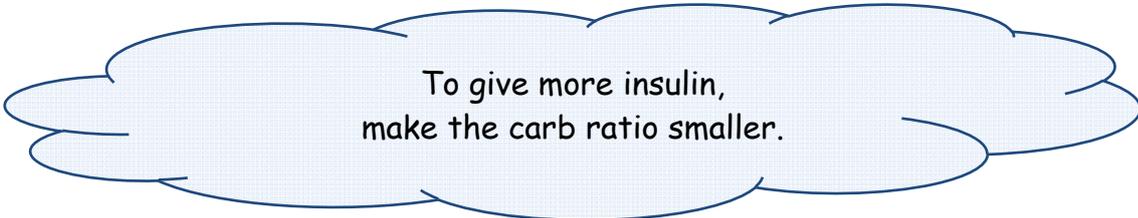
Kishan finds that nearly every day his blood glucose is high 2 hours after his lunch. He knows that he has counted his carbohydrate correctly so he thinks he needs to take more insulin at lunchtime. His carb ratio at lunchtime is 12g/u. How should he change the ratio to give him more insulin?

Think of it like this: When the blood glucose goes up after a meal, it means there is too much carbohydrate eaten for the insulin taken. Kishan should **reduce** his carb ratio to have more insulin.

For example:

$$60 \text{ g} \div 12 \text{ g/u} = 5 \text{ units}$$

$$60 \text{ g} \div 10 \text{ g/u} = 6 \text{ units}$$



To give more insulin,
make the carb ratio smaller.

If the blood glucose goes down, what does this mean?

Fiona has been having hypos after dinner each night for the last few days. She's been counting her carbohydrate amounts well and hasn't been doing any different activity that might cause the hypos to happen. Her dinner carb ratio is 8g/u.

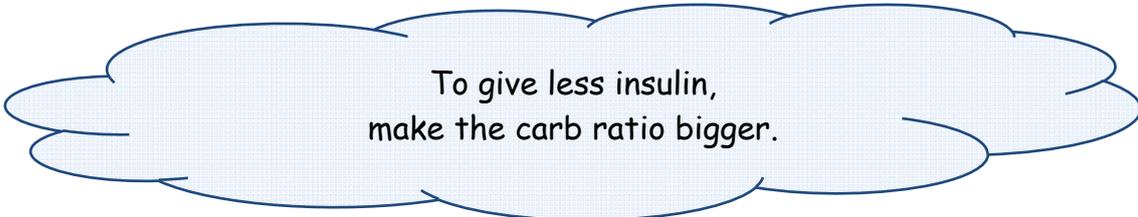
In this case, Fiona needs to take more carbohydrate for each unit of insulin. She could try **increasing** the carb ratio from 8g/u to 9g/u.

For example:

$$60 \text{ g} \div 8 \text{ g/u} = 7.5 \text{ units}$$

$$60 \text{ g} \div 9 \text{ g/u} = 6.666 \text{ units}$$

(round this down to 6.5 units)



To give less insulin,
make the carb ratio bigger.

How to get excellent control?

Everyone is an individual and you will have your own carb ratio for breakfast, lunch and dinner. This ratio may change frequently, for example during periods of fast growing or depending on how long you have had diabetes. Doing paired readings is the only way to find out if your carb ratio is working for you.

You can get blood glucose results in target, good health and excellent overall control by eating a healthy diet, counting carbohydrate accurately, measuring blood glucose frequently and altering the insulin doses as necessary. Knowing what your carb ratios are for each meal time means that you can vary the amounts of carbohydrate eaten according to appetite, situation and have the right amount of insulin for great blood glucose results.

Insulin should be given **before** meals for best control unless in exceptional circumstances.

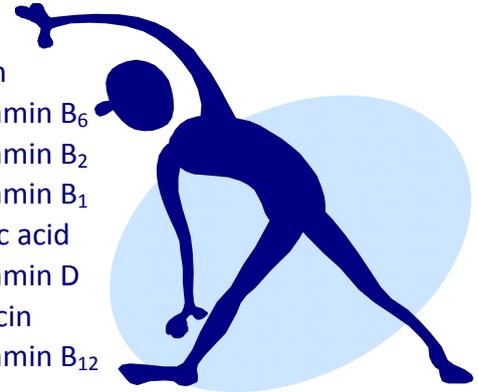
For more details about calculating carb ratios see 'my health record' book (p I 19).

Food labels

A food label gives information about the product, telling us what ingredients are used. The food label of Special K lists the ingredients as:

- rice
- wheat
- sugar
- wheat gluten
- dried skimmed milk
- salt
- de-fatted wheatgerm
- barley malt flavouring
- vitamin C

- iron
- vitamin B₆
- vitamin B₂
- vitamin B₁
- folic acid
- vitamin D
- niacin
- vitamin B₁₂



The ingredients are listed in order of weight. You can see there is more rice than sugar in this product.

A label also provides nutritional information. It will tell you how much carbohydrate is in the product and allows you to compare foods and choose a healthier, high fibre, low sugar or low fat food.

Remember that these figures are per 100 grams. Some labels will state the information per serving or per item but if not, you will need to work out the amounts from the weight of the item.

It is the **total carbohydrate** that you need to count, not the 'of which sugars' value. The 'of which sugars' tells you how much of the total carbohydrate is faster acting sugar. Ideally, the 'of which sugars' value should be as low as possible (aim for one third of the total carbohydrate for foods eaten regularly).

Exceptions to this are foods containing fruit (fructose) and or milk (lactose) as these are 'good natural' sugars and will result in the 'of which sugars' being high. An example of this is fruit yoghurt.

Many foods, such as biscuits and puddings, are labelled 'low sugar' or 'low in fat'. It is worth investigating and trying these.

The 'traffic light' food labelling system, although useful, can be misleading. The coloured area for sugar refers to the total sugar content of the product not the **total carbohydrate** content.

- **Don't panic!** Food labelling can sometimes be confusing ... check with your dietitian if you need some help interpreting a label.

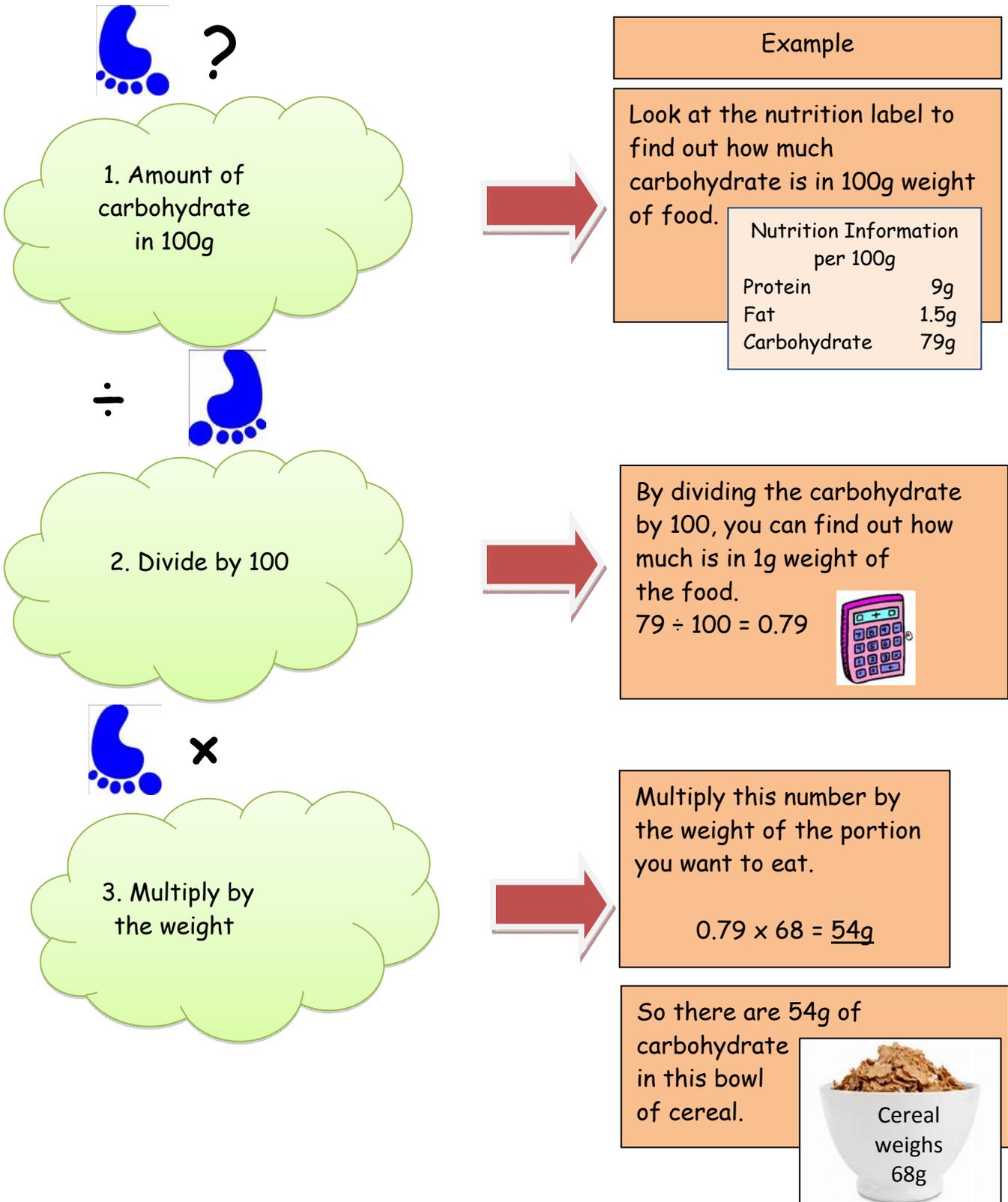
Remember!

Look at the labels on tins and packets too carbohydrate. If you do not know the carbohydrate content of the food then make an educated guess based on the amount and type of food. For example a waffle may be less carbohydrate than a pancake of a similar size. Don't miss out!

Carbohydrate Counts

Most foods now have a nutrition information label on them to tell you how much carbohydrate is in them. Some, however, might only list the amounts based on a recommended portion or on 100 grams of weight, which might not be the amount you want to eat!

Here are 3 easy steps to help you work out how much carbohydrate is in your portion size.



Ideas for Meals

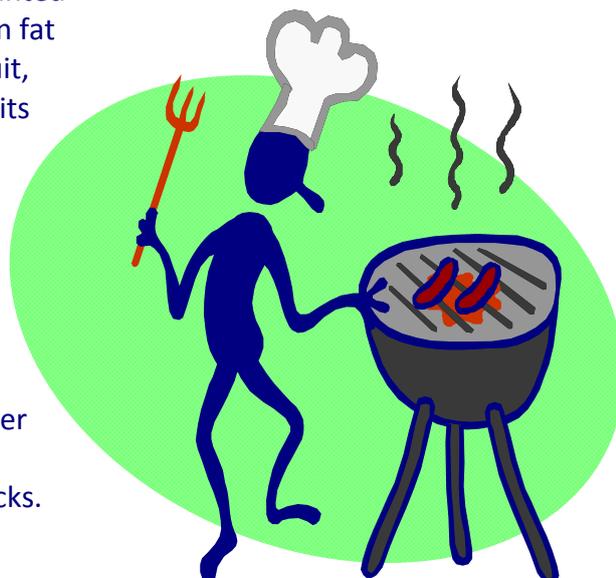
Feeding a family can be expensive, but there are many dishes that are easy to prepare, tasty and relatively cheap. Here are some ideas for meal times...

- ✔ Convenience foods need not be bad foods.
- ✔ Tins and packets can be used to make a healthy meal
 - try a packet of soup followed by beans on toast.
- ✔ Jars of 'Cook-In Sauces' can be added to pasta, meat or vegetables
 - add to tuna, ham or chicken and vegetables.
- ✔ Baked potatoes can be made quickly if you have a microwave
 - they are tasty with baked beans, chilli or tuna.
- ✔ Tinned soups are quick and can be high in fibre
 - try lentil, pea and ham, and vegetable soup.
 - soups can be served with French bread, crusty bread or rolls.
- ✔ Nutritious meals needn't always be hot
 - what about sandwiches or rolls with egg, tuna, lean meat, chicken or cheese and salad?
 - have you tried filled mini pitta breads?
 - you could finish off with yoghurt, fromage frais or fruit.
- ✔ Kidney beans or butter beans in mince or stews give extra fibre.
- ✔ Use plenty of rice, pasta, couscous, quinoa, sweet potatoes and potatoes
 - potato in 'micro chips' or waffles is expensive and high in fat.
- ✔ Frozen vegetables are just as nutritious as fresh ones.
- ✔ Buy fruit and vegetables that are in 'season' as they'll cost less.

Ideas for Snacks

You can have plenty of variety when planning daily snacks. At school, quick snacks are often wanted - while people like crisps, they are also high in fat and salt. Much healthier options include fruit, cereal bars, or raisins. Mini packets of biscuits can be useful, but try not to fill up with too many.

Toast, sandwiches, rolls, pitta bread, scones, pancakes, crumpets, fruit loaf, crackers and oatcakes (with low-sugar jam) are all good. What about a variety of fruit, yoghurt, or even cereal? Porridge, other breakfast cereals and wholemeal toast with low-sugar jam can make great bedtime snacks.



Special Occasions and Eating Out

Eating plays an important part in almost every social event there is. Think of birthdays, Christmas, Easter, or even a day out without food!

Learning to live with diabetes means joining in all of these activities, planning around them and most of all *enjoying them*.



Special Occasions

Here are a few tips:

- Remember that eating well most of the time means that you can have treats some of the time.
- Parties can be 'strenuous exercise' with lots of games and dancing. Encourage savoury foods like sandwiches, chicken nuggets, cocktail sausages, crisps - but a treat can be included such as cake, a chocolate biscuit or a few sweets. Simply count the total carbohydrate content of the meal and use your carb ratio to work out how much insulin you need to cover your food. You may need to adjust your dose if it is an event where you will be burning up a lot of energy such as a swimming or football party.
- It is easier to give sugar free or diet drinks to everyone.
- Many parties are held in fast food chains or children's play centres and the food does tend to be more savoury than sweet i.e. fish fingers, chicken nuggets, burger and chips.
- Sugar free jelly can be used on its own or as an ingredient in sugar free puddings e.g. trifle or jelly whip.
- Christmas wouldn't be Christmas without Christmas Dinner! If dinner is mid-afternoon have a snack at lunch time. Most children are very excited and active on Christmas Day and will need extra food, not to mention being up early too. Once a year they can eat what they like and enjoy it.
- Party bags filled with balloons and small toys are preferable to lots of sweets. Presents or prizes of sweets should be, where possible, discouraged - ask relatives or friends to give a favourite novelty or comic instead. However, any sweets received can be kept and eaten before exercise or after a main meal.

Hints for eating out

You can easily keep your diabetes well controlled when eating out with a little prior thought.

- Many of the larger chain eating places provide nutritional information either as leaflets or on web sites. Check the amounts of carbohydrate in your favourite foods before you go.
- Don't give your insulin until the food arrives – the insulin can be given with the food and you can see how much carbohydrate it contains
- If you are having a high fat, high protein meal that slows down the rate that glucose goes into the blood stream, you may need to give insulin after food.
- You can always give extra insulin after the main course if you decide to have 'seconds' or a pudding.
- If dinner is going to be much later than usual and you normally have long acting insulin at dinner time, simply take the long acting insulin at the usual time and the fast acting before you eat.

Fibre

Fibre is the part of plant foods not broken down in the body. It is found in cereals, vegetables, fruits, nuts and pulses (such as beans and lentils). Fibre keeps the body healthy. Drink plenty water when following a high fibre diet.

There are two main types of fibre - *soluble* and *insoluble*.

Soluble fibre is beneficial in the way our bodies deal with sugars and fats and is found in:

oats
lentils
peas
oranges

This means that oatcakes, porridge, lentil soup, peas and oranges are excellent carbohydrate foods.

Aim for at least 5 portions of fruit and vegetables every day.

Ways to increase fibre intake...

Include some foods from this table every day ...

- wholemeal, granary, soft grain bread, white bread with added fibre, rye and seeded breads
- wholemeal pasta
- brown rice
- wholemeal biscuits and crackers, oatcakes, muesli biscuits, digestives, Hobnobs, high fibre cereal bars
- porridge, oat cereals, bran flakes, muesli, shreddies, weetabix
- potatoes cooked in their skins (baked or boiled)
- oranges, tangerines, satsumas
- pulses (beans, including kidney and butter beans and lentils)
- nuts including peanut butter (Caution children under 5 should not have whole nuts as they may cause choking.)

Benefits of dietary fibre:

- ✎ improved blood sugars
- ✎ less constipation
- ✎ feel satisfied for longer
- ✎ reduced bowel problems & heart disease risk (in later years).

Glycaemic Index

Glycaemic Index (GI) is something you may have heard about. It gives an indication of how quickly carbohydrate containing foods are broken down into glucose and absorbed into the blood stream.

Different carbohydrates affect blood glucose levels in different ways. Some cause the blood glucose level to rise higher and quicker than others. The foods that are absorbed into the bloodstream quickly are known as high glycaemic index (high GI) foods. Foods that are absorbed more slowly are called low glycaemic index (low GI) foods.

Once you have mastered the day-to-day carbohydrate counting you may wish to consider the GI of the carbohydrates eaten. To achieve the best possible blood glucose results, include as many low GI foods as possible.

Lower GI foods help you feel fuller for longer. This may be very useful if you are watching your weight. These foods also generally help to improve the fat levels in your blood, which is great for your heart and circulation.

When eating foods that have a low glycaemic index and/or a high fat content, you may experience unusually low blood glucose results followed by higher results. This **can** happen because it takes longer for the glucose to reach the bloodstream. It may help to split this bolus insulin dose, giving half before food and the remainder afterwards. Alternatively, some may find delaying the entire dose until the end of the meal achieves better blood glucose results. So...the total carbohydrate content will determine the insulin dose, however, the glycaemic index and the fat content may affect the way this is given.

Low GI	Medium GI	High GI
<ul style="list-style-type: none">• apples, oranges• pears, peaches• beans, lentils, barley• pasta (durum wheat)• sweet potato• porridge• custard• milk• All bran, Special K• Sultana bran	<ul style="list-style-type: none">• pineapple• honey, jam• shredded wheat• Weetabix• ice cream• new potatoes• pitta bread• couscous• basmati rice	<ul style="list-style-type: none">• glucose• water melon• white and brown bread• brown rice• white rice• cornflakes• baked potato• mashed potato

There are many sources of information on glycaemic index. These include books, leaflets and web sites. To access many of these, just enter "glycaemic index" into an internet search engine, such as Google, MSN Search, or Yahoo!. A detailed list can be found on the internet this way. One such site is found at: www.glycaemicindex.com. Some GI's may surprise you!

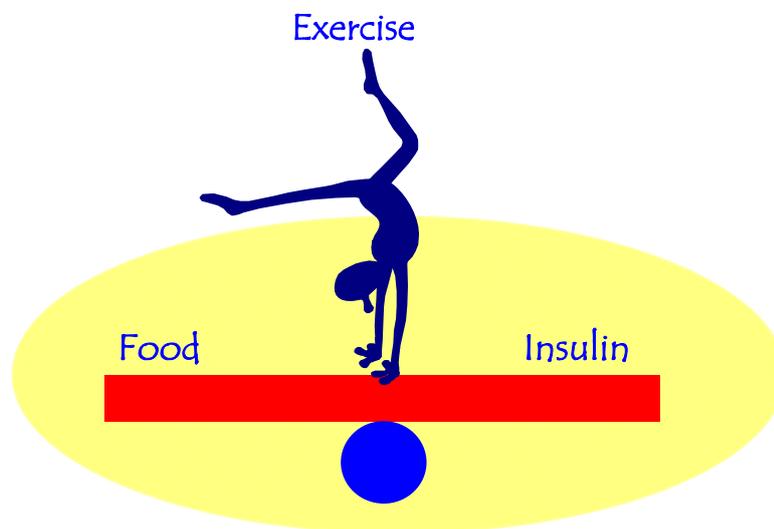
Hypoglycaemia

We describe the amount of sugar (also known as “glucose”) in the blood by describing what amount of solid (glucose) is dissolved in what amount of liquid (blood). This is known as the “concentration” of glucose in the blood, and here we describe it as an amount (millimoles, or “mmol” for short) in a certain volume (a litre, “l”). A typical result would be written in this form:

5.6 mmol/l.

Good diabetes control relies on balancing the blood glucose concentration *increase* from the intake of food at meals, with the blood glucose concentration *reduction* brought about by insulin.

In those *without* diabetes, the body automatically adjusts the amount of insulin produced to match the blood glucose concentration resulting from the food we eat. For someone *with* diabetes, we have to achieve this balance by matching appropriate doses of injected insulin to the food we plan to eat each day. Exercise plays an important part, too, but we will discuss that later...



Ideally, blood glucose results should be between 3.9 and 6.9 mmol/l, but sometimes the blood glucose will fall below 3.9. We call this a

“hypo” ...

What’s a “hypo”?



The word “hypo” is an abbreviation of the word, “hypoglycaemia”, which itself is made up from several smaller Greek words...

- Hypo - “Under”
- glykys - “sweet” = “Under – sweet – blood”
- haima - “blood”

This literally refers to “low blood sugar” – too low to provide the body with enough energy to carry out its normal functions. We usually start to feel the ill-effects of a low blood glucose when it falls below 3.9mmol/l. We refer to any blood glucose lower than 3.9 as a “hypo” (which is short for “hypoglycaemia”!).

We have *all* felt the early signs of a hypo, whether we have diabetes or not – the hunger, the mild tummy ache, and maybe even slight dizziness. This happens whenever it has been a while since our last meal or snack, and our own blood glucose concentration has fallen low.

What are some of the causes of a “hypo”?

As discussed above, blood glucose moves out of the target range when the balance between food, insulin and exercise is upset. Situations when this might occur include:

- Not eating enough carbohydrate
- Being late for, or missing a meal or snack
- Taking too much insulin (carb ratio too low or overestimating carbohydrate content of a meal)
- Taking insulin at the wrong time
- Extra exercise and too little food
- Food not absorbed (such as when ill with vomiting and/or diarrhoea)

There usually *is* a reason, but a hypo *may* happen without an obvious cause.

Features of hypoglycaemia

Grade	Signs and Symptoms	Treatment
Mild	<ul style="list-style-type: none">• looks pale• shaky• shaky legs• hungry• headache• dizziness• behaviour change	<ul style="list-style-type: none">• confirm blood glucose below 3.9 mmol/l• take 10 grams of fast-acting carbohydrate (e.g. 60 ml Lucozade, 3 DextroEnergy tablets, etc.)• wait 10 minutes and retest blood glucose• if blood glucose still below 3.9 mmol/l take fast-acting carbohydrate and retest in 10 minutes• if blood glucose 3.9 mmol/l or above take 10 grams of slow-acting carbohydrate or meal or snack if due.
Moderate	<ul style="list-style-type: none">• same as above, <i>but also</i>• unaware of hypo• unable to treat self• struggles to eat/drink• feeling sick• unsteady on feet• uncooperative• confused, “drunk”• slurred speech	<ul style="list-style-type: none">• treat as for a mild hypo (see above) if able and if there is no risk of choking, or• use glucose gel e.g. Glucogel, RapiLOSE or HypoStop• wait 10 minutes, <i>and then</i>• treat with 10 grams of slow-acting carbohydrate.
Severe	<ul style="list-style-type: none">• unable to eat/drink• unconscious• may be fitting	<ul style="list-style-type: none">• Glucagon (“Glucagen”) injection.• once rousable, give glucose gel.• follow the above with treatment as for a mild hypo.

Principles of management

- Check blood glucose or treat as though hypo anyway. Some people may feel hypo when the blood glucose is over 3.9mmol/l. This is NOT hypoglycaemia and glucose should NOT be given.
- Treat quickly.
- If after 10 minutes the blood glucose is still low repeat the hypo treatment.
- Consider possible causes and record details: prevention’s better than cure!
- Hypo treatment does NOT count as part of a meal or snack.
- Remember that hypo features vary.
- Everyone with responsibility for caring for the child should know how to look after a hypo (including family, friends, teachers, baby-sitters, etc.)

ALWAYS CARRY A HYPO TREATMENT WITH YOU

Exercise

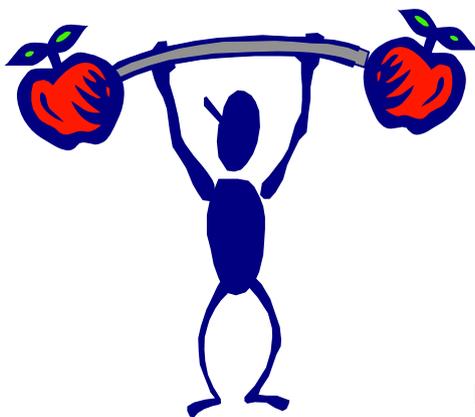
Exercise is good for you, for all sorts of reasons! Let's look at some of the benefits of exercising...

Benefits of Exercise
Exercise...
makes you feel good
improves your circulation
makes for a healthy heart
reduces fats in your blood
lowers blood glucose
is a good way of socialising with friends
helps control weight
improves insulin effectiveness
improves bone health

We should all exercise every day. The recommended amount of physical activity for 5-18 year old children and young people is at least **one hour each day**. This is the same if you have diabetes.

The benefits far outweigh the risks!

Having diabetes is no reason to side step exercise. In fact, it should probably be prescribed like insulin! What is important is to try and avoid hypoglycaemia and find something that you enjoy doing. Extra activity uses up the body's glucose, and causes it to fall - UNLESS you start exercising with high blood glucose, when lack of insulin may result in ketones and cause you to become unwell (see illness).



How do you avoid hypos?

Your carb ratios are designed to cover a day's usual activity, balancing with the day's carbohydrate doses and background insulin.

Extra exercise means using extra energy, and so may need **more** carbohydrate or **reducing** the fast acting insulin dose. A lot of people find that a combination of reducing their insulin dose and eating extra works well.

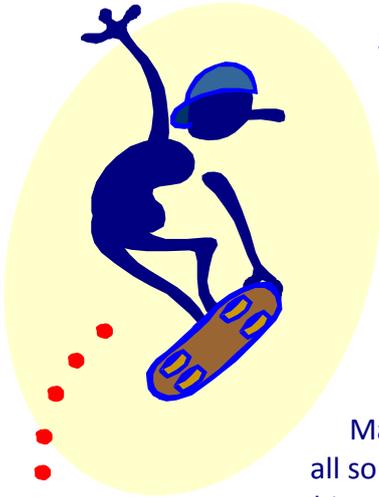
If eating extra carbohydrate to cover activity, this is a great time to include faster acting carbohydrates e.g. chocolate or sweet foods.

Always carry a hypo remedy when exercising as you are more likely to become hypo at this time. Glucose tablets and Lucozade are handy.

What is extra activity?

This depends on the individual - everyone is different. It may depend on:

- how active a person is usually
- how long the activity lasts
- how much effort a person puts into sport



Some examples include:

- A person cycles 2 miles to school every day
This is not extra exercise.
- One hour of gym, or disco dancing
This is extra exercise/activity
- Staying up hours later than usual
This is extra exercise - you use up more glucose than if lying in bed!

Many famous, world class athletes have diabetes, it is no bar to:- discos, all sorts of dancing, swimming, basketball, football, cycling, hockey, running, aerobics, PE at school, judo, karate, skiing - even climbing Mount Everest! - but remember to speak to your Diabetes Team before leaving for Nepal...they will want to go with you!

When to eat extra?

The best time to eat extra carbohydrate is *just before* exercise. You can also add this to the meal or snack beforehand, but games and other activities so often happen without planning that this may not be practical.

If the exercise *is* unplanned take additional food during or afterwards. With prolonged exercise like cross-country running, or dancing all night, extra food may be necessary before, during and afterwards.

Strenuous activity can not only lower the blood glucose at the time but also for many hours thereafter - by making the body more sensitive to insulin - so do EXTRA blood glucose tests.

How much extra?

Again, this depends! In the first few weeks following diagnosis it is safest to take an extra 10g carbohydrate before exercise. By checking your blood glucose before and after exercise you will soon find out what works for each of your different activities. With time you will be able to adapt your food and insulin depending on the situation.

10 g of carbohydrate is usually enough for most activities, but for hard or fast sports like skiing or climbing, up to 40g might be needed.

It's trial and error really - check the blood glucose after exercise and ...

- **If between 3.9 and 6.9** ... Brilliant! Just enough carbohydrate to balance the exercise and the day's insulin.
- **More than 6.9** ... A little less carbohydrate *or* more exercise next time.
- **Less than 3.9** ... Treat the low blood glucose immediately, and remember next time to
 - eat more the next time!
 - Take a little less insulin!
 - Eat a little more *and* take a little less insulin!



Keep good records of your activity and blood glucose results so that you can learn quickly from experience.

N.B. You may also have adjusted your insulin before exercise so keep a note of this too.

Hard, prolonged exercise can make insulin work better. This can lead to a lower blood glucose (and a possible hypo) well after the exercise is finished, up to 16 hours afterwards, so as well as reducing fast acting insulin, you may also need to reduce your long acting insulin.



What to take?

Ideas for snacks before and during exercise could be

- Dried fruit such as sultanas or raisins
- Fruit such as banana, grapes or oranges
- Cereal bar or plain biscuit such as oatcakes
- Fruit juice
- Sports drinks or sports gel containing 6g carbohydrate per 100ml can be useful for unplanned exercise or during

exercise such as swimming or cycling.

If you are taking a carbohydrate snack after exercise, then you could try cereal and milk, a sandwich or some dried fruit and nuts.

Try not to overdo the extra food, as this will affect your overall diabetes control, and exercise performance.

Remember...

- If doing a 'risky' sport where you wouldn't want to be hypo like swimming or cycling make sure your blood glucose is over 4.9mmol/l before you set off.
- Extra exercise needs extra carbohydrate (and/or less insulin).
- Extra carbohydrate is just that, **not** included in your carbohydrate dose of insulin calculation.
- The amount of food for each activity may differ: Work out how much is right for you.
- Regularly taking too much food will affect your overall control.
- Always carry your hypo remedy. The risk of a hypo is greater at this time.
- Prolonged exercise may need a reduction in long acting insulin.
- Tell your friends you have diabetes, and how to deal with hypos. They may see hypo warning signs before you do!
- Carry some identification with you.
- Blood glucose tests show you the effect of food and exercise but this may not always be possible (such as on a ski slope!)
- Don't exercise if you are unwell – you are more likely to make ketones.
- If you take part in serious, competitive sport and train hard and often, you will need a specially tailored plan. Speak to the Diabetes Team.
- You also may get useful advice from the internet www.runsweet.com or www.childrenwithdiabetes.com/sports/
- **Most importantly enjoy your sport!**



School

Children spend a lot of their time at nursery, primary and secondary school. It is important that teachers know about diabetes, and how to deal with any situation that may arise. The Diabetes Team will contact the nursery/school and give them all the appropriate information.

Take in a 'First Aid Kit' in a box to nursery or school. This should be kept in the classroom. It should contain:

- glucose tablets
- Lucozade
- plain biscuits
- 10g snack suitable for exercise

It is important to plan meals and snacks:

Morning snack time should be when the whole class have a break. Check "ideas for snacks" for ideas.

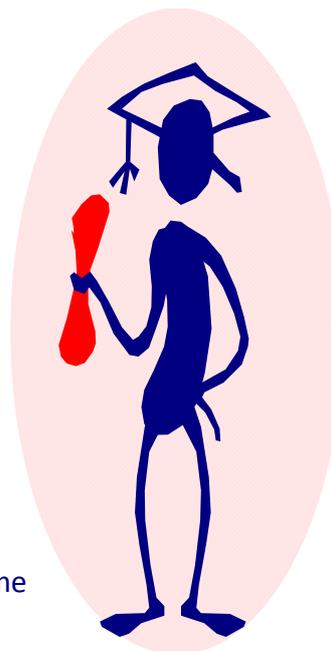
At **lunchtime**, there are several options, but where possible continue with arrangements as before - don't change things just because of 'diabetes'.

A **home lunch** isn't always possible, and if your child didn't come home for lunch before being diagnosed with diabetes, they won't have to come home for the midday meal now.

School lunches now offer a wide variety of suitable foods. Primary Schools tend to send home menus in advance therefore suitable choices can be discussed with the child, the family and the school. Packed lunches are an option if preferred.

Many older children and teenagers like to visit the **local shops for lunch** with their friends. However, it's all too easy to end up having chips or a roll and sausage every day. It would be better to have rolls filled with cold meat, chicken, tuna or cheese and fruit instead - at least most of the time.

School trips or holidays may need a little more thought but should pose no real problems. The Diabetes Team will be happy to discuss any aspects of diabetes in the school.



Illness

At some stage, all children will get colds, sore throats, viruses, tummy bugs and vomiting illnesses. There is no reason why a child with diabetes should become unwell any more often than a child without the condition, but they certainly aren't immune to all the usual childhood illnesses.

Illness will probably affect blood glucose results and your appetite. The body responds to some types of illness by increasing the amount of glucose in the blood. The body's metabolic rate increases, and therefore so does its need for an adequate energy supply. Normally the pancreas gland would simply produce more insulin in this situation, but for someone with diabetes, they have to increase the insulin amount themselves, by injecting increased doses.



Without an increase in the amount of insulin injected during illness, the body will be unable to use carbohydrate properly, and so will start to use its alternative energy supply – fat. This only provides a short term solution, as the result of using fat as an energy source is that ketones are produced. These acids steadily poison the body, making the person with diabetes even more ill, and only **insulin** will halt this situation developing.

Care must be taken at a time of illness, however, as the blood glucose may fall during a vomiting illness or if the child has diarrhoea, even as the body continues to produce ketones from the consumption of fat. In this case, and any time someone with diabetes becomes ill, it is essential to check blood glucose results often, and also to test the urine or blood for ketones. Keep a record of the results and follow “How to look after diabetes when unwell” advised by your team (pG 06 in the ‘My Health Record’ book).

Seek advice from the Diabetes Team whenever you are uncertain or concerned in any way.

Do not wait for the Diabetes to get out of control.

Remember the golden rule: **Never Stop Your Insulin or Carbohydrate**

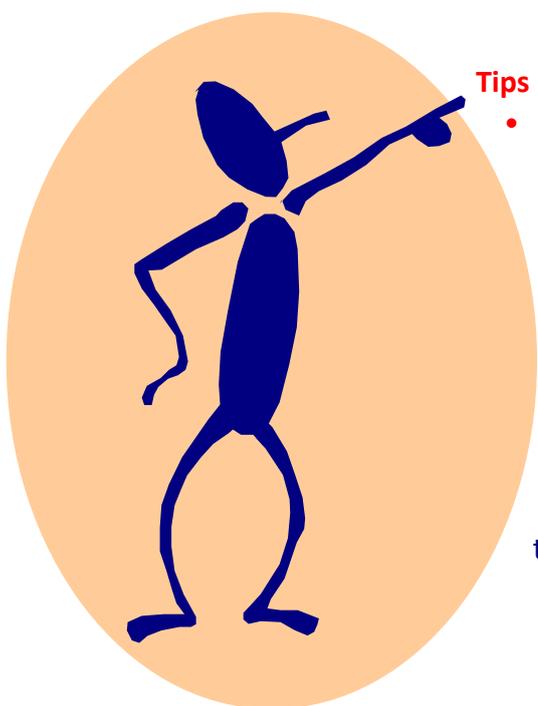
It is important to **always** have insulin and carbohydrate every day, even during illness when appetites are poor and even if you are on a basal bolus insulin regimen. As mentioned above, you usually need **more** insulin during illness. Carbohydrate is needed to stop the body using its fat stores as a source of energy, and insulin is then essential to prevent the ketones forming.

During minor illness, the usual diet may be tolerated but if the child feels unable to eat as normal, carbohydrate may have to be given in a different form – as simple, sugary carbohydrates or fluids. A vomiting illness can be a cause for real concern. Contact your Diabetes Team if the child is vomiting to the extent that all fluids are being brought back.

Remember, always **seek medical advice if concerned** in any way, and **always check for ketones when unwell**, even if the blood glucose is normal or low.

Can't face food?

If usual foods cannot be eaten, replace the usual carbohydrate amount in the diet with carbohydrates or fluids that will be more easily tolerated for example soups, puddings, yogurts, full sugar drinks, ice lollies, fruit juice and Lucozade.



Tips

- **Sugary foods and drinks** may be necessary to ensure sufficient carbohydrate is taken.
- Many children **prefer to drink** than eat when unwell.
- If fluids are all that can be managed, sip them slowly throughout the day - **little and often** is best.
- Let the **gas go out of fizzy drinks** as it may upset the stomach further.
- Encourage **low calorie/sugar free drinks** including water, *in addition* to any fluids used to provide carbohydrates. This prevents dehydration.

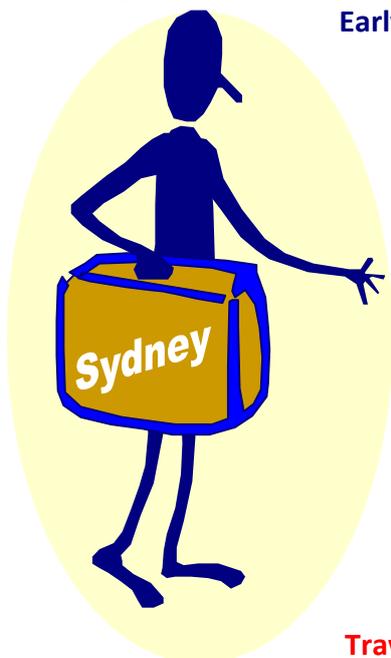
Never stop carbohydrate completely – your body need this energy especially during illness.

Travel and Holidays

With a little forward planning, travel should pose no problems, whether just going into town or on holiday abroad.

Follow the advice given in the 'My Health Record' regarding insulin as often you need a lower dose due to increased activity and the change in climate.

Travel Tips



Early Starts

If making an early start it may be necessary to take an extra snack after getting up, especially if everyone is excited. Children who are travelling very early, but just go into the car and go back to sleep will not need extra carbohydrate.

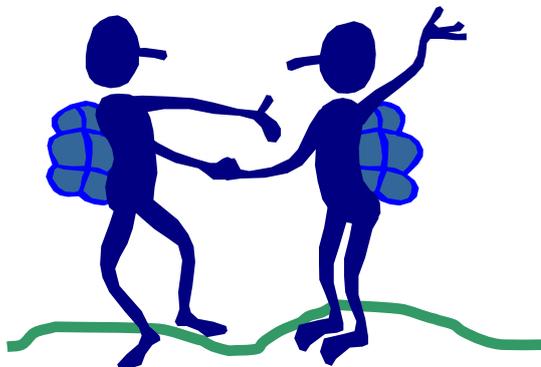
Insulin and breakfast can be given at the usual time, even if this means eating rolls or sandwiches in the car or bus.

Taking food with you can be easier than finding an eating place at the right time.

Travel Abroad

- A letter is available from the Team outlining the need to take injection devices such as pens and or pumps and insulin through customs.
- Check holiday insurance cover.
- Discuss how to manage travel through different time zones with your team.
- Carry some form of identification e.g. SOS Talisman or Medic-alert.
- Take double the supplies that are needed, and divide them through your carry-on luggage, as a precaution against loss or breakage.
- Take care of insulin while on holiday. Never expose it to temperature extremes. Insulin should be kept cool, but not frozen, and not too hot.
- Never pack insulin into luggage going into the hold of a plane as it will freeze and be ruined. When travelling in a hot country, insulin can be carried in a cool bag or in a vacuum flask which has been cooled overnight in a fridge.
- Most countries have low calorie drinks available, but it may be useful to take a bottle of low calorie squash. Make this up with bottled water or check that the local tap water is suitable for drinking. Beware of ice cubes in drinks as these may be made using local water!

- Peel fresh fruit and avoid raw vegetables and salads washed in local water.
- A change of climate may change activity levels e.g. hot weather may make some want to swim all day - and need extra carbohydrate, OR others may want to sunbathe. To find out the effects on the diabetes, check blood glucose regularly.



Check list for air travel

- Carry hypo remedy (in hand luggage).
- Carry carbohydrate containing food to cover delays and smaller meals.
- Don't order a "diabetic meal" from the airline - it may not contain sufficient carbohydrate.

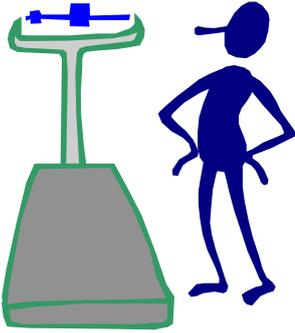
Toddlers

Food fads and food refusal in this age group are common. It may be thought of as 'normal' behaviour at this stage, even though worrying and frustrating for parents. When a child has diabetes, concern about eating problems is understandably greater. If there are problems with food they may be resolved by a change in insulin regimen.

These pointers may be helpful:

- Children grow and thrive without being 'told' how much to eat. Don't worry if you feel they are not eating enough - they usually are! Chat with your dietitian if you are concerned.
- Children eat better sitting at a table with the family and without distractions such as watch television or playing computer games.
- Children often copy others. Cooking one meal for everyone will encourage them to eat the same as the rest of the family.
- Limit meal times to 20-30 minutes at most. If a child has not eaten their food take the plate away without fuss. Try and make meal times enjoyable and don't let your toddler know that you are anxious about their food intake.
- Do not allow them to eat too much in-between meals if they struggle to finish their food at mealtimes.
- A child will never respond to force feeding. Although it will be difficult at first, try to play down the emphasis on food. Usually falling blood glucose will promote hunger and make the child eat.
- Avoid using sweet foods or sugary drinks to "make up" the carbohydrate. Children soon learn that food refusal means a sweet drink or chocolate biscuit!
- Offer a variety of foods - not just the carbohydrate. The overall balance of the diet matters too.
- Breakfast can be a difficult time. Try cereals, milk, toast or even yoghurt or unsweetened fresh fruit juice. Some children may at first only take a drink of milk, and then eat in half an hour or so.
- Glucose gels, such as Glucogel and RapiLOSE, can be a useful hypo remedy for low blood glucose in this age group.
- Toddlers are growing and constantly changing. At this age a regular review of food intake and insulin dose is particularly important.
- Talk to the dietitian about any problems you may have about food.

Weight – the Truth



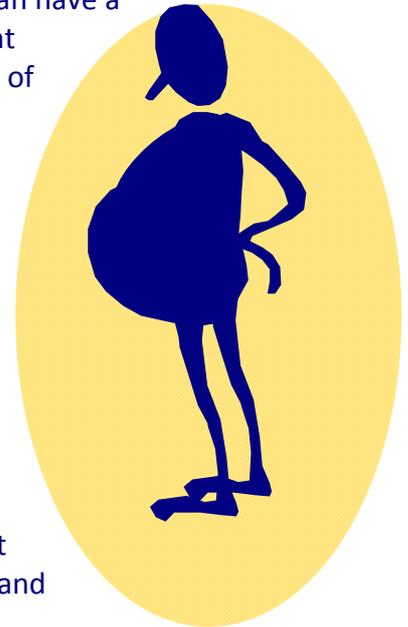
It is important for everyone to be the correct weight for height. Being the appropriate weight for height improves general health, and helps you feel good about yourself. The balance between food and insulin is important. Occasionally the insulin doses rise too high and to prevent hypos, overeating results in extra weight. This will be picked up at clinic when your height and weight are plotted and the appropriate advice given.

What weight should I be?

It is fashionable to be thin - overly thin in fact. This trend is worrying because many children and teenagers - both male and female - can have a distorted view of their weight. They can feel overweight when they are not. Your dietitian will give you an idea of what an acceptable weight for you is.



For growing children who are a kilo or two overweight, it is best to let weight “mark time”, and they will in effect slim down, as they grow taller. This can be done by adjusting food intake and increasing the activity level.



Some teenagers find themselves a little overweight, especially if they are not doing as much activity as they used to. Find a sport or activity that appeals - even walking is good for you. Other teenagers just feel overweight but are in fact an ideal weight; it's just that their body is changing shape and they don't have the media's stereotype of a model figure.

Remember carbohydrate contains 4 kcals per gram, but fat contains 9 kcals per gram!!!



Speak to the dietitian if you feel that you are eating more than you would like to because you have been told to do so.

A regular review of insulin and eating plan by your diabetes team is a good idea. A different insulin regimen may be advised that will help control your weight.

Feel free to discuss any concerns or queries you may have at any time with the diabetes dietitian or another team member.

Carbohydrate Amounts – Getting Started



These tables are to help you get started with carbohydrate counting, however if your food has a nutrition label then this will be more accurate. Follow the labels if available, otherwise use the tables below.

Approximate Weight Conversion

1oz = 28g

1 level teaspoon (tsp) = 5 ml

1 dessertspoon (dsp) = 10ml

1 level tablespoon (tbs) = 15ml

1 pint = 570ml

20 fl oz = 570ml

Bread, Flour and Pastry			
Food Item	Serving	Carbohydrate(g)	
Bread: white	1 thin slice (30g)	14	
	1 medium slice (40g)	18	
	1 thick slice (50g)	23	
wholemeal	1 thin slice (30g)	13	
	1 medium slice (40g)	17	
	1 thick slice (50g)	21	
Bagel	1 (85g)	49	
Chapatti	6" diameter (approx 60g)	27	
Crispbread	1 slice (5g)	4	
Croissant	1 (50g)	22	
Crumpet	1 (45g)	20	
Flour:	chapatti	100g	73
	cornflour	100g	88
	gram	100g	53
	plain / self-raising	100g	72
		100g	61
French bread	1 inch slice (37g)	21	
Naan	1 large (140g)	70	
Pancake: scotch	1 (30g)	14	
Panini	1 (75g)	34	
Pastry:	filo uncooked	100g	53
	puff uncooked	100g	34
	shortcrust uncooked	100g	38
Pitta	1 standard (59g)	32	
Potato scone	1 (50g)	19	
Rolls:	white	1 (48g)	25
	wholemeal	1 (51g)	23
	crusty	1 (86g)	47
Scone	1 (28g)	13	
Waffle	1 (49g)	15	

Breakfast Cereals		
Food Item	Serving	Carbohydrate(g)
All Bran	40g (3tblsp)	19
Bran flakes	30g (5 tblsp)	20
Cheerios	30g (5 tblsp)	23
Cornflakes	30g (5 tblsp)	25
Fruit 'n' Fibre	40g (5 tblsp)	28
Puffed wheat	30g (5 tblsp)	21
Oats So Simple (Original) made with water	27g sachet	16
Oats So Simple (Original) made with 180mls of milk	27g sachet	24
Oatibix	1 biscuit (24g)	15
Porridge oats	40g (3tblsp)	24
Ready Brek (Original) dry weight	30g (3tblsp)	17
Rice Krispies	30g (5tblsp)	26
Shredded Wheat	1 biscuit (23g)	15
Shreddies	45g (5tblsp)	32
Special K	30g (3tblsp)	24
Sugar free muesli	50g (3tblsp)	32
Weetabix	1 biscuit (19g)	13

Milk and Dairy		
Food Item	Serving	Carbohydrate(g)
Milk, cows: all types	100g	5
Milk other e.g. almond, soya, coconut - check labels as contents vary		
Ice cream	1 scoop	10
Natural yogurt	100g	7

Pasta, Rice and other grains		
Food Item	Serving	Carbohydrate(g)
Barley	100g	73
Couscous: cooked	75g (3tblsp)	17
cooked	100g	23
uncooked	100g	77
Gnocchi	100g	33
Lasagne: uncooked	13g (1 sheet)	9
Noodles: dry	66g (1 sheet / nest)	48
cooked	100g	25
Pasta: all types uncooked	75g	50
all types uncooked	100g	70
cooked	165g	50
cooked	100g	30
Polenta: cooked	65g	10
Quinoa: cooked	100g	21
Rice white: uncooked	35g	29
uncooked	100g	85
cooked	75g	21
cooked	100g	30
Rice brown: uncooked	35g	28

Rice brown: uncooked	100g	81
cooked	75g	24
cooked	100g	32
Rice ground uncooked	100g	80

Fruit and Nuts		
Food Item	Serving	Carbohydrate(g)
Almonds	100g	20
Apple	150g (1 medium)	18
Apricot fresh or dried	1 average	5
Avocado	1 average	12
Banana no skin	100g (1 medium)	20
Blackberries	½ cup	9
Blackcurrants	½ cup	9
Blueberries	½ cup	10
Brazil nuts	100g	12
Cashew nuts	100g	33
Coconut	100g	23
Cherries fresh	100g (approx 10)	12
Dates dried	1	4
Fig	1 medium	10
Gooseberries	½ cup	8
Grapefruit	½ medium	6
Grapes	1	1
Guava	½ cup	7
Hazelnuts	100g	17
Kiwi	1 medium	5
Lychees	100g	20
Macadamia	100g	14
Mango	1	30
Melon	150G (1 slice)	10
Nectarines	1 medium	10
Oranges	1 large	10
Papaya	½ cup	7
Passion fruit	1 medium	4
Peach	1 medium	10
Peanuts	100g	33
Pear	1 medium	15
Pineapple: fresh	100g (1 slice)	10
tinned in juice	1 ring / 6 chunks	6
Pecan nuts	100g	14
Pine nuts	100g	13
Pistachio nuts	100g	10
Plum	1	5
Prunes	1	5
Raisins, currants, sultanas	15g (1 mini box)	10
Raspberries	100g	10
Red currants	½ cup	8
Satsuma	1	5

Sharon Fruit	1	20
Strawberries	100g (10)	6
Tangerines	1	5
Walnuts	100g	13
Fruit Juice		
Fruit juice: most varieties	100ml	10
Tomato juice	100mls	4

Vegetables		
Food Item	Serving	Carbohydrate(g)
Baked beans: tinned	120g (2 tbs)	18
Beetroot boiled	100g	9
pickled	100g	6
Butterbeans	100g	17
Capsicum - red pepper	100g	6
Carrots raw	100g	6
Cassava: chips	100g	92
steamed	100g	37
Chick peas: canned	70g (2tbs)	11
Kidney beans: canned	65g (2 tbs)	12
Lentils: red uncooked	100g	56
Lentils red dried	1 tbs	7
red cooked	100g	20
Parsnips: raw	100g	12
Peas frozen and fresh	100g	10
Potatoes: baked	90g (small)	30
baked	180g (1 medium)	60
baked	270g (large)	90
boiled	100g	18
chips cooked	100g	30
mashed	1 scoop	10
roast	70g (1 medium)	18
waffle	1 average	12
Squash: butternut	100g	7
Sweetcorn: canned	100g	27
kernel	100g	17
on the cob, boiled	100g (1 mini cob)	12
Sweet potato: baked	100g	28
Tomatoes: cherry	1 tomato	1
Tomatoes	100g	3
Yam, baked	100g	37

Convenience foods		
Food Item	Serving	Carbohydrate(g)
Chicken nuggets	4 medium	10
Chinese spare ribs	150g	18
Cornish pasty	175g (1 medium)	45
Fish: breaded	140g (1 fillet)	25
fish cake	1	17
fish finger	1	5

Haggis	100g	15
Honey	1 tsp	4
Jam	1 tsp	5
Nutella	1 tbsp	11
Pizza (varies widely check label)	1 snack size	30
Salad cream	1 tbsp	2
Sausage: link	1	5
square	1	20
Sausage roll	60g	15
Scotch egg	100g	17
Scotch pie	1	35
Soup, thick	150mls (1 ladle)	10
Tomato ketchup	1 tbsp	4
Yorkshire pudding	1	7

Snacks		
Food Item	Serving	Carbohydrate(g)
Biscuits: cream cracker	1	5
digestive	1	9
ginger nut	1	7
Hobnobs	1	9
oatcake	1 round	6
rich tea	1	6
rice cake	1	9
Popcorn: plain	20g	10
Scone: plain	40g (1 medium)	20
fruit	60g (1 medium)	35
Shortbread	1 finger	11



Notes



Food For Life

