The Royal Wolverhampton
NHS Trust

Dietary Information for Children, Young People and Families with Type 1 Diabetes

AHP - Nutrition & Dietetics

The prevention of infection is a major priority in all healthcare and everyone has a part to play.

- **Please decontaminate your hands frequently for 20 seconds using soap and water or alcohol gel if available**
- **If you have symptoms of diarrhoea and/or vomiting, cough or other respiratory symptoms, a temperature or any loss of taste or smell please do not visit the hospital or any other care facility and seek advice from 111**
- **Keep the environment clean and tidy**
- **Let's work together to keep infections out of our hospitals and care homes.**

Safe & Effective | Kind & Caring | Exceeding Expectation

Who is this information for?

This information is for the families and carers of children and young people recently diagnosed with Type 1 diabetes.

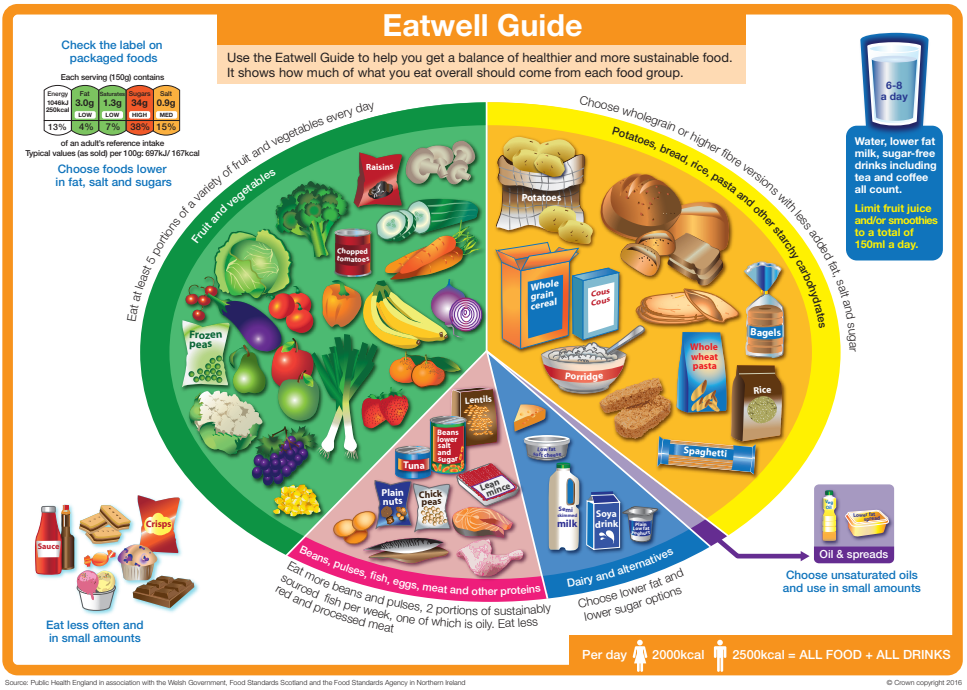
Introduction

Being diagnosed with Type 1 diabetes can leave you and your family with questions regarding diet and lifestyle.

The aim of this introductory guide is to provide you with information about dietary aspects of managing type 1 diabetes. It includes information about healthy eating, carbohydrate counting, eating patterns and snacking.

Do I need to change my diet?

There is not a special diet for managing Type 1 diabetes. It is recommended that you follow a healthy and balanced diet in line with the Eatwell Guide (image below). This may be different from how you eat now. It may take time to adjust your diet to become aligned to this; your dietitian can help you to make gradual changes which work for your family.



Source: Public Health England in association with the Welsh Government, Food Standards Scotland and the Food Standards Agency in Northern Ireland

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Can I still eat my favourite foods?

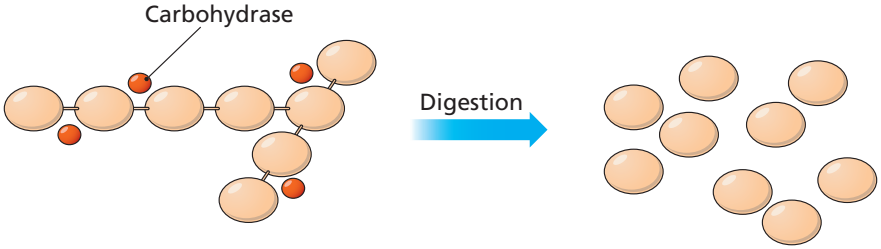
There is no reason to exclude foods from the diet. Following a healthy diet helps to manage diabetes well. This means eating plenty of fruit and vegetables, including higher fibre starchy foods, balancing meals with adequate protein, cutting down on processed foods, limiting refined carbohydrates (commonly referred to as carbs) like sweets, cakes and puddings and drinking enough water or sugar-free drinks. It is recommended that foods high in sugar and fat are eaten less often and in small amounts.

Do I need to eat at set times of the day?

Having a regular and consistent eating pattern makes diabetes easier to manage. However, you do not need to have set meal times. There may be times when a meal is later or earlier than usual and this is not a problem.

Why do I need to be given insulin?

When you eat, foods containing carbohydrate are digested / broken down into glucose.



Carbohydrate Glucose

This increases your blood glucose level. In someone without diabetes, insulin is released from the pancreas, which allows the glucose to move from the blood stream into the cells in the body to use as energy. In somebody with type 1 diabetes the pancreas no longer releases insulin, so this needs to be given by injection.

Why do I need to count carbohydrates?

As part of successful diabetes management, people with Type 1 Diabetes (with support from their family or carers) are encouraged to count the carbohydrates in foods. Counting carbohydrates allows you to choose what you eat for each meal and give the correct amount of insulin for that amount of carbohydrate. This helps to keep your glucose levels in target range (4-7mmol/l) more of the time.

What does carbohydrate counting mean?

Carbohydrate counting means calculating the amount of carbohydrate in food you are going to eat. You will be shown how to do this in hospital using different methods. The amount of carbohydrate will be used to calculate the amount of insulin you need at each meal. You will need to count the carbohydrates in your food each time you eat. This gets easier with time as people tend to eat similar foods or meals often. You may find it useful to keep a list of the common foods and meals you eat.

Which foods contain carbohydrates?

Most foods contain carbohydrates. It is important to remember that carbohydrates are not bad. They are needed to fuel the cells in your muscles and brain. Your dietitian will go through which foods contain carbohydrates in more detail.

Food group	Carbohydrate or Carb free
Fruit	Contain carbohydrate
Vegetables	Most are carbohydrate free except sweetcorn, peas and starchy vegetables (for example, parsnips, potatoes, yam, plantain)
Starchy foods (bread, pasta, rice, cereal)	Contain carbohydrate
Dairy (milk, yoghurt, cheese)	Some contain carbohydrate
Fats (oil, butter, margarine)	Carbohydrate free
Meat protein (plain fish, meat, eggs)	Carbohydrate free (battered or coated and processed foods contain carbohydrate)

Beans, pulses, lentils	Contain carbohydrate
Sweet foods and most snacks	Contain carbohydrate
Drinks	Some contain carbohydrate

What about foods that do not contain carbohydrates?

You can continue to eat foods that do not contain carbohydrates. You do not usually need to give insulin for carbohydrate free foods. Small amounts of carbohydrate free foods are suitable to have in-between meals without needing insulin.

Is a carbohydrate free diet suitable?

Foods containing carbohydrates are needed for growth and contain important nutrients that the body needs. It is not recommended to follow a carbohydrate free or low carbohydrate diet. You are not limited to a set amount of carbohydrate per day, so can vary your diet as you would have done before your diagnosis. Your dietitian can help guide you on appropriate carbohydrate intake as part of a healthy, balanced diet.

Carbohydrate Counting

What do I need in order to learn about carbohydrate counting?

There are some resources which are useful for carbohydrate counting. Your dietitian will teach you how to count carbohydrates and will be available for ongoing support.

Worked Examples of Carbohydrate Counting Carbs & Cals book and App:

1. Weighing portions: You may decide to eat the same portion size as shown in the book / app. If this is the case weigh it out on digital kitchen scales and use the corresponding carb value. Carbs and Cals images are cooked so the weights shown refer to cooked weight.

   If you wish to eat a portion different to the portion pictured you will need to work out the carbohydrate content of your portion using the formula below or by inputting a 'custom weight' into the app.

$$\frac{\text{Carbohydrate value of photographed food}}{\text{Weight of photographed food (grams)}} \times \text{Weight of your portion in grams}$$

Example: Look up spaghetti in your Carbs and Cals book:

If your portion of spaghetti weighs 150g

50 ÷ 158 x 150 = 47g carbs

Work out this example: look up mashed potato. What is the carb content of 280g mashed potato?

Weight from photo: 355g; Carbs: 56g

$$\frac{\text{g}}{\text{g}} \times \text{g} = \text{g}$$

Answer 44g

Working out carb value from a food label.

If you are not eating the same portion that is shown on a food label you will need to calculate the carbs in your portion. You will do this by weighing the food and using the carbohydrates on the food label per 100g.

$$\frac{\text{Total carbohydrate per 100g}}{100} \times \text{your portion (grams)} = \text{Carbohydrates (g)}$$

Look at the worked example below showing how to work out the carbohydrate content of a 30g serving.

Cornflakes	Per 100g
Energy	113 calories
Protein	7g
Carbohydrate	84g
of which sugars	8g
Fat	0.9g
Fibre	3g

`

$$\frac{84g}{100} \times 30 \text{ (grams)} = 25g \text{ Carbohydrates}$$

Using the same food label work out the carbohydrates for a 50g serving of corn flakes.

$$\frac{\text{g}}{\text{g}} \times \text{g} = \text{g}$$

Answer 42g

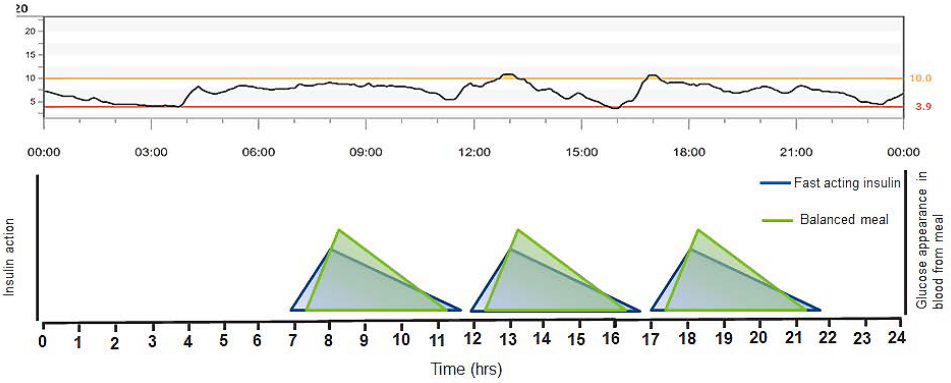
What do I do once I have calculated my carbohydrates?

Once you have calculated your carbohydrates you will need to apply your carbohydrate ratio and correction factor to work out how much insulin to give. You will need to divide your carbohydrate value (g) by your carbohydrate ratio. This will tell you how much insulin you need for what you are going to eat. You may be given some tables to help you.

Your diabetes nurse or dietitian will go through some worked examples with you.

When should I have my insulin injection?

It is recommended that you have your insulin injection 15-20 minutes before you eat your meal (unless you have been advised otherwise). Even though the insulin for your meals is fast acting, it needs some time to enter your body to start working. The insulin prevents your blood glucose levels from rising rapidly and helps to keep your glucose level in target range. The diagram below shows that meals which are well balanced match the action of insulin well (when given 15 minutes before eating) and help maintain glucose levels in target range.



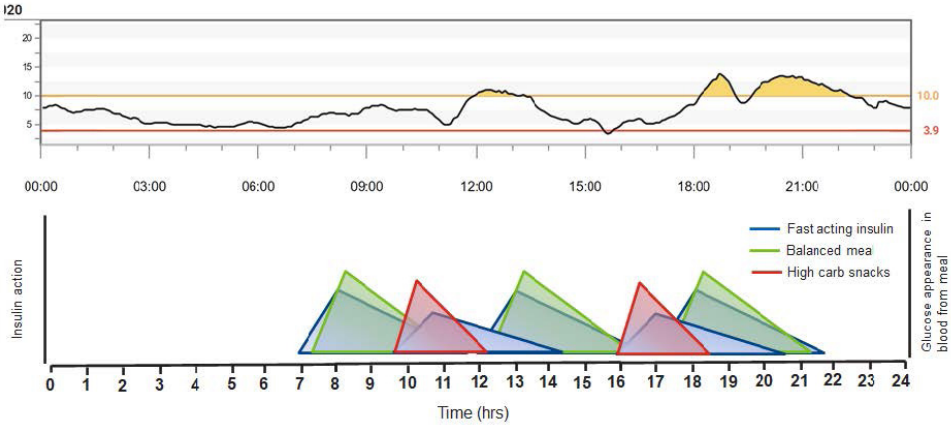
Can I have a snack?

Healthy eating advice discourages frequent snacking. Frequent snacking and grazing can make it harder to keep your blood glucose within target range and cause more variability in your glucose levels. Snacking on carbohydrate containing foods without insulin should be avoided and will result in raised glucose levels.

However, there may be times when a snack is needed between meals. There are a couple of options of how to manage this.

1. Try a small carb free snack which does not require insulin. This will have minimal effect on glucose levels. Not all carb free snacks are healthy; your dietitian can give you some healthy ideas
2. Try a small carbohydrate containing snack (10-20g). This will require insulin. Keep fast acting insulin 2 hours apart to avoid insulin stacking, which may result in low blood glucose (hypo). If it is less than 2 hours until your next meal consider whether you could bring your next meal forward instead of having the snack. Alternatively you could have the snack with insulin and delay your next meal so there is a 2 hour gap between insulin doses. If you regularly need a snack at a certain time of the day consider it as an extra meal and manage it as you would your other meals.

Snacking with insulin will still impact on glucose levels as the image below indicates.



Snacks which are commonly consumed in the UK are often less healthy foods (crisps, biscuits, chocolate, ice-creams, snack packs aimed at children) and are not healthy to snack on regularly. Doing so may result in having an unbalanced diet and lead to unnecessary weight gain.

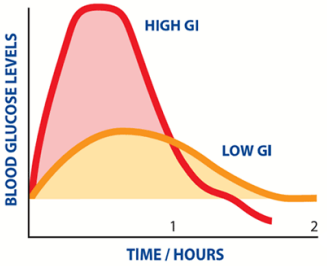
Having a good mealtime routine may help prevent the need to snack. If a snack is regularly needed, consider establishing a meal and snack routine so that insulin can be given with the snack.

After school is a time when children are frequently hungry and want to snack. Ensuring they eat an adequate and balanced lunch can help prevent hunger mid-afternoon. Ensuring their evening meal is not too late, may prevent the need to snack. Alternatively having a snack after school, followed by a later evening meal may work for your family. Speak to your dietitian for further advice on snacking or balancing meals.

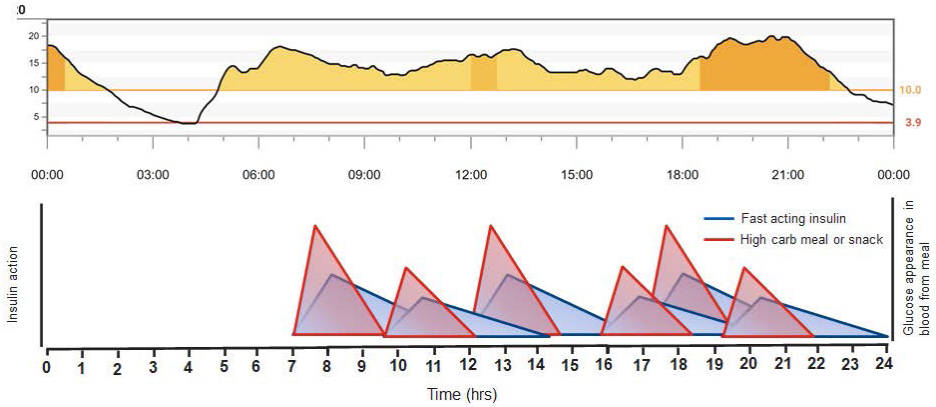
How does what I eat affect glucose levels?

Your blood glucose levels are affected by the foods you choose, the amount you eat, the glycaemic index (GI) (see image to the right) of foods and your activity level.

The image below shows the impact of a diet high in carbohydrate with two high carbohydrate snacks. It shows that such a diet can result in high glucose levels even though insulin has been given.



Showing how different GI foods can influence blood glucose over time



With thanks to Birmingham Children's Hospital for allowing use of these graphs.

What if I give my insulin but cannot finish my meal?

You could have a sugary drink or alternative snack which 'tops up' the amount of carbohydrate you have not eaten in your meal. If this is not possible be aware you may experience low glucose level later in the day (hypo) so check your glucose levels and have hypo treatment ready.

Should I buy 'Diabetic Foods'?

You do not need to eat 'diabetic foods' as these are expensive and often contain a type of sweetener called Sorbitol (a nutritive sweetener or polyol) which may still raise your blood glucose level and can give you a stomach ache.

What can I drink?

Water and sugar free drinks are suitable options as they do not raise your glucose levels. No added sugar drinks may contain carbohydrate so check the label and speak to your dietitian for further guidance. Milk (and milk drinks such as milkshakes / yoghurt drinks / hot chocolate) and fruit juice (including smoothies) contain carbohydrate so are discouraged between meals because insulin would be needed. These drinks need to be carbohydrate counted. If you have a carbohydrate containing drink it is best to have it with your meal so that you can add the correct amount of insulin for the carbohydrate.

Why am I so hungry?

In the first 2 to 4 weeks after diagnosis, it is normal to have an increased appetite. We recommend you try to eat meals which are well balanced that will help to fill you up. This will also help you to be a healthy weight. When your insulin dose is correct you will not need to snack to maintain your blood glucose levels within the target range.

What should I do when I exercise?

Keeping fit and active is an important part of keeping healthy.

It is recommended that children and young people do an average of 60 minutes of moderate to rigorous activity a day.

Having type 1 diabetes does not need to change your activity or exercise routine. Your diabetes nurses and dietitian will provide you with more information about managing diabetes when you exercise.

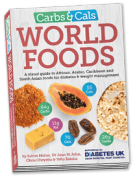
I have more questions about my diet and lifestyle – what should I do?

Your dietitians will provide you with ongoing support. They will be present in your multidisciplinary team clinic appointments and as a standard part of diabetes care you will have a dietary annual review appointment. You can also contact them by telephone (details on your care plan) with any queries. They will be happy to discuss any queries on the phone or arrange an appointment at the hospital or at your home.

The dietitians also arrange visits to schools to train or support staff with carb counting menus - please contact them to ask.

Useful resources:

- Carbs and Cals – Carbohydrate and calorie counter by Chris Cheyette and Yello Balolia
- Carbs and Cals - World Foods
- Carbs and Cals App – (subscription fee)
- Digital kitchen scales
- Calculator.



Working out the carbohydrate content of your meals allows you to dose your insulin correctly. This is important to help you keep glucose levels in target range. There are various methods to carbohydrate count.

Nutrition	1.	2.		
Typical values	100g contains	Each slice (typically 44g) contains	% RI*	RI* for an average adult
Energy	985kJ 235kcal	435kJ 105kcal	5%	8400kJ 2000kcal
Fat	1.5g	0.7g	1%	70g
of which saturates	0.3g	0.1g	1%	20g
Carbohydrate	45.5g	20.0g		
of which sugars	3.8g	1.7g	2%	90g
Fibre	2.8g	1.2g		
Protein	7.7g	3.4g		
Salt	1.0g	0.4g	7%	6g

3. This pack contains 16 servings

*Reference intake of an average adult (8400kJ / 2000kcal)

Food Labels: It is a legal requirement for pre-packaged food to label the carbohydrate content. This may be per portion (which is useful if you are going to eat that portion) or per 100g (which you can use to work out the carbohydrate content of the portion you will eat). You should always refer to carbohydrate not 'of which sugars'.

Weighing food portions: Knowing the portion of the food you are going to eat is essential for working out carbohydrate values accurately. You will need digital scales to measure the weight (in grams) of your portion. You can then work out the carb value from the label or from Carbs and Cals book/app.

Standard or pre-calculated measures: For foods you eat regularly you may like to work out the carbohydrate content of your standard portion of the food. For example, if you often have a bowl of cornflakes for breakfast you may like to use a small cup to measure these into, knowing this holds 40g of cornflakes, which is 36g carbs. This makes carb counting much quicker and easier.

Estimating by eye: Sometimes it is necessary to estimate the portion of food by eye, for example, if you go out for a meal, eat at a friend's house or go to a party. The Carbs and Cals book or app allows you to visually compare pre-measured portions to your portion.

Guessing based on previous knowledge and experience: When you have been carbohydrate counting for a while you have a memory bank of carb values. You will know how many carbs are in your usual portion of chips or baked beans, for example. We suggest every so often you 're-calibrate' your carbohydrate counting to check your estimates are accurate and that your serving sizes have not changed. For school age children half-term holidays is often a good time to do this.

Dietitian Contact Information

Nutrition and Dietetic Department
Royal Wolverhampton NHS Trust
Wolverhampton
WV10 0QP

Working hours 9am-5pm

Tel: 01902 695335

Paediatric Dietitians

Dietitian's name: .....

Mobile: .....

For out of hours advice contact Paediatric Assessment Unit (PAU): 01902 307999 Ext: 88394

English

If you need information in another way like easy read or a different language please let us know.

If you need an interpreter or assistance please let us know.

Lithuanian

Jeigu norėtumėte, kad informacija jums būtų pateikta kitu būdu, pavyzdžiui, supaprastinta forma ar kita kalba, prašome mums apie tai pranešti.

Jeigu jums reikia vertėjo ar kitos pagalbos, prašome mums apie tai pranešti.

Polish

Jeżeli chcieliby Państwo otrzymać te informacje w innej postaci, na przykład w wersji łatwej do czytania lub w innym języku, prosimy powiedzieć nam o tym.

Prosimy poinformować nas również, jeżeli potrzebowaliby Państwo usługi tłumaczenia ustnego lub innej pomocy.

Punjabi

ਜੇ ਤੁਹਾਨੂੰ ਇਹ ਜਾਣਕਾਰੀ ਕਿਸੇ ਹੋਰ ਰੂਪ ਵਿਚ, ਜਿਵੇਂ ਪੜ੍ਹਨ ਵਿਚ ਆਸਾਨ ਰੂਪ ਜਾਂ ਕਿਸੇ ਦੂਜੀ ਭਾਸ਼ਾ ਵਿਚ, ਚਾਹੀਦੀ ਹੈ ਤਾਂ ਕਿਰਪਾ ਕਰਕੇ ਸਾਨੂੰ ਦੱਸੋ।

ਜੇ ਤੁਹਾਨੂੰ ਦੁਭਾਸ਼ੀਏ ਦੀ ਜਾਂ ਸਹਾਇਤਾ ਦੀ ਲੋੜ ਹੈ ਤਾਂ ਕਿਰਪਾ ਕਰਕੇ ਸਾਨੂੰ ਦੱਸੋ।

Romanian

Dacă aveți nevoie de informații în alt format, ca de exemplu caractere ușor de citit sau altă limbă, vă rugăm să ne informați.

Dacă aveți nevoie de un interpret sau de asistență, vă rugăm să ne informați.

Traditional Chinese

如果您需要以其他方式了解信息，如易读或其他语种，请告诉我们。

如果您需要口译人员或帮助，请告诉我们。

Designed & Produced by the Department of Clinical Illustration,
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Review Date 21/09/2029 Date Produced 2022 MI_9573014_22.09.26_V_1