Healthy Eating and Carbohydrate Counting

What can I expect from the Dietitians?

In hospital: (at diagnosis)

- We will meet you and provide nutrition advice based on your needs and answer any questions you may have. We will teach you how to carbohydrate (carb) count during this time.

At home:

- If we have not seen you in hospital, we will aim to see you at your home soon after you are discharged from hospital to help support you.
- We are usually at the diabetes clinic appointments that you will be invited to every 3 months.
- Once a year you will be offered an extra appointment to discuss any topics such as exercise, nutrients for growing and carb counting updates.
- If you need extra support or training, we can arrange this at home, at school/day care, at a clinic or over the telephone.
- As a team, we provide group education and events that you will be invited to.

The Dietitian can support you with:

- Healthy eating and how to eat a balanced diet.
- Any concerns about weight.
- Carb counting - if you are new to it, would like to re-cap or you would like to become more independent, such as when starting high school/school trips.
- School - particularly carb counting for school meals.
- Understanding the glycaemic index and other dietary factors that affect the glycaemic response to foods.
- Using advanced insulin pump bolus techniques.
- Special dietary needs, such as gluten free diets for coeliac disease.
- Managing exercise and physical activity.

Contact details

Children's Diabetes Team: 01484 356923
Yvonne Mitchell (Dietitian): Yvonne.Mitchell@cht.nhs.uk
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Healthy eating

The diet for people with diabetes is not a special diet – it should be a healthy diet that all your family and friends can enjoy. There are no foods the family must avoid completely, but some foods are better choices than others.

Eating healthily will help to manage your blood glucose levels and reduce the risk of developing diabetes related complications.

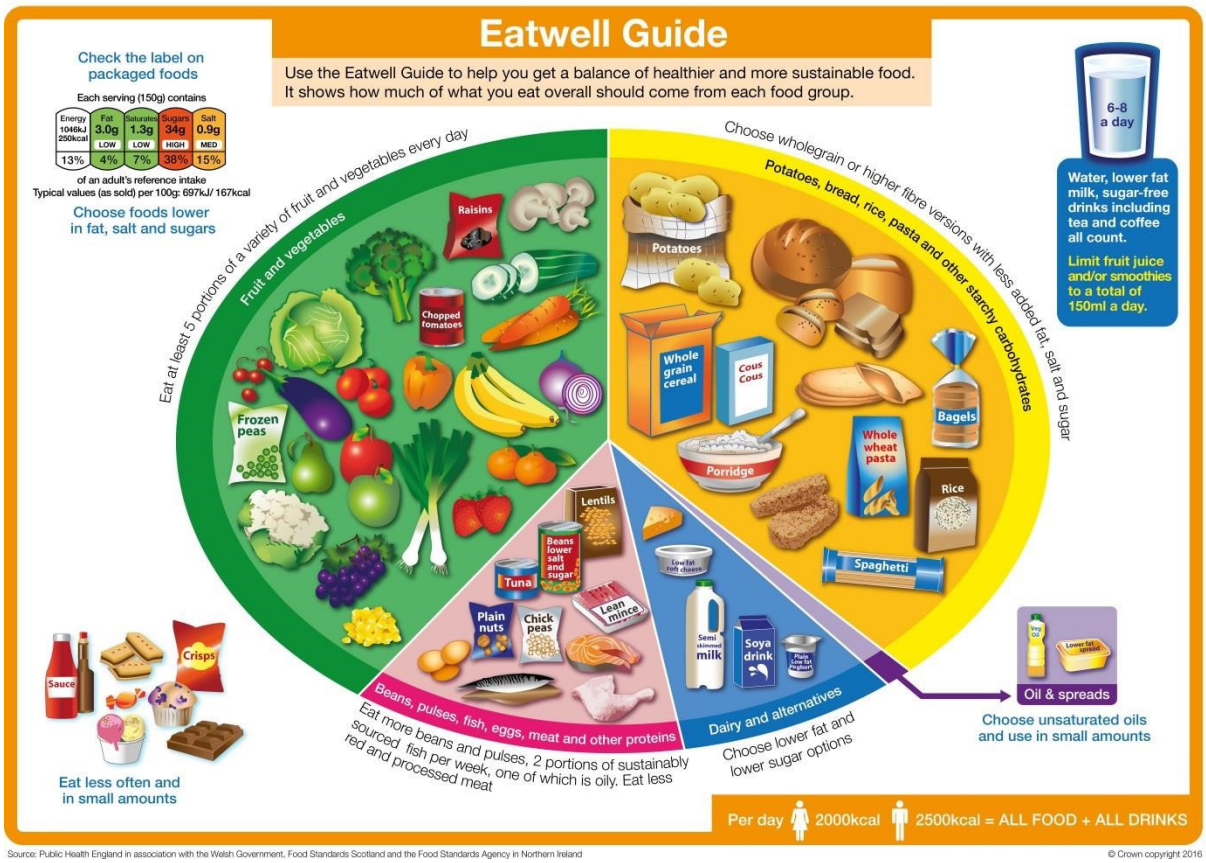
Recommended intake and portion sizes

Children require a varied and balanced diet to:

- provide energy and nutrients for growth, development and activity
- be a healthy weight
- keep them healthy

The Eatwell Guide below represents a balanced diet and it is appropriate for children over 5 years, adolescents and adults. Younger children should also be encouraged to eat family foods and aim to be eating the proportions shown on the Eatwell Guide by the age of 5.

A routine is very important. Aim for regular meals and snacks rather than having food whenever wanted.



NOTE: The Eatwell Guide above shows adult energy requirements in the margins, children's values differ depending on age and size.

Getting the balance right

Food Group	Foods included	Main nutrients	Recommended frequency
Potatoes, bread, rice, pasta and other starchy carbohydrates	Bread, chapatti, breakfast cereals, rice, couscous, pasta, potatoes, and foods made with flour such as pizza bases, buns, pancakes	Carbohydrate B vitamins Fibre	Base meals on these foods
Fruit and vegetables	Fresh, frozen, tinned and dried fruits and vegetables, unsweetened fruit juice	Vitamins and minerals Fibre	Eat at least 5 portions of a variety of these a day **Note: Fruit juice can be counted as a portion once per day - although it is high in sugar can be difficult to manage with diabetes**
Dairy and alternatives	Breast milk, formula milk, cow's milk, yoghurts, cheese, calcium enriched soya, oat, nut and rice milks, tofu **Note: Rice milk is not suitable for children under 5 years**	Calcium Protein	Include some of these a day **Note: Semi-skimmed milk can be used after 2 years**
Beans, pulses, fish, egg, meat and other proteins	Pulses, dhal, nuts, seeds, meat, fish, eggs, Quorn	Protein Iron and other minerals Omega-3 from oily fish	Aim to eat 2 servings of protein rich foods each day Fish should ideally be offered twice per week (at least one serving should be oily fish)
Oils and Spreads	Butter, margarines, cooking oils	Vitamin D & E Omega-3 fatty acids	Use these sparingly. **Note: Unsaturated fats are healthier fats and include vegetable, rapeseed, olive and sunflower oils**
Fluid	All drinks including water, milk and milk substitutes, squashes, juices and hot drinks	Water	6-8 drinks per day and more in hot weather or after physical activity **Note: Sugary drinks should be discouraged**

Foods high in fat, salt and sugar such as cream, salad oils, mayonnaise, chocolate, confectionary, cakes, biscuits, jam, honey, sugar, syrup, ice-cream, crisps and other high fat savoury snacks are not essential and so should be eaten less often and in small amounts.

Portions

At different ages, children will require different amounts of food to meet changing energy and nutrient requirements. You may eat varying amounts from day-to-day but this is normal behaviour. As long as you are having a varied diet and growing well, it is likely that you will be meeting requirements.

Tips for controlling portions

- Be careful of pre-packaged portions. Most processed foods are sold as adult portions so a child will not need the full portion.
- Try using a smaller plate or bowl that suits your age. This will make it easier to have “child size” portions.
- Try to have regular meal and snack times. If you feel hungry in between these e.g. whilst meals are being cooked, try having a glass of water rather than an extra snack to keep you going until the mealtime. It will hopefully stop you overeating and ruining your appetite for the meal.
- As it takes approximately 20 minutes for the brain to send signals that you are full, it is a good idea to try to eat slowly as this will allow you to recognise when you are full.
- Try to have mealtimes without distractions such as television, computer, electronic games and smart phones. These can distract us from noticing signals that we feel full.
- Parents/carers should avoid forcing a child to clear their plate. If you regularly do not finish a meal then have smaller meal portions in future.

Tips for a Healthy Diet

There is no “special diet” for children with diabetes. Your food should consist of what is normally considered “healthy” for every adult and child. Everyone is encouraged to eat regular meals with:

- More Fibre
- Less Sugar
- Less Fat
- Less Salt

More Fibre

- Try to eat wholemeal, granary or seeded bread rather than white.
- Try higher fibre breakfast cereals such as Weetabix, Shredded Wheat, Bran Flakes, Porridge Oats, etc.
- Use wholemeal flour in baked goods rather than white (for young children, you could use half wholemeal and half white flour recipes).
- Try to eat five portions of fruit and vegetables each day and, if possible, use lentils and pulses too.
- Use brown rice or wholewheat pasta.

Less Sugar

Foods that contain small amounts of sugar can be included in a high fibre, low fat diet.

- Use sugar free, diet, no added sugar, or low calorie drinks.
- Use tinned fruit in natural juices and choose low sugar yoghurt.
- Use reduced sugar jam and sugar free jelly.
- Use recipes with a reduced sugar content.
- Limit biscuits, sweets and chocolate.

Less Fat

Try to limit the amount of fat you eat. Fats are very concentrated source of energy and too much could result in you becoming overweight. We know that too much fat is bad for your heart and can result in an increased risk of cardiovascular disease. Research shows that eating oily fish, such as salmon, mackerel, herring etc., can help to keep your heart healthy.

- Try to eat fewer fried foods, sausages, tinned meat, pastry and burgers.
- Spread butter or margarine thinly. Do not add to vegetables or potatoes. Try to choose monounsaturated spreads such as olive oil based ones, or polyunsaturated spreads such as sunflower spread, but still use sparingly.
- Change from whole milk to semi-skimmed or skimmed milk. (Your Dietitian will discuss this with you if you have a child under five).
- Use lower fat cheese, e.g. Edam, Gouda, Cottage cheese, low fat cream cheese or reduced fat hard cheese.
- Choose low fat desserts and yoghurts.

Less Salt

It is not a good idea for anyone to have a high intake of salt. It is thought that the long-term use of excessive salt may raise blood pressure.

- Reduce, or do not add, salt to your food.
- Reduce the amount of salt, stock etc. that you use in family cooking.
- Try and avoid salty snacks such as crisps, nuts, etc.
- Try not to use ready meals, packet or tinned soup etc. as these tend to be high in salt.
- Limit intake of processed foods.

Fruit and Vegetables

Aim to have at least 5 portions of fruit and vegetables every day. This can be split into 2 portions of fruit and 3 portions of vegetables. They can be fresh, frozen or tinned.

Fruit contains the natural sugar fructose, which can increase blood glucose levels if taken in excess. Use the portion guide below to help and remember to spread fruit evenly throughout the day.

A portion is often best described as a small handful, which varies depending on the size of the young person, for example:

- 1 average size apple, pear, banana, orange
- 2 smaller fruits, e.g. plums, kiwis, satsumas
- 1 large slice of melon or pineapple
- 10 grapes or any type of berries
- 2-3 tablespoons of fruit salad, stewed fruit or tinned fruit in juice
- 1 tablespoon of dried fruit
- 3-4 dried prunes or apricots
- 1 small (150ml) glass of fruit juice – this is best consumed alongside a meal
- 2-3 heaped tablespoons of vegetables including pulses (e.g. baked beans)
- a small cereal bowl of salad

School Meals

You can still have school meals if you have diabetes. Discuss this with your Dietitian.

Choose a main course with a source of protein, some vegetables and always include a starchy carbohydrate food (see page **3 and 7** for details of food groups). For pudding choose fresh fruit, yoghurt, plain biscuits, milk etc. Limit other puddings to once or twice a week.

Take water or diet/no added sugar drinks.

Remember to watch your fat intake. Choose jacket, mashed or new potatoes, or pasta or rice rather than chips.

A Note for the Under "Fives"

Young children, under five, have small stomach capacities and it is essential to allow sufficient calories for growth. If you try and encourage a full range of high fibre foods, you will find that a small child may be full before getting enough energy. Make small changes. Start perhaps with using wholemeal bread or a suitable cereal and encouraging a full range of fruit and vegetables.

Semi-skimmed milk is not recommended for children under two years and skimmed milk not until the age of five. This is because of the reduced fat content and again to provide sufficient calories.

Never get into battles over food. Try to make meal and snack times fun. If you are having problems at mealtimes, discuss this with one of the diabetes team.

Carbohydrate (carb) counting

What is carb counting?

All the food you eat is made up of carbohydrate, protein and fat or a mixture of these.

Carbohydrate is turned into **glucose** by the body and causes the rise in blood glucose levels after eating.

Carb counting is a way of calculating the amount of fast acting insulin you need with each meal. It also allows you to be flexible with food you choose to eat and when you eat. However, it is still important to have regular healthy meals.

The more you try to get the carbohydrate amount right, the better you will manage your diabetes.

Which foods contain carbohydrate?

Food group	Carbs		No carbs
Potatoes, bread, rice, pasta and other starchy carbohydrates	• All types of bread (includes wraps, pitta bread, teacakes, crumpets, croissants) • Potatoes • Pasta • Rice • Chapattis • Breakfast cereals • Noodles	• Milk • Yoghurt • Bread • Couscous • Sweet potato and squashes • Crackers & bread sticks • All foods containing flour e.g. pancakes, pizza base, pastry products	
Fruit and vegetables	• All fruits • Fruit juice • Peas	• Fruit smoothies • Dried fruit • Sweetcorn	Most vegetables* (except peas and sweetcorn)
Dairy and alternatives	• Milk • Yoghurt • Fromage Frais • Drinking yoghurt • Milkshake	• Custard • Milk puddings e.g. rice pudding	• Hard cheese
Beans, pulses, fish, egg, meat and other proteins	• Pulses (baked beans, mushy peas, lentils, peas, chickpeas, Dhal, lentils)** • Breaded/battered meat/fish e.g. chicken nuggets, fish fingers	• Check the labels of processed meats such as sausages and burgers, as some may include flour or breadcrumbs	• Eggs • Fresh, unprocessed meat including: poultry, pork, and beef • Fish • Nuts
Oils and Spreads			Butter, margarine, ghee, oil, mayonnaise, cream
Fluid	• Full sugar drinks • Fresh fruit drinks		• Water • Diet fizzy drinks • Some flavoured water
Foods with added sugars	• Sweets • Cakes and biscuits • Chocolates	• Puddings and Desserts • Jams and marmalades	

*The carbohydrates in most vegetables and salads do not need to be counted. Most of these contain very small amounts of carbohydrate which are absorbed slowly. Peas and sweetcorn contain higher amounts of carbohydrates than other vegetables – if these are eaten in large quantities, they should be counted.

**If you are eating beans, lentils and other pulses (including bakes beans) as the main protein source of a meal (in place of meat or in a large quantity), they should be counted. If added to a meal in small quantities (eg, kidney beans in chilli con carne), you may not need to count them. It is better to always count the carbohydrates in baked beans due to the sugary tomato sauce.

How to Carb count

There are different ways to carb count food and drinks:

- Reading food labels
- Weighing foods
- Carbs & cals book or app (we also have a World Foods carbs and cals book – if you think this would be useful, please let your diabetes team know)
- Carb counting apps eg, Nutracheck
- Using standard measures e.g. cups, spoons
- Looking on the internet

Reading food labels

Most packaged food has nutritional information on the back or side. This shows the main nutrients, including energy (calories), protein, carbohydrate and fat.

- **Always check the values -** Check if you are reading the values 'per portion' or 'per 100g'.
- **Check your portion size -** What size is your portion? It may be much larger than the suggested portion on the label.
- **Look at carbs not sugars -** Use the value for 'Carbohydrate' rather than 'of which Sugars'. Sugar is just one part of the carbohydrate.
- **As sold / dry or cooked? -** Do the values relate to 'as sold' or 'as cooked/prepared'?

Have a go

How many carbs are in one packet of crisps?

Typical Values	Per 25g pack	Per 100g
Energy	549kJ	2194kJ
-	132kcal	526kcal
Fat	8.0g	31.9g
Of which saturates	0.7g	2.6g
Carbohydrates	12.9g	51.5g
Of which sugars	0.1g	0.4g
Fibre	1.1g	4.3g
Protein	1.5g	6.1g
Salt	0.35g	1.4g

You decide to have 3 fish fingers. How many carbs?

Typical Values	As sold Per 100g provides:	Per 4 fish fingers (112g) oven baked provides:
Energy	916kJ	1024kJ
-	218kcal	244kcal
Fat	9.4g	10.0g
Of which saturates	0.8g	0.8g
Carbohydrates	21.0g	24.0g
Of which sugars	<0.5g	<0.5g
Fibre	0.9g	1.0g
Protein	12.0g	14.0g
Salt	0.88g	0.99g

Weighing food

It is important to weigh some foods when you count carbohydrates. Foods that are good to weigh include pasta, rice, potatoes (roast, mashed, chips, jacket), couscous, noodles, breakfast cereals, homemade recipes and fruits.

Use nutritional labels and digital weighing scales to calculate the carbs in your portion as below:

$$\frac{\text{The amount of carbohydrate in 100g of food}}{100} \times \text{Weight of your portion (g)} = \text{carbs in your portion (g)}$$

For example: 45g breakfast cereal (label shows 85g carbs per 100g)
Using the calculation above

85 ÷ 100 x 45 = 38g carbohydrate
So your portion of 45g contains 38g of carbohydrate

Tip: Keep a note of your portion size for future reference, so you do not have to do this calculation every time.

Have a go

Your weighed portion of cooked rice is 180g
The carbohydrate in cooked rice is 30g carbohydrate per 100g.

Using the calculation, calculate the carbs in your weighed portion:

Carbs & cals book or app

The carbs and cals book is a good visual guide to carb counted foods. You can use this to estimate your portion size and identify the carb content of your meals. This can be useful when you are unable to weigh the food, such as in a restaurant or when you are eating in someone else's home.

The app has a similar layout. If you have the free version of the app, some of the portion sizes and features will be locked but if your maths skills are good, you will be able to calculate other portion sizes yourself. If you are not confident with your maths skill, there is another free app (described on the next page) which could help with this.

It is not easy to estimate the portion size of cereals, rice and pasta ‘by eye,’ so it is recommended to weigh your portions of these foods.

If your weighed food portion does not match any of the portions photographed, you can use the following calculation to get the carbohydrate content in your portion:

$$\frac{\text{The amount of carbohydrate in photographed food (g)}}{\text{Weight of photographed food (g)}} \times \text{Weight of your portion (g)} = \text{carbs in your portion (g)}$$

For example

Your mash potato serving weighs 205g. There is no matching portion in the book or app, so instead you can use a difference portion size using the calculation above

56 ÷ 355 x 205 = 32g carbohydrate

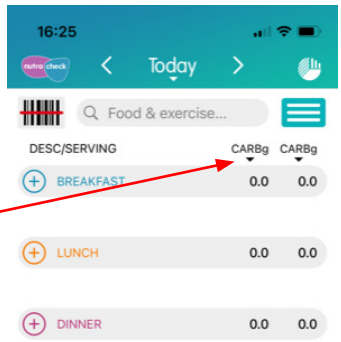
So your portion of 205g contains 32g of carbohydrate

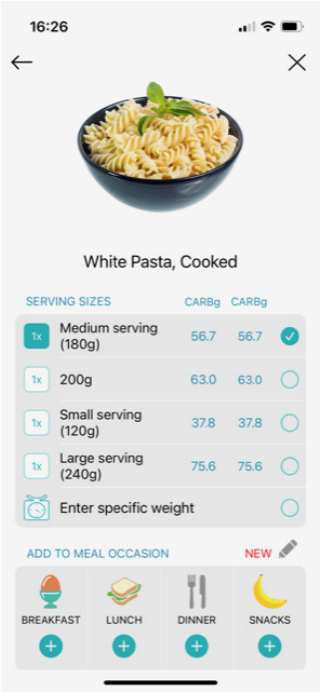
This method involves more effort but greater accuracy.
The paid version of the carbs and cals app will do this calculation for you.

Other apps – eg, Nutracheck

Nutracheck is a free app which you can use to search for foods, including specific brand names and takeaways. There is also a bar code scanner for packaged foods.

You will need to tap here when you first use your app to show the carb values (they will be set as kcal and fat when you first download the app)





When you have searched for a specific food, you can choose from the selection of portion sizes or enter the weight of your portion. This is handy if you are not confident with your maths skills, or if you want to check your calculations.

You can also save the foods you eat often in specific categories – breakfast, lunch, dinner or snacks.

Handy measures

Finding an easy measure like a spoon or cup can help to serve the same size portion.

Weigh the portion of food from your easy measure, calculate the carbs using the above methods and then write down the carbs in the portion of food from the easy measure.

For example, use an ice cream scoop when serving mash potato (if it is 60g in weight this would be 10g carbs). Or a cup full of cooked rice (if a using a 240ml cup this would be 47g carbs).

This may help on a day-to-day basis.

Recipes

Your family can still enjoy your favourite recipes. Once worked out (and written down) it is easier going forward.

Tips
- ✓ There is a website **http://explorefood.foodafactoflife.org.uk** which might be useful
- ✓ Use the labels and reference books or apps (e.g. Carbs and Cals or Nutracheck) you can use a table to write down the recipe and divide by each portion

Example:

Scone recipe, to make 8

Ingredient	Weight of ingredient	Carbs per 100g	Calculation	Carb per ingredient
Flour	200	78	(78/100) x 200	56
Margarine	50	-	-	-
Sugar	50	100	(100/100) x 50	50
Milk	125	5	(5/100) x 125	6.25
Egg	1 egg	-	-	-
Sultanas	50	69	(69/100) x 50	34.5
				TOTAL 246.75
				Per scone (divide by 8) 31g carbs

Have a go Fill in the remaining columns

Victoria sponge cake, to make 12 slices

Ingredient	Weight of ingredient	Carbs per 100g	Calculation	Carb per ingredient
Butter	110			
Caster Sugar	110			
Egg	2 eggs			
Self-raising flour	110			
				TOTAL
				Per slice

Eating out

Many large restaurant chains have nutrition information online to help with eating out. You will also find some of these in the Carbs & Cals app and the Nutracheck app. Research tells us that families who carbohydrate count as accurately as possible at home are able to estimate carbohydrate content of foods eaten away from home. We also know that foods eaten outside of the home often contain more fat and protein and they can have more of an effect on glucose levels. You many find meals out need different amounts of insulin compared to when you eat the same foods at home.

Handy tips for carbohydrate counting

- ✓ Keep digital **scales**, a calculator, a pen and notebook handy in the kitchen.
- ✓ Calculate the carbohydrate content of your common meals and snacks. **Keep a list** to save you doing it every time. Your servings will get bigger as you get older, so check the weight of your meals and snacks every couple of months.
- ✓ Use nutritional **labels** to count your carbohydrate.
- ✓ Always use the **total amount** of carbohydrate figure (this number includes both the 'of which sugars' and 'of which starch' amounts).
- ✓ Check the labels for **uncooked (dry)** and **cooked** weights e.g. for pasta or rice.
- ✓ **Use a handy measure** e.g. when you have weighed food, put it into a cup or bowl so that you know how much food they hold and you don't have to use the scales every time.
- ✓ The more time you **practice** calculating the carbohydrate in your meals and snacks, the better you will get. This will help when you don't have time to do all the calculations.
- ✓ Many restaurants have nutritional information available. **Check online** before you go and feel free to ask, as most places will be happy to help.
- ✓ Involve **everyone** in the family with the calculations.
- ✓ If you need help carbohydrate counting **school meals** then ask your dietitian

* **Remember – you need to give your fast acting insulin approximately 15 minutes before your carb counted food.**

With thanks to Dietitians at Mid Yorkshire Hospitals NHS Trust who gave permission for their carbohydrate counting information to be adapted for use in this diet sheet.

If you have any comments about this leaflet or the service you have received you can contact :

Children's Diabetes Team

Telephone: 01484 356923

www.cht.nhs.uk

If you would like this information in another format or language contact the above.

Potřebujete-li tyto informace v jiném formátu nebo jazyce, obraťte se prosím na výše uvedené oddělení

Jeżeli są Państwo zainteresowani otrzymaniem tych informacji w innym formacie lub wersji językowej, prosimy skontaktować się z nami, korzystając z ww. danych kontaktowych

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اگر آپ کو یہ معلومات کسی اور فارمیٹ یا زبان میں درکار ہوں، تو
برائے مہربانی مندرجہ بالا شعبے میں ہم سے رابطہ کریں.

"إذا احتجت الحصول على هذه المعلومة بشكل مغاير أو مترجمة إلى لغة مختلفة فيرجى منك الاتصال بالقسم المذكور أعلاه"