NHS

Royal Papworth Hospital

NHS Foundation Trust

Carbohydrate awareness and carbohydrate counting

A patient's guide

About this guide

This guide is designed to be used in conjunction with individual advice from your CF team. Your dietitian or diabetes nurse will go through the information in this guide with you.

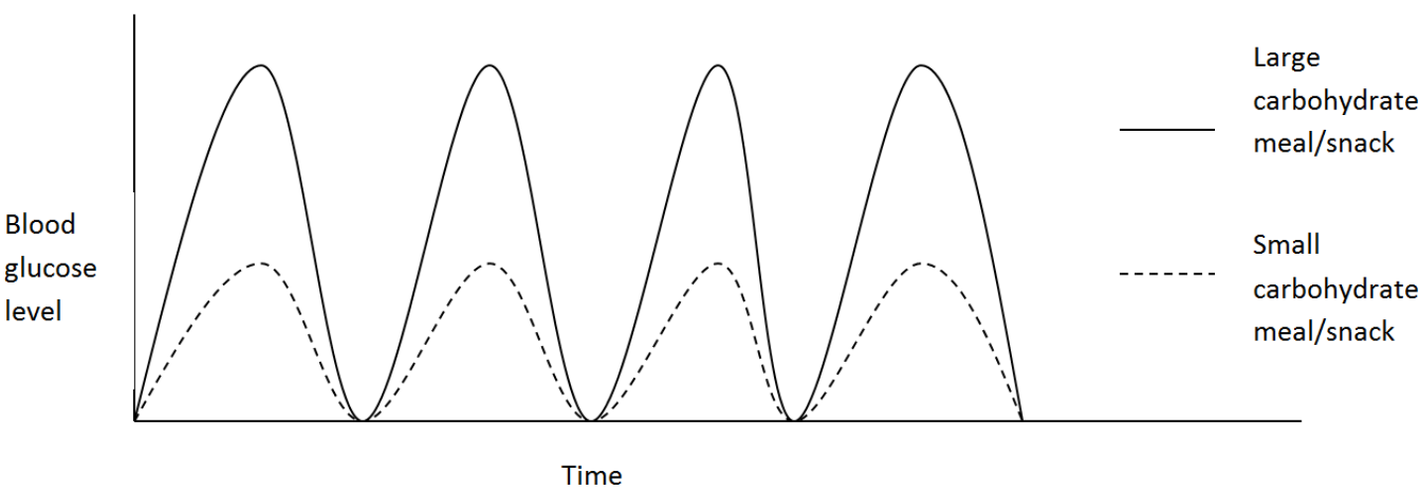
What is carbohydrate?

Carbohydrate is an important part of food that provides the body with energy. Carbohydrate is broken down into glucose (a type of sugar) by the body and transported in the blood to fuel the body's cells. The amount of carbohydrate you eat will affect how much glucose is in your blood. See diagram below.

There are two main forms of carbohydrates in the diet. These are starchy carbohydrates and sugary carbohydrates. Carbohydrates can also be found in other foods. See the tables on pages 2 and 3 for more information.

Why is carbohydrate important in cystic fibrosis related diabetes (CFRD)?

Carbohydrates can affect CFRD control if not matched correctly with insulin. Insulin is a hormone which moves glucose from the blood stream into cells in the body for example in your muscles, brain and other organs. Insulin is made in the body by the pancreas. In CFRD the body might not make enough insulin to manage the amount of glucose in the blood after carbohydrate has been eaten. Glucose levels can be controlled by diet, oral tablets or injecting insulin. The way levels are controlled will be individual to you and should be discussed with your diabetes nurse.



Foods that do contain carbohydrate

Food group	Examples	Effect on blood glucose	Do I count carbohydrates?
Starchy carbohydrate	• Bread, chapattis, naan bread • Potatoes, sweet potatoes and potato products e.g. chips/crisps • Breakfast cereals and oats, rice and pasta, flour • Products made from flour e.g. Yorkshire pudding, pastry, cakes • Breaded products e.g. breaded fish and scotch egg		Yes
Sugary carbohydrate	• Glucose drinks and tablets • Ordinary soft drinks and squash • Chewy sweets, gums, jellies, mint • Chocolate, honey, jam		Yes
Protein	• Nuts • Quorn • Tofu • Soya • Pulses e.g. lentils, peanut butter		Speak with your dietitian
Fruit	• Apples and pears • Oranges • Berries • Tropical fruit • Grapes and plums		Yes
	• Tomatoes • Grapefruit, lemons, limes		Speak with your dietitian
Vegetables	• Some vegetables, including sweetcorn, squash/pumpkin and parsnips		Speak with your dietitian
Dairy	• Milk • Yoghurt • Ice cream		Yes

Foods that do not contain carbohydrate

Food group	Examples	Effect on blood glucose	Do I count carbohydrates?
Fats	• **Butter** • **Lard** • **Ghee** • **Margarine** • **Oils**	⟷	**No**
Protein	• **Meat** • **Fish** • **Eggs**	⟷	**No**
Dairy	• **Cheese**	⟷	**No**
Vegetables	• **Salad** • **Most vegetables**	⟷	**No**
Drinks	• **Water** • **Sugar free and diet drinks/ squashes** • **Tea and coffee (without milk)**	⟷	**No**

Carbohydrate counting

The carbohydrate that you eat, your activity levels and your insulin affect your blood sugar. By trying to match the amount of carbohydrate you eat to the amount of insulin you take, it is possible to improve your blood glucose control. The best way to do this is to learn how much carbohydrate there is in the food you eat.

Useful resources for carbohydrate counting are:

- Carbs & Cals CARB & CALORIE COUNTER by Chris Cheyette and Yello Balolia. It is available as a book or an App.
- DAFNE carbohydrate portion booklet.

The internet is also a good place to look for the carbohydrate contents of takeaway/ restaurant foods, e.g.:

www.pizzahut.co.uk

www.dominos.co.uk

www.pizzaexpress.co.uk

www.kfc.co.uk

www.nandos.co.uk

www.burgerking.co.uk

www.mcdonalds.co.uk

Please ensure you are looking at nutritional information pertaining to the UK and not elsewhere in the world as the composition of food and standard portion sizes can be different from country to country.

Food labels

You can also look on food labels to find out the carbohydrate content of the foods you eat. Look at the total carbohydrate content of the food rather than the sugar content. From the example below you would count 30g carbohydrate per pack eaten. If you ate 400g of pie you would count 40g carbohydrate, as from the left hand column each 100g pie contains 10g carbohydrate so 4 x 10g = 40g carbohydrate.

Ocean Pie with Cod

Typical value	**Amount per 100g**	**Amount per pack (1 serving)**
Energy	85 Kcal	245 Kcal
Protein	5.4g	16.1g
Carbohydrate (of which sugars)	10g (1g)	30g (3g)
Fat (total)	11g	33g
of which saturated	5g	15g
polyunsaturated	3g	9g
monosaturated	3g	9g

Calculating meal time insulin

Once you know how much carbohydrate is in the food you are eating you can work with the diabetes nurse on your insulin to carbohydrate ratio. This is the amount of insulin you will need to inject for a certain amount of carbohydrate. This can vary from person to person therefore it is important to work closely with the dietitian and diabetes nurse.

Snacks

Some people can tolerate foods with less than 10g carbohydrate without needing to take additional insulin. Examples of such foods are given below:

- 1 apple
- 1 digestive biscuit
- 2 sausages
- 1 small glass of milk
- 1 small pot of natural yoghurt
- 1 small banana
- 2 tablespoons of cereal
- 2 semi-sweet biscuits

Top tips

- Have starchy carbohydrate at each meal time
- Sugary carbohydrates are best eaten with or after a meal
- Sugary carbohydrates such as jelly sweets, glucose tablets, full sugar cola/lemonade, orange juice are best limited to treating hypoglycaemia (low blood glucose)

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