

Carbohydrate counting for Cystic Fibrosis Related Diabetes

Information on how to count carbohydrates for children who have Cystic Fibrosis Related Diabetes (CFRD).

Counting carbohydrates helps to maintain good Blood Glucose Level (BGL) control

When you have CFRD, you don't produce enough insulin and/or your insulin doesn't work properly. Insulin is needed to move glucose from the blood into the body's cells to be used for energy.

Carbohydrates are the only foods that directly affect the glucose levels in the blood because the body turns carbohydrates into glucose. Carbohydrates are found in the following foods:

- Breads, breakfast cereals, pasta, rice, crackers
- Starchy vegetables and legumes (potato, sweet potato, sweet corn, legumes and lentils)
- Fruit and fruit juice
- Milk, yoghurt, custard, ice cream
- Biscuits, cake, muesli bars, chocolate
- Soft drink, cordial, lollies, jelly, sports drinks, sugar

Insulin allows the glucose in your blood (from the carbohydrates you have eaten) to move into your body's cells. Because insulin doesn't work properly in CFRD, you need to have insulin injections to help move the glucose from your blood into your body's cells. This stops glucose from building up in the blood. Your insulin regime should therefore be matched to your carbohydrate intake. Counting the amount of carbohydrate you are having helps you to maintain a balance between carbohydrate intake and insulin. This will help with BGL control.

The exchange system is a useful way to measure the amount of carbohydrate in foods you eat. One exchange is the amount of food which contains approximately 15 grams of carbohydrate. A dietitian will advise you on the number of exchanges to have over a day to meet your individual needs. You can read the label on a food to find out how much carbohydrate it contains (see example below) or use the following "exchange list".

Examples of 1 carbohydrate exchange (15g carbohydrate)

1 cup milk, ¾ cup flavoured milk	200g diet or plain yoghurt, 100g flavoured yoghurt, ½ cup custard, 1 scoop ice cream
1 slice bread, 1 crumpet, 1 dinner roll	½ cup dry cereal, 1 ½ Weetbix, ¼ cup muesli
1/3 cup cooked pasta, noodles or rice	1 medium piece of fruit, ½ cup juice
1 medium potato, ½ cup sweet corn, ½ cup baked beans, 1/3 cup lentils	3 teaspoons sugar or honey, 6-7 jelly beans, ½ can non-diet soft drink, 5 small squares plain chocolate

Working out carbohydrate exchanges from a label:

LCM Bar NUTRITION INFORMATION Serving Size: 22g (1 bar)		
	Per Serve	Per 100g
Energy	390kJ	1750kJ
Protein	0.7g	3.3g
Fat	2.3g	10.3g
Carbohydrate - Total	17.0g	77.2g
- Sugars	6.6g	30.0g
Dietary Fibre	0.1g	0.5g

On the Nutrition Information Panel, look at Total Carbohydrate in the per serve column. Ensure you check if the amount you are having is equal to the amount the manufacturer calls a serve. Remember, one exchange is about 15 grams of carbohydrate so to work out the number of exchanges, use this guide:

- 5–10g total carbohydrate = ½ exchanges
- 11–19g total carbohydrate = 1 exchanges
- 20–25g total carbohydrate = 1½ exchanges
- 26–34g total carbohydrate = 2 exchanges

So in the above example, 1 LCM bar is 1 exchange.

Most people find the exchange system a useful way to regulate carbohydrate intake. Exchanges are a guide to help you maintain the balance between carbohydrate and insulin. This will help you to gain better control of your BGLs. Adjustments can be made to allow an appropriate exchange plan for your lifestyle.

Remember, it is essential for all people with CF to follow a high energy diet to ensure good nutrition. This does not change with CFRD but now it is important to also ensure good BGL control. Poorly controlled BGLs can cause increased hospital admissions, worsening of lung function and poor weight gain. CFRD is quite different to other types of diabetes and the dietary recommendations should not be confused with those for type 1 or 2 diabetes.

If you have any questions about how to count carbohydrates to help control your CFRD, consult your CF dietitian.

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