

Counting carbohydrates

This fact sheet provides people with type 1 diabetes information on how to count the grams of carbohydrates in food. General diabetes information on food can be found in the 'Getting Started' booklet.

Why count carbohydrates?

Carbohydrates are broken down into glucose in the body and therefore affect your blood glucose levels. The key to having good blood glucose control is to match the amount of carbohydrate eaten, with the amount of insulin injected. In order for the right amount of insulin to be injected into the body, you need to be able to count how much carbohydrate is in food. Counting carbohydrates will allow flexibility in eating patterns and lifestyle and so it is important to learn to count carbohydrates well as soon as possible.

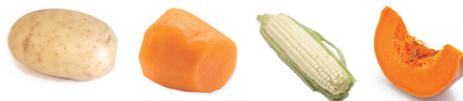
First step – what foods have carbohydrates?

Healthy carbohydrate foods include foods that contain starch, fructose or lactose. These include:

- > breads, cereals, flour, rice, pasta and grains



- > potato, sweet potato, corn, carrot and pumpkin



- > legumes and lentils



- > fruit including fresh fruit, dried fruit and fruit juice



- > milk products including milk, yoghurt, custard and dairy desserts (butter, cream and cheese do not contain carbohydrates)



Other carbohydrate foods that contain mostly sucrose (table sugar) or glucose (refined sugars) are not recommended as everyday foods. These can be included as sometimes foods or foods to be used for hypo treatment. Your dietitian will discuss these foods with you.

Second step – how much carbohydrate is in the food?

All you need to count carbohydrates is:

- > this information pamphlet
- > an Australian based carbohydrate counting book/phone app/resource/website
- > measuring cups or digital scales
- > food labels.



Counting carbohydrates

Basic carbohydrate values of some common foods

Pasta/Rice (cooked)

Food	Amount	Grams of Carbs
Pasta	½ cup (75g)	20
	1 cup (150g)	45
Lasagne sheet	1 small (dry)	15
Rice (basmati)	½ cup (80g)	20
	1 cup (160g)	35
Rice (white)	1 cup (160g)	50
Rice (brown)	1 cup (160g)	50
Noodles	1 packet	45
Cous cous/ Gnocchi	1 cup	50

Other Miscellaneous foods – inc dairy

Food	Amount	Grams of Carbs
Cashews	20 raw	5
	20 roasted	10
Almonds	20 raw	negligible
	20 roasted	5
Milk	1 cup (250ml)	15
Pasta sauce (commercial)	125g or ¼ jar	Varies, ~15
Jam/honey	1 heaped tsp	10
Tomato sauce	2 tbsps (30ml)	5
Yoghurt – natural/ diet	200g tub	10
Yoghurt – regular	200g tub	20-25
Custard – vanilla	½ cup/125ml	20
Icecream regular	1 scoop (50g)	15

Fruit – Fresh

Food	Amount	Grams of Carbs
Apple (with core and skin)	small (100g)	10
	medium (150g)	15
	large (200g)	20
Banana (with skin)	small (130g)	15
	medium (170g)	20
	large (210g)	25
Blueberries	100g	10
Cherries	16 medium or 25 small (100g)	10
Grapes	small bunch/~20 grapes (120g)	20
Melon including Honeydew, Rockmelon, Cantaloupe, Watermelon etc	1 cup diced	10
Kiwifruit	1 small (70g)	5
Mandarin	small (80g)	5
	medium (150g)	10
Mango	1 medium cheek (120g of flesh)	15
Nectarine	1 small (90g)	5
	1 medium (120g)	10
Orange	1 medium (190g)	10
Peach	1 medium (120g)	10
Pear	1 small (110g)	10
	1 medium (150g)	15
Pineapple	1 cup cubes	10
Plum	1 small (70g)	5
	1 large (150g)	10
Raspberries	1 cup (130g)	10
Strawberries	1 small punnet (250g)	10

Fruit – Dried

Food	Amount	Grams of Carbs
Sultanas	1 tbsp	10
Apricot	5 pieces (30g)	15

Vegetables (raw)

Food	Amount	Grams of Carbs
Carrot	1 medium (100g)	5
Potato	small (100g)	15
	medium (150g)	20
	large (200g)	30
	extra large (250g)	40
Potato mash (cooked)	½ cup	15
Pumpkin – Butternut/ QLD blue	100g	5
Sweet corn	medium cob (100g)	15
	- ½ cup kernels (cooked/canned) 80g	10
Sweet potato	¼ of a small (100g)	15
Peas (cooked)	- ½ cup (80g)	5
Beans (canned)	- ½ cup (100g)	15
Chickpeas (canned)	- ½ cup (100g)	13
Lentil (canned)	- ½ cup (125ml)	10

Breads

Food	Amount	Grams of Carbs
Bread	1 slice	Varies. ~15
	roll (75g)	Varies, 30-40
Crumpet	1 round	20
Fruit bread/toast	1 slice (30g)	Varies, 15-20
English muffin	1 whole	Varies, 25-30
Flat bread/pita bread	1 medium (50g)	30
Rolled oats (uncooked)	¼ cup (30g)	15
Weetbix	2 weetbix	20

Counting carbohydrates

Carbohydrate counting resources for foods not listed above

The resource your diabetes team recommend is the 2011 or newer versions of 'Allen Borushek's Calorie, Fat and Carbohydrate Counter'. This book also has a website and phone app which can be helpful to use when available. The website is www.calorieking.com.au, the phone app is Calorie King Australia. Other Australian based apps that could be useful are the "Australian Calorie Counter" by Easy Diet Diary and the "Australian carb counter – traffic light guide to food".

It is important to make sure you are using Australian based carbohydrate counters as foods in the United States of America (USA) or United Kingdom (UK) have different carbohydrate contents.

The weights and measures of the foods in carbohydrate counting books/apps are not always the same as the serve size you are about to eat. You may need to weigh or measure the amount of food you are eating to work out the carbohydrate in your serve. Compare your serve size to the examples given in the book, find the closest one and adjust the carbohydrate value up or down to suit.

Spend some time with your dietitian learning how to best use your carbohydrate counting resource.

Food labels

If the food you are eating has a food label, you can use this to carbohydrate count. Not all foods needed for a healthy diet, such as fruit and vegetables, have food labels. Therefore, it needs to be used in conjunction with a carbohydrate counting resource.



When using food labels, make sure you:

- > Look at the total carbohydrate in the 'per serve' column and then compare and adjust to the amount of food you want to eat to the serve size on the packet.
- > Round the number up or down to a whole number. Don't worry about decimal points!

Spend some time with your dietitian looking at food labels following the points above.

Nutrition information panel

Muesli		
NUTRITION INFORMATION		
Serving size: 50g (3/4 cup)		
	Per Serve (50g)	Per 100g
Energy	890kJ	1780kJ
Protein	4.5g	9g
Fat	7.8g	15.6g
Carbohydrate		
– Total	28.8g	57.6g
– Sugars	14.2g	28.4g
Dietary Fibre	4.3g	8.6g
Sodium	60mg	120mg

INGREDIENTS: Cereals (49%) [wheat, oats], fruit (17%) [apricot, apple, raisins, sultanas, cranberries], seeds and nuts (16%) [almonds, pepitas, cashews, hazelnuts, coconut], raw sugar, honey, sunola oil. Maltodextrin, cinnamon, minerals (calcium), emulsifier (471), vitamins (natural Vitamin E, Folate).

Counting carbohydrates

Counting carbohydrates in recipes

Healthy baking is a great way to provide you and your family with the food they love. When counting the carbohydrates that are in a recipe, firstly find all the ingredients that contain carbohydrates, then use the food list here and your carbohydrate counting resources to work out the amount of carbohydrate in each individual ingredient. To finish, add up the amount of carbohydrates in the whole recipe and divide by the number of serves.

To help you find your ingredients we have created a table of common foods used in baking.

Cooking ingredients

Food	Amount	Grams of Carbs
100s & 1000s	1 Tbsp	15
Almond meal	free	free
Baking powder/ Bi-carb	free	free
Breadcrumbs	¼ cup, 30g	20
Chocolate chips	½ cup, 100g	60
Cocoa	½ cup, 45g	10
Coconut (desiccated)	1 cup, 100g	5
Condensed milk	1 Tbsp, 20ml ¼ cup, 125ml	10 35
Cornflour	1 tbsp	10
Custard powder	1 tbsp	15
Evaporated milk	1 Tbsp, 20ml ½ cup, 125ml	free 15
Flour – Plain/Self Raising	1 cup sifted 1 cup unsifted	115 100
Flour – Wholemeal	1 cup sifted	90
Honey/Golden Syrup	1 Tbsp	20

Most recipes benefit from some changes to make them healthier for everybody, but this can be really important for children with diabetes!

- > Try to limit sugar to ¾ cup total added sugar per recipe.
- > To sweeten a recipe, other options include adding 100% fruit products e.g. 100% fruit juice, dried fruit, fruit pulp.
- > Some artificial sweeteners can also be used in cooking to sweeten the recipe (e.g. Splenda, Stevia, Equal baking).
- > Omit icings all together if possible; however for an alternative to traditional icing, try cream cheese icing. This example refers to the healthy alternative for the above recipe for muffins where we have used cream cheese instead of all icing sugar.
- > When baking, aim to limit the number of high Glycaemic Index (GI) ingredients in recipes such as Rice bubbles and Cornflakes and try increasing the number of lower GI ingredients such as fruit, whole grains, seeds, oats, high fibre flours and bran.
- > For savoury meals, aim to include low GI options such as basmati rice, sweet potato, pasta, noodles and legumes such as red kidney beans, lentils and baked beans.

Recipe for Banana Muffins (makes 12 muffins)

Food	Grams of Carbs
2 cups self raising flour	200
½ cup (firmly packed) brown sugar	115
⅓ cup vegetable oil	0
1 cup milk	15
2 eggs	0
2 medium bananas (ripe)	40
Total carbohydrates	370
Carbohydrate content per muffin	~30g

Food	Amount	Grams of Carbs
Oats, rolled	¼ cup	15
Pasta (dry)	35g	25
Rice (dry)	½ cup	75
Rice paper	1 sheet (10x10cm)	10
Skim milk powder	2 heaped Tbsp	15
Sugar – White/ Raw	1 tsp 1 Tbsp ½ cup, 115g 1 cup, 230g	5 15 115 230
Sugar – Brown	1 Tbsp 1 cup loosely packed 1 cup packed firmly	15 150 235
Smart sugar (CSR – with stevia)	½ cup (equivalent of 1 cup of sugar)	60
Sultanas/raisins	½ cup loose, 75g	55
Sweetener powders (equal spoon for spoon, splenda)	1 Tbsp, 2g ½ cup, 12g	free 10

Healthy alternatives for the above muffin recipe

Food	Grams of Carbs
1 cup wholemeal self raising flour	90
½ cup oats	30
½ cup almond meal	0
¼ cup (loosely packed) brown sugar	40
⅓ cup vegetable oil	0
1 cup milk	15
2 eggs	0
2 medium bananas (ripe)	40
Total carbohydrates	215
Carbohydrate content per muffin	~18g

Counting carbohydrates

Carbohydrate free foods

Carbohydrate free foods do not contain carbohydrate and can be eaten without affecting blood glucose levels. Carbohydrate free foods include:

Foods containing mostly protein

- > lean meat, fish, chicken (ie. tuna, BBQ chicken, lean ham) and eggs
- > reduced fat cheese including cheddar, cottage, ricotta or cream cheese
- > nuts and seeds including almonds, peanut butter etc

Vegetables

- > all vegetables except for potato, sweet potato, corn, and large amounts of carrot (more than 1 medium) or pumpkin.
- > includes pickles and gherkins

Foods containing mostly fat

- > butter, cream, oil margarine, salad dressing, mayonnaise

Note: Large amounts of fat are not recommended as part of a healthy diet.

Other foods

- > some fruits like passionfruit, lemon, lime and rhubarb
- > products with all sugar from artificial sweetener like diet jelly, diet cordial or frozen diet cordial ice blocks, and diet toppings
- > coffee and tea
- > vanilla and other essences
- > some spreads
 - i.e. yeast spread such as vegemite, meat paste, fish paste, peanut butter etc
- > seasonings
 - salt and pepper, herbs and spices, stock cubes, vinegar etc
- > gelatine

It is important to eat these foods in healthy portions. Don't overeat just because they don't contain carbohydrates!

Free Food ideas for me

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Counting carbohydrates

Important tips for counting carbohydrates

Measure your serving sizes regularly using cup measures or weighing on digital scales. This will help you become familiar with what the serving size looks like and be more accurate when you estimate your serve size. For fruits and vegetables it is important to weigh them regularly as sizes vary greatly between seasons.

- > Some foods are harder than others to guess serving size. These include cereal, pasta, rice, potato and some fruits. You may need to measure these more frequently to be accurate when estimating.
- > Take some time to work out the carbohydrate amounts in grams of foods you like to eat often and write them down on whiteboards, posters in the pantry, or your own pocket book. This helps to find the information quickly.
- > To make it easier for kids at school, use stickers/glad wrap/glad bags to write down the carbohydrate value on the food.

Healthy Eating

Healthy eating is vital to achieve overall good health, therefore it is important for people with type 1 diabetes to follow the healthy eating guidelines, including:

- > eat mainly wholegrain, low GI bread, cereals, rice and pasta, legumes, fruit and vegetables
- > have small serves of low fat dairy products, lean meats, eggs, chicken and fish
- > limit high fat, high sugar snacks like chips, chocolate, cakes, pastries and some muesli/cereal bars
- > avoid high GI, high sugar food like regular lollies, soft drink, jelly etc. Replace these with artificially sweetened varieties if needed. Drink water as your main drink.



Counting carbohydrates

Meal and snack ideas (carbohydrate foods)

Remember to make your meal balanced by including some lean protein and carbohydrate-free vegetables.

Breakfast (g carbohydrates)
Morning tea (g carbohydrates)
Lunch (g carbohydrates)
Afternoon tea (g carbohydrates)
Dinner (g carbohydrates)
Supper (g carbohydrates)

For more information

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