



Guide to carbohydrate counting at school

Why count carbohydrate?

The diet for children with Type 1 diabetes is the same healthy diet recommended for children of a similar age. Even though you are counting the carbohydrate in meals, it's still important for the child with Type 1 Diabetes to eat a well-balanced, healthy diet, containing foods from all the food groups.

Carbohydrate foods are the group of foods which cause the greatest rise in blood glucose levels. Counting carbohydrate gives a way of matching insulin doses with the carbohydrate eaten, helping to manage Type 1 Diabetes.

This insulin and carbohydrate 'matching' gives the flexibility to choose the food to eat, the portion size and the time it is eaten, without having an adverse effect on blood glucose levels.

It involves:

- identifying the carbohydrate in meals
- working out how much carbohydrate is in that meal
- calculating how much insulin to give

Remember: it's not how big the meal is, but how much carbohydrate it contains, which determines how much insulin is given.

Which foods contain carbohydrate?

This includes both starchy and sugary foods:

- bread, bagels, crumpets, wraps, naans, croissants
- potatoes, chips, crisps
- pasta, noodles, rice, couscous
- biscuits, savoury crackers, crispbread, popcorn
- pizza, pancakes, pastry
- baked beans, kidney beans, chickpeas, lentils

- cakes and puddings
- sweets and chocolates

- fruit—fresh, dried, frozen or tinned in its own juice, fruit juice
- milk, milk puddings, custard, ice-cream, yoghurt, fromage frais

Which foods don't contain carbohydrate?

This includes:

-protein – meat, fish, eggs and cheese don't contain carbohydrate; if they are covered in batter or breadcrumbs (e.g. fish fingers), they need to be counted

-vegetables + salad – the only vegetables we count are peas, baked beans and sweetcorn – the others should all be encouraged as they are packed with vitamins and minerals

-drinks – water, 'no added sugar' squash and 'diet' drinks don't contain carbohydrate. Drinks such as milk, milkshakes and fruit juice contain carbohydrate, so are best consumed at lunchtime and included in the carbohydrate calculation. All ordinary, full sugar drinks are high in sugar, and not recommended for mealtimes, just for exercise or treating a 'hypo'.

Working out the carbohydrate

There are several different ways to work out the carbohydrate content of foods and meals, but you always need to know how much of the food will be eaten.

You can weigh the food; use the portion size information on the food label or from the school menus; or estimate the amount from books or apps.

For foods such as pasta, rice and potatoes, weigh them after they're cooked, not before, as their weight will change during cooking.

Using food labels

If you are using the information on food labels, you need to know how much of the food that the child will eat, then work out the carbohydrate in that portion.

Remember, you are looking for the total amount of carbohydrate in the food, not just the sugars.

e.g. If you look at the label below, for a 'mini' pizza (which weighs 170g), you can see that the whole 'mini' pizza contains 51.3g carbohydrate.

Nutritional information		
Typical values	Per 100g	Per pizza
Energy (Kcal)	267	400
Protein (g)	11	18.7
Carbohydrate (g)	30.2	51.3
of which sugars (g)	2.7	4.6
Fat (g)	11.3	19.2
of which saturates (g)	5.3	9
Fibre (g)	1.5	2.6
Sodium (g)	0.5	0.9

If you ate the whole 'mini' pizza, it would be 51.3g carbohydrate.
If you had ½ a 'mini' pizza, it would be 25.7g carbohydrate.

We advise counting to the nearest whole gram of carbohydrate.

Take care if you are eating foods from a multipack, such as yoghurts, or individually wrapped biscuits. The carbohydrate information may only be on the outer packaging, or on one of the items, so make sure you keep a note of it somewhere.

Weighing foods

Lots of foods don't come in packets, or the portion size is different to what the packet says is a portion, so it's worth weighing these foods to find out the child's portion, then work out how much carbohydrate it contains, using the calculation below:

e.g.

If you eat a 60 g portion of breakfast cereal:

- From the packet, breakfast cereal contains 75g carbohydrate per 100g cereal
- Divide by 100 to find out how much carbohydrate there is in 1g cereal (a quick way is to move the decimal point 2 places to the left = 0.75g)

$$\begin{array}{rclcl} \textit{Weight of cereal} & & \textit{Carbs in 1g cereal} & & \textit{Carbs in portion of cereal} \\ 60\text{g} & \times & 0.75\text{g CHO} & = & 45\text{g CHO} \end{array}$$

Mealtimes

If the child is on school meals, find your school's menus and use the leaflet 'Carbohydrate content of school meals' to work out the carbohydrate in the relevant meal.

If the child has a packed lunch, sometimes the family will send in carbohydrate information for you to use – if not, the information will be in the 'Carbs + Cals' book or app.

What about snacks?

You need to give fast-acting insulin with all carbohydrate foods eaten, to keep blood glucose levels within the target range.

This includes snacks, which can often be quite high in carbohydrate. If the child is hungry at break times and doesn't want to give an insulin injection, they could choose a non-carbohydrate snack such as cucumber sticks or mini tomatoes, which will also help towards their '5-a-day'.

- Do not give insulin for snacks if the child is having the snack to cover activity.
- Do not give insulin if the child is taking carbs as part of treatment for a 'hypo'

Residential trips

If you are taking the child on a residential trip, ask the site to send you their menus ahead of time, and some may even have carbohydrate information for their menus.

How do you work out how much insulin to give?

Once you have counted the carbohydrate in the meal, you will need to calculate how much insulin is needed to match this. This is worked out using the insulin to carbohydrate ratio (ICR).

Ratios can vary from person to person and are worked out individually. They can vary at different times of the day, and usually change as the child gets older:

e.g. this may be 1 unit of fast-acting insulin to match each 10g carbohydrate in the meal. So, a meal containing 50g carbohydrate needs 5 units of fast-acting insulin.

Most children on injections use a 'smart' meter which is programmed with the child's individual settings and can work out the correct insulin dose for them at a particular meal or snack.

If they are on an insulin pump, all their individual settings will be programmed into their pump.

Further information

If you need more help with managing school meals for the child with Type 1 Diabetes, please contact:

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