



## Nutrition for children with Type 1 Diabetes

Food is essential for growth and good health in children and young people.

Food also plays an important role in the control of diabetes.

Food is made up of a variety of nutrients:

- Protein
- Fat
- Carbohydrate
- Fibre
- Vitamins
- Minerals

Children with diabetes do not have different nutritional requirements when compared to children without diabetes.

They require the same amount and types of foods as other children. It is important to eat regular meals and snacks from the five food groups:

- Vegetables – include different colours including raw (e.g. salad) and cooked
- Fruit
- Breads and cereals – choose wholegrain and/or high fibre varieties such as bread, rice, pasta, noodles, polenta, couscous, oats, quinoa and barley
- Lean meats and poultry, fish, eggs, tofu, nuts and seeds and legumes/beans

- Milk, yoghurt, cheese and/or their alternatives – choose reduced fat versions for children over 2 years

Consuming a wide variety of foods ensures children are getting enough of nutrients for healthy growth and development. It is also important to drink enough fluid; water is the best drink for your child.

### Carbohydrate

Carbohydrate is the main nutrient that we focus on when preparing food for children with Diabetes. It is the only nutrient that directly affects blood glucose levels and must be included in all meals and snacks.

There are two different types of carbohydrates:

#### a. Sugars

Examples of sugars are white or brown sugar, honey, fructose (fruit sugar) and lactose (milk sugar).

Many processed foods are high in sugar (e.g. lemonade, cordial, lollies). Some breakfast cereals are also high in sugar (e.g. *Nutri-Grain*, *Cocopops*, *Fruit Loops*).



## b. Starches

These occur naturally in foods and are often found together with dietary fibre. Foods that contain starches also contain many other important nutrients. Examples of starches include potato, pasta, rice, bread and cereals. Include these foods at each meal and snack.

## **Protein**

Protein is needed for growth and repair of body tissues. It is also a source of energy. The main sources of protein are meat, eggs, fish, poultry, dairy products, nuts, seeds and legumes.

## **Fat**

Fat is a concentrated source of energy. Sources of fat include butter, margarine, and oils. Significant amounts are also found in meats, eggs, dairy products, nuts, and fried foods.

Polyunsaturated fats (e.g. canola oil) and monounsaturated fats (e.g. olive oil) are healthier choices. Your dietitian can provide more information about dietary fats.

## **Fibre**

Fibre is the part of a plant food that is not digested. It helps prevent constipation

and protects against bowel disease.

Wholegrain cereals and breads, legumes, oats, fruits, and vegetables are rich sources of dietary fibre. Try to include these foods each day.

## **Minerals**

Minerals are found in a variety of foods. Calcium, which is important for healthy bones and teeth, is found in dairy products such as milk and cheese. Iron, which is important for red blood cell formation, is found in meats, eggs, dark green leafy vegetables, and fortified cereals. Eating a wide variety from the five food groups will ensure adequate mineral intake.

## **Vitamins**

The body requires many different vitamins in small amounts. Eating a wide variety of foods will ensure an adequate intake. It should not be necessary to take supplements if you have a balanced diet.



## **Carbohydrate and Diabetes**

What happens when you eat food that contains carbohydrate?

- The carbohydrate is digested into glucose.
- The glucose is then absorbed from the intestinal system into the blood stream.
- The glucose is then carried to the body's cells and used for energy.
- Insulin is needed to pull the glucose from the blood to the cells for energy.
- People with Type 1 diabetes are not able to make their own insulin.
- This is why your child's insulin dose needs to be matched to the amount of carbohydrate eaten.

## **Carbohydrate foods and serve sizes**

Carbohydrate foods are broken down into glucose to be absorbed into the cells for energy. Children and young people with Type 1 diabetes need to include these foods at each meal and snack.

Carbohydrate foods should be eaten at regular times throughout the day in roughly the same amount. This ensures blood glucose levels can be balanced with the insulin dose from one day to the next.

Achieving good control of blood glucose levels (i.e. avoiding high levels or low levels) requires a consistent diet to match the dose of insulin. The foods can change from day to day but the carbohydrate content (number of serves) must remain relatively constant across the main meals.

If a meal or snack is delayed or missed altogether, the blood glucose level may go too low resulting in hypoglycaemia. Your dietitian will suggest carbohydrate serves to include in each meal and snack. The tables on the following pages provide a guide to the number of serves for carbohydrate containing foods.

Remember to check the food label as the carbohydrate content and serve sizes will vary between products.

### **Remember:**

**One carbohydrate serve is equal to 15g carbohydrate**

Food type	Serve size	Number of serves
<b>Breads</b>		
Bread (white, wholemeal, multigrain, fruit loaf)	1 slice (30g)	1
Bread roll (white, wholemeal, multigrain)	1	2 - 3
Pita bread / wrap bread	1	1 ½
Crumpet / English muffin / Croissant	1	2
Lebanese bread	1	3
Pikelet	2 small	1
<b>Grains</b>		
Cooked pasta / noodles / spaghetti	1 cup	3
Cooked rice - white	1 cup	4
Cooked rice – brown	½ cup	3 ½
Cooked quinoa / cous cous	½ cup	1 ½
Lasagne sheet	1 sheet (16g)	1
Ravioli	7 pieces	1
Flour (wholemeal or white) (unsifted)	1 cup	8
<b>Cereals</b>		
<i>Weetbix / Vitabrits</i>	2 biscuits	1
Porridge (cooked with water)	¾ cup	1
Plain cereal (e.g. <i>Cornflakes, Rice Bubbles</i> )	¾ cup	1
<b>Biscuits and crackers</b>		
Crispbreads – <i>Sao, Cruskit</i>	3	1
Crispbread – <i>Vitawheat, Premium</i>	4	1
Crispbread - <i>Ryvita</i>	2	1
Rice crackers (e.g. <i>Sakata</i> )	10	1
Crackers (e.g. water cracker, <i>Jatz</i> )	6	1
Plain sweet biscuit (e.g. <i>Milk Arrowroot, Nice</i> )	2	1

Food type	Serve size	Number of serves
<b>Fruits</b>		
Apple, orange, peach, pear, banana	1 medium	1
Mandarin, nectarine, plum, kiwi fruit	2 medium	1
Apricot	4	1
Cherry / grapes	½ cup	1
Watermelon / rockmelon	2 slices	1
Pineapple	2 slices	1 ½
Mango	½ medium	1
Dried fruit	Small handful	1
Tined fruit	½ cup	1
Fruit juice	½ cup	1
<i>* Strawberries, blueberries, raspberries, lemon, passionfruit are considered to carbohydrate free fruits</i>		
<b>Vegetables</b>		
Baked beans	½ cup	1
Corn	½ cob	1
Potato	1 medium (150g)	1
Potato, mashed	½ cup	1
Sweet potato	½ cup	1
<i>* All other vegetables are considered carbohydrate free</i>		
<b>Dairy and dairy alternatives</b>		
Milk / soy milk	1 cup	1
Yoghurt – plain	200g	1
Yoghurt – fruit	200g	2
Custard	½ cup	1
<i>* Hard cheese is carbohydrate free</i>		

Food type	Serve size	Number of serves
<b>Miscellaneous</b> <i>These foods are high in sugar and/or fat and low in nutrients. They should be limited to special occasions only</i>		
Sugar	1 tb	1
Chocolate	4 squares or 1 snack size bar	1
Muesli bar	1 bar	~ 1 ½
Sweetened cereals (e.g. Cocopops)	~ ½ cup	1
Ice cream / frozen yoghurt	2 scoops	1
Water or milk based ice block	1 block	1
Yogo / Milo dairy snack	1 tub (150g)	1
Chocolate or cream filled biscuit	1 biscuit	1
Soft drink, regular	1 can	2 ½
Packet chips	1 packet (50g)	2
Cake (plain with icing)	1 slice (30g)	1
2 minute noodles	1 packet	4
Nutella	1 ½ tb	1
Jelly	⅓ cup	1
Hot chips	1 cup	1
Potato scallop	1	1
Party pie	1	1
Regular pie	1	1 ½
Sausage roll	1 large	2
Pizza	1 slice	2-3
Burger bun	1	2
Big Mac, McChicken, Quarter Pounder, Zinger Burger	1 burger	3
Junior burger / cheese burger	1 small burger	2
McNuggets	6 pieces	1
French Fries	1 medium serve	4



## Label reading

Understanding how to read food labels is an essential skill for children with diabetes and their families. Food labels can be used to compare two products and to identify how much carbohydrate there is in a serve.

Remember, when comparing two products to use the per 100g column. When identifying how many carbohydrate serves (15g carbohydrate / serve) in a product, use the per serve column. Check the label of each product as the carbohydrate content varies between brands.

*For example:*

*If you were consuming 2 portions of the product below your portion would be 60g (1 cup) and contain 44g total carbohydrate.*

<b>NUTRITION INFORMATION –</b>		
<b>Serving Size: 30g ( ½ cup)</b>		
	Per Serve 30g	Per 100g
Energy	443Kj	1478Kj
Protein	3.9g	13.1g
Fat	0.7g	2.2g
Carbohydrate		
Total	22g	73.4g
Sugars	4.1g	13.5g
Dietary Fibre	2.8g	9.3g
Sodium	292mg	937mg

**Carbohydrate Total** – Refers to the total carbohydrates (starches and sugars combined) in that food. *Remember: 15g of carbohydrate is equal to one serve.*

**Sugars** – Refers to all sugars including added and naturally occurring. Avoid foods that are high in sugar, as sugar can increase the GI of foods.

**Fat** – Look for products that are low in fat. A useful guide is to choose products with total fat less than 10g per 100g. Furthermore, try to choose foods that are higher in ‘unsaturated fat’ compared to ‘saturated fat’.

Sites such as Calorie King can help you determine the carbohydrate content in a range of foods:

[www.calorieking.com.au](http://www.calorieking.com.au)



## Healthy snack ideas

It is important for children with Type 1 Diabetes to eat regular meals and snacks. Snacks should be based on foods from the five food groups to ensure good nutrition for health and growth.

### Sweet Snacks

- Variety of fresh fruit
- Small amount of dried fruit such as apricots, sultanas, dates, apple and prunes
- Tinned fruit
- Low fat yoghurt
- Low fat milk – plain or with small amounts of flavouring (e.g. *Milo*)
- Fruit smoothie – low fat milk, fresh fruit and yoghurt. Try frozen bananas or berries to give the smoothie a cold and creamy consistency.
- Slice of raisin toast
- Pikelets
- Fruit scones
- Plain biscuits
- Muesli bar (look for options with oats, dried fruit and nuts)

### Savoury Snacks

- Mini Pizzas – split a wholegrain muffin and spread with pizza sauce and favourite toppings
- *Vita-Weats*<sup>™</sup> or *Ryvitas*<sup>™</sup> try topping with low fat cottage cheese, tomato, salmon
- Vegetable sticks (carrot, celery, capsicum) with low fat dips
- Pretzels
- A mini can of baked beans
- Rice crackers with hommus, avocado or low fat cheese
- Vegetable based soup
- Toasted Pita bread triangles with low fat tomato salsa dip
- Low fat savoury muffins eg. herb and low fat cheese, ham and pineapple
- Microwave popcorn
- Baked beans on wholegrain toast
- Celery boats filled with cottage cheese tomato and ham or peanut butter
- Lavish or Lebanese bread – roll up with peanut butter or try a banana