

## Nutrition for children with Type 1 Diabetes

Food is essential for growth and good health in children and young people. 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. Eating regular meals and snacks from the five core food groups is important in diabetes.

Food is made up of a variety of nutrients:

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

**Eating from the Five Food groups provides a balanced diet:**

- Vegetables – include different colours, and both raw and cooked vegetables for variety.
- Fruit – include a variety of different colours.
- 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 dairy for children over 2 years of age (reduced fat milks are not suitable for children under 2 years of age).

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

**The main nutrients that make up our foods are carbohydrate, protein and fat.**

## **Carbohydrates**

Carbohydrate is the main nutrient that we focus on when preparing food for children with diabetes. Carbohydrate is the only nutrient that **directly** increases blood glucose levels and should be included in all meals and snacks. Good diabetes control can be achieved by including nutritious carbohydrates in the diet and matching your insulin with your carbohydrates.



**There are two different types of carbohydrates:**

- **Sugars:** Examples of sugars are white/brown/raw 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*, *Coco Pops*®, *Froot Loops*®). Some high sugar foods (milk and fruit sugar) do not raise the glucose rapidly and contain important nutrients that should be eaten daily

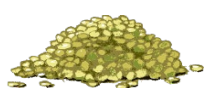


- **Starches:** These occur naturally in foods and are often found together with dietary fibre. Foods that contain starches also contain many other important nutrients. Examples of starches include potato, pasta, rice, bread and cereals.



## 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.



## Low Carbohydrate Diets

Carbohydrates should not be restricted in children and adolescents with type 1 diabetes as it can affect growth and increase the risk of heart disease and poor eating behaviours. Your dietitian and diabetes team can help you with tricky foods and reducing post meal blood glucose spikes.

## High Protein and High Fat

Meals that contain high fat and high protein have a **delayed** impact on blood glucose levels. Your dietitian can provide more information about the impact of high protein and high fat meals and how to manage your blood glucose levels. It is important to follow a balance diet for your child's health and diabetes management.

## 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

Dietary fats are essential for your child's health and development. They help the body absorb vitamins A, D, E and K. Dietary fats also help to make hormones. The type and amount of fat children eat is important. As dietary fat is very high in energy, too much can cause children to become an unhealthy weight and this can make diabetes more difficult.



There are three types of fat;

- **Saturated and trans fats** are found in fatty meats, full fat dairy products (milk, cheese, cream), butter, coconut and palm oil, deep fried takeaway foods and commercially baked products such as biscuits and pastries. **Trans fats** are not always listed in the nutritional panel on food items. A “hidden” source is hydrogenated vegetable oil.
- **Polyunsaturated fats:** are found in sunflower, safflower and soybean oil, fish, legumes, nuts and seeds
- **Monounsaturated fats:** are found in canola oil, olive oil, avocado, nuts and seeds (where suitable, under the age of 3 nuts can be a choking hazard).

Polyunsaturated fats and monounsaturated fats are healthier choices. Children whose diets contain too much saturated or trans fats are more likely to have higher cholesterol levels and heart disease later in life. It is important to set good eating habits at a young age. Low fat food options are not suitable for children under the age of 2 years.

Your dietitian can provide more information about dietary fats.

## Minerals

Children with diabetes do not have different mineral requirements when compared to children without diabetes. Minerals are found in a variety of foods. Eating a wide variety from the five food groups will ensure adequate mineral intake.

## Calcium

Calcium is an important dietary mineral which is important for healthy bones and teeth, and is found in dairy products such as milk, yoghurt, and cheese.

Other examples of calcium containing foods include:

- tofu, soy milk, canned chickpeas,
- reduced fat vanilla custard (not suitable for children below the age of 2),
- almonds (not suitable for children under the age of 3 due to choking hazard),
- pink salmon canned in water with no added salt.

Your dietitian can help with non- dairy foods that contain calcium.



## Iron

Iron is an important dietary mineral that carries oxygen around the body. Iron is stored in haemoglobin which is found in red blood cells. Iron assists with energy levels, concentration and fighting infections. To stay healthy, include iron- rich foods each day. Iron is found in meat, eggs, dark green leafy vegetables, and fortified breakfast cereals.



## Vitamins

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

Children without diabetes can automatically increase or decrease insulin levels according to changes in BGL due to changes in diet and exercise. Children with Type 1 diabetes no longer have this 'automatic' insulin release and this is why your child's insulin dose needs to be matched to the amount of carbohydrate eaten.

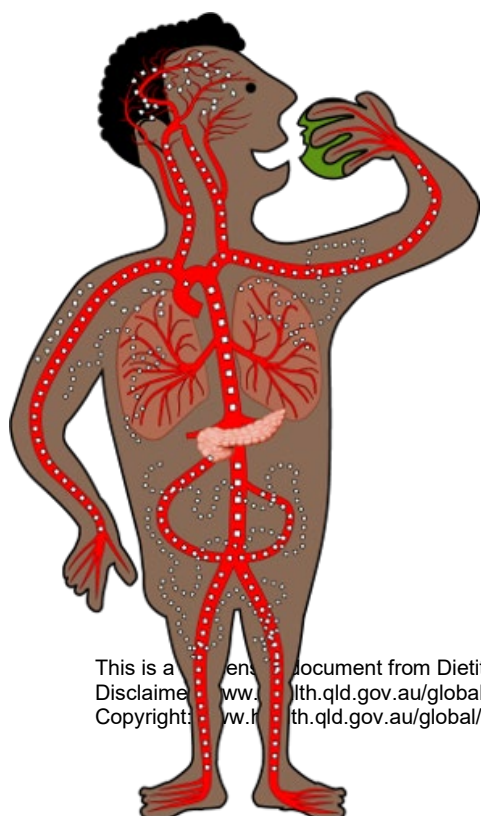
## **Carbohydrate foods and portion sizes / carbohydrate grams.**

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 carbohydrate foods at each meal to ensure they receive enough nutrition and energy for day to day activities and for growth.

To achieve good control of blood glucose levels (i.e. avoiding high levels or low levels)

- Carbohydrate foods should be eaten at regular times throughout the day
- Carbohydrate foods should be matched with your insulin dose
- Meal- time routines, diet quality and getting the right dose of insulin are important for diabetes control.

## **What happens when you eat food that contains carbohydrate?**



**1. Food is eaten**

**2 Food is swallowed**

**3 Food is mashed up in your stomach**

**4 Your food goes into your small intestines**

**5 The sugar (glucose) then goes into your blood stream**

**6 Insulin is needed to pull the glucose from the blood to the cells for energy**

## Carbohydrate Counting

When matching your insulin to carbohydrate intake you will need to count the carbohydrates you plan to eat. You may count carbohydrates in either grams or portions. When counting in portions 1 carb portion contains 15g of carbohydrate. Some centres count in 10g carb portions.

**1 carbohydrate portion = 15g carbohydrate**

Your dietitian can suggest the right amount of carbohydrate portions or grams to include in each meal and snack that best suits your age, gender, activity, and your previous diet.

A good guide when you are first diagnosed and very hungry is:

Carbohydrate Recommendations				
Age	Main meals (maximum)		Snacks (maximum)	
	Portions	Grams	Portions	Grams
2-3 years	3 carb portions	45g carbohydrate	½ carb portion	7g carbohydrates
4-8 years	4 carb portions	60g carbohydrate	1 carb portion	15g carbohydrate
9-13years	5 carb portions	75g carbohydrate	1-2 carb portions	15-30g carbohydrate
14 years & older	6 carb portions	90g carbohydrate	2-3 carb portions	30-45g carbohydrate



## Healthy snack ideas

It is important for children with Type 1 Diabetes to eat regular meals and snacks. 3 main meals and 2 -3 snacks per day is appropriate for a child with diabetes. Snacks should also be based on foods from the five food groups to ensure good nutrition for health and growth.

Low fat food options are not suitable for children under the age of 2 years. Children aged between 2- 5 years should choose reduced fat varieties.

### Savoury Snacks

- Vegetable sticks (carrot, celery, capsicum) with low fat dips
- Pretzels, microwave popcorn
- A mini can of baked beans
- A small handful of nuts or seeds (where appropriate for age)
- Tinned tuna, salmon or chicken (including flavoured varieties)
- Low fat cheese sliced, diced or cut into sticks.
- Eggs can be served boiled as a snack, devilled, scrambled or cooked into an omelette
- Rice crackers with hummus, avocado or low-fat cheese
- Plain corn chips with tomato salsa dip
- Savoury muffins eg. herb and low-fat cheese, ham and pineapple
- Baked beans on wholegrain toast
- Celery boats filled with low fat cottage cheese tomato and ham or peanut butter
- Fill lean slices of ham or turkey with sliced salad vegetables and cottage cheese and roll up
- San choy bow: lettuce filled with cooked lean mince (beef / chicken / pork) with cooked diced vegetables and soy sauce\
- 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 based soup



## Healthy snack ideas

### Sweet Snacks

- Variety of fresh fruit
- Berries – strawberries, blueberries, raspberries (fresh or frozen)
- Small amount of dried fruit such as apricots, sultanas, dates, apple and prunes
- Tinned fruit
- Low fat yoghurt (where appropriate for age)
- 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.
- Raisin toast
- Pikelets
- Plain biscuits
- Muesli bar (look for options with oats, dried fruit, and nuts)

**Remember to consider the carbohydrate content of snacks and whether you need to give insulin.**

## Suggested meal plan

BREAKFAST	CARB COUNT
MORNING TEA	
LUNCH	
AFTERNOON TEA	
DINNER	
SUPPER	

Things I can do to help me with my diabetes:

1.

2.

3.

**For further information contact your Dietitian:** \_\_\_\_\_