

I can tell you about carbohydrates

Children with diabetes should eat the same healthy foods as other children. They do not have to be on a special diet. However, children with type 1 diabetes need to match the amount of insulin to the carbohydrate they will eat.

All food is made of different combinations of 3 nutrients: **carbohydrates, proteins,** and **fats**. The body uses each of these for different things and digests them in different ways.

Carbohydrates (or **carbs**) are the sugars and starches in food. When eaten, they break down into sugar. Carbohydrates make blood sugar levels go up, whether you have diabetes or not. Insulin lowers the blood sugar levels.

In a person who does not have diabetes, the pancreas releases just the right amount of insulin each time food is eaten. This insulin moves the sugar from the blood into the body's cells, where it is used for energy. In type 1 diabetes, the pancreas no longer makes insulin to take care of the sugar from these foods, so we need to take insulin. In other words, we are doing what the pancreas would have done. The goal is to match the carbs to the insulin as best as we can.

Children need carbohydrates to grow and develop. Children with diabetes need carbohydrates, just like they did before getting diabetes. Having type 1 diabetes does not mean your child needs fewer carbs or more carbs. It just means they need the insulin to cover those carbs. A balanced diet is the best way to keep your child healthy.

With type 1 diabetes, we count all the carbohydrates in each meal and snack to find out how much insulin to take. This is called **carbohydrate counting**, or **carb counting**. While your child is in the hospital, you will learn how to count carbohydrates.

Some foods will have many carbs, and will need a higher dose of insulin than others. For example, a pasta meal will require a higher dose of insulin than steak and a salad, because pasta has more carbs. Pasta can still be a healthy choice.

How do I know how many carbohydrates are in a food?

Many foods come with a label that shows the carbohydrate amount. Look for the **Nutrition Facts** label. You will need to read it carefully to know how many carbohydrates are in the amount of food your child eats. To figure out the carb amount from the food label, find the serving size and the total carbohydrate.

The label tells you:

Serving size: Everything on the label is based on this serving size. Your child may eat more or less than one serving.

Total carbohydrate: The grams of total carbohydrate include the grams of dietary fiber, sugar, and other carbohydrates. The grams of sugar do not need to be counted separately.

Then ask: **How many servings will your child eat?**

If it is more or less than one serving, find the amount of carbohydrates in what your child will eat.

For example, let's say a 1 cup serving of this food has 31 grams of carbohydrate. If your child eats 2 cups, that will be 62 grams of carbohydrate.

Nutrition Facts	
Serving Size 1 cup (228g)	
Servings per Container 2	
Amount Per Serving	
Calories 280	Calories from Fat 120
% Daily Value*	
Total Fat 13g	20%
Saturated Fat 5g	25%
Trans Fat 2g	
Cholesterol 2mg	10%
Sodium 660mg	28%
Total Carbohydrate 31g	10%
Dietary Fiber 3g	0%
Sugars 5g	
Protein 5g	
Vitamin A 4%	Vitamin C 2%
Calcium 15%	Iron 4%
<small>*Percent Daily Values are based on a 2,000-calorie diet. Your daily values may be higher or lower depending on your calorie needs.</small>	
	Calories: 2,000 2,500
Total Fat	Less than 65g 80g
Sat Fat	Less than 20g 25g
Cholesterol	Less than 300mg 300mg
Sodium	Less than 2,400mg 2,400mg
Total Carbohydrate	300g 375g
Fiber	25g 30g
Calories per gram:	
Fat 9	Carbohydrate 4 Protein 4

A nutrition label

A nutrition label

How do you know how many carbohydrates are in fruits or vegetables in a store?

Or how many carbohydrates are in food from a restaurant? Your diabetes team will show you how to find out how many carbohydrates are in foods that don't come with labels. This information is in books, on websites, and on apps, such as:

- The website for the restaurant
- The National Nutrient Database at <http://ndb.nal.usda.gov/ndb/foods>
- Calorie King book or smartphone app

Many schools have carbohydrate information on the breakfast and lunch menus. If you pack a lunch for your child, write the grams of carbohydrate on each item that

doesn't have a Nutrition Facts label.

Choose healthy foods

Everyone, with or without diabetes, should choose foods that have lots of nutrition. These are whole grains, fruits, vegetables, lean meats, and low-fat dairy products. It is not healthy for anyone to eat sugar often or in large amounts. For example, regular soda has a lot of sugar but very little nutrition.

A person with type 1 diabetes can still eat foods that have sugar. Your child does not need **sugar-free foods** because of type 1 diabetes. Still, some families want to consider sugar-free foods, especially for **free snacks**.

Keep in mind sugar-free does not always mean carbohydrate-free. Foods that say they are sugar-free or have no sugar added may have as many grams of carbohydrate as the foods they are meant to replace. For example, ½ cup of no sugar added ice cream has about 15 grams of carbohydrates. Regular ice cream may have the same number of carbohydrates. So it may not be helpful to use the sugar-free food.

Sometimes there is a big difference in carbohydrates between the regular and the sugar-free types of a food. For example, sugar-free sodas, jelly, and Jell-O have fewer carbohydrates than regular sodas, jelly, and Jell-O.

Some no sugar added products may use sugar alcohols (Mannitol, Sorbitol, Xylitol) in place of sugar. If sugar alcohols are eaten often or in large amounts, they may cause stomach pain, bloating, gas, or diarrhea. However, many people with diabetes include some sugar alcohols in their diet without any problems. To find what works best, try different sugar alcohols without limiting carbohydrates.

How do protein and fat affect blood sugar?

Protein and **fat** affect blood sugars in a different way than carbohydrates. It takes the body longer to digest protein and fat than it does carbohydrates. Also, fat and protein slow down the absorption of carbohydrate. So when they are eaten with carbohydrate, fat and protein prevent the blood sugar levels from rising too quickly. Ask your nurse to see the graph that shows how carbohydrate, protein, and fat affect blood sugar levels in different ways.

What is a free snack?

Free snacks are snacks that are low enough in carbohydrates to not require an insulin injection. Many kids, especially younger ones, need a small snack to avoid hunger between meals. Free snacks are a great way to provide food between meals, without needing an extra insulin injection.

To find number of carbohydrate grams your child can eat without requiring an insulin injection:

- Take your child's carb ratio number (the number of carbohydrate grams covered by 1 unit of fast-acting insulin).
- Divide that number by 4. This is because we cannot draw up $\frac{1}{4}$ of a unit of insulin to cover that amount of carbohydrate.

Your child can only have one free snack between meals. If the child has several free snacks, the carbohydrate grams will start adding up and will require insulin.

Some parents find it helpful to have a free snack basket and let the child choose a free snack.

These common low-carbohydrate snacks which are often free:

Hard boiled egg
Veggies with dressing or hummus
Raw vegetables
Sliced turkey or ham
Tuna or chicken salad
Celery with 1 Tablespoon of peanut butter
Nuts
String cheese
Sugar free gelatin
Sugar free popsicles

Carbohydrate free does not mean calorie free. Some low carb foods are high in calories and should only be eaten in small amounts.

How do I record the amount of carbs eaten?

Date 6/29	12PM	1PM	2PM	3PM	4PM	5PM	6PM	7PM	8PM
Blood Sugar	244					136			219
Carb Intake	73					32			-
Carb Dose	2.4					1.0			-
High Blood Sugar Dose	.6					-			.4
Total Dose	3.0					1.0			.5
Levemir or Lantus Dose									3.0

Log Sheet

- **Date:** Write the date that the information is from.
- **Blood sugar:** Write the blood sugar result from the meter.
- **Carb Intake:** Write the total amount of carbohydrate that your child had at a meal or snack.
- **Carb Dose:** Write the amount of fast acting insulin that you calculated to cover carbohydrates.
- **High Blood Sugar Dose:** Write the amount of fast acting insulin that you calculated to correct a high blood sugar.
- **Total Dose:** Write the total dose of fast acting insulin that was given.
- **Levemir or Lantus Dose:** Write the dose of long acting insulin that was given. This is usually only one time each day.

Bring your log sheets and meter to every appointment.

Now that you've read this:

- Tell your nurse, doctor, or dietitian which foods have carbohydrates or carbs. (Check when done.)
- Tell your nurse, doctor, or dietitian how you find the amount of carbohydrates or carbs in a food with a Nutrition Facts label. (Check when done.)
- Tell your nurse, doctor, or dietitian how you find the amount of carbohydrates or carbs in a food without a label. (Check when done.)
- Show your nurse or doctor what and where you write on the diabetes log. (Check when done.)
- Tell your nurse or doctor when you should share the log with your Diabetes Team. (Check when done.)

Disclaimer

The information provided at this site is intended to be general information, and is provided for educational purposes only. It is not intended to take the place of examination, treatment, or consultation with a physician. Phoenix Children's Hospital urges you to contact your physician with any questions you may have about a medical condition.

Foods with Carbohydrates

Grains

Bread, pita bread, tortillas
Hamburger buns and hotdog buns
Rolls, croissants, bagels, biscuits, cornbread
Pancakes, waffles, muffins
Cereal, oatmeal, cream of wheat, grits
Pasta, noodles, rice, grains, barley, bulgur
Flour, cornstarch, breadings, crusts, croutons
Crackers, popcorn, pretzels, granola

Fruits

Apples, applesauce, oranges, bananas
Watermelons, melons, cantaloupe, honeydew
Pineapple, pears, apricots, peaches, plums
Grapes, dates
Berries, cherries
Papaya, mango, kiwi
Dried fruit, fruit juice

Dairy

Milk (all types)
Buttermilk
Yogurt

Starchy Vegetables

Beans and lentils (most types)
Green peas, corn, parsnips
Potatoes, sweet potatoes
Winter squash

Condiments

Many sauces, such as BBQ, teriyaki, ketchup
Honey, jam, jelly
Less Healthy Foods
Chips, fries, Cheetos
Sodas, sports drinks
Energy drinks, Kool-Aid
Cookies, candies, cakes, pies
Donuts, cinnamon rolls
Chocolate, icing, frosting
Ice cream, regular Jell-O
Table sugar, brown sugar
High fructose corn syrup

Foods with no Carbohydrates or very low in carbohydrates

Non-Starchy Vegetables

Salad, lettuce, spinach, cabbage, kale, greens
Tomato, onion, green onions, avocado
Mushrooms, olives, cucumbers, pickles
Carrots, beets, radishes, turnips, sprouts
Celery, leeks, cabbage, sauerkraut
Baby corn, bamboo shoots, water chestnuts
Green beans, Italian beans, wax beans
Asparagus, artichoke, eggplant
Zucchini, summer squash
Broccoli, cauliflower, brussels sprouts
Okra, peppers

Fruits

Lemons, limes

Proteins

Eggs, egg substitutes
Fish, tuna, shellfish, seafood
Chicken, poultry, turkey
Pork chops, ham
Beef, hamburger, steak
Lamb, venison, bison
Nuts, nut butters, cashews, seeds
Tofu, soy protein

Dairy

Cheese, string cheese, cottage cheese

Condiments and Oils

Garlic, herbs, spices, and seasonings
Vinegar, mustard
Vegetable oils, canola oil, olive oil

Less Healthy Foods

Mayonnaise
Salad dressings, creamy sauces, gravies
Heavy cream, whipped cream topping
Cream cheese, sour cream
Butter, margarine, lard, shortening
Hydrogenated oil, trans fats, coconut oil
Hot dogs, bacon, sausage, organ meats