

# Carbohydrate Counting: Meals for Diabetes<sup>1</sup>

Cassie Rowe, Jamila R. Lepore, and Wendy J. Dahl<sup>2</sup>

Carbohydrates are a key nutrient for adults with diabetes who take insulin. Counting carbohydrates is the primary method to help manage blood glucose (sugar) levels. While the number of carbohydrates is most important, it is recommended to consider the source of carbohydrate. A small apple may have the same number of grams of carbohydrate as two small cookies, but the apple contains more nutrients, including vitamins, minerals, water, and fiber. In fact, choosing high-fiber carbohydrate foods is best, because fiber may help with blood glucose control. A well-balanced, nutrient-dense diet can help reduce the risk of complications from diabetes, such as heart disease and kidney disease. It is, therefore, important to learn to choose and enjoy the right types of carbohydrates in the appropriate quantities.

## Carbohydrate Counting

### What is carbohydrate counting?

“Carb” counting is a way to plan meals to help you maintain target blood glucose levels. Certain foods contain carbohydrates, and these are the foods that most influence your blood glucose. Your body needs carbohydrates in just the right amount. Not enough carbohydrates can lead to low blood glucose (hypoglycemia). Too much carbohydrate can lead to high blood glucose (hyperglycemia). Carb counting is a great tool to understand and practice because it can help you control your blood glucose and still allow you to make varied food choices.

### What foods contain carbohydrates?

Not all foods contain carbohydrates, and some contain more than others. Which foods matter?

Foods that contain carbohydrates:

- Starchy vegetables (corn, potatoes, winter squash, sweet peas, legumes [peas and beans], and soy products like veggie burgers)
- Starchy grain products (bread, rice, pasta, and cereal)
- Fruit and fruit juices
- Milk and yogurt
- Sweets and snacks (cookies, cake, crackers, chips, candy, sugary beverages, and ice cream)

Foods that contain little or no carbohydrates

- Meat (beef, pork, lamb, veal, etc.), poultry, fish (without breading)
- Cheese
- Oil/butter
- Non starchy vegetables (some carbohydrates, but very low)
- Nuts/seeds (some carbohydrates, but very low)

1. This document is FSHN12-18, one of a series of the Food Science and Human Nutrition Department, UF/IFAS Extension. Original publication date March 2013. Revised July 2016, March 2020, and May 2024. Visit the EDIS website at <https://edis.ifas.ufl.edu> for the currently supported version of this publication.

2. Cassie Rowe, former graduate student; Jamila R. Lepore, Extension agent; and Wendy J. Dahl, associate professor; Food Science and Human Nutrition Department, UF/IFAS Extension, Gainesville, FL 32611.

## What serving size do I need?

According to the American Diabetes Association, an exchange of a carbohydrate food contains approximately 15 grams (g) of carbohydrates. Depending on your glycemic control, weight, and other health factors, your healthcare provider will suggest a certain amount of carbohydrate exchanges per meal to help keep your after-meal blood glucose levels within target ranges. Therefore, your healthcare provider may recommend a small, medium, or large carbohydrate meal, depending on your needs. Thirty grams of carbohydrates are recommended for the small meal. This is equal to two 15 g servings of carbohydrate foods. For medium meals (60 g carbohydrate), there are four exchanges, and for large meals (90 g carbohydrate), there are six exchanges.

General serving sizes for common foods (each contains ~15 g carbohydrates per serving)

- 1 slice of bread
- ½ English muffin
- ¼ large bagel or muffin
- 1 (4-inch) pancake/waffle
- 1 (6-inch) tortilla
- ¾ cup unsweetened cereal
- ½ cup cooked cereal (oatmeal, cream of wheat, grits)
- ⅓ cup rice or pasta
- 6 small crackers
- ¾ ounce potato/tortilla chips
- 3 cups popcorn
- ½ cup starchy vegetable (corn, peas, potato, beans)
- 8 ounces milk
- 6 ounces yogurt
- 1 small (4-ounce) fresh fruit
- ½ cup canned fruit (drained) or fruit juice
- ¾–1 cup fresh fruit
- 2 small (2-inch) cookies (sandwich crème filled, chocolate chip, peanut butter)
- ½ cup ice cream/frozen yogurt
- 1 (1-ounce) granola bar
- ½ cup casserole (including lasagna, macaroni and cheese, or other casserole dishes)
- 1 tablespoon sugar, jam, jelly, or honey
- 2 tablespoons light maple syrup

The serving may vary depending on the food and brand but keeping these common foods and serving sizes in mind will help you estimate carbohydrate content when a food label isn't available. When eating out, request the nutrition information or check for it on the restaurant's website. Many restaurants have carbohydrate counts for their foods. If there is no nutrition information available or you don't have access to it, remember this page as a guide when making food choices. Don't see the food item on here? Choose the food that matches best.

## Label Reading

The best way to determine the carbohydrate of a packaged food is to read the “Nutrition Facts” panel. The grams of “Total Carbohydrate” minus the grams of “Dietary Fiber” is the amount of carbohydrates that provided blood glucose and thus should be counted. Make sure to check the serving size, because packaged foods often contain more than one serving per container.

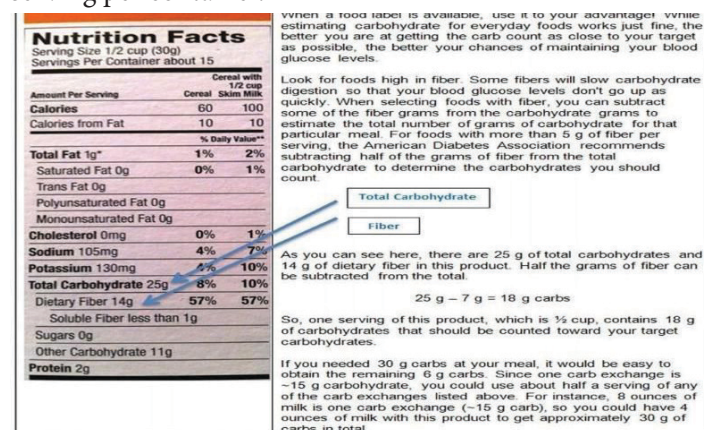


Figure 1. How to use a food label with carb counting.

## Meal Planning: Small, Medium, and Large Carbohydrate Meals

If you are on insulin and have been recommended a carbohydrate “size” of your meals—small, medium, or large—it is important to include food containing the correct grams of carbohydrate at each meal. However, it can be difficult to know what the sizes of small (30 g), medium (60 g), and large carbohydrate (90 g) meals look like. In Tables 1–3, you will find two examples for each type of meal, home-prepared meals versus restaurant meals, with the foods that contain carbohydrate underlined.

While example meals are great to get started, you need to understand and be able to apply these concepts to any meal. You probably do not eat the same foods every day; counting carbohydrates will help you to eat appropriately sized and balanced meals.

Use the examples in the tables below as a guide for your meals. Read on—some of these meals might surprise you!

The meal examples listed in the tables can be altered to accommodate your likes and dislikes. Look at the home-prepared midday meal with 90 g of carbohydrate, for example. You may substitute an additional  $\frac{1}{3}$  cup of pasta in place of the garlic toast and still have 90 g of carbohydrate. The restaurant evening meal also provides 90 g of carbohydrate. You may substitute two slices of garlic bread in place of French fries and still have a 90 g carbohydrate meal. The grams of carbohydrate in a meal is not always what you would expect. To help decide how other foods fit into small, medium, or large carbohydrate meals, just add the carbohydrate values in your meal together. You will notice in our examples, the numbers do not always add up *exactly*, but they are within 5 grams of carbohydrate for the target. Most restaurants have the nutrition facts for every menu item, both in the restaurant and online. Now that you have a better idea of what small, medium, and large carbohydrate meals look like, you will be on your way to being in better control of your diabetes. Happy eating!

## Notes

[illegible]

Table 1. Small carbohydrate meal examples.

Meal example	Home-prepared meal	Restaurant meal
<b>Morning meal</b>	1 scrambled egg w/2 oz cheese <b>AND</b> 1 slice of <u>toast</u> with butter (15 g) <b>AND</b> 1 ¼ cup whole <u>strawberries</u> (15 g)	1 <u>McDonald's Sausage McMuffin w/Egg®</u> (29 g), <b>OR</b> 1 <u>McDonald's Fruit and Yogurt Parfait®</u> (30 g) <b>AND</b> a coffee with 1 packet of Splenda®
<b>Midday meal</b>	1 lunchmeat sandwich with 2 slices of reduced carb <u>bread</u> , 1 slice tomato, 2 oz cheese, and condiments (mayo/mustard) (15 g) <b>AND</b> ½ cup <u>no-sugar-added pudding made with fat-free milk</u> (15 g) <b>AND</b> 1 can diet soda	<u>Subway® Club Salad</u> (11 g) <b>AND</b> 1 package <u>honey mustard dressing</u> (7 g) <b>AND</b> 1 package <u>Subway® Apple Slices</u> (9 g) <b>AND</b> unsweetened tea
<b>Evening meal</b>	6 oz broiled salmon <b>AND</b> ⅓ cup (cooked) <u>brown rice</u> (15 g) <b>AND</b> ¾ cup bell <u>peppers</u> + ¼ cup <u>corn</u> (15 g) <b>AND</b> 1 can diet soda	<u>Sonny's® Barbecue Caesar salad</u> (30 g) with chargrilled chicken <b>AND</b> 1 can diet soda
<b>Note:</b> A small carbohydrate meal is based on about 30 g of carbohydrates. Foods that contain carbohydrates are underlined.		

Table 2. Medium carbohydrate meal examples.

Meal example	Home-prepared meal	Restaurant meal
<b>Morning meal</b>	1 ½ cups <u>Plain Cheerios®</u> (30 g) <b>AND</b> 1 cup <u>1% milk</u> (15 g) <b>AND</b> ½ <u>small banana</u> (15 g) <b>AND</b> coffee with 1 packet Splenda®	1 <u>McDonald's Sausage McMuffin with Egg®</u> (30 g), <b>OR</b> 1 <u>McDonald's Fruit and Yogurt Parfait®</u> (31 g) <b>AND</b> 2 <u>hash browns</u> (30 g) <b>AND</b> a coffee with 1 packet of Splenda®
<b>Midday meal</b>	1 lunchmeat sandwich on 2 slices <u>bread</u> with 1 slice tomato, 2 oz cheese, and condiments (mayo/mustard) (30 g) <b>AND</b> 1 ½ oz (30–40 chips) <u>Baked Lay's® potato chips</u> (30 g) <b>AND</b> 1 can diet soda	<u>Subway® 6" turkey sub with bread</u> , cheese, lettuce, tomato, green peppers, onion, cucumber, and condiments (mayo/mustard) (45 g) <b>AND</b> 1 bag <u>Simply Lays® Sea Salt Potato Chips</u> (15 g) <b>AND</b> unsweetened tea
<b>Evening meal</b>	6 oz grilled chicken <b>AND</b> 1 cup <u>mashed potatoes</u> with 2 oz cheese and butter (30 g) <b>AND</b> ½ cup <u>peas</u> (15 g) <b>AND</b> 1 cup <u>fresh fruit</u> (15 g) <b>AND</b> unsweetened tea	<u>Sonny's® Barbecue dinner portion of classic dry rub brisket</u> (no bun) (5g) <b>AND</b> 1/2 baked <u>sweet potato</u> (30g) <b>AND</b> 1 serving <u>Southern green beans</u> (11g) <b>AND</b> ½ slice <u>garlic bread</u> (13g) <b>AND</b> 1 can diet soda
<b>Note:</b> A medium carbohydrate meal is based on about 60 g of carbohydrates. Foods that contain carbohydrates are underlined.		

Table 3. Large carbohydrate meal examples.

Meal example	Home-prepared meal	Restaurant meal
<b>Morning meal</b>	1 <u>Thomas'® Everything bagel</u> (50 g) <b>AND</b> 2 oz cream cheese <b>AND</b> ½ small <u>banana</u> (30 g) <b>AND</b> 1 cup <u>1% milk</u> (15 g)	2 <u>McDonald's Sausage McMuffin with Egg®</u> (60 g), <b>OR</b> 1 <u>Hotcakes and Sausage</u> (55 g) <b>AND</b> 2 <u>hash browns</u> (30 g) <b>AND</b> coffee with 1 packet of Splenda®
<b>Midday meal</b>	¾ cup cooked <u>pasta</u> (30 g) <b>AND</b> ½ cup <u>Ragu® pasta sauce</u> (15 g) <b>AND</b> 1 slice <u>toast</u> (15 g) with cheese and garlic <b>AND</b> 1 cup cooked <u>spinach</u> + ½ cup <u>tomatoes</u> (15 g) <b>AND</b> 1 small <u>apple</u> (15 g) <b>AND</b> 1 can diet soda	<u>Subway® 6" turkey sub with bread</u> , cheese, lettuce, tomato, green peppers, onion, cucumber, and condiments (mayo/mustard) (45 g) <b>AND</b> 1 bag <u>Simply Lays® Sea Salt Potato Chips</u> (15 g) <b>AND</b> 1 <u>chocolate chunk cookie</u> (30 g) <b>AND</b> unsweetened tea
<b>Evening meal</b>	2 slices of supreme Digiorno® <u>Rising Crust pizza</u> (⅓ of pizza) (82 g) <b>AND</b> <u>salad with 1 cup spinach, ¼ cup carrots, ¼ cup tomato, ½ cup cucumber</u> (10 g) <b>AND</b> 2 tbsp. Italian dressing <b>AND</b> unsweetened tea	<u>Sonny's® Barbecue dinner portion of classic dry rub brisket</u> (no bun) (5g) <b>AND</b> 1 baked <u>sweet potato</u> (60g) <b>AND</b> 1 serving <u>Southern green beans</u> (11g) <b>AND</b> ½ slice <u>garlic bread</u> (13g) <b>AND</b> 1 can diet soda
<b>Note:</b> A large carbohydrate meal is based on about 90 g of carbohydrates. Foods that contain carbohydrates are underlined.		