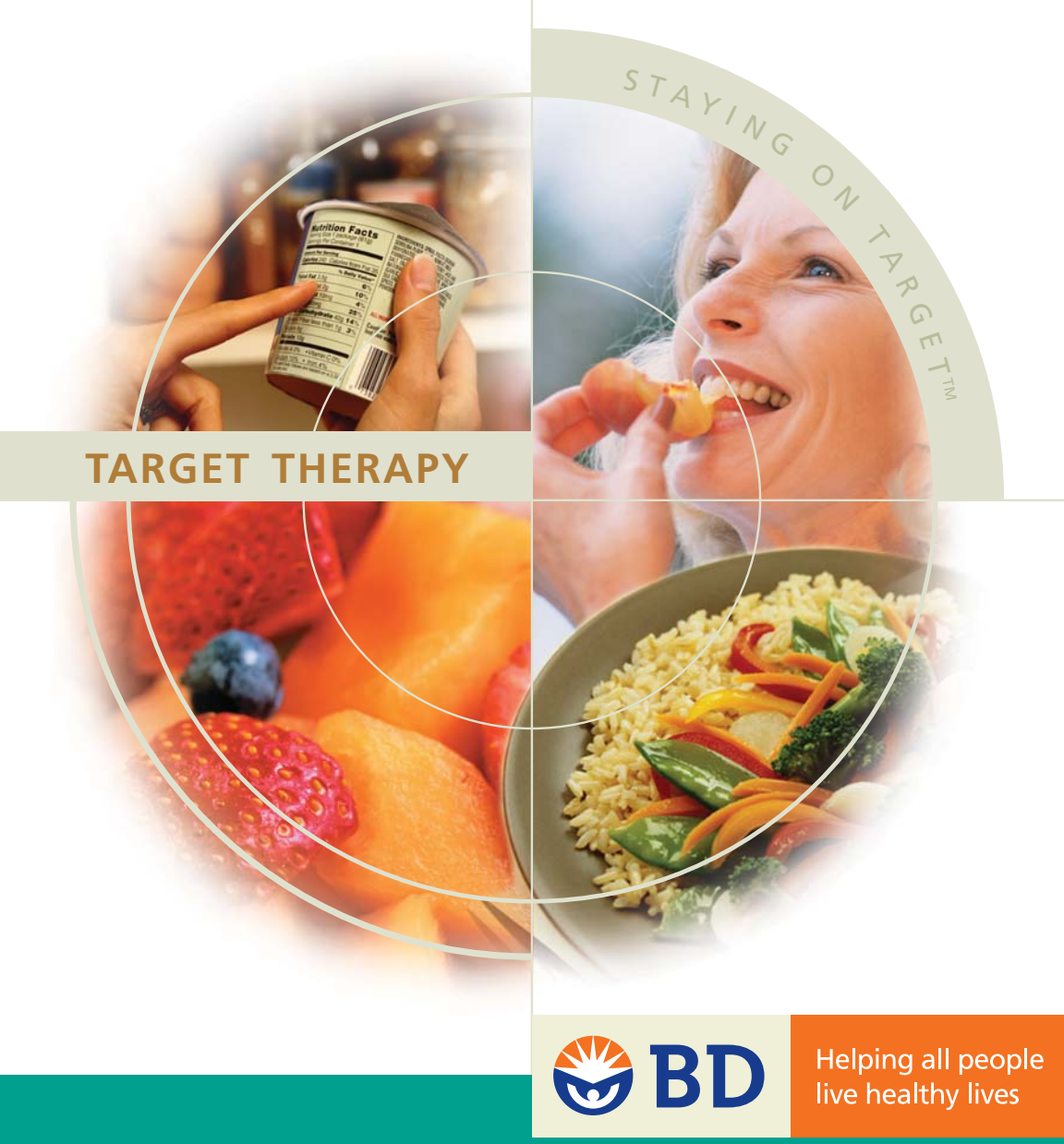


BD

Helping all people live healthy lives

Staying on Target™

Carb Counting...Eat to Win!

What is "Carb" Counting?

Carb (carbohydrate) Counting is a meal planning method for people with diabetes. It is a way to count the carb grams or servings in meals and snacks. By evenly spacing carb foods through the day and by eating about the same amount at each meal or snack you get better blood glucose control so you can stay within your blood glucose targets. You can also enjoy a greater variety of meal and snack choices. Carb Counting can be basic or advanced and is a good meal planning system for anyone with diabetes.

Why Should I Count Carbs?

Food contains many nutrients such as carb, protein, fat, vitamins, minerals, and water. Carb, protein and fat supply the calories in foods that give you energy. Years of research show that carb is the nutrient that has the most effect on your blood glucose. In fact, 90 to 100 percent of the carb you eat appears in your bloodstream as blood glucose within a few hours after you have eaten. Protein and fat have much less effect on your blood glucose. A healthy diet includes a balance of carb, protein and fat.

What is Carb?

Carb foods are very important to a healthy meal plan. They give us energy as well as vitamins, minerals, and fiber. Foods that provide most of their calories from carb include fruit, milk, sugar, sweets, breads, cereals, rice, and pasta as well as starchy vegetables such as corn,

peas, potatoes, and dried beans. Carbs break down into sugar and are released into the blood stream.

What Kind of Carb Do I Need?

Many studies have shown that all types of carb foods affect blood glucose in the same way. *It is the amount of carb you eat during a meal or snack that is important, not the type of carb.*[1]

For example: If you have one cup of vanilla ice cream that has 30 grams of carb and a sandwich with 30 grams of carb, both will affect blood glucose levels in the same way.

Are Some Carbs Better for Me?

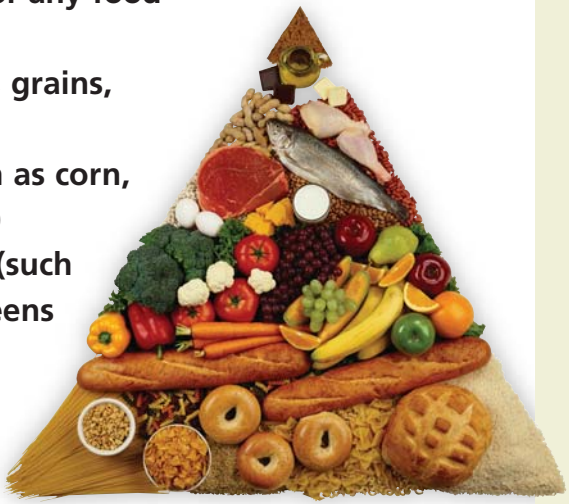
To eat as healthily as you can, you should eat the more nutritious high-fiber carbs like whole grains fruits and vegetables including legumes (peas, beans, etc.). Some sweets can be included in your meal plan but should be limited. They often are high in fat and include few nutrients like vitamins, minerals, or fiber. Carb Counting will help you decide how to include sweets in your meal plan. Be aware that "sugar-free" foods may still contain a large amount of carb.

For example: Sugar-free apple pie will contain carb from the apples and the crust. Sugar-free ice cream will have carb from milk.

[1] American Diabetes Association Clinical Practice Recommendations 2007, *Nutrition Recommendations and Interventions for Diabetes,* Diabetes Care, January 2007, Supplement 1, vol.30, p S52.

Carb-Containing Foods

- **Fruit, fruit juices (or any food that contains fruit or fruit juices)**
- **Milk, ice cream, yogurt (or any food that contains milk)**
- **Breads, cereals, crackers, grains, pasta, rice**
- **Starchy vegetables (such as corn, potatoes, peas or beans)**
- **Non-starchy vegetables (such as broccoli and salad greens that contain very small amounts of carb)**
- **Sweets (such as cake, candy, cookies, pie)**
- **Sugary foods (such as regular soda, fruit drinks, sherbet)**



How Do I Count Carb?

Carb can be counted by **either carb servings / choices** *or* by **carb grams**. A gram (g) is a unit of measure used for foods. One carb serving/choice equals 15g of carb. Either method can be used but however you count carb, you will also need to learn and recognize portion sizes.

What is Basic Carb Counting?

With Basic Carb Counting, your carb choices can change from day to day as long as the totals for your meals and snacks are about the same. (You do not have to eat the same foods or meals everyday, but you need to eat the same amount of carb at each meal). Being consistent is the key to Carb Counting. Eating similar amounts of carb foods at each meal or snack helps "even out" the

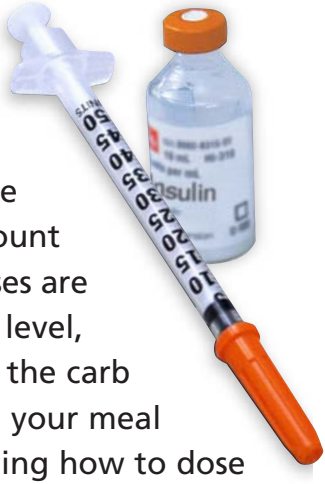
ups-and-downs in your blood glucose level. You can count the amount of carb you eat as servings, choices or grams.

It is also important to eat balanced meals with lean protein foods along with your carb choices. Basic Carb Counting—along with medication and exercise—helps keep your blood glucose levels in your target range so you can stay as healthy as possible.

Do I Need Advanced Carb Counting?

If you use flexible insulin therapy you can benefit from Advanced Carb Counting. Flexible management means:

1. Multiple daily insulin injections of before-meal rapid- or short-acting insulin *or*
2. Using an insulin pump *and*
3. Frequent daily self-monitoring of blood glucose



In Advanced Carb Counting, mealtime insulin doses are matched to the amount of carb you choose to eat. Insulin doses are based on your current blood glucose level, your target blood glucose range and the carb amounts in your meal plan. Learning how to dose your insulin builds on your Basic Carb Counting skills.

Learning The Basics

How Would I Count Carb by the Serving?

You may be familiar with the ADA (American Diabetes Association and American Dietetic Association) *Exchange Lists for Meal Planning*. These lists group foods according to their nutrients. The carb-containing food groups include Bread/Starch, Fruit, Milk and Other Carbs. The foods in these groups contain about 15 grams of carb per serving. Therefore, one carb choice equals 15 grams of carb.

The following servings are each one carb choice equaling 15 grams of carb, so each of these choices will affect your blood glucose level the same:

- **1/2 cup orange juice from the Fruit Group**
- **3/4 cup of cereal from the Bread/Starch Group**
- **1 cup of milk (12 grams of carb) from the Milk Group. Twelve grams of carb is equal to one carb choice.**

For example: Whether you drink a 1/2 cup of orange juice (one carb choice) or 3/4 cup of cereal (one carb choice) or one cup of milk (one carb choice) each food choice will affect your blood glucose about the same because each contains equal amounts of carb. All carb-containing foods are counted equally. Learning the serving size of each item in the carb-containing food groups will help you count your carb servings at meals and snacks.

Remember: **15 g of carb = 1 carb serving or carb choice.**

Carb Amounts in the *Exchange Lists for Meal Planning*

Food Exchange Group	Carb Grams Per Item	Carb Servings
Starch/Bread	15 g carb	1 carb serving or choice
Fruit	15 g carb	1 carb serving or choice
Milk	12 g carb	1 carb serving or choice
Other Carbs	15 g carb	1 carb serving or choice
Vegetable	5 g carb	1/3 carb serving or choice
Meat/Meat Substitute	0 g carb	0 carb serving or choice
Fat	0 g carb	0 carb serving or choice

You may have an *Exchange List* meal plan from your dietitian that suggests specific amounts of **carb servings** for each meal and snack. Keep in mind that different sized portions of fruit, starch, milk, grains, etc. contain different amounts of carb. What you consider a portion may actually count as more than one carb serving.

For example: one carb serving of pasta is 1/3 cup (15 g carb); if you eat 1 cup of pasta, your portion is actually 3 carb servings (45g carb).

How Would I Count Carb by the Grams?

Another way to count carb is to count the number of **carb grams** in the portions you eat, and add those amounts together for a meal or snack total. A gram (g) is a unit of measure for foods. Your meal plan may suggest specific amounts of carb grams at each meal or snack. You will need to become familiar with your portion sizes and the amounts of carb they contain.

For example: If your portion of pasta is one cup, you are eating 45 g of carb.

There are many resources you can use to find out how much carb is in the food you eat, such as:

- **The Internet**
- **Brand Name Food Books**
- **Bowes and Church's Food Values of Portions Commonly Used**[2]
- **Cookbooks**
- **Restaurant Item Lists**
- **The BD Getting Started™ Fast Food Guide**

What Supplies Do I Need to Get Started?

Some helpful carb counting tools include:

- **"Nutrition Facts" panel on food labels**
- **Measuring cups for liquids**
- **Measuring cups for solids**
- **Measuring spoons**
- **Food scale**
- **Calculator**

Practice is important. First, measure your usual food portions. Then, compare them to the serving sizes listed on the Nutrition Facts panel on food labels. It is also a good idea to compare your portions with the serving sizes in the ADA *Exchange Lists for Meal Planning*. Knowing portion sizes will be helpful when you are eating in a restaurant.

[2] Pennington. Jean A.T., Bowes and Church's Food Values of Portions Commonly Used. Eighteenth Edition, J.B. Lippincott, Philadelphia. 2004.

How Can I Use Nutrition Facts on Food Labels?

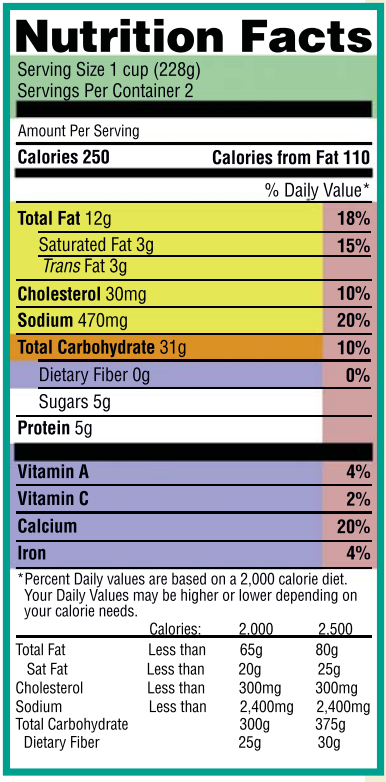
The most common tool for preparing foods at home is the Nutrition Facts panel. Nearly everything you buy in grocery stores, except for meats and fresh produce, has a Nutrition Facts panel on the label. Once you know what to look for on the label, you will be able to count carb by the serving or the gram.

To Find the Amount of Carb Servings:

1. **Check the product serving size.** In this example it is 1 cup.

2. **See the total g (grams) carb amount for the serving size.** In this example it is 31g. (The sugars are already accounted for in the total carb amount.)

3. **Find the dietary fiber amount for the serving size.** If a food you are planning to eat has five or more grams of fiber per serving, subtract the grams of fiber from the total carb grams in the meal. Fiber is a carb that is not absorbed by the body, so high fiber foods have less of an effect on blood sugar levels.



Nutrition Facts

Serving Size 1 cup (228g)
Servings Per Container 2

Amount Per Serving	
Calories 250	**Calories from Fat 110**
	% Daily Value*
Total Fat 12g	**18%**
Saturated Fat 3g	**15%**
Trans Fat 3g	
Cholesterol 30mg	**10%**
Sodium 470mg	**20%**
Total Carbohydrate 31g	**10%**
Dietary Fiber 0g	**0%**
Sugars 5g	
Protein 5g	
Vitamin A	**4%**
Vitamin C	**2%**
Calcium	**20%**
Iron	**4%**

*Percent Daily values are based on a 2,000 calorie diet. Your Daily Values may be higher or lower depending on your calorie needs.

	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
Dietary Fiber		25g	30g

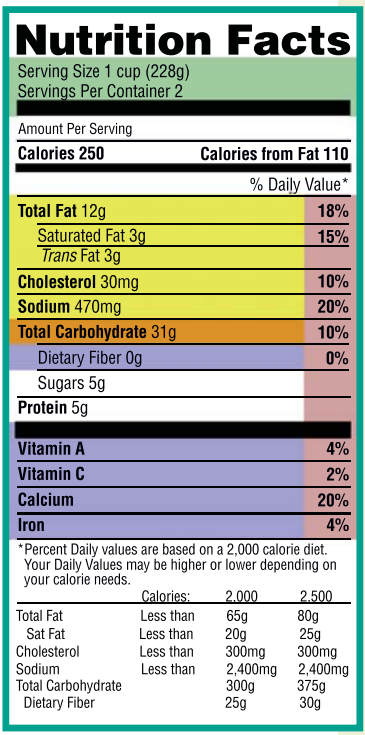
For example: One cup of cooked oatmeal has 25 g of carb and six g of dietary fiber. The total available carb is 19 g (25 g minus 6 g) or one carb serving.[3]

[3] Warshaw, Hope S. and Bolderman, Karen M., Practical Carbohydrate Counting: A How to guide for Health Professionals. American Diabetes Association, 2001, p.43

4. **Find the number of carb servings or choices by dividing the total g carb by 15.** In this example it is 2 (31 g divided by 15 equals 2.06, round to 2). One serving of this product is equal to two carb servings or choices.
5. **Measure your portion.** How does it compare to the serving size on the label? How many carb servings is your portion?

For example: If you eat one cup your portion is two carb servings.

6. **Add up the total amount of the other carb foods you are eating.** That will give you a total amount of carb servings for that meal or snack.



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Sodium 470mg	**20%**
Total Carbohydrate 31g	**10%**
Dietary Fiber 0g	**0%**
Sugars 5g	
Protein 5g	
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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
Dietary Fiber		25g	30g

TO COUNT CARB SERVINGS:

Grams of Carb	Count as the following Carb Servings
0 to 5 g	Do not count
6 to 10 g	1/2 carb serving or choice
11 to 20 g	1 carb serving or choice
21 to 25 g	1 1/2 carb servings or choices
26 to 35 g	2 carb servings or choices

To Find the Amount of Carb Grams:

1. **Find the product serving size.** In this example, it is 1 cup.
2. **Look at the total carb amount for the serving size.** In this example, it is 31g. One cup of this product contains 31g carb. The sugars are already accounted for in the total carb amount, so you do not have to count them.

If a food you are planning to eat has 5 or more grams of fiber per serving, subtract the grams of fiber from the total carb in the meal.

3. **Measure your portion.** How does it compare to the serving size on the label? How many servings is your portion?
4. **Multiply your number of servings times the grams of carb per serving.** One serving of this product is one cup and has 31 g of carb. If you are eating 1 1/2 cup, multiply 1 1/2 times 31. This equals 46 1/2 grams of carb (round to 47 g). One- and-one-half cups of this product would equal 47 grams of carb.
5. **Get the total amount of carb for that meal or snack by adding the amounts of the other carb foods you are eating.**

How Much Carb Do I Need?

Everyone needs a different amount of carb. The amount that is best for you depends on your age, height, weight, level of physical activity, current blood glucose level, and your blood glucose targets. Most people start with 3 or 4 carb servings (45 to 60 g) at each meal and 1 or 2 carb servings (15 to 30 g) for snacks. Your dietitian can help provide the amounts that would be best for you.

Sample Menu

FOOD/BEVERAGE	CARB GRAMS
BREAKFAST	
1/2 cup orange juice	15
2 slices (2 oz.) whole-wheat toast	30
1 soft-cooked egg	0
2 tsp. Margarine	0
12 oz. coffee	0
1 pkg. Sweetener	3
Total grams carb:	**48**
LUNCH	
2 slices (2 oz.) rye bread	30
2 oz. sliced turkey	0
2 lettuce leaves	<1
1 tsp. mayonnaise	0
1 small bag (3/4 oz.) pretzels	15
1 small (4 oz.) apple	15
12 oz. diet cola soda	0
Total grams carb:	**60**
MID-AFTERNOON SNACK	
16 oz. diet iced tea	0
1/2 c. frozen yogurt	15
Total grams carb:	**15**
SUPPER/DINNER	
1 c. tossed salad greens, cucumber slice	5
1 Tbsp. salad dressing	0
3 oz. baked chicken breast	0
1/2 c. mashed potato	15
1/2 c. sliced carrots	5
1 small (1 oz.) dinner roll	15
1 tsp margarine	0
2" brownie square	15
12 oz. diet caffeine-free cola soda	0
Total grams carb:	**50**
BEDTIME SNACK	
1/2 c. juice-packed fruit cocktail	15
2 small (2/3 oz.) sandwich-type creme filled cookies	15
10 peanuts	0
Total grams carb:	**30**



What Should I do About Protein and Fat?

Counting carb servings or grams does not mean you should ignore protein and fat in your diet. Meat and meat substitutes contain protein and fat, which are also essential nutrients. But eating too many servings of protein and fat can lead to weight gain and other health problems, including high cholesterol.

Most active adults should aim for a total of about 6 oz. of cooked meat or meat substitutes per day. Choosing very lean or lean meats over medium- to high-fat meats are healthier options. This can be divided between your meals. A simple way to plan this is to have one small serving at lunch, and one medium-sized serving at supper. A 3 oz. serving is about the size of a deck of cards.

Fats that are considered more "healthy" are liquid at room temperature. Limit the use of fats. Most of your fat intake should be unsaturated fat such as olive, canola, or peanut oils, nuts, seeds, or avocado. Limit your amounts of saturated fats like butter, bacon, cream, solid shortenings, and high-fat meats. Ask your dietitian for help.

Can I Have Alcohol?

Always use caution when drinking alcohol! Pure alcohol, such as gin, rum, vodka, or whiskey and most wines do not contain carb, but do have calories. Research has shown that drinking alcohol can cause low blood glucose (hypoglycemia).[4] At first, blood glucose may increase; especially if the drink contains carb (beer, wine or some mixed drinks), but blood glucose could drop several hours after drinking. To prevent low blood glucose, always eat food, especially carb, if you drink alcohol.

It is generally recommended that you limit your alcohol to one or two drinks, one to two times per week. One drink is equal to:

- **12 oz. light beer (regular beer contains about 15 grams of carb)**
- **5 oz. Wine**
- **1.5 oz. glass of pure alcohol (distilled spirits)**

If you drink alcohol, check your blood glucose regularly to watch the effects. You should check your blood glucose before and several hours after a drink to determine the effect of alcohol on your blood glucose. When mixing drinks with carb-containing liquids like orange juice you need to count the carb in the mix.[5]

[4] American Diabetes Association Clinical Practice Recommendations 2007, *Nutrition Recommendations and Interventions for Diabetes*, Diabetes Care, January 2007, Supplement 1, vol.30, p S54.

[5] Franz, Marion J. and Bantle, John P. Editors. American Diabetes Association Guide to Medical Nutrition Therapy for Diabetes. Clinical Education Series P. 202-204. 1999.

Advanced Carb Counting

Why do I Need to Keep Records?

Once you've learned the basics of carb counting, you're ready for Advanced Carb Counting. It is important to understand how your carb intake, insulin doses, and other factors affect your glucose levels. To do this you will need to keep four different kinds of records for several days or weeks.

1. Food and drink records

- Name of food or drink _____
- Portion size _____
- Carb grams in your portions _____
- Alcohol intake _____

2. Insulin dose records

- Kind of insulin _____
- Time of dose _____
- Amount of dose _____

3. Self-monitoring of blood glucose records

- Fasting blood glucose level _____
- Pre-meal blood glucose level _____
- Two-hour after-the-start-of-the-meal blood glucose level _____
- Bedtime blood glucose level _____

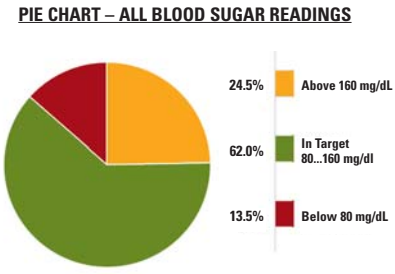
4. Records of other factors that can affect your blood glucose level

- Physical activity _____
- Illness _____
- Stress _____
- Low blood glucose and amount and type of treatment used _____

What is Pattern Management?

To identify your blood glucose patterns you will need to look over your records. A pattern is a trend in your blood glucose levels over a length of time. Many blood glucose meters have software that can assist you in seeing these trends in blood glucose. "Pattern management" is changing your diabetes care so you can stay within your blood glucose targets. This could mean adjusting your:

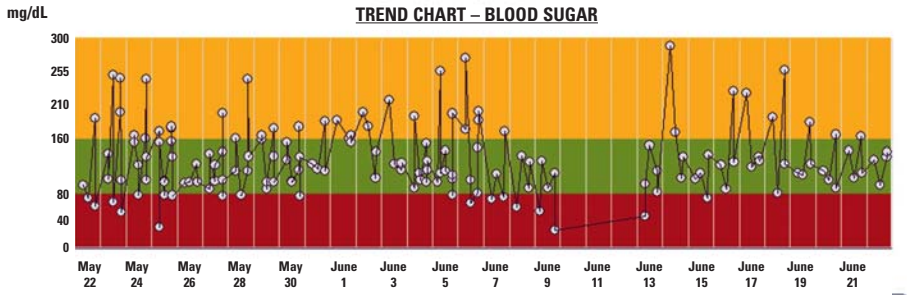
- **Meal plan**
- **Amount of insulin**
- **Level of physical activity**



For example: You may see that your blood glucose levels are above or below your targets at certain times of day or after eating certain foods. Once you notice a trend that needs correction, you can make the necessary changes.

What is An Insulin-to-Carb Ratio?

This is the amount of rapid- or short-acting insulin you need to match, or "cover," the amount of carb you have eaten. Your ratio depends on how sensitive you are to insulin. The more sensitive you are, the more carb you will need. Knowing your ratio and how to dose your mealtime insulin to match your carb intake will give you the most flexibility with improved blood glucose control.

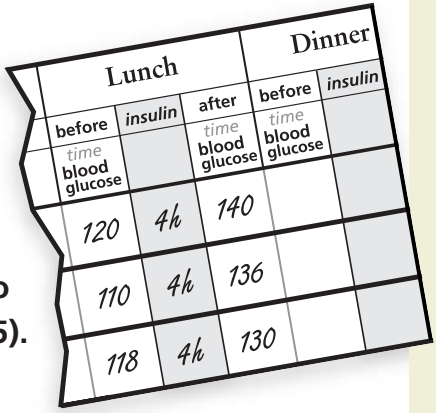


How Can I Find My Ratio?

1. **Review your records.**
2. **Look for patterns.** Pay careful attention to the amounts of carb you ate, your blood glucose readings, and your insulin dosages. Eat as consistent amounts of carb at meals and snacks as possible.
3. **Use your information to calculate your ratio.** If your pre-meal and post-meal blood glucose readings were within your target ranges, divide the grams of carb by your pre-meal rapid-acting insulin dose. The result is your insulin-to-carb ratio.

For example: Here is how one individual determined his ratio:

- **He ate 60 g (4 servings) of carb at lunch.**
- **His before-lunch blood glucose level was within target range.**
- **His before-lunch rapid-acting insulin dose was 4 units.**
- **His after-lunch blood glucose level was within target range.**
- **He divided his grams of carb by his insulin dosage to get his ratio (60 g divided by 4 units equals 15).**
- **His insulin-to-carb ratio was 1:15 (one unit of insulin covered 15 g or one serving of carb).**



4. **Do these calculations for several meals over many days.** Keep in mind that your ratio could change by meal, day, or special circumstances, such as active days or inactive days, illness, or stress. Eating new foods or drinking alcohol can also affect your blood glucose levels. In these cases, you may need to change your ratio(s).

5. **A good starting point for most adults might be a ratio of 1:10.** Children and insulin-sensitive people generally use a 1:10 or 1:15 insulin-to-carb ratio. Everyone is different and it may take some time to see what works best for you. Your diabetes educator can help you find the insulin-to-carb ratio that is right for you.

Why is the Insulin Sensitivity Factor (ISF) Important?

Your ISF is the amount of blood glucose (in mg/dl) reduced by one unit of rapid- or short-acting insulin over two to four hours. The ISF helps decide how much insulin you need to get elevated blood glucose back in your before-meal blood glucose target range. Your ISF should be tailored for your needs. Ask your doctor to give you your ISF. Trial-and-error and keeping detailed records will help you find your ISF. Typically, adults use an ISF of about 50 mg/dl, while children and insulin-sensitive adults use an ISF of 30 to 50 mg/dl. Everyone is different.

How Can I Figure Out My Correction Dose of Insulin?

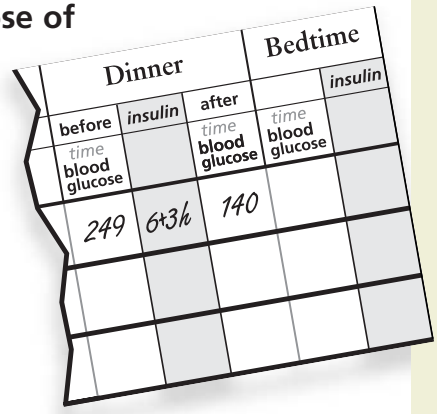
Once you know your ISF, you can use it to calculate your **correction dose (supplemental dose)** of insulin. Depending on when you check your blood sugar level, you may be advised by your physician to add your correction dose to your pre-meal insulin dose, or to take your correction dose three or four hours after your meal.

To calculate your correction dose: [6]

1. Subtract your target blood glucose level from your current blood glucose level.
2. Divide by your ISF.
3. The result is your correction dose of insulin.

For example: Here is how one person with diabetes computed her correction dose.

- **Her pre-meal blood glucose level was 249 mg/dl.**
- **Her target pre-meal blood glucose level was 100 mg/dl.**
- **She subtracted her pre-meal blood sugar target of 100 mg/dl from her actual pre-meal blood glucose of 249 mg/dl and found she was 149 mg/dl over target.**
- **Her ISF was 50 mg/dl.**
- **She divided 149 by 50 and got 2.98, which she rounded to 3.**
- **Her correction dose was 3 units**



Here is her same computation expressed as an equation:

$$\frac{\text{(Current blood glucose – target blood glucose)}}{\text{Insulin Sensitivity Factor}} = \frac{(249-100)}{50} = \frac{149}{50} = 2.98, \text{round to } 3$$

Always check with your physician or healthcare provider for specific guidelines.

[6] Warshaw, Hope S., Bolderman, Karen M., Practical Carbohydrate Counting. Association, 2001, p.29.



Things to Remember

A healthy diet is a balance of carb, protein, and fat. For most adults, this includes about two to four servings from the milk group each day. Choose fewer salty and high fat foods, and include fiber-containing foods. There are many ways to learn the carb gram amounts of your favorite foods. Read labels, ask for nutrition information when eating out and check with your dietitian. Carb Counting can be a successful meal planning approach to help manage your diabetes. With time and practice, you will become an expert. The benefits of more flexibility and better blood glucose control will result in a winning effort!

For basic guidelines, each food portion listed contains about 15 g of carb and counts as one carb serving, unless noted otherwise.

Carb Servings

Starch

Breads, Cereals and Grains, Starchy Vegetables, Crackers and Snacks, Beans, Peas, and Lentils, and Starches Prepared with Fat

One serving = 15 g carb or 1 carb serving

FOOD	SERVING SIZE
BREAD	
Bagel, 4 oz	1/4 (1 oz)
Bread, white, whole-wheat, pumpernickel, rye, unfrosted raisin	1 slice (1 oz)
English muffin	1/2
Hot dog or hamburger bun	1/2 (1 oz)
Muffin, 5 oz	1/5 (1 oz)
Pancake, 4 in. across, 1/4 in. thick	1
Pita, 6 in. across	1/2
Roll, plain, small	1 (1 oz)
Tortilla, corn or flour, 6 in. across	1
Tortilla, flour, 10 in. across	1/3
Waffle, reduced-fat, 4 in. square or across	1
CEREALS AND GRAINS	
Bran cereals	1/2 cup
Cereals, cooked	1/2 cup
Cereals, unsweetened, ready-to-eat	3/4 cup
Granola, low-fat	1/4 cup
Grits	1/2 cup
Oats	1/2 cup
Pasta	1 cup
Puffed cereal	1 1/2 cups
Rice, white or brown	1/3 cup
Sugar-frosted cereal	1/2 cup

STARCHY VEGETABLES

Baked beans . . . . . 1/3 cup
Corn . . . . . 1/2 cup
Corn on cob, large . . . . . 1/2 cob (5 oz)
Mixed vegetables with corn, peas, ... 1 cup
Peas, green . . . . . 1/2 cup
Potato, boiled . . . . . 1/2 cup or 1/2 medium (3 oz)
Potato, baked with skin . . . . . 1/4 large (3 oz)
Potato, mashed . . . . . 1/2 cup
Squash, winter (acorn, butternut, pumpkin) . . . . . 1 cup
Yam, sweet potato, plain . . . . . 1/2 cup

CRACKERS AND SNACKS

Graham crackers, 2 1/2 in. square 3
Popcorn (popped, no fat added or low-fat microwave) . . . . . 3 cups
Pretzels . . . . . 3/4 oz
Rice cakes, 4 in. across 2
Saltine-type crackers 6
Snack chips, fat-free (tortilla, potato) . . . . . 15–20 (3/4 oz)
Whole-wheat crackers, no fat added . . . . . 2–5 (3/4 oz)

BEANS, PEAS, AND LENTILS

(also contain about 7 g protein per serving and 5-7g fiber)

Beans and peas (garbanzo, pinto, kidney, white, split, black-eyed), lentils . . . . . 1/2 cup
Lima beans . . . . . 2/3 cup

STARCHY FOODS PREPARED WITH FAT (about 5 g fat per serving)

Biscuit, 2 1/2 in. across 1
Chow mein noodles . . . . . 1/2 cup
Corn bread, 2 in. cube . . . . . 1 (2 oz)
Croutons . . . . . 1 cup
Granola . . . . . 1/4 cup
Popcorn, microwave . . . . . 3 cups
Sandwich crackers, cheese or peanut butter filling 3
Snack chips (potato, tortilla) . . . . . 9–13 (3/4 oz)
Stuffing, bread (prepared) . . . . . 1/3 cup
Taco shell, 6 in. across 2
Waffle, 4 in. square or across 1

Fruit and Fruit Juices

One serving = 15 g carb or 1 carb serving

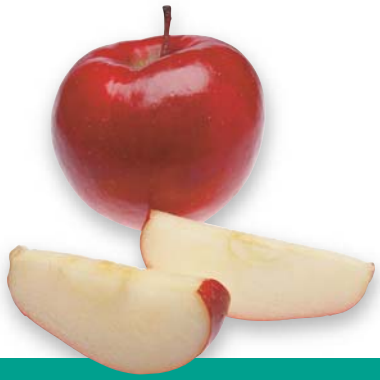
FOOD	SERVING SIZE

FRUIT

Fresh fruit, 1 small	1 (4 oz)
Canned fruit, unsweetened	1/2 cup
Dried fruit, unsweetened	1/4 cup
Blackberries, blueberries	3/4 cup
Cantaloupe, small	1/3 melon (11 oz) or 1-cup cubes
Cherries, sweet, fresh	12 (3 oz)
Dates	3
Grapefruit, large	1/2 (11 oz)
Grapes, small	17 (3 oz)
Honeydew melon	1 slice (10 oz) or 1 cup cubes
Pineapple, fresh	3/4 cup
Plums, small	2 (5 oz)
Raisins	2 Tbsp
Raspberries	1 cup
Strawberries	1 1/4 cup whole berries
Tangerines, small	2 (8 oz)
Watermelon	1 slice (13 1/2 oz) or 1 1/4 cup cubes

FRUIT JUICE

Apple juice/cider, grapefruit juice, orange juice, pineapple juice	1/2 cup
Cranberry juice cocktail, 100% fruit juice blends, grape juice, prune juice	1/3 cup
Cranberry juice cocktail, reduced-calorie	1 cup



Milk

One serving = 12–15 g carb or 1 carb serving

FOOD	SERVING SIZE
Fat-free, 1/2%, 1%, 2%, whole, sweet acidophilus	1 cup
Buttermilk, low-fat or fat-free	1 cup
Chocolate, reduced fat or whole	1/2 cup
Dry, fat-free	1/3 cup dry
Evaporated, fat-free or whole	1/2 cup
Soymilk, fat-free, low-fat, reduced fat	1 cup
Yogurt, plain or sweetened w/nonnutritive sweetener	1 cup
Yogurt, plain low-fat or made from whole milk	1 cup
Yogurt, flavored and sweetened with fructose	3/4 cup

Non-starchy Vegetables

One serving = 5 g carb
One serving is free. Three servings = one carb serving or choice (15 grams of carb).
One serving of a non-starchy vegetable is:
1 cup raw:
1/2 cup cooked:

Artichoke
Artichoke hearts
Asparagus
Beans (green, wax, Italian)
Bean sprouts
Beets
Broccoli
Brussels sprouts
Cabbage
Carrots
Cauliflower
Celery
Cucumber
Eggplant
Green onions or scallions
Greens (collard, kale, mustard, turnip)
Kohlrabi
Leeks
Mixed vegetables (w/o corn, peas, pasta)
Mushrooms
Okra
Onions
Pea pods
Peppers (all varieties)
Radishes
Salad greens (endive, escarole, lettuce, romaine, spinach)
Sauerkraut
Spinach
Summer squash
Tomato
Tomatoes, canned
Tomato sauce
Tomato/vegetable juice
Turnips
Water chestnuts
Turnips

Sweets and Desserts

1 carb serving = 15 g carb
2 carb servings = 30 g carb
3 carb servings = 45 g carb

These foods are listed according to how many carb and fat servings they contain.

FOOD	SERVING SIZE	SERVINGS
Angel food cake, unfrosted	1/12th cake (about 2 oz)	2 carbs
Brownie, small, unfrosted	2 in. square (about 1 oz)	1 carb, 1 fat
Cake, unfrosted	2 in. square (about 1 oz)	1 carb, 1 fat
Cake, frosted	2 in. square (about 2 oz)	2 carbs, 1 fat
Cookie or sandwich cookie with creme filling	2 small (about 2/3 oz)	1 carb, 1 fat
Cookies, sugar-free	3 small or 1 large (3/4–1 oz)	1 carb, 1–2 fats
Cupcake, frosted	1 small (about 2 oz)	2 carbs, 1 fat
Doughnut, plain cake	1 medium (1 1/2 oz)	1 1/2 carbs, 2 fats
Doughnut, glazed	3 3/4 in. across (2 oz)	2 carbs, 2 fats
Fruit juice bars, frozen, 100% juice	1 bar (3 oz)	1 carb
Fruit spreads, 100% fruit	1 1/2 Tbsp	1 carb
Gelatin, regular	1/2 cup	1 carb
Granola or snack bar, regular or low-fat	1 bar (1 oz)	1 1/2 carbs
Honey	1 Tbsp	1 carb
Ice cream	1/2 cup	1 carb, 2 fats
Ice cream, light	1/2 cup	1 carb, 1 fat
Ice cream, low-fat	1/2 cup	1 1/2 carbs
Ice cream, fat-free, no sugar added	1/2 cup	1 carb
Jam or jelly, regular	1 Tbsp	1 carb
Pie, fruit, 2 crusts	1/6 pie	3 carbs, 2 fats
Pie, pumpkin or custard	1/8 pie	2 carbs, 2 fats
Pudding, regular (made with reduced-fat milk)	1/2 cup	2 carbs
Pudding, sugar-free or sugar-free and fat-free (made with fat-free milk)	1/2 cup	1 carb

FOOD	SERVING SIZE	SERVINGS
Sherbet, sorbet	1/2 cup	2 carbs
Sports drinks	8oz.	1 carb
Sugar	1 Tbsp	1 carb
Sweet roll or Danish	1 (2 1/2oz)	2 1/2 carbs, 2 fats
Syrup, light	2 Tbsp	1 carb
Syrup, regular	1 Tbsp	1 carb
Yogurt, frozen	1/2 cup	1 carb, 0–1 fat
Yogurt, frozen, fat-free	1/3 cup	1 carb
Yogurt, low fat with fruit	1 cup	3 carbs, 0–1 fat

Meat and Meat Substitutes

Most adults should plan to have a total of 4-6 oz. per day.

Each of these servings = 1 oz. meat.

1 oz. cooked chicken, turkey, fish, lean beef, pork, lamb, wild game
1 slice cheese
1/4 cup cottage cheese or tuna
1/2 cup tofu
1 Tbsp peanut butter
1 egg

Fat

Try to limit your fat intake to 3 to 5 servings per day. One serving = 5 g fat.

One fat serving is:

1 tsp margarine, butter, mayonnaise, oil
1 Tbsp cream cheese, salad dressing, and half-n-half cream, reduced-fat margarine or reduced fat mayonnaise
1 Tbsp sesame, pumpkin, or sunflower seeds
2 Tbsp sour cream, reduced-fat cream cheese, reduced-fat salad dressing

Combination Foods

These foods have servings from several food groups:

FOOD	SERVING SIZE	SERVINGS
Spaghetti or pasta sauce, canned	1/2 cup	1 carb, 1 fat

ENTREES

Tuna noodle casserole, lasagna, spaghetti with meatballs, chili with beans, macaroni and cheese	1 cup (8oz)	2 carbs, 2 meats
Chow mein (without noodles or rice)	2 cups (16oz)	1 carb, 2 meats

FROZEN ENTREES AND MEALS

Dinner-type meal	generally 14–17 oz	3 carbs, 3 meats, 3 fats
Pizza, cheese, thin crust	1/4 of 10 in. (5 oz)	2 carbs, 2 meats, 1 fat
Pizza, meat topping, thin crust	1/4 of 10 in. (5 oz)	2 carbs, 2 meats, 2 fats
Pot pie	1 (7 oz)	2 1/2 carbs, 1 meat, 3 fats
Entree or meal with less than 340 calories	about 8–11 oz	2–3 carbs, 1–2 meats

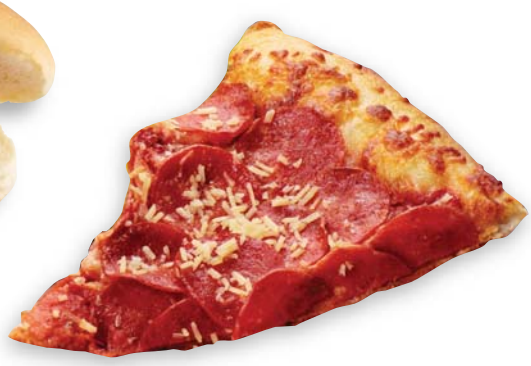
SOUPS

Bean	1 cup	1 carb, 1 meat
Cream (made with water)	1 cup (8 oz)	1 carb, 1 fat
Instant	6 oz prepared	1 carb
Instant with beans/lentils	8 oz prepared	2 1/2 carbs, 1 meat
Split pea (made with water)	1/2 cup (4 oz)	1 carb
Tomato (made with water)	1 cup (8 oz)	1 carb
Vegetable beef, chicken noodle, or other broth-type	1 cup (8 oz)	1 carb



FAST FOODS

FOOD	SERVING SIZE	SERVINGS
Burrito with beef	1 (5–7 oz)	3 carb, 1 meat, 1 fat
Chicken nuggets	6	1 carb, 2 meats, 1 fat
Chicken breast and wing, breaded and fried	1 each	1 carb, 4 meats, 2 fats
Chicken sandwich, grilled	1	2 carb, 3 meats
Chicken wings, hot	6 (5 oz)	1 carb, 3 meats, 4 fats
Fish sandwich/tartar sauce	1	3 carb, 1 meat, 3 fats
French-fries	1 medium serving (5 oz)	4 carb, 4 fats
Hamburger, regular	1	2 carb, 2 meats
Hamburger, large	1	2 carb, 3 meats, 1 fat
Hot dog with bun	1	1 carb, 1 meat, 1 fat
Pizza, individual pan	1	5 carb, 3 meats, 3 fats
Pizza, cheese, thin crust	1/4 medium (12" round) about 6 oz	2 1/2 carb, 2 meats
Pizza, meat, thin crust	1/4 medium (12" round) about 6 oz	2 1/2 carb 2 meats, 1 fat
Soft-serve cone	1 small (5 oz)	2 1/2 carb, 1 fat
Submarine sandwich	1 sub (6 in.)	1 vegetable, 2 meats, 1 fat, 3 carb
Taco, hard or soft-shell	1 (3-3 1/2 oz)	1 carb, 1 meat, 1 fat



Free Foods

These foods contain less than 5 g of carb and have less than 20 calories per serving. If a serving size is given, limit the food to three servings per day.

FAT-FREE OR REDUCED-FAT FOODS

FOOD	SERVING SIZE
Cream cheese, fat-free	1 Tbsp (1/2oz)
Creamers, nondairy, liquid	1 Tbsp
Creamers, nondairy, powdered	2 tsp
Mayonnaise, fat-free	1 Tbsp
Mayonnaise, reduced-fat	1 tsp
Margarine spread, fat-free	4 Tbsp
Margarine spread, reduced-fat	1 tsp
Nonstick cooking spray	
Salad dressing, fat-free or low fat	1 Tbsp
Salad dressing, fat-free, Italian	2 Tbsp
Sour cream, fat-free, reduced-fat	1 Tbsp
Whipped topping, regular	1 Tbsp
Whipped topping, light or fat-free	2 Tbsp

SUGAR-FREE FOODS

Candy, hard, sugar-free	1 candy
Gelatin dessert, sugar-free	
Gelatin, unflavored	
Gum, sugar-free	
Jam or jelly, light	2 tsp
Sugar substitutes, alternatives, or replacements*	
Syrup, sugar-free	2 Tbsp

*FDA (Food and Drug Administration) approved include:

- Equal® (aspartame)
- Splenda® (sucralose)
- Sprinkle Sweet® (saccharin)
- Sweet One® (acesulfame K)
- Sweet-10® (saccharin)
- Sugar Twin® (saccharin)
- Sweet 'n Low® (saccharin)

FOOD	SERVING SIZE

DRINKS

Bouillon, broth, consommé
Bouillon or broth, low-sodium
Carbonated or mineral water
Club soda
Cocoa powder, unsweetened . . . . . 1 Tbsp
Coffee
Diet soft drinks, sugar-free
Drink mixes, sugar-free
Tea
Tonic water, sugar-free

CONDIMENTS

Catsup . . . . . 1 Tbsp
Horseradish
Lemon juice
Lime juice
Mustard
Pickles, dill . . . . . 1 1/2 large
Salsa . . . . . 1/4 cup
Soy sauce, regular or light . . . . . 1 Tbsp
Taco sauce . . . . . 1 Tbsp
Vinegar
Yogurt . . . . . 2 Tbsp

SEASONINGS

Flavoring extracts
Garlic
Herbs, fresh or dried
Pimento
Spices
Tabasco® or hot pepper sauce
Wine, used in cooking
Worcestershire sauce

Food Diary

NAME_____ **DATE**_____

MEAL PLAN GOAL_____

NUMBER OF CARB CHOICES:

Breakfast_____ carb choices
Lunch_____ carb choices
Dinner_____ carb choices
Snacks_____ carb choices

Record all the food that you eat for at least 3 days below. This record will help you and your health care team decide if changes in medication and or your meal plan should be made.

TIME	AMOUNT	SNACK/MEAL	FOOD EATEN / PREPARATION	CARB CHOICES
GOAL:				

EXERCISE:

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