

My Carbohydrate Guide

With diabetes, knowledge is good medicine. Understanding carbohydrates and learning how to plan meals can help you to manage your diabetes and reach your blood glucose (blood sugar) goals.

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Answers That Matter.

My Carbohydrate Guide



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Diabetes Care and Education (DCE), a dietetic practice group of the American Dietetic Association (ADA), promotes quality diabetes care and education. DCE is comprised of members of the ADA who are leaders in the field of medical nutrition therapy and care of people with diabetes. Their expertise is widely recognized throughout the diabetes community. We are pleased to have the opportunity to collaborate with this group of professionals on the creation of *My Carbohydrate Guide*.

We hope you find it a valuable resource.



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A meal plan to fit your goals should be individualized according to your specific lifestyle needs. Talk with your registered dietitian or healthcare provider for a customized meal plan.



What Are Carbohydrates?

Carbohydrates (also known as carbs) are one of three key nutrients, or building blocks, which make up all of the foods you eat. The other two building blocks are protein and fat. Your body needs all three to be healthy and strong.

Many foods are a combination of carbs, protein, and fat. Blood glucose—also known as blood sugar—is made from carbs we eat and is used by the cells as a source of energy. Carbs get the most attention when it comes to diabetes because they directly raise blood glucose levels when digested by your body. Many foods with carbs are healthy foods. They not only taste good, but provide calories and energy to fuel your body, along with important vitamins, minerals, and fiber that your body needs.

Blood Glucose = Blood Sugar

Carbs = Energy

What Foods Contain Carbs?

- Breads, cereals, and grains
- Starchy vegetables
- Crackers and snacks
- Dried beans, peas, and lentils
- Fruits
- Milk and yogurt
- Nonstarchy vegetables
- Sweets, desserts, and regular soda



Why Do You Need to Know About Foods With Carbs When You Have Diabetes?

When you eat food with carbs, your body breaks down the carbs and your blood glucose levels go up. Different amounts of carbs have different effects on blood glucose levels. A high carb meal (such as a plate of pasta and a breadstick) will raise blood glucose more than a low carb meal (such as a grilled chicken breast, salad, and broccoli).

Insulin is a hormone made by the pancreas. The body uses insulin to move glucose from your blood into your cells where it is used for energy. If you have type 2 diabetes, your body may have trouble using the insulin you make, or your pancreas may not make enough insulin. If you have type 1 diabetes, your pancreas doesn't make insulin.

Eating the right amount of carbs at each meal and taking diabetes medications, including insulin, if needed, may help keep your blood glucose closer to target levels.

A1C and Blood Glucose Targets

One of your main diabetes treatment goals is to manage your blood glucose and keep it as close to normal as possible. The American Diabetes Association recommends the following blood glucose goals for people with diabetes:

Test	ADA Goals
A1C (tells your average blood glucose over the past 2 to 3 months)	Under 7%
Blood Glucose (before meals)	70-130 mg/dL
Blood Glucose (after meals)	Under 180 mg/dL at peak

These are recommended blood glucose target levels. Talk to your healthcare provider to set the targets that are right for you.

How Many Carbs Do You Need to Eat?

Your registered dietitian can help decide how many carbs you need. The amount depends on your age, weight, activity, and diabetes medications, if used. You can learn how “counting carbs” at each meal (and snacks, if needed) can help keep your blood glucose at your target level.

1 carb choice = 15 grams (g) of carbs

	Most WOMEN Need	Most MEN need
Each Meal	3 to 4 carb choices = 45 to 60 g of carbs	4 to 5 carb choices = 60 to 75 g of carbs
Snacks (if needed)	1 carb choice = 15 g of carbs	1 to 2 carb choices = 15 to 30 g of carbs

Talk to your registered dietitian or healthcare provider to determine how many carbs are right for you.

Carbs are an important part of a healthy meal plan. Watching portion sizes and getting most of your carbs from fruits, vegetables, whole grains, low-fat milk, and yogurt is important.

Sample meal with 4 carb choices:

- 1 slice of whole wheat bread (1 carb choice)
- ½ cup mashed potatoes (1 carb choice)
- ½ cup canned peaches (1 carb choice)
- 1 cup skim milk (1 carb choice)

Add these foods to complete the meal, which will mainly provide nutrients other than carbs:

- 3 ounces of chicken (0 carb choices)
- 1 green salad (0 carb choices)
- 1 to 2 tablespoons of dressing (0 carb choices)

If you’re taking insulin with your meals, you can talk to your healthcare provider or registered dietitian about the options you have to match your dose with the amount of food you’re eating.

For a referral to a registered dietitian or more information on meal planning, contact the American Dietetic Association at www.eatright.org.

Be a Carb Detective—Read Food Labels

Nutrition Facts			
Serving Size 8 Crackers (28g)			
Amount per serving			
Calories	120	Fat Calories	30
% Daily Value			
Total Fat	3.5g		5%
Saturated Fat	1g		5%
Trans Fat	0g		
Polyunsaturated Fat	1.5g		
Monounsaturated Fat	0.5g		
Cholesterol	0mg		0%
Sodium	140mg		6%
Total Carbohydrate	22g		7%
Dietary Fiber	1g		3%
Sugars	7g		
Protein	2g		
Vitamin A	0%	Vitamin C	0%
Calcium	10%	Iron	4%

Check the serving size: 8 crackers. Is that how much you plan to eat?

This number—28 g—is the weight of the crackers, not the amount of carbs in the serving.

Count total carbs.

You do not need to count sugars separately because they are already counted as part of the total carbs.

To calculate carb choices:

Divide the total grams of carbs by 15 (1 carb choice = 15 grams of carbs).

Example:

1. Total carbs = 22 g.
2. 22 divided by 15 = 1.47 (round to 1.5).
3. Therefore, 8 crackers would be equal to 1½ carb choices.

Some foods do not come with labels. Look for nutrition information on Web sites of food manufacturers and restaurants. Many restaurants also have nutrition information available that you can review before you order.

If a food contains more than 5 g of fiber, you can subtract half the grams of fiber from the grams of total carbs and use that new number as the food’s total carb count. The same rule applies for sugar alcohols. If a food contains more than 5 g of sugar alcohols, subtract half the grams of sugar alcohols from the grams of total carbs and use that new number as the food’s total carb count.



How Much Do You Eat?

A portion is the amount of food that you actually eat. It may vary from the serving size listed on a food's Nutrition Facts label. Serving sizes listed on food labels are standardized to make it easier to compare similar foods. They are provided in familiar units, such as cups or pieces. The number of calories, carbs, and other nutrient amounts listed on the food label are based on the serving size. Pay attention to the serving size and how many servings there are in the food package. Ask yourself, "How many servings am I eating?" The portion that you choose to eat may be ½ serving, 1 serving, or more. You may be eating more carbs than you think. Therefore, carefully check the Nutrition Facts label to estimate the amount of carbs you actually get from a food.

The portion sizes of foods are getting bigger and bigger, so it is easy to lose touch with what a standard serving size is. Also, the larger the portion offered, the more people tend to eat! Portion sizes can be larger than what a person needs at one time, so be aware of the sizes and carb content of foods and beverages to help manage your diabetes.

You can also use this simple chart for carb choices:

Grams of Carbs	Number of Carb Choices
0 to 5 g	Do not count
6 to 10 g	½ carb choice
11 to 20 g	1 carb choice
21 to 25 g	1½ carb choices
26 to 35 g	2 carb choices



20 YEARS AGO



TODAY



20 YEARS AGO



TODAY

	20 Years Ago	Today
Soda	85 calories	250 calories
Pizza	500 calories	850 calories

Note that portion sizes vary. Check the food labels.

A Handy Guide to Portion Sizes

Stay on track with your portions by using this quick guide to estimate portion sizes and carbs. Practice can help you learn portion sizes that provide the amount of carbs you need to help keep your blood glucose at target levels.



Your palm, not including fingers and thumb, is about 3 ounces of cooked and boneless meat.



A fist is about 1 cup or 30 grams of carbs for foods such as ice cream or cooked cereal.

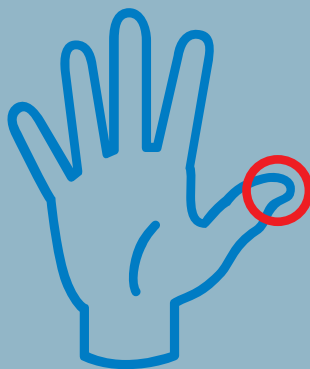
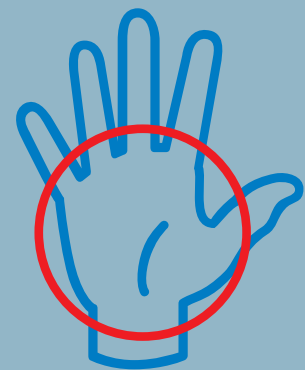


Your thumb is about 1 tablespoon or 1 serving of regular salad dressing, reduced-fat mayonnaise, or reduced-fat margarine.



Your thumb tip is about 1 teaspoon or 1 serving of margarine, mayonnaise, or other fats such as oils.

These portion estimates are based on a woman's hand size. Hand sizes vary. Portion estimates will change based on the size of hand used. Measuring or weighing foods is the most accurate way to figure out a portion size.



What Is Healthy Eating?

Healthy eating is eating what your body needs—not too much and not too little of one type of food or beverage.

Choose most of your carbs from fruits, vegetables, whole grains, and low-fat or nonfat dairy products. Select lower fat meats and limit fats, oils, sweets, and alcohol in your meal planning.

When you have diabetes, besides counting carbs, you can also benefit from eating lower fat, high-fiber foods and just enough calories to maintain a healthy weight.

Eating fruits and vegetables of all colors also provides important vitamins and minerals needed for health.

Most foods can fit into a healthy meal plan. It all depends on:

- How much
- How often
- What else you plan to eat

Too little or too much?

People often eat too much of these:

Total fat, saturated fat, trans fat, cholesterol, sodium (salt)

Some don't get enough of these:

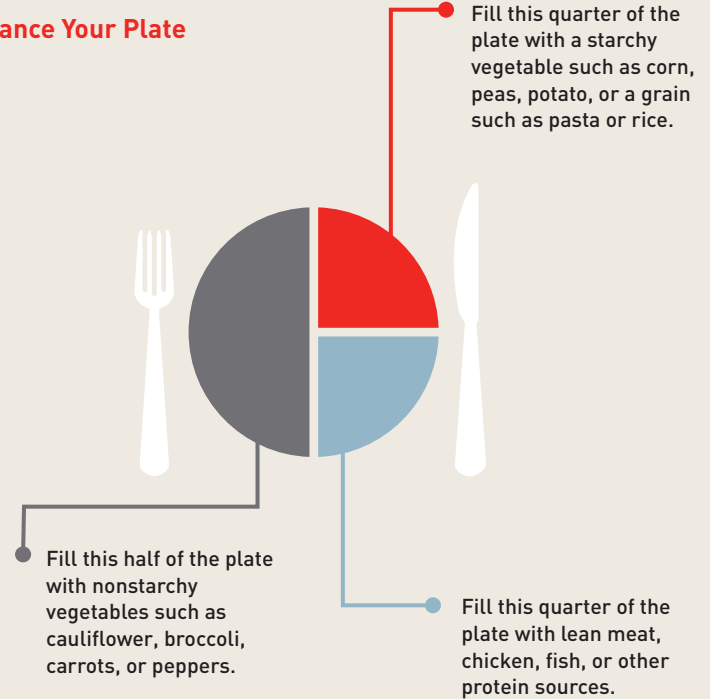
Fiber, vitamins A, C, and D, iron, calcium

For enough vitamins, minerals, and fiber, eat 2 to 3 cups of vegetables and 1½ to 2 cups of fruit a day.

For enough calcium, eat 3 servings of fat-free or low-fat dairy foods a day.

The plate method may also help you practice healthy eating.

Balance Your Plate



Add 1 cup of milk, 1 fruit serving, and a green salad to complete the meal.

Note that dry beans such as kidney beans and pinto beans contain protein and carbs; therefore, count them toward your total carbs for the meal.

Examples of Carb Amounts in Foods

Bread, Cereal, Grain, Pasta, and Rice		One serving = 15 g carbs
Bagel (1/3 large bagel or 1 oz) Biscuit (2 1/2 inches across) Bread, white or whole wheat, pumpkin, rye (1 slice or 1 oz) Bun, hamburger/hot dog (1/2 bun or 1 oz) Crackers, saltine or round butter (4 to 6) English muffin (1/2) Melba toast (4 slices) Oyster crackers (20) Pancake or waffle (4 inches across) Stuffing (1/3 cup) Tortilla, corn or flour (6 inches across)	Cereals: Bran cereal, flakes (1/2 cup) Cold cereal, unsweetened (3/4 cup) Cold cereal, sugar-coated (1/2 cup) Cooked cereal, oatmeal, grits (1/2 cup) Granola (1/4 cup) Puffed cereal (1 1/2 cups)	
	Grains (cooked): Barley (1/3 cup) Couscous (1/3 cup) Pasta (1/3 cup) Rice, white or brown (1/3 cup)	
Starchy Vegetables		One serving = 15 g carbs
Breadfruit (1/4 cup small cubes) Corn/peas (1/2 cup) Corn on the cob, large (1/2 cob) Mixed vegetables with corn, peas, or pasta (1 cup) Potato, baked (1 small or 1/4 large, 3 oz)	Potatoes, mashed (1/2 cup) Pumpkin, cooked (1 cup small cubes) Squash, acorn, butternut (1 cup) Sweet potato (1/2 cup) Yam (1/2 cup)	
Dried Beans, Peas, and Lentils		One serving = 15 g carbs
Baked beans (1/3 cup) Beans—black, garbanzo, kidney, navy, lima, pinto, white (cooked 1/2 cup) Lentils (cooked 1/2 cup)	Hummus (1/3 cup) Refried beans (1/2 cup) Peas—black-eyed, split, cooked (1/2 cup)	
Nonstarchy Vegetables		One serving = 5 g carbs
In general, 1 serving = 1 cup raw, 1/2 cup cooked, 1/2 cup juice, or 1/2 cup tomato sauce. Beans (wax or green); bean sprouts; beets; broccoli; brussels sprouts; cabbage; carrots; cauliflower; celery; cucumber; eggplant; greens; lettuce; mushrooms; okra; onions; pea pods; peppers; radishes; rutabaga; spinach; tomatoes; zucchini.		

Fruit		One serving = 15 g carbs
Apple or orange (1 small) Apricots (4 whole or 8 dried halves) Banana, extra small (1 or 4 oz) Blueberries (3/4 cup) Canned fruit in juice (1/2 cup) Cantaloupe (1 cup cubes) Cherries (12) Dried fruit (2 tbsp) Grapefruit, large (1/2) Grapes, small (17) Juice, prune or grape, fruit juice blends, 100% juice (1/3 cup) Juice, unsweetened (1/2 cup)	Kiwi (1) Mango (1/2 small or 1/2 cup) Papaya (1/2 of small fruit or 1 cup cubes) Passion fruit (1/4 cup) Peach (1 medium) Pear (1/2 large) Pineapple (3/4 cup) Plum (2 small) or 3 dried plums Raspberries (1 cup) Strawberries (1 1/4 cup) Watermelon (1 1/4 cup)	
Milk		One serving = 12-15 g carbs
Fat-free or low-fat milk, soy or cow's (1 cup) Fat-free plain yogurt (2/3 cup)	Fat-free, artificially sweetened flavored yogurt (2/3 cup)	
Snack Foods		One serving = 15 g carbs
Animal crackers (8 crackers) Gingersnaps (3 cookies) Graham crackers (3 squares) Rice cakes (2 cakes)	Popped popcorn (3 cups) Pretzels (3/4 oz) Snack chips (15-20 chips) Vanilla wafers (5 wafers)	
Sweets		
One serving = 15 g carbs Brownie, unfrosted (1 1/4-inch square—1 oz) Cake, unfrosted (2-inch square—1 oz) Cookies (2 small, sandwich type) Fruit juice bars (1 bar—3 oz) Ice cream (1/2 cup) Jam/jelly (1 tbsp) Muffin (1/4 of 4-oz muffin) Pancake syrup (1 tbsp) Regular gelatin (1/2 cup) Regular soda (1/2 cup) Sports drinks (1 cup) Yogurt, frozen (1/2 cup)	One serving = 30 g carbs Cupcake, small, frosted (1 3/4) Doughnut, glazed (2-3 oz) Milk, chocolate (1 cup) Pie, pumpkin (1/8 pie) Pudding (1/2 cup) Rice pudding, sweet rice with milk (1/2 cup) Sherbet (1/2 cup) <i>Please note that this has more carbs:</i> Pie, fruit, 2 crusts (1/8 pie is 45 g of carbs)	

For more information on carb amounts, see *Choose Your Foods: Exchange Lists for Diabetes* or *Official Guide to Diabetes Exchanges* by the American Dietetic Association and the American Diabetes Association.

Available at: eatright.org or store.diabetes.org

Foods That Don't Have Carbs

Meat/chicken/poultry/fish do not have carbs, but if they are prepared with sauces or breaded, they may contain carbs. Check the Nutrition Facts on the package or jar. Plan to eat 4 to 6 ounces of lean meat/meat substitutes per day. Also, fats (such as oils) do not contain carbs, but eating too much fat may add extra calories to your meal plan.

Combination Foods

Mixing It Up

How can you figure out how many carbs are in mixed foods such as salads, soups, and casseroles?

Below are some examples to help you know what you are getting.

Food	Serving Size	Carbs
Baked empanada	1 empanada	36 g
Burrito (beef and bean)	5 oz	45 g
Casseroles	1 cup	30 g
Chili (beef and bean)	1 cup	30 g
Frozen enchilada dinner	1 11-oz dinner	63 g
Hamburger	1 2-oz bun	30 g
Lasagna (meat)	1 cup	30 g
Macaroni & cheese	1 cup	30 g
Orange chicken (meat w/ sweet sauce)	1 cup	45 g
Pita pocket sandwich	1 4½-oz sandwich	45 g
Pizza (thin crust, cheese)	¼ of a 12-inch pizza	30 g
Pot pie	1 7-oz pie	38 g
Soup	1 cup	15 g
Spaghetti with meatballs	1 cup	30 g
Stew	1 cup	15 g
Submarine sandwich	1 6-inch sub	45 g
Taco (meat and cheese)	1 taco	15 g

Be Choosy When Eating Out

When eating out, choose meals that are within your meal plan. Most fast food restaurants provide nutrition facts brochures or offer information on their Web sites that you can use to look up the amount of carbs in meals. Practice measuring foods at home to learn how to estimate portion sizes in a restaurant.

Remember your options when eating out:

- Try different restaurants
- Look over the whole menu and then select items that meet your carb needs
- Ask for your foods to be prepared in a healthier way (see tips below)

When eating out, remember:

- Portion sizes are often large
- You may get more fat and sodium (salt) than you need
- Calories add up quickly
- You may not get many fruits and vegetables
- You often will not get much fiber

Here are some tips:

Browse the menu for dishes cooked by these healthier methods:

- Steamed
- Grilled
- Roasted
- Broiled
- Baked
- Poached
- Red sauces (instead of white ones)
- Lightly sautéed

Ask for what YOU want:

- Nutrition information
- Description about how the food is cooked
- Salad dressing on the side in order to use less than the whole serving
- Smaller or half portions
- Less sauce in general
- Extra veggies on the side
- Skip appetizers, bread, and butter

When eating at the homes of friends and family, ask how they prepared the foods so you can count your carbs there, too.

Best Choices When Eating Out

Remember that when eating out you can share or ask for a box/bag to take home half of the food for the next meal. Here are some suggestions of items to choose when you dine out:

Chinese

Try brown rice if available; steamed dumplings; lots of veggies; and low-salt soy sauce.

Fast Food

Order plain hamburger; veggie burger; grilled chicken or fish sandwich; salads with grilled chicken and low-fat dressing; apple sauce or apple dippers as a side; yogurt parfait; salad or chili instead of fries in value meal; grilled chicken filet; baked potato with chili, broccoli, or chives.

Indian

Select lentil soup, chicken tikka; GO EASY on naan bread or get lighter pappadams instead. AVOID fried items.

Fried Chicken

Select BBQ chicken sandwich; chicken breast (take off skin and breading); green beans, mashed potatoes, or corn on the cob as sides.

Italian

Choose salads with dressing on the side; pasta with tomato (marinara) sauce and vegetables; appetizer serving sizes; baked, broiled, grilled, or poached fish/chicken/veal; Italian ice. AVOID cheese-stuffed items.

Sandwich Restaurants

Choose veggie sandwiches; turkey breast sandwich on wheat roll and add extra vegetables; baked chips or pretzels if you decide to have chips.

Japanese

Order sushi; light soy sauce; noodles in soup; vegetable rolls. LIMIT starch portions and AVOID dishes with mayo and “tempura” (= fried).

Mexican Fast Food

Order food that has fresh salsa, grilled steak, or choose a beef/chicken soft taco and items with soft tortillas. AVOID crispy (fried) chips and shells.

Mexican

Order food that has fresh salsa, grilled steak, or choose a beef/chicken soft taco and items with soft tortillas. AVOID crispy (fried) chips and shells. Choose vegetarian refried beans; items wrapped in soft (not fried) tortillas such as burritos, and ask for lots of vegetables. GO EASY on cheese and choose small portions of guacamole and sour cream.

Pizza

Order vegetarian; thin crust. AVOID stuffed crust; eat with salad if available to fill up. Select low-fat toppings like ham, chicken, vegetables, low-fat or less cheese.

Note that foods in restaurants or fast food places are usually very high in sodium. Many restaurants and food manufacturers now list the nutrition facts of their foods on their Web sites.



Sugar-Free and Fat-Free Foods

Be sure you know what you are getting!

Sugar-free foods can be part of a healthy meal plan in small amounts. Keep in mind, though, that many of these foods still have carbs (which can be in the form of other sweeteners such as sorbitol, isomalt, and mannitol) and so may still affect your blood glucose levels.

If it is sugar-free, I can eat as much as I want, right?

Not really... many sugar-free foods have calories, carbs, and lots of fat. In fact, some sugar-free foods may have the same amount of calories and carbs as non-sugar-free options. Therefore, make sure you read the labels!

Many foods come in sugar-free versions, such as hard candy, chocolate, frozen pops, gelatin, gum, ice cream, and pudding. Always remember to account for the carbs in these foods in your meal plan.

Note that sometimes sugar-free foods are also called “dietetic foods” and may be able to be worked into your meal plan. Always check out the nutrition information on the food labels.

Fat-free foods can also be included in healthy meal plans. Many lower fat and fat-free foods may have sugar or carbs added, though.

Comparing Labels

Compare labels below. Notice that the regular ice cream has the same amount of carbs and calories as the sugar-free ice cream. It also has about the same amount of fat and more saturated fat.

Regular Ice Cream

Nutrition Facts		
Serving Size 1 bar (42g)		
Servings Per Container 6		
Amount per serving		
Calories	120	Calories From Fat 60
		% Daily Value
Total Fat 7g		11%
Saturated Fat 4g		20%
Cholesterol 30mg		10%
Sodium 35mg		1%
Total Carbohydrate 13g		4%
Dietary Fiber 0g		0%
Sugars 13g		
Protein 2g		

Sugar-Free Ice Cream

Nutrition Facts		
Serving Size 1 bar (49g)		
Servings Per Container 6		
Amount per serving		
Calories	120	Calories From Fat 70
		% Daily Value
Total Fat 8g		13%
Saturated Fat 6g		32%
Cholesterol 10mg		4%
Sodium 40mg		2%
Total Carbohydrate 13g		4%
Dietary Fiber 0g		2%
Sugars 4g		
Protein 3g		

For More Information

Please note that content in this booklet and the resources below are general guidelines. A meal plan to fit your health goals should be individualized to your needs, so consult a registered dietitian for a customized meal plan.

Many health insurance plans pay for people with diabetes to see a registered dietitian. For more information, contact your insurance company to see if they provide reimbursement for these services.

American Association of Diabetes Educators (AADE)

www.diabeteseducator.org

American Diabetes Association www.diabetes.org

American Dietetic Association (ADA) www.eatright.org

American Heart Association—Tips for Eating Out

www.americanheart.org/presenter.jhtml?identifier=531

Diabetes Care and Education Practice Group www.dce.org

Harvard School of Public Health www.hsph.harvard.edu/nutritionsource

Healthy Diabetes Plate www.cdc.gov/pcd/issues/2007/jan/06_0050.htm

National Diabetes Education Program (NDEP) www.ndep.nih.gov

- **Recipes** www.ndep.nih.gov/diabetes/MealPlanner/en_intro.htm

National Health, Lung & Blood Institute (NHLBI) Food Exchange List

www.nhlbi.nih.gov/health/public/heart/obesity/lose_wt/fd_exch.htm

National Institute of Diabetes & Digestive & Kidney Diseases (NIDDK)

www.niddk.nih.gov

Portion Distortion hp2010.nhlbihin.net/portion

United States Department of Agriculture (USDA) Food Pyramid

www.mypyramid.gov

- **Assess your food intake and your physical activity**
www.mypyramidtracker.gov
- **Video of the Food Pyramid**
www.mypyramid.gov/global_nav/media_animation-presentation_eng_pc.html

For additional books and educational materials, visit the American Diabetes Association online bookstore at store.diabetes.org.

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