Know Your™ Nutrition

A Personal Approach to Diabetes Management

Participant Guide

Know Your™ Nutrition

N U T R I T I O N

The Good News About Diabetes

Learning to Live With Diabetes

It has been said that the way to have a long and healthy life is to get a chronic disease and learn how to control it — Elliott Joslin. Because managing diabetes has a lot to do with healthy eating habits and regular exercise, living well with diabetes can help you reach a healthy life goal. Good control of your diabetes can help you feel your best every day and may reduce your risk of developing complications.[1]

Nutrition is one of the key building blocks of good diabetes management, so let's learn some details about food and how it affects blood sugar.[1]

Body Converts Food Into Energy

The Close Relationship Between Food and Blood Sugar

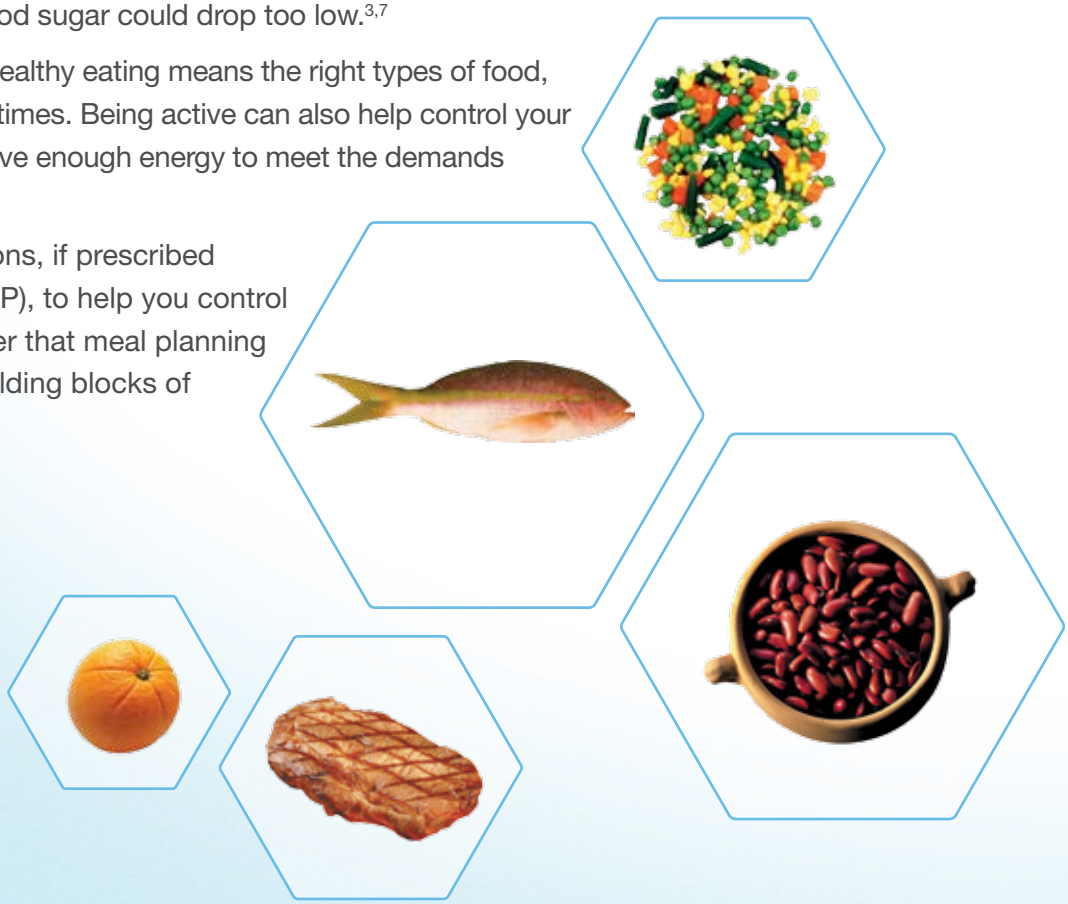
Food is your body's source of fuel. When you eat, the carbs* in your food are digested and converted into a sugar called glucose, which goes into the blood.[2] This sugar needs to get into body cells where it can be used for energy.[3] A hormone called insulin is needed to make this process work correctly. Diabetes is a condition in which the pancreas no longer produces insulin (type 1) or the insulin that is produced is not enough or does not work effectively (type 2). When there is not enough insulin, the sugar stays in the blood and can cause damage to your heart, liver, kidneys, and eyes.[4,5]

Without diabetes, the **right** amount of insulin is released from the pancreas in response to sugar coming into the bloodstream.[2] This is all automatic and you don't have to think about it. With diabetes, you have to do the thinking to keep sugar and insulin in balance.

If you eat more food than your body can handle, your blood sugar levels can go up and stay up.[6] On the other hand, if you don't eat enough food and you are taking medication to lower your blood sugar, your blood sugar could drop too low.[3,7]

To help keep things in balance, healthy eating means the right types of food, in the right amounts, at the right times. Being active can also help control your blood sugar. You also need to have enough energy to meet the demands of exercise.[8]

You may need to take medications, if prescribed by your healthcare provider (HCP), to help you control your blood sugar.[9] But remember that meal planning and exercise are always key building blocks of good diabetes management.[10]



*Carbs are carbohydrates, which include sugar and starches. Some foods high in carbs include bread, pasta, and rice.

Blood Sugar Targets

Testing Blood Sugar Is Also a Key Building Block of Good Diabetes Management[7,10]

In order to keep your blood sugar in balance, it is helpful to set blood sugar targets and a target for your A1C.[7,10]

Recommendations for blood sugar control†

	AACE[10‡]	ADA[7§]
Fasting/before-meal blood sugar	<110 mg/dL	70-130 mg/dL
After-meal blood sugar (2 hours after start of meal)	<140 mg/dL	<180 mg/dL
A1C	≤6.5%	<7%

†For non-pregnant adults.
‡American Association of Clinical Endocrinologists.
§American Diabetes Association.

Testing your blood sugar with a blood glucose meter at different times of the day is an important part of managing your diabetes. Testing tells you if your blood sugar is too high or too low. Testing can help you understand how food, exercise, or your medicines work and how these things affect your blood sugar. For example, if you test your blood sugar before and then 2 hours after the start of a meal, you can see the effect of that meal on your blood sugar. This can help you make healthy food choices and learn how to plan meals. The same can be true for exercise. If you test before and after a brisk walk, you may see the effect of exercise on your blood sugar results.[7,11]

Some meters may help you monitor your blood sugar after meals by providing you with Before-Meal and After-Meal marker features—like the CONTOUR® NEXT and CONTOUR® NEXT USB meters from the CONTOUR® NEXT portfolio from Bayer. These meters can also remind you when it's time to test after meals with an audible reminder feature.

Check with your healthcare provider on how often you should test your blood sugar levels and what your goals should be.

CONTOUR® NEXT
Blood Glucose Meter
from Bayer

Second-Chance® Sampling
multi pulse Accuracy Technology
NO CODING

CONTOUR® NEXT EZ
Blood Glucose Meter
from Bayer

CONTOUR® NEXT USB
Blood Glucose Meter from Bayer

Testing Your A1C

A1C (Hemoglobin A1C) or eAG (Estimated Average Glucose)

The A1C test tells you your average blood sugar control over the past several months.[7] The A1C test looks at the amount of sugar that has attached to the hemoglobin (red blood cells) in the blood. As blood sugar levels rise, more and more sugar attaches to the hemoglobin.[12] The A1C test result is shown as either a percentage or as eAG, which is a number more like your daily blood sugar tests.[3]

Matching A1C with eAG[7]

A1C (%)	Blood sugar (mg/dL)
6	126
7	154
8	183
9	212
10	240
11	269
12	298

An A1C test can be done by a laboratory test or in an HCP's office. Testing your A1C in an HCP's office gives you the opportunity to discuss the result during your visit.

Tips for Healthy Nutrition

Consult Your Healthcare Team to Develop Your Meal Plan

The ADA recommends nutrition therapy for all people with type 1 and type 2 diabetes. Consult with your healthcare team to find a Registered Dietician Nutritionist" (RDN - an expert in nutrition) or other qualified HCP, who can personalize your meal plan to fit your individual needs. Within the first 6 months of your diabetes diagnosis, you should meet with your RDN 3 to 4 times. After 6 months, you should continue to visit with your RDN once a year.[1]

Don't hesitate to ask for help with your meal plan. Many health insurance plans cover nutrition and diabetes education sessions.[1]

What You Need To Know About Nutrition Therapy

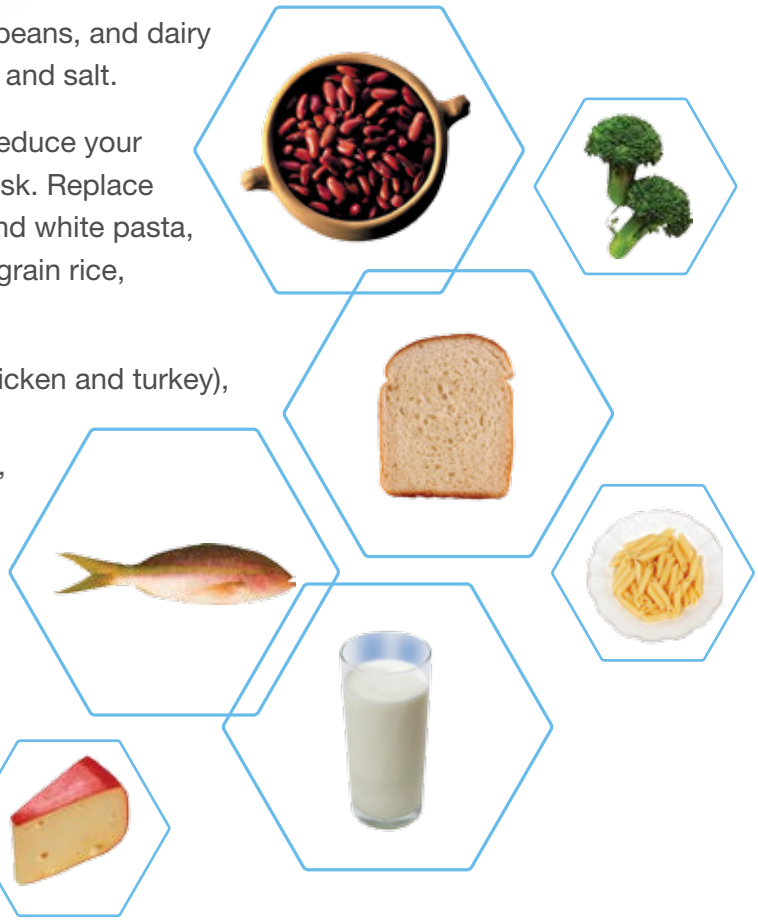
- The United States Department of Agriculture's (USDA's) MyPlate provides many options to help people make healthy food choices every day. For more information visit www.ChooseMyPlate.gov.[13]
- For specific nutrition guidelines for managing your diabetes, meet with your RDN. Your RDN will teach you how the food you eat affects your blood sugar and how you can make better food choices to control your diabetes.
- For instance, in nutrition therapy you may learn about carb counting, which helps you figure out how much sugar is in your meal, and if you are on insulin, how much insulin you need at mealtime to keep your blood sugar within your target range.[1]
- There is not a one-size-fits-all approach! Nutrition therapy will be tailored to YOUR individual needs, including your cultural background, traditions, lifestyle, financial means, and availability of food where you live.[1]
- Your RDN will not make you give up all the foods you enjoy eating. Instead, your RDN will help you to adopt a healthy lifestyle, which includes "everything in moderation."

In the following sections, you will learn about healthy food choices, carb counting, choosing the right portion sizes, and reading food labels.

Know Your Nutrition

Some Healthy Choices to Consider[1,14]

Eat a variety of foods each day



- Eat carbs from vegetables, fruits, whole grains, beans, and dairy products instead of carbs with added sugar, fat, and salt.
- **Whole grains** have more fiber, which may help reduce your cholesterol, blood pressure, and heart disease risk. Replace processed grains, like white bread, white rice, and white pasta, with whole grains like whole grain bread, whole grain rice, whole grain pasta, and oatmeal.
- Choose **lean sources of protein,** like poultry (chicken and turkey), lean cuts of red meat, and fish. Avoid meat that is breaded or fried because this adds carbs, fat, and calories.
- Choose **low-fat or fat-free dairy products,** including milk, yogurt, and cheese. If you don't or can't drink milk, choose lactose-free products.
- **Avoid processed foods** because these have most of the salt Americans eat in their diet, which can increase your blood pressure. Examples of processed foods are canned soup, deli meat, pre-packaged meals, and fast food.

Replace the bad fats in your diet with good fats

- Some fats are better for you than others and can keep your heart healthy.
- **Bad fats are "saturated" and "trans" fats,** which can be found in meat, eggs, dairy products, and tropical oils (like palm and coconut).
- **Good fats are "monounsaturated" and "polyunsaturated" fats,** which can be found in vegetable oils (like olive oil), avocados, and nuts.
- Omega-3 fatty acids are also very healthy for you and can be found in fatty fish, like salmon and trout; the ADA recommends 2 servings of fatty fish per week to help keep your heart healthy.

Watch portion sizes

- Always check the "Serving Size" and "Servings Per Container" on food labels.
- For foods that do not have a food label, like fruit and vegetables, measuring and weighing your food can help you learn what a correct portion size is.
- Your RDN can also help you learn serving sizes for the common foods that you eat.

Avoid skipping meals

- Try to eat at about the same time each day.

Be sure to check with your healthcare team before you make changes to your diabetes management.

Know Your Carbs

Learning to Count Carbs

Since carbs raise blood sugar, you may be asked to count them.[1] Examples of carbohydrates are beans, grains, starchy vegetables, fruit, dairy products, sweets, and snacks.[1]

Should you avoid carbohydrates? Absolutely not! Carbohydrates are your body's main source of fuel. By counting your carbs, you can make decisions that can help you control your weight and your blood sugar.[1]

Ask your HCP or RDN how many carbs should be in your daily diet.

How Many Carbs Do You Need?

Monitoring carb intake by carb counting is a key strategy in achieving blood sugar control.[1] Consult with your HCP about limiting the carbs you eat each day.

When you count carbs, keep in mind that every 15 grams of carbs is 1 carb serving.[15] A carb serving is sometimes called a “carb point” or a “carb choice.”

Some carbs may be healthier for you than others (hint: those with more fiber and whole grains). The amount of fiber in food can change how quickly your body is able to turn carbs into blood sugar. For example, oatmeal and whole wheat bread are high in fiber, so your blood sugar may rise more slowly.

Consider getting yourself a carb-counting book, available at any bookstore, so you can find out how many carbs are in the foods you eat.

How many carbohydrates do you eat in a day? For the next 7 days, count your carbohydrates and find out!

_____ Monday

_____ Tuesday

_____ Wednesday

_____ Thursday

_____ Friday

_____ Saturday

_____ Sunday

_____ **Total**

Knowing the number of carbs in each meal and testing your blood sugar will show you how food and carbs affect your blood sugar.[1] Testing your blood sugar before and 2 hours after the start of a meal will teach you which carbs raise your blood sugar the most.

Some of the blood glucose meters from Bayer have carb-counting features. For example, CONTOUR® NEXT USB has easy-to-log carbs, which makes it easier to collect more information.

Serving Size

How Much Is Enough?

In order to take control of your meal plan, you need to know how much food you are eating.

How much you need to eat depends on:

- Your age
- Your activity level
- Your weight goals
- Whether you are male or female, pregnant or breast-feeding
- Your diabetes treatment plan
- Overall health

Please check with your HCP or RDN to decide what is enough for you.

Serving Size[14]

A key to healthy eating is practicing "portion control." Since no one wants to carry around measuring cups and food scales, some dietitians have come up with a few simple ways to estimate portion sizes.

Fruit and Vegetable Serving	 =		Approximately the size of a baseball
Meat Serving (3 oz)	 =		Approximately the size of a deck of cards
Cereal (1 cup)	 =		Approximately the size of a fist
Hard Cheese (1.5 oz)	 =		Approximately the size of 4 dice

Food Labels

How Do I Know What's in It?

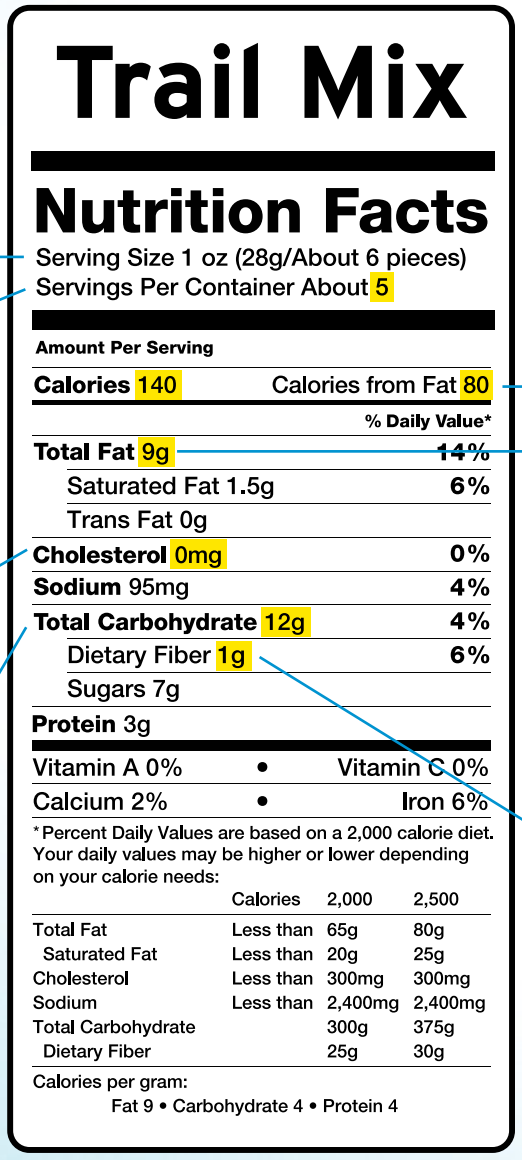
Here are some tips for reading and understanding food labels.

This bag of trail mix contains 5 individual servings (1 oz per serving) that are 140 calories each.

Eating 1 serving is OK, but if you eat the entire package, that's 700 calories! So be sure to watch serving size.

Talk to your HCP about the amount of cholesterol you should have per day.

Every 15 Grams Total Carbohydrate = 1 Carbohydrate Serving



Trail Mix

Nutrition Facts

Serving Size 1 oz (28g/About 6 pieces)
Servings Per Container About 5

Amount Per Serving	
Calories 140	Calories from Fat 80
	% Daily Value*
Total Fat 9g	**14%**
Saturated Fat 1.5g	**6%**
Trans Fat 0g	
Cholesterol 0mg	**0%**
Sodium 95mg	**4%**
Total Carbohydrate 12g	**4%**
Dietary Fiber 1g	**6%**
Sugars 7g	
Protein 3g	
Vitamin A 0% •	Vitamin C 0%
Calcium 2% •	Iron 6%

*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
Saturated 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

Calories per gram:
Fat 9 • Carbohydrate 4 • Protein 4

No more than 30% of total calories should come from fat in a daily diet. For example, no more than 600 calories for a 2000-calorie diet.

Try to avoid saturated and trans fats. Instead look for "monounsaturated" and "polyunsaturated" fats on the food label, as these fats are better for you.

Talk to your HCP about the total amount of dietary fiber you should have per day based on the number of calories you consume each day.

Know Your Results

Tracking Your Nutrition

In order to see how the food you eat affects your blood sugar, try this 3-day experiment.

1. Make 3 copies of the Food Record Form located on the next page and keep a daily food record. Use a separate page for each day.

2. For the next 3 days, write down everything you eat and drink, including the amount of food and carbohydrates (in grams) if you know how to count carbs. Also, write down when you take your medications and keep track of your exercise and other physical activities. Try to record everything as soon as you can so you don't forget anything.

3. Test your blood sugar before and after meals (2 hours from when you start eating) and record the results in your Food Record Form.

4. Make an appointment to meet with your physician, diabetes educator, or registered dietitian to review your food record to see if there are any changes you need to make in your meal plan or other parts of your diabetes management plan.

Tracking Your Intake

Food Record

Day _____ Date _____

	Time	Food/Beverage	Amounts (servings)	Carbs (grams)	Before-Meal Blood Sugar	After-Meal Blood Sugar (2 hours)	Medications and Physical Activity
Breakfast							
Snack*							
Lunch							
Snack*							
Supper							
Snack*							
Total:							

*Only if recommended by HCP.

For More Information About Healthy Nutrition...

There are lots of resources for learning more about healthy nutrition and meal planning. Here are some books you may consider purchasing. They are available from the American Diabetes Association at www.diabetes.org and at most bookstores. We've also included some Web site addresses that you may find handy.

Books

Guide to Healthy Fast-Food Eating, 2nd Edition
Hope S. Warshaw, MMSc, RD, CDE, BC-ADM

Quick & Healthy Volume II, 2nd Edition
Brenda J. Ponichtera

What Do I Eat Now? A Step-by-Step Guide to Eating Right With Type 2 Diabetes
Patti B. Geil, MS, RD, FADA, CDE; and Tami A. Ross, RD, LD, CDE

Web sites

American Diabetes Association
http://www.diabetes.org

American Dietetic Association
http://www.eatright.org

American Association of Clinical Endocrinologists
http://www.aace.com

American Association of Diabetes Educators
http://www.aadenet.org

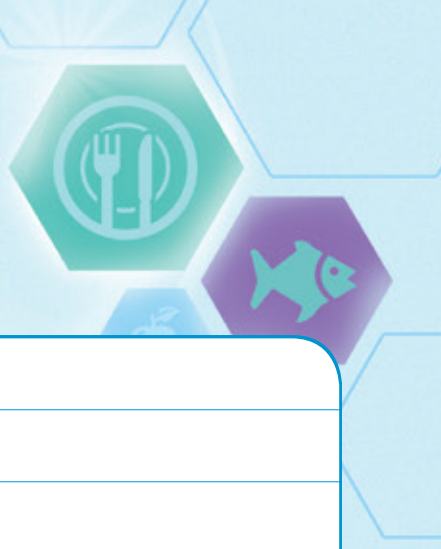
Bayer HealthCare
http://www.BayerCONTOUR.com

MyPlate
http://www.ChooseMyPlate.gov

National Diabetes Education Program
http://www.ndep.nih.gov

National Institute of Diabetes and Digestive and Kidney Diseases
http://www.niddk.nih.gov

Notes



References: 1. Evert AB, Boucher JL, Cypress M, et al; for American Diabetes Association. Nutrition therapy recommendations for the management of adults with diabetes. *Diabetes Care.* 2013;36(11):3821-3842. **2.** Marieb EN. *Anatomy & Physiology.* San Francisco, CA: Benjamin Cummings; 2002. **3.** Fauci AS, Braunwald E, Kasper DL, et al, eds. *Harrison's Principles of Internal Medicine.* 17th ed. New York, NY: The McGraw-Hill Companies, Inc; 2008. **4.** Genuth S. Type 1 diabetes mellitus. In: *ACP Medicine.* Part 9. Philadelphia, PA: BC Decker, Inc; 2008. **5.** Riddle MS, Genuth S. Type 2 diabetes mellitus. In: *ACP Medicine.* Part 9. Philadelphia, PA: BC Decker, Inc; 2010. **6.** American Diabetes Association. Diagnosis and classification of diabetes mellitus. *Diabetes Care.* 2013;36(suppl 1):S67-S74. **7.** American Diabetes Association. Standards of medical care in diabetes—2013. *Diabetes Care.* 2013;36(suppl 1):S11-S66. **8.** Colberg SR, Sigal RJ, Fernhall B, et al. Exercise and type 2 diabetes. *Diabetes Care.* 2010;33(12):e147-e167. **9.** Nathan DM, Buse JB, Davidson MB, et al. Medical management of hyperglycemia in type 2 diabetes: a consensus algorithm for the initiation and adjustment of therapy. *Diabetes Care.* 2009;32(1):193-203. **10.** Handelsman Y, Mechanick JI, Blonde L, et al. American Association of Clinical Endocrinologists Medical Guidelines for Clinical Practice for developing a diabetes mellitus comprehensive care plan. *Endocr Pract.* 2011;17(suppl 2):1-53. **11.** Benjamin EM. Self-monitoring of blood glucose: the basics. *Clin Diabetes.* 2002;20(1):45-47. **12.** Peterson KP, Pavlovich JG, Goldstein D, Little R, England J, Peterson CM. What is hemoglobin A1c? An analysis of glycated hemoglobins by electrospray ionization mass spectrometry. *Clin Chem.* 1998;44(9):1951-1958. **13.** United States Department of Agriculture. http://www.choosemyplate.gov/. Accessed December 12, 2013. **14.** US Department of Health & Human Services. Dietary guidelines for Americans. http://www.health.gov/dietaryguidelines. Accessed December 19, 2013. **15.** Gillespie SH, Kulkarni KD, Daly AE. Using carbohydrate counting in diabetes clinical practice. *J Am Diet Assoc.* 1998;98(8):897-905.

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