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Advancing Diabetes Education

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01

## Daily Diabetes Management Book

This book belongs to

Name \_\_\_\_\_

Address \_\_\_\_\_

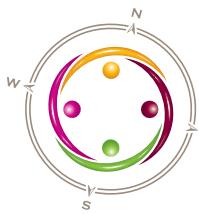
### Diabetes Health Care Team

Primary Doctor
Diabetes Educator
Specialist
Dietitian/Nutritionist
Pharmacy
Insurance Provider

### Telephone Numbers


### Medication List

Diabetes Medications	Cholesterol Medications	Blood Pressure Medications	Other Medications



## Questions to ask your health care providers

1. What should my ABC target numbers be?

A1C \_\_\_\_\_ Blood pressure \_\_\_\_\_ Cholesterol \_\_\_\_\_

2. What are my ABC numbers?

	Appointment 1	Appointment 2	Appointment 3	Appointment 4
Date of Test				
A for A1C				
B for blood pressure				
C for cholesterol				

3. How often should I test my blood sugar? (If your blood sugar is above targeted goal, ask your health care provider what to do.)

4. What are the warning signs if my blood sugar is too high?

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5. What are the warning signs if my blood sugar is too low?

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6. Should I attend a class taught by a diabetes educator?

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7. Should I see a registered dietitian to review what I eat and to develop an individual meal plan?

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8. Which exercises are best for me?

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9. How often should I exercise and for how long?

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10. What is my weight goal short-term? \_\_\_\_\_ Long-term? \_\_\_\_\_

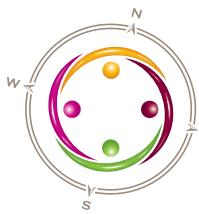
11. According to American Diabetes Association (ADA) Guidelines, which tests do I need to take (and how often) to check my eyes: \_\_\_\_\_

feet: \_\_\_\_\_

kidneys: \_\_\_\_\_

nerves: \_\_\_\_\_

heart: \_\_\_\_\_



## Managing Diabetes

A main goal of treating diabetes is to lower your blood sugar to a normal level. Lowering and controlling blood sugar may help prevent or delay problems caused by diabetes. Diet, exercise, and certain medications can help lower blood sugar. If you take an active role in managing your diabetes, you will be on the road to better health.

### To help prevent high and low blood sugar levels:

- Stay as close as possible to your schedule of eating, activity, and medication.
- Check your blood sugar as directed and share your tracking records with your health care team.
- Set goals with your health care team for weight, activity, blood sugar level, and A1C level.

For additional information and diabetes management tools and resources, go to **JourneyForControl.com** or see the list of additional Web sites on the last page.

Work with your health care team to determine your individual health care goals. Taking this important step is essential to managing your diabetes.

## Health Care Goals

Blood Glucose Targets Before Meals (Fasting Plasma Glucose [FPG]): \_\_\_\_\_

2 Hours After Meals (Postprandial Glucose [PPG]): \_\_\_\_\_

Hemoglobin A1C: \_\_\_\_\_

Blood Pressure: \_\_\_\_\_

Cholesterol: \_\_\_\_\_

LDL Cholesterol: \_\_\_\_\_

HDL Cholesterol: \_\_\_\_\_

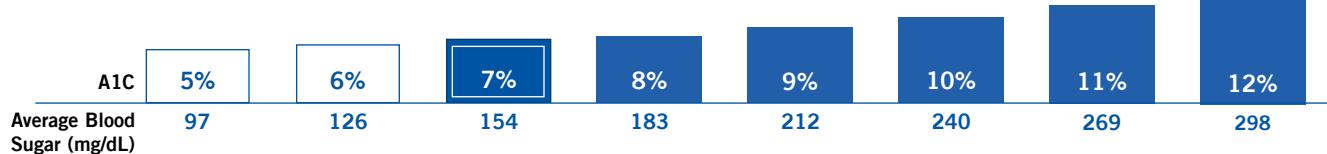
Triglycerides: \_\_\_\_\_

Weight Goal: \_\_\_\_\_

Daily Calorie Goal: \_\_\_\_\_

Activity/Exercise Goal: \_\_\_\_\_

## Relationships between A1C and average blood sugar levels

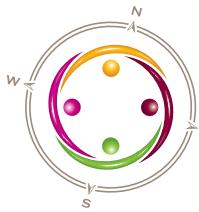


Your blood sugar levels vary throughout the day. Self-checking your blood sugar every day shows you how you are doing at a moment in time. An A1C test shows your blood sugar average for the past 3 months. The American Diabetes Association (ADA) recommends that many patients with diabetes aim for an A1C of less than 7%. Your health care provider may suggest a different A1C goal. This figure shows how A1C and average blood sugar are related.

## Blood Glucose Tracker

Enter Your Goals*									
Date	Before Breakfast	2 Hours After Breakfast	Before Lunch	2 Hours After Lunch	Before Dinner	2 Hours After Dinner	Before Bed	Exercise	Notes
10/01	133	185*	140	124	115	155**		Vacuumed for 10 min.	*Ate pancakes and syrup. **Celebrated Sam's birthday.
10/02	69	115	110	100	115	165 <sup>†</sup>		Cut grass for 30 min.	<sup>†</sup> Forgot bedtime snack.
10/03	90	120	110	130	120	140	130	Walked for 30 min.	Good day. Ate at home.

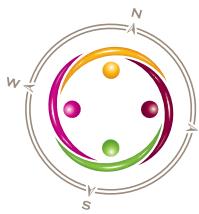
\*Work with your health care provider to determine your blood sugar goals.



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Enter Your Goals*									
Date	Before Breakfast	2 Hours After Breakfast	Before Lunch	2 Hours After Lunch	Before Dinner	2 Hours After Dinner	Before Bed	Exercise	Notes

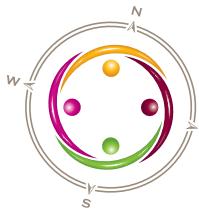
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## Blood Glucose Tracker

Enter Your Goals*									
Date	Before Breakfast	2 Hours After Breakfast	Before Lunch	2 Hours After Lunch	Before Dinner	2 Hours After Dinner	Before Bed	Exercise	Notes

\*Work with your health care provider to determine your blood sugar goals.



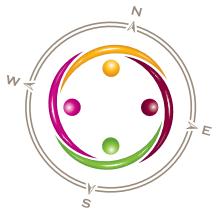
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## Blood Glucose Tracker

\*Work with your health care provider to determine your blood sugar goals.



## Understanding Food Nutrition Labels

### Serving Size

Check to see if your serving is the same size as the one on the label. If you eat double the serving size listed, you need to double the nutrient and caloric values. If you eat one-half the serving size shown here, the nutrient and caloric values should be halved.

### Calories

Look here to see what a serving of food adds to your daily calorie total. A person's size and activity level help determine total calories needed per day. For example, a 138-lb active woman needs about 2,000 calories each day, while a 160-lb active woman needs about 2,300 calories. Talk to your health care provider to determine the calorie intake that is right for you.

### Total Carbohydrates

Carbohydrates are found in foods like bread, potatoes, fruits, and vegetables. They are a key element in your diet, giving you nutrients and energy. Talk to your health care provider to determine the carbohydrate intake that is right for you.

### Dietary Fiber

It is important to consume fiber in your diet. Fiber (also called "roughage") can be soluble or insoluble (unabsorbed) dietary fiber. Fruits, vegetables, whole-grain foods, beans, and legumes are all good sources of fiber.

### Protein

Most adults get more protein than they need. Protein from animal sources contains both fat and cholesterol, so eat small servings of lean meat, fish, and poultry. Use skim or low-fat milk, yogurt, and cheese. You also can get your protein from beans, grains, and cereals.

### Vitamins & Minerals

Make it your goal to get 100% of the daily allowance of vitamins and minerals every day from the foods you eat.

## Nutrition Facts

Serving Size 1/2 cup (114 g)  
Servings Per Container 4

### Amount Per Serving

Calories	90	Calories from Fat	30
% Daily Value*			
Total Fat	3 g	5%	
Saturated Fat	0 g	0%	
Cholesterol	0 mg	0%	
Sodium	300 mg	13%	
<b>Total Carbohydrate</b>	<b>13 g</b>	<b>4%</b>	
Dietary Fiber	3 g	12%	
Sugars	3 g		

### Protein

Vitamin A	80%	• Vitamin C	60%
Calcium	4%	• 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	65 g	80 g
Sat. Fat	Less than	20 g	25 g
Cholesterol	Less than	300 mg	300 mg
Sodium	Less than	2,400 mg	2,400 mg
Total Carbohydrate		300 g	375 g
Dietary Fiber		25 g	30 g

### Calories per gram:

Fat 9      •    Carbohydrate 4      •    Protein 4

*Additional nutrients may be listed on some food labels:*

g = grams (about 28 g = 1 ounce).

mg = milligrams (1,000 mg = 1 g).

### Other Terms You May See on Packages:

**Reduced**—This means that the product has been nutritionally altered so that it now contains 25% less of a specific nutrient, such as fat, calories, sugar, or sodium.

**Free**—This means that the product contains none or almost none of the specified nutrient. For example, sugar-free foods have less than 0.5 gram of sugar per serving. However, sugar-free does not mean carbohydrate-free. Compare the total carbohydrate content of a sugar-free food with that of the standard product. If there is a big difference in carbohydrate content between the 2 foods, buy the sugar-free food.

### Percent (%) Daily Values

Indicates how much of a specific nutrient a serving of food contains compared to a 2,000-calorie diet. A product is considered a good source of a particular nutrient if one serving provides 10% to 19% of the Daily Value and is considered high in a given nutrient if it contains 20% or more of the Daily Value. If the Daily Value is 5% or less, the food is low in that nutrient.

### Daily Value Table

This table lists the U.S. recommended daily values of specific nutrients for 2,000- or 2,500-calorie diets. Recommended daily intake for some nutrients (cholesterol and sodium) are lower for people with diabetes. Talk to your health care provider to determine the daily value that is right for you.

### Total Fat

Try to limit your calories from fat. Choose foods with less than 25–35% of calories derived from fat. Foods with more than 30% fat are considered high-fat. Intake of trans-fatty acids should be as low as possible.

### Saturated Fat

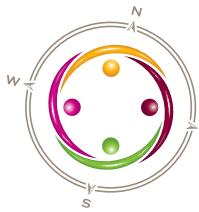
The ADA recommends consuming than 7% of calories from saturated fatty acids by replacing them with monosaturated and polysaturated fatty acids.

### Cholesterol

Challenge yourself to keep your cholesterol to less than 300 mg of cholesterol each day. Consuming less than 200 mg per day can further help individuals at high risk of heart disease.

### Sodium

Too much sodium (salt) can add up to high blood pressure in some people. The USDA recommends reducing daily sodium intake to less than 1,500 mg among persons who are 51 and older and those of any age who are African American or have hypertension, diabetes, or chronic kidney disease.



## Diabetes Organizations and Resources

**American Association of Diabetes Educators**  
[diabeteseducator.org](http://diabeteseducator.org)  
1-800-338-3633

**American Diabetes Association**  
[diabetes.org](http://diabetes.org)  
1-800-DIABETES (1-800-342-2383)

**Academy of Nutrition and Dietetics**  
[eatright.org](http://eatright.org)  
1-800-877-1600

**American Heart Association**  
[americanheart.org](http://americanheart.org)  
1-800-AHA-USA1 (1-800-242-8721)

**Centers for Disease Control and Prevention**  
[cdc.gov/diabetes](http://cdc.gov/diabetes)  
1-800-CDC-INFO (1-800-232-4636)

**Merck Medicus™**  
[merckmedicus.com](http://merckmedicus.com)  
1-800-489-5119

**National Diabetes Education Program**  
[ndep.nih.gov](http://ndep.nih.gov)  
1-888-693-6337

**National Diabetes Information Clearinghouse**  
[diabetes.niddk.nih.gov](http://diabetes.niddk.nih.gov)  
1-800-860-8747

E-mail:

Web site:

# Carb Counting Quick Reference

The “Nutrition Facts” label on packaged food tells you how many carbohydrates are in the food. But some foods, such as fresh vegetables, don’t have labels. Or you may be eating away from home, where food is already removed from its packaging. If you are counting carbs, learn the serving sizes of carbohydrate-containing foods that you eat often. Use this chart to look up the serving sizes of many common foods.

**Remember: 1 serving of these foods = 1 carbohydrate serving = about 15 grams of carbohydrate = 1 carb.**

## Breads, Grains, Snacks

Bagel	.....	1/4 (1 oz)
Bread (white, whole-wheat, pumpernickel, rye)	.....	1 slice (1 oz)
Crackers (white flour)	.....	6 crackers
Roll (plain, small)	.....	1 (1 oz)
Graham crackers (2½ inches sq)	.....	3 crackers
English muffin	.....	½ muffin
Oats (cooked)	.....	½ cup
Pasta	.....	1/3 cup
Pita bread (6-inch)	.....	½ pita
Popcorn (low-fat)	.....	3 cups
Pretzels	.....	¾ oz
Rice (white or brown)	.....	1/3 cup
Tortilla (6-inch, corn or flour)	.....	1 tortilla
Tortilla chips	.....	9–13 chips (¾ oz)

## Starchy Vegetables and Beans

Beans (garbanzo, pinto, kidney, white) and peas (split, black-eyed)	.....	½ cup
Baked beans	.....	1/3 cup
Corn	.....	½ cup
Lentils	.....	½ cup
Peas (green)	.....	½ cup
Potato (baked or boiled)	.....	½ cup or 1 medium (3 oz)
Potato (mashed)	.....	½ cup
Winter squash	.....	1 cup

## Fruits

Apple (small, unpeeled)	.....	1 apple (4 oz)
Applesauce (unsweetened)	.....	½ cup
Apple juice	.....	½ cup
Banana (small)	.....	1 banana (4 oz)
Blueberries or blackberries	.....	¾ cup
Cantaloupe (small)	.....	1/3 melon (11 oz)
Fruit cocktail	.....	½ cup
Grapes (small)	.....	17 (3 oz)
Orange (small)	.....	1 orange (6½ oz)
Orange juice	.....	½ cup
Peach (fresh, medium)	.....	1 (6 oz)
Peaches (canned in syrup or juice)	.....	½ cup
Pear (fresh, large)	.....	½ pear (4 oz)
Pineapple (canned)	.....	½ cup
Raisins	.....	2 tbsp
Raspberries	.....	1 cup
Strawberries	.....	1¼ cup whole berries

## Dairy Products

Ice cream	.....	½ cup
Milk (skim, 1%, 2%, whole)	.....	1 cup
Pudding (fat-free or whole)	.....	½ cup
Soy milk (fat-free or low-fat)	.....	1 cup
Yogurt (fat-free, plain, or fruit-flavored)	.....	6 oz
Yogurt (frozen, fat-free)	.....	1/3 cup

Source: Choose Your Foods: Exchange Lists for Diabetes. American Diabetes Association, Inc., 2008.

Adapted from the Diabetes Go-To Guide created by Krames in collaboration with the American Diabetes Association. This information is not intended as a substitute for professional health care. Always follow your health care provider's instructions.

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## Diabetes and Men's Sexual Health

In people with type 2 diabetes, sexual dysfunction can be the result of damage to the nerves that regulate sexual response. This nerve damage is called neuropathy. For men, this can mean problems achieving an erection or difficulty with ejaculation.

### Erectile dysfunction

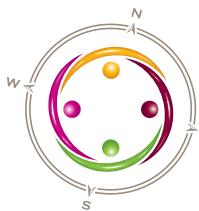
Erectile dysfunction (ED) is the frequent to total inability to maintain an erection firm enough for sexual intercourse. Men who have type 2 diabetes often experience ED earlier in life than men without the condition. Other factors that can cause ED are:

- High blood pressure
- Kidney disease
- Alcoholism
- Blood vessel disease
- Some medications
- Psychological distress
- Smoking
- Hormone deficiency

For ED that is caused by nerve damage, treatments include:

- Oral medicine
- A vacuum pump
- Urethral implants
- Injections
- Surgery

Talk with your doctor about recommendations for treating ED and how to manage type 2 diabetes to maintain good sexual health.



## Diabetes and Men's Sexual Health

### Retrograde ejaculation

In retrograde ejaculation, all or part of the semen is ejaculated backward into the bladder rather than out of the penis. This happens when certain muscles that open and close to allow passage of fluids inside the body don't work correctly. The semen ejaculated into the bladder does no harm and is eliminated during urination.

Symptoms of retrograde ejaculation include:

- A small amount of discharge during sex
- Cloudy urine
- Infertility issues

Retrograde ejaculation caused by nerve damage due to poor blood sugar control can be treated with medicine.

### What you can do to maintain your sexual health

To have a healthy and fulfilling life with type 2 diabetes and avoid potential sexual complications, it is important to eat right, exercise daily, track your blood sugar, and take medication if needed.

For more information about diabetes, please visit [JourneyForControl.com](http://JourneyForControl.com).

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## Diabetes and Women's Sexual Health

In people with type 2 diabetes, sexual dysfunction can be the result of damage to the nerves that regulate sexual response. This nerve damage is called neuropathy. Women may experience problems with vaginal lubrication or sexual stimulation.

### Reduced vaginal lubrication

Women with type 2 diabetes can be affected by nerve damage to the cells that line the vagina, resulting in:

- Dryness within the vagina
- Discomfort during sexual intercourse
- Decrease in sexual desire or response

### Decreased or absent sexual response

Up to 35% of women who have diabetes may also experience low or no sexual response or desire. Symptoms may include:

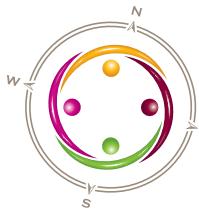
- Little interest in sexual intercourse
- Reduced sensation in the genital area
- Occasional, frequent, or total inability to reach orgasm
- Vaginal dryness with accompanying pain or discomfort during sex

In addition to type 2 diabetes, other causes of a woman's lack of sexual desire include:

- Blood pressure medicine
- Various prescription and over-the-counter medicines
- Alcohol abuse
- Smoking
- Psychological issues
- Gynecologic infections
- Conditions relating to pregnancy or menopause

Talk with your health care team, including your gynecologist, about how to manage type 2 diabetes and what to do to help female sexual dysfunction. Some methods used to treat the condition are:

- Kegel exercises
- Vaginal lubricants
- Psychological counseling
- Changes in sexual approach or position



## Diabetes and Women's Sexual Health

### What you can do to maintain your sexual health

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## Talking to Your Doctor: A Conversation Starter

You can learn more about managing your blood sugar—your doctor's office can be a good place to start. Also, make the most of your doctor visits by taking the following information with you:

- Questions or concerns you may have about your lifestyle adjustments and how you're coping with diabetes
- Your glucose meter with your stored results
- Medicines that you're taking, including prescription and over-the-counter (OTC) medicines, vitamins, and herbal supplements (You can put all your medicines into a plastic bag and take them with you.)
- Notes about any health problems you've experienced

**If you're not sure what to ask your doctor, you can use these questions to help get the conversation started:**

1. What are my ABC numbers?
  - A for A1C • B for blood pressure • C for cholesterol
2. What should my ABC target numbers be?
3. How often should I test my blood sugar?
4. Will I notice any warning signs if my blood sugar is too high or too low?
5. Should I speak to a registered dietitian to review what I eat?
6. Do I need to lose weight?
7. Which exercises are best for me?
8. Do I need additional tests to check the health of my eyes, feet, kidneys, nerves, and heart?
9. Should I attend a class taught by a diabetes nurse educator? If so, where can I find such a class in my area?
10. What are the side effects of my current medication(s)?

Make copies of this conversation starter for future use or go to **JourneyForControl.com**.



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## Eating Out When You Have Diabetes

Eating right is an important part of keeping your blood glucose in your target range. You just need to make healthy choices. When you eat away from home:

### Try These Tips

- Ask how foods are prepared before you order.
- Instead of fried, sautéed, or breaded foods, choose ones that are broiled, steamed, grilled, or baked.
- Ask for sauces and dressings on the side.
- Only eat an amount that fits your meal plan.  
Remember: You can take home the leftovers.
- Reserve dessert for special occasions. Then, choose a small dessert or share one with someone else.

### Make Healthy Choices

#### Fast Food

- Garden salad with light dressing on the side
- Baked potato with vegetables or herbs



You can make healthy choices and ask for substitutions when you eat out — even at fast-food restaurants

#### Mexican

- Chicken enchilada, no cheese or sour cream
- Small burrito with whole beans and chicken

#### Steak House

- Grilled or broiled lean cuts of beef
- Baked potato with vegetables or herbs

#### Asian

- Steamed dumplings or potstickers
- Broiled, boiled, or steamed meats or fish

- Broiled, roasted, or grilled chicken sandwich
- Sliced turkey or lean roast beef sandwich

- Whole beans (not refried) and rice
- Chicken or fish fajitas

- Broiled or baked chicken (don't eat the skin)
- Steamed vegetables

- Sushi or sashimi
- Steamed rice or boiled noodles (one serving is equal to 1/3 cup)

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## Exercise Journal

### Exercise: Choosing Your Activity

Regular exercise is important for everyone. It helps burn excess calories and fat to help you achieve your optimal weight.

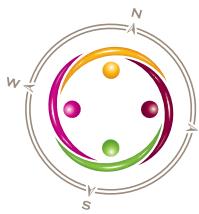
However, exercise doesn't necessarily mean spending hours at the gym or running for miles. It can mean many kinds of physical activity. Choose an activity that you enjoy, or try a new activity!

#### Activities may include:

- Walking around the block
- Taking the stairs instead of the elevator
- Mowing the lawn
- Gardening and pulling weeds
- Parking the car farther away from your destination and walking
- Dancing
- Bowling
- Biking to work
- Vacuuming
- Swimming a few laps
- Washing your car

Do some physical activity each day. If you haven't been very active lately, talk to your health care provider before beginning, and begin slowly. Start with 5 to 10 minutes and then add more time, or exercise for 10 minutes 3 times a day.

It is important to work with your health care provider to create an exercise program that is right for **you**.



## Exercise Journal

Date	Exercise	Duration	Heart Rate or Intensity
<b>Note (goals, moods, etc.):</b>			

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## Exercise to Manage Your Blood Glucose

Being physically active every day can help you manage your blood glucose. That's because an active lifestyle can improve your body's ability to use insulin. Daily activity can also help delay or prevent complications of diabetes. It can help you maintain a healthy weight. And it's a great way to relieve stress. If you aren't normally active, be sure to consult your healthcare provider before getting started.

### How Much Activity Do You Need?

If daily activity is new to you, start slow and steady. Begin with 10 minutes of activity each day. Then work up to at least 30 minutes a day. Do this by adding a few minutes each week. It doesn't have to be done all at once. Each active period throughout the day adds up.

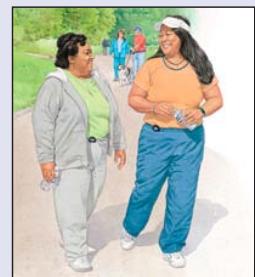
### Just Move!

You don't have to join a gym or own pricey sports equipment. Just get out and walk. Walking is an aerobic exercise that makes your heart and lungs work hard. It helps your heart and blood vessels. Walking requires only a sturdy pair of sneakers and your own feet. The more you walk, the easier it gets.

- Schedule time every day to move your feet.
- Make it part of your daily routine.
- Walk with a friend or a group to keep it interesting and fun.
- Try taking several short walks during the day to meet your daily activity goal.

### A Pedometer Makes Every Step Count

A pedometer is a small device that keeps track of how many steps you take. You can clip it to your belt (or a strap on your arm or leg) and go about your daily routine. At the end of the day, the pedometer shows the total number of steps you took. Use a pedometer to set daily goals for yourself. For instance, if you walk 4,000 steps a day, try adding 200 more steps each day. Aim for a goal of 7,500. With every step, you're doing a little more to help your body use insulin.



# Exercise to Manage Your Blood Glucose

## Adding Resistance Exercise

Resistance exercise (also called strength training) makes muscles stronger. It also helps muscles use insulin better. Ask your healthcare provider whether this type of exercise is right for you. If it is, your healthcare provider can help you work it in to your activity plan.

## Staying Safe

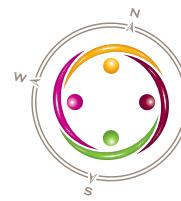
Being active may cause blood glucose to drop faster than usual. This is especially true if you take medication to manage your blood glucose. But there are things you can do to help reduce the risk of accidental lows. Keep these tips in mind:

- Always carry identification when you exercise outside your home. Carry a cell phone to use in case of emergency.
- If you can, include friends and family in your activities.
- Wear a medical ID bracelet that says you have diabetes.
- Use the right safety equipment for the activity you do (such as a bicycle helmet when you ride a bicycle outdoors). Wear closed-toed shoes that fit your feet well.
- Drink plenty of water before and during activity.
- Keep a fast-acting sugar (such as glucose tablets) on hand in case of low blood glucose.
- Dress properly for the weather. Wear a hat if it's sunny, or wait until evening if it's too hot.
- Avoid being active for long periods in very hot or very cold weather.
- Skip activity if you're sick.

## Notice How Activity Affects Blood Sugar

Physical activity is important when you have diabetes. But you need to keep an eye on your blood glucose level. Check often if you have been active for longer than usual, or if the activity was unplanned. Make it a habit to check your blood glucose before being active. And check again a few hours later. Use your log book to write down how activity affects your numbers. If you take insulin, you may be able to adjust your dose before a planned activity. This can help prevent lows. Talk to your healthcare provider to learn more.

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01

## Healthy Meals for Diabetes

Ask your healthcare team to help you make a meal plan that fits your needs. Your meal plan tells you when to eat your meals and snacks, what kinds of foods to eat, and how much of each food to eat. You don't have to give up all the foods you like. But you do need to follow some guidelines.

### Eat Foods Rich in Fiber

Fiber is a carbohydrate that breaks down slowly. Fiber is also healthy for your heart. Fiber-rich foods include:

- Whole-grain breads and cereals
- Bulgur wheat
- Brown rice
- Whole-wheat pasta
- Fruits and vegetables
- Dry beans, and peas

### Choose Healthy Protein Foods

Eating protein that is low in fat can help you control your weight. It also helps keep your heart healthy. Low-fat protein foods include:

- Fish
- Plant proteins, such as dry beans and peas, nuts, and soy products like tofu and soymilk
- Lean meat with all visible fat removed
- Poultry with the skin removed
- Low-fat or nonfat milk, cheese, and yogurt

### Limit Unhealthy Fats and Sugar

Saturated and trans fats are unhealthy for your heart. They raise LDL (bad) cholesterol. Fat is also high in calories, so it can make you gain weight. To cut down on unhealthy fats, limit these types of foods:

- Butter or margarine
- Palm and palm kernel oils and coconut oil
- Cream
- Cheese
- Bacon
- Lunch meats
- Ice cream
- Sweet bakery goods such as pies, muffins, and donuts
- Jams and jellies
- Candy bars
- Regular sodas

### How Much to Eat

The amount of food you eat affects your blood glucose. It also affects your weight. Your healthcare team will tell you how much of each type of food you should eat.

- Use measuring cups and spoons and a food scale to measure serving sizes.
- Learn what a correct serving size looks like on your plate. This will help when you are away from home and can't measure your servings.
- Eat only the number of servings given on your meal plan for each food. Don't take seconds.

# Healthy Meals for Diabetes

## When to Eat

Your meal plan will likely include breakfast, lunch, dinner, and some snacks.

- Try to eat your meals and snacks at about the same times each day.
- Eat your meals and snacks as recommended by your healthcare provider. Skipping a meal or snack can make your blood glucose drop too low. It can also cause you to eat too much at the next meal or snack. Then your blood glucose could get too high.

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01

## Hyperglycemia (High Blood Glucose)

Too much glucose (sugar) in your blood is called hyperglycemia or high blood glucose. High blood glucose can lead to a dangerous condition called ketoacidosis. In severe cases, it can lead to coma.

### Possible Causes of Hyperglycemia

- Eating too much food, especially carbohydrates
- Being less active than usual
- Not taking enough medication
- Being sick
- Being under stress



### Symptoms of Hyperglycemia

Hyperglycemia may not cause symptoms. If you do have symptoms, they may include:

- Thirst
- Frequent need to urinate
- Feeling tired
- Nausea
- Itchy, dry skin
- Blurry vision
- Fast breathing
- Weakness
- Dizziness
- Wounds or skin infections that don't heal

### What You Should Do

- Check your blood glucose.
- Drink sugar-free, caffeine-free liquids such as water or diet soda. Don't drink fruit juice.
- Check your blood or urine for ketones as directed.
- Talk to your healthcare provider about when to call if your blood glucose and ketones do not return to your target range.
- When you are sick, check your blood glucose again every 4 hours. If you take insulin or diabetes medications, follow your sick-day plan for taking medication. Call your healthcare provider if you are not able to eat.

# Hyperglycemia (High Blood Glucose)

## Preventing High Blood Glucose

To help keep your blood glucose from getting too high:

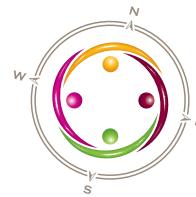
- Follow your meal plan. Eat only the amount of food on your meal plan.
- Follow your exercise plan.
- Take your insulin or diabetes medications as directed by your healthcare team. Also test your blood glucose as directed.
- Control stress.
- When you're ill, follow your sick-day plan.

## Other Things to Do

- Carry a medical ID card or wear a medical alert bracelet. It should say that you have diabetes. It should also say what to do in case you pass out or go into a coma.
- Make sure family, friends, and coworkers know the signs of high blood glucose. Tell them what to do if your blood glucose gets very high and you can't help yourself.
- Talk to your healthcare team about other things you can do to prevent high blood glucose.

**Special note:** Drink plenty of sugar-free and caffeine-free liquids when you feel symptoms of hyperglycemia. Call your doctor if you keep having episodes of hyperglycemia.

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01

## Hypoglycemia (Low Blood Sugar)

Too little glucose (sugar) in your blood is called **hypoglycemia or low blood sugar**. Diabetes itself doesn't cause low blood sugar. But some of the treatments for diabetes may increase your risk for it. Very low blood sugar may cause you to lose consciousness or have a seizure. So always treat low blood sugar right away.

**Special note:** Always carry a source of fast-acting sugar and a snack in case of hypoglycemia.

### What You May Notice

If you have low blood sugar, you may have these symptoms:

- Shakiness or dizziness
- Cold, clammy skin or sweating
- Feelings of hunger
- Headache
- Nervousness
- A fast heartbeat
- Weakness
- Confusion or irritability
- Blurred vision

### What You Should Do

- First, check your blood sugar. If it is too low (out of your target range), eat or drink **15** grams of fast-acting sugar. This may be **3 or 4** sugar tablets, 4 oz (half a cup) fruit juice or regular (nondiet) soda, 8 oz (1 cup) milk, or 1 tablespoon of sugar. Don't take more than this, or your blood sugar may go too high.
- Wait **15** minutes. Then recheck your blood sugar if you can.
- If your blood sugar is still too low, repeat the steps above and check your blood sugar again. If your blood sugar still has not returned to your target range, contact your health care provider or seek emergency care.
- Once your blood sugar returns to target range, eat. If your next meal is less than **1** hour away, eat that meal now. If it's more than **1** hour, eat a snack, such as half a sandwich, or crackers and cheese.



# Hypoglycemia (Low Blood Sugar)

## What You Should Do

- Eat your meals and snacks at the same times each day. Don't skip meals!
- Ask your health care provider if it is safe for you to drink alcohol. Never drink on an empty stomach.
- Take your medication at the prescribed times.
- Always carry a source of fast-acting sugar and a snack when you're away from home.

## Other Things to Do

- Carry a medical ID card or wear a medical alert bracelet or necklace. It should say that you have diabetes. It should also say what to do if you pass out or have a seizure.
- Make sure your family, friends, and coworkers know the signs of low blood sugar. Tell them what to do if your blood sugar falls very low and you can't treat yourself.
- Keep a **glucagon emergency kit** handy. Be sure your family, friends, and coworkers know how and when to use it. Check it regularly and replace the glucagon before it expires.
- Talk to your health care team about other things you can do to prevent low blood sugar.

If you experience hypoglycemia several times, call your health care provider.

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01

## Hypoglycemia (Low Blood Sugar)

### What You Should Know, What You Should Do.

Hypoglycemia can happen even during those times when you're doing all you can to manage your diabetes. So, although many times you can't prevent it from happening, hypoglycemia can be treated before it gets worse.

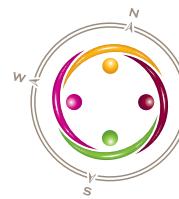
 **Check any of the following symptoms of hypoglycemia that you experience and bring this sheet to the next visit with your health care provider.**

- |                                      |   |                                     |
|--------------------------------------|---|-------------------------------------|
| <input type="checkbox"/> Sweatiness  | <input type="checkbox"/> Anxiety          | <input type="checkbox"/> Confusion  |
| <input type="checkbox"/> Shakiness   | <input type="checkbox"/> Weakness         | <input type="checkbox"/> Sleepiness |
| <input type="checkbox"/> Hunger      | <input type="checkbox"/> Grouchiness      | <input type="checkbox"/> Dizziness  |
| <input type="checkbox"/> Nervousness | <input type="checkbox"/> Light-headedness | <input type="checkbox"/> Headache   |

### Take action if you have low blood sugar

1. If your blood sugar is below 70 mg/dL or if you feel any of the above signs, take ONE of the following quick-fix foods:
  - 3 or 4 glucose tablets
  - 1 serving of glucose gel (equal to 15 grams of carbohydrate)
  - 1 cup of milk
  - ½ cup of fruit juice
  - ½ can of regular soda pop (not diet)
  - 5 or 6 pieces of hard candy
  - 1 tablespoon of corn syrup or honey
2. Wait 15 minutes. Check your blood sugar again.
3. If your blood sugar is still below 70 mg/dL or if you do not feel better, repeat steps 1 and 2 every 15 minutes until your blood sugar is 70 mg/dL or above.
4. After you feel better, be sure to eat your regular meals and snacks as planned to keep your blood sugar level up.
5. Call your doctor if you do not feel better or if your blood sugar stays low (below 70 mg/dL).
6. Call your doctor if you experience low blood sugar several times in a week.





## Long-term Complications of Diabetes

People with diabetes can develop complications over time. Problems are more likely to occur if your blood glucose is often out of your target range. Over time, high blood glucose levels can damage blood vessels. This can lead to health problems (complications). Keeping your blood glucose in your target ranges can help prevent or delay complications.

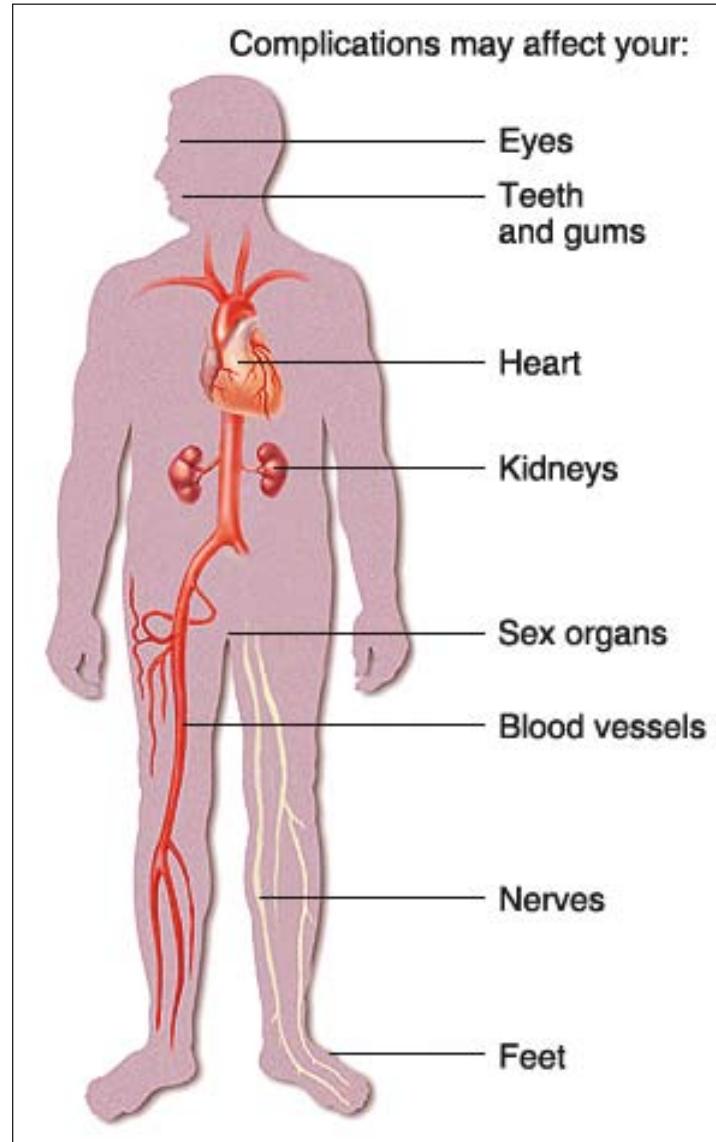
### Why Manage Diabetes?

You can take an active role in your health by managing diabetes. You can manage diabetes by monitoring your blood glucose, eating healthy, exercising, and taking medication if directed.

### Long-term Complications

Managing diabetes can help you reduce your risk or avoid these and other complications:

- Eye problems, including damage to the blood vessels in the eyes (retinopathy), pressure in the eye (glaucoma), and clouding of the eye's lens (a cataract)
- Tooth and gum problems (periodontal disease), causing loss of teeth and bone
- Blood vessel (vascular) disease leading to circulation problems, heart attack, or stroke
- Problems with sexual function
- Kidney disease (nephropathy)
- Nerve problems (neuropathy), causing pain or loss of feeling in your feet and other parts of your body
- High blood pressure (hypertension), putting strain on your heart and blood vessels



- Serious foot infections, possibly leading to loss of toes, feet, or lower limbs

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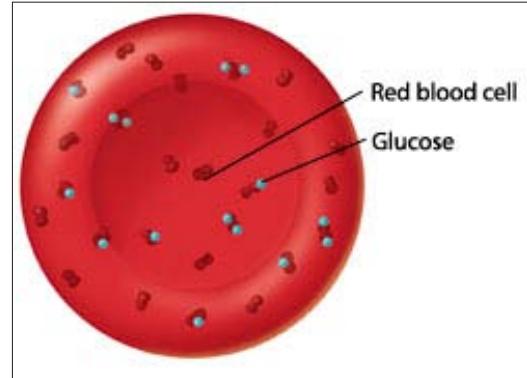
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01

## Managing Diabetes: The A1C Test

### What Is the A1C Test?

Using your glucose meter helps you track your blood glucose every day. But you also need to know if your treatment plan is keeping you at your A1C goal level over time. An **A1C (glycated hemoglobin)** test can help. This test measures your average blood glucose level over the prior 2 or 3 months. A higher A1C result means that you have a higher risk of developing complications of diabetes.



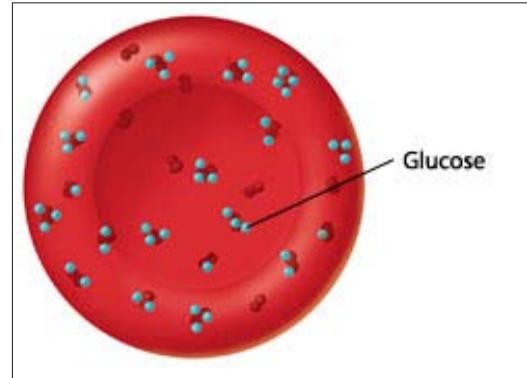
Healthy red blood cells have some glucose stuck to them.

### The A1C Test

The A1C is a blood test done by your health care provider. You will likely have an A1C test every 3 to 6 months.

### Your Blood Glucose Goal

A1C has been shown as a percentage. But it can also be shown as a number representing the **estimated Average Glucose (eAG)**. Unlike the A1C percentage, eAG is a number similar to the numbers listed on your daily glucose monitor. Your health care provider will help you figure out what your ideal A1C or eAG should be. Your target number will depend on your age, general health, and other factors. If your current number is too high, your treatment plan may need changes, such as different medications.



A high A1C means that unhealthy amounts of glucose are stuck to the cells.

### Sample Results

Most people aim for an A1C lower than 7%. That's an eAG less than 154 mg/dL. Or, your health care provider may want you to aim for an A1C of 6%. That's an eAG of 126 mg/dL.

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## Managing Your Blood Sugar Levels

When you have type 2 diabetes, you need to manage your blood sugar carefully to keep it within the target range. Doing so can help prevent or delay the onset of complications associated with type 2 diabetes, such as damage to the nerves, eyes, kidneys, and blood vessels.

Managing your blood sugar involves balancing the food you eat with exercise and any medications you might be taking. Two tests can help you monitor how well you are managing your blood sugar: a blood sugar check and a urine ketone check.

### Blood sugar checks

Blood sugar checks tell you your blood sugar level at any given time and are the main tool to see how you are doing in managing your blood sugar. Using a blood glucose meter is the most accurate way to check your blood sugar. It's important to keep a log of your blood sugar levels so that you can review them with your health care provider. This log will show your body's response to the foods you are eating and the medications you may be taking. The log will allow your health care provider to modify your treatment plan as necessary to maintain proper blood sugar control.

*Here is a chart that includes the ADA's target blood sugar ranges for many adults with diabetes:*

Glycemic control	
A1C	Less than 7%*
Fasting blood glucose (before a meal)	70–130 mg/dL (5.0–7.2 mmol/L)
Postprandial blood glucose (after a meal)	Less than 180 mg/dL (less than 10.0 mmol/L)

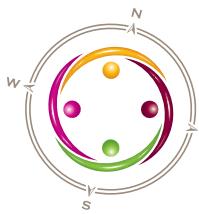
ADA=American Diabetes Association.

\*The general goal of less than 7% appears reasonable for many adults with diabetes. Less stringent A1C goals may be appropriate for other people, especially those with a history of low blood sugar.

### Who should be checked?

The ADA recommends blood sugar checks if you have diabetes. You may need to check your blood sugar more often if you are

- Taking insulin or other diabetes medications
- Undergoing intensive insulin therapy
- Pregnant
- Having a hard time controlling your blood sugar levels
- Having severely low blood sugar levels or ketones from high blood sugar levels
- Having low blood sugar levels without the usual warning signs



## Managing Your Blood Sugar Levels

### Urine ketone checks

Urine ketone tests are important when your blood sugar is high or when you are ill. Ketones show up in urine when your body is burning fat instead of glucose for fuel because there is too little insulin available. Ketones in the urine is more common in type 1 diabetes.

This test is easy to do, but to get accurate results, you must follow the directions and be sure that the test strips have not expired. If you have any questions, be sure to check with your health care provider.

#### Here's how most urine tests are done:

- Get a sample of your urine in a clean container.
- Place the strip in the sample (you can also pass the strip through the urine stream).
- Gently shake excess urine off the strip.
- Wait for the strip pad to change color. The directions will tell you how long to wait.
- Compare the strip pad to the color chart on the strip bottle. This gives you a range of the amount of ketones in your urine.
- Record your results.

What do your results mean? A negative result indicates that there are no ketones present. Small amounts of ketones may mean that ketone buildup is starting; therefore, you should test again in a few hours. Moderate or large amounts of ketones are a danger sign because they can upset the chemical balance of your blood and ultimately poison the body. Moderate or large amounts of ketones and high blood sugar are indications that your diabetes is out of control. Talk to your health care provider at once if your urine results show moderate or large amounts of ketones, and never attempt to exercise if there are ketones in your urine.

### When to test

Ask your health care provider when to check for ketones, and learn to recognize the warning signs for elevated levels. You may be advised to check for ketones when

- Your blood sugar is more than 300 mg/dL
- You feel nauseated, are vomiting, or have abdominal pain
- You are sick (for example, with a cold or flu)
- You feel tired all the time
- You are thirsty or have a very dry mouth
- Your skin is flushed
- You have a hard time breathing or your breath smells "fruity"
- You feel confused or "in a fog"

These can be signs of high ketone levels that may require your health care provider's help.

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## My Blood Glucose Log

- Write down the time and blood glucose number before and 2 hours after every meal for every day of the week.
- Also write down the time and blood glucose number at nighttime if needed at bedtime and in the middle of the night.
- Be sure to also note if you were doing any specific thing, such as “Ate a big lunch” or “Went for a long walk before bed.”

Name \_\_\_\_\_

### BLOOD GLUCOSE LOG

Day	Breakfast				Lunch				Dinner				Nighttime (if needed)				What I Was Doing	
	Before		2 Hours After		Before		2 Hours After		Before		2 Hours After		At Bedtime		Middle of Night			
	Time	Number	Time	Number	Time	Number	Time	Number	Time	Number	Time	Number	Time	Number	Time	Number		
Sun																		
Mon																		
Tues																		
Wed																		
Thurs																		
Fri																		
Sat																		

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## My Medication List

Use this chart to keep track of all your medications. Write down the name, dosage, and time of day to take each medication. This includes any different types of insulin that you take. Make a copy to keep in a binder so you can carry it with you.

NAME OF MEDICATION	DOSAGE	WHEN TO TAKE IT	WITH OR WITHOUT FOOD

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## My Goal Numbers

Track your target numbers for blood glucose, cholesterol, blood pressure, and weight.

Tests	American Diabetes Association Targets	Current Numbers	My Goal Numbers
<b>Blood Glucose</b>			
A1C	<7.0%*	_____	_____
Premeal blood glucose	70-130 mg/dL	_____	_____
Postmeal blood glucose	<180 mg/dL	_____	_____
<b>Blood Pressure</b>	<140/80 mmHg†	_____	_____
<b>Cholesterol</b>			
LDL ("bad" cholesterol)	<100 mg/dL	_____	_____
<b>Weight</b>		_____	_____
<b>My next checkup date:</b>			

\* The general goal of <7% appears reasonable for many adults with diabetes. Higher or lower A1C goals may be appropriate for other patients.

† Based on patient characteristics and response to therapy, lower systolic blood pressure targets may be appropriate.

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01

## Put Your Best Feet Forward

Two complications of diabetes make it important to pay special attention to your feet.

- 1. Nerve damage.** The nerves in your legs and feet are vulnerable to damage caused by high levels of blood sugar. This may affect your ability to feel pain, heat, or cold in your legs and feet. You may also experience odd sensations or numbness. This nerve damage, called peripheral diabetic neuropathy, can lead to a sore or an infection, which may get worse because you don't know it's there.
- 2. Poor blood flow.** When too little blood circulates to your legs and feet, it's hard for a sore or infection to heal. This problem is called peripheral vascular disease.

### Start taking care of your feet today

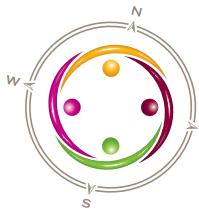
Neglecting your feet can result in serious consequences, including amputation in the worst case. That's why you'll want to prevent problems before they arise.

- **Keep your feet clean and protected**

- Wash them every day, and dry them carefully, especially between the toes.
- Don't go barefoot. Wear clean socks and comfortable shoes that protect your feet.
- To keep the skin soft and smooth, rub a thin coat of lotion on your feet every day, but not between your toes.
- Ask your health care provider about insurance coverage for special protective shoes.
- Avoid exposing your feet to extreme heat or cold. Even hot bathwater isn't good for them. Avoid heating pads, hot water bottles, and electric blankets.

- **Watch out for wounds and infections**

- Check your feet every day for wounds or infections. Use a mirror if you have trouble seeing the soles of your feet.
- Keep your toenails properly trimmed, in a straight line. If you cannot trim them safely yourself, ask your health care provider to trim them.
- Have your health care provider trim any corns or calluses on your feet.
- Have a health care provider examine your feet regularly—at least once a year or more often if you have foot problems.
- Contact your health care provider early if you have cuts or breaks in the skin of your foot, a change in color or shape, pain or numbness, or an ingrown toenail. Even athlete's foot, blisters, and plantar warts can become infected.



## Put Your Best Feet Forward

- **Keep the blood flowing to your legs and feet**

- Don't sit with one leg crossed over the other.
- When you're able to, prop your feet up when you're sitting.
- Wriggle your toes and flex your ankles by moving your feet for about 5 minutes 2 to 3 times every day.
- Don't smoke—smoking can make circulation problems worse.

### Reward your feet for their years of faithful service

Two very helpful things you can do for your feet are:

- Keep your blood sugar in your target range.
- Be more active by following your doctor-approved exercise program.

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## Diabetes: Sick-Day Plan

When you're sick, even with just a cold, your blood glucose level may rise. Ask your healthcare team to help you develop a sick-day plan for controlling blood glucose. Here are some guidelines.

### Don'ts

- Don't stop taking your diabetes medication unless your healthcare provider tells you to.
- Don't take other medications, such as cold or flu remedies, without checking with your healthcare provider first.



### Do's

- Stick to your meal plan. If you can't eat, try fruit juice, regular gelatin, or frozen juice bars as directed by your healthcare provider.
- Drink at least 1 glass of liquid every hour. If you're eating, these liquids should be sugar-free.
- Check your blood glucose as often as directed by your healthcare provider.
- Look for sugar-free cough drops and syrups. Ask your healthcare provider if it's okay for you to take these.
- Adjust your insulin according to your sick-day plan. Don't skip insulin. You need insulin even if you can't eat your normal meals. If you take pills, take the normal dose unless your doctor tells you to stop.
- Ask someone to check on you several times a day.

### Call Your Healthcare Provider If:

- You vomit or have diarrhea for more than 6 hours.
- Your blood glucose level is higher than 240 after you have taken extra insulin (if recommended in your sick-day plan).
- You take oral medication for diabetes, your blood glucose is higher than 240 before a meal and stays that high for more than 24 hours.
- You have moderate to large amounts of ketones in your urine.
- You aren't better after 2 days.

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## Taking Medication for Diabetes

Medications can't cure diabetes. But they can delay or prevent health complications by helping you manage your blood glucose. Your healthcare provider may also prescribe medications to help control blood pressure and/or cholesterol, which are just as important. Taking medications every day, especially shots, may seem overwhelming. But they are powerful tools that can help manage your diabetes.

### Where the Medications Work

Diabetes medications for lowering blood glucose act on different parts of the body. Some of them increase insulin release from the pancreas. Others improve the action of insulin in cells, or keep the liver from releasing too much glucose. And some slow the conversion of carbohydrate to blood sugar.



Your diabetes educator will help you practice giving yourself shots until you feel comfortable.

### Getting Familiar with Shots

Some medications, including insulin, can't be swallowed. They are usually injected through the skin to reach the bloodstream. It's not hard to learn how to give yourself shots. And there are new devices for injecting medications that may be available to you. Ask your healthcare provider for more information.

### Sticking to Your Medication Routine

Take your medications as instructed by your healthcare provider. Taking your medications at the right times will give you the best control over your blood glucose. Like a meal routine, a medication routine can help keep your blood glucose steady. Keep track of medications with a pill organizer and a daily schedule. Ask your family to help you stick to a medication routine. And don't get distracted. Make it a priority.

### If You Take Other Medications

Some other medications can affect blood glucose. This includes over-the-counter medications and those prescribed for other health problems. Make sure you tell your healthcare provider about all the medications you take, including herbs and vitamins. And always remember to tell the pharmacist that you have diabetes when buying other medications.

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## Diabetes: Understanding Carbohydrates

Just as a car needs the right type of fuel (gas) to run, you need the right kind of fuel (food) to function. To sustain energy, your body needs food that contains **carbohydrates**. But carbohydrates raise blood glucose levels higher and faster than other kinds of food. Your dietitian will probably recommend that 50-60% of your calories come from carbohydrates.



### Starches

Starches are found in grains, some vegetables, and beans. Grain products include bread, pasta, cereal, and tortillas. Starchy vegetables include potatoes, peas, corn, lima beans, yams, and winter squash (such as acorn or butternut). Kidney beans, pinto beans, black beans, garbanzo beans, and lentils also contain starches.

### Sugars

Sugars are found naturally in many foods. Or sugar can be added. Foods that contain natural sugar include fruits and fruit juices, dairy products, honey, and molasses. Added sugars are found in most desserts, processed foods, candy, regular soda, and fruit drinks.

### Fiber

Fiber comes from plant foods. Most fiber isn't digested by the body. Instead of raising blood glucose levels like other carbohydrates, it actually keeps blood glucose from rising too fast. Fiber is found in fruits, vegetables, whole grains, beans, peas, and many nuts.

### Carb Counting

You can learn to figure out how many carbohydrates you are eating every day. Ask your dietitian to teach you a technique called "carb counting." This system helps you keep track of the carbohydrates you eat at each meal. There are different ways to do carb counting. Basic carb counting is described below. This method is a good way to get started with carb counting.

- When you count carbohydrate servings, one serving of a starch, fruit, or dairy product counts as one "carb."
- Each carb is about 15 grams of carbohydrate. For example:
  - 1 slice of bread = 1 starch serving = 15 grams of carbohydrate
  - 1 apple = 1 fruit serving = 15 grams of carbohydrate
  - 1 cup milk = 1 dairy serving = 15 grams of carbohydrate
- Your dietitian will help you determine how many carbohydrate servings to have at each meal and snack.

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## Diabetes: Understanding Carbohydrates, Fats, and Protein

Food is a source of fuel and nourishment for your body. It's also a source of pleasure. Having diabetes doesn't mean you have to eat special foods or give up desserts. Instead, you can learn how to plan meals to suit your body. To start, learn how different foods affect blood glucose.



### Carbohydrates

Carbohydrates are the main source of fuel for the body. Carbohydrates raise blood glucose. Many people think carbohydrates are only found in pasta or bread. But carbohydrates are actually in many kinds of foods.

- **Sugars** occur naturally in foods such as fruit, milk, honey, and molasses. Sugars can also be added to many foods, from cereals and yogurt to candy and desserts. Sugars raise blood glucose.
- **Starches** are found in bread, cereals, pasta, and dried beans. They're also found in corn, peas, potatoes, yams, acorn squash, and butternut squash. Starches also raise blood glucose.
- **Fiber** is found in foods such as vegetables, fruits, and whole grains. Unlike other carbs, fiber isn't digested or absorbed. So it doesn't raise blood glucose. In fact, fiber can help keep blood glucose from rising too fast. It also helps keep blood cholesterol at a healthy level.

### Did You Know?

Even though carbohydrates raise blood glucose, it's best to have some in every meal. They are an important part of a healthy diet.

### Fat

Fat is an energy source that can be stored until needed. Fat does not raise blood glucose. However, it can raise blood cholesterol, increasing the risk of heart disease. Fat is also high in calories, which can cause weight gain. Not all types of fat are the same.

### More Healthy

- **Monounsaturated fats** are mostly found in vegetable oils such as olive, canola, and peanut oils. They are also found in avocados and some nuts. Monounsaturated fats are healthy for your heart. That's because they lower LDL (unhealthy) cholesterol.
- **Polyunsaturated fats** are mostly found in vegetable oils such as corn, safflower, and soybean oils. They are also found in some seeds, nuts, and fish. Polyunsaturated fats lower LDL (unhealthy) cholesterol. So, choosing them instead of saturated fats is healthy for your heart.

# Diabetes: Understanding Carbohydrates, Fats, and Protein

## Fat (*continued*)

### Less Healthy

- **Saturated fats** are found in animal products such as meat, poultry, whole milk, lard, and butter. Saturated fats raise LDL cholesterol and are **not** healthy for your heart.
- **Hydrogenated oils** and trans fats are formed when vegetable oils are processed into solid fats. They are found in many processed foods. Hydrogenated oils and trans fats raise LDL cholesterol and lower HDL (healthy) cholesterol. They are **not** healthy for your heart.

## Protein

Protein helps the body build and repair muscle and other tissue. Protein has little or no effect on blood glucose. However, many foods that contain protein also contain saturated fat. By choosing low-fat protein sources, you can get the benefits of protein without the extra fat.

- **Plant protein** is found in dry beans and peas, nuts, and soy products such as tofu and soymilk. These sources tend to be cholesterol-free and low in saturated fat.
- **Animal protein** is found in fish, poultry, meat, cheese, milk, and eggs. These contain cholesterol and can be high in saturated fat. Aim for lean, lower-fat choices.



## Understanding Type 2 Diabetes

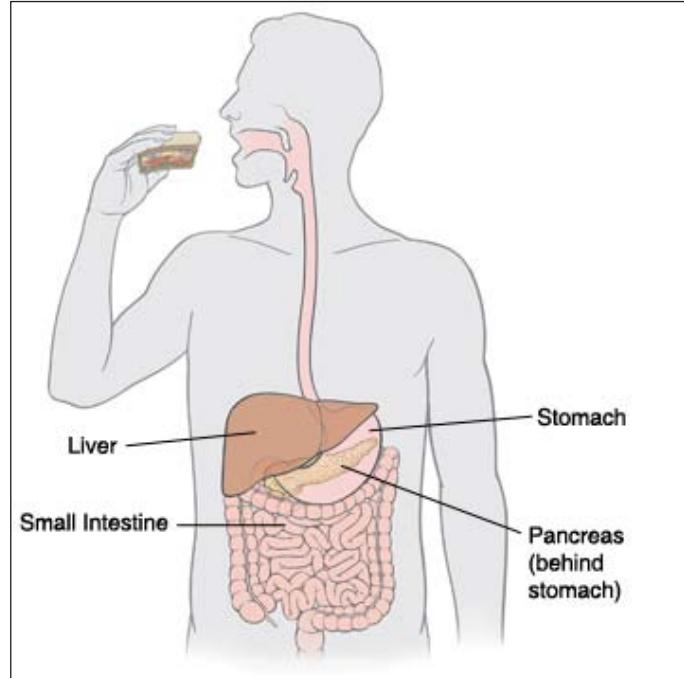
When your body is working normally, the food you eat is digested and used as fuel. This fuel supplies energy to the body's cells. When you have diabetes, the fuel can't enter the cells. Without treatment, diabetes may cause serious long-term health problems.

### How the Body Gets Energy

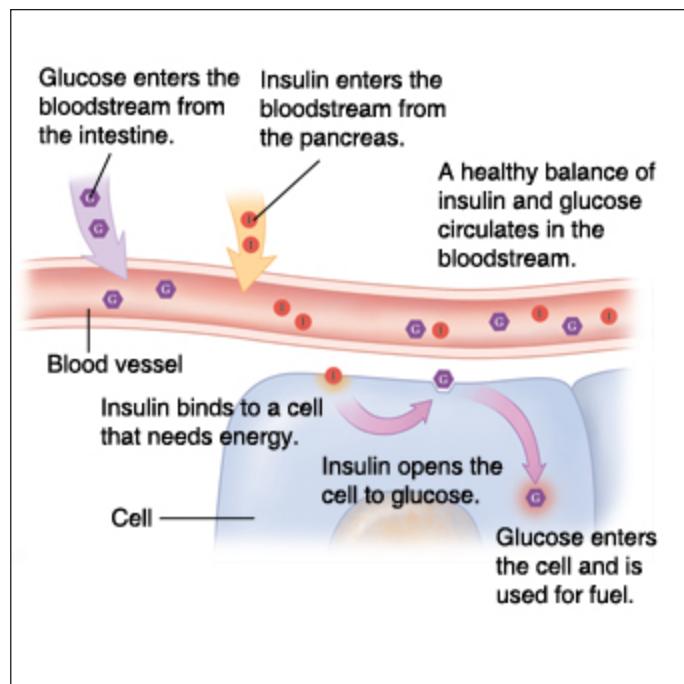
After you eat, digestion breaks down part of the food into a fuel called **glucose** (a type of sugar). Some of this glucose is stored in the liver. But most of it enters the bloodstream and travels to the cells to be used as fuel. Glucose needs the help of a hormone called **insulin** to enter the cells. Insulin is made in the pancreas. It is released into the bloodstream in response to the presence of glucose in the blood. Think of insulin as a key. When insulin reaches a cell, it attaches to the cell wall. This signals the cell to create an opening that allows glucose to enter the cell.

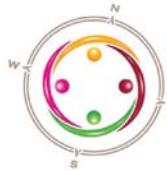
### When You Have Type 2 Diabetes

Early in type 2 diabetes, your cells don't respond properly to insulin. Because of this, less glucose than normal moves into cells. This is called **insulin resistance**. In response, the pancreas makes more insulin. But eventually, the pancreas can't produce enough insulin to overcome insulin resistance. As less and less glucose enters cells, it builds up to a harmful level in the bloodstream. This is known as **high blood glucose** (also known as high blood sugar) or **hyperglycemia**. The result is type 2 diabetes. The cells become starved for energy, which can leave you feeling tired and rundown.



Your body breaks down the food you eat into glucose.





## Understanding Type 2 Diabetes

### Why High Blood Glucose Is a Problem

If high blood glucose is not controlled, blood vessels throughout the body may become damaged. Prolonged high blood glucose affects organs and nerves. As a result, the risks of damage to the heart, kidneys, eyes, and limbs increase. Diabetes also makes other problems, such as high blood pressure and high cholesterol, more dangerous. Over time, people with uncontrolled high blood glucose have a high chance of dying of, or being disabled by, heart attack or stroke.

