

# Prevent diabetes problems: Keep your diabetes under control

## What are diabetes problems?

Too much glucose in the blood for a long time can cause diabetes problems. This high blood glucose, also called blood sugar, can damage many parts of the body, such as the heart, blood vessels, eyes, and kidneys. Heart and blood vessel disease can lead to heart attacks and strokes. You can do a lot to prevent or slow down diabetes problems.

## Will I have diabetes problems?

Maybe. You may have one or more diabetes problems or none at all. If you get diabetes when you are young, you may not have diabetes problems for many years. If you find out you have diabetes as an adult, you may already have diabetes problems. Either way, keeping your blood glucose, blood pressure, and cholesterol under control can prevent diabetes problems.



Be active to prevent diabetes problems.

## What should my blood glucose numbers be?

Keeping your blood glucose on target can prevent or delay diabetes problems. The chart below shows target blood glucose levels for most people with diabetes.

Target Blood Glucose Levels for People With Diabetes	
Before meals	70 to 130
1 to 2 hours after the start of a meal	less than 180

Talk with your health care provider about what **your** blood glucose numbers should be. Print this document and write them in this chart.

My Target Blood Glucose Levels	
Before meals	_____ to _____
1 to 2 hours after the start of a meal	less than _____

Talk with your health care provider about when you need to check your blood glucose using a blood glucose meter. You will do the checks yourself. Your health care provider can teach you how to use your meter.

Keep track of your blood glucose checks using the record page. Make copies yourself or ask your health care provider for a blood glucose record book. Your blood glucose check results will help you and your health care provider make a plan for keeping your blood glucose under control. Always bring your record book to your doctor visits so you can talk about reaching your glucose goals.

### How can I find out what my average blood glucose is?

Ask your health care provider for the A1C test. This blood test shows the average amount of glucose in your blood during the past 2 to 3 months. Have this test done at least twice a year. If your A1C result is not on target, your health care provider may do this test more often to see if your result is improving as your treatment changes. Your A1C result plus your blood glucose meter results can show whether your blood glucose is under control.

The A1C target for most people with diabetes is below 7 percent. Ask your health care provider if this target is right for you. Print and write your A1C target here:

My A1C target is \_\_\_\_\_ percent.

If your A1C test result is on target, then your blood glucose is in a desirable range and your diabetes treatment plan is working. The lower your A1C is, the lower your chance of having health problems.

If your result is too high, you may need a change in your diabetes plan. Your health care team can help you decide what part of your plan to change. You may need to change your meal plan, your diabetes medicines, or your physical activity plan.

What Your A1C Result Means	
My A1C Result	My Average Blood Glucose
6%	135
7%	170
8%	205
9%	240
10%	275
11%	310
12%	345

### What should my blood pressure be?

Normal blood pressure will help prevent damage to your eyes, kidneys, heart, and blood vessels. Blood pressure is written with two numbers separated by a slash. For example, 120/70 is said as “120 over 70.” The first number should be below 130 and the second number should be below 80. Keep your blood pressure as close to these numbers as you can. If you already have kidney disease, ask your doctor what numbers are best for you.

Meal planning, medicines, and physical activity can help you reach your blood pressure target.



Have your blood pressure checked at every visit.

### What should my cholesterol be?

Normal cholesterol and blood fat levels will help prevent heart disease and stroke, the biggest health problems for people with diabetes. Keeping cholesterol levels under control can also help with blood flow. Have your blood fat levels checked at least once a year. Meal planning, physical activity, and medicines can help you reach your blood fat targets:

Target Blood Fat Levels for People With Diabetes	
Total cholesterol	below 200
LDL cholesterol	below 100
HDL cholesterol	above 40 (men) above 50 (women)
Triglycerides	below 150

### What does smoking have to do with diabetes problems?

Smoking and diabetes are a dangerous combination. Smoking raises your risk for diabetes problems. If you quit smoking, you'll lower your risk for heart attack, stroke, nerve disease, and kidney disease. Your cholesterol and your blood pressure levels may improve. Your blood circulation will also improve.



If you smoke, ask your health care provider for help in quitting.

### **What else can I do to prevent diabetes problems**

You can do many things to prevent diabetes problems. For example, to keep your feet healthy, check them each day. Ask your health care team whether you should take a low-dose aspirin every day to lower your risk for heart disease. To keep your eyes healthy, visit an eye care professional once a year for a complete eye examination that includes using drops in your eyes to dilate the pupils.



Check your feet each day to keep them healthy.

Make sure your doctor checks your urine for protein every year. At least once a year, your blood creatinine level should be checked. Also once a year, your health care provider should do a complete foot exam. See [Things to Do Every Day for Good Diabetes Care](#) for what you can do each day to stay healthy with diabetes. See [Things for Your Health Care Provider to Look at Every Time You Have a Checkup](#) for other things to check for good diabetes care.

### **Things to Check for Good Diabetes Care**

Taking care of diabetes is a team effort between you and your health care team—doctor, diabetes nurse educator, diabetes dietitian educator, pharmacist, and others. You are the most important member of the team.

Take charge of your diabetes by learning what to do for good diabetes care:

- [things to do every day for good diabetes care](#)
- [things for your health care provider to look at every time you have a checkup](#)
- [things for you or your health care provider to do at least once or twice a year](#)

Keep a daily record of blood glucose check results. Make copies of the Daily Diabetes Record. This information will help you see whether you are reaching your blood glucose goals.

**You can prevent or slow down diabetes problems by reaching your blood glucose, blood pressure, and cholesterol goals most of the time.**

### Things to Do Every Day for Good Diabetes Care



Follow the healthy eating plan that you and your doctor or dietitian have worked out.



Be active a total of 30 minutes most days. Ask your doctor what activities are best for you.



Take your medicines as directed.



Check your blood glucose every day. Each time you check your blood glucose, write the number in your record book.



Check your feet every day for cuts, blisters, sores, swelling, redness, or sore toenails.



Brush and floss your teeth every day.



Control your blood pressure and cholesterol.



Don't smoke.

### Things for Your Health Care Provider to Look at Every Time You Have a Checkup

<b>Your blood glucose records</b>	Show your records to your health care provider.  Tell your health care provider if you often have low blood glucose or high blood glucose.
<b>Your weight</b>	Talk with your health care provider about how much you should weigh.  Talk about ways to reach your goal that will work for you.
<b>Your blood pressure</b>	The goal for most people with diabetes is less than 130/80.  Ask your health care provider about ways to reach your goal.
<b>Your medicines</b>	Talk with your health care provider about any problems you have had with your medicines.
<b>Your feet</b>	Ask your health care provider to check your feet for problems.
<b>Your physical activity plan</b>	Talk with your health care provider about what you do to stay active.
<b>Your meal plan</b>	Talk about what you eat, how much you eat, and when you eat.
<b>Your feelings</b>	Ask your health care provider about ways to handle stress.  If you are feeling sad or unable to cope with problems, ask about how to get

	help.
<b>Your smoking</b>	If you smoke, talk with your health care provider about how you can quit.

### Things for You or Your Health Care Provider to Do at Least Once or Twice a Year

<b>A1C test</b>	Have this blood test at least twice a year (See <a href="#">How can I find out what my average blood glucose is?</a> ) Your result will tell you what your average blood glucose level was for the past 2 to 3 months.
<b>Blood lipid (fats) lab tests</b>	Get a blood test to check your <ul style="list-style-type: none"> <li>• total cholesterol—aim for below 200</li> <li>• LDL—aim for below 100</li> <li>• HDL—men: aim for above 40; women: aim for above 50</li> <li>• triglycerides—aim for below 150</li> </ul>
These test results will help you plan how to prevent heart attack and stroke.	
<b>Kidney function tests</b>	Once a year, get a urine test to check for protein. At least once a year, get a blood test to check for creatinine. The results will tell you how well your kidneys are working.
<b>Dilated eye exam</b>	See an eye care professional once a year for a complete eye exam.
<b>Dental exam</b>	See your dentist twice a year for a cleaning and checkup.
<b>Foot exam</b>	Ask your health care provider to check your feet to make sure your foot nerves and your blood circulation are OK.
<b>Flu shot</b>	Get a flu shot each year.
<b>Pneumonia vaccine</b>	Get one; if you're over 64 and your shot was more than 5 years ago, get one more.

### How to Use the Daily Diabetes Record Page

Use copies of the [record page](#) to keep track of blood glucose checks, medicines, and notes about things that affect your blood glucose. Make one copy of the record page for each week. This record will help you see whether your diabetes plan is working. Review your record with your health care provider.

### Blood Glucose Checks

Talk with your health care provider and decide on the best times to check blood glucose. You may be checking blood glucose before meals, after meals, or at bedtime. Write when to check here:

---

---

---

---

---

---

---

---

If needed, draw a line in the boxes under “Breakfast,” “Lunch,” and “Dinner” to make room for blood glucose check results before and after a meal, like this example:

118  
/ 150

See [What should my blood glucose numbers be?](#) for information about target blood glucose levels.

### Medicines

Under the heading marked “Medicine,” write the names of your diabetes medicines and the amounts taken.

### Notes

Write down things that affect your blood glucose level. Some examples are

- eating more or less than usual
- forgetting to take your diabetes medicine
- exercising—write down what kind and for how long
- being sick or upset about something—being under stress
- going to a social event or other special event, or being on vacation

### [Daily Diabetes Record Page](#)

#### My Health Care Team Members

	Name and Address	Phone Number
--	------------------	--------------



Doctor		
Diabetes dietitian educator		
Diabetes nurse educator		
Eye care professional		
Dentist		
Foot doctor		
Pharmacist		
Counselor		

**Pronunciation Guide**

- A1C** (AY-WUHN-SEE)
- cholesterol** (koh-LESS-tur-ol)
- circulation** (SUR-kyoo-LAY-shuhn)
- creatinine** (kree-AT-ih-neen)
- glucose** (GLOO-kohss)
- triglycerides** (try-GLISS-ur-eyedz)

**For More Information**



**Diabetes Teachers** (nurses, dietitians, pharmacists, and other health professionals)

To find a diabetes teacher near you, call the American Association of Diabetes Educators toll-free at 1-800-TEAMUP4 (832-6874), or look on the Internet at [www.diabeteseducator.org](http://www.diabeteseducator.org) and click on "Find a Diabetes Educator."

**Dietitians**

To find a dietitian near you, call the American Dietetic Association toll-free at 1-800-877-1600, or look on the Internet at [www.eatright.org](http://www.eatright.org) and click on "Find a Nutrition Professional."

To get more information about taking care of diabetes, contact

**National Diabetes Information Clearinghouse**

1 Information Way  
Bethesda, MD 20892-3560  
Phone: 1-800-860-8747  
Fax: 703-738-4929  
Email: [ndic@info.niddk.nih.gov](mailto:ndic@info.niddk.nih.gov)  
Internet: [www.diabetes.niddk.nih.gov](http://www.diabetes.niddk.nih.gov)

**National Diabetes Education Program**

1 Diabetes Way  
Bethesda, MD 20892-3560  
Phone: 1-800-438-5383  
Fax: 703-738-4929  
Internet: [www.ndep.nih.gov](http://www.ndep.nih.gov)

**American Diabetes Association**

1701 North Beauregard Street  
Alexandria, VA 22311  
Phone: 1-800-DIABETES (342-2383)  
Internet: [www.diabetes.org](http://www.diabetes.org)

**Juvenile Diabetes Research Foundation International**

120 Wall Street  
New York, NY 10005-4001

Phone: 1-800-533-CURE (2873)

Internet: [www.jdrf.org](http://www.jdrf.org)

This publication may contain information about medications used to treat a health condition. When this publication was prepared, the NIDDK included the most current information available. Occasionally, new information about medication is released. For updates or for questions about any medications, please contact the U.S. Food and Drug Administration at 1-888-INFO-FDA (463-6332), a toll-free call, or visit their website at [www.fda.gov](http://www.fda.gov). Consult your doctor for more information.

## **Acknowledgments**

The National Diabetes Information Clearinghouse thanks the people who helped review or field-test this publication.

### ***For the American Association of Diabetes Educators***

Lynn Grieger, R.D., C.D.E.

Arlington, VT

Celia Levesque, R.N., C.D.E.

Montgomery, AL

Teresa McMahon, Pharm.D., C.D.E.

Seattle, WA

Barbara Schreiner, R.N., M.N., C.D.E.

Galveston, TX

### ***For the American Diabetes Association***

Phyllis Barrier, M.S., R.D., C.D.E.

Alexandria, VA

Linda Haas, Ph.C., R.N., C.D.E.

Seattle, WA

Kathleen Mahoney, M.S.N., R.N., C.D.E.

Drexel Hill, PA

Randi Kington, M.S., R.N., C.S., C.D.E.

Hartford, CT

### ***For the Centers for Medicare & Medicaid Services***

Baltimore, MD

Jan Drass, R.N., C.D.E.

### ***For the Diabetes Research and Training Centers***

Albert Einstein School of Medicine

Norwalk Hospital

Norwalk, CT

Jill Ely, R.N., C.D.E.

Sam Engel, M.D.

Pam Howard, A.P.R.N., C.D.E.

Indiana University School of Medicine  
Indianapolis, IN  
Madelyn Wheeler, M.S., R.D., F.A.D.A., C.D.E.

VA/JDF Diabetes Research Center  
Vanderbilt School of Medicine  
Nashville, TN  
Ok Chon Allison, M.S.N., R.N.C.S., A.N.P., C.D.E.  
Barbara Backer, B.S.  
James W. Pichert, Ph.D.  
Alvin Powers, M.D.  
Melissa E. Schweikhart  
Michael B. Smith  
Kathleen Wolffe, R.N.

***For the Grady Health System Diabetes Clinic***

Atlanta, GA  
Ernestine Baker, R.N., F.N.P., C.D.E.  
Kris Ernst, R.N., C.D.E.  
Margaret Fowke, R.D., L.D.  
Kay Mann, R.N., C.D.E.

***For the Indian Health Service***

Albuquerque, NM  
Ruth Bear, R.D., C.D.E.  
Dorinda Bradley, R.N., C.D.E.  
Terry Fisher, R.N.  
Lorraine Valdez, R.N., C.D.E.

Red Lake, MN  
Charmaine Branchaud, B.S.N., R.N., C.D.E.

***For the Medlantic Research Center***

Washington, DC  
Resa Levetan, M.D.

***For Texas Diabetes Council***

Texas Department of Health  
Austin, TX  
Luby Garza-Abijaoude, M.S., R.D., L.D.

**National Diabetes Information Clearinghouse**

1 Information Way  
Bethesda, MD 20892-3560  
Phone: 1-800-860-8747  
TTY: 1-866-569-1162

Fax: 703–738–4929

Email: [ndic@info.niddk.nih.gov](mailto:ndic@info.niddk.nih.gov)

Internet: [www.diabetes.niddk.nih.gov](http://www.diabetes.niddk.nih.gov)

The National Diabetes Information Clearinghouse (NDIC) is a service of the National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK). The NIDDK is part of the National Institutes of Health of the U.S. Department of Health and Human Services. Established in 1978, the Clearinghouse provides information about diabetes to people with diabetes and to their families, health care professionals, and the public. The NDIC answers inquiries, develops and distributes publications, and works closely with professional and patient organizations and Government agencies to coordinate resources about diabetes.

Publications produced by the Clearinghouse are carefully reviewed by both NIDDK scientists and outside experts.

This publication is not copyrighted. The Clearinghouse encourages users of this publication to duplicate and distribute as many copies as desired.

NIH Publication No. 08–4349

February 2008