

Type 2 Diabetes

About 9.7 million women in the United States have diabetes. Most women and men diagnosed with diabetes have type 2 diabetes. Type 2 diabetes used to be called adult-onset diabetes. But now we know that people can develop type 2 diabetes at any age—even during childhood or adolescence.

The good news is that doctors know a lot about managing diabetes. You can lead a long and healthy life with diabetes. Getting treatment and taking care of yourself can help prevent health problems. In fact, your doctor will want you to take an active part in your diabetes care.

What is diabetes?

Diabetes is a disorder of metabolism—the way your body uses digested food for growth and energy. Much of the food you eat is broken down into glucose, the form of sugar in the blood. Glucose is the main source of fuel for your body.

After digestion, glucose enters your bloodstream. Then glucose goes to your body's cells to be used for energy. For glucose to enter into your cells, insulin must be present. Insulin is a hormone produced by your pancreas (PAN-kree-uhss), a large gland behind your stomach.

When you eat, your pancreas automatically produces the right amount of insulin to move glucose from your blood into your cells. But if you have type 2 diabe-





tes, your body's system for producing energy doesn't work correctly. One or both of the following things can happen:

- Your cells don't respond properly to your own insulin, a condition called insulin resistance.
- Your pancreas makes little or no insulin.

As a result, glucose builds up in your blood and passes out of your body in your urine. Your body loses its main source of fuel, even though your blood contains large amounts of glucose.

You could have type 2 diabetes and not know it. In fact, sometimes type 2 diabetes has no warning signs at all.

- Of the 1.3 million women aged 18 to 44 years with diabetes, one-half million don't know they have it.
- Of the 4 million women aged 65 years and older with diabetes, 1 million don't know they have it.

Another form of diabetes, type 1 diabetes, formerly called juvenile diabetes or insulin-dependent diabetes, is usually first diagnosed in children, teenagers, or young adults. In type 1 diabetes, cells in the pancreas no longer make insulin because the body's immune system has attacked and destroyed them. People with type 1 diabetes must take insulin by injection or with an insulin pump.

Know your risk of type 2 diabetes

The following factors put you at risk for type 2 diabetes. Some of these factors are not under your control. But you can control a number of the risk factors and lower your chances of getting type 2 diabetes. To learn your risk of type 2 diabetes, place a check mark beside each item that applies to you. Then show this list to your doctor and ask whether you should be tested for diabetes.

Risk factors you can't control

- I am age 45 or older.
- My family background is African American, American Indian/Alaska Native, Hispanic, Asian American, or Pacific Islander.*
- I have had gestational (jess-TAY-shuhn-uhl) diabetes, or I gave birth to a baby weighing more than 9 pounds. (See page 71 for gestational diabetes information.)
- I have a parent, brother, or sister with diabetes.
- I have polycystic ovary syndrome, also called PCOS.
- I have had blood vessel problems affecting my heart, brain, or legs.

Risk factors you can control

- I am overweight. (See page 22 of the *Heart Disease* chapter for the Body Mass Index chart.)
- I am fairly inactive. I exercise fewer than three times a week.
- My blood pressure is 140/90 mmHg or higher, or I have been told that I have high blood pressure.
- My cholesterol (koh-LESS-tur-ol) levels are not normal. My HDL (good) cholesterol is below 35 mg/dL, and/or my triglyceride (treye-GLIH-suh-ryd) level is above 250 mg/dL.
- I have been told that I have higher than normal blood glucose levels, also called pre-diabetes, impaired glucose tolerance, or impaired fasting glucose.
- The skin around my neck or in my armpits looks dark, thick, and velvety, a skin condition associated with insulin resistance called acanthosis nigricans (ak-an-THOH-suhss NIG-ruh-kanz).
- I have blood vessel problems affecting my heart, brain, or legs.

**If you're an African American, Hispanic, American Indian/Alaska Native, Asian American, or Pacific Islander woman, you're more than twice as likely as a Caucasian woman to get type 2 diabetes.*

What is gestational diabetes?

Gestational diabetes is a type of diabetes that first develops during pregnancy and usually disappears on delivery. It increases the mother's risk of developing diabetes later in life. For more information on how it is diagnosed and treated, see the *Pregnancy* chapter on page 169.

What is metabolic (met-uh-BOL-ihk) syndrome?

Metabolic syndrome is a group of conditions that increases your risk of developing type 2 diabetes, heart disease, or a stroke. If you have any three of the following five conditions, you have metabolic syndrome, also called insulin resistance syndrome:

- a large waistline: 35 inches or more
- high triglyceride levels: 150 mg/dL or higher
- low HDL cholesterol levels: below 50 mg/dL
- high blood pressure levels: 130/85 mmHg or higher
- above-normal fasting blood glucose levels: 100 mg/dL or higher

Preventing or delaying type 2 diabetes

A major research study has shown that type 2 diabetes can be prevented or delayed in people at high risk of diabetes, including women with a history of gestational diabetes. People who participated in the study

- lowered their intake of fat and calories
- exercised about 30 minutes a day, 5 days a week

These efforts resulted in a modest weight loss and prevented or delayed diabetes. If you are at risk of diabetes, making these same lifestyle changes to help prevent or delay diabetes is important.

Warning signs of type 2 diabetes

You might have no warning signs at all. Or you might have these signs:

- increased thirst
- increased hunger
- fatigue
- increased urination, especially at night
- weight loss
- blurred vision
- sores that don't heal
- tingling or numb feet or hands

Diagnosing type 2 diabetes

Your doctor can use any of the following ways to diagnose type 2 diabetes:

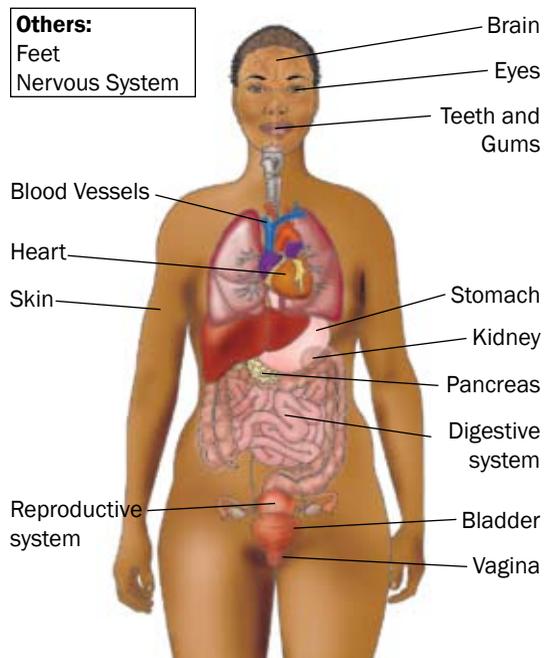
- A fasting plasma glucose test measures your blood glucose level after you have gone at least 8 hours without eating. Experts recommend this test for diagnosis.
- An oral glucose tolerance test measures your blood glucose level after you have gone at least 8 hours without eating and 2 hours after you drink a glucose-containing beverage.
- In a random plasma glucose test, your doctor checks your blood glucose level at any time of the day without regard to when you last ate. Your doctor will also ask about signs and symptoms of diabetes.

If the results of any of these tests show you have diabetes, your doctor will confirm the results by testing you again on a different day.

Health effects of type 2 diabetes

Over time, high blood glucose levels can lead to serious health problems with your eyes, kidneys, nervous system, feet, skin, teeth, and gums. But the most serious problems, especially for women with diabetes, are problems with the heart and blood vessels. Such problems can lead to heart disease, heart attacks, and strokes. Diabetes is a more common cause of heart disease in women than in men. When heart disease occurs in women with diabetes, the damage can be worse than it is in men with diabetes. The good news is that you can prevent or delay serious problems by taking care of your health.

Body Parts That Can Be Affected by Type 2 Diabetes



TYPE 2 DIABETES CAN AFFECT MANY PARTS OF YOUR BODY, BUT YOU CAN DO A LOT TO TAKE CARE OF YOURSELF AND PREVENT HEALTH PROBLEMS.

Fasting* Blood Glucose Numbers (mg/dL) and What They Mean

Blood glucose numbers	What they mean
From 70 to 99	Normal
From 100 to 125	Pre-diabetes, also called impaired fasting glucose
126 and above on more than one test	Diabetes

*Note: Fasting means not eating or drinking for at least 8 hours.

What Women With Type 2 Diabetes Need to Know

Urinary tract infections	<ul style="list-style-type: none"> You might have an increased risk of urinary tract infections. (See the <i>Urologic and Kidney Health</i> chapter on page 251.)
Bladder problems	<ul style="list-style-type: none"> You might have an increased risk of urinary incontinence. (See the <i>Urologic and Kidney Health</i> chapter on page 251.)
Fungus or yeast infections	<ul style="list-style-type: none"> If you are overweight and have high blood glucose levels, you might be at increased risk of fungus or yeast infections. These infections can occur in the vagina and genital area, under the breasts, or under skin folds.
Menstrual cycle	<ul style="list-style-type: none"> Changes in your hormone levels before, during, and after your menstrual cycle can affect your blood glucose levels. Talk with your doctor about how to adjust your medicines and meal plan to keep your blood glucose levels on target.
Birth control	<ul style="list-style-type: none"> Talk with your doctor about which birth control method would be best for you. (See the <i>Reproductive Health</i> chapter on page 153.)
Sexual dysfunction	<ul style="list-style-type: none"> You might experience decreased sexual desire, trouble becoming aroused or having an orgasm, or pain during intercourse.
Pregnancy	<ul style="list-style-type: none"> Meet with your doctor several months before you try to get pregnant. Your doctor can help you make a plan for getting your blood glucose on target before conception. Keeping your blood glucose as close to normal as possible before you get pregnant and during your pregnancy is the most important thing you can do to stay healthy and have a healthy baby. (See the <i>Pregnancy</i> chapter on page 169.)
Breastfeeding	<ul style="list-style-type: none"> Breastfeeding is highly recommended for the babies of women with diabetes. (See the <i>Breastfeeding</i> chapter on page 187.)
Menopause	<ul style="list-style-type: none"> As you start to go into menopause, swings in hormone levels can lead to swings in blood glucose levels. Changes in hormone levels with menopause can lead to lower blood glucose levels. You might need lower doses of your diabetes medicine. (See the <i>Healthy Aging</i> chapter on page 221.)

How to prevent or delay heart disease and other health problems

You can lower your chances of having heart disease and other health problems by managing the ABCs of diabetes.

Goals for the ABCs of Diabetes	
<p>A is for the A1C blood glucose test. The result shows your average blood glucose level for the past 2 to 3 months.</p>	<ul style="list-style-type: none"> • Aim for lower than 7 percent. • Your doctor may ask you to aim for lower than 6 percent. <p>Ask your doctor what goal is best for you. Write your goal here: _____.</p>
<p>B is for Blood pressure.</p>	<ul style="list-style-type: none"> • Aim for lower than 130/80 mmHg.
<p>C is for Cholesterol.</p>	<ul style="list-style-type: none"> • Aim for: LDL cholesterol: lower than 100 mg/dL HDL cholesterol: higher than 50 mg/dL Triglycerides: lower than 150 mg/dL



Questions to Ask Your Doctor About Your A1C Test Result

- What was the result of my latest A1C test?
- What does the result mean in terms of my risk of long-term health problems?
- What can I do to lower my risk of long-term health problems?

Managing diabetes

Taking care of diabetes requires a team approach involving you, your doctor, a diabetes educator, a nurse, a dietitian, other health care providers, and other specialists as needed. You are an important part of the team because you will be making the decisions about your food, physical activity, and other important parts of your daily diabetes care.



Treatments for Type 2 Diabetes

Meal planning	<ul style="list-style-type: none"> • Ask for a personalized meal plan, tailored to your daily routine, from a registered dietitian. • Your dietitian can show you how to include your favorite foods in your meal plan. • Choosing sensible serving sizes will help keep your blood glucose levels on target. • If you want to lose weight, your dietitian can design a meal plan to help you reach your goal. • If you choose to drink alcoholic beverages, talk with your doctor about personalized guidelines. In general, most women with diabetes should limit themselves to one drink a day or less.
Physical activity	<ul style="list-style-type: none"> • Before you start an exercise program, ask your doctor what kinds of physical activity would be best for you. • Moderate aerobic physical activity, at least 3 days a week, can help you reach your target blood glucose levels and your body weight goal, and lower your risk of heart and blood vessel disease. • Resistance exercise, three times a week, is also recommended for women with type 2 diabetes.
Medicines	<ul style="list-style-type: none"> • There are three types of diabetes medicines: pills, insulin (taken by injection or with an insulin pump), and other injectable medicines. • You might need a combination of medicines to control your blood glucose levels. • You also might need medicines for other medical conditions, such as high blood pressure or high cholesterol. Talk with your doctor about birth control methods. • Ask your doctor whether you should take aspirin every day to prevent a heart attack or a stroke.

All about your blood glucose levels

Keeping blood glucose levels on target day to day will help you feel better and help delay or prevent long-term health problems. You can check your own blood glucose levels using a blood glucose meter. Your doctor or diabetes educator can show you how to use a meter. Goals for most women are shown below.

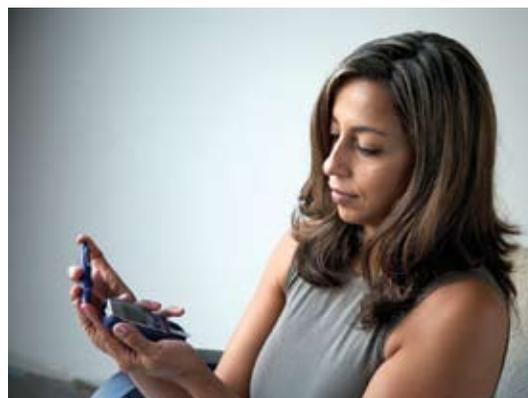
Blood Glucose Targets for Most Women With Diabetes

When	Target levels
Before meals	70 to 130 mg/dL
1 to 2 hours after the start of a meal	Less than 180 mg/dL

No one expects you to reach your blood glucose targets all the time. But the clos-

er you get to your goals, the more you will lower your risk of health problems. Every step helps.

Blood glucose levels rise and fall many times during the day and night. The chart on the next page can help you understand why. Remember—sometimes you won't be able to explain why your blood glucose is up or down.



What Factors Make Blood Glucose Levels Rise or Fall?

<p>Reasons blood glucose levels rise</p> 	<ul style="list-style-type: none"> • Eating a meal or a snack • Eating more food or more carbohydrates than usual • Being physically inactive • Having an infection, surgery, injury, or being ill • Being under stress • Having changes in hormone levels, such as during certain times in your menstrual cycle • Taking certain medicines (side effects) • Taking too little diabetes medicine or not taking your diabetes medicine
<p>Reasons blood glucose levels fall</p> 	<ul style="list-style-type: none"> • Missing or delaying a meal or a snack • Eating less food or fewer carbohydrates than usual • Being physically active • Drinking alcoholic beverages, especially on an empty stomach • Having changes in hormone levels, such as during menopause • Taking certain medicines (side effects) • Taking too much diabetes medicine

Low blood glucose

Low blood glucose, also called hypoglycemia (heyeh-poh-glyeh-SEE-mee-uh), happens when your blood glucose is too low to provide enough energy for your body's activities. Low blood glucose can make you feel shaky, nervous, sweaty, dizzy, or confused.

Low blood glucose can occur

- as a side effect of diabetes medicines that lower blood glucose levels
- if you miss or delay a meal
- if you eat less than usual
- if you're more active than usual

Eating or drinking something with carbohydrates, such as glucose tablets or fruit juice, can bring your blood glucose level back to normal. Ask your doctor how to handle low blood glucose.



Keeping track of your health

You and your health care team will work together to keep track of your health. During your office visits, you'll review your blood glucose records, talk about your medicines, meal plans, a physical activity routine, and other concerns. You can use the following reminder list of diabetes checkups and discuss other things to do to make sure you get the best diabetes care.

Diabetes Checkups

- **A1C test.** Have this blood glucose test at least twice a year. Your result will tell you what your average blood glucose level was for the past 2 to 3 months.
- **Blood pressure.** Have your blood pressure checked every time you visit your doctor.
- **Blood fat (lipid) lab tests.** Get a blood test at least once a year to check your cholesterol and other blood fats. These test results will help you plan how to prevent heart disease, heart attack, and stroke.
- **Kidney function tests.** Get a urine test once a year to check for protein. Get a blood test at least once a year to measure the amount of creatinine (kree-AT-uh-noon). The results of these tests will tell you how well your kidneys are working.
- **Dilated eye exam.** See an eye care professional once a year for a complete eye exam.
- **Dental exam.** See your dentist twice a year for a cleaning and checkup.
- **Foot exam.** Ask your health care provider to check your feet at least once a year to make sure your foot nerves and your blood circulation are OK.
- **Flu shot.** Get a flu shot each year.
- **Pneumonia (noo-MOH-nyuh) vaccine.** Get a pneumonia vaccination. If you're older than 64 and your vaccine was more than 5 years ago, get another one.

Be sure to ask your doctor or diabetes educator if you have questions about what to do during these special times:

When you're ill. Illness can raise blood glucose levels. Your doctor may suggest you check your blood glucose levels more often at these times. Ask your doctor for other special instructions about taking your diabetes medicines when you're ill.

When you travel. When you travel, always carry the following with you:

- your diabetes medicines
- your diabetes supplies for checking your blood glucose
- food for snacks, a meal, and for treating low blood glucose

Never put your diabetes medicines or supplies in your checked baggage.

When you change time zones. If you'll be changing time zones, meet with your doctor or diabetes educator several weeks ahead of time to learn how to adjust your diabetes medicines, especially if you take insulin.



When you take a long car trip. If you take diabetes medicines that can cause low blood glucose, check your blood glucose before you drive to make sure it's in the normal range. Stop and check your blood glucose every 2 hours. If your blood glucose is low, eat or drink something. Low blood glucose can be dangerous when you're driving because you can pass out.

Diabetes and your emotions

Sometimes having a chronic disease like type 2 diabetes leads to emotional upset. You might feel angry, afraid, guilty, or overwhelmed. It's normal to feel this way. Perhaps you're the one in your family who takes care of everyone else. Maybe you worry about how you'll have time to take care of yourself.

Depression, a serious medical condition that's more than feeling sad (see the *Mental Health* chapter on page 207), is common in women with diabetes. Depression can get in the way of taking care of yourself. If you're depressed, talk with your doctor. Treatment can help.

You can learn how to cope with having diabetes, manage stress, and find support. Share your concerns with your doctor.



Some women enjoy going to support groups where they can talk with others who have diabetes. Or you can get help from family and friends.

Paying for Diabetes Care

If you're worried about the cost of your diabetes care and need financial assistance, ask your doctor for help in finding resources. Medicare helps pay for diabetes equipment, supplies, and other services. Call (800) MEDICARE for more information.

Living well with type 2 diabetes

You can learn how to live a full and active life with diabetes. Taking care of yourself can help delay or prevent diabetes-related health problems. Your health care team can provide care and guidance during all of the stages of your life. ■

One Woman's Story

In 2007, I was on top of the world for a change with respect to my health. With a new focus on health once I hit age 40 and knowledge of my family history of high blood pressure, cancer, and diabetes, I knew I needed to make some life changes. I didn't want to struggle with those same health problems. I paid attention to what I was eating and was physically active four to five times a week. I was even able to stop taking my blood pressure medicine. I thought things were going great.

Then at my annual physical, the doctor ran some blood tests and scheduled me to come back in a few days. I went back, expecting to get an all-clear. The last thing I expected to hear was that I now have type 2 diabetes. I was in complete shock! I said to the doctor, "What? That can't be right. I've been doing all the right things." I went into shutdown mode mentally. The words just kept echoing in my head. The doctor kept talking as if this was not a life-changing statement, and there was no sense of concern on her part. I was given a monitor and told I could use it or not and wasn't given very much more information except to stay away from potatoes, rice, and starches. She never mentioned working with a dietitian, following a healthy lifestyle regimen, or finding support groups. I left the office feeling like I had been punched in the stomach. I called my mom, who also has type 2 diabetes, and she was a great help to me. She told me to get on the Internet and seek out support groups in my area that would be able to help me navigate life with diabetes.

I am fortunate that I am able to control my diabetes with a personalized eating plan and physical activity. I do not have to take insulin at this point. It has been a long journey, but I am moving through this transition in a positive direction with a positive outlook. And I am taking much-needed steps to find a new doctor to help me continue to control my diabetes—someone who can inform me and support me in my efforts.

Sandra

Las Vegas, Nevada

**I called my mom,
who also has type
2 diabetes, and
she was a great
help to me.**

For More Information...

Office on Women's Health, HHS

200 Independence Ave SW, Room 712E
Washington, DC 20201

Web site: www.womenshealth.gov/faq/diabetes.htm

Phone number: (800) 994-9662,
(888) 220-5446 TDD

Division of Diabetes Translation, CDC

4770 Buford Highway NE, MS K-10
Atlanta, GA 30341-3717

Web site: www.cdc.gov/diabetes

Phone number: (800) 232-4636,
(888) 232-6348 TTY

National Diabetes Education Program, NIH

1 Diabetes Way

Bethesda, MD 20814-9692

Web site: www.ndep.nih.gov

Phone number: (888) 693-6337

National Diabetes Information Clearinghouse, NIH

1 Information Way

Bethesda, MD 20892-3560

Web site: www.diabetes.niddk.nih.gov

Phone number: (800) 860-8747

Office of Women's Health, FDA

5600 Fishers Ln
Rockville, MD 20857

Web site: www.fda.gov/womens
www.fda.gov/womens/taketimetocare/diabetes

Phone number: (888) 463-6332

American Association of Diabetes Educators

200 W Madison St, Suite 800
Chicago, IL 60606

Web site: www.diabeteseducator.org

Phone number: (800) 832-6874 to find a
diabetes educator

American Diabetes Association

1701 N Beauregard St

Alexandria, VA 22311

Web site: www.diabetes.org

Phone number: (800) 342-2383

American Dietetic Association

120 S Riverside Plaza, Suite 2000

Chicago, IL 60606-6995

Web site: www.eatright.org

Phone number: (800) 877-1600 ext.5000