Am I at Risk for type 2 Diabetes?

Taking Steps to Lower the Risk of Getting Diabetes
AM I AT RISK FOR TYPE 2 DIABETES?

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Taking Steps to Lower the Risk of Getting Diabetes

What is type 2 diabetes?

Diabetes is a disease in which blood glucose levels are above normal. People with diabetes have problems converting food to energy. After a meal, food is broken down into a sugar called glucose, which is carried by the blood to cells throughout the body. Cells use the hormone insulin, made in the pancreas, to help them process blood glucose into energy.

People develop type 2 diabetes because the cells in the muscles, liver, and fat do not use insulin properly. Eventually, the pancreas cannot make enough insulin for the body’s needs. As a result, the amount of glucose in the blood increases while the cells are starved of energy. Over the years, high blood glucose damages nerves and blood vessels, leading to complications such as heart disease, stroke, blindness, kidney disease, nerve problems, gum infections, and amputation.

How can type 2 diabetes be prevented?

Although people with diabetes can prevent or delay complications by keeping blood glucose levels close to normal, preventing or delaying the development of type 2 diabetes in the first place is even better. The results of a major federally funded study, the Diabetes Prevention Program (DPP), show how to do so.

This study of 3,234 people at high risk for diabetes showed that moderate diet and exercise resulting in a 5- to 7-percent weight loss can delay and possibly prevent type 2 diabetes.

Study participants were overweight and had higher than normal levels of blood glucose, a condition called pre-diabetes (impaired glucose tolerance). Both pre-diabetes and obesity are strong risk factors for type 2 diabetes.
Am I at Risk for Type 2 Diabetes?

Because of the high risk among some minority groups, about half of the DPP participants were African American, American Indian, Asian American, Pacific Islander, or Hispanic American/Latino.

The DPP tested two approaches to preventing diabetes: a healthy eating and exercise program (lifestyle changes), and the diabetes drug metformin. People in the lifestyle modification group exercised about 30 minutes a day, 5 days a week (usually by walking), and lowered their intake of fat and calories. Those who took the diabetes drug metformin received standard information on exercise and diet. A third group received only standard information on exercise and diet.

The results showed that people in the lifestyle modification group reduced their risk of getting type 2 diabetes by 58 percent. Average weight loss in the first year of the study was 15 pounds. Lifestyle modification was even more effective in those 60 and older. They reduced their risk by 71 percent. People receiving metformin reduced their risk by 31 percent.

What are the signs and symptoms of type 2 diabetes?

Many people have no signs or symptoms. Symptoms can also be so mild that you might not even notice them. Nearly six million people in the United States have type 2 diabetes and do not know it.

Here is what to look for:

• increased thirst
• increased hunger
• fatigue
• increased urination, especially at night
• weight loss
• blurred vision
• sores that do not heal
Types of diabetes

The three main kinds of diabetes are type 1, type 2, and gestational diabetes.

Type 1 diabetes
Type 1 diabetes, formerly called juvenile diabetes or insulin-dependent diabetes, is usually first diagnosed in children, teenagers, or young adults. In this form of diabetes, the beta cells of the pancreas no longer make insulin because the body’s immune system has attacked and destroyed them. Treatment for type 1 diabetes includes taking insulin shots or using an insulin pump, making wise food choices, exercising regularly, taking aspirin daily (for some), and controlling blood pressure and cholesterol.

Type 2 diabetes
Type 2 diabetes, formerly called adult-onset or noninsulin-dependent diabetes, is the most common form of diabetes. People can develop type 2 diabetes at any age, even during childhood. This form of diabetes usually begins with insulin resistance, a condition in which fat, muscle, and liver cells do not use insulin properly. At first, the pancreas keeps up with the added demand by producing more insulin. In time, however, it loses the ability to secrete enough insulin in response to meals. Being overweight and inactive increases the chances of developing type 2 diabetes. Treatment includes taking diabetes medicines, making wise food choices, exercising regularly, taking aspirin daily, and controlling blood pressure and cholesterol.

Gestational diabetes
Some women develop gestational diabetes during the late stages of pregnancy. Although this form of diabetes usually goes away after the baby is born, a woman who has had it is more likely to develop type 2 diabetes later in life. Gestational diabetes is caused by the hormones of pregnancy or a shortage of insulin.
Sometimes people have symptoms but do not suspect diabetes. They delay scheduling a checkup because they do not feel sick. Many people do not find out they have the disease until they have diabetes complications, such as blurry vision or heart trouble. It is important to find out early if you have diabetes because treatment can prevent damage to the body from diabetes.

Should I be tested for diabetes?

Anyone 45 years old or older should consider getting tested for diabetes. If you are 45 or older and overweight (see BMI chart on pages 10 and 11), it is strongly recommended that you get tested. If you are younger than 45, overweight, and have one or more of the risk factors on page 5, you should consider testing. Ask your doctor for a fasting blood glucose test or an oral glucose tolerance test.

Even if your blood glucose level is normal and you have no risk factors, if you are over 45, you may need to remind your doctor to check your blood glucose again in 3 years. If your blood glucose is higher than normal but lower than the diabetes range (what we now call pre-diabetes), have your blood glucose checked in 1 to 2 years. As you get older, your chances of getting type 2 diabetes rise. You are also more likely to get type 2 diabetes if you have one or more of the risk factors on page 5.
What does it mean to have pre-diabetes?

It means you are at risk for getting type 2 diabetes and heart disease. The good news is if you have pre-diabetes you can reduce the risk of getting diabetes and even return to normal blood glucose levels. With modest weight loss and moderate physical activity, you can delay or prevent type 2 diabetes.

Besides age and overweight, what other factors increase my risk for type 2 diabetes?

To find out your risk for type 2 diabetes, check each item that applies to you.

- I have a parent, brother, or sister with diabetes.
- My family background is African American, American Indian, Asian American, Pacific Islander, or Hispanic American/Latino.
- I have had gestational diabetes, or I gave birth to at least one baby weighing more than 9 pounds.
- My blood pressure is 140/90 or higher, or I have been told that I have high blood pressure.
- My cholesterol levels are not normal. My HDL cholesterol (“good” cholesterol) is 35 or lower, or my triglyceride level is 250 or higher.
- I am fairly inactive. I exercise fewer than three times a week.
Am I at Risk for Type 2 Diabetes?

What can I do about my risk?

You can do a lot to lower your chances of getting diabetes. Exercising regularly, reducing fat and calorie intake, and losing weight can all help you reduce your risk of developing type 2 diabetes. Lowering blood pressure and cholesterol levels also help you stay healthy.

If you are overweight

Then take these steps:

- Reach and maintain a reasonable body weight (see page 8).
- Make wise food choices most of the time (see page 9).
- Be physically active every day (see page 9).

If you checked

- I am fairly inactive.

Then take this step:

- Be physically active every day (see page 9).

If you checked

- My blood pressure is 140/90 or higher.

Then take these steps:

- Reach and maintain a reasonable body weight (see page 8).
- Make wise food choices most of the time (see page 9).
- Reduce your intake of salt and alcohol.
- Be physically active everyday (see page 9).
- Talk to your doctor about whether you need medicine to control your blood pressure (see page 12).
If you checked

❑ My cholesterol levels are not normal.

Then take these steps:

• Make wise food choices most of the time (see page 9).
• Be physically active every day (see page 9).
• Talk to your doctor about whether you need medicine to control your cholesterol levels (see page 12).

Doing my part: Getting started

Making big changes in your life is hard, especially if you are faced with more than one change. You can make it easier by taking these steps:

• Make a plan to change behavior.
• Decide exactly what you will do and when you will do it.
• Plan what you need to get ready.
• Think about what might prevent you from reaching your goals.
• Find family and friends who will support and encourage you.
• Decide how you will reward yourself when you do what you have planned.

Your doctor, a dietitian, or a counselor can help you make a plan. Here are some of the areas you may wish to change to reduce your risk of diabetes.
Reach and maintain a reasonable body weight

Your weight affects your health in many ways. Being overweight can keep your body from making and using insulin properly. It can also cause high blood pressure. The DPP showed that losing even a few pounds can help reduce your risk of developing type 2 diabetes because it helps your body use insulin more effectively. In the DPP, people who lost between 5 and 7 percent of their body weight significantly reduced their risk of type 2 diabetes. For example, if you weigh 200 pounds, losing only 10 pounds could make a difference.

Body mass index (BMI) is a measure of body weight relative to height. You can use BMI to see whether you are underweight, normal weight, overweight, or obese. Use the table on pages 10 and 11 to find your BMI.

• Find your height in the left-hand column.
• Move across in the same row to the number closest to your weight.
• The number at the top of that column is your BMI. Check the word above your BMI to see whether you are normal weight, overweight, or obese.

If you are overweight or obese, choose sensible ways to get in shape:

• Avoid crash diets. Instead, eat less of the foods you usually have. Limit the amount of fat you eat.
• Increase your physical activity. Aim for at least 30 minutes of exercise most days of the week. (See page 9 for easy suggestions.)
• Set a reasonable weight-loss goal, such as losing 1 pound a week. Aim for a long-term goal of losing 5 to 7 percent of your total body weight.
Taking Steps to Lower the Risk of Getting Diabetes

Make wise food choices most of the time
What you eat has a big impact on your health. By making wise food choices, you can help control your body weight, blood pressure, and cholesterol.

• Take a hard look at the serving sizes of the foods you eat. Reduce serving sizes of main courses (such as meat), desserts, and foods high in fat. Increase the amount of fruits and vegetables.

• Limit your fat intake to about 25 percent of your total calories. For example, if your food choices add up to about 2,000 calories a day, try to eat no more than 56 grams of fat. Your doctor or a dietitian can help you figure out how much fat to have. You can check food labels for fat content too.

• You may also wish to reduce the number of calories you have each day. People in the DPP lifestyle modification group lowered their daily calorie total by an average of about 450 calories. Your doctor or dietitian can help you with a meal plan that emphasizes weight loss.

• Keep a food and exercise log. Write down what you eat, how much you exercise—anything that helps keep you on track.

• When you meet your goal, reward yourself with a nonfood item or activity, like watching a movie.

Be physically active every day
Regular exercise tackles several risk factors at once. It helps you lose weight, keeps your cholesterol and blood pressure under control, and helps your body use insulin. People in the DPP who were physically active for 30 minutes a day 5 days a week reduced their risk of type 2 diabetes. Many chose brisk walking for exercise.

If you are not very active, you should start slowly, talking with your doctor first about what kinds of exercise would be safe for you. Make a plan to increase your activity level toward the goal of being active at least 30 minutes a day most days of the week.

Continued on Page 12
## Body Mass Index Table

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Source: Adapted from *Clinical Guidelines on the Identification, Evaluation, and Treatment of*
## Extreme Obesity

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*Overweight and Obesity in Adults: The Evidence Report.*
Am I at Risk for Type 2 Diabetes?

Choose activities you enjoy. Here are some ways to work extra activity into your daily routine:

• Take the stairs rather than an elevator or escalator.
• Park at the far end of the lot and walk.
• Get off the bus a few stops early and walk the rest of the way.
• Walk or bicycle instead of drive whenever you can.

Take your prescribed medications

Some people need medication to help control their blood pressure or cholesterol levels. If you do, take your medicines as directed. Ask your doctor whether there are any medicines you can take to prevent type 2 diabetes.

Hope through research

We now know that many people can prevent type 2 diabetes through weight loss, regular exercise, and lowering their intake of fat and calories. Researchers are intensively studying the genetic and environmental factors that underlie the susceptibility to obesity, pre-diabetes, and diabetes. As they learn more about the molecular events that lead to diabetes, they will develop ways to prevent and cure the different stages of this disease. People with diabetes and those at risk for it now have easier access to clinical trials that test promising new approaches to treatment and prevention. For information about current studies, see http://ClinicalTrials.gov.
National Diabetes Information Clearinghouse

1 Information Way
Bethesda, MD  20892–3560
Phone:  1–800–860–8747 or (301) 654–3327
Fax:  (301) 907–8906
Email:  ndic@info.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 under 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. 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 booklet was reviewed by David G. Marrero, Ph.D., Indiana University School of Medicine, Diabetes Research and Training Center; and Michael L. Parchman, M.D., M.P.H., Associate Professor, Department of Family and Community Medicine, University of Texas Health Sciences Center.

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This booklet is also available at www.niddk.nih.gov under “Health Information.”