

# Prediabetes

## Introduction

Prediabetes is a condition in which your blood sugar level is higher than normal, but not high enough to be classified as type 2 diabetes.

Prediabetes shouldn't be taken lightly. It means that you're at risk of developing type 2 diabetes, heart disease and stroke.

An estimated 41 million U.S. adults ages 40 to 74 have prediabetes, according to the Centers for Disease Control and Prevention. And the condition isn't a concern only for adults. The American Academy of Pediatrics reports that one of every 10 males and one of every 25 females ages 12 to 19 have prediabetes.

Prediabetes doesn't have to become type 2 diabetes. With healthy lifestyle changes, you can bring your blood sugar back to normal levels.

## Signs and symptoms

Often, prediabetes has no signs or symptoms. But it's important to watch for the classic red flags of type 2 diabetes — excessive thirst and frequent urination.

Other signs and symptoms of type 2 diabetes may include:

- Constant hunger
- Unexplained weight loss
- Weight gain
- Flu-like symptoms, including weakness and fatigue
- Blurred vision
- Slow healing of cuts or bruises
- Tingling or loss of feeling in hands or feet
- Recurring gum or skin infections
- Recurring vaginal or bladder infections

## Causes

To understand prediabetes, first you have to understand how sugar (glucose) is normally processed in your body.

Glucose is vital to your health because it's a main source of energy for the cells that make up your muscles and tissues. Glucose comes from two major sources: the food you eat and your liver. During digestion, glucose is absorbed into your bloodstream. Normally, glucose then enters your body's cells with the help of insulin.

The hormone insulin comes from your pancreas. When you eat, your pancreas secretes insulin into your bloodstream. As insulin circulates, it acts like a key, unlocking microscopic doors that allow glucose to enter your cells. Insulin lowers the amount of sugar in your bloodstream and prevents it from reaching high levels. As your blood sugar level drops, so does the secretion of insulin from your pancreas.

Your liver acts as a glucose storage and manufacturing center. When your insulin levels are low — when you haven't eaten in a while, for example — your liver releases the stored glucose into your bloodstream to keep your glucose level within a normal range.

If you have prediabetes, this process is beginning to work improperly. Instead of being transported into your cells, a small amount of glucose builds up in your bloodstream. This occurs when your cells become resistant to the action of insulin. Exactly why the cells become resistant to insulin's effects is uncertain, although excess weight and fatty tissue seem to be important factors. Most people with prediabetes are overweight or obese and get little, if any exercise.

### **Risk factors**

The same factors that increase the risk of developing type 2 diabetes increase the risk of developing prediabetes, including:

- **Weight.** Being overweight or obese is one of the most common risk factors for prediabetes. The more fatty tissue you have, the more resistant your muscle and tissue cells become to your own insulin. This is especially true if your excess weight is concentrated around your abdomen and your body is an apple shape rather than a pear shape, where the weight is mostly on the hips and thighs.
- **Inactivity.** The less active you are, the greater your risk of prediabetes. Physical activity helps control your weight, uses up glucose as energy, and makes your cells more sensitive to insulin. Exercise also helps build muscle mass. That's important because most of the glucose in your blood is absorbed by your muscles and burns as energy.
- **Family history.** Your chance of developing prediabetes increases if you have a parent or sibling with type 2 diabetes.
- **Age.** The risk of prediabetes increases as you grow older, especially after age 45. Part of the reason is that as people grow older, they tend to become less physically active, lose muscle mass and gain weight. But diabetes is also increasing dramatically among children, adolescents and younger adults.
- **Race.** Although it's unclear why, people of certain races are more likely to develop diabetes than others. More than 6 percent of the general population has diagnosed diabetes, according to the American Diabetes Association. But that rate doubles for blacks and Hispanics and more than doubles for American

Indians. Among the Pima Indians of Arizona, half of all adults have type 2 diabetes — one of the highest rates of diabetes in the world.

- **Gestational diabetes.** If you developed gestational diabetes when you were pregnant, your risk of type 2 diabetes is greater. If you gave birth to a baby weighing more than 9 pounds, you're also at risk of type 2 diabetes.
- **Depression.** Depression seems to increase the risk of type 2 diabetes, possibly because people with depression often gain weight and are inactive.

## Screening and diagnosis

Many people find out they have prediabetes through blood tests done for another condition or as part of a routine exam. The American Diabetes Association recommends blood glucose screening for everyone at age 45. If you're overweight with one or more additional risk factors for type 2 diabetes, ask your doctor about earlier testing.

Two blood tests can be used to determine whether you have prediabetes.

- **Fasting blood glucose test.** The amount of sugar in your bloodstream naturally fluctuates within a narrow range. Your blood sugar level is typically highest after a meal and lowest after an overnight fast. The preferred way to test your blood sugar is after you've fasted overnight or for at least eight hours. Blood is drawn from a vein and sent to a lab for evaluation.

A fasting blood sugar level under 100 milligrams of glucose per deciliter of blood (mg/dL) is considered normal. If your blood sugar level is 100 to 125mg/dL, you have prediabetes — also called impaired fasting glucose (IFG).

- **Oral glucose tolerance test.** An oral glucose tolerance test requires that you visit a lab or your doctor's office after at least an eight-hour fast. There you will drink about 8 ounces of a sugary liquid. Your blood sugar level is measured before you drink the liquid, then after one hour and again after two hours. If your blood sugar reaches 140 to 199 mg/dL after two hours, you have impaired glucose tolerance (IGT) — another prediabetes condition.

## Prevention

Healthy lifestyle choices can help you prevent prediabetes and its progression to type 2 diabetes. Even if diabetes runs in your family, diet and exercise can help you prevent the disease.

- **Eat healthy foods.** Choose foods low in fat and calories. Focus on fruits, vegetables and whole grains. Strive for variety to help you achieve your goals without compromising taste or nutrition.
- **Get more physical activity.** Aim for 30 minutes of moderate physical activity a day. Take a brisk daily walk. Ride your bike. Swim laps. If you can't fit in a long workout, break it up into smaller sessions spread throughout the day.
- **Lose excess pounds.** If you're overweight, the American Diabetes Association says that losing just 5 percent of your body weight can improve blood sugar control and reduce the risk of cardiovascular disease. To keep your weight in a healthy range, focus on permanent changes to your eating and exercise habits. Motivate yourself by remembering the benefits of losing weight, such as a healthier heart, more energy and improved self-esteem.

Sometimes medication is an option as well. Oral diabetes drugs such as metformin (Glucophage) and rosiglitazone (Avandia) may reduce the risk of type 2 diabetes — but healthy lifestyle choices remain essential.

Credit – Mayo Clinic Foundation