DIABETES

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Diabetes happens when your body isn't able to take up sugar (glucose) into its cells and use it for energy. This results in a buildup of extra sugar in your bloodstream.

Poorly controlled diabetes can lead to serious consequences, causing damage to a wide range of your body's organs and tissues – including your heart, kidneys, eyes and nerves.

The process of digestion includes breaking down the food you eat into various different nutrient sources. When you eat carbohydrates (for example, bread, rice, pasta), your body breaks this down into sugar (glucose). When glucose is in your bloodstream, it needs help – a "key" – to get into its final destination where it's used, which is inside your body's cells (cells make up your body's tissues and organs). This help or "key" is insulin.

Insulin is a hormone made by your pancreas, an organ located behind your stomach. Your pancreas releases insulin into your bloodstream. Insulin acts as the “key” that unlocks the cell wall “door,” which allows glucose to enter your body’s cells. Glucose provides the “fuel” or energy tissues and organs need to properly function.

If you have diabetes, your pancreas doesn’t make any insulin or enough insulin or your pancreas makes insulin but your body’s cells don’t respond to it and can’t use it as it normally should.

If glucose can’t get into our body’s cells, it stays in our bloodstream and our blood glucose level rises.

What are the different types of diabetes?

The types of diabetes are:

- **Type 1 diabetes:** This type is an autoimmune disease, meaning your body attacks itself. In this case, the insulin-producing cells in your pancreas are destroyed. Up to 10% of people who have diabetes have Type 1. It’s usually diagnosed in children and young adults (but can develop at any age). It was once better known as “juvenile” diabetes. People with Type 1 diabetes need to take insulin every day. This is why it is also called insulin-dependent diabetes.
- **Type 2 diabetes:** With this type, your body either doesn’t make enough insulin or your body’s cells don’t respond normally to the insulin. This is the most common type of diabetes. Up to 95% of people with diabetes have Type 2. It usually occurs in middle-aged and older people. Other common names for Type 2 include adult-onset diabetes and insulin-resistant diabetes. Your parents or grandparents may have called it “having a touch of sugar.”

- **Prediabetes:** This type is the stage before Type 2 diabetes. Your blood glucose levels are higher than normal but not high enough to be officially diagnosed with Type 2 diabetes.
- **Gestational diabetes:** This type develops in some women during their pregnancy. Gestational diabetes usually goes away after pregnancy. However, if you have gestational diabetes you're at higher risk of developing Type 2 diabetes later on in life.

Risk factors diabetes

- Having a family history (parent or sibling) of Type 1 diabetes.
- Injury to the pancreas (such as by infection, tumor, surgery or accident).
- Presence of autoantibodies (antibodies that mistakenly attack your own body's tissues or organs).
- Physical stress (such as surgery or illness).
- Exposure to illnesses caused by viruses.
- Family history (parent or sibling) of prediabetes or Type 2 diabetes.
- Being African-American, Hispanic, Native American, Asian-American race or Pacific Islander.
- Being overweight.
- Having high blood pressure.
- Having low HDL cholesterol (the "good" cholesterol) and high triglyceride level.
- Being physically inactive.
- Being age 45 or older.
- Having gestational diabetes or giving birth to a baby weighing more than 9 pounds.
- Having polycystic ovary syndrome.

- Having a history of heart disease or stroke.
- Being a smoker.
- Family history (parent or sibling) of prediabetes or Type 2 diabetes.
- Being African-American, Hispanic, Native American or Asian-American.
- Being overweight before your pregnancy.
- Being over 25 years of age.

What causes diabetes?

The cause of diabetes, regardless of the type, is having too much glucose circulating in your bloodstream. However, the reason why your blood glucose levels are high differs depending on the type of diabetes.

- **Causes of Type 1 diabetes:** This is an immune system disease. Your body attacks and destroys insulin-producing cells in your pancreas. Without insulin to allow glucose to enter your cells, glucose builds up in your bloodstream. Genes may also play a role in some patients. Also, a virus may trigger the immune system attack.
- **Cause of Type 2 diabetes and prediabetes:** Your body's cells don't allow insulin to work as it should to let glucose into its cells. Your body's cells have become resistant

to insulin. Your pancreas can't keep up and make enough insulin to overcome this resistance. Glucose levels rise in your bloodstream.

- **Gestational diabetes:** Hormones produced by the placenta during your pregnancy make your body's cells more resistant to insulin. Your pancreas can't make enough insulin to overcome this resistance. Too much glucose remains in your bloodstream.

What are the symptoms of diabetes?

Symptoms of diabetes include:

- Increased thirst.
- Weak, tired feeling.
- Blurred vision.
- Numbness or tingling in the hands or feet.
- Slow-healing sores or cuts.
- Unplanned weight loss.
- Frequent urination.
- Frequent unexplained infections.
- Dry mouth.

Other symptoms

- In women: Dry and itchy skin, and frequent yeast infections or urinary tract infections.
- In men: Decreased sex drive, erectile dysfunction, decreased muscle strength.

Type 1 diabetes symptoms: Symptoms can develop quickly – over a few weeks or months. Symptoms begin when you're young – as a child, teen or young adult. Additional symptoms include nausea, vomiting or stomach pains and yeast infections or urinary tract infections.

Type 2 diabetes and prediabetes symptoms: You may not have any symptoms at all or may not notice them since they develop slowly over several years. Symptoms usually begin to develop when you're an adult, but prediabetes and Type 2 diabetes is on the rise in all age groups.

Gestational diabetes: You typically will not notice symptoms. Your obstetrician will test you for gestational diabetes between 24 and 28 weeks of your pregnancy.

What are the complications of diabetes?

If your blood glucose level remains high over a long period of time, your body's tissues and organs can be seriously damaged. Some complications can be life-threatening over time.

Complications include:

- Cardiovascular issues including coronary artery disease, chest pain, heart attack, stroke, high blood pressure, high cholesterol, atherosclerosis (narrowing of the arteries).
- Nerve damage (neuropathy) that causes numbing and tingling that starts at toes or fingers then spreads.
- Kidney damage (nephropathy) that can lead to kidney failure or the need for dialysis or transplant.
- Eye damage (retinopathy) that can lead to blindness; cataracts, glaucoma.
- Foot damage including nerve damage, poor blood flow and poor healing of cuts and sores.
- Skin infections.
- Erectile dysfunction.
- Hearing loss.
- Depression.
- Dementia.
- Dental problems.

Complications of gestational diabetes:

In the mother: Preeclampsia (high blood pressure, excess protein in urine, leg/feet swelling), risk of gestational diabetes during future pregnancies and risk of diabetes later in life.

In the newborn: Higher-than-normal birth weight, low blood sugar (hypoglycemia), higher risk of developing Type 2 diabetes over time and death shortly after birth.

How is diabetes diagnosed?

Diabetes is diagnosed and managed by checking your glucose level in a blood test. There are three tests that can measure your blood glucose level: fasting glucose test, random glucose test and A1c test.

- **Fasting plasma glucose test:** This test is best done in the morning after an eight hour fast (nothing to eat or drink except sips of water).
- **Random plasma glucose test:** This test can be done any time without the need to fast.
- **A1c test:** This test, also called HbA1C or glycated hemoglobin test, provides your average blood glucose level over the past two to three months. This test measures the amount of glucose attached to hemoglobin, the protein in your red blood cells that carries oxygen. You don't need to fast before this test.
- **Oral glucose tolerance test:** In this test, blood glucose level is first measured after an overnight fast. Then you drink a sugary drink. Your blood glucose level is then checked at hours one, two and three.

DIAGNOSIS AND TESTS

How is diabetes managed?

Diabetes affects your whole body. To best manage diabetes, you'll need to take steps to keep your risk factors under control and within the normal range, including:

- Keep your blood glucose levels as near to normal as possible by following a diet plan, taking prescribed medication and increasing your activity level.
- Maintain your blood cholesterol (HDL and LDL levels) and triglyceride levels as near the normal ranges as possible.
- Control your blood pressure. Your blood pressure should not be over 140/90 mmHg.

You hold the keys to managing your diabetes by:

- Planning what you eat and following a healthy meal plan. Follow a Mediterranean diet (vegetables, whole grains, beans, fruits, healthy fats, low sugar) or Dash diet. These diets are high in nutrition and fiber and low in fats and calories. See a registered dietitian for help understanding nutrition and meal planning.
- Exercising regularly. Try to exercise at least 30 minutes most days of the week. Walk, swim or find some activity you enjoy.
- Losing weight if you are overweight. Work with your healthcare team to develop a weight-loss plan.
- Taking medication and insulin, if prescribed, and closely following recommendations on how and when to take it.
- Monitoring your blood glucose and blood pressure levels at home.
- Keeping your appointments with your healthcare providers and having laboratory tests completed as ordered by your doctor.
- Quitting smoking (if you smoke).
- How do I check my blood glucose level? Why is this important?
- Checking your blood glucose level is important because the results help guide decisions about what to eat, your physical activity and any needed medication and insulin adjustments or additions.
- The most common way to check your blood glucose level is with a blood glucose meter. With this test, you prick the side of your finger, apply the drop of blood to a test strip, insert the strip into the meter and the meter will show your glucose level at that moment in time. Your healthcare provider will tell you how often you'll need to check your glucose level.