

DID YOU KNOW?

The term diabetes mellitus comes from the Greek word diabetes meaning “to pass through” (referring to frequent urination) and the Latin word mellitus meaning “honeyed” or “sweet,” describing the sweet taste of urine in undiagnosed individuals.

Chapter 1

Introducing Diabetes

You’ve probably heard of diabetes, but you may not be exactly sure what it is. If so, you’ve come to the right chapter. Here, you find a definition of diabetes, information on the history of diabetes, a breakdown of the different types of diabetes, and the symptoms of the disease. You also get info on how diabetes is diagnosed and whether it can be cured.

What Is Diabetes?

Diabetes mellitus, usually referred to just as diabetes, is a chronic health condition characterized by persistently high blood *glucose* (sugar) levels. The regulation of sugar, in the form of glucose, in blood is normally controlled by the hormone insulin, which acts as a chemical messenger to optimize the transport, processing, and transfer of glucose from food sources to enter the body's cells to provide energy. Diabetes occurs either because the pancreas is not producing enough insulin or because the body's cells aren't responding effectively to the insulin that the pancreas is producing.

When this system of management fails, glucose builds up in the bloodstream. Over time, this buildup can lead to serious damage to various organs and systems throughout the body, including the heart, blood vessels, nerves, kidneys, and eyes. Managing diabetes typically involves lifestyle adjustments, and often medication, to help keep blood sugar levels within a healthy range and prevent complications.

What Is the History of Diabetes?

Diabetes has been recognized since ancient times, with some of the earliest references so far discovered appearing in the Ebers Papyrus from

Egypt dating back to 1550 BCE, which described symptoms like excessive urination. Ancient Indian physicians noted the sweet taste of diabetic urine and called the condition *madhumeha* (“honey urine”). Early treatments were largely ineffective, and a diagnosis of diabetes, especially type 1 diabetes, was usually fatal.

The modern understanding of diabetes began in the late 19th and early 20th centuries. In 1889, researchers demonstrated the role of the pancreas in diabetes. By the 1920s, the hormone insulin was identified and isolated. Researchers successfully extracted and purified insulin for clinical use, first treating a 14-year-old boy in 1922. This transformed diabetes from a fatal disease to a manageable condition. Since then, advances in blood glucose monitoring, new medications, and insulin delivery systems have dramatically improved care and quality of life for people with diabetes.

What Are the Different Types of Diabetes?

There are several types of diabetes:

- » **Type 1 diabetes:** Type 1 diabetes usually develops in children or young adults when the immune system destroys insulin-producing cells, leading to little or no insulin. Type 1 diabetes isn't linked to lifestyle, so it isn't

possible to prevent it, although if you have type 1 diabetes, it's important to maintain a healthy lifestyle to reduce the likelihood of complications.

- » **Type 2 diabetes:** More common in adults, type 2 diabetes occurs when the body can't use insulin properly or doesn't make enough of it. This type of diabetes is often linked to lifestyle and genetics.
- » **Gestational diabetes:** Gestational diabetes appears during pregnancy and typically goes away after childbirth, but it increases the risk of type 2 diabetes later in life.
- » **Maturity-onset diabetes of the young (MODY):** MODY is less common than type 1, type 2, and gestational diabetes. It's linked to specific genetic factors or a slower autoimmune process.
- » **Latent autoimmune diabetes in adults (LADA):** Like MODY, LADA is less common than type 1, type 2, and gestational diabetes. It, too, is linked to specific genetic factors or a slower autoimmune process.
- » **Secondary diabetes:** Secondary diabetes is caused by other medical conditions or medications (for example, diseases of the pancreas or drugs called steroids). It's less common than type 1, type 2, or gestational diabetes, and it may be possible to reverse it if the underlying condition is treated or the medication that caused it can be stopped.

Each type of diabetes has different causes and treatments, but all involve issues with blood sugar regulation.

What Is the Difference between Type 1 and Type 2 Diabetes?

Type 1 diabetes is an autoimmune disorder in which the body's immune system mistakenly attacks and destroys the insulin-producing beta cells in the pancreas. It's thought to sometimes be triggered by a viral infection. As a result, people with type 1 diabetes generally can't produce insulin and must take insulin every day to manage their blood glucose levels. The onset of type 1 diabetes is usually sudden, and symptoms can become severe very quickly, requiring immediate and urgent treatment to preserve life.

Type 2 diabetes is much more common and typically develops in adults, though it is increasingly diagnosed in younger people, especially those with obesity or a strong family history. In type 2 diabetes, the body either becomes resistant to the effects of insulin or doesn't produce enough insulin to meet its needs. This form of diabetes is strongly linked to lifestyle factors such as diet, physical inactivity, and excess body weight, although genetic and environmental factors also play important roles. Management

typically begins with healthy lifestyle changes, such as improved diet and increased physical activity, but it may also include oral medications or, over time, insulin therapy if blood glucose remains uncontrolled.

What Is Gestational Diabetes?

Gestational diabetes is a type of diabetes that develops during pregnancy, usually in the second or third trimester, between 13 weeks and full term, when pregnancy hormones make it harder for the body to use insulin properly, causing blood glucose levels to rise. Unlike other types of diabetes, gestational diabetes typically resolves after the baby is born. Most women with gestational diabetes don't notice any symptoms, which is why routine screening between 24 and 28 weeks of pregnancy is important. If left unmanaged, it can increase the risk of complications such as high birth weight, preterm delivery, and problems for both mother and baby during birth. With careful monitoring, a healthy diet, and sometimes medication, most women with gestational diabetes have healthy pregnancies and babies.



TIP

Gestational diabetes raises the mother's future risk of developing type 2 diabetes, so regular follow-up is recommended.

What Are the Symptoms of Diabetes?

The most common symptoms of diabetes include increased thirst, frequent urination, unexplained weight loss, and persistent feelings of tiredness or fatigue. Many people also experience increased hunger, even after eating, as the body struggles to use glucose for energy despite high levels of glucose in the blood. Other symptoms can include blurred vision, slow-healing cuts or sores, frequent infections (such as thrush or skin infections), and tingling or numbness in the hands and feet. Some people may notice dry or itchy skin. In women, recurrent vaginal yeast infections can be a warning sign.

Type 1 diabetes is most commonly diagnosed in children and young adults, but it can occur at any age. Symptoms often appear suddenly and can become severe within a few weeks or months and may include nausea, vomiting, or stomach pains, in addition to the classic signs.

Type 2 diabetes symptoms typically develop more slowly, sometimes over several years, and are often mild enough to be overlooked. Some people may not notice any symptoms at all, which is why regular screening is important, especially for those with risk factors such as being overweight, having a family history of diabetes, or being from certain ethnic backgrounds.

Gestational diabetes, which occurs during pregnancy, usually doesn't cause noticeable symptoms and is typically detected through routine screening between 24 and 28 weeks of pregnancy.

How Is Diabetes Diagnosed?

Diabetes is diagnosed with blood tests that measure your blood glucose levels to see if it's raised or if the regulation of glucose is less effective. The most common tests include the baseline fasting blood glucose test, where you don't eat for a defined number of hours before the test, and the hemoglobin A1C (HbA1C) test, which shows your average blood sugar levels over the past two to three months. Sometimes, a glucose tolerance test is used, where your blood sugar is measured before and after drinking a sugary drink.

These tests all help doctors see whether your blood glucose is in the normal range or if you have prediabetes or diabetes. In some cases, extra tests may be done to find out what type of diabetes you have. Nowadays, there are even more accurate tests like continuous glucose monitoring, which can be used to measure and record blood glucose constantly.

Can Diabetes Be Cured?

Currently, there is no cure for diabetes, but the condition can be managed effectively.

In some cases of type 2 diabetes, people may achieve remission with reversal of excessively high blood glucose, where their levels return to normal without the need for medication, often through significant weight loss, improved diet, and increased physical activity. However, remission doesn't mean diabetes is cured; the risk of relapse remains, and ongoing monitoring is important.

For type 1 diabetes, which results from the immune system destroying insulin-producing cells, lifelong insulin therapy is necessary. Frequent blood glucose monitoring and lifestyle adjustments are essential for keeping it in a healthy range and preventing complications. Although research is ongoing into advanced treatments such as pancreatic islet transplants and immune therapies, these are not yet widely available.



TIP

Early diagnosis and consistent management are key to living well with diabetes. Advancements in technology and personalized care have made it possible for many people to maintain good health and quality of life, even though a cure is not yet available.

