

# Diabetes Mellitus

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The number of Americans with diabetes mellitus, a condition defined by abnormally high levels of glucose (a natural sugar) in the blood, has grown dramatically in recent decades. In 1980, less than six million Americans were living with diagnosed diabetes. By 2015, that number had climbed to more than 23 million, and each year there are almost one and a half million new cases of diabetes diagnosed. If this trend continues, by 2050 one out of every three adults in the United States will have diabetes. Also alarming is the statistic that about eight million people with diabetes do not know they have the disease. Diabetes impacts some groups more than others. For instance, 25 percent of adults age 65 or older have diabetes. The prevalence rates are even higher among Hispanic/Latino Americans and African Americans. Besides those diagnosed with diabetes, more than 85 million other Americans have “prediabetes,” or evidence of problems controlling glucose levels that increases their risk of developing diabetes and other serious problems, including heart disease and stroke.

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There are two major types of diabetes mellitus. Type 1 diabetes, also known as insulin dependent diabetes or juvenile diabetes, accounts for 5 percent of all diagnosed cases of diabetes in United States adults. While type 1 diabetes can occur at any age, it is most likely to occur in persons under 20 years of age. There is no known way to prevent type 1 diabetes, as it is an autoimmune disorder in which the beta cells of the pancreas (the cells that create insulin) are destroyed. Type 2 diabetes is more common and is also known as adult-onset diabetes, as it is generally found in persons 40 years old or older. Weight is a significant risk factor for type 2 diabetes, with overweight and obese adults at higher risk to develop this disorder. And with the current obesity epidemic in the United States occurring across all age groups, type 2 diabetes is becoming more common in children and adolescents, with more than 5,000 new cases of type 2 diabetes being diagnosed in persons 20 years old and younger every year. However, it should be noted that even lean adults can develop type 2 diabetes—usually associated with family inheritance. Other types of diabetes exist, such as gestational diabetes, which occurs during pregnancy.

## **Who is at Risk for Diabetes Mellitus**

Persons at risk for developing diabetes include adults over the age of 45, those with a family history of diabetes (type 2 diabetes has a strong genetic predisposition), certain races and ethnicities (Asian Americans, African Americans, Hispanics/Latinos, Native Americans, Pacific Islanders), persons who are overweight or obese, women with a history of gestational diabetes, and women with a diagnosis of polycystic ovarian disease. Individuals who are at high risk for diabetes must advocate for themselves and ask their health care provider if it is appropriate to screen for diabetes.

It is important that people at high risk for developing diabetes have the appropriate screening tests. At least two screening tests separated by a few days or weeks must be abnormal to make and confirm the diagnosis of diabetes. (Sometimes diet, medications, illnesses, or even anemia [low blood count] can cause abnormal test results in those who do not have diabetes, and thus having a second test is a necessary step in diagnosis.) There are three tests that can be performed to diagnose diabe-

tes: a fasting glucose check, an oral glucose tolerance test, and a hemoglobin A1c (HgbA1c) test 3. For the fasting glucose check, a patient is required to have had no food for at least 10 hours (often overnight) before blood is drawn and tested. Normal values for glucose are 100 mg/dL or less; a value of 126 mg/dL or more is diagnostic of diabetes. For an oral glucose tolerance test, the same procedure as for a fasting glucose test is initially followed. But in addition, after the first blood is drawn, the patient drinks a sugary mixture and has a second blood sample drawn two hours later. If the fasting blood glucose is 126 mg/dL or greater or if the blood glucose two hours later is 200 mg/dL or greater, a diagnosis of diabetes can be made. As for the final test, the HgbA1c gives an average level of blood glucose over the past two to three months. An HgbA1c less than 5.7 percent is considered normal; 6.5 percent or greater is considered diagnostic of diabetes.

### **The Risks of Ignoring Information on Diabetes Mellitus**

Undetected and untreated diabetes sets the stage for other diseases or conditions that can kill or cripple:

- **Stroke.** Adults with diabetes are almost twice as likely as those without diabetes to have a stroke.
- **Heart disease.** Older adults with diabetes are at least twice as likely to develop cardiovascular disease, and heart attacks in diabetes are more likely to be fatal.
- **Eye disease.** Cataracts, glaucoma, and retinopathy (damage to the retina) are more common among older adults with diabetes. Retinopathy can cause bleeding in the eye, leading to blindness.
- **Kidney disease.** Adults with diabetes are more likely to develop nephropathy (kidney damage) that often leads to kidney failure and the need for hemodialysis.
- **Amputation.** The risk of lower-extremity amputation is close to ten times greater for older adults with diabetes as compared to adults without diabetes.

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### **What Can Be Done to Prevent Diabetes Mellitus?**

Currently there are no tests that can identify those at risk for type 1 diabetes, and there are no interventions that can prevent its development. Fortunately, the development of type 1 diabetes occurs with much less frequency than type 2 diabetes, and individuals at risk for type 2 diabetes are easy to identify. Since obesity and inactivity are the two most potent risk factors for developing type 2 diabetes, those who are overweight or obese and inactive should undergo regular screening tests to

check their blood glucose levels. Such tests can help identify prediabetes, which should be viewed as an early warning sign and serve as motivation to make meaningful lifestyle changes to prevent the progression to diabetes. Individuals found to have prediabetes who then lose weight (even just 5 – 7%) and become more active are less likely to develop type 2 diabetes. In fact, even among individuals who are overweight, regular exercise can improve glucose control, likely postponing the development of diabetes, even without weight loss.

If either type 1 or type 2 diabetes is detected, some of the long-term complications can be eliminated, postponed, or have their severity greatly reduced with treatment. Although treatment of type 1 diabetes includes daily injections of insulin, many cases of type 2 diabetes do not require insulin injections. Both types of diabetes can be managed through a combination of diet, weight control, and exercise. In type 2 diabetes, oral medications may be needed if diet and exercise do not adequately control the blood glucose levels, and some persons with type 2 diabetes will require insulin therapy to control the blood glucose levels. Insulin therapy should not be viewed as a punishment, but as a valuable medication that can accomplish the important goal of returning the high blood glucose levels to near normal levels and preventing complications.



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