

National Diabetes Statistics, 2011

National Diabetes Information Clearinghouse



U.S. Department
of Health and
Human Services

NATIONAL
INSTITUTES
OF HEALTH

NIDDK
NATIONAL INSTITUTE OF
DIABETES AND DIGESTIVE
AND KIDNEY DISEASES

Fast Facts on Diabetes

Diabetes affects 25.8 million people of all ages
8.3 percent of the U.S. population

DIAGNOSED
18.8 million people

UNDIAGNOSED
7.0 million people

- Among U.S. residents ages 65 years and older, 10.9 million, or 26.9 percent, had diabetes in 2010.
- About 215,000 people younger than 20 years had diabetes—type 1 or type 2—in the United States in 2010.
- About 1.9 million people ages 20 years or older were newly diagnosed with diabetes in 2010 in the United States.
- In 2005–2008, based on fasting glucose or hemoglobin A1C (A1C) levels, 35 percent of U.S. adults ages 20 years or older had prediabetes—50 percent of adults ages 65 years or older. Applying this percentage to the entire U.S. population in 2010 yields an estimated 79 million American adults ages 20 years or older with prediabetes.
- Diabetes is the leading cause of kidney failure, nontraumatic lower-limb amputations, and new cases of blindness among adults in the United States.
- Diabetes is a major cause of heart disease and stroke.
- Diabetes is the seventh leading cause of death in the United States.

Estimation Methods

The estimates in this fact sheet were derived from various data systems of the Centers for Disease Control and Prevention (CDC), the Indian Health Service's (IHS's) National Patient Information Reporting System (NPIRS), the U.S. Renal Data System of the National Institutes of Health (NIH), the U.S. Census Bureau, and published studies. The estimated percentages and the total number of people with diabetes and prediabetes were derived from 2005–2008 National Health and Nutrition Examination Survey (NHANES), 2007–2009 National Health Interview Survey, 2009 IHS data, and 2010 U.S. resident population estimates. The diabetes and prediabetes estimates from NHANES were applied to the 2010 U.S. resident population estimates to derive the estimated number of adults with diabetes or prediabetes.

The methods used to generate the estimates for the fact sheet may vary over time and need to be considered before comparing fact sheets. In contrast to *National Diabetes Statistics 2007*, which used fasting glucose data to estimate undiagnosed diabetes and prediabetes, *National Diabetes Statistics, 2011* uses both fasting glucose and A1C levels to derive estimates for undiagnosed diabetes and prediabetes. These tests were chosen because they are most frequently used in clinical practice.

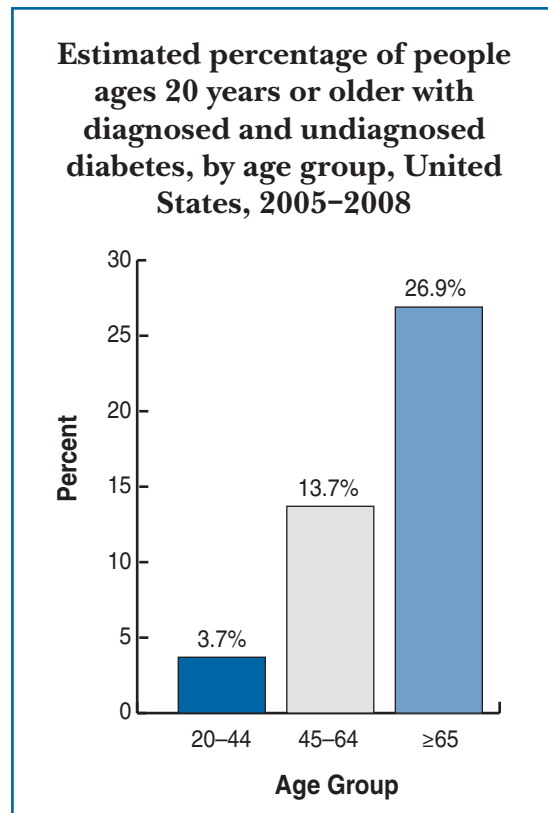
Detailed information about the data sources, methods, and references are available at www.cdc.gov/diabetes/pubs/references11.htm.

Diagnosed and Undiagnosed Diabetes among People Ages 20 Years or Older, United States, 2010

Group	Number or percentage who have diabetes
Ages 20 years or older	25.6 million, or 11.3 percent, of all people in this age group
Ages 65 years or older	10.9 million, or 26.9 percent, of all people in this age group
Men	13.0 million, or 11.8 percent, of all men ages 20 years or older
Women	12.6 million, or 10.8 percent, of all women ages 20 years or older
Non-Hispanic whites	15.7 million, or 10.2 percent, of all non-Hispanic whites ages 20 years or older
Non-Hispanic blacks	4.9 million, or 18.7 percent, of all non-Hispanic blacks ages 20 years or older

Sufficient data are not available to estimate the total prevalence of diabetes—diagnosed and undiagnosed—for other U.S. racial/ethnic minority populations.

Diagnosed and Undiagnosed Diabetes



Source: 2005–2008 National Health and Nutrition Examination Survey

Diagnosed Diabetes

Diagnosed Diabetes among People Younger than 20 Years of Age, United States, 2010

About 215,000 people younger than 20 years have diabetes—type 1 or type 2. This represents 0.26 percent of all people in this age group. Estimates of undiagnosed diabetes are unavailable for this age group.

Racial and Ethnic Differences in Diagnosed Diabetes

National estimates of diagnosed diabetes for some but not all minority groups are available from national survey data and from the IHS NPIRS, which includes data for about 1.9 million American Indians and Alaska Natives in the United States who receive health care from the IHS. Differences in diabetes prevalence by race/ethnicity are partially attributable to age differences. Adjustment for age makes results from racial/ethnic groups more comparable.

Data from the 2009 IHS NPIRS indicate that 14.2 percent of American Indians and Alaska Natives ages 20 years or older who received care from the IHS had diagnosed diabetes. After adjusting for population age differences, 16.1 percent of the total adult population served by the IHS had diagnosed diabetes, with rates varying by region from 5.5 percent among Alaska Native adults to 33.5 percent among American Indian adults in southern Arizona.

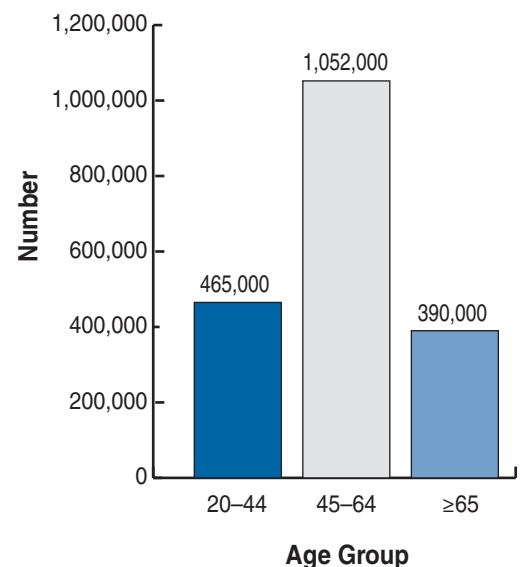
After adjusting for population age differences, 2007–2009 national survey data for people ages 20 years or older indicate that 7.1 percent of non-Hispanic whites, 8.4 percent of Asian Americans, 11.8 percent of Hispanics/Latinos, and 12.6 percent of non-Hispanic blacks had diagnosed diabetes. Among Hispanics/Latinos, rates were 7.6 percent for both Cuban Americans and for Central and South Americans, 13.3 percent for Mexican Americans, and 13.8 percent for Puerto Ricans.

Compared with non-Hispanic white adults, the risk of diagnosed diabetes was 18 percent higher among Asian Americans, 66 percent higher among Hispanics/Latinos, and 77 percent higher among non-Hispanic blacks. Among Hispanics/Latinos compared with non-Hispanic white adults, the risk of diagnosed diabetes was about the same for Cuban Americans and for Central and South Americans, 87 percent higher for Mexican Americans, and 94 percent higher for Puerto Ricans.

New Cases of Diagnosed Diabetes

Estimated number of new cases of diagnosed diabetes among people ages 20 years or older, by age group, United States, 2010

About 1.9 million people ages 20 years or older were newly diagnosed with diabetes in 2010.



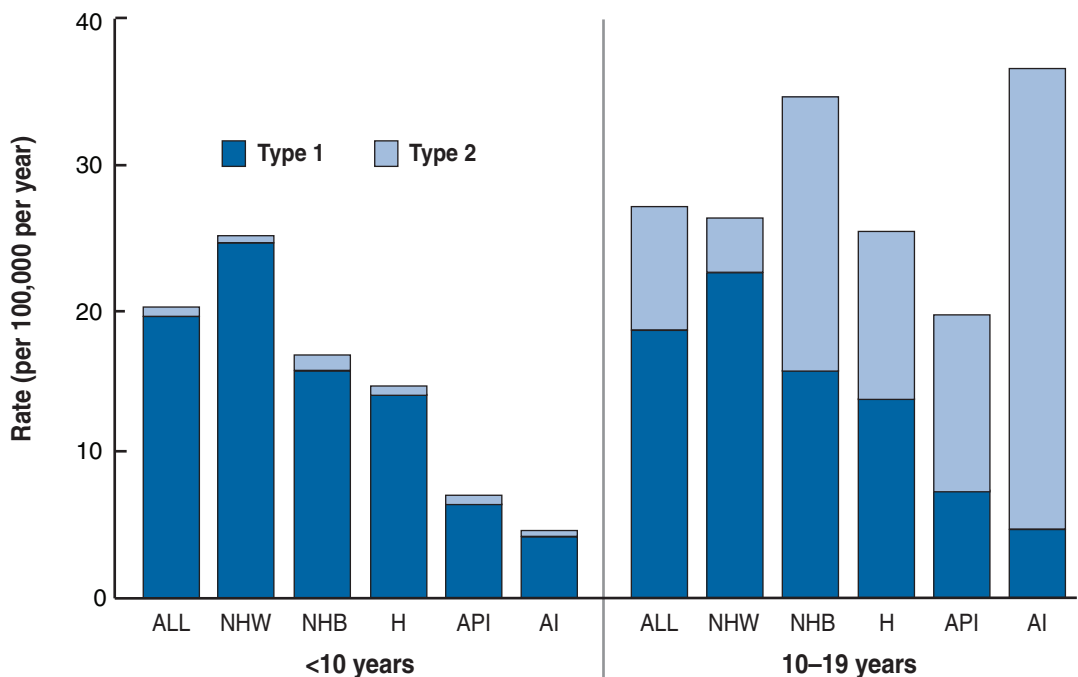
Source: 2007–2009 National Health Interview Survey estimates projected to the year 2010

New Cases of Diagnosed Diabetes among People Younger than 20 Years of Age, United States, 2002–2005

SEARCH for Diabetes in Youth is a multi-center study funded by the CDC and the NIH to examine diabetes—type 1 and type 2—among children and adolescents in the United States. SEARCH findings for the communities studied include the following:

- During 2002–2005, 15,600 youth were newly diagnosed with type 1 diabetes annually, and 3,600 youth were newly diagnosed with type 2 diabetes annually.
- Among youth ages younger than 10 years, the rate of new cases was 19.7 per 100,000 each year for type 1 diabetes and 0.4 per 100,000 for type 2 diabetes. Among youth ages 10 years or older, the rate of new cases was 18.6 per 100,000 each year for type 1 diabetes and 8.5 per 100,000 for type 2 diabetes.
- Non-Hispanic white youth had the highest rate of new cases of type 1 diabetes—24.8 per 100,000 per year among those younger than 10 years and 22.6 per 100,000 per year among those ages 10–19 years.
- Type 2 diabetes was extremely rare among youth ages younger than 10 years. While still infrequent, rates were greater among youth ages 10–19 years than in younger

Rate of new cases of type 1 and type 2 diabetes among youth ages younger than 20 years, by race/ethnicity, 2002–2005



Source: SEARCH for Diabetes in Youth Study
 NHW=non-Hispanic whites; NHB=non-Hispanic blacks; H=Hispanics/Latinos;
 API=Asian/Pacific Islander Americans; AI=American Indians

children, with higher rates among U.S. minority populations than in non-Hispanic whites.

- Among non-Hispanic white youth ages 10–19 years, the rate of new cases was higher for type 1 than for type 2 diabetes. For Asian/Pacific Islander Americans and American Indian youth ages 10–19 years, the opposite was true—the rate of new cases was greater for type 2 than for type 1 diabetes. Among non-Hispanic black and Hispanic/Latino youth ages 10–19 years, the rates of new cases of type 1 and type 2 diabetes were similar.

Prediabetes

Prediabetes among People Ages 20 Years or Older, United States, 2010

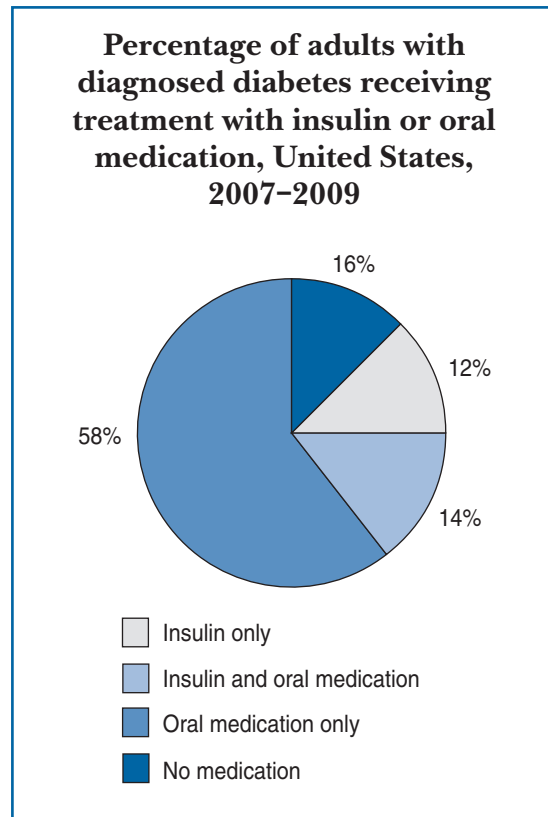
- Prediabetes is a condition in which individuals have blood glucose, also called blood sugar, or A1C levels higher than normal but not high enough to be classified as diabetes. People with prediabetes have an increased risk of developing type 2 diabetes, heart disease, and stroke.
- Studies have shown that people with prediabetes who lose weight and increase their physical activity can prevent or delay type 2 diabetes and in some cases return their blood glucose levels to normal.
- In 2005–2008, based on fasting glucose or A1C levels, 35 percent of U.S. adults ages 20 years or older had prediabetes—50 percent of those ages 65 years or older. Applying this percentage to the entire U.S. population in 2010 yields an estimated 79 million Americans ages 20 years or older with prediabetes.

- On the basis of fasting glucose or A1C levels, and after adjusting for population age differences, the percentage of U.S. adults ages 20 years or older with prediabetes in 2005–2008 was similar for non-Hispanic whites, 35 percent; non-Hispanic blacks, 35 percent; and Mexican Americans, 36 percent.
- Using a different data source than for other race/ethnicity groups, a different age group, and a different definition on the basis of fasting glucose levels only, and after adjusting for population age differences, 20 percent of American Indians ages 15 years or older had prediabetes in 2001–2004.

Gestational Diabetes in the United States

- Reported rates of gestational diabetes range from 2 to 10 percent of pregnancies.
- Immediately after pregnancy, 5 to 10 percent of women with gestational diabetes are found to have diabetes, usually type 2.
- Women who have had gestational diabetes have a 35 to 60 percent chance of developing diabetes in the next 10–20 years.
- New diagnostic criteria for gestational diabetes will increase the proportion of women diagnosed with gestational diabetes. Using these new diagnostic criteria, an international, multicenter study of gestational diabetes found that 18 percent of the pregnancies were affected by gestational diabetes.

Treatment of Diabetes



Source: 2007–2009 National Health Interview Survey

Among adults with diagnosed diabetes—type 1 or type 2—12 percent take insulin only, 14 percent take both insulin and oral medication, 58 percent take oral medication only, and 16 percent do not take either insulin or oral medication.

Deaths among People with Diabetes, United States, 2007

- Diabetes was the seventh leading cause of death based on U.S. death certificates in 2007. This ranking is based on the 71,382 death certificates in 2007 in which diabetes was the underlying cause of death. Diabetes was a contributing cause of death in an additional 160,022 death certificates for a total of 231,404 certificates in 2007 in which diabetes appeared as any-listed cause of death.
- Diabetes is likely to be underreported as a cause of death. Studies have found that about 35 to 40 percent of decedents with diabetes had it listed anywhere on the death certificate and about 10 to 15 percent had it listed as the underlying cause of death.
- Overall, the risk for death among people with diabetes is about twice that of people of similar age but without diabetes.

Estimated Diabetes Costs in the United States, 2007

Total costs—direct and indirect	\$174 billion
Direct medical costs	\$116 billion—after adjusting for population age and sex differences, average medical expenditures among people with diagnosed diabetes were 2.3 times higher than what expenditures would be in the absence of diabetes
Indirect costs	\$58 billion—disability, work loss, premature mortality

Medical expenses for people with diabetes are more than 2 times higher than for people without diabetes.

Complications of Diabetes in the United States

Heart Disease and Stroke

- In 2004, heart disease was noted on 68 percent of diabetes-related death certificates among people ages 65 years or older.
- In 2004, stroke was noted on 16 percent of diabetes-related death certificates among people ages 65 years or older.
- Adults with diabetes have heart disease death rates about 2 to 4 times higher than adults without diabetes.
- The risk for stroke is 2 to 4 times higher among people with diabetes.

Hypertension

- In 2005–2008, of adults ages 20 years or older with self-reported diabetes, 67 percent had blood pressure greater than or equal to 140/90 millimeters of mercury (mmHg) or used prescription medications for hypertension.

Blindness and Eye Problems

- Diabetes is the leading cause of new cases of blindness among adults ages 20–74 years.
- In 2005–2008, 4.2 million—28.5 percent—people with diabetes ages 40 years or older had diabetic retinopathy, and of these, 655,000—4.4 percent of those with diabetes—had advanced diabetic retinopathy that could lead to severe vision loss.

Kidney Disease

- Diabetes is the leading cause of kidney failure, accounting for 44 percent of all new cases of kidney failure in 2008.
- In 2008, 48,374 people with diabetes began treatment for end-stage kidney disease.
- In 2008, a total of 202,290 people with end-stage kidney disease due to diabetes were living on chronic dialysis or with a kidney transplant.

Nervous System Disease

- About 60 to 70 percent of people with diabetes have mild to severe forms of nervous system damage. The results of such damage include impaired sensation or pain in the feet or hands, slowed digestion of food in the stomach, carpal tunnel syndrome, erectile dysfunction, or other nerve problems.
- Almost 30 percent of people with diabetes ages 40 years or older have impaired sensation in the feet, for example, at least one area that lacks feeling.
- Severe forms of diabetic nerve disease are a major contributing cause of lower-extremity amputations.

Amputations

- More than 60 percent of nontraumatic lower-limb amputations occur in people with diabetes.
- In 2006, about 65,700 nontraumatic lower-limb amputations were performed in people with diabetes.

Dental Disease

- Periodontal, or gum, disease is more common in people with diabetes. Among young adults, those with diabetes have about twice the risk of those without diabetes.
- Adults ages 45 years or older with poorly controlled diabetes—A1C above 9 percent—were 2.9 times more likely to have severe periodontitis than those without diabetes. The likelihood was even greater—4.6 times—among smokers with poorly controlled diabetes.
- About one-third of people with diabetes have severe periodontal disease consisting of loss of attachment—5 millimeters or more—of the gums to the teeth.

Complications of Pregnancy

- Poorly controlled diabetes before conception and during the first trimester of pregnancy among women with type 1 diabetes can cause major birth defects in 5 to 10 percent of pregnancies and spontaneous abortions in 15 to 20 percent of pregnancies. On the other hand, for a woman with pre-existing diabetes, optimizing blood glucose levels before and during early pregnancy can reduce the risk of birth defects in their infants.
- Poorly controlled diabetes during the second and third trimesters of pregnancy can result in excessively large babies, posing a risk to both mother and child.

Other Complications

- Uncontrolled diabetes often leads to biochemical imbalances that can cause acute life-threatening events, such as diabetic ketoacidosis and hyperosmolar—nonketotic—coma.
- People with diabetes are more susceptible to many other illnesses. Once they acquire these illnesses, they often have worse prognoses. For example, they are more likely to die with pneumonia or influenza than people who do not have diabetes.
- People with diabetes ages 60 years or older are 2 to 3 times more likely to report an inability to walk one-quarter of a mile, climb stairs, or do housework compared with people without diabetes in the same age group.
- People with diabetes are twice as likely to have depression, which can complicate diabetes management, than people without diabetes. In addition, depression is associated with a 60 percent increased risk of developing type 2 diabetes.

As indicated above, diabetes can affect many parts of the body and can lead to serious complications such as blindness, kidney damage, and lower-limb amputations. Working together, people with diabetes, their support network, and their health care providers can reduce the occurrence of these and other diabetes complications by controlling the levels of blood glucose, blood pressure, and blood lipids, and by receiving other preventive care practices in a timely manner.

Preventing Diabetes Complications

Glucose Control

- Studies in the United States and abroad have found that improved glycemic control benefits people with either type 1 or type 2 diabetes. In general, every percentage point drop in A1C blood test results, for example, from 8.0 to 7.0 percent, can reduce the risk of microvascular complications—eye, kidney, and nerve diseases—by 40 percent. The absolute difference in risk may vary for certain subgroups of people.
- In patients with type 1 diabetes, intensive insulin therapy has long-term beneficial effects on the risk of cardiovascular disease.

Blood Pressure Control

- Blood pressure control reduces the risk of cardiovascular disease—heart disease or stroke—among people with diabetes by 33 to 50 percent and the risk of microvascular complications—eye, kidney, and nerve diseases—by about 33 percent.
- In general, for every 10 mmHg reduction in systolic blood pressure, the risk for any complication related to diabetes is reduced by 12 percent.
- No benefit of reducing systolic blood pressure below 140 mmHg has been demonstrated in randomized clinical trials.
- Reducing diastolic blood pressure from 90 mmHg to 80 mmHg in people with diabetes reduces the risk of major cardiovascular events by 50 percent.

Control of Blood Lipids

- Improved control of LDL, or bad, cholesterol can reduce cardiovascular complications by 20 to 50 percent.

Preventive Care Practices for Eyes, Feet, and Kidneys

- Detecting and treating diabetic eye disease with laser therapy can reduce the development of severe vision loss by an estimated 50 to 60 percent.
- About 65 percent of adults with diabetes and poor vision can be helped by appropriate eyeglasses.
- Comprehensive foot care programs—ones that include risk assessment, foot-care education and preventive therapy, treatment of foot problems, and referral to specialists—can reduce amputation rates by 45 to 85 percent.
- Detecting and treating early diabetic kidney disease by lowering blood pressure can reduce the decline in kidney function by 30 to 70 percent. Treatment with particular medications for hypertension called angiotensin-converting enzyme (ACE) inhibitors and angiotensin receptor blockers (ARBs) is more effective in reducing the decline in kidney function than is treatment with other blood pressure lowering drugs.
- In addition to lowering blood pressure, ARBs and ACE inhibitors reduce proteinuria, a risk factor for developing kidney disease, by about 35 percent.

General Information

What is diabetes?

Diabetes is a group of diseases marked by high levels of blood glucose resulting from defects in insulin production, insulin action, or both. Diabetes can lead to serious complications and premature death, but people with diabetes, working together with their support network and their health care providers, can take steps to control the disease and lower the risk of complications.

Types of Diabetes

Type 1 diabetes was previously called insulin-dependent diabetes mellitus (IDDM) or juvenile-onset diabetes. Type 1 diabetes develops when the body's immune system destroys pancreatic beta cells, the only cells in the body that make the hormone insulin that regulates blood glucose. To survive, people with type 1 diabetes must have insulin delivered by injection or a pump.

This form of diabetes usually strikes children and young adults, although disease onset can occur at any age. In adults, type 1 diabetes accounts for about 5 percent of all diagnosed cases of diabetes. Risk factors for type 1 diabetes may be autoimmune, genetic, or environmental. No known way to prevent type 1 diabetes exists. Several clinical trials for preventing type 1 diabetes are currently in progress or are being planned.

Type 2 diabetes was previously called non-insulin-dependent diabetes mellitus (NIDDM) or adult-onset diabetes. In adults, type 2 diabetes accounts for about 90 to 95 percent of all diagnosed cases of diabetes. Type 2 diabetes usually begins as insulin resistance, a disorder in which the cells do not use insulin properly. As the need for insulin rises, the pancreas gradually loses its ability to produce insulin.

Type 2 diabetes is associated with older age, obesity, family history of diabetes, history of gestational diabetes, impaired glucose metabolism, physical inactivity, and race/ethnicity. African Americans, Hispanic/Latino Americans, American Indians, and some Asian Americans and Native Hawaiians or other Pacific Islander Americans are at particularly high risk for type 2 diabetes and its complications. Type 2 diabetes in children and adolescents, although still rare, is being diagnosed more frequently among American Indians, African Americans, Hispanic/Latino Americans, and Asian/Pacific Islander Americans.

Gestational diabetes is a form of glucose intolerance diagnosed during pregnancy. Gestational diabetes occurs more frequently among African Americans, Hispanic/Latino Americans, and American Indians. Gestational diabetes is also more common among obese women and women with a family history of diabetes. During pregnancy, gestational diabetes requires treatment to optimize maternal blood glucose levels to lessen the risk of complications in the infant.

Other types of diabetes result from specific genetic conditions, such as maturity-onset diabetes of youth; surgery; medications; infections; pancreatic disease; and other illnesses. Such types of diabetes account for 1 to 5 percent of all diagnosed cases.

Treating Diabetes

Diet, insulin, and oral medication to lower blood glucose levels are the foundation of diabetes treatment and management. Patient education and self-care practices are also important aspects of disease management that help people with diabetes lead normal lives.

- To survive, people with type 1 diabetes must have insulin delivered by injection or a pump.
- Many people with type 2 diabetes can control their blood glucose by following a healthy meal plan and exercise program,

losing excess weight, and taking oral medication. Medications for each individual with diabetes will often change during the course of the disease. Some people with type 2 diabetes may also need insulin to control their blood glucose.

- Self-management education or training is a key step in improving health outcomes and quality of life. This type of education or training focuses on self-care behaviors, such as healthy eating, being active, and monitoring blood sugar. Self-management education or training is a collaborative process in which diabetes educators help people with or at risk for diabetes gain the knowledge and problem-solving and coping skills needed to successfully self-manage the disease and its related conditions.
- Many people with diabetes also need to take medications to control their cholesterol and blood pressure.

Prevention or Delay of Type 2 Diabetes

- The Diabetes Prevention Program (DPP), a large prevention study of people at high risk for diabetes, showed that lifestyle intervention to lose weight and increase physical activity reduced the development of type 2 diabetes by 58 percent during a 3-year period. The reduction was even greater, 71 percent, among adults ages 60 years or older.
- Treatment with the drug metformin reduced the risk by 31 percent overall and was most effective in younger—ages 25–44 years—and in heavier—body mass index greater than or equal to 35—adults.
- Prevention or delay of type 2 diabetes with either lifestyle or metformin intervention was effective in all racial and ethnic groups studied and has been shown to persist for at least 10 years.

- Interventions to prevent or delay type 2 diabetes in individuals with prediabetes can be feasible and cost-effective. Research has found that lifestyle interventions are more cost-effective than medications.

Acknowledgments

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Agency for Healthcare Research and Quality
www.ahrq.gov/browse/diabetes.htm

American Association of Diabetes Educators
www.diabeteseducator.org

American Diabetes Association
www.diabetes.org

Centers for Disease Control and Prevention
www.cdc.gov/diabetes, www.cdc.gov/nchs

Centers for Medicare & Medicaid Services
www.cms.hhs.gov

U.S. Department of Veterans Affairs
www.healthquality.va.gov

U.S. Food and Drug Administration
www.fda.gov

Health Resources and Services Administration
www.hrsa.gov

Indian Health Service
www.ihs.gov/MedicalPrograms/Diabetes/index.asp

Juvenile Diabetes Research Foundation International
www.jdrf.org

National Diabetes Education Program, a joint program of the NIH and the CDC
www.yourdiabetesinfo.org

National Diabetes Information Clearinghouse
www.diabetes.niddk.nih.gov

National Institute of Diabetes and Digestive and Kidney Diseases of the National Institutes of Health
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