National Diabetes Fact Sheet, 2011

FAST FACTS ON DIABETES

Diabetes affects 25.8 million people
8.3% of the U.S. population

DIAGNOSED
18.8 million people

UNDIAGNOSED
7.0 million people

All ages, 2010

- Among U.S. residents aged 65 years and older, 10.9 million, or 26.9%, 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 aged 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 levels, 35% of U.S. adults aged 20 years or older had prediabetes (50% of adults aged 65 years or older). Applying this percentage to the entire U.S. population in 2010 yields an estimated 79 million American adults aged 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.

Citation

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National Center for Chronic Disease Prevention and Health Promotion
Division of Diabetes Translation

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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) 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 (NHIS), 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 the 2007 National Diabetes Fact Sheet, which used fasting glucose data to estimate undiagnosed diabetes and prediabetes, the 2011 National Diabetes Fact Sheet uses both fasting glucose and hemoglobin A1c (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 http://www.cdc.gov/diabetes/pubs/references11.htm.

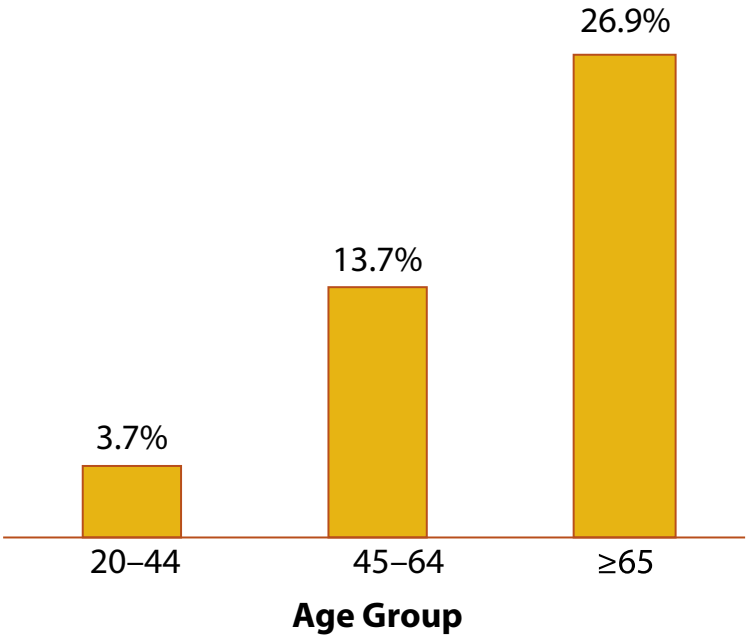
Diagnosed and undiagnosed diabetes among people aged 20 years or older, United States, 2010

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

Estimated percentage of people aged 20 years or older with diagnosed and undiagnosed diabetes, by age group, United States, 2005–2008



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

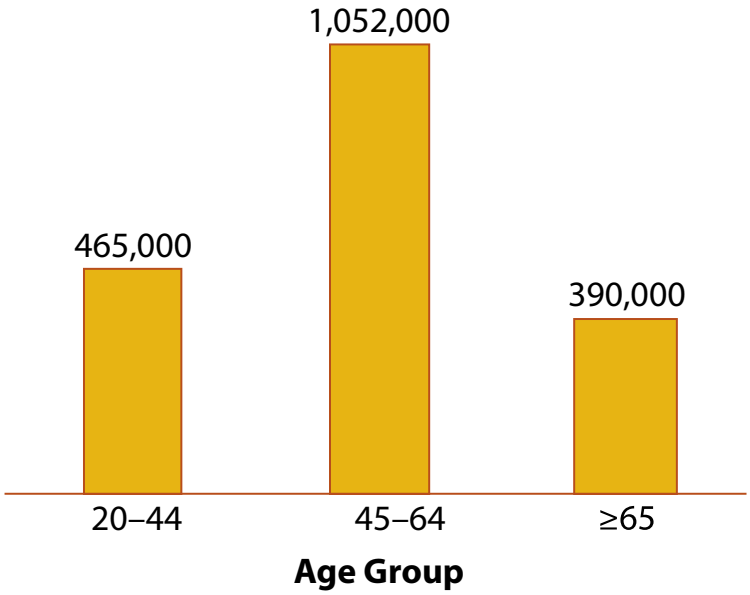
After adjusting for population age differences, 2007–2009 national survey data for people aged 20 years or older indicate that 7.1% of non-Hispanic whites, 8.4% of Asian Americans, 11.8% of Hispanics, and 12.6% of non-Hispanic blacks had diagnosed diabetes. Among Hispanics, rates were 7.6% for both Cubans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

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

New cases of diagnosed diabetes

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

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



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

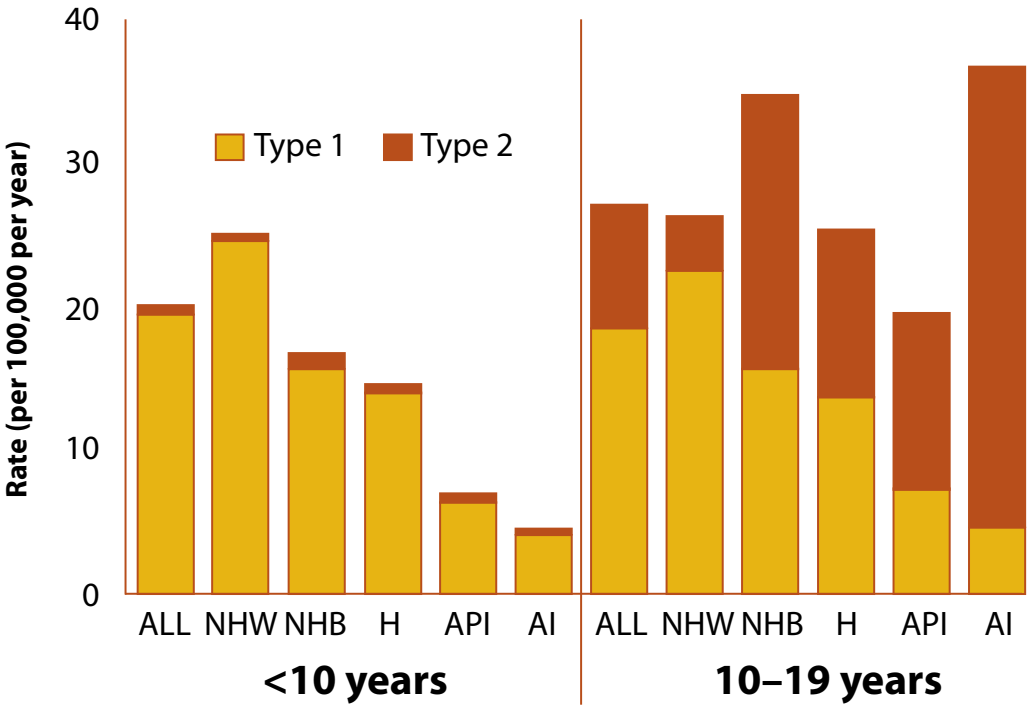
New cases of diagnosed diabetes among people younger than 20 years of age, United States, 2002–2005

SEARCH for Diabetes in Youth is a multicenter study funded by CDC and 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 aged <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 aged 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 aged 10–19 years).
- Type 2 diabetes was extremely rare among youth aged <10 years. While still infrequent, rates were greater among youth aged 10–19 years than in younger children, with higher rates among U.S. minority populations than in non-Hispanic whites.
- Among non-Hispanic white youth aged 10–19 years, the rate of new cases was higher for type 1 than for type 2 diabetes. For Asian/Pacific Islander and American Indian youth aged 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 youth aged 10–19 years, the rates of new cases of type 1 and type 2 diabetes were similar.

New cases of diagnosed diabetes *(continued)*

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



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

Prediabetes

Prediabetes among people aged 20 years or older, United States, 2010

- Prediabetes is a condition in which individuals have blood glucose 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% of U.S. adults aged 20 years or older had prediabetes (50% of those aged 65 years or older). Applying this percentage to the entire U.S. population in 2010 yields an estimated 79 million Americans aged 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 aged 20 years or older with prediabetes in 2005–2008 was similar for non-Hispanic whites (35%), non-Hispanic blacks (35%), and Mexican Americans (36%).
- 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% of American Indians aged 15 years or older had prediabetes in 2001–2004.

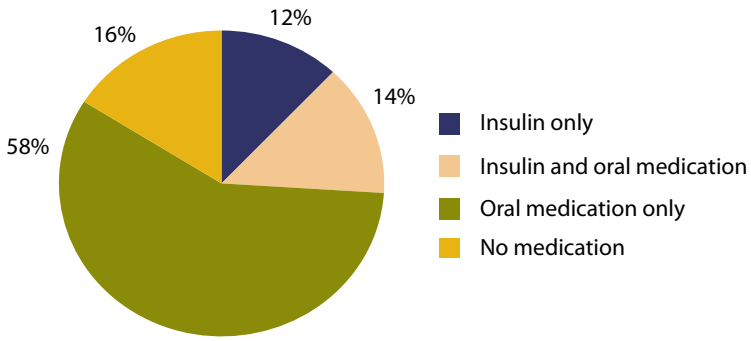
Gestational diabetes in the United States

- Reported rates of gestational diabetes range from 2% to 10% of pregnancies.
- Immediately after pregnancy, 5% to 10% of women with gestational diabetes are found to have diabetes, usually type 2.
- Women who have had gestational diabetes have a 35% to 60% 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% of the pregnancies were affected by gestational diabetes.

Women who have had gestational diabetes have a 35% to 60% chance of developing diabetes in the next 10–20 years.

Treatment of diabetes, United States, 2007–2009

Percentage of adults with diagnosed diabetes receiving treatment with insulin or oral medication, United States, 2007–2009



Source: 2007–2009 National Health Interview Survey

Among adults with diagnosed diabetes (type 1 or type 2), 12% take insulin only, 14% take both insulin and oral medication, 58% take oral medication only, and 16% 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% of decedents with diabetes had it listed anywhere on the death certificate and about 10% to 15% 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.

*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 (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 two 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% of diabetes-related death certificates among people aged 65 years or older.
- In 2004, stroke was noted on 16% of diabetes-related death certificates among people aged 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 aged 20 years or older with self-reported diabetes, 67% 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 aged 20–74 years.
- In 2005–2008, 4.2 million (28.5%) people with diabetes aged 40 years or older had diabetic retinopathy, and of these, 655,000 (4.4% 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% 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% 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% of people with diabetes aged 40 years or older have impaired sensation in the feet (i.e., 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% 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.

Complications of diabetes in the United States *(continued)*

Dental disease

- Periodontal (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 aged 45 years or older with poorly controlled diabetes (A1c > 9%) 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% of pregnancies and spontaneous abortions in 15% to 20% 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 aged 60 years or older are 2–3 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% 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 (e.g., from 8.0% to 7.0%) can reduce the risk of microvascular complications (eye, kidney, and nerve diseases) by 40%. 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

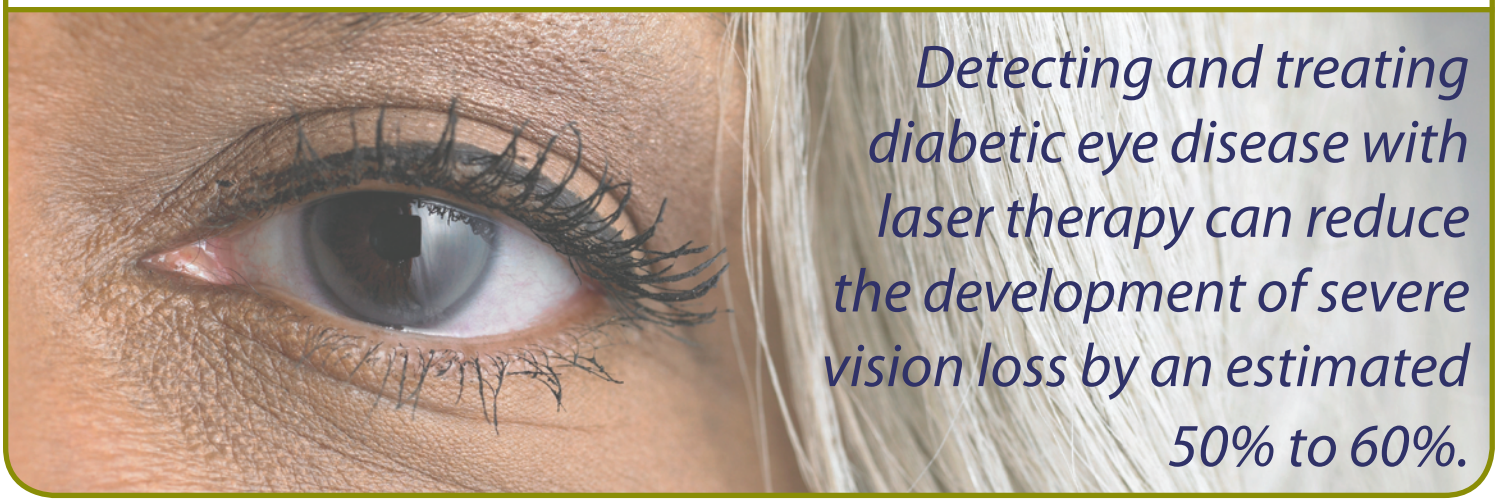
- Blood pressure control reduces the risk of cardiovascular disease (heart disease or stroke) among people with diabetes by 33% to 50%, and the risk of microvascular complications (eye, kidney, and nerve diseases) by approximately 33%.
- In general, for every 10 mmHg reduction in systolic blood pressure, the risk for any complication related to diabetes is reduced by 12%.
- 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%.

Control of blood lipids

- Improved control of LDL cholesterol can reduce cardiovascular complications by 20% to 50%.

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%.
- About 65% of adults with diabetes and poor vision can be helped by appropriate eyeglasses.
- Comprehensive foot care programs, i.e., 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%.
- Detecting and treating early diabetic kidney disease by lowering blood pressure can reduce the decline in kidney function by 30% to 70%. Treatment with particular medications for hypertension called angiotensin-converting enzyme inhibitors (ACEIs) 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 ACEIs reduce proteinuria, a risk factor for developing kidney disease, by about 35%.



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 approximately 5% of all diagnosed cases of diabetes. Risk factors for type 1 diabetes may be autoimmune, genetic, or environmental. There is no known way to prevent type 1 diabetes. 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% of all diagnosed cases of diabetes. It 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 it. 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 Islanders 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 Asians/Pacific Islanders.

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. It 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% 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. It focuses on self-care behaviors, such as healthy eating, being active, and monitoring blood sugar. It 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.

General information *(continued)*

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% during a 3-year period. The reduction was even greater, 71%, among adults aged 60 years or older.
- Treatment with the drug metformin reduced the risk by 31% overall and was most effective in younger (aged 25–44 years) and in heavier (body mass index ≥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.

Acknowledgements

The following organizations collaborated in compiling the information for this fact sheet:

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

American Association of Diabetes Educators: http://www.diabeteseducator.org*

American Diabetes Association: http://www.diabetes.org*

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

Centers for Medicare & Medicaid Services: http://cms.hhs.gov

U.S. Department of Veterans Affairs: http://www.healthquality.va.gov

U.S. Food and Drug Administration: http://www.fda.gov

Health Resources and Services Administration: http://www.hrsa.gov

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

Juvenile Diabetes Research Foundation International: http://www.jdrf.org*

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

National Diabetes Information Clearinghouse: http://diabetes.niddk.nih.gov

National Institute of Diabetes and Digestive and Kidney Diseases of the National Institutes of Health: http://www.niddk.nih.gov

U.S. Department of Health and Human Services, Office of Minority Health: http://www.omhrc.gov

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Centers for Disease Control and Prevention
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