DIABETES IN GEORGIA 2009

- PREVALENCE
- RISK FACTORS
- PREVENTIONS
Acknowledgements

Georgia Department of Community Health
Clyde L. Reese, III, Esq, Commissioner

Division of Public Health
M. Rony Francois, MD, MSPH, PhD, Director

Epidemiology Branch
Anilkumar Mangla, MS, MPH, PhD, Acting Director

Chronic Disease, Healthy Behaviors and Injury Epidemiology Section
Rana Bayakly, MPH, Acting Director

Health Promotion and Disease Prevention Programs
Kimberly C. Redding, MD, MPH, Director

Office of Chronic Disease Prevention and Wellness
Shonta Chambers, MSW, Director

Diabetes Program Manager
Clem Jeffers, MBA, MPA

Graphic Design: Jimmy Clanton, Jr.

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For further information about this report, please contact:
Rennatus Mdodo, DrPH, MS
Georgia Department of Community Health
Division of Public Health
Epidemiology Branch
Chronic Disease Epidemiology Team
2 Peachtree Street, NW, 14th Floor
Atlanta, GA 30303-3142
404-463-4630
Diabetes is a common, costly and serious chronic disease in Georgia.

Diabetes is Common.

- **Prevalence estimates (2008)**
  - Diagnosed cases of adult diabetes (9.9% of adult Georgian population) 707,000
  - Estimated number of undiagnosed cases (for every two diagnosed cases there is one undiagnosed case) +354,000
  - Total estimated number of adult Georgians living with diabetes (equivalent to one in seven Georgians) 1,061,000

- **Incidence estimates (2006-2008)**
  - Newly diagnosed cases of adult diabetes (9.6 per 1,000 adult Georgians, a 118% increase from 4.4 per 1,000 adults in 1999) 51,450 per year

Diabetes is Costly.

- **Health care utilization and associated costs (2006)**
  - Hospital charges
  - Urgent care costs (emergency room visits)
  - Average hospital charges per patient
  - Average length of hospital stay per patient
  - Estimated total economic cost = More than $288 million = More than 3.2 million = $18,470 = 5 days = More than $5.1 billion

Diabetes is Serious.

- **Mortality and morbidity profiles (2006)**
  - Seventh leading cause of death, responsible for 1,626 deaths or about 31 deaths each week
  - Contributed to 15,593 hospitalizations and 19,459 emergency room visits
  - For every hospital admission with a primary diagnosis of diabetes, there were about 10 other cases where diabetes was listed as an associated illness
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Diabetes mellitus, or simply diabetes, is the medical term for the presence of high blood glucose levels in the body. Diabetes is one of the most common chronic diseases in Georgia as well as in the United States. It is a slowly progressive, lifelong, systemic disease and can damage many parts of the body over time. However, people with diabetes usually have few or no obvious symptoms, especially in the early stage. Thus, diabetes can go undiagnosed for many years. Once it is diagnosed, serious complications may have already developed inside the body, and vital organs of the body such as the heart, the brain, the kidneys, and the eyes may have been damaged.

Diabetes is always a serious disease, and in fact, it is a notorious silent killer. It is also a costly chronic disease. Its economic impact on the nation’s health care system as well as on its productivity is enormous. Yet, diabetes is controllable. People with diabetes can take charge of their disease and lead a happy, active and productive life by adopting healthy lifestyles, avoiding risky behaviors, reducing risk factors and managing the disease properly.
Overview

Diabetes is a group of diseases marked by high blood glucose levels due to defects in insulin production, insulin action, or both. Diabetes is also associated with impaired glucose production in the liver. Diabetes can cause serious complications and even premature death, but people with diabetes can take steps to control the disease and lower the risk for developing complications. Diabetes is always manageable. One can take charge of the disease and control diabetes for life.

Major Types of 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. To survive, people with type 1 diabetes must have insulin delivered by injection or pump from outside the body. This form of diabetes usually strikes children and young adults, although disease onset can occur at any age. Type 1 diabetes accounts for 5% to 10% of all diagnosed cases of diabetes.

**Type 2 diabetes** usually begins as insulin resistance, a disorder in which the body cells cannot use insulin properly. As the need for insulin rises, the pancreas gradually loses its ability to produce sufficient insulin to meet the increasing demand. Eventually, the pancreas fails and stops producing insulin. At this stage, type 2 patients, like their type 1 counterparts, need insulin from an outside source.

Type 2 diabetes is the most common form, accounting for 90% to 95% of all diagnosed cases of diabetes. It is also strongly associated with obesity and physical inactivity and is typically related to increasing age. Thus, type 2 diabetes is common among people aged 45 and older, with the highest peak among senior citizens. Today, about 24 million Americans have type 2 diabetes.

**Gestational diabetes** is a form of glucose intolerance that occurs or is noticed for the first time in some women during pregnancy. Gestational diabetes occurs in 4% to 7% of pregnant women and is one of the most common medical complications of pregnancy. It can affect both the mother and the baby. Preeclampsia, spontaneous abortions, congenital malformations, stillbirths, and need for cesarean sections are some of the serious complications of diabetes during pregnancy. Women who have had gestational diabetes have a 35% to 60% chance of developing type 2 diabetes in the next 10 to 20 years. Since a subsequent pregnancy can increase the risk of having recurrent episodes of high blood glucose levels, women with history of gestational diabetes should be screened and monitored carefully, starting from the pre-conception stage.

**Pre-diabetes** is a condition in which a person’s blood glucose levels are higher than normal but not high enough to be diagnosed as diabetes. It can entail impaired fasting glucose (IFG) or impaired glucose tolerance (IGT) or both (Table 1). Having pre-diabetes is a serious risk factor for developing type 2 diabetes. Currently, about 57 million Americans have pre-diabetes, having IFG, IGT, or both.

**Other types of diabetes** result from specific genetic conditions, surgery, drugs, malnutrition, infections, and other illnesses, accounting for 1% to 5% of all diagnosed cases.

<table>
<thead>
<tr>
<th>Metabolic State</th>
<th>Measure (plasma glucose levels in mg/dl)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal</td>
<td>FPG&lt;100; 2hPG&lt;140</td>
</tr>
<tr>
<td>Pre-diabetes</td>
<td>100-125*; 140-199**</td>
</tr>
<tr>
<td>Diabetes</td>
<td>≥125; ≥200</td>
</tr>
</tbody>
</table>

1Fasting plasma glucose
22-hour plasma glucose after 75 grams oral glucose (Oral Glucose Tolerance Test, OGTT).
3Either impaired fasting glucose (IFG) or impaired glucose tolerance (IGT) or both
*IFG **IGT

Source: American Diabetes Association.
Incidence
As in other parts of the nation, diabetes is a growing public health problem in Georgia, with incidence rapidly increasing in the past decade. In 2008, the overall diabetes incidence was 10.7 per 1,000 adults, a 143% increase from 4.4 per 1,000 in 1999. The incidence of diabetes in Georgia is 30% higher than the national average of 7.5 per 1,000 (Figure 1). In Georgia, the age-adjusted incidence per 1,000 population for men (10.8) was higher than that for women (10.0). In the combined years 2006-2008, the age-adjusted incidence for blacks (14.2) was significantly higher than that for whites (8.0). Black women had the highest age-adjusted incidence of 14.5 per 1,000 adults, followed by black men (13.9), white men (8.2) and white women (7.8) (Figure 2).

Prevalence
The prevalence of a disease depends on its incidence and the duration of illness. Thus, an increase in the incidence of a chronic disease like diabetes will generally lead to an increase in prevalence. The prevalence of diabetes is increasing in both Georgia and the United States at an alarming rate. In the last 15 years, the number of people in the United States with diagnosed diabetes has more than doubled, reaching 23.6 million in 2007. A similar trend was also noted in Georgia as the proportion of adult Georgians with diagnosed diabetes went up from 4.3% in 1994 to 9.9% in 2008. In 2008, about 707,000 Georgia adults aged 18 years and older reported that they had been diagnosed with diabetes at sometime in their lives. Since 2000, the prevalence of diabetes in Georgia has been consistently higher than in the United States (Figure 3).

Of the more than 23.6 million Americans with diabetes, 5.7 million still do not know they have the disease.
For every two people with diabetes who have been diagnosed, another has not yet been diagnosed. Thus, in 2008, approximately 354,000 additional adult Georgians could have had undiagnosed diabetes, and the total number of adult Georgians living with diabetes could have been over 1,000,000. Thousands more are at increased risk of getting diabetes because of aging, obesity, unhealthy eating habits, smoking and physical inactivity.

Diabetes disproportionately affect older adults, women, and certain racial and ethnic groups. One in five United States adults over age 65 has diabetes. African American, Hispanic, American Indian, and Alaska Native adults are at least twice as likely as white adults to have diabetes. The prevalence of diabetes is highest among Georgians aged 65 years and older (Figure 4). Black males and females in Georgia are significantly more likely to suffer from diabetes than white males and females (Figure 5).

Diabetes is not equally distributed in Georgia. The 2000-2008 combined BRFSS data reveal that several southern and northwestern public health districts have higher prevalences than other districts (Figure 6).
People with diabetes have poor health and if their illness is untreated or uncontrolled they are likely to need acute care and hospitalization. In 2006, diabetes was the principal diagnosis for 15,593 hospitalizations in Georgia, resulting in more than $288 million in hospital charges and approximately 78,346 days (or about 215 years) of hospital stay.

Among Georgians who needed in-patient care in 2006, 31% of those hospitalized with cardiovascular disease and 30% of those admitted with end-stage renal disease had diabetes. For those in-patients who required lower limb amputation procedures, two-thirds of them had diabetes. Although the number of lower limb amputations decreased by more than 100 cases from 2000 to 2006, the proportion of cases with diabetes went up from 49% in 2000 to 66% in 2006. In 2006, nearly 6,000 people with diabetes were treated as in-patients for diabetic ketoacidosis resulting from poor blood glucose control. This was a 62% increase from 3,702 diabetic ketoacidosis cases in 2000 (Table 2).

A study by the American Diabetes Association (ADA) reported that the annual cost of diabetes in Georgia due to excess medical costs and lost productivity increased from over $4 billion in 2002 to over $5 billion in 2006.5

In 2006, nearly 20,000 emergency room visits in Georgia were also attributable to diabetes. Many of these visits could have been avoided by proper blood glucose control. Unfortunately, they required urgent care resulting in more than $3.2 million in medical care charges.

The health care cost for a person with diabetes is approximately $13,200 per year compared with $2,600 per year for a person of comparable age without diabetes.6 The ADA reports that one out of every five health care dollars was spent to care for someone with diabetes.7

Georgia counties in the east, southwest and south central regions tend to have higher hospital discharge rates for diabetes than the statewide average for 1999 - 2006 (Figure 7). These areas also have higher prevalence of diabetes and have heavier economic burden from diabetes as a result.

### Table 2. Hospitalizations with Diabetes-related Complications, Georgia Adults 2000 and 2006

<table>
<thead>
<tr>
<th>Primary Diagnosis or Procedure</th>
<th>2000 Total</th>
<th>Diabetes as secondary diagnosis</th>
<th>2006 Total</th>
<th>Diabetes as secondary diagnosis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cardiovascular disease</td>
<td>133,075</td>
<td>39,242 (29%)</td>
<td>144,902</td>
<td>44,999 (31%)</td>
</tr>
<tr>
<td>End-stage renal disease (ESRD)</td>
<td>785</td>
<td>215 (27%)</td>
<td>675</td>
<td>203 (30%)</td>
</tr>
<tr>
<td>Diabetic ketoacidosis</td>
<td>3,702</td>
<td>3,702 (100%)</td>
<td>5,997</td>
<td>5,977 (100%)</td>
</tr>
<tr>
<td>Lower extremity amputation*</td>
<td>4,060</td>
<td>2,009 (49%)</td>
<td>3,942</td>
<td>2,593 (66%)</td>
</tr>
</tbody>
</table>

* Non-traumatic amputations

Diabetes-related Complications

Diabetes can contribute to blindness, kidney failure, amputations, heart disease, stroke, hypertension, nerve damage, impotence, skin disorders, periodontal disease, pregnancy complications, disability, and premature death. Many complications can be prevented with early detection and comprehensive management.

**Major Complications**
Chronically elevated blood glucose levels can damage both large and small blood vessels supplying oxygen and nutrients to vital organs of the body. Damage to large vessels in organs such as the heart and the brain can cause heart attack and stroke. Insufficient blood flow to the legs can lead to ulcers, slow wound healing, gangrene, and eventually amputations. Damage to small vessels in other organs such as the eyes and the kidneys can give rise to diabetic retinopathy and diabetic nephropathy, leading to blindness and kidney failure.

**Cardiovascular Events**
People with diabetes are two to four times more likely to have a heart attack or stroke than those without the disease\(^2\), and two out of three people with diabetes die from heart attack or stroke.\(^6\)

In 2008, people with diabetes in Georgia were three to four times more likely to have had either angina, heart attack, or stroke than those without the disease (Figure 8). When these events occur, healthcare for people with diabetes is more expensive than healthcare for those without diabetes. This is due to increased complexity of care and hospitalizations among people with diabetes.\(^5\)

![Figure 8. Prevalence of Cardiovascular Events by Diabetes Status, Georgia Adults, 2008](image)

* Figure 8. Prevalence of Cardiovascular Events by Diabetes Status, Georgia Adults, 2008

* Age 18 and older.
Source: Georgia BRFSS.
Vision Impairments
Diabetic retinopathy is a common complication of diabetes, affecting about 140,000 Georgians aged 40 years and older in 2008. Black women had the highest prevalence of diabetic retinopathy (Figure 9).

Diabetes also puts a person at increased risk for other eye diseases. In 2007, Georgians with diabetes had higher prevalence of cataract, glaucoma and age-related macular degeneration (AMD) than those without diabetes (Figure 10).

Kidney Failure (Diabetic Nephropathy)
Diabetes is a leading cause of kidney failure in the United States. The term “kidney disease” or “renal disease” refers to a partial or complete loss of kidney function, which may lead to heart disease, bone disease, anemia, nerve damage, or premature death. If detected early, the progression of kidney disease and its complications can be delayed. Unfortunately, mild loss of kidney function has no symptoms. In contrast, severe kidney function loss can have a broad range of symptoms: weakness, shortness of breath, swelling of the hands, feet or face, difficulty in concentration, loss of appetite and nausea.

Certain types of kidney disease, if untreated, can cause progressive loss of kidney function and eventually kidney failure. People with kidney failure cannot survive without receiving dialysis or a transplant; this irreversible, terminal condition is called end-stage renal disease (ESRD).

Diabetes and high blood pressure are the two most common causes of ESRD. Physicians in Georgia reported that there were 3,302 newly diagnosed ESRD patients in 2002. Of them, 76% had either diabetes (43%) and/or high blood pressure (33%). The United States Renal Data System (USRDS) report shows that the number of Georgians living with ESRD is growing (Figure 11). This increase coincides with increasing prevalence of chronic conditions in Georgia such as obesity, hypertension and diabetes. 8, 11, 12

Figure 9. Diabetic Retinopathy among Georgia Adults* with Diabetes by Sex and Race, 2008

Figure 10. Prevalence of Major Eye Diseases by Diabetes Status among Georgia Adults 40 Years and Older, 2007

Figure 11. Age-adjusted Prevalence and Incidence Rates for End Stage Renal Disease, Georgia, 1999-2005

Source: Georgia BRFSS.

In 2006, diabetes was the seventh leading cause of death, killing 1,626 Georgians, equivalent to about 31 deaths per week (Figure 12). The overall age-adjusted diabetes death rate was 20.2 per 100,000 population. For every death for which diabetes is the primary cause, there are two more deaths for which diabetes is a contributing cause.⁶

Compared to the nation, Georgia has consistently had a lower age-adjusted death rate from diabetes since 1989 (Figure 13). Among different age groups, Georgians aged 85 and older had the highest death rate, 223.2 per 100,000 in 2006 (Figure 14). The age-adjusted diabetes death rate per 100,000 population was 1.3 times higher for men (23.3) than for women (17.8), and 2.3 times higher among Blacks (36.4) than Whites (16.1). Black men (42.4) and women (32.3) had higher age-adjusted diabetes death rates than their white counterparts (19.1 and 13.7, respectively) (Figure 15).

In 2006, about 38% of diabetes deaths were in people under the age of 65; more than 600 people with diabetes died prematurely (Figure 16). Premature diabetes deaths (age less than 65 years) were highest among Black males (53.7%), followed by White males (41.1%), Black females (33.0%), and White females (26.6%) (Figure 17).

![Diabetes is a SERIOUS disease in Georgia.](image-url)
Georgia counties in the south, central and east regions tended to have the highest age-adjusted diabetes mortality rates from 1999 through 2006 (Figure 18).

**Figure 16.  Diabetes Deaths by Age Group, Georgia, 2006**

38% of deaths under 65 years of age

Source: GDPH, OASIS.

**Figure 17.  Premature Deaths (<65 years) from Diabetes by Race and Sex, Georgia, 2006**

Source: GDPH, OASIS.

**Figure 18.  Age-adjusted Mortality Rates for Diabetes, Georgia counties, 1999 - 2006**

<table>
<thead>
<tr>
<th>AAMR per 100,000 population</th>
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<tbody>
<tr>
<td>31 – 83 (Very high)</td>
</tr>
<tr>
<td>26 – 30 (High)</td>
</tr>
<tr>
<td>21 – 25 (Average)</td>
</tr>
<tr>
<td>16 – 20 (Low)</td>
</tr>
<tr>
<td>8 – 15 (Very low)</td>
</tr>
<tr>
<td>Statistically unstable</td>
</tr>
</tbody>
</table>

State Average AAMR
23 deaths per 100,000 population

AAMR = Age-adjusted mortality rate
Source: GDPH, OASIS
Risk Factors

Unhealthy eating habits, excess body weight, physical inactivity, a sedentary lifestyle and advancing age are risk factors for developing diabetes. The 2008 Georgia BRFSS survey data revealed that only 4.6% of adults with a normal body weight were diagnosed with diabetes, compared to 8.9% and 17.8% of overweight and obese Georgians, respectively (Figure 19). This is partly because excess body fat promotes insulin resistance, the major factor in the development of type 2 diabetes. The BRFSS data also showed that almost half of Georgians with diabetes were obese and were more likely to be physically inactive than non-diabetics. About 18% of them were also current smokers (Figure 20). Regarding other comorbidities, 71% of diabetic Georgians had high blood pressure and 68% had high cholesterol in 2007 (Figure 21). Both high blood pressure and high cholesterol can increase the risk of developing cardiovascular events.

Diabetes-related complications have a major impact on quality of life. The 2008 Georgia BRFSS data show that over 40% of people with diabetes reported having sub-optimal health or a disability. (Figure 22).
Diabetes is a serious disease, but it can be controlled. Self-management is crucial in diabetes control. For example, people with diabetes must monitor their blood glucose levels regularly. Learning about diabetes and knowing how to manage it are survival skills for people with diabetes as well as for family members, relatives and friends. People with diabetes also need to consult with their health care provider on a regular basis to receive recommended routine care for diabetes. As the disease progresses, diabetes management care plans and treatment regimes may need to be modified. Thus, regular doctor’s visit is as important as proper self-management.

In 2008, adults with diabetes in Georgia met only two of seven national targets (Healthy People 2010 Objectives) for recommended routine care for diabetes (Figure 23). This indicates that, although the majority of them went to see their doctors in 2008, adult Georgians with diabetes did not receive the minimal level of recommended care for diabetes in all required aspects. However, there were substantial improvements in immunization: the proportion of those receiving an annual influenza vaccination and a one-time immunization for pneumonia increased from 34% and 26% in 2005 to 54% and 47% in 2008, respectively, approaching the national goals of 60% in both indicators.

**Figure 23. Recommended Routine Care Rates for Adults with Diabetes, Georgia, 2008**

- Annual doctor visit
- Diabetes education
- Daily self glucose monitoring
- Annual retinal eye exam
- Annual blood pressure
- Annual foot exam
- Annual influenza vaccination
- Pneumococcal vaccination

Significant improvement from 2005
Healthy people 2010 objective

Source: Georgia BRFSS.
Diabetes Management by Medications

Pre-diabetes can usually be managed by healthy eating habits, physical activity and body weight control. This state can even be reversed back to normal (the normoglycemic state) with proper intervention, without medication. However, once uncontrolled or poorly controlled pre-diabetes turns into type 2 diabetes, there will likely be a need for regular medication; either oral pills, insulin or both. Still, diabetes can be kept under control by proper blood glucose monitoring and appropriate medications, along with healthy eating and regular physical activity.

In 2007, more than 50% of Georgians with diabetes used oral diabetic medications to control their blood glucose levels, and 14% used insulin. About 13% had to take both oral pills and insulin to better control their blood glucose levels. The remaining 19% did not report use of any diabetes medication (Figure 24).
The mission of the Georgia Diabetes Prevention and Control Program (DPCP) is to reduce the burden of diabetes in Georgia and to improve the well-being of those affected by diabetes. The DPCP has been funded by the Centers for Disease Control and Prevention through a cooperative agreement since 1977. The program conducts a broad range of public health activities designed to reduce and prevent deaths, disabilities, and cost related to diabetes and its complications, to promote knowledge and awareness of diabetes, and to improve access to resources and services for people with diabetes. While implementing these strategies, the DPCP strives to reach communities most affected by diabetes and improve the quality of care for Georgians with diabetes.

Selective Services

The Georgia Diabetes Coalition
The Georgia Diabetes Coalition (GDC) consists of area health care providers, local public health professionals, Georgians with diabetes and community leaders. The GDC provides advice and recommendations to the DPCP regarding statewide program services, initiatives, and activities. The coalition meets regularly to discuss and evaluate initiatives related to diabetes and make recommendations for program interventions.

Professional Education
In partnership with the Grady Health System, the DPCP offers two workshops and a statewide teleconference for rural health professionals every year. The workshops cover recent advances in treatment, patient education and diabetes management. They also serve as a review course for the certified diabetes educator (CDE) exam. An annual statewide diabetes and cardiovascular conference is also held for area health care professionals.

Certified Diabetes Educator (CDE) Scholarship
Annually, ten scholarships are awarded to eligible candidates to pay for the exam fees or tuition.

Diabetes Today Project
This community-based program addresses diabetes related problems from a public health perspective. The program aims to empower both individuals and groups to build linkages in their communities to promote and support diabetes prevention and control efforts.

Community Outreach
Collaborating with local professional organizations, the DPCP supports community outreach events such as the Diabetes Expo, Victory Over Diabetes and the Diabetes University in metro Atlanta.

Drive for Sight Program
This program, which is funded by voluntary donations from the driver’s license renewal process, provides financial support to several vision projects. Diabetic retinopathy screening and early interventions for prevention of blindness and vision conservation are among the program’s activities.

The mission . . . is to reduce the burden of diabetes in Georgia and to improve the well-being of those affected by diabetes.
References


Technical Notes

Age-adjusted mortality rates
Age-adjusted diabetes mortality rates for the United States from 1981 through 2002 and for Georgia from 1981 through 1993 were obtained via CDC WONDER at http://wonder.cdc.gov from the compressed mortality file compiled by the National Center for Health Statistics, CDC. Age-adjusted diabetes mortality rates for Georgia from 1994 through 2002 were obtained via OASIS (On-line Analytical Statistical Information System) at http://health.state.ga.us provided by the Office of Health Information and Policy, Georgia Division of Public Health. Age-adjusted diabetes mortality (years) rates for counties were also obtained from the OASIS. The number of deaths due to kidney disease prior to 1999 was determined using the International Classification of Diseases, 9th Revision (ICD-9) codes 580-589. The number of deaths for 1999 and after was determined using the International Classification of Diseases, 10th Revision (ICD-10) codes N00-N07, N17-N19, and N25-N27. The 2006 leading cause of death was obtained from OASIS.

Age-adjusted ESRD incidence rates
The incidences of end-stage renal disease (ESRD) for the United States and Georgia were obtained from the United States Renal Data System (USRDS) annual report. The incidence of ESRD was defined as the number of new patients treated by dialysis or kidney transplantation whose records are registered, classified, stored and maintained in the USRDS in a given calendar year. Age-adjusted rates were computed using the direct method based on the population estimates obtained from the U.S. Bureau of the Census. The 2000 United States standard population was used as the standard. Further information on USRDS data sources can be found at http://www.usrds.org.

Age-adjusted ESRD prevalence rates
The prevalences of end-stage renal disease (ESRD) for the United States and Georgia from 1999 through 2005 were obtained from the United States Renal Data System (USRDS) annual report. The prevalence of ESRD was defined as the total number of reported ESRD patients recorded in the USRDS as of December 31, 2005. Age-adjusted rates were computed using the direct method based on the population estimates obtained from the United States Bureau of the Census. The 2000 United States standard population was used as the standard.

BRFSS data
Prevalence, risk factors, and management of diabetes among adults in Georgia were obtained from the 2006, 2007 and 2008 Georgia Behavioral Risk Factor Surveillance System, a telephone survey conducted annually with a sample of adults aged 18 years and older. The sample is weighted so that it reflects the total adult population of the state. The International Classification of Diseases, 9th Revision (ICD-9) and International Classification of Diseases, 10th Revision (ICD-10) codes for diabetes were 250 and E10-E14 respectively.

Hospital discharge data
Data on hospitalizations at acute care hospitals in Georgia were provided by the Office of Health Indicators for Planning after compilation by the Georgia Hospital Association. Analyses were restricted to Georgia residents. The ICD-9-CM code 250 was used for diabetes.
Glossary

**Age-adjusted mortality rate**: a rate calculated based on a standard age distribution to enable comparison of rates in populations with different age structures.

**Chronic kidney disease**: the presence of kidney damage or decreased level of kidney function for three months or more, irrespective of diagnosis. In this report, it specifically refers to certain types of kidney diseases such as nephritis, nephrotic syndrome, and nephrosis.

**Diabetic retinopathy**: a disease of the tiny blood vessels that supply the retina of the eye, due to chronic exposure to high blood sugar levels. It can lead to visual impairment and blindness.

**Diabetic nephropathy**: a progressive, chronic kidney disease caused by damage to the tiny blood vessels in the glomeruli, the filtering units of the kidney, due to high blood sugar levels.

**Dialysis**: the process by which metabolic waste products are removed by cleansing the blood directly through filtration membranes outside the body (hemodialysis) or indirectly by diffusion of waste products through the peritoneal membranes into instilled fluids (peritoneal dialysis).

**End-stage renal disease (ESRD)**: chronic renal failure requiring either dialysis or a kidney transplant to sustain life.

**Glomerular filtration rate (GFR)**: a calculated measurement that indicates how well a person’s kidney functions. It may be estimated from one’s blood level of creatinine.

**Hypertension**: High blood pressure. A medical condition in which constricted arterial blood vessels increase the resistance to blood flow, causing an increase in blood pressure exerted on vessel walls.

**Incidence**: the number of new cases of disease occurring in a specific population over a specific period of time, usually one year. For example, number of people newly diagnosed with diabetes from January 1, 2008 to December 31, 2008.

**Prevalence**: the number of people with a disease or an attribute at a specified point of time. For example, number of people living with diabetes as of December 31, 2008.

**Risk factor**: a habit, characteristic, or finding on clinical examination that is associated with an increased probability of having a particular disease.

**Serum creatinine**: a waste product in a person’s blood that comes from muscle activity. It is normally removed from one’s blood by the kidneys; however, when kidney function slows down, the creatinine level rises.
## Abbreviations

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>AAMR</td>
<td>Age-adjusted mortality rate</td>
</tr>
<tr>
<td>AMD</td>
<td>Age-related macular degeneration</td>
</tr>
<tr>
<td>BRFSS</td>
<td>Behavioral Risk Factors Surveillance System</td>
</tr>
<tr>
<td>CDC</td>
<td>Centers for Disease Control and Prevention</td>
</tr>
<tr>
<td>CDE</td>
<td>Certified diabetes educator</td>
</tr>
<tr>
<td>CKD</td>
<td>Chronic kidney disease</td>
</tr>
<tr>
<td>DPCP</td>
<td>Diabetes Prevention and Control Program</td>
</tr>
<tr>
<td>ESRD</td>
<td>End-stage renal disease</td>
</tr>
<tr>
<td>FPG</td>
<td>Fasting plasma glucose test</td>
</tr>
<tr>
<td>OGTT</td>
<td>Oral glucose tolerance test</td>
</tr>
<tr>
<td>GFR</td>
<td>Glomerular filtration rate</td>
</tr>
<tr>
<td>GDC</td>
<td>Georgia Diabetes Coalition</td>
</tr>
<tr>
<td>GDPH</td>
<td>Georgia Division of Public Health</td>
</tr>
<tr>
<td>GDM</td>
<td>Gestational diabetes</td>
</tr>
<tr>
<td>ICD-9</td>
<td>The International Classification of Diseases, 9th Revision</td>
</tr>
<tr>
<td>ICD-10</td>
<td>The International Classification of Diseases, 10th Revision</td>
</tr>
<tr>
<td>IFG</td>
<td>Impaired fasting glucose</td>
</tr>
<tr>
<td>IGT</td>
<td>Impaired glucose tolerance</td>
</tr>
<tr>
<td>NCHS</td>
<td>The National Center for Health Statistics</td>
</tr>
<tr>
<td>OASIS</td>
<td>On-line Analytical Statistical Information System</td>
</tr>
</tbody>
</table>
Diabetes in Georgia, 2009