Diabetes Management and Care

Among New York State Adults

Diabetes Prevention and Control Program
Bureau of Chronic Disease Evaluation and Research
New York State Department of Health

Authors:

Bureau of Chronic Disease Evaluation and Research
Rachael Ruberto, MPH, CPH, CHES
Ian Brissette, PhD

Bureau of Community Chronic Disease Prevention
Maureen Spence, MS, RD, CDN
Tracy Mills, MPP

For additional information about this report:

Rachael Ruberto, MPH, CPH, CHES
Bureau of Chronic Disease Evaluation and Research
Division of Chronic Disease Prevention
New York State Department of Health
Empire State Plaza
Corning Tower, Room 1072
Albany, NY 12237
518-474-2434
rxr24@health.state.ny.us

For additional information about the Diabetes Prevention and Control Program:

Susan Millstein, LCSW-R, MPH
Director, Diabetes Prevention and Control Program
Bureau of Community Chronic Disease Prevention
Division of Chronic Disease Prevention
New York State Department of Health
Riverview Center
150 Broadway, 3rd Floor West
Albany, NY 12204
518-408-0125
slm11@health.state.ny.us

This report was supported by Cooperative Agreement Number 1U58/DP00-1963-03 from the National Center for Chronic Disease Prevention and Health Promotion, United States Centers for Disease Control and Prevention (CDC). Its contents are solely the responsibility of the authors and do not necessarily represent the official view of the CDC.

Table of Contents

Executive Summary

Diabetes Management and Care Among New York State Adults examines data on access to care, receipt of routine medical care, self-management behaviors, and disease control among adults with diabetes in New York State (NYS). Using the NYS Behavioral Risk Factor Surveillance System (BRFSS) and the NYS Quality Assurance and Reporting Requirements System (QARR) as data sources, the report summarizes information about trends in access, management, and disease control indicators over time for people with diabetes. Differences in these trends are also presented for adults with diabetes compared to adults without diabetes when the data are available. This Executive Summary offers highlights of the diabetes-related information in NYS detailed throughout the report.

Access to care

- In 2009, adults with diabetes were more likely to have a regular medical provider (94.3% versus 85.8%) and were more likely to receive an annual physical exam than adults without diabetes (90.6% versus 71.7%) (BRFSS).

Clinical management

- The percentage of adults with diabetes who had an A1C test at least twice in the past year has remained stable since 2001. In 2009, 74.0% of adults with diabetes received at least two A1C tests in the past year (BRFSS).
- The percentage of adults with diabetes who received an A1C test within the past year increased from 83.3% in 2002 to 89.5% in 2009 among commercial managed care plan enrollees and from 79.9% in 2002 to 88.7% in 2009 among Medicaid managed care plan enrollees (QARR).
- In 2009, adults with diabetes were more likely to report having an annual cholesterol check than adults without diabetes (90.7% versus 61.2%) (BRFSS).
- In 2008, adults with diabetes were less likely to have an annual dental examination than adults without diabetes (66.1% versus 75.0%) (BRFSS).

Self-management behaviors

- The percentage of adults with diabetes who ever took a class or course on diabetes self-management education (DSME) has remained stable since 2001. In 2009, 40.6% of adults with diabetes reported ever having received DSME (BRFSS).
- The percentage of adults with diabetes who perform daily blood glucose self-monitoring increased from 54.4% in 2001 to 64.9% in 2009 (BRFSS).

Diabetes control

- The percentage of adults with diabetes whose blood glucose levels were in poor control (A1C>9.0%) decreased from 30.9% in 2002 to 27.7% in 2009 among commercial managed care plan enrollees and from 45.4% in 2002 to 33.4% in 2009 among Medicaid managed care plan enrollees (QARR).
- In 2009, adults with diabetes were more likely to have high blood pressure (67.0% versus 24.8%) and more likely to be taking medication to control their blood pressure than adults without diabetes (92.9% versus 74.0%) (BRFSS).
- The percentage of adults with diabetes whose blood pressure levels were in control increased from 27.1% in 2006 to 29.8% in 2009 among commercial managed care plan enrollees and from 30.2% in 2006 to 34.5% in 2009 among Medicaid managed care plan enrollees (QARR).
- The percentage of adults with diabetes whose LDL cholesterol levels were in control increased from 44.5% in 2007 to 47.2% in 2009 among commercial managed care plan enrollees and from 40.7% in 2007 to 44.0% in 2009 among Medicaid managed care plan enrollees (QARR).

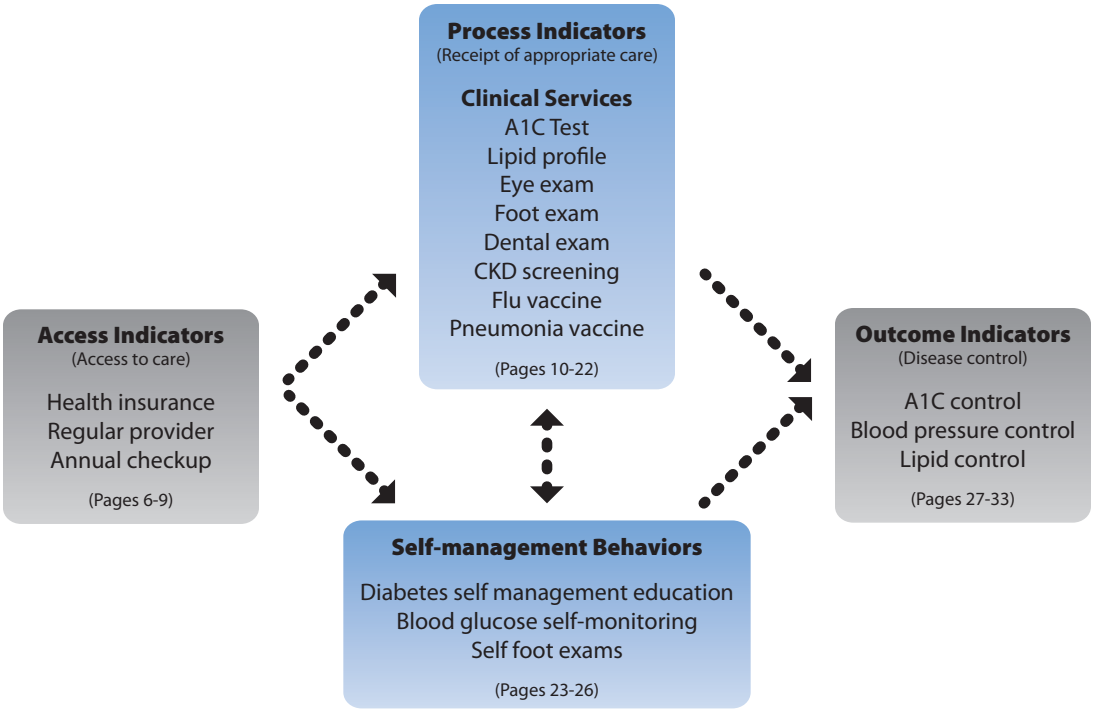
List of Figures

List of Tables

Diabetes Management and Care Overview

Diabetes is a complex chronic condition that requires daily care and management to promote control and prevent complications. Adequate diabetes management involves regular and effective medical care along with active patient self-care. People with diabetes should receive medical care from a physician-coordinated team that can encourage them to assume an active role in their care. The risk of diabetes-related complications and mortality can be reduced through access to quality, coordinated diabetes medical care and self-management education.[1] This report summarizes available data on access to care, receipt of routine medical care, self-management behaviors, and disease control for adults with diabetes in New York State.

In order to achieve disease control, adults with diabetes need to have access to health care, receive appropriate clinical preventive services, and engage in regular self-management behaviors. The following diagram illustrates how the relationship between access to care, clinical services, and self-management behaviors leads to diabetes control.



Access to care indicators

Access to quality care is important to improve the quality of life for all New Yorkers and to eliminate disparities in health.[2] For people with diabetes, having access to health care services, medications, and medical equipment is essential to preventing complications. The lack of access to affordable and quality care may lead people to forgo the care they need to prevent or delay the progression of diabetes. Indicators of health access covered within this report include: health insurance coverage, having at least one regular health care provider, and receiving an annual physical exam.

Diabetes clinical care indicators

Optimal diabetes care and management depend on access to and receipt of a comprehensive set of clinical services. The following table summarizes the 2011 Clinical Care Guidelines for Adult Diabetes Care developed by the New York Diabetes Coalition (NYDC) in collaboration with the NYSDOH Diabetes Prevention and Control Program.[3] The guidelines are reviewed annually by a clinical workgroup and are based on the American Diabetes Association's Clinical Practice Recommendations:

Clinical service	Frequency	Goal or recommendation
Glycosylated hemoglobin A1C (A1C)	2-4 times annually	<7.0%*
Blood pressure	Every visit	<130/80 mmHg*
Fasting lipid profile cholesterol	Annually	LDL <100 mg/dl for patients without overt cardiovascular disease.
Dilated retinal exam	Annually	Detect retinopathy; refer to eye care professional.
Comprehensive foot exam	Annually	Teach protective foot behavior if sensation diminished; refer to podiatrist.
Dental exam	Every 6 months	Evaluate teeth and gums. Encourage daily brushing and flossing; refer to dentist.
Urine microalbumin/ creatinine Ratio	At diagnosis and annually	Perform test on spot urine for albumin and creatinine and calculate ratio: ≥30µg alb/mg creatinine is abnormal.
eGFR (calculated from serum creatinine)	Annually	Obtain estimated glomerular filtration rate (eGFR) to stage the level of chronic kidney disease (CKD).
Flu vaccine	Annually	Administer to all adults with diabetes.
Pneumovax	Once	Administer to all adults with diabetes. A one-time revaccination is recommended for adults >64 years of age previously immunized when they were <65 years of age if the vaccine was administered >5 years ago.

**with individual adjustment as appropriate*

This report presents information about the extent to which persons with diabetes are receiving each of these critical clinical preventive services.

Diabetes self-management indicators

Diabetes also requires individuals to engage in self-care to meet treatment guidelines and avoid complications. This report summarizes data on three important indicators of self-care: self-monitoring of blood glucose, self-foot exams and participating in self-management education. Routine self-monitoring of blood glucose allows patients with diabetes and their providers to track glycemic control (the maintenance of blood glucose levels within appropriate ranges) and assess the effectiveness of current treatment regimens. People with diabetes are also encouraged to perform daily self-foot examinations to check for loss of sensation and the presence of diabetic sores or ulcers. Comprehensive diabetes self-management education is an integral component of diabetes care, and has been shown to improve diabetes outcomes and reduce health care costs when delivered in accordance with national standards. The following table summarizes the 2011 American Diabetes Association's Clinical Practice Recommendations related to diabetes self-management behaviors:[4]

Self management indicator	Frequency	Goal or recommendation
Diabetes self-management education (DSME)	At diagnosis and as needed thereafter	DSME should be delivered in accordance with national standards and provide knowledge and skill training, as well as help individuals identify barriers, facilitate problem-solving and develop coping skills to achieve effective self-care and behavior change.
Self-monitoring of blood glucose (SMBG)	Varies	SMBG should be carried out three or more times daily for patients using multiple insulin injections or insulin pump therapy. For adults not using insulin, SMBG may be useful as a guide to monitor glycemic control and evaluate the success of the person's current therapy.
Self-foot exams	Daily	Adults with diabetes should perform foot monitoring on a daily basis, and understand the importance of proper foot care, and the selection of appropriate footwear.

Diabetes control indicators

Diabetes disease control involves achieving glycemic control targets, as well as targets for blood pressure and cholesterol. For the purposes of this report, good diabetes control is defined as having an A1C of less than 7.0%, a blood pressure of less than 130/80 mmHg, and an LDL cholesterol of less than 100 mg/dl. Maintaining good control can help prevent diabetes-related complications and improve the quality of life for people with diabetes. Indicators of disease control covered within this report include: glucose control, hypertension control and use of high blood pressure medication, and cholesterol control.

Surveillance Indicators and Data Sources

Behavioral Risk Factor Surveillance System (BRFSS)

A primary source of information on diabetes care and management in New York State is the Behavioral Risk Factor Surveillance System (BRFSS), a statewide random-digit-dialing telephone survey of the non-institutionalized adult population aged 18 years and older. The BRFSS survey data provide information about the proportion of people with diabetes receiving selected clinical care measures. People who identified themselves as having diabetes in the BRFSS survey were asked several questions related to diabetes care practices, both self-administered and received within the health care setting. Individuals who answered any question with the responses "Don't Know" or "Not Sure" were considered missing in all analyses. Prevalence estimates and 95% confidence intervals (CIs) for each of the BRFSS diabetes care and management indicators are provided in the data tables and figures within this report.

For figures that depict BRFSS trend data, an approximation of the chi-square test suitable for data collected from a complex survey design was used to determine if differences in annual prevalence estimates were statistically significant. Instances where indicators of self-management and diabetes care changed significantly over time are noted throughout the report.

More information on the BRFSS is available at: http://www.health.ny.gov/statistics/brfss/

Quality Assurance Reporting Requirements (QARR)

QARR is a public reporting system that is used to monitor managed care plan performance and improve the quality of care provided to New York State residents. QARR is largely based on measures of quality published by the National Committee for Quality Assurance (NCQA) Healthcare Effectiveness Data and Information Set (HEDIS), but also includes information collected using a national satisfaction survey methodology called Consumer Assessment of Healthcare Providers and Systems (CAHPS). CAHPS data are collected every year for commercial enrollees. The NYSDOH sponsors a Consumer Assessment of Healthcare Providers and Systems (CAHPS) survey for Medicaid managed care enrollees every two years. Comprehensive diabetes care is assessed by comparing the rate at which plan members (age 18-75) with diabetes received six necessary components of diabetes care. QARR data are also available on the NYSDOH website as an interactive report card for health care consumers. Commercial, Medicaid, and Child Health Plus data are available on a regional basis. Prevalence estimates for each of the QARR diabetes care and management indicators are provided in the data tables and figures within this report; 95% confidence intervals are not provided for population-level estimates.

More information on QARR is available at:
http://www.health.ny.gov/health_care/managed_care/reports/

Data Standards and Objectives

1) NYSDOH Office of Health Insurance Programs' Access to Quality Care Objectives

In 2008, the New York State Department of Health (NYSDOH) launched a Prevention Agenda for the Healthiest State to support the goals of health care reform. This agenda sets ten statewide public health priorities and asks local health departments, hospitals and other community partners to work together to address them. The emphasis of this public health initiative is on prevention strategies to improve the health of all New Yorkers and foster healthy communities.

In addition to the Prevention Agenda objectives around access to quality care, the NYSDOH Office of Health Insurance Programs (OHIP) established the following objectives related to diabetes management and control:

By year 2013, increase the percentage of diabetic managed care enrollees whose blood sugar levels are in good control to:

- 50% for commercial enrollees (Baseline: 44%, 2007 QARR data).
- 45% for Medicaid enrollees (Baseline: 38%, 2007 QARR data).

More information about the NYSDOH Prevention Agenda and related OHIP objectives is available on the Prevention Agenda page on the NYSDOH website:
http://www.health.ny.gov/prevention/prevention_agenda/

2) Healthy People 2020 (HP2020)

Healthy People 2020 is a comprehensive set of disease prevention and health promotion objectives for the Nation to achieve over the next ten years. Healthy People 2020 has established objectives aimed at reducing the economic burden of diabetes, and improving the quality of life for all persons who have or are at risk for diabetes. These objectives include 2020 targets related to both diabetes management and risk factor control.

- Increase the proportion of adults with diabetes who have glycosylated hemoglobin (A1C) measurement at least twice a year to 71.1% (Baseline: 64.6%, 2008 BRFSS).
- Reduce the proportion of people with diabetes with an A1C value greater than 9% to 14.6% (Baseline: 16.2%, 2005-08 NHANES).
- Increase the proportion of people with diabetes with an A1C value less than 7% to 58.9% (Baseline: 53.5%, 2005-08 NHANES).
- Increase the proportion of the population with diabetes whose blood pressure is under control to 57.0% (Baseline: 51.8%, 2005-08 NHANES).
- Increase the proportion of adults with diagnosed diabetes who have at least an annual dental examination to 61.2% (Baseline: 55.6%, 2008 NHIS).
- Increase the proportion of adults with diabetes who have at least an annual foot examination to 74.8% (Baseline: 68.0%, 2008 BRFSS).
- Increase the proportion of adults with diabetes who obtain an annual urinary microalbumin measurement to 37.0% (Baseline: 33.6%, 2007 USRDS).
- Increase the proportion of adults with diabetes who have an annual dilated eye examination to 58.7% (Baseline: 53.4%, 2008 NHIS).
- Increase the proportion of adults with diabetes who receive formal diabetes education to 62.5% (Baseline: 56.8%, 2008 BRFSS).
- Increase the proportion of adults with diabetes who perform self-blood glucose-monitoring at least once daily to 70.4% (Baseline: 64.0%, 2008 BRFSS).

More information about Healthy People 2020 is available at:
http://www.healthypeople.gov/2020/default.aspx

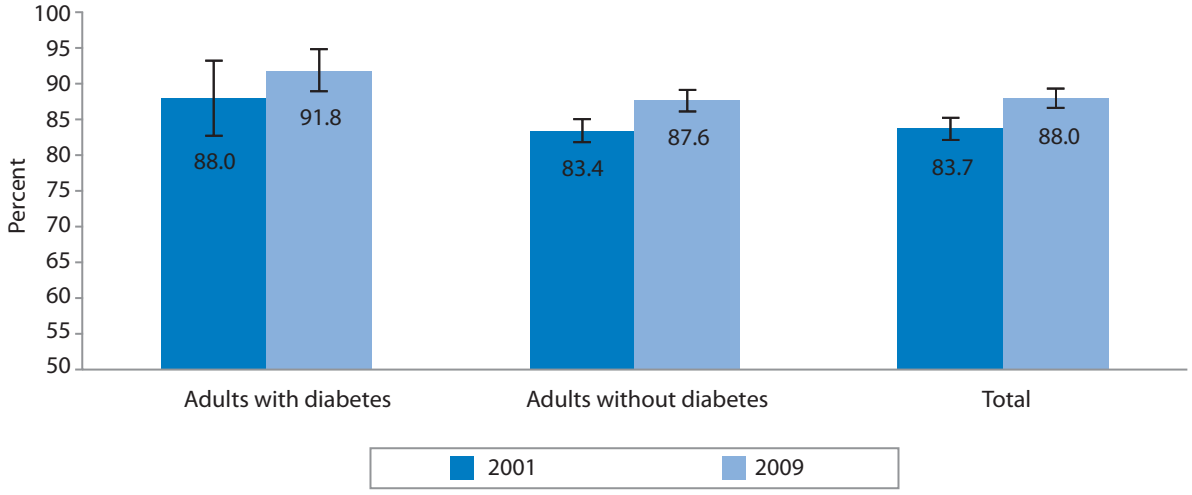
Access to Care

Access to care is the first step to ensuring that people with diabetes receive the clinical preventive services and self-management support necessary to manage and control their disease. In this report, access to care is defined by three indicators: health insurance coverage, having at least one regular medical provider, and receiving an annual checkup.

The annual NYS BRFSS survey includes questions that assess whether the survey respondent has health insurance (Do you have any kind of health care coverage, including health insurance, prepaid plans such as HMOs, or government plans such as Medicare?), a regular medical provider (Do you have one (or more than one) person you think of as your personal doctor or health care provider?), or visited the doctor for an annual checkup (About how long has it been since you last visited a doctor for a routine checkup?). Data obtained from these questions can be used to estimate the prevalence of access to care for adults with and without diabetes in NYS.

Data on access to care measures from the NYS BRFSS can be found in Table 1.

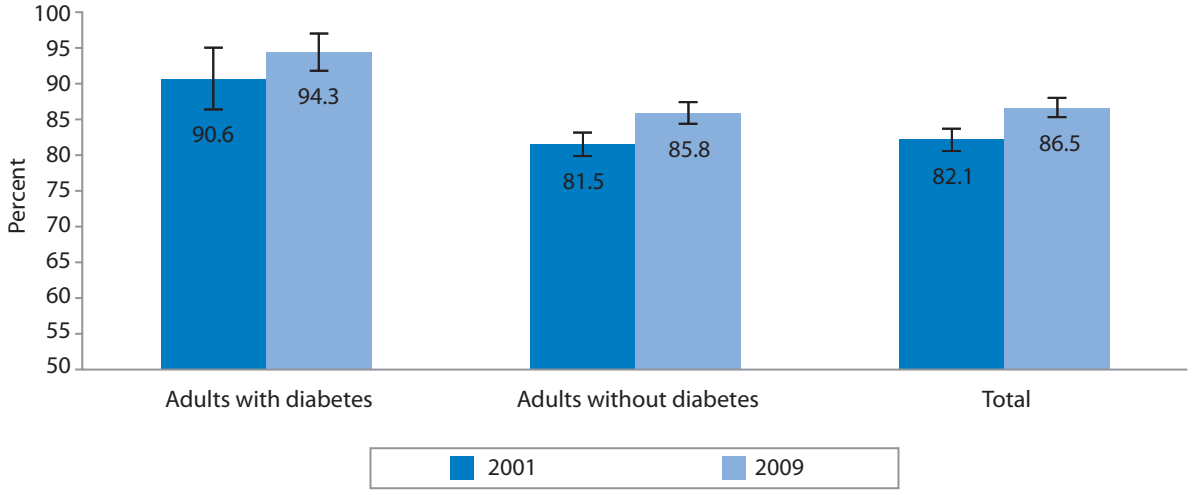
Figure 1 Percentage of NYS adults with some form of health insurance by diabetes status, BRFSS 2001 and 2009



The percentage of adults with health insurance increased significantly from 83 7% in 2001 to 88 0% in 2009 Among adults with diabetes, the percentage with health insurance was 88 0% in 2001 and 91 8% in 2009

The current prevalence of health insurance among NYS adults (88 0%) is below the objective identified in the Prevention Agenda (100%) For more information on the NYSDOH Prevention Agenda Toward the Healthiest State, please visit: http://www health ny gov/prevention/prevention_agenda/

Figure 2 Percentage of NYS adults with at least one regular medical provider by diabetes status, BRFSS 2001 and 2009

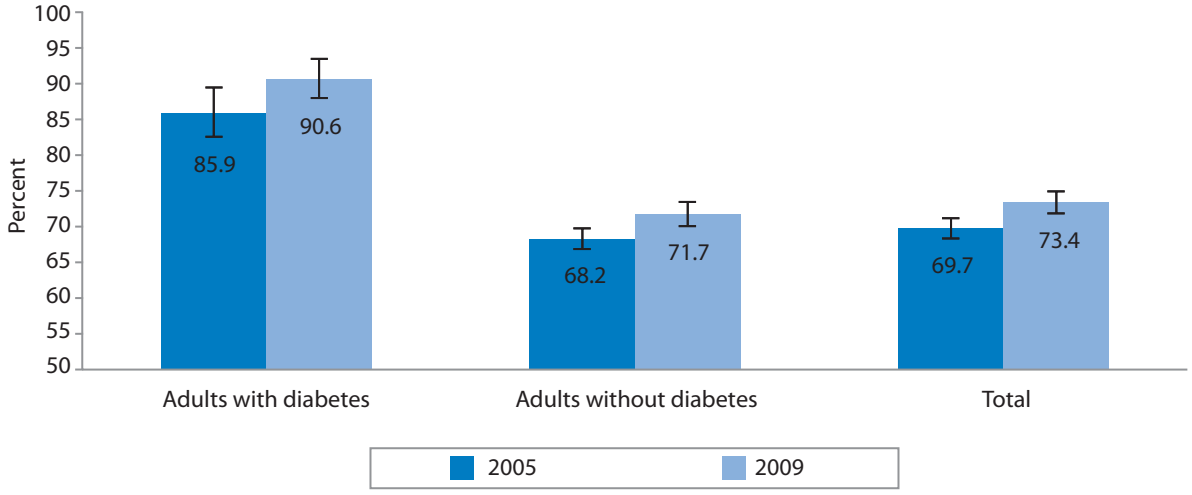


The percentage of adults with a regular medical care provider increased significantly from 82 1% in 2001 to 86 5% in 2009 Among adults with diabetes, the percentage with a regular medical provider was 90 6% in 2001 and 94 3% in 2009

Adults with diabetes are more likely to have a regular health care provider than adults without diabetes

The current prevalence of having a regular medical care provider among NYS adults (86 5%) is below the objective identified in the Prevention Agenda (96%) For more information on the NYSDOH Prevention Agenda Toward the Healthiest State, please visit: http://www health ny gov/prevention/prevention_agenda/

Figure 3 Percentage of NYS adults who received a physical exam in the last year by diabetes status, BRFSS 2005 and 2009*



*This question was not asked in the BRFSS until 2005.

The percentage of adults who received an annual physical exam increased significantly from 69 7% in 2005 to 73 4% in 2009 Among adults with diabetes, the percentage who received an annual physical exam was 85 9% in 2005 and 90 6% in 2009

Adults with diabetes are more likely to receive an annual physical exam from a health care provider than adults without diabetes

Diabetes Clinical Management Indicators

To prevent or delay serious diabetes-related complications, it is recommended that people with diabetes receive specific preventive care services every year.[5] These annual care services include, but are not limited to: tests for A1C, blood pressure, cholesterol and screening for kidney disease, dilated eye exams, comprehensive foot exams, immunizations, and dental exams. The annual NYS BRFSS includes questions that assess whether adults with diagnosed diabetes receive all of these recommended services with the exception of screening for kidney disease. The NYS QARR data include information on receipt of A1C and lipid testing, dilated eye exams, and screening for kidney disease among Medicaid and commercial managed care enrollees with diabetes. Targets for population attainment of these recommended diabetes care services are part of the national health objectives for 2020.[6] For specific targets for individuals with diabetes, please refer to the table on page 2 of this report.

A1C

Glycemic control is essential for diabetes management and for the prevention of diabetes-related complications. The A1C test provides a picture of a person's average blood glucose control for the past 2 to 3 months. The results are a good indication of how well an individual's diabetes treatment plan is working.

Blood pressure

Cardiovascular disease (CVD) is the major cause of morbidity and mortality for individuals with diabetes and the largest contributor to the direct and indirect costs of diabetes. Both diabetes and high blood pressure increase an individual's risk of heart attack, stroke, and eye and kidney disease. Because of this, people with diabetes have a lower blood pressure target than the general public.

Cholesterol

People with diabetes have an increased prevalence of dyslipidemia (abnormal blood cholesterol levels), which in turn increases their risk for complications from cardiovascular disease. Early detection of elevated lipid levels and appropriate treatment can decrease risk for cardiovascular complications including stroke, angina and congestive heart failure.

Dilated eye exams

People with diabetes are at increased risk of developing eye disorders, including diabetic retinopathy, glaucoma and cataracts. This risk continues to increase the longer a person has diabetes. A combination of good blood glucose management and regular eye exams has been shown to prevent or delay the onset and progression of diabetic retinopathy and other eye complications.

Foot exams

Amputation and foot ulceration are common causes of morbidity and disability in people with diabetes. Early recognition and management of risk factors can help prevent or delay adverse outcomes.

Dental visits

Periodontal (gum) disease is more common in people with diabetes. Periodontal disease has also been associated with the development of glucose intolerance and poor glycemic control among adults with diabetes.[7] Regular dental visits provide an opportunity for the early diagnosis, prevention, and treatment of oral diseases and conditions for people with diabetes.[8]

Nephropathy monitoring

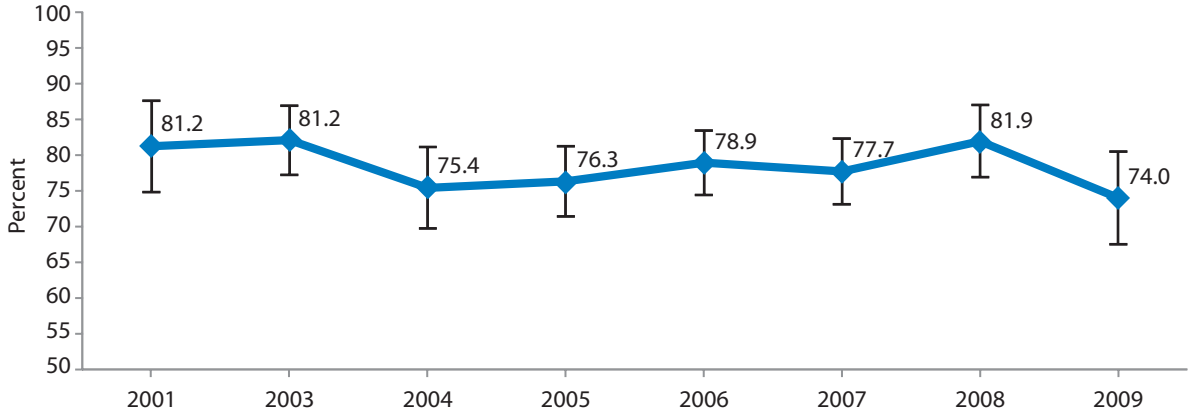
Diabetic nephropathy (kidney disease) occurs in 20–40% of patients with diabetes and is the single leading cause of end-stage renal disease (kidney failure that requires dialysis or a kidney transplant). Early detection of kidney disease through nephropathy screening is essential so that the disease can be treated with medication and/or lifestyle modifications to slow or delay progression.[9]

Immunizations

Patients with diabetes may have abnormalities in immune function that can result in increased morbidity and mortality from infection. Studies have shown that patients with diabetes are at high risk for complications, hospitalization, and death from influenza and pneumococcal disease. Immunization for influenza and pneumococcal pneumonia in patients with diabetes has the potential for significant reduction in morbidity and mortality due to these infections.

Data on diabetes clinical care measures from the NYS BRFSS and QARR can be found in Tables 2, 3, and 4.

Figure 4 Percentage of NYS adults with diabetes who received an A1C test at least twice in the past year, BRFSS 2001-2009*

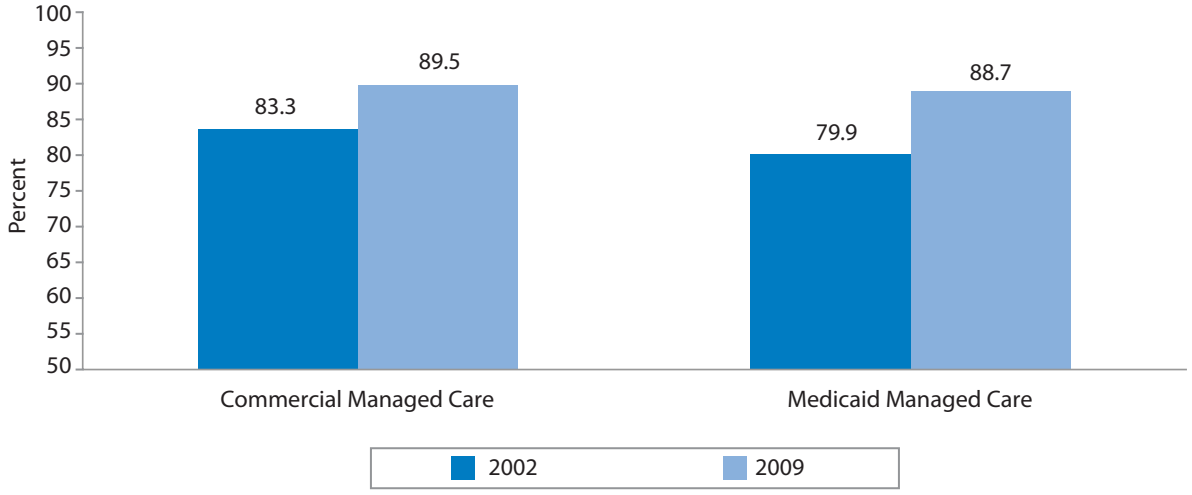


**This question was not asked in the BRFSS in 2002.*

The percentage of NYS adults with diabetes who had an A1C test at least twice in the past year has remained stable over the past 8 years

In 2009, nearly three quarters (74 0%) of NYS adults with diabetes received an A1C test at least twice in the past year

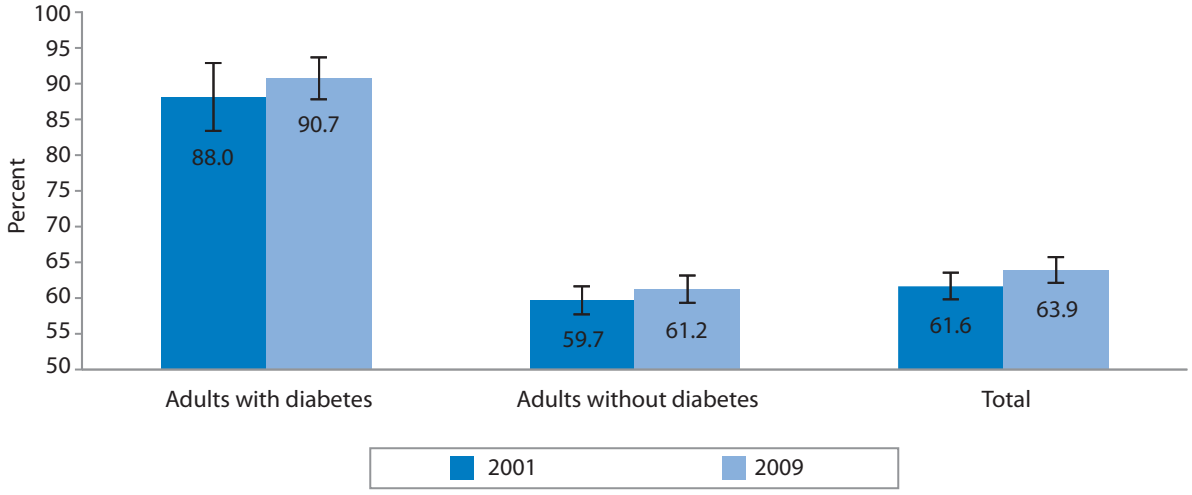
Figure 5 Percentage of NYS adults with diabetes enrolled in managed care plans who received an A1C test in the past year, QARR 2002 and 2009



The percentage of NYS adults with diabetes who received an A1C test within the past year increased over time among both commercial and Medicaid managed care plan enrollees

In 2009, the percentage of adults receiving an A1C testing was similar among those who enrolled in commercial (89 5%) versus Medicaid managed care plans (88 7%)

Figure 6 Percentage of NYS adults who had their cholesterol checked* at least once in the past year by diabetes status, BRFSS 2001 and 2009

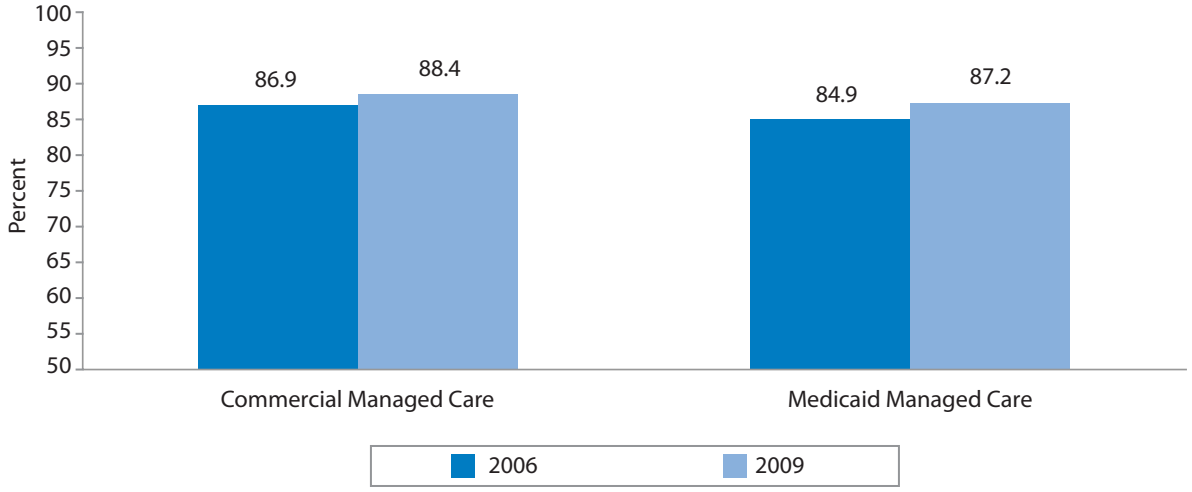


*Includes any self-reported cholesterol test within the past year.

The percentage of adults who had their cholesterol checked within the past year had remained constant from 2001 to 2009 Among adults with diabetes, the percentage who had an annual cholesterol check was 88 0% in 2001 and 90 7% in 2009

Adults with diabetes are more likely to have their cholesterol checked in the past year than adults without diabetes In 2009, 90 7% of adults with diabetes had an annual cholesterol check, compared to 61 2% of adults without diabetes

Figure 7 Percentage of NYS adults with diabetes enrolled in managed care plans who received a lipid profile* in the past year, QARR 2006 and 2009

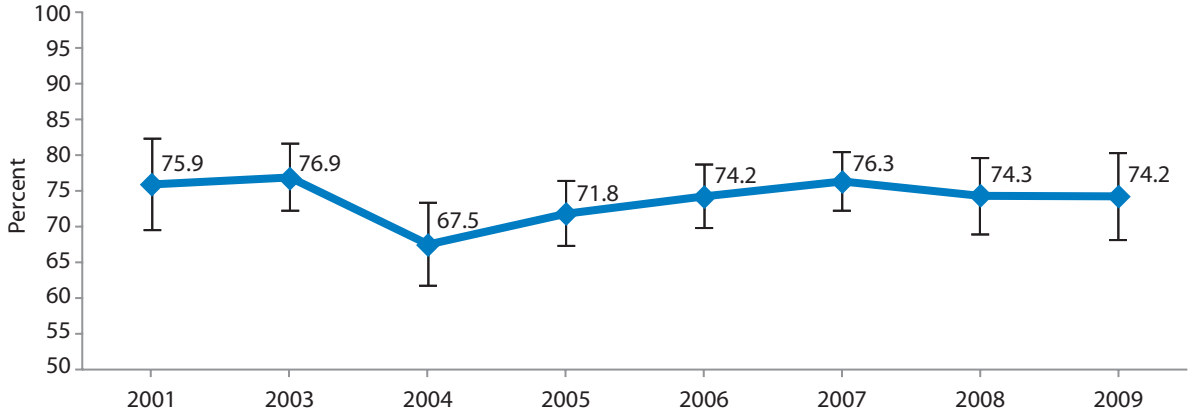


**Lipid profile includes measurement of total cholesterol, high density lipoprotein (HDL), and triglycerides.*

The percentage of NYS adults with diabetes who received a lipid profile within the past year increased from 86 9% in 2006 to 88 4% in 2009 among commercial managed care enrollees and from 84 9% in 2006 to 87 2% in 2009 among Medicaid managed care plan enrollees

In 2009, the percentage of adults with diabetes receiving an annual lipid profile was similar among those enrolled in commercial (88 4%) and Medicaid managed care plans (87 2%)

Figure 8 Percentage of NYS adults with diabetes who received a dilated eye exam at least once in the past year, BRFSS 2001-2009*

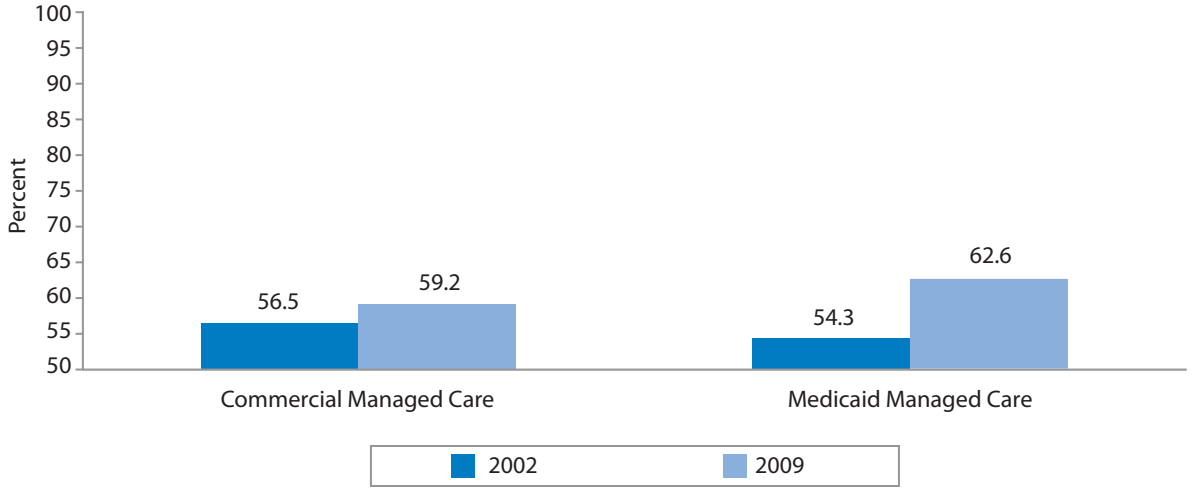


*This question was not asked in the BRFSS in 2002.

The percentage of NYS adults with diabetes who received a dilated eye exam at least once in the past year did not change significantly between 2001 and 2009

In 2009, nearly three-quarters (74 2%) of adults with diabetes received a dilated eye exam at least once in the past year

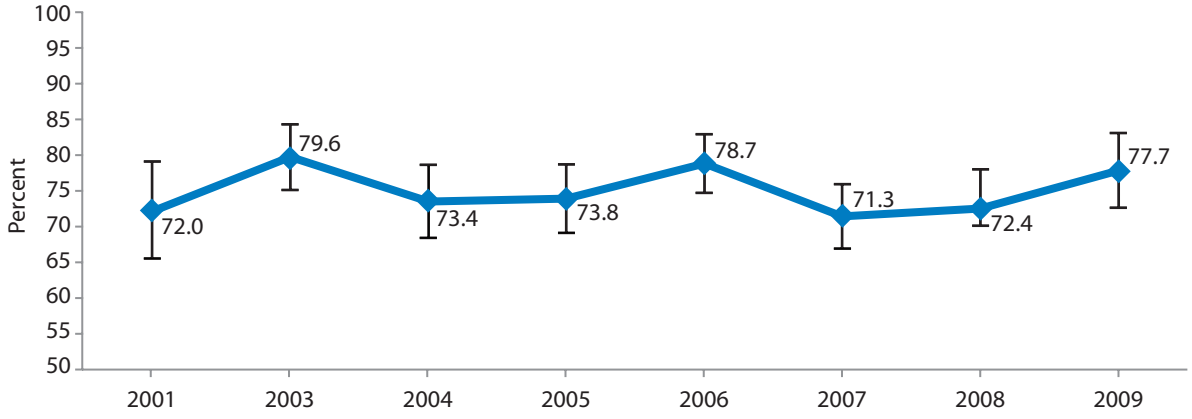
Figure 9 Percentage of NYS adults with diabetes enrolled in managed care plans who received a dilated eye exam within the past two years, QARR 2002 and 2009



The percentage of NYS adults with diabetes who received a dilated eye exam within the past two years increased from 56 5% in 2002 to 59 2% in 2009 among commercial managed care enrollees and from 54 3% in 2002 to 62 6% in 2009 among Medicaid managed care plan enrollees

In 2009, 62 6% of Medicaid managed care enrollees had a dilated eye exam within the past two years as opposed to 59 2% of those enrolled in commercial managed care plans

Figure 10 Percentage of NYS adults with diabetes who received a professional foot exam at least once in the past year, BRFSS 2001-2009*

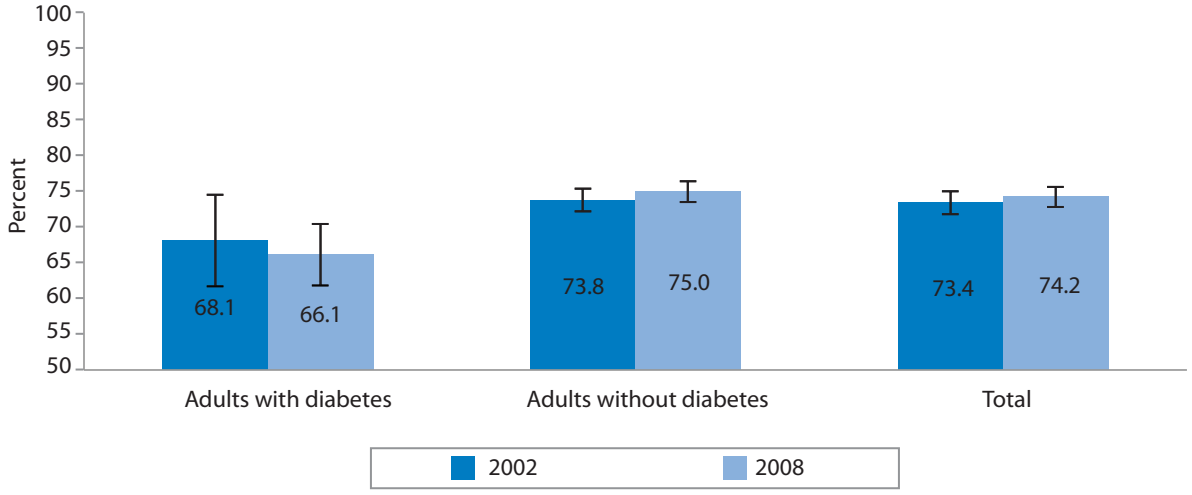


**This question was not asked in the BRFSS in 2002.*

The percentage of NYS adults with diabetes who received a professional foot exam at least once in the past year has remained constant from 2001-2009

In 2009, over three-quarters (77 7%) of adults with diabetes received a professional foot exam at least once in the past year

Figure 11. Percentage of NYS adults who saw a dental professional for a check-up in the past year by diabetes status, BRFSS 2002 and 2008*

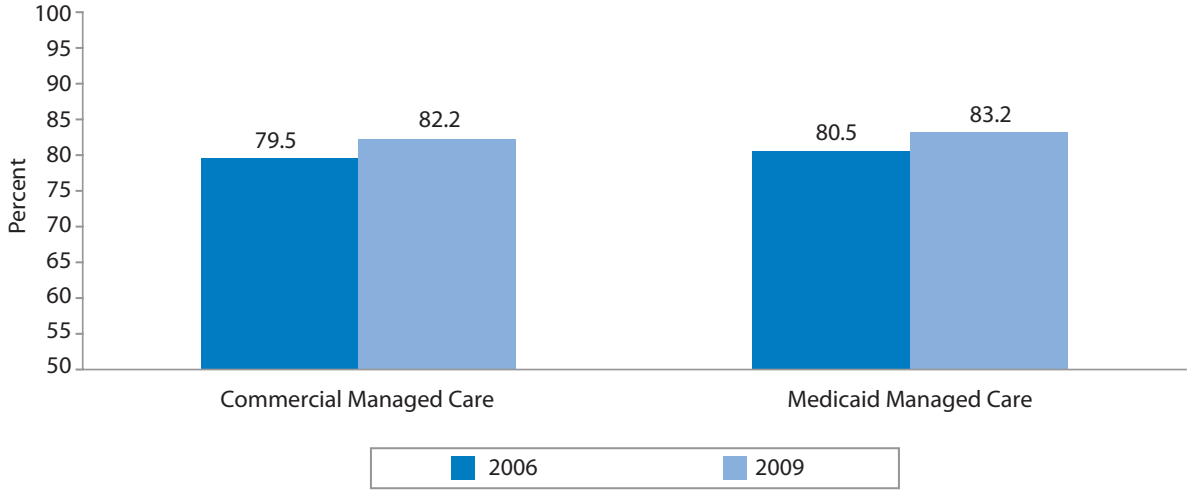


*This question was only asked in the BRFSS during even survey years.

The percentage of adults who saw a dental professional for a check-up in the past year remained stable from 2002 (73 4%) to 2008 (74 2%) Among adults with diabetes, the percentage who received an annual dental exam was 68 1% in 2001 and 66 1% in 2009

In 2008, adults with diabetes were less likely to have an annual dental examination (66 1%) than adults without diabetes (75 0%)

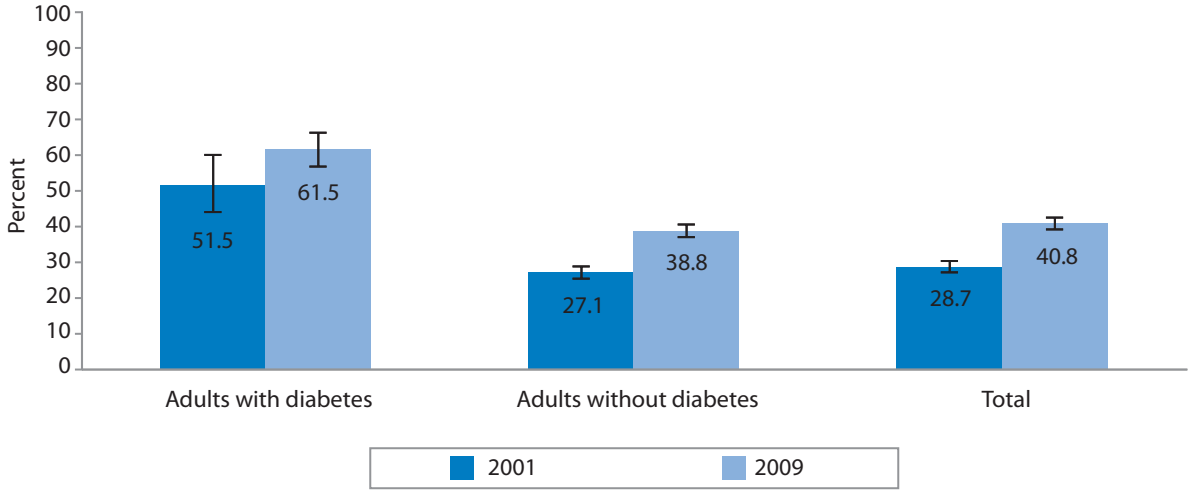
Figure 12 Percentage of NYS adults with diabetes enrolled in managed care plans who were screened or monitored for kidney disease in the past year, QARR 2006 and 2009



The percentage of NYS adults with diabetes who were screened for kidney disease within the past year increased slightly over time for both commercial and Medicaid managed care plan enrollees

The prevalence of annual screening for kidney disease is similar for adults with diabetes who are enrolled in commercial and Medicaid managed care plans

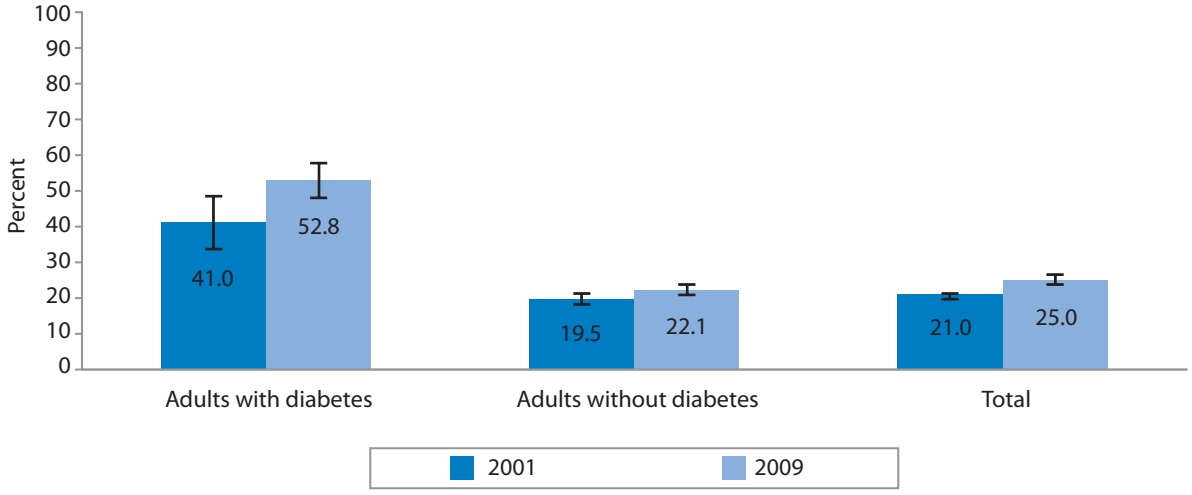
Figure 13a Percentage of NYS adults who received a flu vaccine in the past year by diabetes status, BRFSS 2001 and 2009



The percentage of adults who received an annual influenza vaccine significantly increased among all adults from 28 7% in 2001 to 40 8% in 2009 Among adults with diabetes, 61 5% received a flu shot in 2009 as compared to 51 5% in 2001

Adults with diabetes are significantly more likely to receive an annual influenza vaccine than adults without diabetes In 2009, 61 5% of adults with diabetes received a flu shot in the past year as compared to 38 8% of adults without diabetes

Figure 13b Percentage of NYS adults who received a pneumonia vaccination in their lifetime by diabetes status, BRFSS 2001 and 2009



The percentage of adults who ever received a pneumonia vaccine significantly increased from 21 0% in 2001 to 25 0% in 2009 Among adults with diabetes, 52 8% ever received a pneumonia vaccination in 2009 as compared to 41 0% in 2001

Adults with diabetes are significantly more likely to ever receive a pneumonia vaccination than adults without diabetes In 2009, 52 8% of adults with diabetes ever received a pneumonia vaccination as compared to 22 1% of adults without diabetes

Diabetes Self-management Indicators

Self-management education and behaviors are important since people with diabetes and their families provide 95% of their own care. Without appropriate education, people cannot make the complex daily medical decisions required for good health, quality of life and survival.[10]

Diabetes self-management education

Diabetes self-management education (DSME), delivered in accordance with national standards, is an integral component of diabetes care. Education helps people with diabetes initiate effective self-management skills and maintain a healthy lifestyle in order to optimize glycemic control and prevent complications.[11] The annual NYS BRFSS survey includes a question that asks whether survey respondents with diagnosed diabetes have ever received diabetes self-management education (Have you ever taken a course or class in how to manage your diabetes yourself?).

Self-monitoring of blood glucose and foot exams

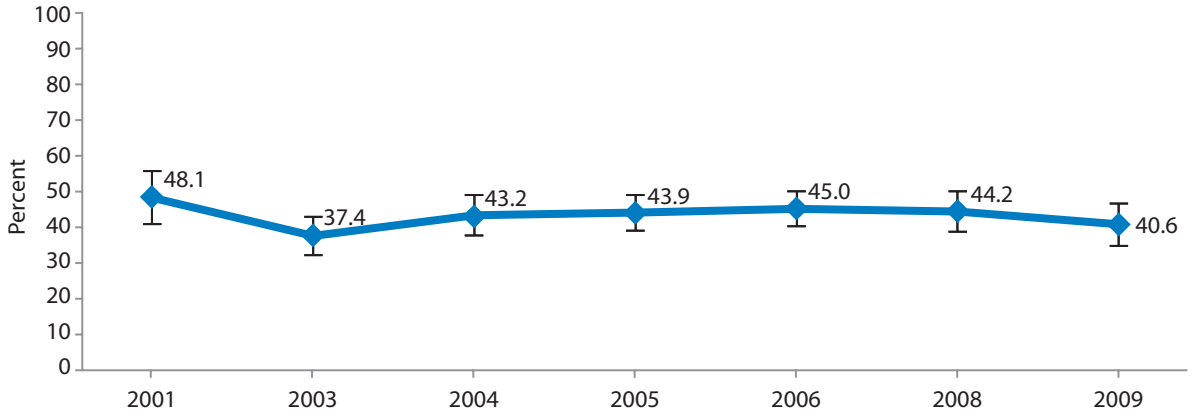
For people with diabetes who use an insulin pump and/or take insulin injections, self-monitoring of blood glucose should occur 3-4 times daily. Checking feet regularly for infections, blisters, pressure spots, and loss of sensation can help prevent foot ulcers as well as reduce the risk of lower extremity amputations.

The annual NYS BRFSS survey includes questions that assess the frequency of blood glucose self-monitoring (About how often do you check your blood for glucose or sugar? Include times when checked by a family member or friend, but do NOT include times when checked by a health professional.) and self-foot exams (About how often do you check your feet for any sores or irritations? Include times when checked by a family member or friend, but do NOT include times when checked by a health professional.) among survey respondents with diabetes.

For information on self-management behavior recommendations for individuals with diabetes, refer to the table on page 3 of this report.

Data on diabetes self-management practices from the NYS BRFSS can be found in Table 5.

Figure 14 Percentage of NYS adults with diabetes who ever took a class or course on diabetes self-management, BRFSS 2001-2009*

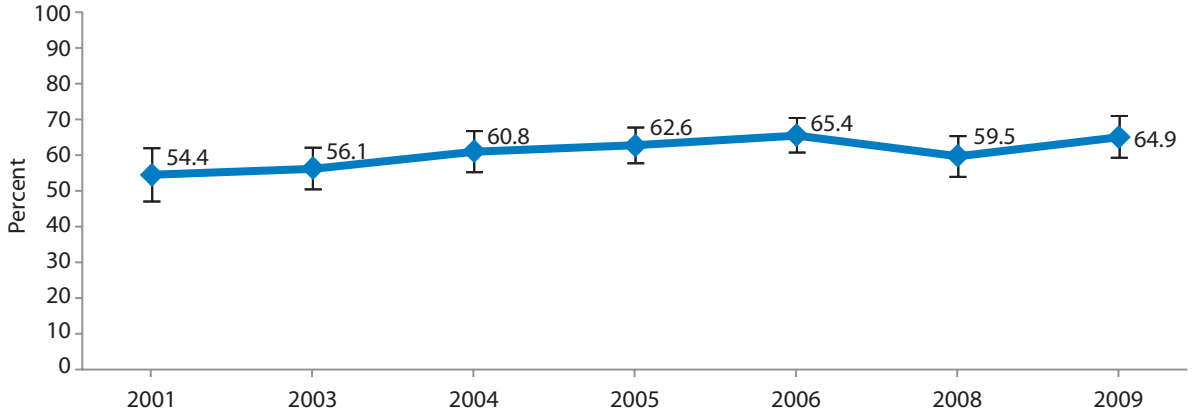


**This question was not asked in the BRFSS in 2002 or 2007.*

The percentage of NYS adults with diabetes who ever took a class or course on diabetes self-management has remained constant over the past 8 years

In 2009, less than half (40 6%) of NYS adults with diabetes ever received diabetes self-management education

Figure 15 Percentage of NYS adults with diabetes who perform blood glucose self-monitoring at least once a day, BRFSS 2001-2009*

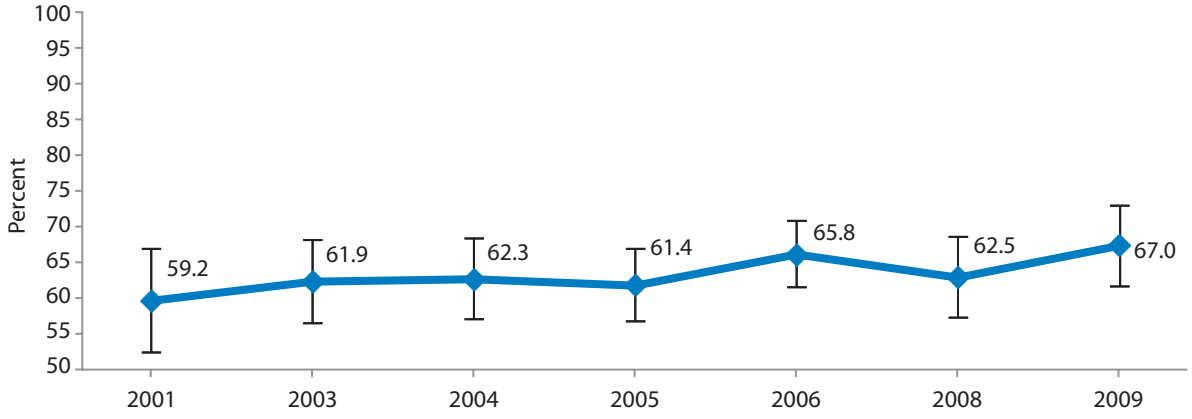


**This question was not asked in the BRFSS in 2002 or 2007.*

The percentage of NYS adults with diabetes who perform daily blood glucose self-monitoring has increased from 54 4% in 2001 to 64 9% in 2009

In 2009, nearly two-thirds (64 9%) of NYS adults with diabetes were performing blood glucose self-monitoring at least once a day

Figure 16 Percentage of NYS adults with diabetes who perform self-foot exams at least once a day, BRFSS 2001-2009*



**This question was not asked in the BRFSS in 2002 or 2007.*

The percentage of NYS adults with diabetes who perform daily self-foot exams has remained stable over the past 8 years

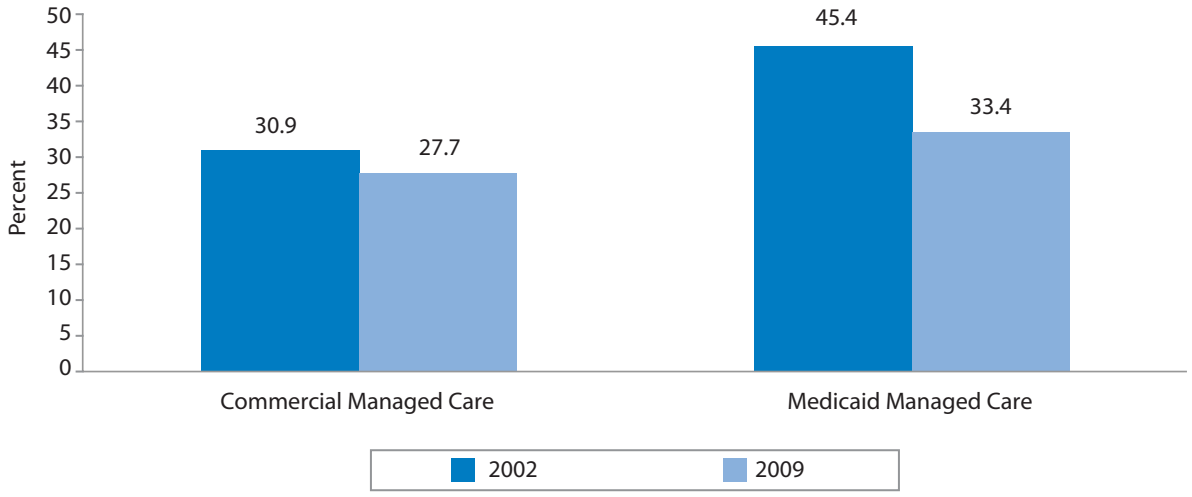
In 2009, over two-thirds (67%) of NYS adults with diabetes checked their feet for sores or irritation at least once a day

Diabetes Control Indicators

Diabetes disease control involves achieving glycemic control targets, as well as targets for blood pressure and cholesterol. Maintaining good control can help prevent diabetes-related complications and improve the quality of life for people with diabetes. The diabetes control indicators included in this report are A1C in good control (<7.0%), A1C in poor control (>9.0%), blood pressure in control (<130/80 mmHg), and LDL cholesterol in control (<100 mg/dl). The NYS QARR includes data on these indicators for Medicaid and commercial managed care enrolled with diabetes. As an additional measure of blood pressure control, the NYS BRFSS also includes a question that asks whether survey respondents have ever been told by a health care provider that they have high blood pressure (Have you EVER been told by a doctor, nurse or other health professional that you have high blood pressure? If "Yes" and respondent is female, ask Was this only when you were pregnant?)

Data on diabetes clinical care measures from the NYS BRFSS and QARR can be found in Tables 6 and 7.

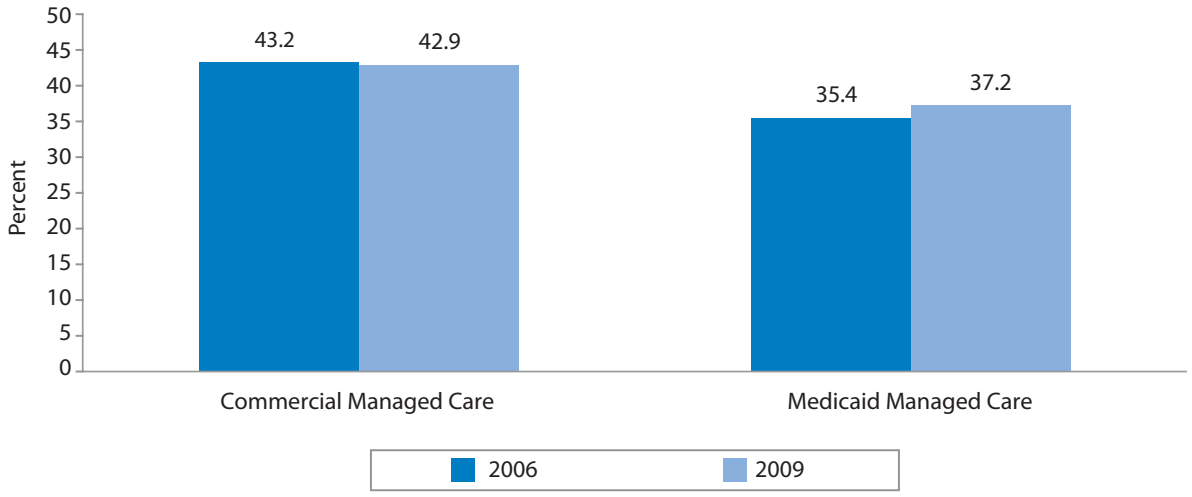
Figure 17 Percentage of NYS adults with diabetes enrolled in managed care plans whose blood glucose levels are in poor control (A1C>9.0%), QARR 2002 and 2009



The percentage of NYS adults with diabetes whose blood glucose levels are in poor control (A1C>9 0%) decreased over time for both commercial and Medicaid managed care plan enrollees

The percent of members with diabetes who are in poor control is lower for those enrolled in commercial plans compared to those enrolled in Medicaid managed care plans

Figure 18 Percentage of NYS adults with diabetes enrolled in managed care plans whose blood glucose levels are in good control (A1C< 7.0%), QARR 2006 and 2009

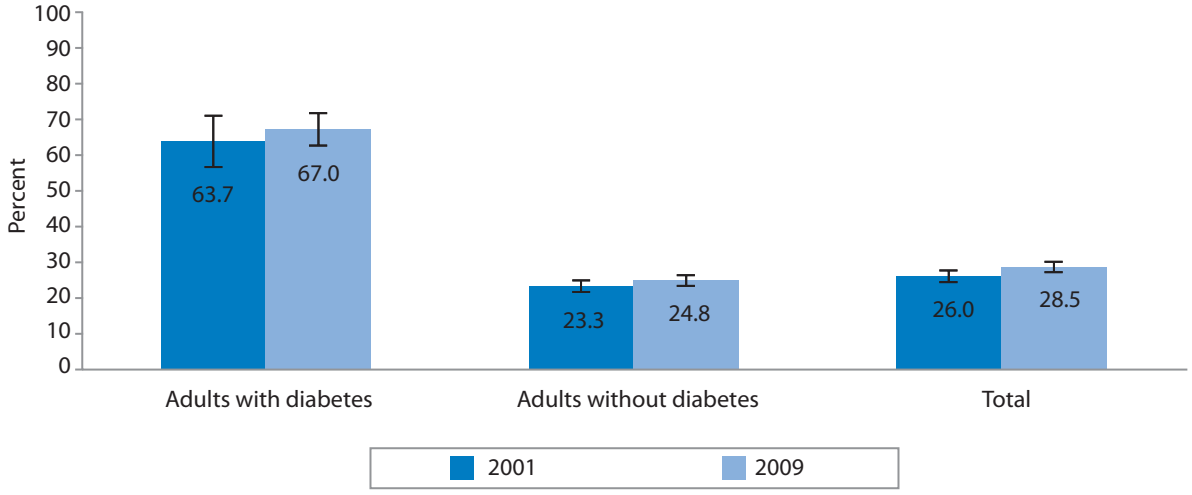


The percentage of NYS adults with diabetes whose blood glucose levels are in good control (A1C<7 0%) has remained stable over time for both commercial and Medicaid managed care plan enrollees

The percentage of members with diabetes whose blood glucose levels are in good control is higher for those enrolled in commercial plans compared to those enrolled in Medicaid managed care plans

The current prevalence of blood glucose control among managed care enrollees with diabetes is below the objectives identified by the NYSDOH Office of Health Insurance Programs (OHIP) for commercial (50%) and Medicaid (45%) managed care plan enrollees For more information on the NYSDOH Prevention Agenda Toward the Healthiest State, including OHIP objectives to increase access to quality health care, please visit: http://www health ny gov/prevention/prevention_agenda/

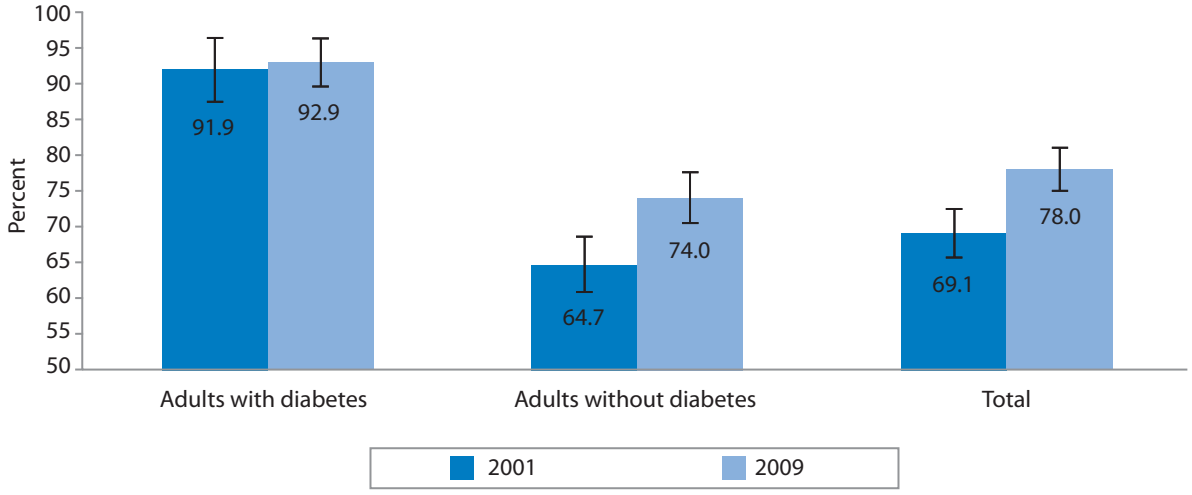
Figure 19 Percentage of NYS adults diagnosed with high blood pressure by diabetes status, BRFSS 2001 and 2009



The percentage of adults diagnosed with high blood pressure has remained constant from 2001 (26 0%) to 2009 (28 5%) Among adults with diabetes, the percentage who were diagnosed with high blood pressure was 63 7% in 2001 and 67 0% in 2009

Adults with diabetes are significantly more likely to have high blood pressure than adults without diabetes In 2009, the prevalence of high blood pressure was 67 0% among adults with diabetes compared to 24 8% among adults without diabetes

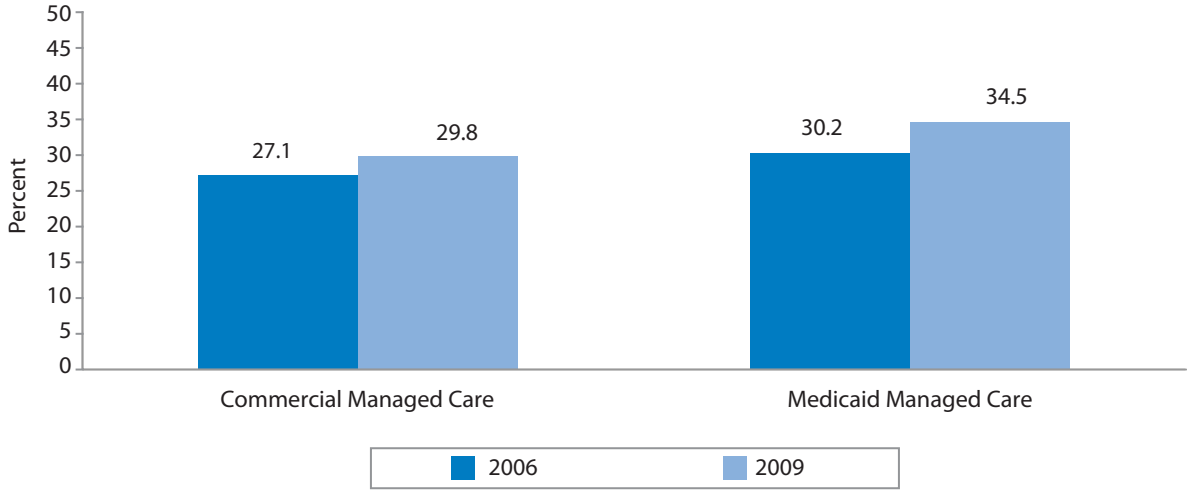
Figure 20 Prevalence of medication use to control high blood pressure (HBP) among NYS adults with HBP, BRFSS 2001 and 2009



Among adults with high blood pressure, the percent who took medication to control it significantly increased from 69 1% in 2001 to 78 0% in 2009 Among adults with diabetes, the percent who took medication to control high blood pressure was 91 9% in 2001 and 92 9% in 2009

Adults with both diabetes and high blood pressure are significantly more likely to use medication to control high blood pressure than those without diabetes In 2009, the prevalence of medication use to control high blood pressure was 92 9% among adults with diabetes compared to 74 0% among adults without diabetes

Figure 21 Percentage of NYS adults with diabetes enrolled in managed care plans whose blood pressure levels are in control (<130/80 mm Hg), QARR 2006 and 2009

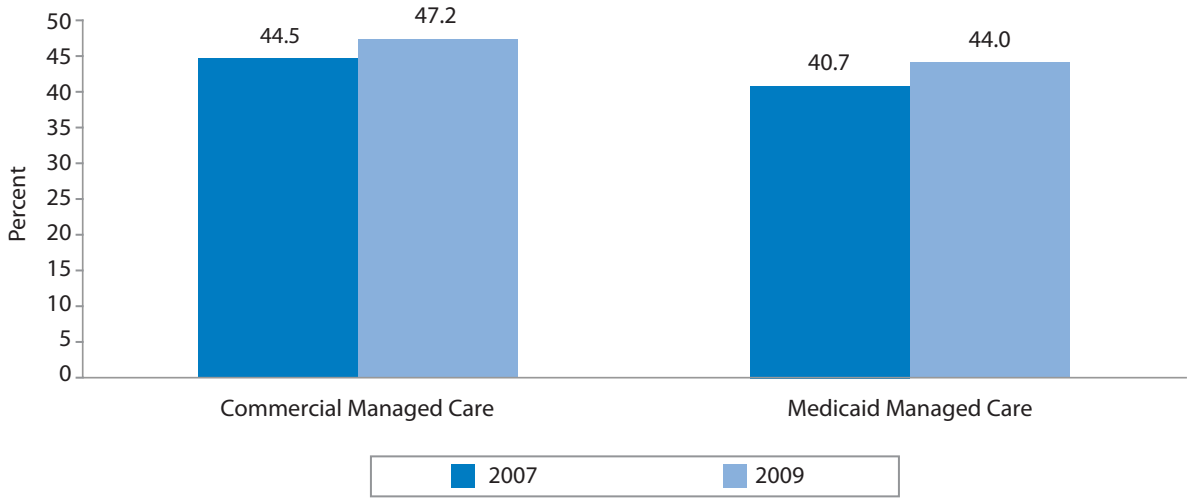


The percentage of NYS adults with diabetes whose blood pressure levels are in control has increased over time for both commercial and Medicaid managed care plan enrollees

In 2009, the prevalence of blood pressure control was higher among adults with diabetes enrolled in Medicaid managed care plans (34 5%) than among those enrolled in commercial managed care plans (29 8%)

Despite this increase, the rates of blood pressure control among commercial and Medicaid managed care plan enrollees with diabetes are well below those of all members enrolled in either commercial (63%) and Medicaid (65%) managed care plans (data not shown) [12]

Figure 22. Percentage of NYS adults with diabetes enrolled in managed care plans whose most recent level of LDL (bad) cholesterol was less than 100 mg/dl, QARR 2007 and 2009



The percentage of NYS adults with diabetes whose LDL cholesterol levels are in control has increased over time for both commercial and Medicaid managed care plan enrollees

The prevalence of LDL control is higher among adults with diabetes enrolled in commercial managed care plans than among those enrolled in Medicaid managed care plans

Table 1 Access to care indicators by diabetes status, BRFSS 2001-2009

Year	Health Insurance			Regular Provider			Annual Checkup*		
	Adults with diabetes % (95% CI)	Adults without diabetes % (95% CI)	Total % (95% CI)	Adults with diabetes % (95% CI)	Adults without diabetes % (95% CI)	Total % (95% CI)	Adults with diabetes % (95% CI)	Adults without diabetes % (95% CI)	Total % (95% CI)
2001	88.0 (82.7-93.2)	83.4 (81.8-85.0)	83.7 (82.1-85.2)	90.6 (86.3-94.9)	81.5 (79.8-83.1)	82.1 (80.5-83.6)	—	—	—
2002	91.1 (86.3-95.9)	84.5 (83.1-86.0)	85.0 (83.6-86.4)	91.6 (87.8-95.4)	80.5 (78.9-82.1)	81.3 (79.8-82.9)	—	—	—
2003	93.6 (90.7-96.6)	83.5 (82.1-84.9)	84.3 (82.9-85.6)	94.7 (91.5-97.8)	81.3 (79.8-82.7)	82.3 (80.9-83.6)	—	—	—
2004	88.4 (83.8-92.9)	84.9 (83.5-86.3)	85.1 (83.8-86.5)	93.9 (90.6-97.2)	82.6 (81.2-84.1)	83.4 (82.1-84.8)	—	—	—
2005	92.2 (89.2-95.2)	85.8 (84.4-87.1)	86.3 (85.0-87.5)	93.2 (90.6-95.9)	81.9 (80.5-83.3)	82.8 (81.5-84.1)	85.9 (82.5-89.4)	68.2 (66.8-69.7)	69.7 (68.3-71.1)
2006	94.0 (91.3-96.7)	85.9 (84.3-87.4)	86.5 (85.1-88.0)	96.1 (94.2-98.0)	84.1 (82.5-85.7)	85.0 (83.5-86.5)	92.1 (89.4-94.8)	68.6 (66.8-70.4)	70.4 (68.7-72.1)
2007	92.5 (89.3-95.7)	85.7 (84.1-87.2)	86.2 (84.7-87.6)	93.1 (89.9-96.3)	83.1 (81.5-84.7)	83.9 (82.4-85.4)	89.7 (86.5-92.9)	69.2 (67.5-70.9)	70.9 (69.3-72.5)
2008	93.8 (91.5-96.1)	87.2 (85.8-88.6)	87.8 (86.4-89.1)	96.1 (94.5-97.7)	84.0 (82.6-85.5)	85.1 (83.7-86.4)	88.7 (85.3-92.1)	70.7 (69.1-72.3)	72.2 (70.7-73.7)
2009	91.8 (88.9-94.8)	87.6 (86.1-89.1)	88.0 (86.6-89.3)	94.3 (91.7-96.9)	85.8 (84.3-87.3)	86.5 (85.2-87.9)	90.6 (87.9-93.4)	71.7 (70.0-73.4)	73.4 (71.8-74.9)

** This question was not asked in the BRFSS from 2001-2004.*

Table 2 Receipt of diabetes clinical preventive services, BRFSS 2001-2009

Year	A1C test at least once in past year % (95% CI)	A1C test at least twice in past year % (95% CI)	Annual dilated eye exam % (95% CI)	Annual professional foot exam % (95% CI)
2001	95.1 (92.0-98.2)	81.2 (74.8-87.6)	75.9 (69.5-82.3)	72.0 (65.4-79.0)
2002	—	—	—	—
2003	95.1 (92.3-97.8)	82.1 (77.2-86.9)	76.9 (72.2-81.6)	79.6 (75.0-84.2)
2004	88.9 (85.2-92.7)	75.4 (69.7-81.1)	67.5 (61.7-73.3)	73.4 (68.3-78.5)
2005	91.5 (88.2-94.8)	76.3 (71.4-81.2)	71.8 (67.3-76.4)	73.8 (69.0-78.6)
2006	92.2 (89.2-95.3)	78.9 (74.4-83.4)	74.2 (69.8-78.7)	78.7 (74.6-82.8)
2007	87.9 (83.7-92.1)	77.7 (73.1-82.3)	76.3 (72.2-80.4)	71.3 (66.8-75.8)
2008	93.0 (89.1-96.8)	81.9 (76.9-87.0)	74.3 (68.9-79.6)	72.4 (70.0-77.9)
2009	91.0 (86.7-95.4)	74.0 (67.5-80.5)	74.2 (68.1-80.3)	77.7 (72.5-83.0)

These questions were not asked in the BRFSS in 2002.

Table 3 Receipt of selected clinical preventive services by diabetes status, BRFSS 2001-2009

Year	Annual cholesterol check*			Annual dental exam			Annual flu shot**			Pneumonia vaccine ever		
	Adults with diabetes	Adults without diabetes	Total	Adults with diabetes	Adults without diabetes	Total	Adults with diabetes	Adults without diabetes	Total	Adults with diabetes	Adults without diabetes	Total
	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)
2001	88.0 (83.3-92.8)	59.7 (57.7-61.6)	61.6 (59.8-63.5)	—	—	—	51.5 (44.0-60.0)	27.1 (25.4-28.8)	28.7 (27.1-30.4)	41.0 (33.5-48.4)	19.5 (18.0-21.1)	21.0 (19.5-22.5)
2002	—	—	—	68.1 (61.7-74.5)	73.8 (72.2-75.4)	73.4 (71.8-75.0)	58.8 (51.9-65.6)	28.2 (26.6-29.8)	30.4 (28.8-32.0)	48.4 (41.4-55.4)	22.2 (20.6-23.8)	24.1 (22.5-25.6)
2003	90.0 (86.9-93.2)	54.7 (53.0-56.3)	57.3 (55.7-59.0)	67.7 (62.2-73.3)	72.5 (70.9-74.1)	72.2 (70.6-73.7)	62.5 (56.7-68.3)	30.5 (29.0-31.9)	32.9 (31.4-34.3)	56.5 (50.5-62.4)	22.9 (21.5-24.3)	25.5 (24.1-27.0)
2004	—	—	—	58.5 (52.8-64.3)	72.9 (71.3-74.4)	71.7 (70.3-73.2)	60.5 (54.7-66.2)	29.9 (28.5-31.4)	32.3 (30.8-33.7)	55.6 (49.7-61.6)	21.8 (20.4-23.2)	24.5 (23.1-25.9)
2005	88.2 (84.0-92.4)	56.3 (54.7-57.8)	58.9 (57.4-60.4)	—	—	—	52.2 (47.0-57.3)	24.1 (22.9-25.4)	26.4 (25.2-27.6)	54.2 (49.0-59.5)	20.7 (19.5-21.9)	23.5 (22.3-24.7)
2006	—	—	—	63.6 (58.8-68.3)	72.4 (70.7-74.1)	71.8 (70.2-73.4)	63.2 (58.4-68.0)	29.8 (28.2-31.3)	32.3 (30.8-33.8)	52.7 (47.5-57.8)	20.1 (18.6-21.5)	22.7 (21.3-24.1)
2007	88.0 (84.4-91.6)	59.5 (57.7-61.3)	61.8 (60.1-63.5)	—	—	—	65.3 (60.6-70.0)	33.4 (31.8-34.9)	36.0 (34.4-37.5)	51.9 (47.0-56.8)	20.0 (18.7-21.3)	22.8 (21.5-24.0)
2008	—	—	—	66.1 (61.8-70.4)	75.0 (73.5-76.4)	74.2 (72.8-75.6)	67.3 (63.0-71.6)	35.2 (33.7-36.7)	37.9 (36.4-39.4)	56.1 (51.4-60.8)	22.2 (20.9-23.6)	25.3 (23.9-26.6)
2009	90.7 (87.7-93.6)	61.2 (59.3-63.1)	63.9 (62.1-65.7)	—	—	—	61.5 (56.7-66.2)	38.8 (37.0-40.5)	40.8 (39.1-42.4)	52.8 (47.9-57.6)	22.1 (20.7-23.6)	25.0 (23.6-26.4)

**This question is asked in the BRFSS on odd years only.*
~This question was not asked in the BRFSS in 2001, 2005, 2007, or 2009.
***2008 and 2009 include adults who received both the flu vaccine and nasal spray.*

Table 4 Receipt of diabetes clinical preventive services by managed care plan type, QARR 2002-2009

Year	Commercial Managed Care Plans %				Medicaid Managed Care Plans %			
	Annual A1C test	Annual cholesterol check	Eye exam in past 2 years	Nephrology screening*	Annual A1C test	Annual cholesterol check	Eye exam in past 2 years	Nephrology screening*
2002	83.3	—	56.5	56.5	79.9	—	54.3	49.7
2003	84.6	—	52.7	52.7	83.6	—	55.2	50.5
2004	87.6	—	55.1	55.1	85.5	—	55.8	55.7
2005	—	—	—	—	—	—	—	—
2006	87.6	86.9	59.1	79.5	86.2	84.9	57.3	80.5
2007	87.7	87.3	60.3	80.6	87.0	85.1	62.0	82.1
2008	—	—	—	—	—	—	—	—
2009	89.5	88.4	59.2	82.2	88.7	87.2	62.6	83.2

Data not collected in 2005 or 2008.
*Measure changed in 2006, data cannot be trended

Table 5 Prevalence of diabetes self-management practices, BRFSS 2001-2009

Year	DSME Ever % (95% CI)	Self monitoring BG % (95% CI)	Self foot exams % (95% CI)
2001	48.1 (40.7-55.6)	54.4 (46.9-61.8)	59.2 (51.9-66.5)
2002	—	—	—
2003	37.4 (32.0-42.8)	56.1 (50.3-61.9)	61.9 (56.0-67.8)
2004	43.2 (37.5-48.8)	60.8 (55.1-66.6)	62.3 (56.6-68.0)
2005	43.9 (38.8-48.9)	62.6 (57.6-67.6)	61.4 (56.3-66.5)
2006	45.0 (40.1-49.9)	65.4 (60.6-70.3)	65.8 (61.1-70.5)
2007	—	—	—
2008	44.2 (38.5-49.9)	59.5 (53.8-65.2)	62.5 (56.8-68.2)
2009	40.6 (34.6-46.5)	64.9 (59.1-70.8)	67.0 (61.2-72.7)

These questions were not asked in the BRFSS in 2002 or 2007.

Table 6 Diabetes control indicators by diabetes status, BRFSS 2001-2009

Year	Diagnosed HBP*			Taking medication to control HBP*		
	Adults with diabetes % (95% CI)	Adults without diabetes % (95% CI)	Total % (95% CI)	Adults with diabetes % (95% CI)	Adults without diabetes % (95% CI)	Total % (95% CI)
2001	63.7 (56.5-70.8)	23.3 (21.6-24.9)	26.0 (24.3-27.6)	91.9 (87.4-96.3)	64.7 (60.9-68.6)	69.1 (65.7-72.5)
2003	59.5 (53.7-65.2)	22.6 (21.3-23.9)	25.3 (24.0-26.7)	90.0 (84.6-95.4)	72.6 (69.5-75.6)	75.6 (72.9-78.3)
2005	66.5 (61.8-71.2)	21.9 (20.7-23.1)	25.5 (24.3-26.7)	90.7 (87.1-94.3)	76.1 (73.3-78.9)	79.2 (76.8-81.6)
2007	70.1 (65.8-74.5)	23.4 (22.0-24.7)	27.2 (25.8-28.5)	93.4 (90.0-96.8)	76.0 (72.9-79.1)	79.6 (77.0-82.3)
2009	67.0 (62.5-71.5)	24.8 (23.3-26.3)	28.5 (27.1-30.0)	92.9 (89.5-96.2)	74.0 (70.5-77.6)	78.0 (75.0-81.0)

*These questions are asked in the BRFSS on odd years only.

Table 7 Diabetes control indicators by managed care plan type, QARR 2002-2009

Year	Commercial Managed Care Plans %				Medicaid Managed Care Plans %			
	A1C in good control*	A1C in poor control**	Blood pressure controlled	Cholesterol controlled	A1C in good control*	A1C in poor control**	Blood pressure controlled	Cholesterol controlled
2002	—	30.9	—	—	—	45.4	—	—
2003	—	31.4	—	—	—	41.8	—	—
2004	—	27.9	—	—	—	36.6	—	—
2005	—	—	—	—	—	—	—	—
2006	43.2	27.5	27.1	—	35.4	35.4	30.2	—
2007	43.9	27.9	29.5	44.5	37.9	33.6	31.4	40.7
2008	—	—	—	—	—	—	—	—
2009	42.9	27.7	29.8	47.2	37.2	33.4	34.5	44.0

Data not collected in 2005 or 2008.
*In 2009, this measure was amended to exclude individuals who should not be advised to intensively control A1C levels to below 7.0% due to age or existing cardiac risk factors.
** A low rate is desirable for this measure.

References

1 American Diabetes Association.Standards of medical care in diabetes. – 2011. Diabetes Care. 2011:34(S1):S11-S61.

2 New York State Department of Health. Prevention Agenda toward the healthiest state: access to quality health care. Available at: http://www.health.ny.gov/prevention/prevention_agenda/access_to_health_care/index.htm

3 NYDC Clinical Practice Guidelines. Available at: http://www.nydc.org/nydc_tools/Guidelines41811.pdf

4 American Diabetes Association.Standards of medical care in diabetes. – 2011. Diabetes Care. 2011:34(S1):S11-S61.

5 American Diabetes Association.Standards of medical care in diabetes. – 2011. Diabetes Care. 2011:34(S1):S11-S61.

6 US Department of Health and Human Services. Healthy People 2020 Summary of Objectives:Diabetes. Available at: http://www.healthypeople.gov/2020/topicsobjectives2020/pdfs/Diabetes.pdf

7 Centers for Disease Control and Prevention. Dental visits among dentate adults with diabetes – United States, 1999 and 2004. MMWR Nov 25 2005; 54(46):1181-3. Available at: http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5446a3.htm

8 New York State Department of Health Bureau of Dental Health.The impact of oral disease in New York State. Dec 2006. Available at: http://www.health.ny.gov/prevention/dental/docs/impact_of_oral_disease.pdf

9 Centers for Disease Control and Prevention. National Chronic Kidney Disease Fact Sheet: general information and national estimates on chronic kidney disease in the United States, 2010. Atlanta, GA: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, 2010. Available at: http://www.cdc.gov/diabetes/pubs/pdf/kidney_Factsheet.pdf

10 International Diabetes Federation. Available at: http://www.idf.org/Position_statementsdiabetes_education

11 American Diabetes Association.Standards of medical care in diabetes. – 2011. Diabetes Care. 2011:34(S1):S11-S61.

12 New York State Department of Health Office of Health Insurance Programs. eQARR 2010: An online report on managed care plans performance in New York State. Available at: http://www.health.ny.gov/health_care/managed_care/reports/eqarr/2010/index.htm


NEW YORK
state department of
HEALTH