Chapter 2. Effectiveness

As better understanding of health and sickness has led to superior ways of preventing, diagnosing, and treating diseases, the health of most Americans has improved dramatically. However, ample evidence indicates that some Americans do not receive the full benefits of high-quality care.

This chapter is organized around eight clinical areas (cancer, diabetes, end stage renal disease, heart disease, HIV and AIDS, maternal and child health, mental health and substance abuse, and respiratory diseases) and three types of health care services that typically cut across clinical conditions (lifestyle modification, functional status preservation and rehabilitation, and supportive and palliative care). The 11 sections of this chapter highlight a small number of core and supporting measures.

In this chapter, process measures are organized into several categories related to the patient's need for preventive care, treatment of acute illness, and chronic disease management. These are derived from the original Institute of Medicine categories: staying healthy, getting better, living with illness or disability, and coping with the end of life. There is sizable overlap among these categories, and some measures may be considered to belong in more than one category. Outcome measures are organized separately because prevention, treatment, and management can all play important roles in affecting outcomes.

Prevention

Caring for healthy people is an important component of health care. Educating people about health and promoting healthy behaviors can help postpone or prevent illness and disease. In addition, detecting health problems at an early stage increases the chances of effectively treating them, often reducing suffering and costs.

Treatment

Even when preventive care is ideally implemented, it cannot entirely avert the need for acute care. Delivering optimal treatments for acute illness can help reduce the consequences of illness and promote the best recovery possible.

Management

Some diseases, such as diabetes and end stage renal disease, are chronic, which means they cannot simply be treated once; they must be managed over time. Management of chronic disease often involves promotion and maintenance of lifestyle changes and regular contact with a provider to monitor the status of the disease. For patients, effective management of chronic diseases can mean the difference between normal, healthy living and frequent medical problems.

Outcomes

Many factors other than health care influence health outcomes, including a person's genes, lifestyle, and social and physical environment. However, for many individuals, appropriate preventive services, timely treatment of acute illness and injury, and meticulous management of chronic disease can positively affect mortality, morbidity, and quality of life.

Effectiveness

Cancer

Importance

Mortality
Number of deaths (2007) ....562,875[1]

Cause of death rank (2007) ....2nd[1]

Prevalence
Number of living Americans who have been diagnosed with cancer (2007).....................................11,713,736[2]

Incidence
New cases of cancer (2010) ....1,529,560[3]

New cases of colorectal cancer (2010)...209,060[3]

Cost
Total cost[i] (2010 est.) ....$263.8 billion[4]

Direct costs[ii] (2010 est.)...$102.8 billion[4]

Indirect costs (2010 est.)..$161.0 billion[4]

Cost-effectiveness[iii] of colorectal cancer screening..$35,000-$165,000/QALY[5]

Measures

Evidence-based consensus defining good quality care and how to measure it currently exists for only a few cancers and a few aspects of care. Breast and colorectal cancers have high incidence rates and are highlighted in alternate years of the report. The 2009 National Healthcare Disparities Report (NHDR) highlighted breast cancer; this year's focus is on colorectal cancer. The core report measures are:

- Colorectal cancer screening.
- Colorectal cancer first diagnosed at advanced stage.

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[i] Throughout this report, total cost equals cost of medical care (direct cost) and economic costs of morbidity and mortality (indirect cost).

[ii] Direct costs are defined as "personal health care expenditures for hospital and nursing home care, drugs, home care, and physician and other professional services."

[iii] Cost-effectiveness is measured here by the average net cost of each quality-adjusted life year (QALY) that is saved by the provision of a particular health intervention. QALYs are a measure of survival adjusted for its value: 1 year in perfect health is equal to 1.0 QALY, while a year in poor health would be something less than 1.0. A lower cost per QALY saved indicates a greater degree of cost-effectiveness.

Effectiveness

As in previous reports, the 2010 NHDR includes one supporting measure for colorectal cancer care from the National Cancer Data Base that has been endorsed by the National Quality Forum:

● Surgical resection of colon cancer that includes at least 12 lymph nodes.

Findings

Prevention: Colorectal Cancer Screening

Colorectal cancer is the third most common cancer in adults. Prevention of colorectal cancer includes modifying risk factors such as weight, physical activity, smoking, and alcohol use, as well as screening for early disease. Screening is important because early stages of colorectal cancer may not present any symptoms, and screening can detect abnormal growths before they develop into cancer.[3,6] Early detection increases treatment options and the chances for survival. The U.S. Preventive Services Task Force recommends colorectal cancer screening for men and women age 50 and over. The screening measured in the NHDR includes having a fecal occult blood test in the past 2 years or ever having received flexible sigmoidoscopy, colonoscopy, or proctoscopy.

Figure 2.1. Adults age 50 and over who reported receiving colorectal cancer screening (received fecal occult blood test in past 2 years or ever received colonoscopy, sigmoidscopy, or proctoscopy), by race, ethnicity, and income, 2000-2008
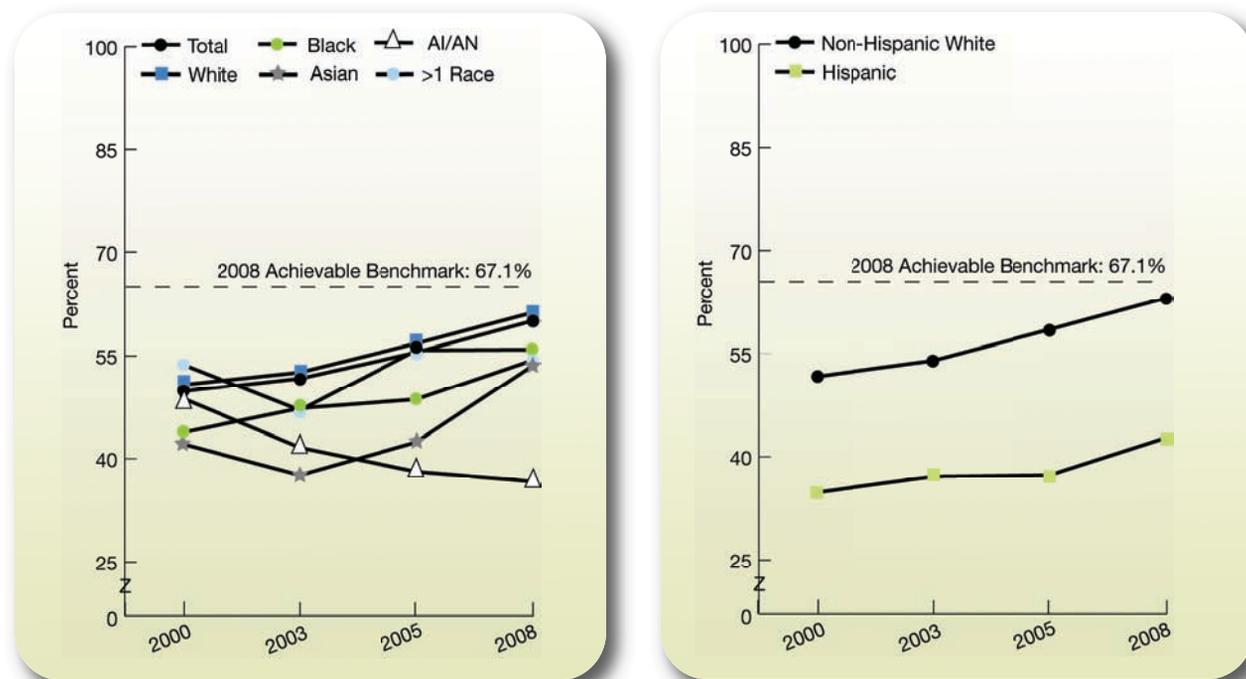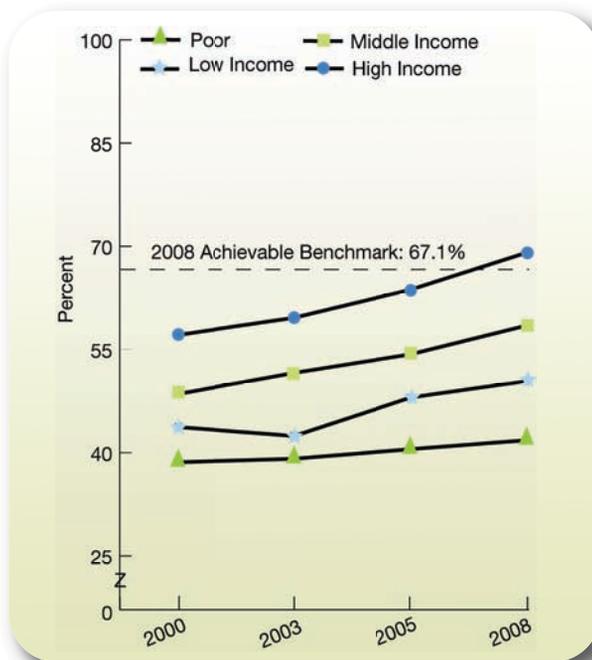
Effectiveness

Key: AI/AN = American Indian or Alaska Native.
Source: Centers for Disease Control and Prevention, National Center for Health Statistics, National Health Interview Survey, 2000, 2003, 2005, and 2008.
Denominator: Adults age 50 and over in the civilian noninstitutionalized population. Benchmark is derived from the Behavioral Risk Factor Surveillance System (BRFSS); see Introduction and Methods for details.

- In all 4 years, the percentage of Whites who ever received colorectal cancer screening was significantly higher than that of Blacks and Asians (Figure 2.1).

- In all 4 years, the percentage of non-Hispanic Whites who ever received colorectal cancer screening was significantly higher than that of Hispanics.

- In all 4 years, the percentage of high-income individuals who ever received colorectal cancer screening was significantly higher than the percentage of poor, low-income, and middle-income individuals.

- The top 5 State achievable benchmark was 67.1%.[iv] At the current annual rate of increase of approximately 1.5%, the benchmark could be achieved overall in 4.6 years.

- Whites could reach the benchmark in 4.3 years while Blacks and Asians could reach the benchmark in about 10 years. Non-Hispanic Whites could reach the benchmark in 2.7 years but Hispanics would not reach the benchmark for 25 years.

- Middle-income adults could reach the benchmark in about 7 years and low-income adults in approximately 8 years. High-income adults have already achieved the benchmark. There is no indication that poor adults are progressing toward the benchmark.
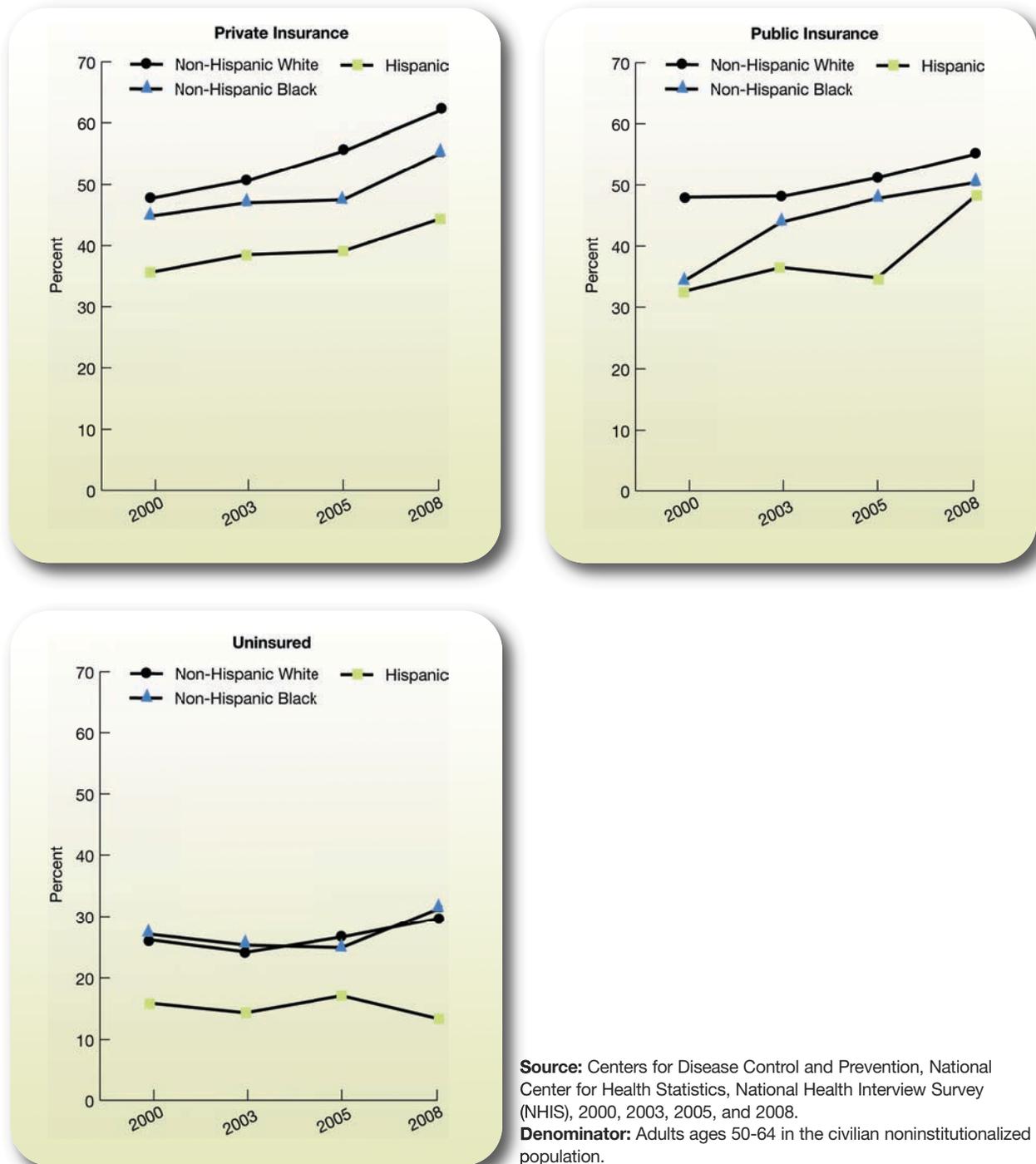
Also, in the National Healthcare Quality Report (NHQR):

- In all available data years, the percentage of adults age 50 and over residing in large fringe metropolitan areas who ever received colorectal cancer screening was significantly higher than it was for adults residing in large central metropolitan and noncore areas.

Racial and ethnic minorities, as well as people with low incomes, have disproportionate rates of individuals with public insurance or no insurance. To distinguish the effects of race, ethnicity, and income on cancer screening, this measure is stratified by insurance status.

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iv The top 5 States contributing to the achievable benchmark are Delaware, Maine, Maryland, Massachusetts, and New Hampshire.

Effectiveness

Figure 2.2. Composite measure: Adults ages 50-64 who reported receiving colorectal cancer screening (received fecal occult blood test in past 2 years or ever received colonoscopy, sigmoidscopy, or proctoscopy), by race and ethnicity, stratified by insurance, 2000-2008


Source: Centers for Disease Control and Prevention, National Center for Health Statistics, National Health Interview Survey (NHIS), 2000, 2003, 2005, and 2008.
Denominator: Adults ages 50-64 in the civilian noninstitutionalized population.

Effectiveness

- Between 2000 and 2008, non-Hispanic Whites and non-Hispanic Blacks ages 50-64 who had private insurance showed significant improvement in the percentage of adults who reported receiving colorectal cancer screening (Figure 2.2). During the same time, non-Hispanic Blacks and Hispanics with public insurance also showed significant improvement in the percentage of adults who ever received colorectal cancer screening.

- Non-Hispanic Whites ages 50-64 with private insurance had significantly higher rates of colorectal screening than non-Hispanic Blacks with private insurance in 2 of the four data years measured and significantly higher rates than Hispanics with private insurance in all 4 years.

- In 2008, among individuals with public insurance ages 50-64, there were no statistically significant differences between non-Hispanic Whites and non-Hispanic Blacks or between non-Hispanic Whites and Hispanics.

Outcome: Advanced Stage Colorectal Cancer

Cancers can be diagnosed at different stages of development. Cancers diagnosed early before spread has occurred are generally more amenable to treatment and cure; cancers diagnosed late with extensive spread often have poor prognoses. The rate of cancer cases that are diagnosed at advanced stages is a measure of the effectiveness of cancer screening efforts and of adherence to followup care after a positive screening test. Because many cancers often take years to develop, changes in rates of late-stage cancer may lag behind changes in rates of screening.

Differences in rates may vary across racial and ethnic groups due to differences in underlying prevalence of colorectal cancer.

Effectiveness

Figure 2.3. Colorectal cancer diagnosed at advanced stage (tumors diagnosed at regional or distant stage) per 100,000 population age 50 and over, by race and ethnicity, 2000-2007
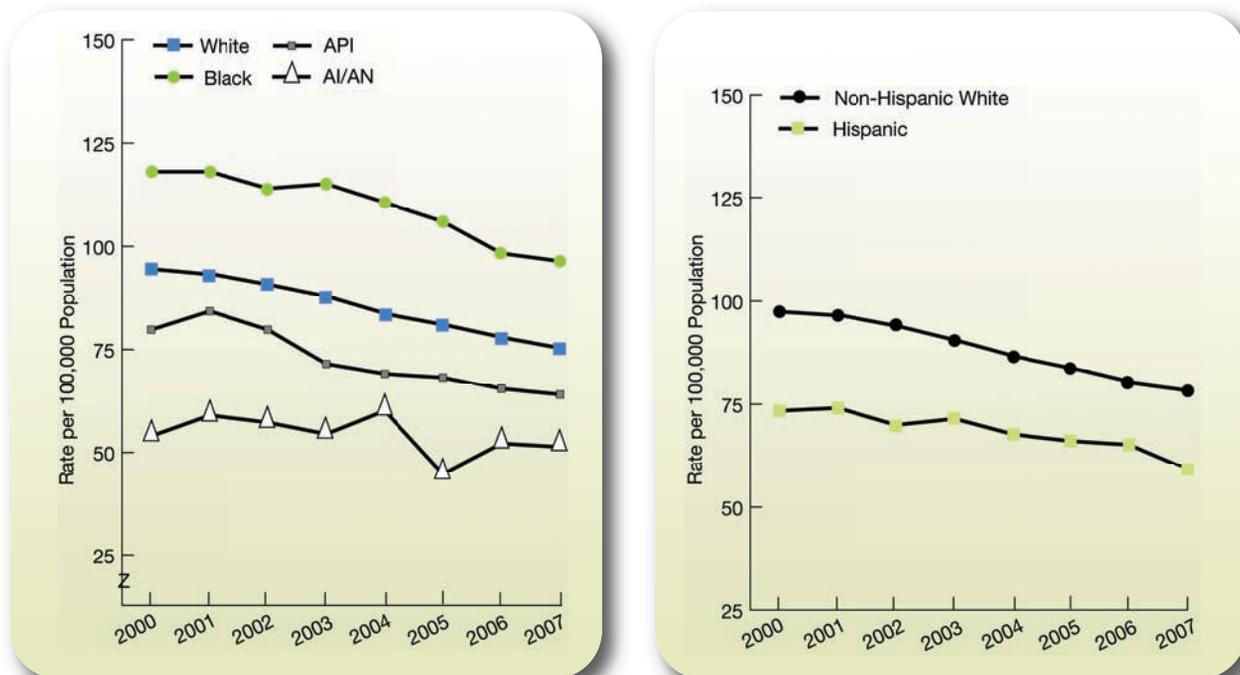
Key: API = Asian or Pacific Islander; AI/AN = American Indian or Alaska Native.
Source: National Cancer Institute, Surveillance, Epidemiology, and End Results Program (SEER), 2000-2007.
Denominator: Adults age 50 and over in the civilian noninstitutionalized population.
Note: Advanced stage colorectal cancer is defined as local stage with tumor size greater than 2 cm diameter, regional stage, or distant stage. Data are SEER 2000-2007 limited-use database, 17 registries, released April 2010, based on the November 2009 submission. The 2005 data were adjusted for areas impacted by Hurricanes Katrina and Rita.

- From 2000 to 2007, the rate of advanced stage colorectal cancer was significantly lower for Asians and Pacific Islanders (APIs) and American Indians and Alaska Natives (AI/ANs) than for Whites (Figure 2.3).

- From 2000 to 2007, Blacks had significantly higher rates of colorectal cancer diagnosed at advanced stage compared with Whites. During the same period, Hispanics had significantly lower rates of advanced stage colorectal cancer compared with non-Hispanic Whites.

Also, in the NHQR:

- From 2000 to 2007, the rate of advanced stage colorectal cancer in adults ages 50-64 significantly decreased, from 45.7 to 40.1 per 100,000 population.

- During the same period, adults age 65 and over also saw a significant decrease, from 154.2 to 119.2 per 100,000 population.

- In all years, adults age 65 and over had significantly higher rates of advanced stage colorectal cancer than adults ages 50-64.

Effectiveness

Treatment: Recommended Care for Colorectal Cancer

Different diagnostic and treatment options exist for various types of cancer. Some aspects of cancer care are well established as beneficial and are commonly recommended. The appropriateness of recommended care depends on different factors, such as the stage or the extent of the cancer within the body (especially whether the disease has spread from the original site to other parts of the body). Other types of care are important for accurate diagnosis, such as ensuring adequate examination of lymph nodes when surgery (e.g., to remove colon cancer) is performed.

Figure 2.4. Patients who received surgical resection of colon cancer that included at least 12 lymph nodes pathologically examined, by race and ethnicity, 2003-2007
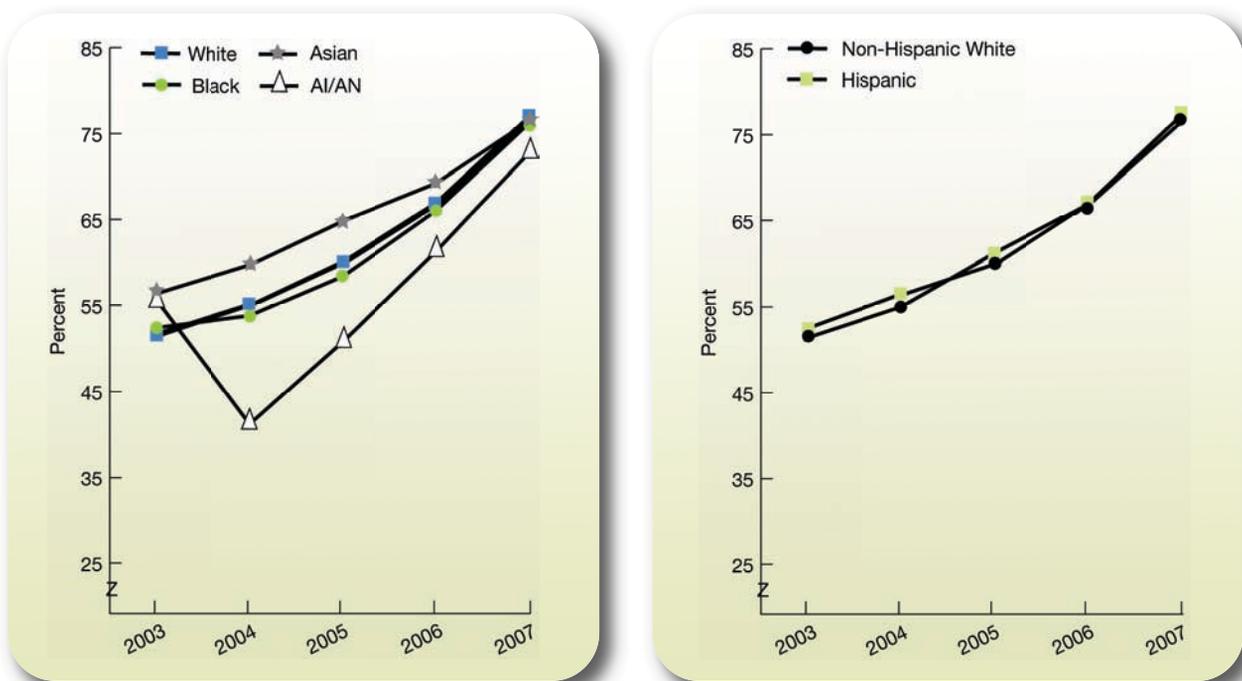
Key: AI/AN = American Indian or Alaska Native.
Source: Commission on Cancer, American College of Surgeons and American Cancer Society, National Cancer Data Base, 2003-2007.
Denominator: U.S. population age 50 and over.

● The overall percentage of adults diagnosed with colorectal cancer who received recommended care significantly increased from 51.7% in 2003 to 77.0% in 2007 (data not shown). Similar improvement was observed among all racial and ethnic groups during this period (Figure 2.4).

Also, in the NHQR:

● From 2003 to 2007, the percentage of colorectal cancer patients who received recommended care significantly increased in all residence locations. The percentage of large metropolitan colorectal cancer patients who received recommended care was significantly higher in all years than that of micropolitan patients and noncore patients.

Effectiveness

Diabetes

Importance

Mortality

Number of deaths (2007)..71,382[1]

Cause of death rank (2007) ....7th[1]

Prevalence

Total number of people with diabetes (2007)..23.6 million[7]

Number of people with diagnosed diabetes (2007)..17.9 million[7]

Number of people with undiagnosed diabetes (2007)...5.7 million[7]

Incidence

New cases (age 20 and over, 2007)...1.6 million[7]

Cost

Total cost (2007 est.)..$174 billion[7]

Direct medical costs (2007 est.) ....$116 billion[7]

Measures

Routine monitoring of blood glucose levels with hemoglobin A1c (HbA1c)[v] tests and dilated eye and foot examinations have been shown to help prevent or mitigate complications of diabetes, such as diabetic neuropathy, retinopathy, and vascular and kidney disease.[8] With more than half a million discharges in 2006, diabetes is one of the leading causes of hospitalization in the United States.[9] However, with appropriate and timely ambulatory care, it may be possible to prevent many hospitalizations for diabetes and related complications.

The core measure reported in this section examines the extent to which individuals with diabetes receive care needed to prevent complications or slow the disease's progression:

● Receipt of three recommended diabetes services.

[v] HbA1c, or glycosylated hemoglobin, is a measure of average levels of glucose in the blood.

Effectiveness

In addition, three supporting outcome measures are presented. Two of these measures are included in AHRQ's Prevention Quality Indicators (PQIs).[vi] PQIs may be used to estimate rates of potentially avoidable hospitalizations among ambulatory care-sensitive conditions. These are hospitalizations that may have been prevented with high-quality ambulatory care and treatment.

The supporting measures from the PQIs are:

● Hospitalization for short-term diabetes complications (PQI 1).

● Hospitalization for lower extremity amputation (PQI 16).

The final supporting measure also offers insight into the adequacy of diabetes management:

● Control of HbA1c, cholesterol, and blood pressure.

Findings

Management: Receipt of Three Recommended Diabetes Services

The NHDR uses a composite measure to track the national rate of the receipt of all three recommended annual diabetes interventions: an HbA1c test, an eye examination, and a foot examination. These are basic process measures that provide an assessment of the quality of diabetes management.

Figure 2.5. Composite measure: Adults age 40 and over with diagnosed diabetes who received three recommended services for diabetes in the calendar year (hemoglobin A1c test, dilated eye examination, and foot examination), by race, ethnicity, family income, and education, 2002-2007
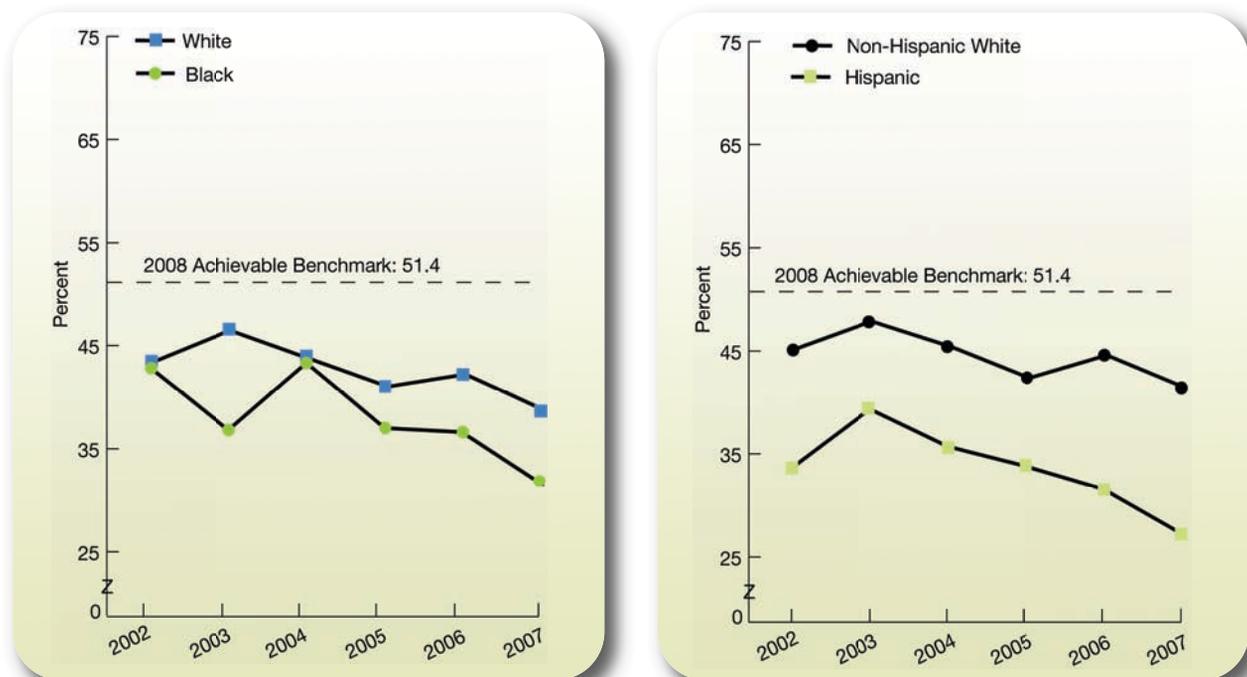
[vi] More information on the PQIs is available at: www.qualityindicators.ahrq.gov/downloads/pqi/word/pqi_guide_v31.doc.
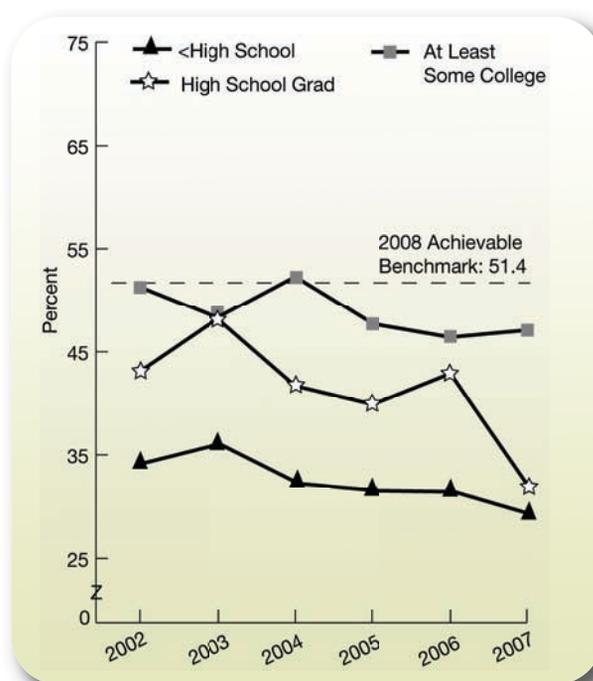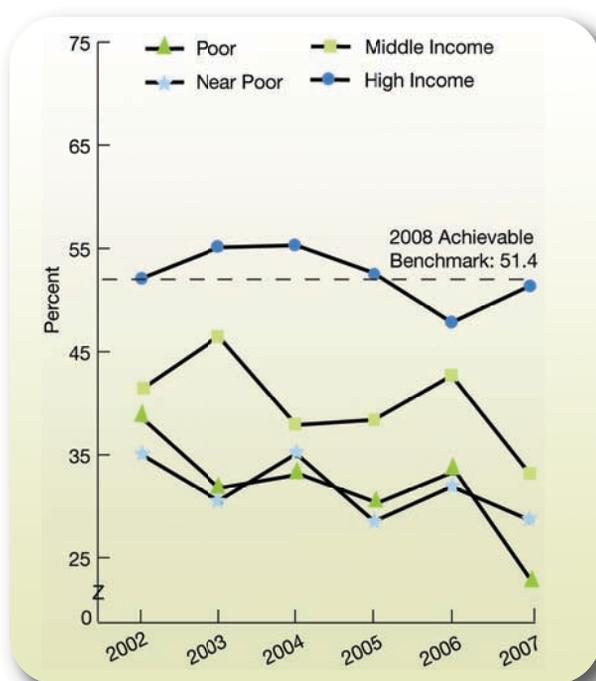
Effectiveness

Source: Agency for Healthcare Research and Quality, Medical Expenditure Panel Survey, 2002-2007.
Denominator: Civilian noninstitutionalized population with diagnosed diabetes, age 40 and over.
Note: Data include people with both type 1 and type 2 diabetes. Rates are age adjusted to the 2000 U.S. standard population. Benchmark is derived from the Behavioral Risk Factor Surveillance System (BRFSS); see Introduction and Methods for details.

- Between 2002 and 2007, Blacks showed a significant decrease in the percentage of adults diagnosed with diabetes who received recommended care (42.8% to 31.7%; Figure 2.5).

- With the exception of 2003, when results were not statistically significant, across all years, the percentage of adults with diabetes who received recommended services was significantly lower for Hispanics than for non-Hispanic Whites.

- An association was noted between income and receipt of diabetes services. Relative to those with a high income, the percentage of adults with diabetes who received all recommended services was significantly lower among poor, near-poor, and middle-income individuals. Among near-poor individuals, this finding was observed in all years; among middle-income people, lower percentages were found except in 2003 and 2006.

- In all years, the percentage of adults age 40 and over with diabetes who received three recommended services was significantly lower for people with less than a high school education compared with adults with at least some college education.

- In 2007, 74.2% of high-income adults diagnosed with diabetes had their feet examined in the calendar year compared with only 62.1% of near-poor adults. Between 2002 and 2007, the percentage of near-poor individuals who had their feet examined in the calendar year significantly decreased from 73.4% to 62.1% (data not shown).

- Between 2002 and 2007, Hispanic, poor, and near-poor adults diagnosed with diabetes all had significant decreases in the percentage of adults who received HbA1c measurement in the calendar year (data not shown).

Effectiveness

- The 2008 top 4 State achievable benchmark was 51.4%.[vii] The percentages of Whites, Blacks, non-Hispanic Whites, and Hispanics receiving recommended care show no progress toward the benchmark. High-income individuals already have achieved the benchmark but middle-income, near poor, and poor individuals show no progress toward the benchmark. Individuals with at least some college education achieved the benchmark in 2004 but individuals with a high school education or less show no progress toward the benchmark.

Also, in the NHQR:

- With the exception of 2004, adults age 40 and over who reside in large fringe metropolitan areas were significantly more likely than those in noncore areas to receive recommended services.

Multivariate analyses were conducted to identify the independent effects of race and socioeconomic factors on several measures. Adjusted percentages are shown for receipt of diabetes services after controlling for race/ethnicity, family income, education, health insurance status, and location.

Figure 2.6. Composite measure: Adjusted percentages of adults ages 40-64 with diagnosed diabetes who received three recommended services for diabetes in the calendar year, by race/ethnicity, family income, education, insurance status, and residence location, 2002-2007
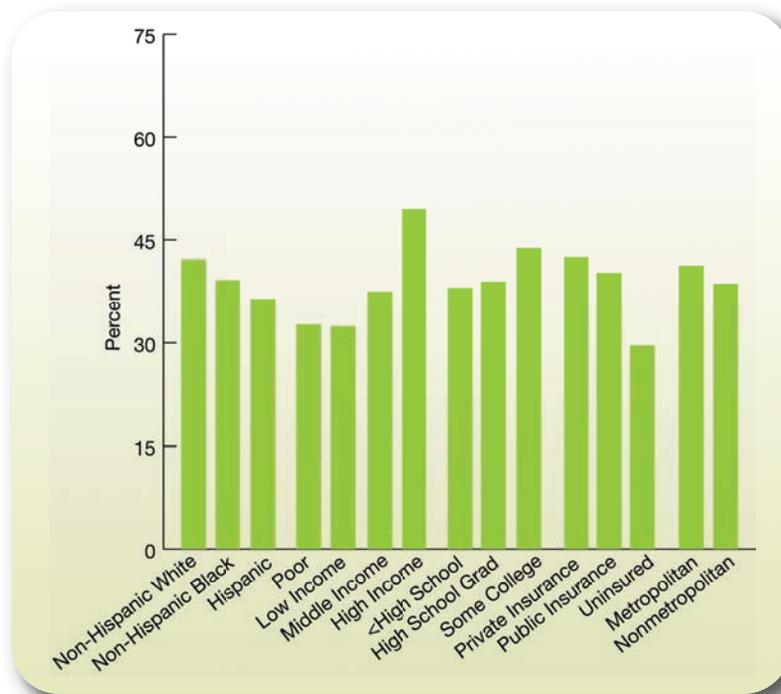
Source: Agency for Healthcare Research and Quality, Medical Expenditure Panel Survey, pooled 2002-2007.
Note: Adjusted percentages are predicted marginals from a statistical model that includes the covariates race/ethnicity, family income, education, health insurance, and residence location. Chapter 1, Introduction and Methods, provides more information.


[vii] The top 4 States contributing to the achievable benchmark are Alaska, New Hampshire, Vermont, and the District of Columbia.

Effectiveness

● After adjustment, 36% of Hispanic adults with diabetes would have received all three recommended services for diabetes, which is significantly lower than the 42% of non-Hispanic Whites who would have received the three recommended services for diabetes (Figure 2.6).

● After adjustment, among adults ages 40-64 with diagnosed diabetes, 33% of poor adults, 32% of low-income adults, and 38% of middle-income adults would have received the three recommended services for diabetes in the calendar year. These are all significantly lower than the 50% of high-income adults.

● After adjustment, only 38% of adults with diabetes with less than a high school education and 39% of high school graduates would have received the three recommended services for diabetes. Both are significantly lower than the 44% of adults with some college education who would have received the three recommended services for diabetes.

● After adjustment, only 30% of adults with diabetes who were uninsured all year would have received all three recommended services for diabetes, which is significantly lower than the 42% of adults who had any private insurance.

Outcome: Admissions for Short-Term Diabetes Complications

Individuals who do not achieve good control of their diabetes are more prone to short-term complications that can reduce quality of life, increase chances of death, and increase health care costs both directly and indirectly. The acute metabolic complications of diabetes consist of diabetic ketoacidosis (DKA), hyperosmolar nonketotic coma (HNC), lactic acidosis (LA), and hypoglycemia.[10] Patients with DKA, HNC, and LA require hospitalization for treatment, which results in the use of significant health care resources with increased health care costs. Patients with hypoglycemia often do not require hospitalization but can still incur costs for treatment in an ambulatory setting, as well as loss of productivity. Prevention is an important component in reducing health care costs for these disorders[10] and helping people with diabetes maintain optimal function.

Effectiveness

Figure 2.7. Hospital admissions for diabetes with short-term complications per 100,000 population, age 18 and over, by race/ethnicity and area income, 2004-2007
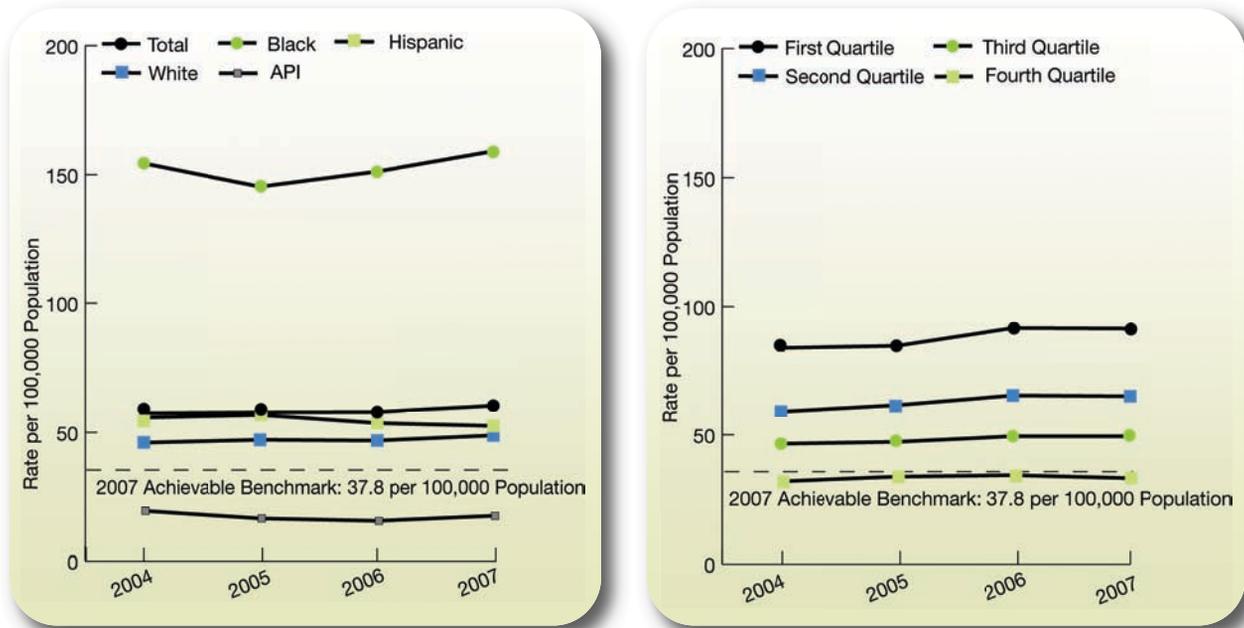
Key: API = Asian or Pacific Islander. First quartile represents the lowest income and the fourth quartile represents the highest income.
Source: Agency for Healthcare Research and Quality, Healthcare Cost and Utilization Project (HCUP), State Inpatient Databases (SID) disparities analysis file, 2004-2007.
Denominator: U.S. resident population age 18 and over.
Note: Short-term complications include ketoacidosis, hyperosmolarity, or coma and exclude obstetric admissions and transfers from other institutions. White, Black, and API are non-Hispanic. Data are adjusted for age, gender, and diagnosis-related group clusters.

- In all years, the rate of hospital admissions for short-term complications was significantly higher for Blacks than for Whites. Blacks had an admission rate more than three times the rate of Whites in all years (Figure 2.7).

- With the exception of 2007, Hispanics had significantly higher rates of hospital admissions for short-term complications compared with Whites.

- In all years, the rate of hospital admissions for short-term complications was significantly higher for adults living in communities with median household incomes in the first quartile than for people living in communities with median household incomes in the fourth quartile. In all years, the rates of admission were about 2.5 times as high for adults living in communities with median household incomes in the first quartile compared with adults living in communities with median household incomes in the fourth quartile.

- The 2007 top 4 State achievable benchmark was 37.8 per 100,000 population.[viii] At the current annual rate of increase of 1.7, there is no overall progress toward the benchmark.

- Adults living in communities with a median income in the fourth quartile and APIs have already achieved the benchmark. Whites, Blacks, Hispanics, and adults living in communities with median incomes in the first, second, and third quartiles indicate no progress toward the benchmark.

[viii] The top 4 States contributing to the achievable benchmark are Hawaii, Nebraska, Utah, and Vermont.

Effectiveness

Also, in the NHQR:

- In all years, residents of large fringe metropolitan areas had significantly lower hospital admissions for short-term complications than residents of micropolitan areas. Residents of large fringe metropolitan areas also had significantly lower hospital admissions than residents of large central metropolitan areas in 3 of 4 years.

- In all years, adults age 65 and over had significantly lower rates of admissions for short-term complications than adults ages 18-64.

Outcome: Controlled Hemoglobin, Cholesterol, and Blood Pressure

People diagnosed with diabetes are often at higher risk for other cardiovascular risk factors, such as high blood pressure and high cholesterol. Having these conditions in combination with diagnosed diabetes increases the likelihood of complications, such as heart and kidney diseases, blindness, nerve damage, and stroke. Patients who manage their diabetes and maintain an HbA1c level of <7%, total cholesterol of <200 mg/dL, and blood pressure of <140/80 mm Hg[ix] can decrease these risks.

Figure 2.8. Adults age 40 and over with diagnosed diabetes with hemoglobin A1c, total cholesterol, and blood pressure under control, by race/ethnicity, 2001-2004 and 2005-2008
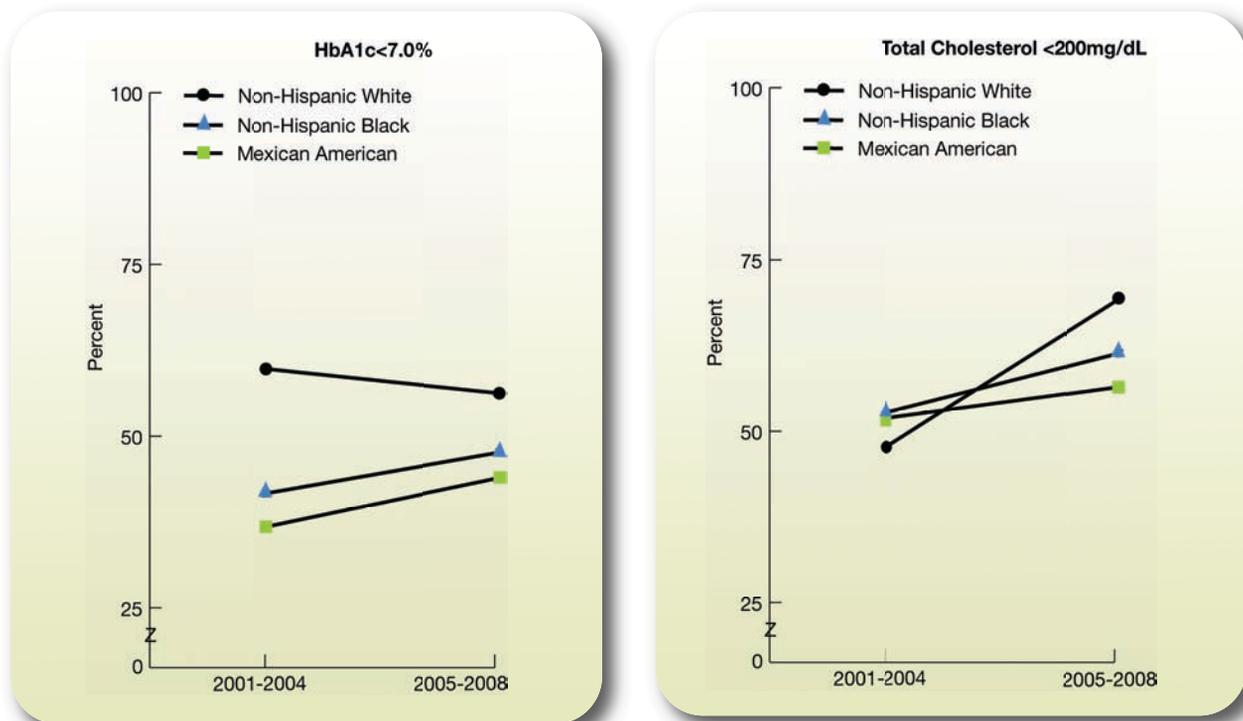
[ix] Blood pressure control guidelines were updated in 2005. Previously, having a blood pressure reading of <140/90 mm Hg was considered under control. For this measure, the new threshold of <140/80 mm Hg has been applied to historic data for the sake of consistency and comparability.
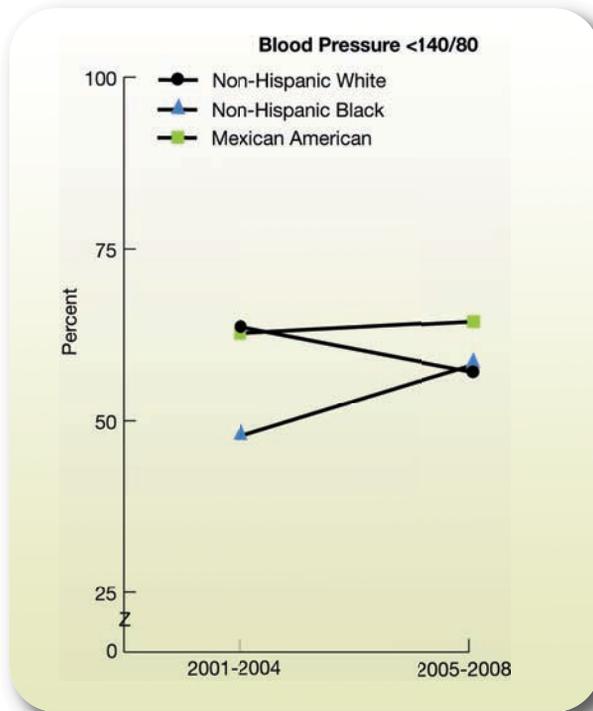
Effectiveness

Blood Pressure <140/80

Legend:
- Non-Hispanic White
- Non-Hispanic Black
- Mexican American

Source: Centers for Disease Control and Prevention, National Center for Health Statistics, National Health and Nutrition Examination Survey, 2001-2008.
Denominator: Civilian noninstitutionalized population with diagnosed diabetes, age 40 and over.
Note: Age adjusted to the 2000 standard population using two age groups: 40-59 and 60 and over.

- In 2005-2008, 56.3% of non-Hispanic White adults with diabetes age 40 and over had their HbA1c level under control (Figure 2.8). This figure is significantly higher than for Mexican Americans; only 43.9% had their HbA1c under control. Comparing these results to those for 2001-2004 shows a similar pattern. Almost 60% of non-Hispanic Whites with diabetes had their HbA1c under control compared with only 36.8% of Mexican Americans.

- In 2001-2004, 47.7% of non-Hispanic Whites had their cholesterol at optimal levels compared with 51.9% of Mexican Americans. In 2005-2008, the percentage of non-Hispanic Whites who had their cholesterol at optimal levels had increased to 69.3% and the percentage of Mexican Americans with optimal control had increased to only 56.5%, significantly less than non-Hispanic Whites.

- In 2001-2004, 63.6% of non-Hispanic Whites had their blood pressure under optimal control, which was significantly higher than the percentage of non-Hispanic Blacks (47.8%). However, in 2005-2008, the percentage of non-Hispanic Whites who had their blood pressure under optimal control had decreased to 57.1% and the percentage of non-Hispanic Blacks with optimal control had increased to 58.2%. There was no statistically significant difference between the two groups.

Also, in the NHQR:

- In 2005-2008, only 54.1% of adults age 40 and over with diabetes had achieved control of their HbA1c level, 65.2% had control over their cholesterol level, and 58.6% had their blood pressure under control. Although the percentage of adults with controlled HbA1c and blood pressure does not differ markedly from that in the 2001-2004 period, a significant increase in the percentage who had their cholesterol levels under control was observed over time, from 48.5% in 2001-2004 to 65.2% in 2005-2008.

Effectiveness

Prevention: Lower Extremity Amputations

People living with diabetes represent more than 60% of nontraumatic lower extremity amputations7 even though amputations can be avoided through proper care on the part of patients and providers. Hospital admissions for lower extremity amputations for patients with diagnosed diabetes reflect poorly controlled diabetes. Better management of diabetes would prevent the need for lower extremity amputations. Differences in rates may also vary across racial and ethnic groups due to differences in prevalence.

Figure 2.9. Hospital admissions for lower extremity amputations per 1,000 adult patients with diagnosed diabetes, by race and gender, 1999-2007
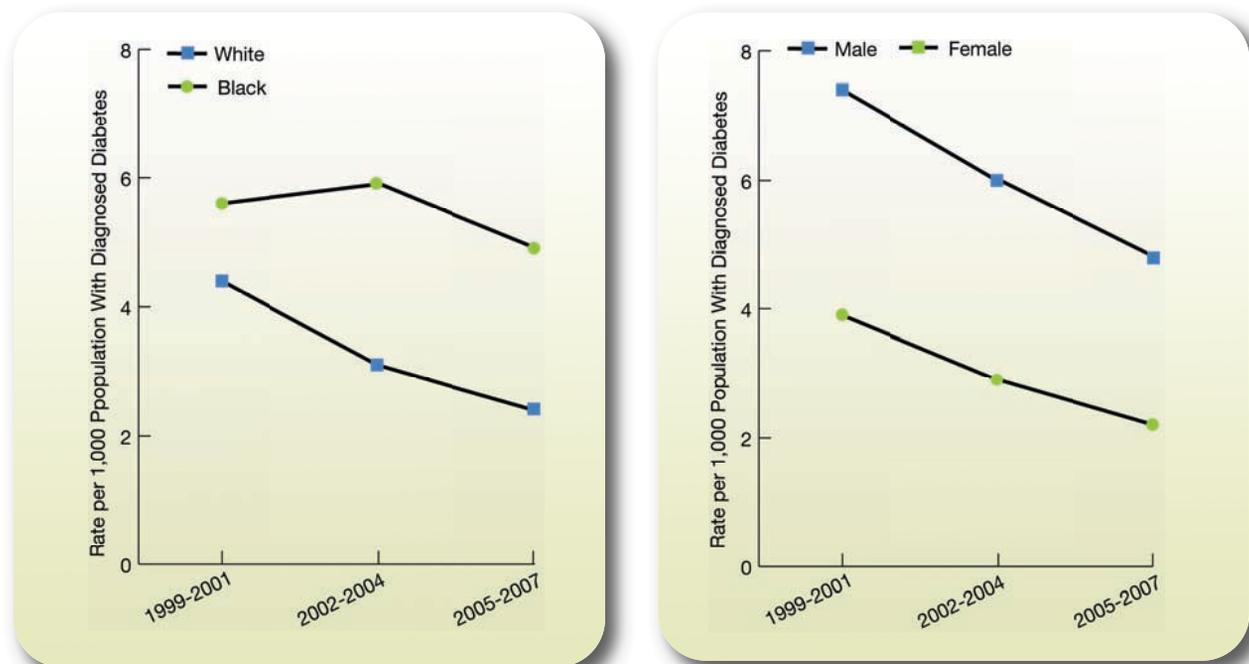
Source: Centers for Disease Control and Prevention, National Center for Health Statistics, National Hospital Discharge Survey and National Health Interview Survey.
Denominator: Civilian noninstitutionalized population 18 years and over who report they have ever been told they have diabetes.
Note: Data are age adjusted to the 2000 standard population using three age groups: 0-64, 65-74, and 75 and over.

● From 1999-2001 to 2005-2007, Whites, males, and females all had significant decreases in the hospitalization rate for lower extremity amputation (Figure 2.9).

● In 2002-2004 and 2005-2007, Blacks had significantly higher rates of hospitalization for lower extremity amputation compared with Whites.

● In all years, males had significantly higher rates of admission, about twice the rate of females.

Also, in the NHQR:

● In all years, adults ages 18-44 had significantly lower rates of hospital admission for lower extremity amputation than the overall population and adults ages 45 and over. The rate of admission for adults age 65 and over was twice the rate of adults ages 18-44 in all years.

Effectiveness
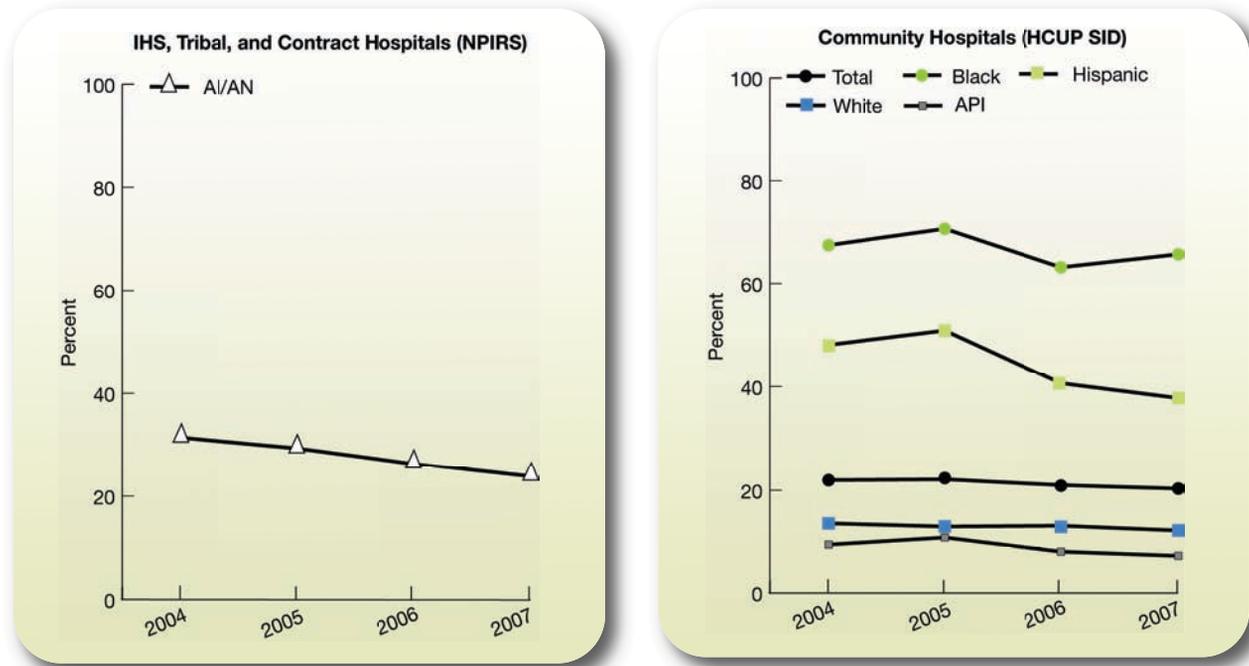
Indian Health Service Facilities

Nationwide, many AI/ANs who are members of a federally recognized Tribe rely on the Indian Health Service (IHS) to provide access to health care in the counties on or near reservations.[11,12,x] Due to low numbers and lack of data, information about AI/AN hospitalizations is difficult to obtain in most Federal and State hospital utilization data sources. The NHQR and NHDR address this gap by examining utilization data from IHS, Tribal, and contract hospitals.

Diabetes is one of the leading causes of morbidity and mortality among AI/AN populations. Its prevention and control are a major focus of the IHS Director's Chronic Disease Initiative and the IHS Health Promotion/Disease Prevention Initiative. Addressing barriers to health care is a large part of the overall IHS goal of ensuring that comprehensive, culturally acceptable personal and public health services are available and accessible to AI/ANs.

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[x] Of potentially eligible AI/ANs, 74% sought health care in 2004 at an IHS or tribally contracted facility, according to IHS estimates published by the Office of Public Health Support, Division of Program Statistics.

Effectiveness

Figure 2.10. Hospital admissions for uncontrolled diabetes per 100,000 population age 18 and over in IHS, Tribal, and contract hospitals, 2004-2007 (left), and community hospitals (right), by race and ethnicity, 2004-2007

Key: AI/AN = American Indian or Alaska Native; API = Asian or Pacific Islander.
Source: Indian Health Service (IHS), Tribal, and contract hospitals:IHS, Office of Information Technology/National Patient Information Reporting System, National Data Warehouse, Workload and Population Data Mart; community hospitals: Agency for Healthcare Research and Quality, Healthcare Cost and Utilization Project (HCUP) State Inpatient Databases (SID) disparities analysis file, 2004-2007.
Note: White, Black, and API are non-Hispanic populations. Data are adjusted for age and gender. The HCUP SID disparities analysis file is designed to provide national estimates using weighted records from a sample of hospitals from 25 States that have 66% of the U.S. resident population.

- From 2004 to 2007, the age-adjusted rate of total hospitalizations for uncontrolled diabetes significantly decreased for AI/AN patients in IHS, Tribal, and contract hospitals (from 31.4 per 100,000 to 23.8 per 100,000; Figure 2.10).

- For all years, White patients in community hospitals had significantly fewer admissions for uncontrolled diabetes compared with AI/AN patients in IHS hospitals. Compared with AI/AN patients in IHS hospitals, Blacks had significantly more admissions in all years and Hispanics had significantly more admissions in 3 of 4 years.

Effectiveness

End Stage Renal Disease

Importance

Mortality
Total end stage renal disease (ESRD) deaths (2007) ....87,812[13]

Prevalence
Total cases (2007) ....514,642[14]

Incidence
Number of new cases (2007)..110,996[13]

Cost
Total ESRD Medicare program expenditures (2007 est.) ....$23.9 billion[13]

Measures

The NHDR tracks several measures of ESRD management to assess the quality of care provided to renal dialysis patients. The two core report measures and one noncore measure highlighted here are:

● Adequacy of hemodialysis (core).

● Registration for transplantation (core).

● Use of arteriovenous fistula (AVF) at first outpatient dialysis (supporting).

Findings

Outcome: Adequate Hemodialysis

Dialysis removes harmful waste and excess fluid buildup in the blood that occurs when kidneys fail to function. Hemodialysis is the most common method used to treat advanced and permanent kidney failure. The adequacy of dialysis is measured by the percentage of hemodialysis patients with a urea reduction ratio equal to or greater than 65%; this measure indicates how well urea, a waste product, is eliminated by the dialysis machine.

Effectiveness

Figure 2.11. Adult hemodialysis patients with adequate dialysis (urea reduction ratio 65% or greater), by race, 2008
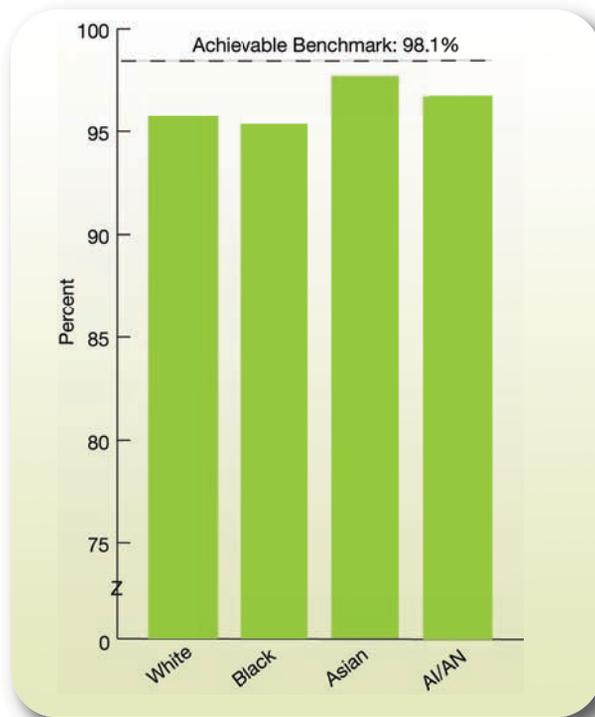
Key: AI/AN = American Indian or Alaska Native.
Source: University of Michigan Kidney Epidemiology and Cost Center, 2009 Dialysis Facility Report.
Denominator: End stage renal disease hemodialysis patients age 20 and over.

- In 2008, the overall percentage of adult hemodialysis patients receiving adequate dialysis was 95.8% (data not shown).

- The percentage of Asian and AI/AN adult hemodialysis patients receiving adequate dialysis was higher than for Whites (97.8% and 96.7%, respectively, compared with 95.9%; Figure 2.11).

- In 2008, the top 5 State achievable benchmark was 98.1%.[xi] The available data were not sufficient to calculate time to benchmark.

Also, in the NHQR:

- In 2008, the percentage of male adult hemodialysis patients receiving adequate dialysis was lower than that of females.

- The percentage of adult hemodialysis patients receiving adequate dialysis was lower for those age 65 years and over than for those ages 20 to 64 years.


[xi] The top 5 States contributing to the achievable benchmark are Colorado, Connecticut, Hawaii, Rhode Island, and Texas.

Effectiveness

Management: Registration for Transplantation

Kidney transplantation is a procedure that replaces a failing kidney with a healthy kidney. If a patient is deemed a good candidate for transplant, he or she is placed on the transplant program's waiting list. Dialysis patients wait for transplant centers to match them with the most suitable donor. Registration for transplantation is an initial step toward patients receiving the option of kidney transplantation. Patients who receive transplants from living donors, about 36% of kidney transplants, do not need to register on a waiting list.

Early transplantation that decreases or eliminates the need for dialysis can also lessen the occurrence of acute rejection and patient mortality. In 2006, 70,778 patients were on the Organ Procurement and Transplantation Network's deceased donor kidney transplant waiting list in the United States, but only 10,212 deceased donor kidney transplants were performed.[15] In 2007, the number of kidney transplants from deceased donors decreased by 1.3%, and kidney transplants from living donors dropped by 6.1%.[16]

Figure 2.12. Dialysis patients who were registered on a waiting list for transplantation, by race and ethnicity, 2000-2006
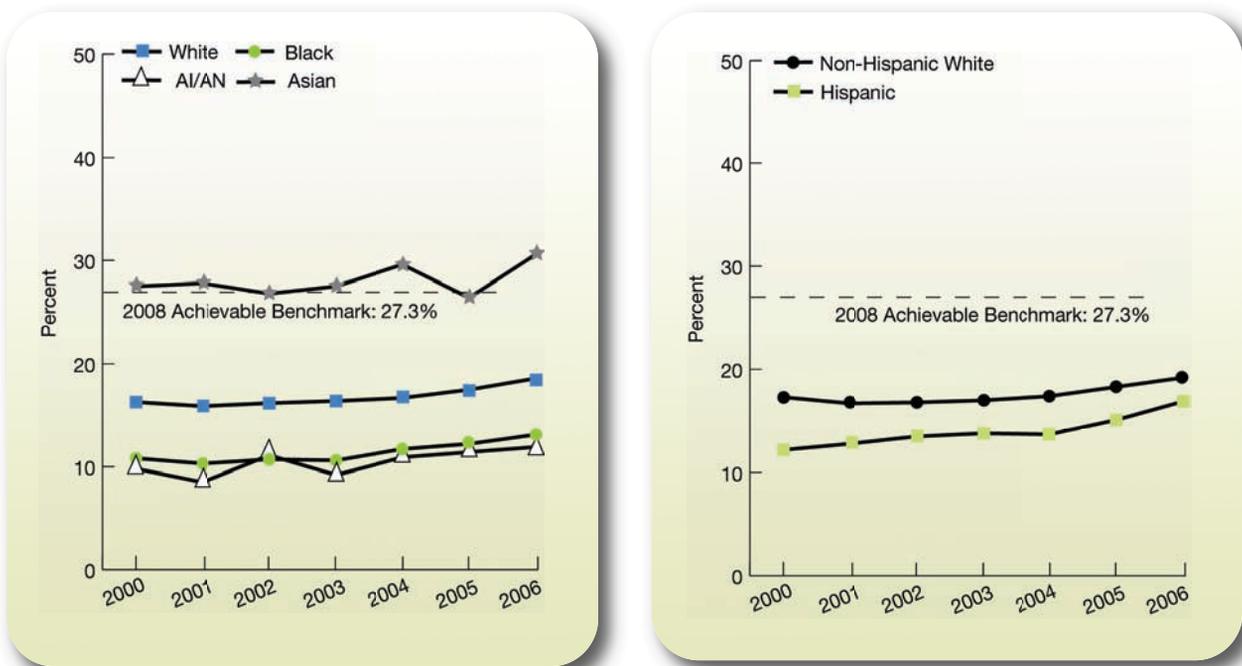
Key: AI/AN = American Indian or Alaska Native.
Source: National Institute of Diabetes and Digestive and Kidney Diseases, U.S. Renal Data System, 2000-2006.
Denominator: End stage renal disease hemodialysis patients and peritoneal dialysis patients under age 70.

- From 2000 to 2006, the percentage of dialysis patients who were registered on a waiting list for transplantation increased from 14.5% to 17.1% (data not shown). Improvements were observed among all racial and ethnic groups (Figure 2.12).

- In 2006, Blacks and AI/ANs were less likely to be registered on a waiting list than Whites (13.1% and 11.9%, respectively, compared with 18.6%). However, Asians (30.6%) were more likely to be registered on a waiting list than Whites.

Effectiveness

- The 2006 top 5 State achievable benchmark was 27.3%.[xii] At the current rate of improvement, the benchmark could not be attained overall for almost 24 years.

- Although Asians have already surpassed the 2006 achievable benchmark (in 2006, 30.6% of Asians were registered on a waiting list), Blacks could not attain the benchmark for almost 34 years and AI/ANs could not attain it for almost 37 years.

Also, in the NHQR:

- In all years, patients ages 20-69 were less likely to be registered on a waiting list than patients ages 0-19.

- In 2006, females were less likely than males to be registered on a waiting list.

- At their current rates of improvement, male patients could attain the achievable benchmark in about 20 years, whereas female patients could not attain the benchmark for more than 29 years.

Use of Arteriovenous Fistula for Vascular Access

For people with ESRD, vascular access is a way to reach the blood vessels so that harmful urea can be removed from the blood. An arteriovenous fistula (AVF) is the preferred type of access for most hemodialysis patients for three reasons: (1) it provides adequate blood flow for dialysis, (2) it lasts a long time, and (3) it has a low complication rate compared with other methods.

Although there is consensus that AVF should be the primary method of vascular access, incidence rates of AVF have historically been very low. Therefore, the Centers for Medicare & Medicaid Services (CMS) has sought to increase rates of AVF for primary access across the country by forming a nationwide initiative and collaborative effort to increase overall use of AVF. In 2005, this effort, called the Fistula First Breakthrough Initiative, set the goal for national prevalence at 66%.

[xii] The top 5 States contributing to the achievable benchmark are California, Minnesota, New Hampshire, Pennsylvania, and South Dakota.

Effectiveness

Figure 2.13. Incident hemodialysis patients who used an arteriovenous fistula at first outpatient dialysis, by race and ethnicity, 2008-2009
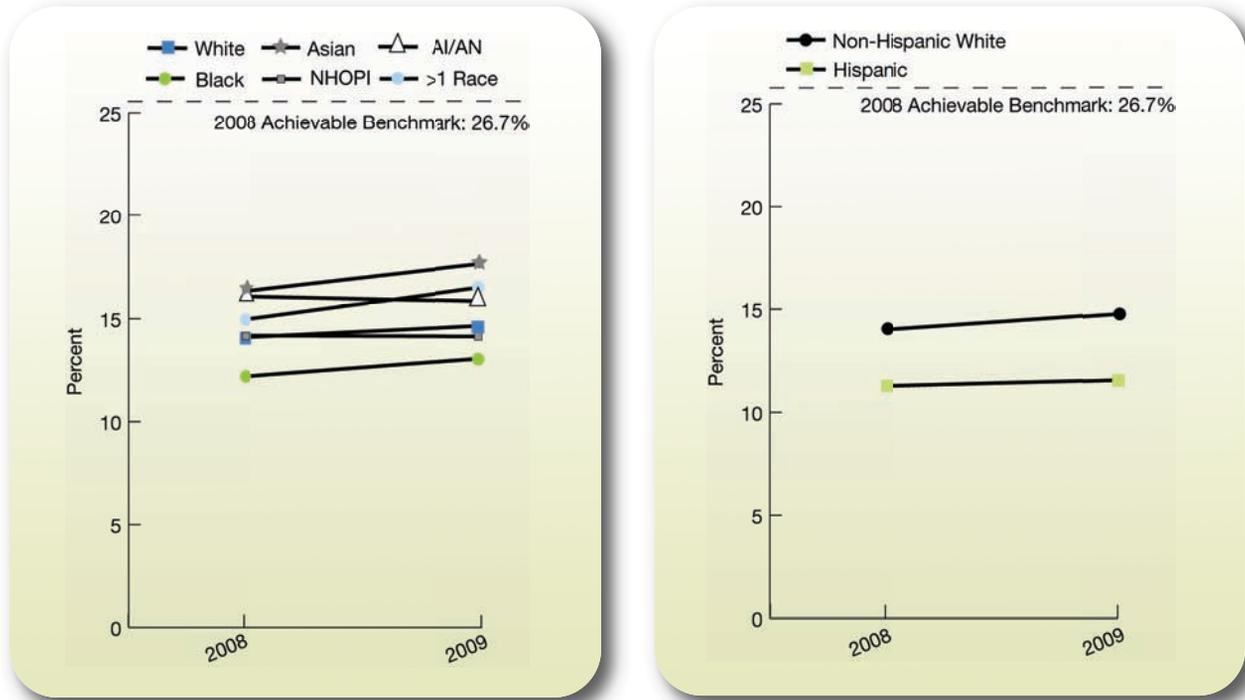
Key: AI/AN = American Indian or Alaska Native; NHOPI = Native Hawaiian or Other Pacific Islander.
Source: Medicare eligibility forms (Centers for Medicare & Medicaid Services [CMS] Form 2728) (2008-2009), Fistula First Incident AVF Dataset, CMS.
Denominator: New end stage renal disease hemodialysis patients.

● From 2008 to 2009, the percentage of dialysis patients who used an AVF at first dialysis improved from 13.7% to 14.3% (data not shown).

● In 2009, a higher percentage of Asians than Whites used AVF at first dialysis, but a lower percentage of Blacks than Whites used AVF at first dialysis (17.6%, 14.7%, and 13.1%, respectively; Figure 2.13).

● Also in 2009, Hispanics had lower rates of AVF at first dialysis than non-Hispanic Whites (11.6% compared with 14.8%).

● The 2009 top 5 State achievable benchmark was 26.7%.[xiii]

Also, in the NHQR:

● In 2009, female dialysis patients had substantially lower rates of AVF at first dialysis than males.

[xiii] The top 5 States contributing to the achievable benchmark are Hawaii, Maine, Montana, New Hampshire, and Oregon.

Effectiveness

Heart Disease

Importance

Mortality

Number of deaths (2007)..616,067[1]

Cause of death rank (2007) ....1st[1]

Prevalence

Number of cases of coronary heart disease (2006) ....17.6 million[4]

Number of cases of heart failure (2006) ....5.8 million[4]

Number of cases of high blood pressure (2006)...74.5 million[4]

Number of heart attacks (2006)..8.5 million[17]

Incidence

Number of new cases of heart failure (2004)..550,000[18]

Cost

Total cost of cardiovascular disease (2010 est.)..$503.2 billion[4]

Total cost of heart failure (2010 est.) ....$39.2 billion[17]

Direct costs of cardiovascular disease (2010 est.) ....$324.1 billion[4]

Cost-effectiveness of hypertension screening ....$14,000-$35,000/QALY[5]

Measures

The NHDR tracks several quality measures for preventing and treating heart disease, including the following three core report measures:

- Receipt of angiotensin-converting enzyme (ACE) inhibitor or angiotensin receptor blocker (ARB) for heart attack.

- Inpatient deaths following heart attack.

- Receipt of recommended care for heart failure.

Several measures related to heart disease are also presented in other chapters of this report. Timeliness of cardiac reperfusion for heart attack patients is tracked in Chapter 4, Timeliness, and receipt of complete written discharge instructions by patients with heart failure is tracked in Chapter 6, Care Coordination.

Effectiveness

Treatment: Receipt of Angiotensin-Converting Enzyme Inhibitor or Angiotensin Receptor Blocker for Heart Attack

Heart attack, or acute myocardial infarction, is a common life-threatening condition that requires rapid recognition and efficient treatment in a hospital to reduce the risk of serious heart damage and death. Measuring processes of heart attack care can provide information about whether a patient received specific needed services, but these processes make up a very small proportion of all the care that a heart attack patient needs. Measuring outcomes of heart attack care, such as mortality, can provide a more global assessment of all the care a patient receives and usually is the aspect of quality that matters most to patients.

Significant improvements in a number of measures of quality of care for heart attack have occurred in recent years. Four measures that have been tracked in past NHDRs (administration of aspirin within 24 hours and at discharge, administration of beta blocker at discharge, and counseling to quit smoking) have attained overall performance levels exceeding 95%. These measures were included in the composite measure of care for heart attack in past NHDRs. However, the success of these measures creates a ceiling effect that limits the report's ability to track improvement over time. Moreover, administration of beta blocker within 24 hours as recommended care has been discontinued. Hence, this NHDR focuses on one measure of heart attack care: ACE inhibitor or ARB treatment among patients with left ventricular systolic dysfunction.

Figure 2.14. Hospital patients with heart attack and left ventricular systolic dysfunction who received angiotensin-converting enzyme inhibitor or angiotensin receptor blocker, by race/ethnicity, 2005-2008
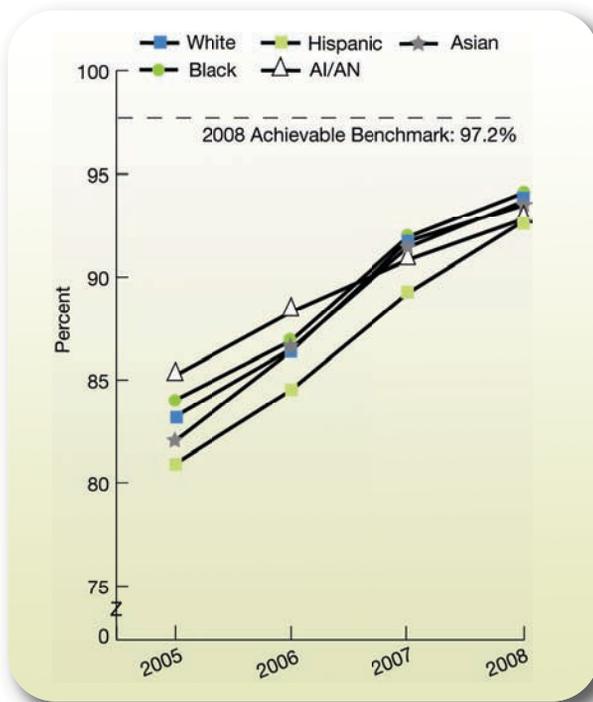
Key: AI/AN = American Indian or Alaska Native.
Source: Centers for Medicare & Medicaid Services, Medicare Quality Improvement Organization Program, 2005-2008.
Denominator: Patients hospitalized with a principal diagnosis of acute myocardial infarction and left ventricular systolic dysfunction.

Effectiveness

● From 2005 to 2008, the percentage of heart attack patients with left ventricular systolic dysfunction who received an ACE inhibitor or ARB improved from 83.4% to 93.7% (data not shown). Improvements were observed among all racial and ethnic groups during the same period (Figure 2.14).

● The 2008 top 5 State achievable benchmark was 97.2%.[xiv] At the current rate of increase, the 2008 achievable benchmark could be achieved in 1 year. With the exception of AI/ANs (who would attain the benchmark in about 1.7 years), the other racial and ethnic groups would attain the benchmark in about 1 year.

Also, in the NHQR:

● At their current rates of improvement, the achievable benchmark could be reached by each age group in about 1 year.

Outcome: Inpatient Deaths Following Heart Attack

Survival following admission for heart attack reflects multiple patient factors, such as a patient's comorbidities, as well as health care system factors, such as the possible need to transfer patients to other hospitals to receive services. It also may partly reflect receipt of appropriate health services.

Figure 2.15. Deaths per 1,000 adult hospital admissions with heart attack, by race/ethnicity and insurance status, 2004-2007
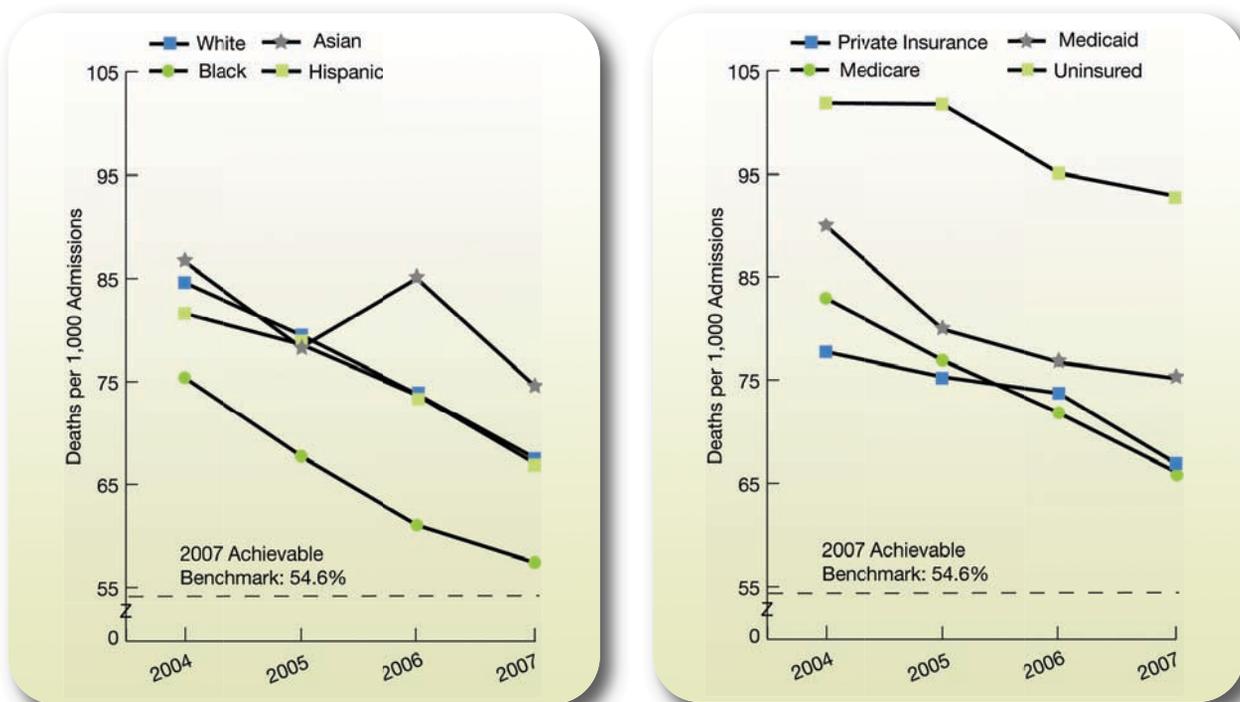
Source: Agency for Healthcare Research and Quality, Healthcare Cost and Utilization Project, Nationwide Inpatient Sample, 2004-2007.
Denominator: Adults age 18 and over admitted to a non-Federal community hospital in the United States with acute myocardial infarction as principal discharge diagnosis.
Note: White, Black, and Asian groups are non-Hispanic. Rates are adjusted by age, gender, age-gender interactions, and all payer refined-diagnosis related group scoring of risk of mortality.

[xiv] The top 5 States contributing to the achievable benchmark are Alaska, Minnesota, New Hampshire, North Dakota, and Oregon.

Effectiveness

- In 2007, the overall rate of inpatient mortality was 64 per 1,000 admissions for heart attack (data not shown). Asians had higher rates of inpatient heart attack mortality than Whites, but Blacks had a lower rate (74.5, 67.5, and 57.4 per 1,000 admissions, respectively; Figure 2.15).

- Also in 2007, the inpatient heart attack mortality for the Medicaid group was significantly higher than for people with private insurance (75.3 per 1,000 admissions compared with 66.9).

- The 2007 top 4 State achievable benchmark for inpatient heart attack mortality was 54.6 per 1,000 admissions.[xv] At the current rate, the achievable benchmark could be attained in about 2.5 years.

- At their current rates of improvement, Blacks could attain the benchmark in less than 1 year, but Asians could not attain the benchmark for more than 6 years.

Also, in the NHQR:

- From 2004 to 2007, the overall inpatient mortality rate decreased significantly overall and for each geographic location and gender group.

- At their current rates of improvement, males could attain the achievable benchmark in less than 1 year; however, females could not attain the benchmark for almost 3 years.

- Although most geographic areas could attain the benchmark in 1 to 2 years, small metropolitan, micropolitan, and noncore areas could not attain the benchmark until later (about 5 years, about 3.6 years, and about 3 years, respectively).

## Treatment: Receipt of Recommended Care for Heart Failure

The NHDR tracks the national percentages of receipt of the following services (found in the Data Tables appendix):

- Recommended test for heart functioning (heart failure patients having evaluation of left ventricular ejection fraction).

- Recommended medication treatment (patients with left ventricular systolic dysfunction prescribed ACE inhibitor or ARB at discharge).

In addition, an overall composite measure describes the percentage of all episodes in which heart failure patients receive recommended care.

[xv] The top 4 States contributing to the achievable benchmark are Arizona, Florida, Maryland, and Michigan.

Effectiveness

Figure 2.16. Hospital patients with heart failure who received recommended hospital care: Overall composite, by race and ethnicity, 2005-2008
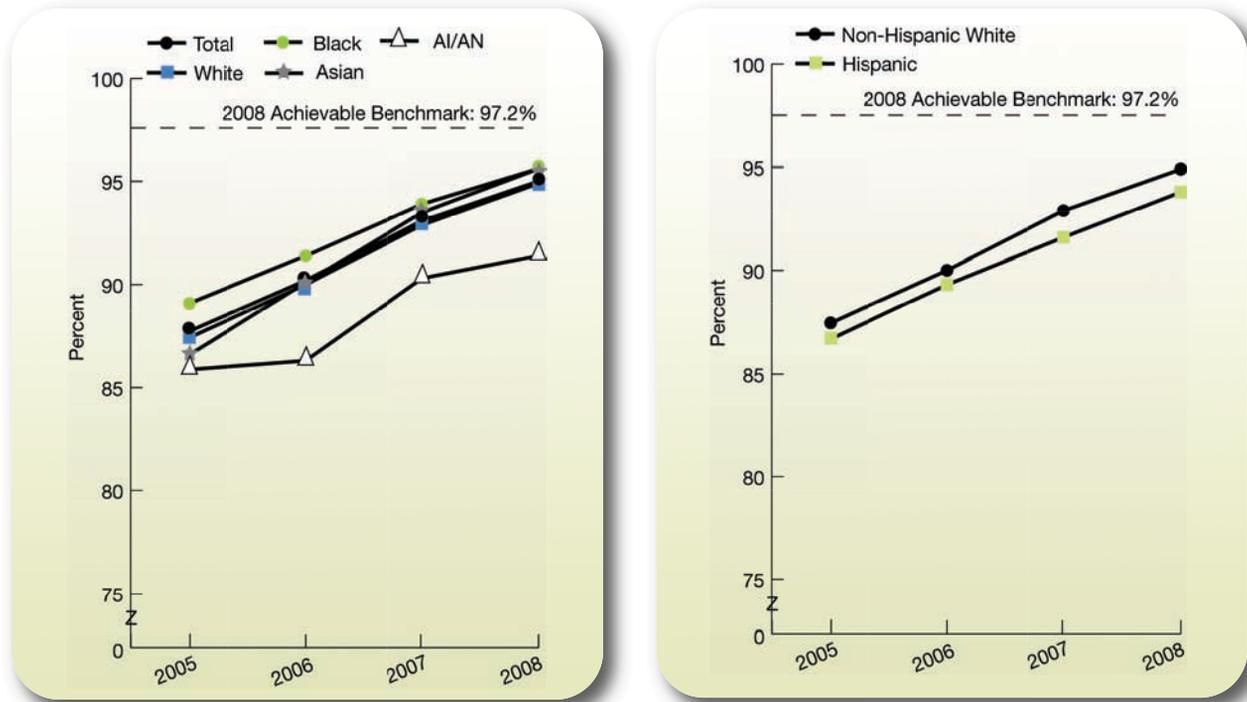
Key: AI/AN = American Indian or Alaska Native.
Source: Centers for Medicare & Medicaid Services, Medicare Quality Improvement Organization Program, 2005-2008.
Denominator: Patients hospitalized with a principal diagnosis of acute heart failure.

- From 2005 to 2008, the overall percentage of patients with heart failure who received recommended care improved from 87.7% to 95% (Figure 2.16). In addition, the percentage of Asian patients who received recommended care for heart failure improved (from 86.6% to 96.6%).

- The 2008 top 5 State achievable benchmark for patients with heart failure who received recommended hospital care was 97.2%.[xvi] At the current rate of improvement, Whites, Blacks, Asians, and non-Hispanic Whites could attain the achievable benchmark in less than a year.

- Although the other racial and ethnic groups could attain the benchmark in less than 1 year, AI/ANs and Hispanics could not attain the benchmark until later (about 3 years and about 1.5 years, respectively).

Also, in the NHQR:

- The percentage of patients with heart failure who received recommended care improved for those age 85 years and over.

- At their current rates of improvement, all age and gender groups could attain the achievable benchmark in about 1 year.

[xvi] The top 5 States contributing to the achievable benchmark are Connecticut, Maine, New Hampshire, New Jersey, and South Carolina.

Effectiveness

HIV and AIDS

Importance

Mortality
Number of deaths of people with AIDS (2007) ....18,089[19]

Prevalence
Number of people living with HIV infection (2007) ....599,819[19]

Number of people living with AIDS (2007)...470,902[19]

Incidence
Number of new HIV infections (2008)...42,439[19]

Number of new AIDS cases (2008) ....37,991[19]

Cost
Federal spending on domestic HIV/AIDS care, cash and housing assistance, and prevention
and research (fiscal year 2011 est.) ....$20.5 billion[20]

HIV is a virus that kills or damages cells of the body's immune system. AIDS is the most advanced stage of HIV infection. HIV is spread through unprotected sex with an infected person and by sharing drug needles or through contact with the blood of an infected person. In addition, women with HIV can give it to their babies during pregnancy, childbirth, or breastfeeding.

The impact of HIV infection and AIDS is disproportionately higher for racial and ethnic minorities and people of lower income and education levels. Although access to care has improved, research shows that Blacks, Hispanics, women, and uninsured people with HIV remain less likely to have access to care and less likely to have optimal patterns of care.[21]

According to the Centers for Disease Control and Prevention, HIV and AIDS disproportionately affect African Americans in the United States. In 2008, African Americans accounted for 52% of all diagnoses of HIV infection and had a rate of 73.7 per 100,000 population compared with 8.2 per 100,000 for Whites.[22] The spread of HIV is linked to complex social and economic factors, including poverty, concentration of the virus in specific geographic areas and smaller sexual networks, sexually transmitted co-infections, stigma (negative attitudes, beliefs, and actions directed at people living with HIV/AIDS or directed at people who engage in behaviors that might put them at risk for HIV), and injection and noninjection drug use and associated behaviors.[23]

The HIV/AIDS epidemic is also a serious threat to the Hispanic community. Hispanics accounted for 15% of the population but had an estimated 17% of the new HIV infections in 2006, which was 2.5 times the rate of Whites.[24] In addition to being seriously affected by HIV, Hispanics continue to face challenges in accessing health care, especially preventive services, and HIV treatment.

Effectiveness

Undocumented Hispanics face an even greater challenge in accessing care and information regarding HIV and AIDS, but data are limited on HIV infection rates of undocumented immigrants.[25] In 2006, HIV/AIDS was the fourth leading cause of death among Hispanic men and women ages 35-44.[26] Having Medicaid and a usual source of care decreased the likelihood of delaying care for HIV, but research shows that delay in care is still greater for Hispanics and African Americans.[27]

The White House Office of National AIDS Policy launched the National HIV/AIDS Strategy (NHAS) in July 2010. The NHAS is a comprehensive plan focused on: (1) reducing the number of people who become infected with HIV, (2) increasing access to care and optimizing health outcomes for people living with HIV, and (3) reducing HIV-related health disparities. The plan will serve as a roadmap for policymakers, partners in prevention, and the public on steps the United States must take to lower HIV incidence, get people living with HIV into care, and reduce HIV-related health disparities.

Measures

This year, five supporting measures are presented on the prevention of opportunistic infections in HIV and AIDS patients and one on HIV infection deaths:

- Eligible patients receiving prophylaxis for *Pneumocystis* pneumonia (PCP).

- Eligible patients receiving prophylaxis for *Mycobacterium avium* complex (MAC).

- Adult HIV patients who had at least two outpatient visits during the year.

- Adult HIV patients who received two or more CD4 tests during the year.

- Adult HIV patients who received highly active antiretroviral therapy (HAART).

Findings

Management: HIV Patients Receiving Care

Management of chronic HIV disease includes outpatient and inpatient services. Without adequate treatment, as HIV disease progresses, CD4 cell counts fall and patients become increasingly susceptible to opportunistic infections.

HIV/AIDS core clinical performance measures are indicators for use in monitoring the quality of care provided to adults and adolescents living with HIV. Based on the set of quality measures developed by the HIV/AIDS Bureau of the Health Resources and Services Administration (HRSA), performance can be measured for various HIV prevention and treatment services. Services indicated for patients with HIV include:

1. Two or more CD4 cell counts performed in the measurement year.
2. HAART for patients with AIDS.
3. Two or more medical visits in an HIV care setting in the measurement year.[28]
4. PCP prophylaxis for patients with CD4 cell count below 200.

Effectiveness

Currently, national data on HIV care are not routinely collected. HIV measures tracked in the NHDR come from the HIV Research Network, which consists of 18 medical practices across the United States that treat large numbers of patients living with HIV. Data from the voluntary HIV Research Network are not nationally representative of the level of care received by all Americans living with HIV. Network data represent only patients who are actually receiving care (about 14,000 HIV patients per year) and do not represent patients who do not receive care. Furthermore, data shown below are not representative of the HIV Research Network as a whole because they represent only a subset of network sites that have the best data.

Below are data from the HIV Research Network that capture four of the recommended HRSA measures. In addition, when CD4 cell counts fall below 50, medicine to prevent development of disseminated MAC infection is routinely recommended.[29]

Figure 2.17. Adult patients with HIV who received care, by race/ethnicity and gender, 2007
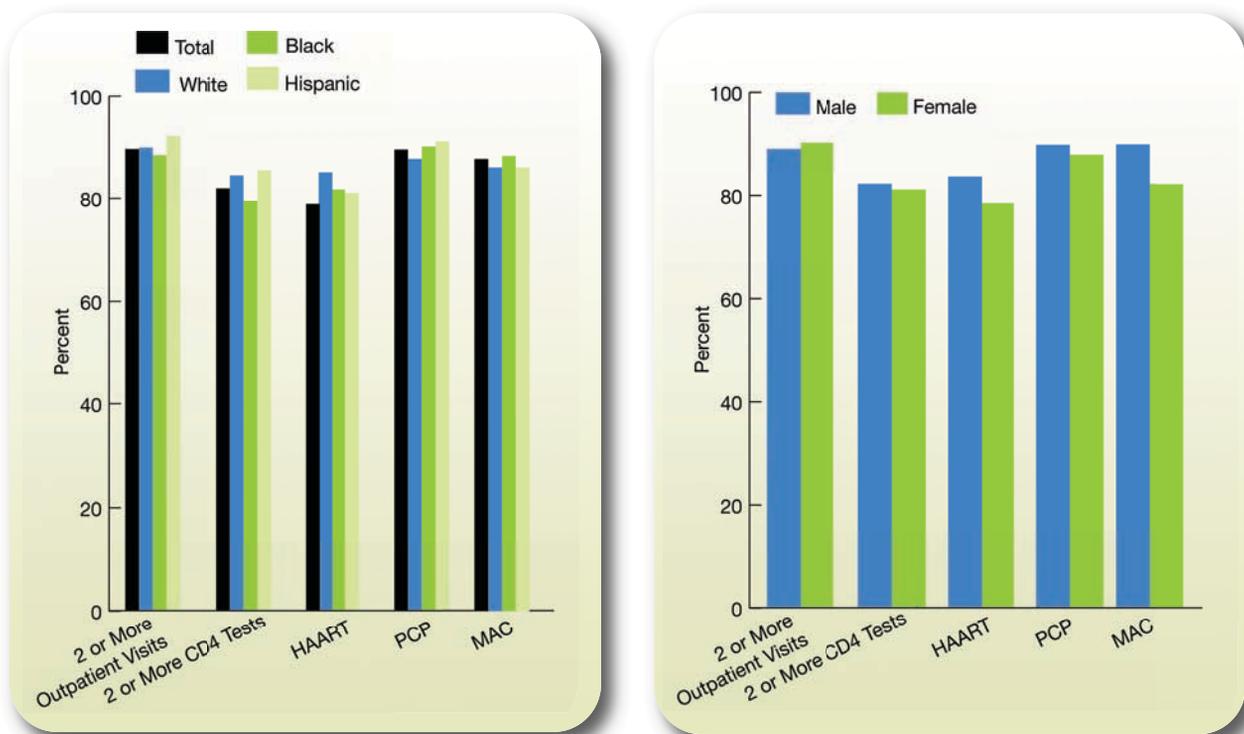
Key: HAART = highly active antiretroviral therapy; PCP = *Pneumocystis* pneumonia; MAC = *Mycobacterium avium* complex.
Source: Agency for Healthcare Research and Quality, HIV Research Network, 2007.
Note: For HAART measure, adult HIV patients had to be enrolled in an HIV network clinic and receive at least one CD4 test and have at least one outpatient visit in addition to having at least one CD4 test result of 350 or less.

- Overall, in 2007, Black patients with HIV were less likely than White patients to receive the minimum care for HIV, except in the receipt of MAC and PCP prophylaxis (Figure 2.17).

- In 2007, female patients with HIV were more likely to have had two or more outpatient visits than male patients but were less likely to receive HAART and MAC prophylaxis.

- There were no statistically significant differences in other recommended care.
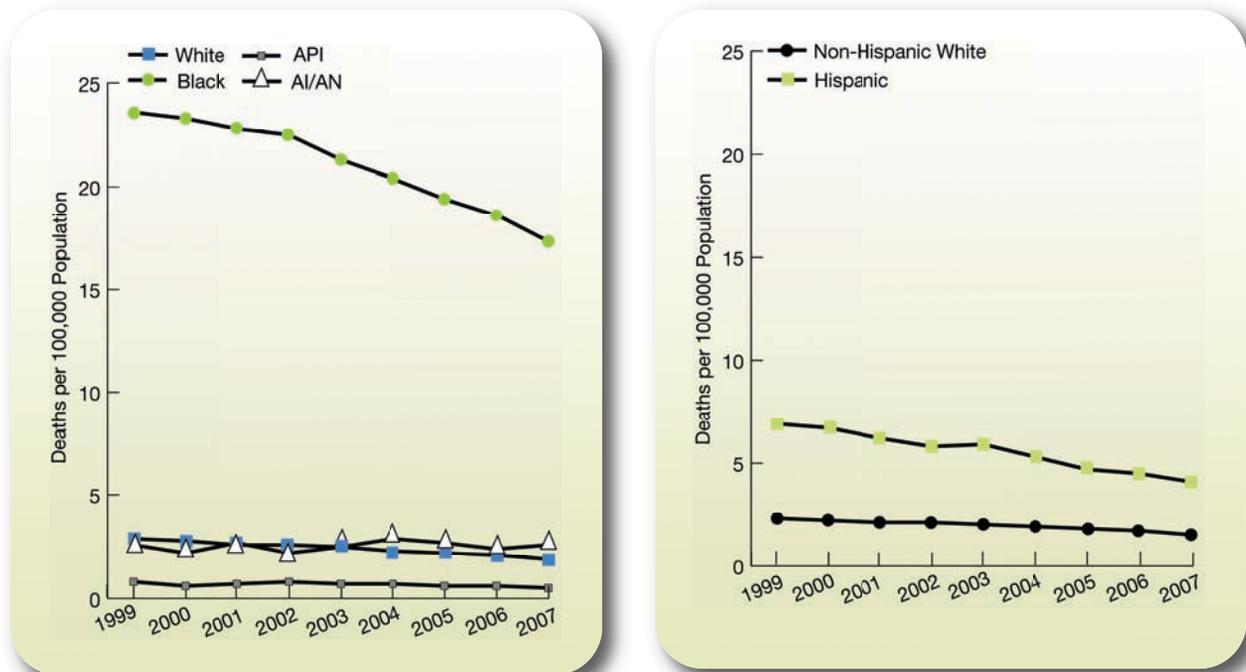
Effectiveness

Also, in the NHQR:

● Adult HIV patients age 45 and over were more likely to receive recommended care than HIV patients ages 18-44.

Outcome: Deaths of People With HIV

Improved management of HIV infection has contributed to declines in the number of new AIDS cases in the United States since the 1990s.[30] HIV infection deaths reflect a number of factors, including underlying rates of HIV risk behaviors, prevention of HIV transmission, early detection and treatment of HIV disease, and management of AIDS and its complications.

Figure 2.18. HIV infection deaths per 100,000 population, by race, ethnicity, and gender, 1999-2007

Effectiveness
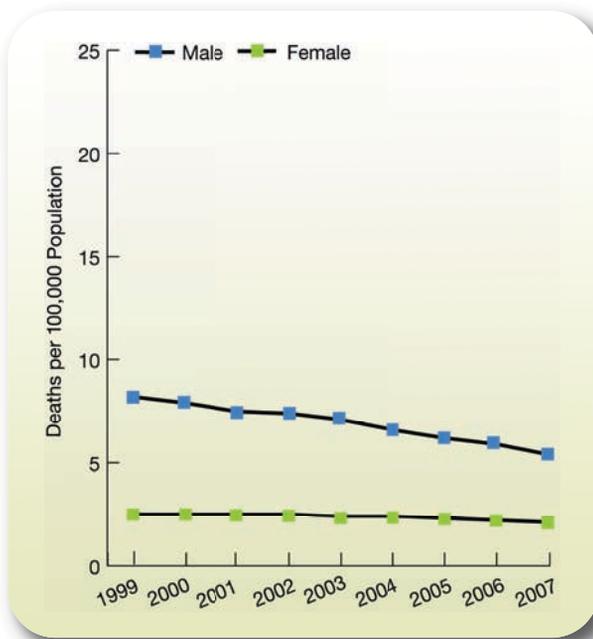
Key: API = Asian or Pacific Islander; AI/AN = American Indian or Alaska Native.
Source: Centers for Disease Control and Prevention, National Center for Health Statistics, National Vital Statistics System — Mortality, 1999-2007.
Note: Rates are age adjusted to the 2000 standard population.

● Overall, from 1999 to 2007, the rate of HIV infection deaths decreased from 5.3 per 100,000 population to 3.7 per 100,000 population (data not shown).

● From 1999 to 2007, HIV infection death rates improved for all groups. The HIV infection death rate decreased for Blacks (from 23.6 per 100,000 population to 17.3 per 100,000 population) but remains significantly higher than the rate for Whites (which decreased from 2.9 per 100,000 population to 1.9; Figure 2.18).

● From 1999 to 2007, the HIV infection death rate decreased for Hispanics (from 6.9 per 100,000 to 4.1 per 100,000) but remains more than twice as high as the rate for non-Hispanic Whites (which decreased from 2.3 per 100,000 population to 1.5).

● In 2007, the HIV infection death rate for males was more than twice that of females (5.4 per 100,000 population compared with 2.1).

Also, in the NHQR:

● From 1999 to 2007, the rate of HIV infection deaths decreased for adults ages 45-64 but was still highest among all age groups.

● In 2007, the rates of HIV infection deaths were highest for residents in large central metropolitan areas and lowest in noncore areas.

Effectiveness

Maternal and Child Health

Importance

Mortality

Number of maternal deaths (2007)..548[1]

Number of infant deaths (2007)..29,138[1]

Demographics

Number of children[xvii] (2007)..73,590,2433[1]

Number of babies born in the United States (2007)...4,316,233[32]

Cost

Total cost of health care for children (2002 est.)...$79 billion[33]

Cost-effectiveness of vision screening for children ....$0-$14,000/QALY[5]

Cost-effectiveness of childhood immunization series[xviii]..Cost saving[5]

Measures

The NHQR and NHDR track several prevention and treatment measures related to maternal and child health care. The core report measures highlighted in this section are:

- Receipt of recommended immunizations by young children.
- Vision checks for children.
- Counseling of children or parents about physical activity.
- Counseling of children or parents about healthy eating.

In addition, two supporting measures are presented:

- Obstetric trauma.
- Weight monitoring of overweight children.

[xvii] In this report, children are defined as individuals under age 18.

[xviii] The childhood immunization series includes vaccinations for diphtheria-tetanus-pertussis, measles-mumps-rubella, inactivated polio virus, *Haemophilus influenzae* type B, hepatitis B, and varicella. "Cost saving" indicates that childhood immunizations are one of very few services that save more money than they cost.

Effectiveness

Findings

Outcome: Obstetric Trauma

Childbirth and reproductive care are the most common reasons for women of childbearing age to use health care services. With nearly 12,000 births each day in the United States,[32] childbirth is the most common reason for hospital admission.

Obstetric trauma involving a severe tear to the vagina or surrounding tissues during delivery is a common complication of childbirth. The higher risk of severe perineal laceration may be related to the degree of fetal-maternal size disproportion. Asian and Pacific Islander (API) women, with the smallest body size, are most likely to experience obstetric trauma.[34] In addition, although any delivery can result in trauma, existing evidence shows that severe perineal trauma can be reduced by restricted use of episiotomy and forceps.[35]

Figure 2.19. Obstetric trauma with 3rd or 4th degree laceration per 1,000 vaginal deliveries without instrument assistance, by race/ethnicity, 2001-2007, and area income, 2004-2007
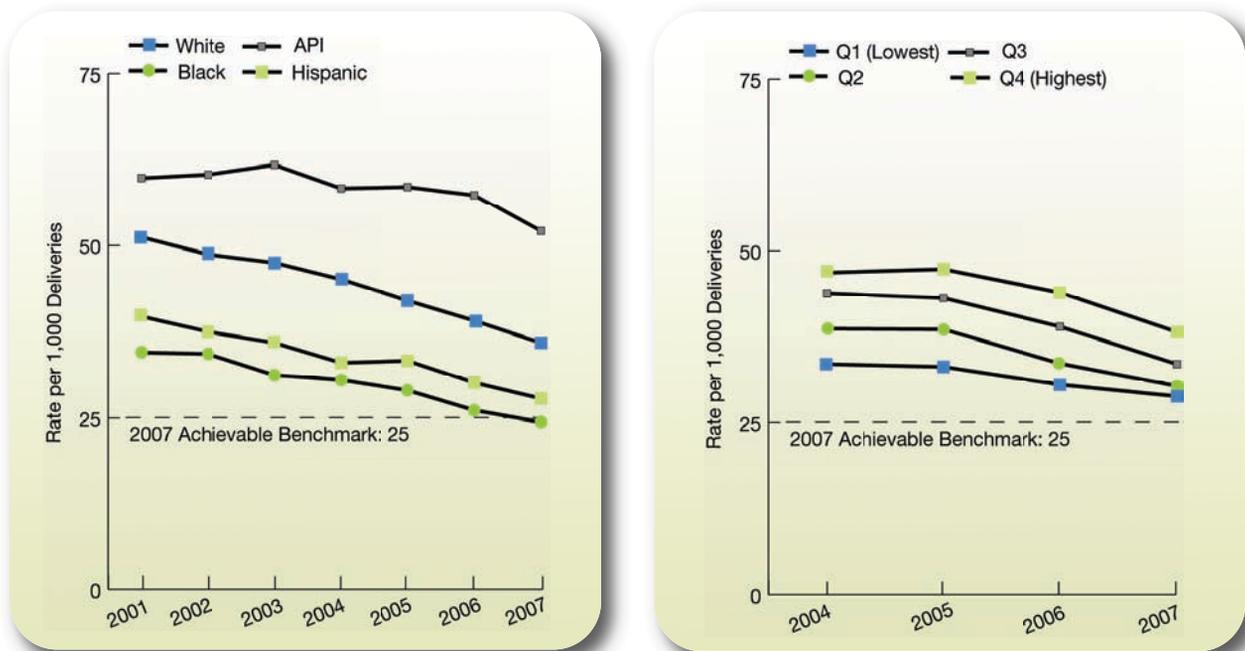
Key: API = Asian or Pacific Islander; Q = Quartile; Q1 indicates the lowest area income quartile while Q4 indicates the highest area income quartile.
Source: Agency for Healthcare Research and Quality, Healthcare Cost and Utilization Project, State Inpatient Databases disparities analysis file, 2001-2007, and Nationwide Inpatient Sample, 2004-2007.
Denominator: All patients hospitalized for vaginal delivery without indication of instrument assistance.
Note: Rates are adjusted by age and comorbidities.

- Declines were observed among all racial/ethnic and area income groups (Figure 2.19).

- In all years, Blacks and Hispanics had lower rates than Whites and residents of the lower two area income quartiles had lower rates than residents of the highest area income quartile.

- In all years, APIs had higher rates than Whites.

Effectiveness

- The 2007 top 3 State achievable benchmark was 25 per 1,000 deliveries.[xix] At the current 8% annual rate of decrease, this benchmark could be attained overall and by most racial/ethnic and income groups in about 3 years. Whites and residents of the highest area income quartile would need 4 years, while APIs would need more than 23 years.

Also, in the NHQR:

- From 2004 to 2007, rates of obstetric trauma with 3rd or 4th degree laceration decreased from 40 to 32 per 1,000 vaginal deliveries without instrument assistance.

- In most years, residents of small metropolitan, micropolitan, and noncore areas had lower rates of obstetric trauma compared with residents of large fringe metropolitan areas.

- The achievable benchmark could be attained in most urban-rural locations in about 3 years. Residents of large fringe metropolitan areas would need about 4 years to attain the benchmark.

Prevention: Receipt of Recommended Immunizations by Young Children

Immunizations are important for reducing mortality and morbidity. They protect recipients from illness and disability and protect others in the community who cannot be vaccinated. In 2008, recommended vaccines for children that should have been completed by ages 19-35 months included four doses of diphtheria-tetanus-pertussis vaccine, three doses of polio vaccine, one dose of measles-mumps-rubella vaccine, three doses of *Haemophilus influenzae* type B vaccine, and three doses of hepatitis B vaccine. These vaccines constitute the 4:3:1:3:3 vaccine series tracked in Healthy People 2010. This series does not include varicella vaccine or vaccines added to the recommended schedule after 1998.

Figure 2.20. Children ages 19-35 months who received the 4:3:1:3:3 vaccine series, by race, ethnicity, and household income, 2000-2008
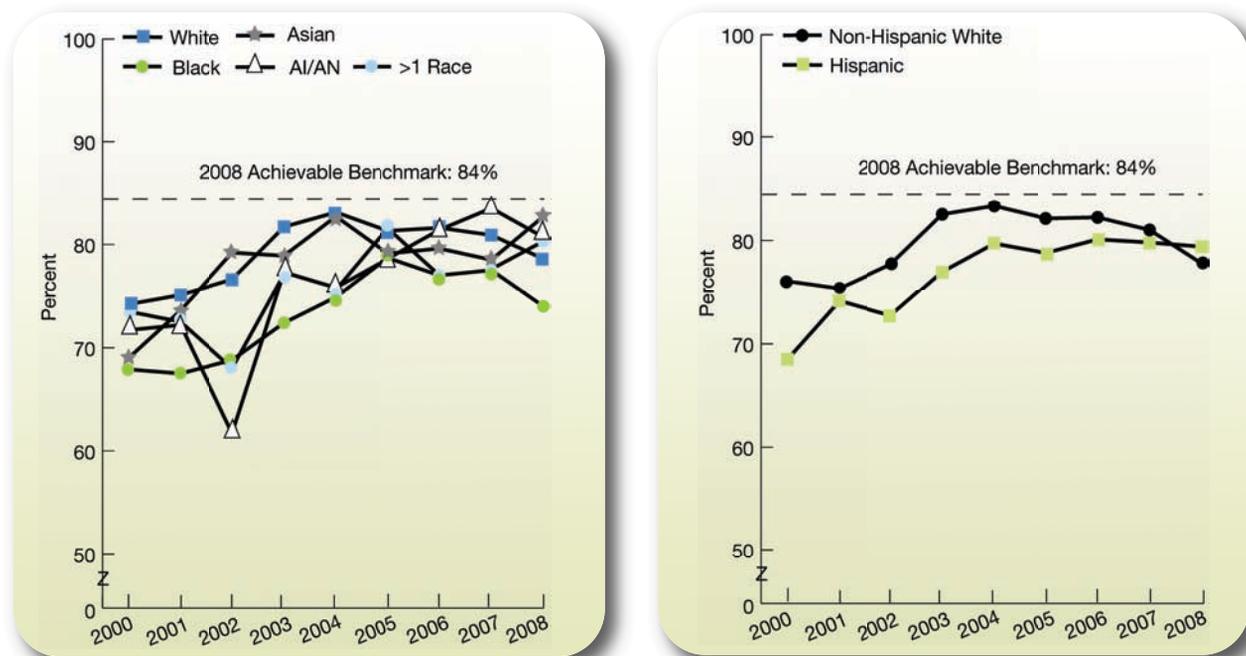
[xix] The top 3 States contributing to the achievable benchmark are Massachusetts, Utah, and Wyoming.

Effectiveness
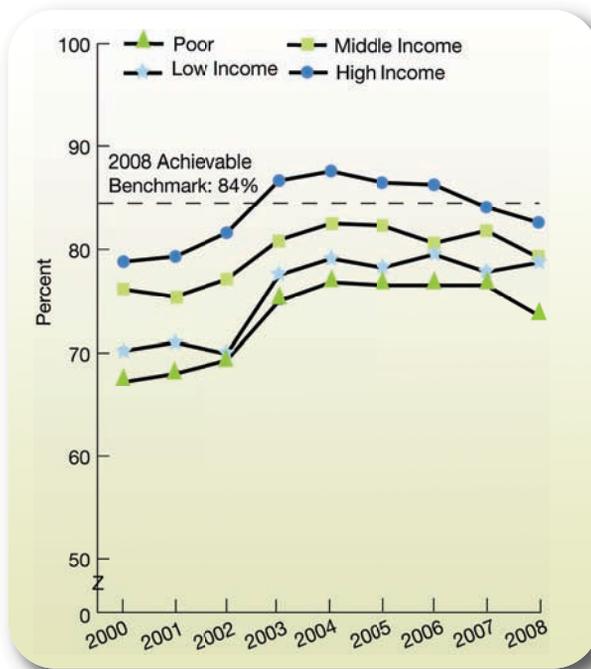
Key: AI/AN = American Indian or Alaska Native.
Source: Centers for Disease Control and Prevention, National Center for Health Statistics and National Center for Immunization and Respiratory Diseases, National Immunization Survey, 2000-2008.
Denominator: U.S. civilian noninstitutionalized population ages 19-35 months.
Note: The vaccines included in this measure are based on the corresponding Healthy People 2010 objective, which does not include varicella vaccine or vaccines added to the recommended schedule after 1998.

● A pattern of rising and then falling rates was observed among all racial, ethnic, and income groups, although the peak year and statistical significance varied (Figure 2.20). The rise between 2000 and 2004 was significant for Whites, Blacks, Asians, Hispanics, and all income groups. The fall between 2004 and 2008 was only significant for Whites and the two higher income groups.

● In almost all years, Black children were less likely than White children and poor, low-income, and middle-income children were less likely than high-income children to receive the 4:3:1:3:3 vaccine series.

● From 2002 to 2006, Hispanic children were less likely than non-Hispanic White children to receive these vaccines. In 2007, rates were comparable, and in 2008, Hispanic children had achieved the higher rate.

● The 2008 top 5 State achievable benchmark was 84%.[xx] All racial, ethnic, and income groups are moving away from the benchmark.

Also, in the NHQR:

● From 2000 to 2004, the percentage of children ages 19-35 months who received the 4:3:1:3:3 vaccine series increased. From 2004 to 2008, the percentage of children with these vaccines fell.

● Since 2004, the overall rate and rates for boys and girls have been moving away from the achievable benchmark.

[xx] The top 5 States contributing to the achievable benchmark are Louisiana, Massachusetts, New Hampshire, Tennessee, and Wisconsin.

Effectiveness

Prevention: Children's Vision Care

Vision checks for children may detect problems of which children and their parents were previously unaware. Early detection also improves the chances that corrective treatments will be successful.

Figure 2.21. Children ages 3-6 who ever had their vision checked by a health provider, by race/ethnicity and income, 2002-2007
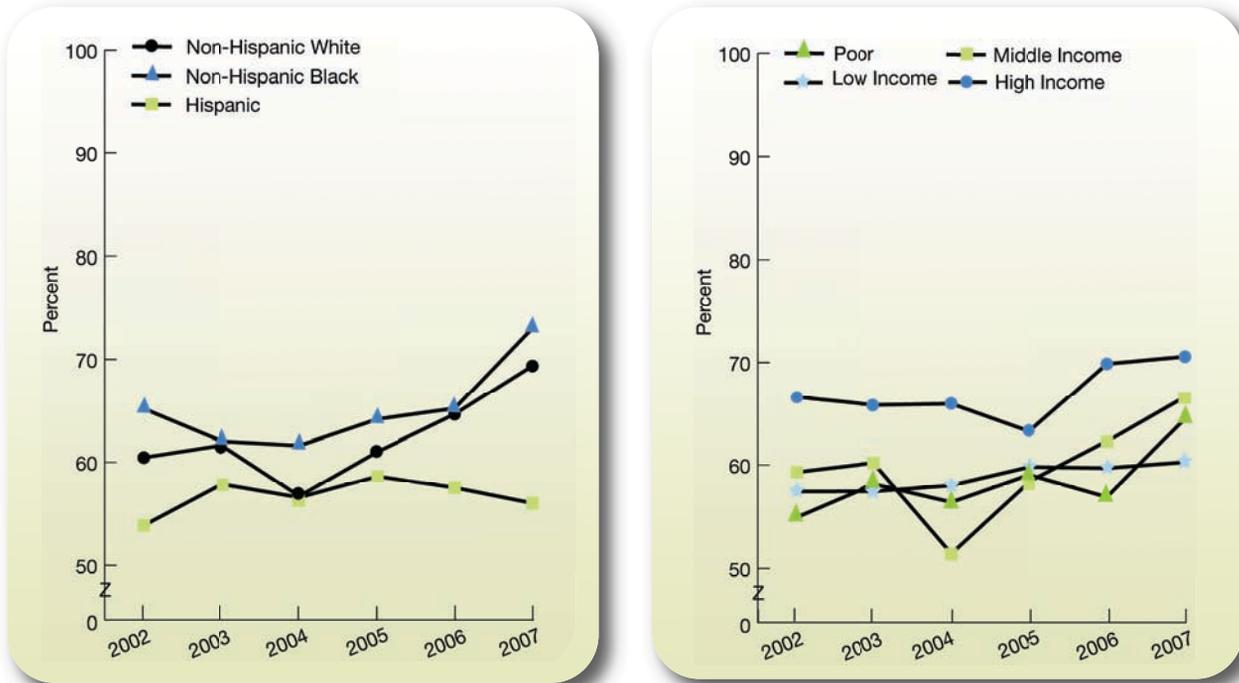
Source: Agency for Healthcare Research and Quality, Medical Expenditure Panel Survey, 2002-2007.
Denominator: U.S. civilian noninstitutionalized population ages 3-6.

- From 2002 to 2007, significant improvements were observed among non-Hispanic Whites and Blacks and among residents of poor and middle-income neighborhoods (Figure 2.21).

- Hispanic children tended to be less likely to receive vision checks than non-Hispanic White children, but this was statistically significant in only 3 of 6 years.

- Poor, low-income, and middle-income children tended to be less likely to receive vision checks than high-income children, but again this was statistically significant in only about half of the years.

Also, in the NHQR:

- From 2002 to 2007, the percentage of children ages 3-6 who ever had their vision checked by a health provider increased.

- Children in large central metropolitan areas tended to be less likely to receive vision checks.

- Children with special health care needs tended to be more likely to receive vision checks.

Effectiveness

Prevention: Weight Monitoring of Overweight Children

American children are getting heavier. Overweight children are identified using growth charts that show body mass index (BMI) for age. These growth charts are based on national data collected between 1963 and 1994. Children with BMI values at or above the 95th percentile are considered overweight. From 1976-1980 to 2003-2006, the proportion of children classified as overweight increased from 6.5% to 17% among children ages 6 to 11 and from 5% to 17.6% among adolescents ages 12 to 19.[36, 37]

Pediatricians are advised to monitor BMI and excessive weight gain in children to recognize and address cases of overweight and obesity.[38] When providers alert young patients and their parents about their overweight status, a new opportunity is created to encourage the development of healthy diet and exercise habits that may be carried into adulthood.[39]

Figure 2.22. People ages 2-19 who were overweight and who reported[xxi] having been told by a health provider they were overweight, by race and income, 2001-2004 and 2005-2008
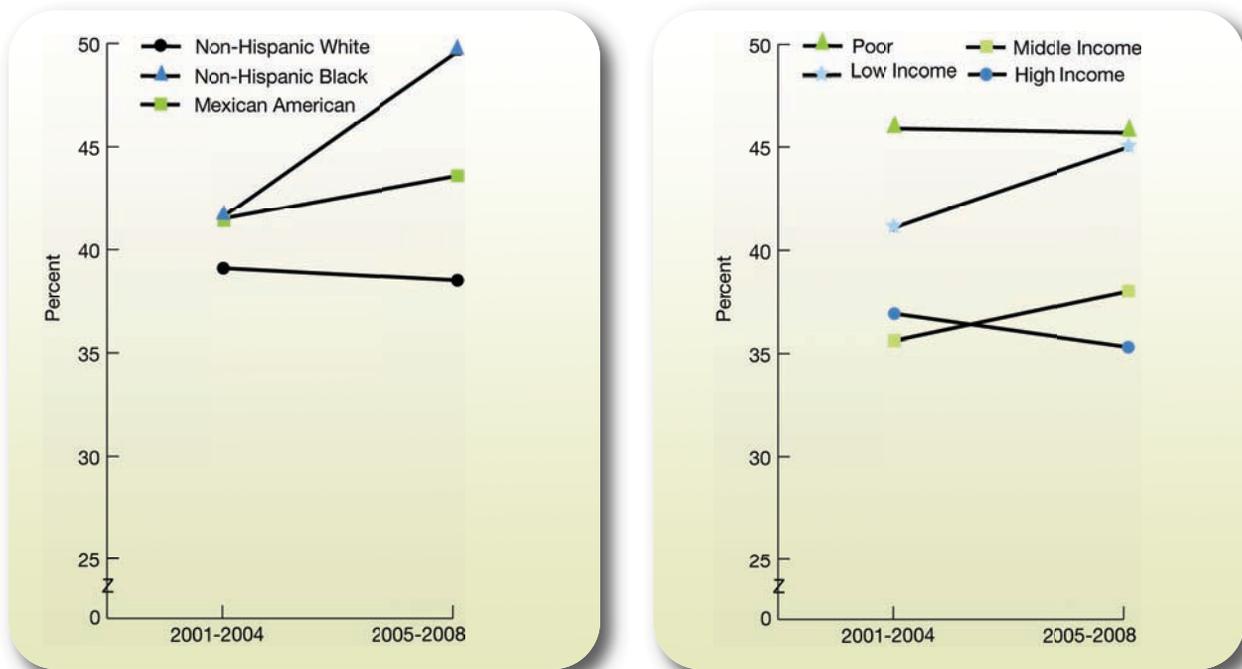
Source: Centers for Disease Control and Prevention, National Center for Health Statistics, National Health and Nutrition Examination Survey, 2001-2004 and 2005-2008.
Denominator: U.S. civilian noninstitutionalized population ages 2-19 who were overweight.
Note: Overweight children are identified using age- and sex-specific reference data from the 2000 Centers for Disease Control and Prevention body mass index (BMI) for age growth charts. Children with BMI values at or above the 95th percentile of the sex-specific BMI growth charts are categorized as overweight.

- Between the two time periods, only non-Hispanic Blacks ages 2-19 who were overweight experienced an increase in being told by a health provider they were overweight (Figure 2.22).

- In 2005-2008, overweight non-Hispanic Blacks were more likely than overweight non-Hispanic Whites to report being told by a health provider that they were overweight.

[xxi] For children ages 2-15, a parent or guardian reported this information.
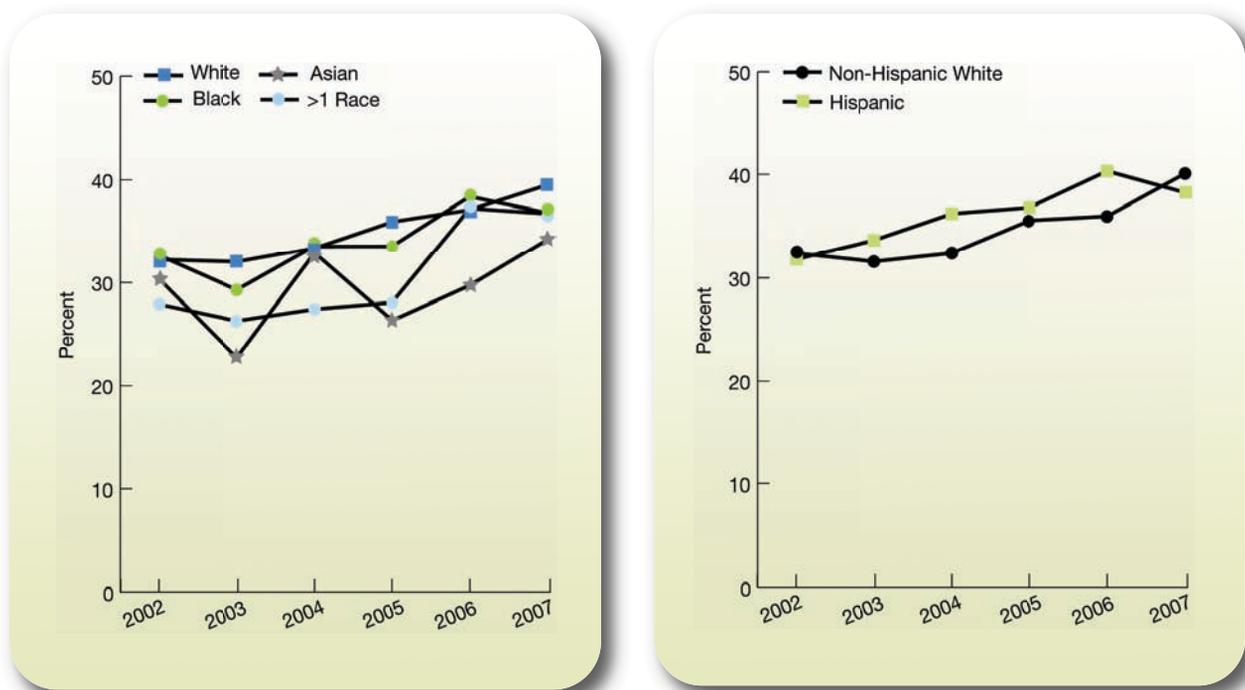
Effectiveness

Also, in the NHQR:

● The percentage of people ages 2-19 who were overweight based on height and weight measurement and who reported having been told by a health provider they were overweight did not change significantly between 2001-2004 and 2005-2008 overall.

● In both time periods, overweight children ages 2-5 and 6-11 were less likely than overweight youths ages 12-19 to report being told by a health provider that they were overweight.

Prevention: Counseling for Children About Physical Activity

Childhood represents a period when healthy lifelong habits are often formed. Physicians can play an important role in encouraging healthy behaviors, such as regular exercise, in children.

Figure 2.23. Children ages 2-17 for whom a health provider ever gave advice about the amount and kind of exercise, sports, or physically active hobbies they should have, by race, ethnicity, household income, and insurance status, 2002-2007

Effectiveness
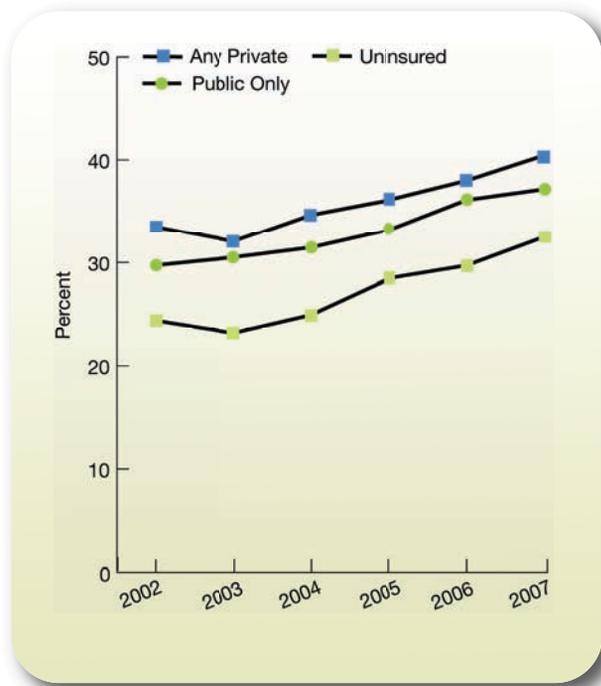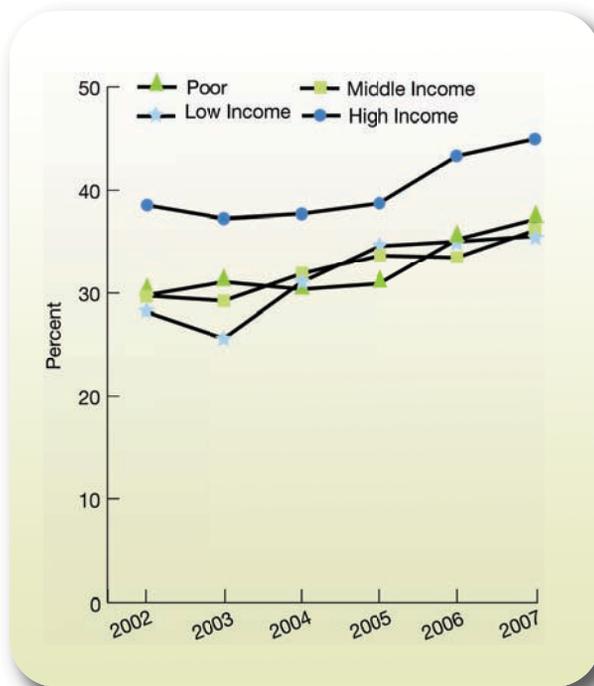
Source: Agency for Healthcare Research and Quality, Medical Expenditure Panel Survey, 2002-2007.
Denominator: U.S. civilian noninstitutionalized population ages 2-17.

- Significant improvements were observed among Whites, Hispanics, all income groups, and all insurance groups (Figure 2.23).

- In all years, poor, low-income, and middle-income children were less likely than high-income children and uninsured children were less likely than privately insured children to receive advice about exercise.

Also, in the NHQR:

- From 2002 to 2007, the percentage of children for whom a health provider ever gave advice about the amount and kind of exercise, sports, or physically active hobbies they should have improved.

- In all years, children in micropolitan and noncore areas were less likely than children in large fringe metropolitan areas and children with special health care needs were more likely than children without such needs to receive advice about exercise.

Prevention: Counseling for Children About Healthy Eating

Physicians play an important role in encouraging children's healthy eating. Overweight and obesity during childhood often persist into adulthood, with consequences that are numerous and costly. Unfortunately, overweight and obesity among children under age 18 have risen dramatically in the past two decades.[38] The American Academy of Pediatrics recommends that pediatricians discuss and promote healthy diets with all children and their parents or guardians, both those who are overweight and those who are not.[38]

Effectiveness

Figure 2.24. Children ages 2-17 for whom a health provider ever gave advice about healthy eating, by race, ethnicity, household income, and insurance status, 2002-2007
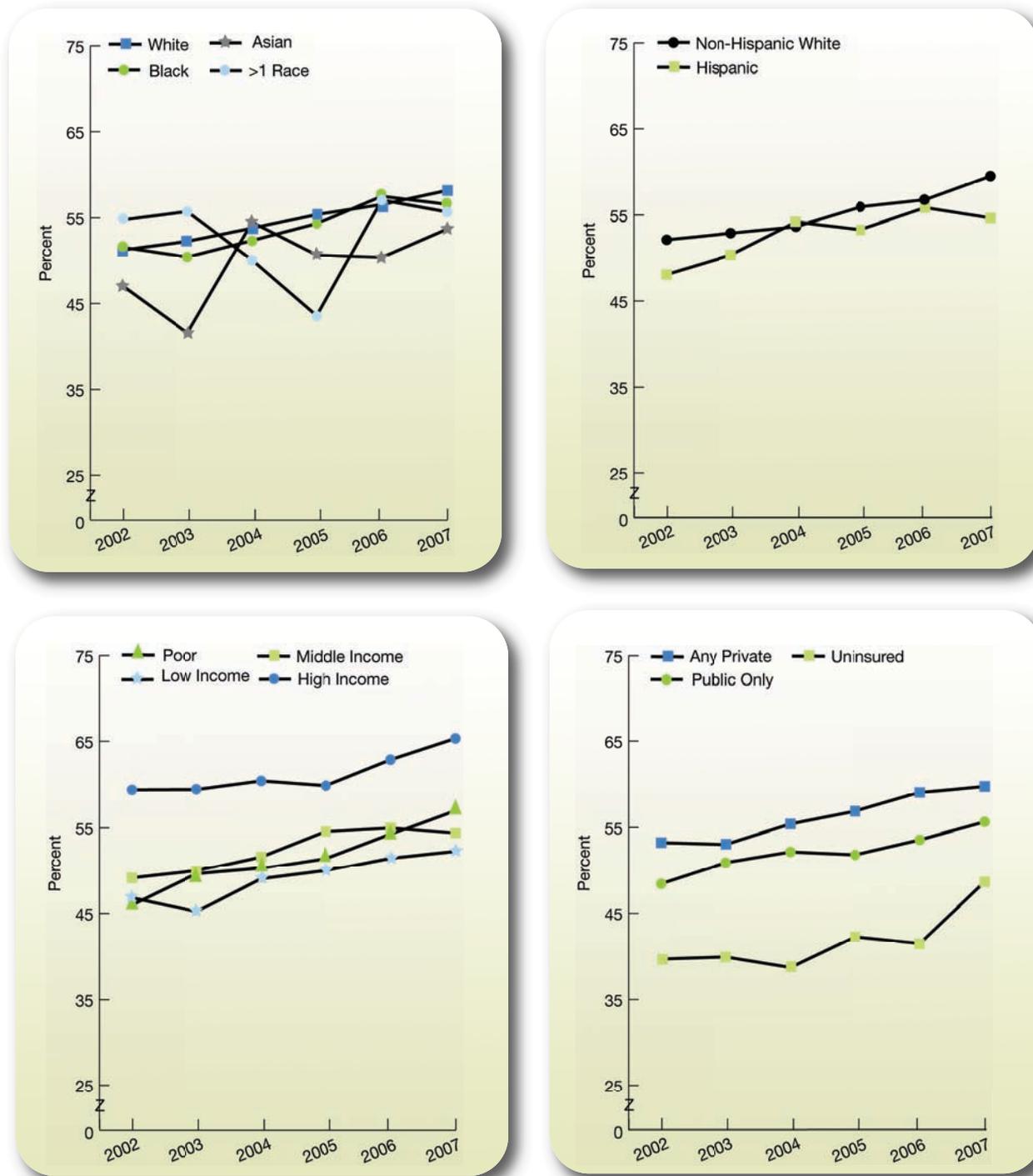
Source: Agency for Healthcare Research and Quality, Medical Expenditure Panel Survey, 2002-2007.
Denominator: U.S. civilian noninstitutionalized population ages 2-17.

Effectiveness

- Significant improvements were observed among Whites, Hispanics, all income groups, and all insurance groups (Figure 2.24).

- In all years, poor, low-income, and middle-income children were less likely than high-income children and uninsured children were less likely than privately insured children to receive advice about healthy eating.

Also, in the NHQR:

- From 2002 to 2007, the percentage of children for whom a health provider ever gave advice about healthy eating improved from 51.0% to 57.6%, about 3% per year.

- In almost all years, children in small metropolitan, micropolitan, and noncore areas were less likely than children in large fringe metropolitan areas and children with special health care needs were more likely than children without such needs to receive advice about healthy eating.

Effectiveness

Mental Health and Substance Abuse

Importance

Mortality

Number of deaths due to suicide (2007) ....34,598[1]

Rank among causes of death in the United States—suicide (2007) ....11th[1]

Alcohol-impaired driving fatalities (2007)...12,998[40]

Prevalence

People age 12 and over with alcohol and/or illicit drug dependence or abuse
in the past year (2008) ....22.2 million (9.0%)[41]

Adults age 18 and over with serious psychological distress in the past
30 days(2008) ....10.2 million (4.5%)[41]

Youths ages 12-17 with a major depressive episode during the past year (2008)................2.0 million (8.3%)[41]

Adults age 18 and over with a major depressive episode during the
past year (2008)...14.3 million (6.4%)[41]

Adults with at least one major depressive episode in their lifetime (2006) ....30.4 million (13.9%)[42]

Cost

National expenditures for treatment of mental health and substance abuse
disorders (2003 est.) ....$121 billion[43]

Cost-effectiveness of screening and brief counseling for problem drinking........................$0-$14,000/QALY[5]

Measures

The NHDR and NHQR track measures of the quality of treatment for major depression and substance abuse.
Mental health treatment includes counseling, inpatient care, outpatient care, and prescription medications.
This section highlights three core measures of mental health and substance abuse treatment:

● Receipt of treatment for depression.
● Suicide deaths.
● Receipt of needed treatment for illicit drug use or alcohol problem.

In addition, one supporting measure is discussed:

● Completion of substance abuse treatment.

Effectiveness

According to data from the Healthcare Cost and Utilization Project, in 2007, 12.5% of emergency department visits (12 million visits) were related to mental health and substance abuse.[44] About 40% of these emergency department visits resulted in hospital admission (4.8 million visits). In 2006, approximately 1.4 million hospitalizations were specifically for mental health conditions[45] and 1 in 5 hospital stays included some mention of a mental health condition as either a principal or secondary diagnosis. Mood disorders were the most common principal diagnosis for all nonelderly people. For individuals age 65 and over, dementia and associated cognitive disorders were the most common cause of mental health hospitalizations.

Social and cultural factors may dramatically affect mental health. Culturally and linguistically appropriate services can decrease the prevalence, incidence, severity, and duration of certain mental disorders. However, many factors adversely affect the mental health of racial and ethnic groups, such as discrimination[xxii] and racism. Some factors also present significant barriers to treatment. These include cost of care, lack of sufficient insurance for mental health services, social stigma, fragmented organization of services,[46] and mistrust.

In addition, economic factors can have a significant effect on mental health. For example, poverty can be a risk factor for poor mental health and a result of poor mental health. Nevertheless, low-income individuals may be more likely to receive needed substance abuse treatment due to linkages in service delivery between substance abuse and public assistance services in many States.

In rural and remote areas, many people with mental illnesses have less adequate access to care, more limited availability of skilled care providers, lower family incomes, and greater societal stigma for seeking mental health treatment than their urban counterparts. In addition, rural Americans are less likely to have private health insurance benefits for mental health care. Lack of coverage often occurs because small employers and individual purchasers dominate the rural health insurance marketplace. Therefore, insurance policies are more likely to have limited or no mental health coverage.

For racial and ethnic populations in rural areas, these problems are compounded by the lack of culturally and linguistically competent providers. And as of September 2009, the number of federally designated mental health professional shortage areas reached 3,291.[47]

Findings

Treatment: Receipt of Treatment for Depression

It has been estimated that about 1 out of 7 individuals in the United States will have a major depressive episode in their lifetime.[42] Treatment can be very effective in reducing symptoms and associated illnesses and returning individuals to a productive lifestyle.


[xxii] The Office for Civil Rights (OCR) (http://www.hhs.gov/ocr/) is the sole HHS agency with the authority to enforce Title VI of the Civil Rights Act of 1964, 42 U.S.C. 2000d, which prohibits discrimination based on race, color, or national origin in programs and activities that receive Federal financial assistance, including most health care providers and human service agencies. Individuals and advocacy groups may file complaints with OCR to remedy such discrimination.

Effectiveness

For example, the Sequenced Treatment Alternatives to Relieve Depression study, funded by the National Institute on Mental Health, was the largest clinical trial ever conducted to help determine the most effective treatment strategies for major depressive disorder. It involved both primary care and specialty care settings. Participants included people with complex health conditions, such as multiple concurrent medical and psychiatric conditions.[48] This study found that between 28% and 33% of participants achieved a symptom-free state after the first round of medication, and most of those that continued in the trial had to try multiple different treatment options, including psychotherapy, to receive symptom relief. Nearly 70% of those who remained did achieve remission after 12 months.[49, 50]

Strategies for treating depression in primary care settings such as the collaborative care model have been shown to generate positive net social benefits in cost-benefit analyses compared with usual care. This is true under a wide range of assumptions regarding the monetary value of a QALY.[51-53] Recent demonstration efforts are also showing promising results for the effectiveness of implementing the collaborative care model in everyday practices.[54]

Figure 2.25. Adults with a major depressive episode in the last 12 months who received treatment for depression in the last 12 months, by race, ethnicity, and gender, 2008
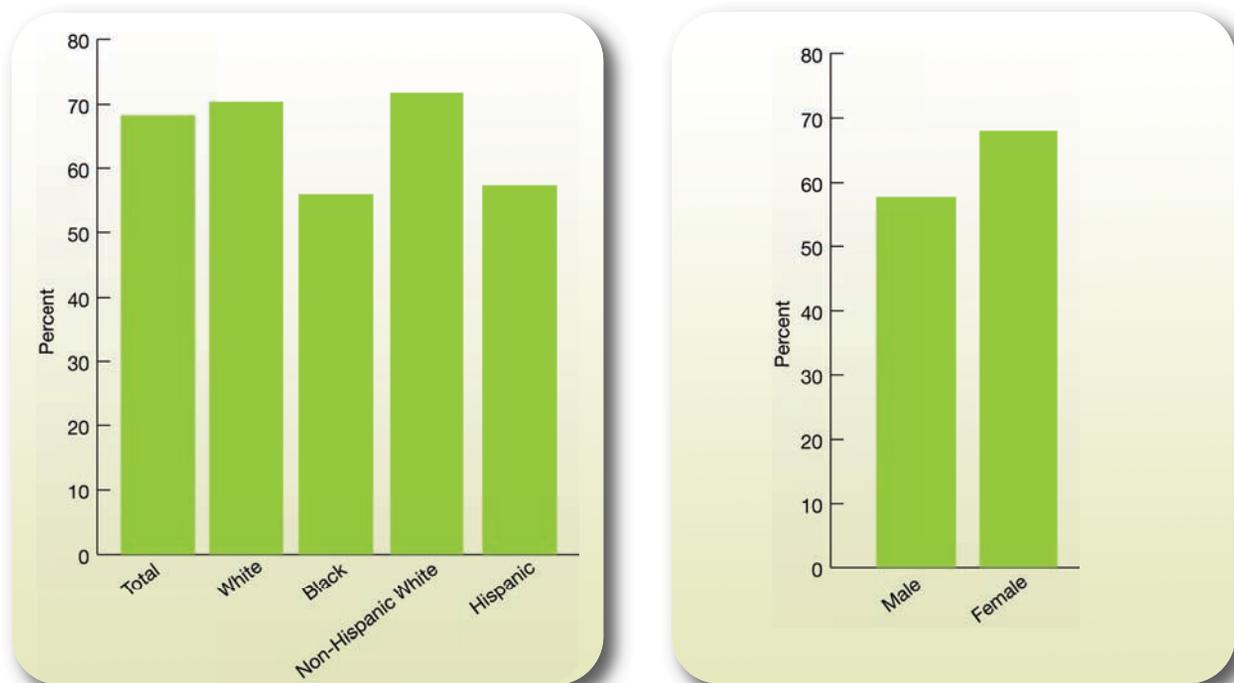
Source: Substance Abuse and Mental Health Services Administration, National Survey on Drug Use and Health, 2008.
Denominator: U.S. population age 18 and over who had a major depressive episode in the last 12 months.
Note: Major depressive episode is defined as a period of at least 2 weeks when a person experienced a depressed mood or loss of interest or pleasure in daily activities and had a majority of the symptoms of depression described in the fourth edition of the *Diagnostic and Statistical Manual of Mental Disorders*. Treatment for depression is defined as seeing or talking to a medical doctor or other professional or using prescription medication in the past year for depression.

Effectiveness

- In 2008, the percentage of adults with a major depressive episode in the last 12 months who received treatment was significantly lower for Blacks than for Whites (56.0% compared with 70.4%; Figure 2.25) and lower for Hispanics than for non-Hispanic Whites (57.4% compared with 71.8%).

- In 2008, adult females with a major depressive episode were more likely than their male counterparts to receive any treatment for depression in the last 12 months (68% compared with 57.8%).

Also, in the NHQR:

- In all years, adults ages 18-44 were less likely to receive treatment for depression than those ages 45-64.

- In 2008, there were no statistically significant differences overall between metropolitan areas and nonmetropolitan areas. However, among metropolitan areas, residents of medium metropolitan areas with depression were more likely than residents of large central and large fringe metropolitan areas to receive treatment for depression in the past year.

Outcome: Suicide Deaths

More than 90% of patients who die by suicide have mental illnesses, such as depression, schizophrenia, or substance abuse.[55] Suicide may be prevented when its warning signs are detected and treated. A previous suicide attempt is among the strongest predictors of subsequent suicide. Cognitive-behavioral therapy can significantly help those who have attempted suicide consider alternative actions when thoughts of self-harm arise.[56] Cognitive therapy has been shown to reduce suicide attempts by half during a year of followup.[57]

Figure 2.26. Suicide deaths per 100,000 population, by race and ethnicity, 1999-2007
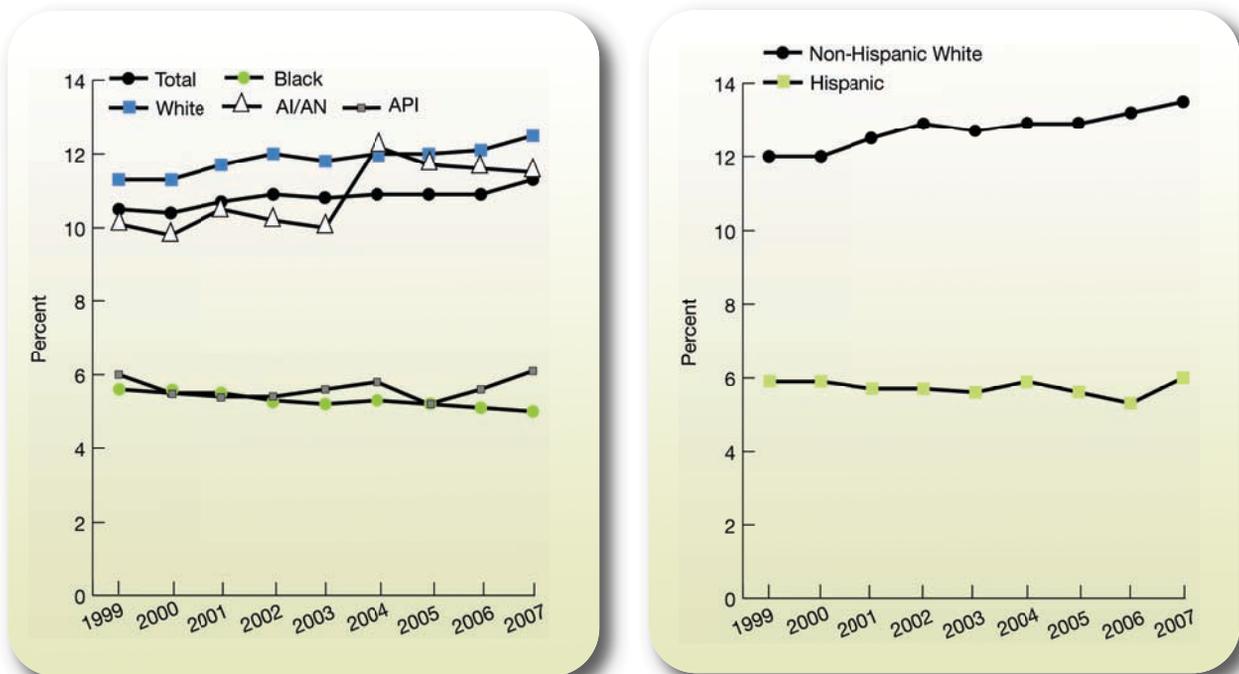
Key: API = Asian and Pacific Islander; AI/AN = American Indian or Alaska Native.
Source: Centers for Disease Control and Prevention, National Center for Health Statistics, National Vital Statistics System—Mortality.
Denominator: Civilian noninstitutionalized population.
Note: Estimates are age adjusted to the 2000 standard population.

Effectiveness

- Overall, from 1999 to 2007, the rate of suicide deaths increased from 10.5 to 11.3 per 100,000 population (Figure 2.26).

- In 2007, Blacks and APIs had lower suicide rates than Whites (5.0 per 100,000 population and 6.1 per 100,000 population, respectively, compared with 12.5 per 100,000 population).

- There were no statistically significant differences between AI/ANs and Whites. Both had higher suicide rates than other racial groups.

- The Hispanic suicide rate was less than half of the rate for non-Hispanic Whites (6.0 per 100,000 population compared with 13.5 per 100,000 population).

Also, in the NHQR:

- Large central metropolitan areas had lower suicide rates compared with large fringe metropolitan areas.

- From 1999 to 2007, males consistently had suicide rates almost four times as high as females.

Treatment: Receipt of Needed Treatment for Illicit Drug Use or Alcohol Problem

Illicit drug[xxiii] use is a medical problem that can have a direct toxic effect on a number of bodily organs. Illicit drug use also can exacerbate numerous health and mental health conditions. Alcohol problems also can lead to serious health risks. Heavy drinking can increase the risk of certain cancers and cause damage to the liver, brain, and other organs.[58] It also can cause birth defects, including fetal alcohol syndrome.[59, 60] Alcoholism increases the risk of death from car crashes and other injuries.[61] Treatment for illicit drug use or an alcohol problem at a specialty facility is an effective way to reduce the chances of future illicit drug use or alcohol problems.

[xxiii] Illicit drugs included in this measure are marijuana/hashish, cocaine (including crack), inhalants (e.g., inhalation of various substances other than for intended use, such as toluene), hallucinogens, heroin, and prescription-type psychotherapeutic drugs (nonmedical use).

Effectiveness

Figure 2.27. People age 12 and over who needed treatment for illicit drug use or an alcohol problem and who received such treatment at a specialty facility in the last 12 months, by race and ethnicity, 2003-2008, and income and education, 2008
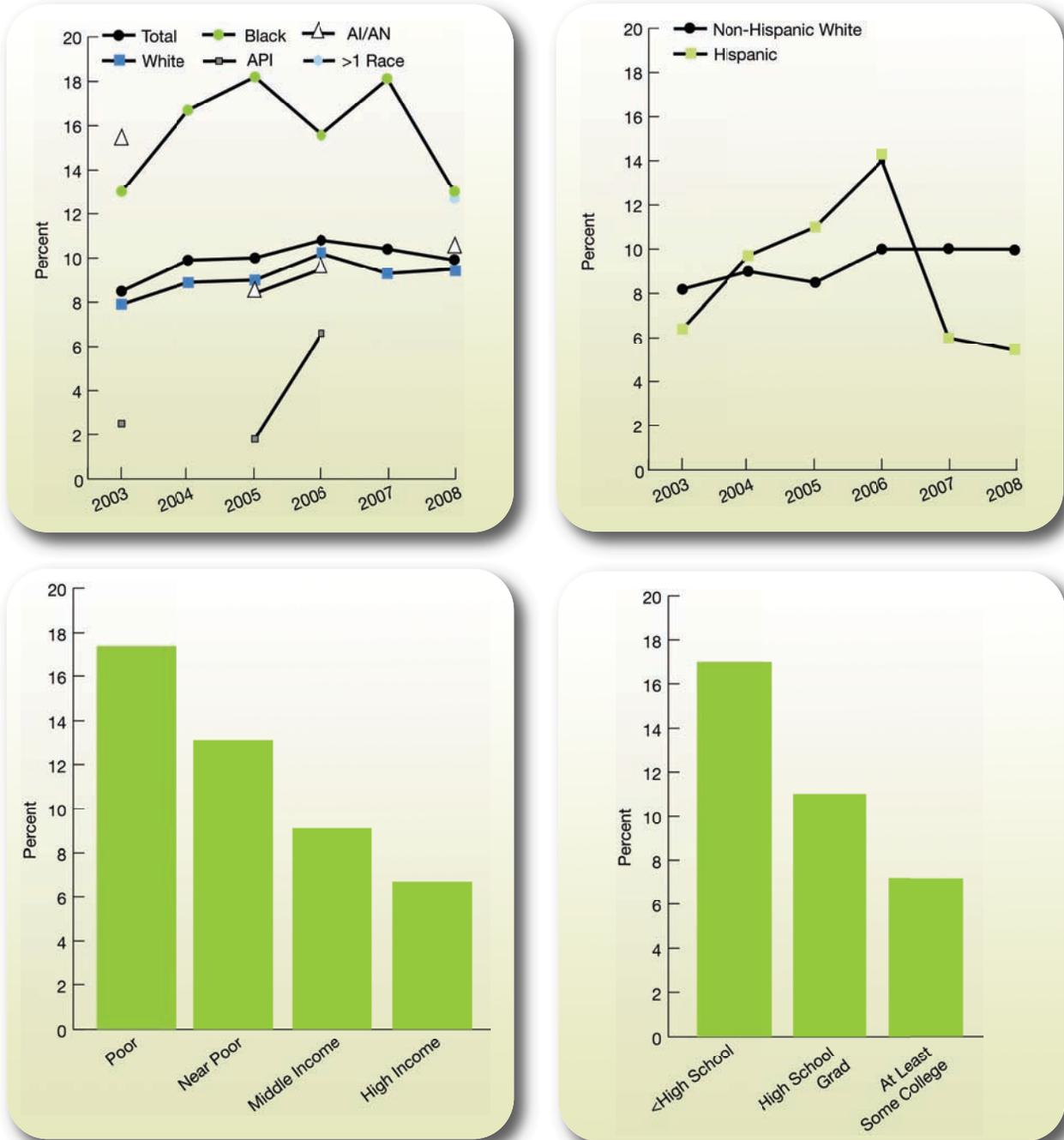
Key: API = Asian or Pacific Islander; AI/AN = American Indian or Alaska Native.
Source: Substance Abuse and Mental Health Services Administration, National Survey on Drug Use and Health, 2003-2008.
Denominator: Civilian noninstitutionalized population age 12 and over who needed treatment for illicit drug use or an alcohol problem in the last 12 months.
Note: Treatment refers to treatment at a specialty facility, such as a drug and alcohol inpatient and/or outpatient rehabilitation facility, inpatient hospital setting, or a mental health center. Data not statiscally reliable for all races in all years.

Effectiveness

- Overall, there were no significant changes from 2003 to 2008 in the percentage of people age 12 and over who needed treatment for illicit drug use or an alcohol problem and received it at a specialty facility in the last 12 months (Figure 2.27), except for high-income and middle-income groups (data not shown).

- In 2008, there were no statistically significant differences between racial or ethnic groups in the percentage of people age 12 and over who needed treatment for illicit drug use or an alcohol problem and received it at a specialty facility in the last 12 months.

- From 2003 to 2008, there were no statistically significant differences between males and females in the percentage of people age 12 and over who needed treatment for illicit drug use or an alcohol problem and received it at a specialty facility in the last 12 months (data not shown).

- In 2008, poor and near-poor people who needed treatment were more likely than high-income people who needed treatment to have received treatment for illicit drug use or an alcohol problem (17.4% and 13.1%, respectively, compared with 6.7%).

- Adults with less than a high school education who needed treatment were more likely than adults with at least some college who needed treatment to have received treatment for illicit drug use or an alcohol problem (17.0% compared with 7.2%).

Also, in the NHQR:

- There were no significant differences by county type in the percentage of people age 12 and over who needed treatment for illicit drug use or an alcohol problem and received it at a specialty facility in the last 12 months.

Effectiveness

Treatment: Completion of Substance Abuse Treatment

Figure 2.28. People age 12 and over treated for substance abuse who completed treatment course, by race/ethnicity and education, 2005-2007
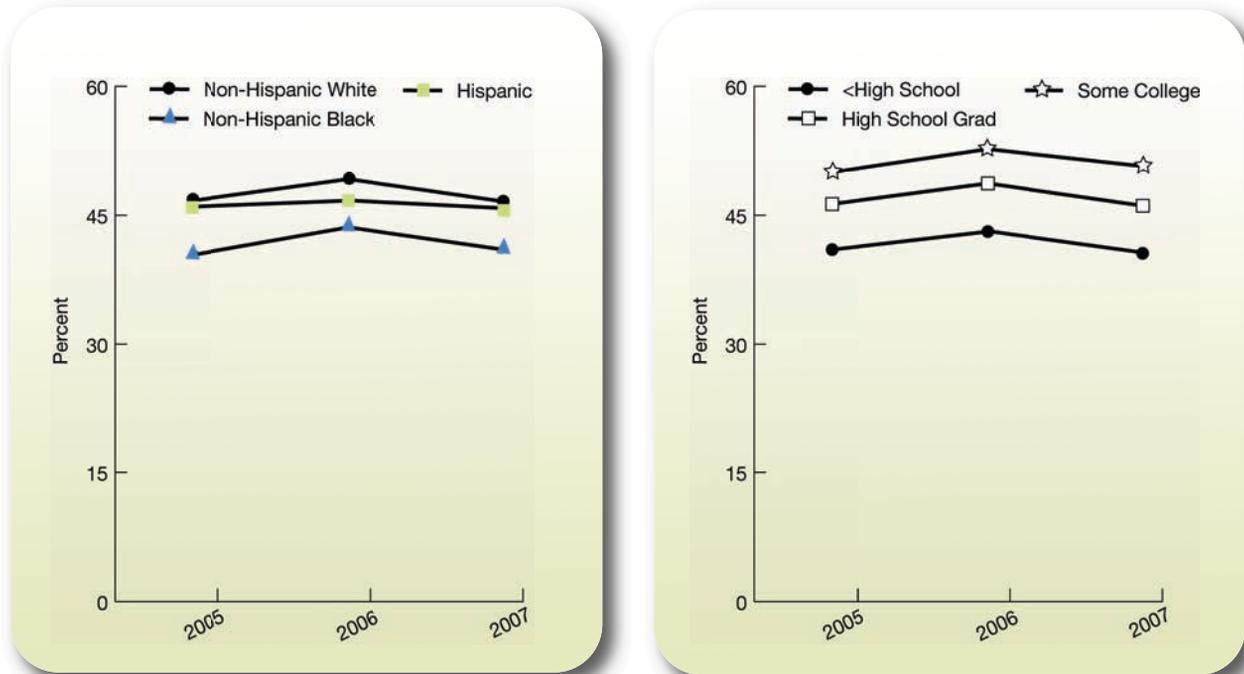
Source: Substance Abuse and Mental Health Services Administration, Treatment Episode Data Set, Discharge Data Set, 2005-2007.
Denominator: Discharges age 12 and over from publicly funded substance abuse treatment facilities.

- From 2005 to 2007, there were no statistically significant changes in the percentage of people age 12 and over treated for substance abuse who completed the treatment course (data not shown).

- In 2007, non-Hispanic Blacks who were treated for substance abuse were significantly less likely than non-Hispanic Whites to have completed treatment (41.0% compared with 46.6%; Figure 2.28).

- In 2007, Hispanics who were treated for substance abuse were significantly less likely than non-Hispanic Whites to have completed treatment (45.8% compared with 46.6%).

- People with less than a high school education and people with a high school education who were treated for substance abuse were significantly less likely than people with at least some college to complete treatment (40.6% and 46.1%, respectively, compared with 50.7%).

Also, in the NHQR:

- In 2007, people ages 12-19 were less likely than those age 20 and over and females were significantly less likely than males to complete treatment.

Effectiveness

Respiratory Diseases

Importance

Mortality

Number of deaths due to chronic lower respiratory diseases[xxiv] (2007) ....127,924[1]

Number of deaths, influenza and pneumonia combined (2007)...52,717[1]

Cause of death rank for chronic lower respiratory diseases (2007)..4th[1]

Cause of death rank for influenza and pneumonia combined (2007) ....8th[1]

Prevalence

Adults age 18 and over with current asthma (2009) ....17.5 million[62]

Children under age 18 with current asthma (2009)...7.1 million[63]

People under age 18 with an asthma attack in last 12 months (2007)..3.8 million[64]

Annual number of cases of the common cold ....>1 billion[65]

Number of discharges attributable to pneumonia (2007)..1.2 million[66]

Incidence

Annual number of pneumonia cases due to *Streptococcus pneumoniae* ....500,000[67]

New cases of tuberculosis (2008)...12,898[68]

Cost

Total cost of lung diseases (2009 est.)...$177.4 billion[69]

Direct medical costs of lung diseases (2009 est.)..$113.6 billion[69]

Total cost of upper respiratory infections (annual est.) ....$40 billion[70]

Total cost of asthma (2007 est.)..$19.7 billion[71]

Direct medical costs of asthma (2007 est.) ....$14.7 billion[71]

Cost-effectiveness of influenza immunization ....$0-$14,000/QALY[5]

[xxiv] Chronic lower respiratory diseases include emphysema and chronic bronchitis.

Effectiveness

Measures

The NHDR tracks several quality measures for prevention and treatment of this broad category of illnesses that includes influenza, pneumonia, asthma, upper respiratory infection, and tuberculosis. The four core report measures highlighted in this section are:

● Pneumococcal vaccination.

● Receipt of recommended care for pneumonia.

● Completion of tuberculosis therapy.
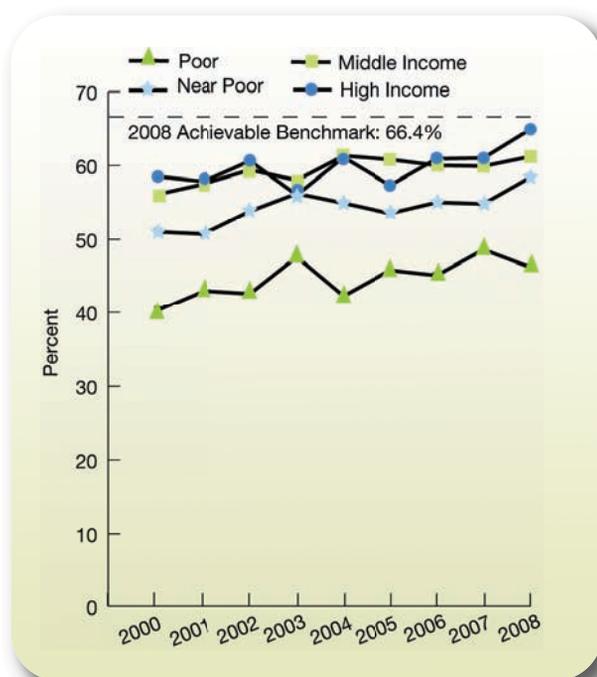
● Daily asthma medication.

Findings

Prevention: Pneumococcal Vaccination

Vaccination is a cost-effective strategy for reducing illness, death, and disparities associated with pneumonia and influenza.[72, 73]

Figure 2.29. Adults age 65 and over who reported ever receiving pneumococcal vaccination, by race, ethnicity, and income, 2000-2008
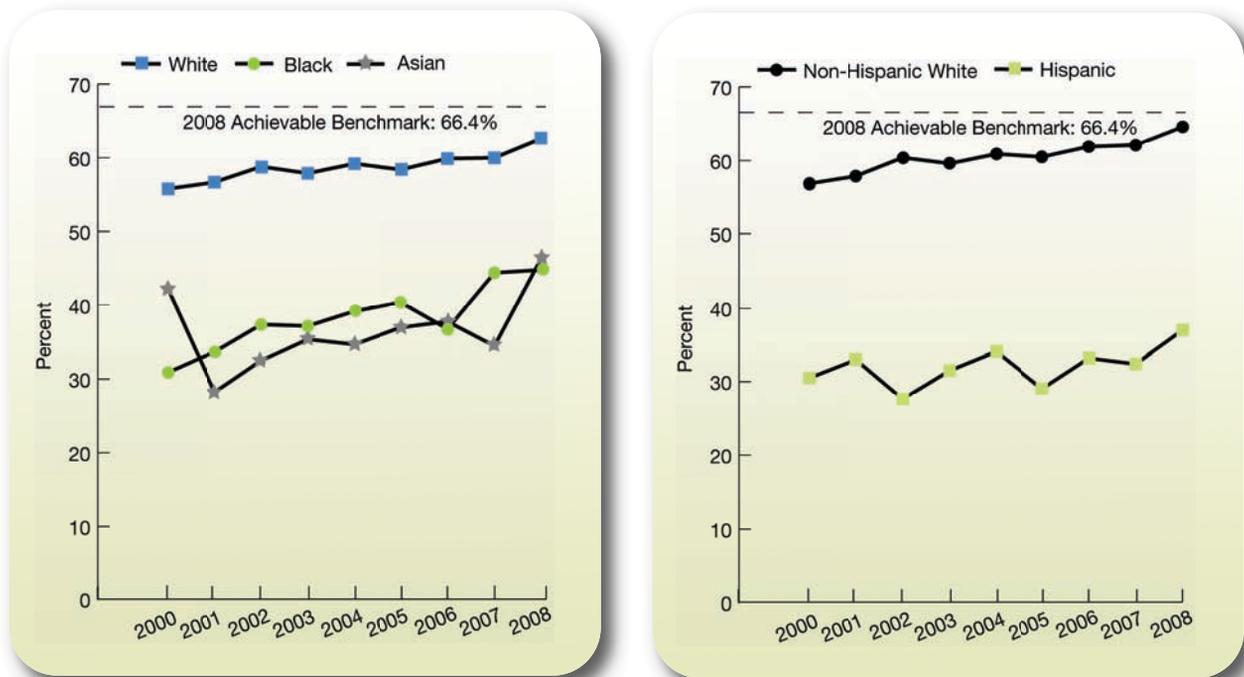
Effectiveness

Source: Centers for Disease Control and Prevention, National Center for Health Statistics, National Health Interview Survey, 2000-2008.
Denominator: Civilian noninstitutionalized population age 65 and over.
Note: Age adjusted to the 2000 U.S. standard population. Benchmark is derived from the Behavioral Risk Factor Surveillance System (BRFSS); see Introduction and Methods for details.

● From 2000 to 2008, improvements were observed for Whites, Blacks, non-Hispanic Whites, and high-income people who reported ever receiving pneumococcal vaccination (Figure 2.29).

● In 2008, the percentage of adults age 65 and over who reported ever having pneumococcal vaccination was significantly lower for Blacks and Asians than for Whites.

● In 2008, the percentage of Hispanic adults age 65 and over who reported ever having pneumococcal vaccination continued to be significantly lower, almost half that of non-Hispanic Whites.

● In 2008, the percentage was significantly lower for poor older adults than for high-income older adults (46.2% compared with 64.9%).

● The 2008 top 5 State achievable benchmark was 66.4%.[xxv] At the current 1.2% annual rate of increase, this benchmark could be attained overall in about 9 years.

● Whites could attain the benchmark in about 6 years, while Blacks and Asians would not attain the benchmark for 14 years and 25 years, respectively. Hispanics would not attain the benchmark for about 54 years.

Also, in the NHQR:

● From 2000 to 2008, the overall percentage of adults age 65 and over who reported ever having pneumococcal vaccination increased.

[xxv] The top 5 States contributing to the achievable benchmark are Colorado, Delaware, Maine, New Hampshire, and Oklahoma.

Effectiveness

Treatment: Receipt of Recommended Care for Pneumonia

Older adults are at high risk for pneumonia. The highest rate of hospitalizations for pneumonia occurs in the population age 65 and over—220.4 per 10,000 population for this group in 2004, compared with 45.5 per 10,000 for the overall population.[74]

CMS tracks a set of measures for quality of pneumonia care for hospitalized patients from the CMS Quality Improvement Organization Program. This set of measures has been adopted by the Hospital Quality Alliance. Recommended care for patients with pneumonia includes receipt of: (1) initial antibiotics within 6 hours of hospital arrival, (2) antibiotics consistent with current recommendations, (3) blood culture before antibiotics are administered, (4) influenza vaccination status assessment/vaccine provision, and (5) pneumococcal vaccination status assessment/vaccine provision. The NHDR shows a composite measure of recommended hospital care that includes these five measures.

Figure 2.30. Composite measure: Hospital patients with pneumonia who received recommended hospital care, by race/ethnicity, 2008
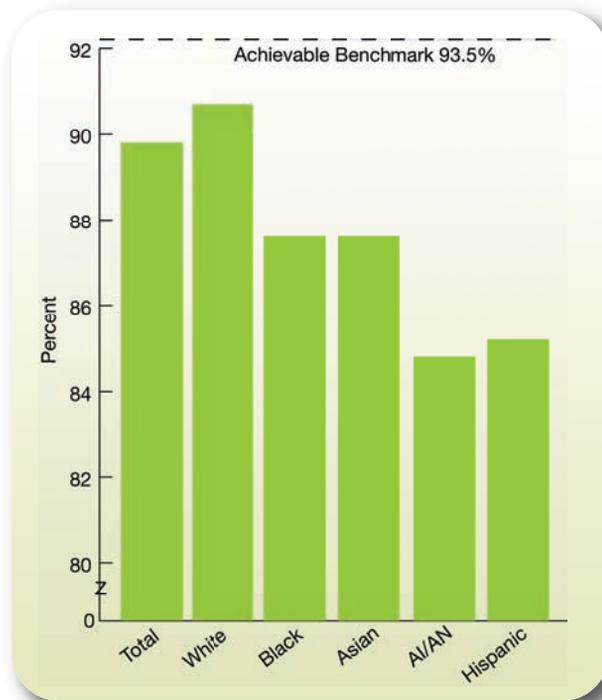
Key: AI/AN = American Indian or Alaska Native.
Source: Centers for Medicare & Medicaid Services, Quality Improvement Organization Program, 2008.
Denominator: Patients hospitalized with a principal discharge diagnosis of pneumonia or a principal discharge diagnosis of either septicemia or respiratory failure and secondary diagnosis of pneumonia.
Note: Composite is calculated by averaging the percentage of opportunities for care in which the patient received all five components of care.

● In 2008, the percentage of patients with pneumonia who received recommended hospital care was significantly lower for Blacks (87.6%; Figure 2.30), Asians (87.6%), AI/ANs (84.8%), and Hispanics (85.2%) compared with Whites (90.7%).

Effectiveness

- The percentage of patients with pneumonia who received recommended hospital care was also lower for females than for males (89.8% compared with 90.0%; data not shown).

- In 2008, the top 5 State achievable benchmark was 93.5%.[xxvi] The available data were not sufficient to calculate time to benchmark.

Also, in the NHQR:

- Among the five components of the composite measure, patients were most likely to receive antibiotics within 6 hours and least likely to have their influenza vaccination status assessed.

Outcome: Completion of Tuberculosis Therapy

To be effective for individuals as well as the public, tuberculosis therapy must be taken to its completion. Failure to complete tuberculosis therapy puts patients at increased risk for treatment failure and for spreading the disease to others. Even worse, it may result in the development of drug-resistant strains of the disease.[75]

Figure 2.31. Patients with tuberculosis who completed a curative course of treatment within 1 year of initiation of treatment, people born outside the United States, by race and ethnicity, 1999-2006
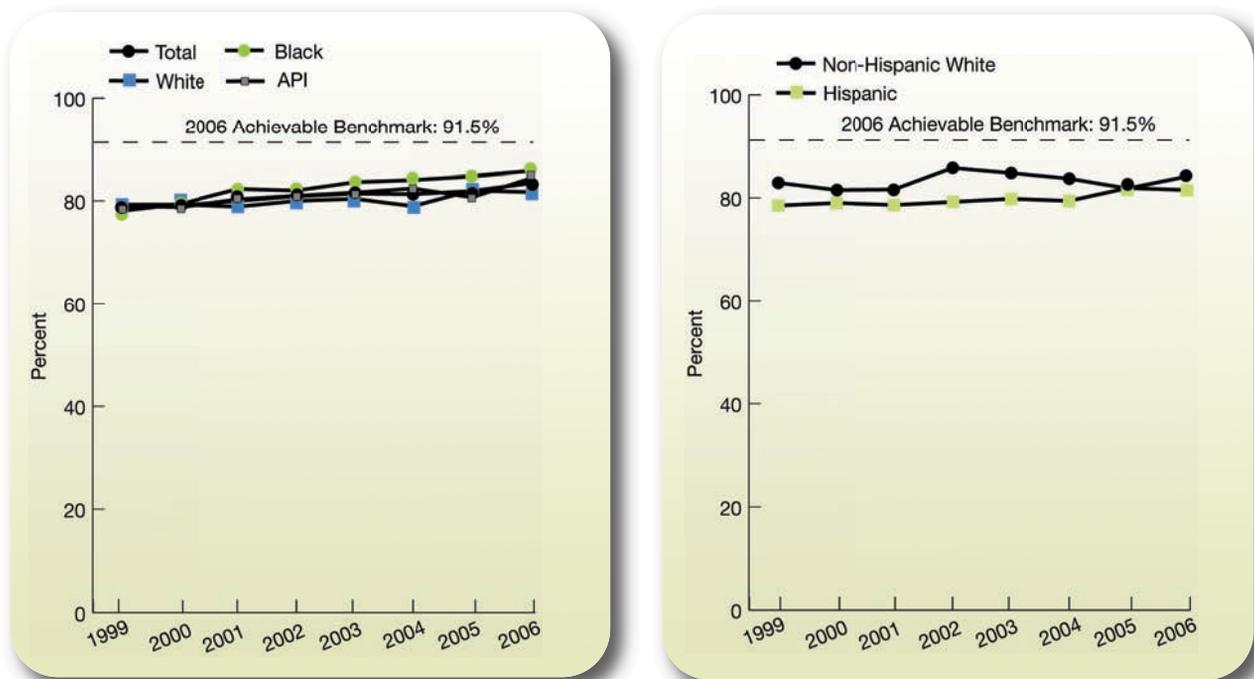
Key: API = Asian or Pacific Islander.
Source: Centers for Disease Control and Prevention, National Tuberculosis Surveillance System, 1999-2006.
Denominator: Foreign-born U.S. resident population with verified tuberculosis, all ages.

- In 2006, among the foreign-born population, Blacks and APIs were more likely than foreign-born Whites to complete tuberculosis therapy within 1 year (85.7% and 84.3%, respectively, compared with 81.7%; Figure 2.31).

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xxvii The top 5 States contributing to the achievable benchmark are Iowa, Maine, New Hampshire, New Jersey, and Vermont.

Effectiveness

- The 2006 top 5 State achievable benchmark was 91.5%.[xxvii] At the current 0.7% annual rate of increase for the general population and for the foreign-born population, this benchmark could be attained overall in about 14 years and 21 years, respectively.

- Among the foreign-born population, Whites would not attain the benchmark for about 31 years, while Blacks and Asians would not attain the benchmark for 13 years and 19 years, respectively. Hispanics would not achieve the benchmark for 28 years.

Also, in the NHQR:

- In all years, among the general population, children ages 0-17 with tuberculosis were more likely than adults age 18 and over to complete a curative course of treatment within 1 year of initiation of treatment.

- Overall, among the general population, females with tuberculosis were more likely to complete treatment within 1 year than males.

Management: Daily Asthma Medication

Improving quality of care for people with asthma can reduce the occurrence of asthma attacks and avoidable hospitalizations. The National Asthma Education and Prevention Program, coordinated by the National Heart, Lung, and Blood Institute, develops and disseminates science-based guidelines for the diagnosis and management of asthma.[76] These recommendations are built around four essential components of asthma management critical for effective long-term control of asthma: assessment and monitoring, control of factors contributing to symptom exacerbation, pharmacotherapy, and education for partnership in care.[77]

Daily long-term controller medication is necessary to prevent exacerbations and chronic symptoms for all patients with persistent asthma. Appropriate controller medications for people with mild persistent asthma[78, xxviii] include inhaled corticosteroids, cromolyn, nedocromil, theophylline, and leukotriene modifiers.[79]

[xxvii] The top 5 States contributing to the achievable benchmark are Alaska (tie), Indiana (tie), Kansas, Maryland, and Oregon.
[xxviii] "Mild persistent asthma" refers to cases in which people experience asthma symptoms more than 2 days per week and more than 2 nights per month, as well as other clinical indicators.

Effectiveness

Figure 2.32. People with current asthma who are now taking preventive medicine daily or almost daily (either oral or inhaler), by race/ethnicity, education, income, and language spoken at home, 2003-2007
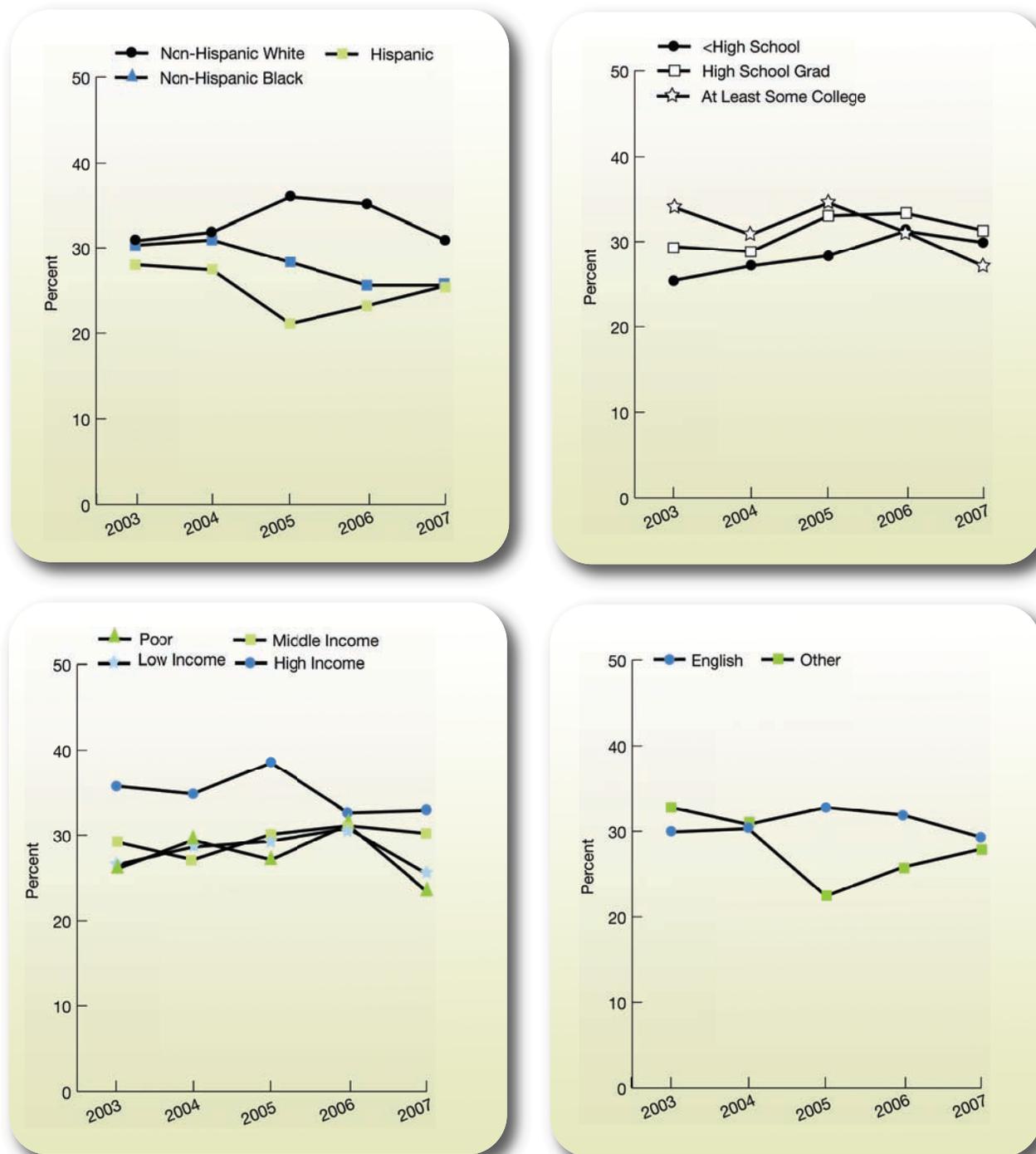
Source: Agency for Healthcare Research and Quality, Medical Expenditure Panel Survey, 2003-2007.
Denominator: Noninstitutionalized population with asthma, as defined below.
Note: People with current asthma report they still have asthma or had an asthma attack in the last 12 months.

Effectiveness

- From 2003 to 2007, there were no statistically significant changes over time for any group in the percentage of people with current asthma who are taking daily preventive medicine, except for people with at least some college (from 34.0% to 27.1%; Figure 2.32).

- In 2007, there were no statistically significant differences by race/ethnicity in the percentage of people with current asthma who are taking daily preventive medicine.

- In 2007, poor people with current asthma were less likely than high-income people to take daily preventive medicine for asthma (23.5% compared with 32.9%).

- In 2007, there were no statistically significant differences in the percentage of people with current asthma who are taking daily preventive medicine between people who spoke English at home and people who spoke another language at home.

Also, in the NHQR:

- Of those with current asthma under age 65 in 2007, 29.1% reported taking preventive medicine daily or almost daily.

- In 2007, people living in large central metropolitan areas were less likely than people living in large fringe metropolitan areas to take daily preventive medication.

- In 2007, there were no statistically significant differences between people with current asthma taking preventive medicine daily who live in metropolitan areas and nonmetropolitan areas.

The data show that disparities for Asians exist not only in comparison with Whites but also between Asian subgroups (Chinese, Filipino, Japanese, Korean, Vietnamese, and South Asian) and across Asian subgroups by income and insurance status. Differences in English proficiency and place of birth are also significant. The following section shows only some of the significant disparities for these groups in California from California Health Interview Survey data.

Effectiveness

Figure 2.33. People with current asthma who were taking prescription medication to control asthma during the past 12 months, by Asian and Hispanic subgroups, California, 2007
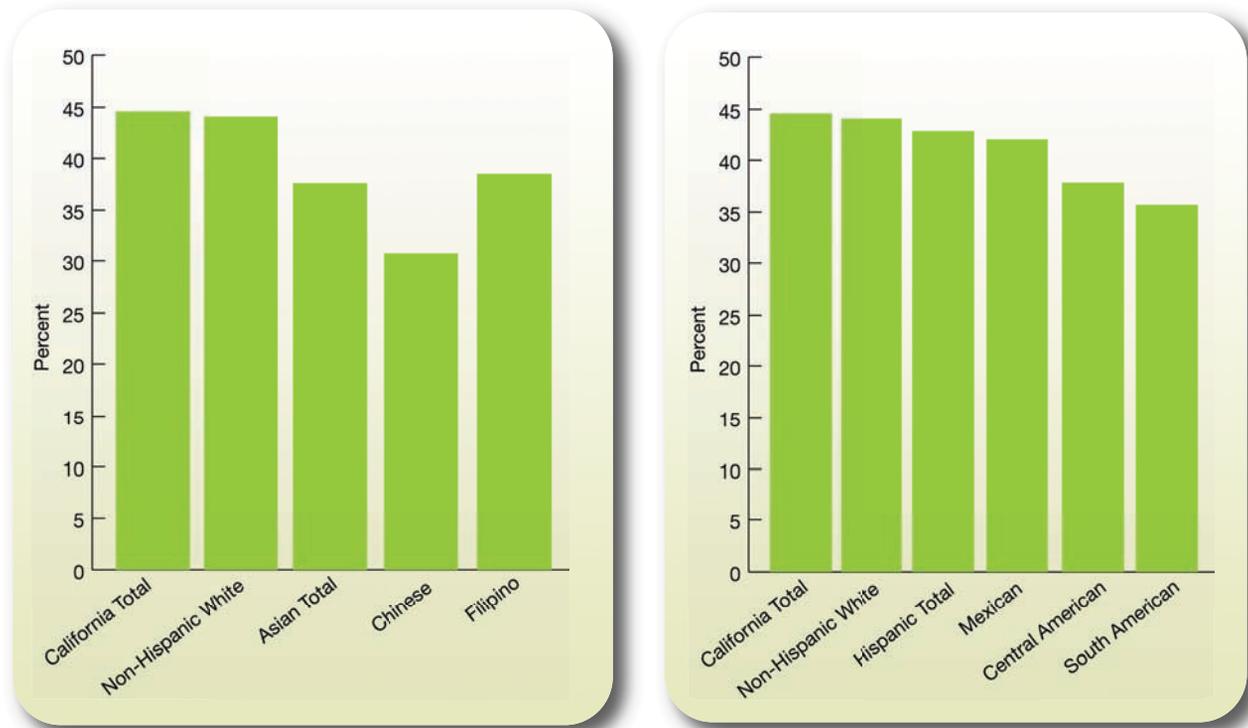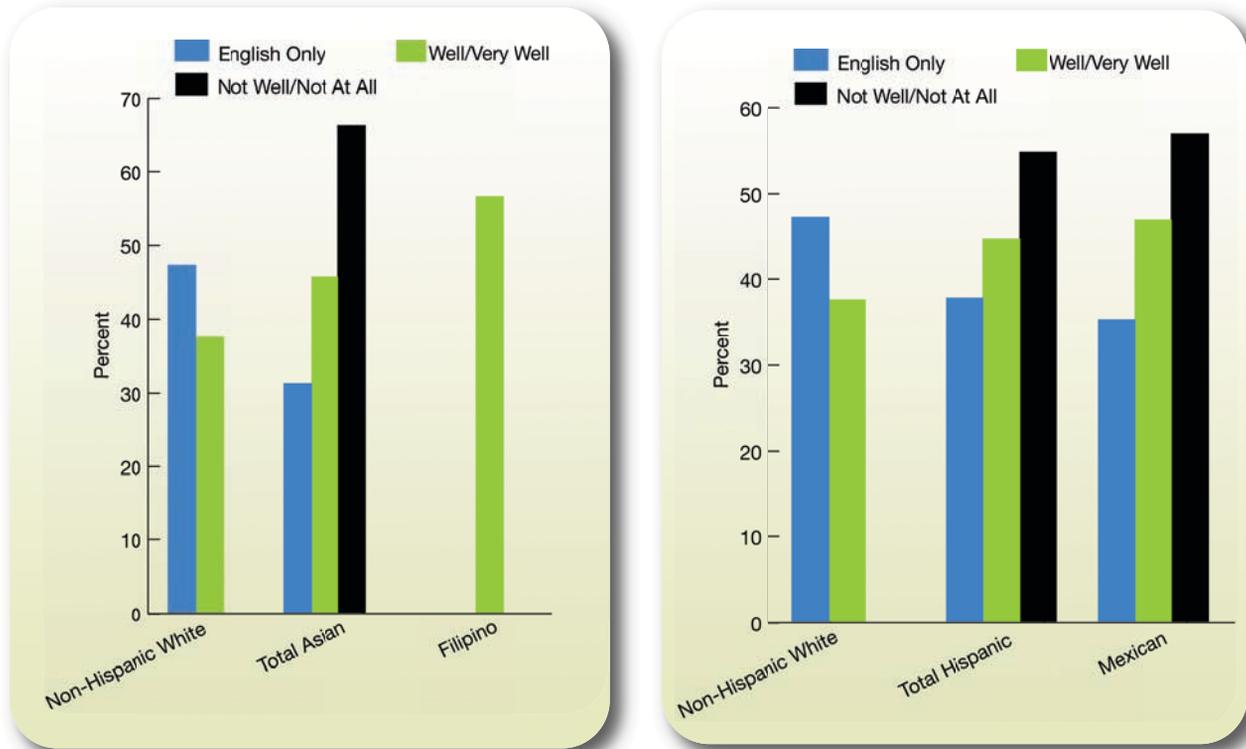

Source: University of California, Los Angeles, Center for Health Policy Research, California Health Interview Survey, 2007.
Denominator: Civilian noninstitutionalized population in California.

● In California, there were no statistically significant differences by ethnicity in the percentage of people with current asthma who took prescription medication to control asthma during the past 12 months (Figure 2.33). This is due to relatively large standard errors for many of the subpopulations.

Effectiveness

Figure 2.34. People with current asthma who are were taking prescription medication to control asthma during the past 12 months, by ethnic subgroups and English proficiency, California, 2007

Source: University of California, Los Angeles, Center for Health Policy Research, California Health Interview Survey, 2007.
Denominator: Civilian noninstitutionalized population in California.
Note: Data were not statistically reliable for Whites who did not speak English well or did not speak English at all and for Filipinos who spoke English only and Filipinos who did not speak English well or did not speak English at all.

- Overall, there were no statistically significant differences in the percentage of people with current asthma who were taking prescription medication to control asthma during the past 12 months in California between people who spoke English only and those who spoke English well or very well and those who did not speak English well or did not speak English at all (data not shown).

- Among people who spoke English only at home in California, Asians were less likely than non-Hispanic Whites to take prescription medication to control asthma during the past 12 months (31.2% compared with 47.2%; Figure 2.34).

- Also, among people who spoke English only at home in California, Hispanics and Mexicans were less likely than non-Hispanic Whites to take prescription medication to control asthma during the past 12 months (37.7% and 35.2%, respectively, compared with 47.2%).

Effectiveness

Lifestyle Modification

Importance

Mortality

Number of deaths per year attributable to smoking (2000-2004)..443,000[80]

Prevalence

Number of adult current cigarette smokers (2009)..46.6 million[81]

Number of obese adults (2005-2006)..>72 million[82]

Number of adults with no leisure-time physical activity (2009)..72.8 million[81]

Cost

Total cost of smoking (2000-2004 est.)..$193 billion[80]

Total health care cost related to obesity (2008 est.)..$147 billion[83]

Measures

Unhealthy behaviors place many Americans at risk for a variety of diseases. Lifestyle practices account for more than 40% of the differences in health among individuals.[84] A recent study examined the effects on incidence of coronary heart disease, stroke, diabetes, and cancer of four healthy lifestyles: never smoking, not being obese, engaging in at least 3.5 hours of physical activity per week, and eating a healthy diet (higher consumption of fruits, vegetables, and whole grain bread and lower consumption of red meat). Engaging in one healthy lifestyle compared with none cut the risk of developing these diseases in half while engaging in all four cut risk by 78%.[85] Unfortunately, healthy lifestyle practices have declined over the past two decades.[85]

Helping patients choose and maintain healthy lifestyles is a critical role of health care professionals. The NHDR tracks several quality measures for modifying unhealthy lifestyles, including the following three core report measures:

- Counseling smokers to quit smoking.
- Counseling obese adults about exercise.
- Counseling obese adults about healthy eating.

In addition, one supporting measure is presented:

- Counseling obese adults about overweight.

Effectiveness

Findings

### Prevention: Counseling Smokers To Quit Smoking

Smoking harms nearly every organ of the body and causes or exacerbates many diseases. Smoking causes more than 80% of deaths from lung cancer and more than 90% of deaths from chronic obstructive pulmonary disease.[86] Heart disease is the leading cause of death in the United States for both men and women,[87] with approximately 135,000 deaths due to smoking.[88] Cigarette smoking increases the risk of dying from coronary heart disease (CHD) two- to threefold.[88]

Quitting smoking has immediate and long-term health benefits. The risk of developing CHD attributed to smoking can be decreased by 50% after one year of cessation.[89] Smoking is a modifiable risk factor, and health care providers can help encourage patients to change their behavior and quit smoking.

Figure 2.35. Adult current smokers under age 65 with a checkup in the last 12 months who received advice from a doctor to quit smoking, by race, ethnicity, income, and language spoken at home, 2002-2007
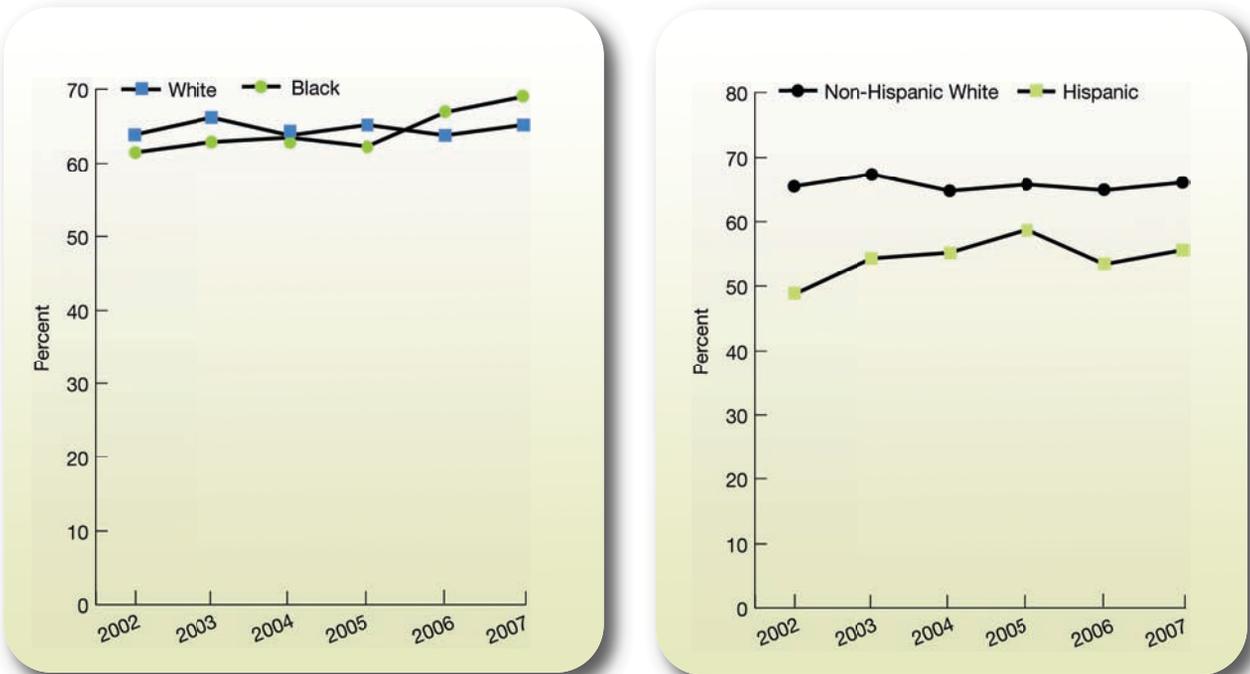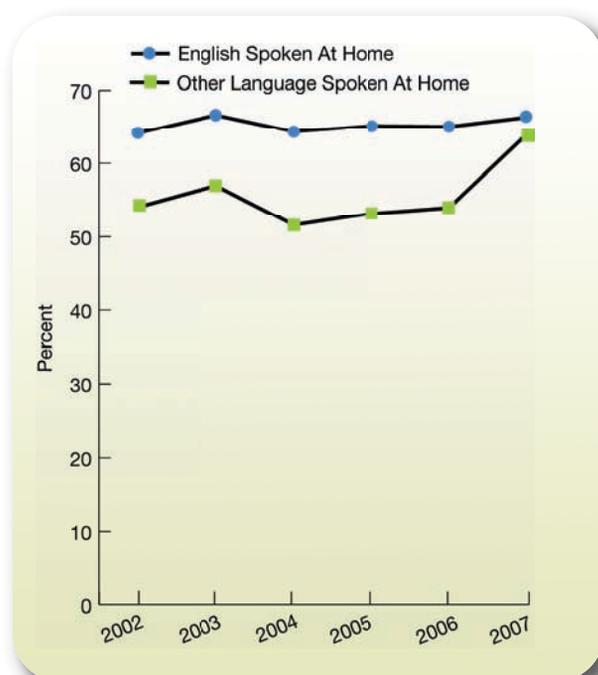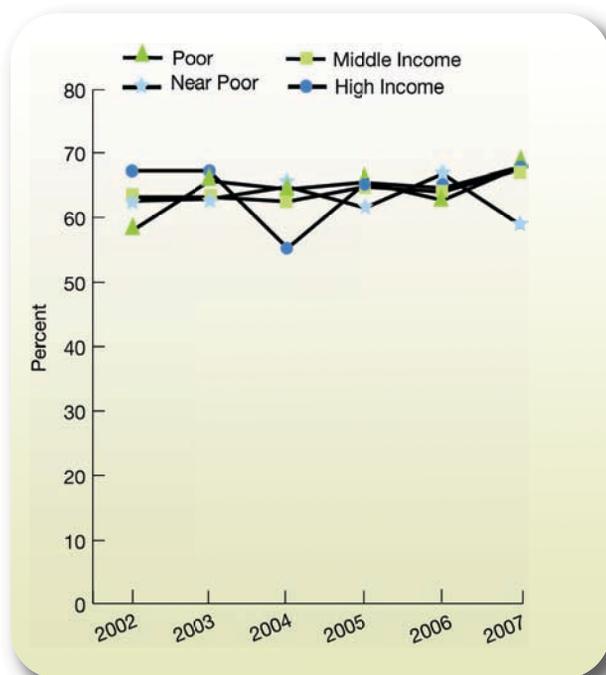
Effectiveness

Source: Agency for Healthcare Research and Quality, Medical Expenditure Panel Survey, 2002-2007.
Denominator: Civilian noninstitutionalized adult current smokers under age 65 who had a checkup in the last 12 months.

● In 2007, only 66.2% of current adult smokers overall who had a checkup in the last 12 months were advised to quit smoking (data not shown).

● There were no statistically significant differences by race and ethnicity in the percentage of current adult smokers who received advice to quit smoking (Figure 2.35).

● From 2002 to 2007, there were no statistically significant changes overall and for all groups in the percentage of current adult smokers with a checkup in the last 12 months who received advice to quit smoking, except for poor patients (from 57.9% to 67.9%).

● In 2007, near-poor current adult smokers were significantly less likely than high-income current adult smokers to receive advice to quit smoking (58.8% compared with 67.8%).

● There were no statistically significant differences in the percentage of current adult smokers with a checkup in the last 12 months who received advice to quit smoking by language spoken at home.

Also, in the NHQR:

● There were no statistically significant differences between adult current smokers living in metropolitan areas and those living in nonmetropolitan areas with a checkup in the last 12 months who received advice to quit smoking. Among metropolitan areas, residents of small metropolitan areas who were current smokers were least likely to receive advice to quit smoking.

● From 2002 to 2007, female current adult smokers continued to be more likely than males to receive advice to quit smoking.

Effectiveness

Each year, multivariate analyses are conducted in support of the NHDR to identify the independent effects of race and socioeconomic status on quality of health care. Past reports have listed some of these findings as odds ratios. This year, the NHDR presents the results of a multivariate model as adjusted percentages for this measure: Adult smokers ages 18-64 with advice to quit smoking. Adjusted percentages show the expected percentage for a given subpopulation after controlling for a number of factors, which include race/ethnicity, family income, education, health insurance status, and geographic location.

Figure 2.36. Adjusted percentages of adults ages 18-64 with advice to quit smoking, 2007
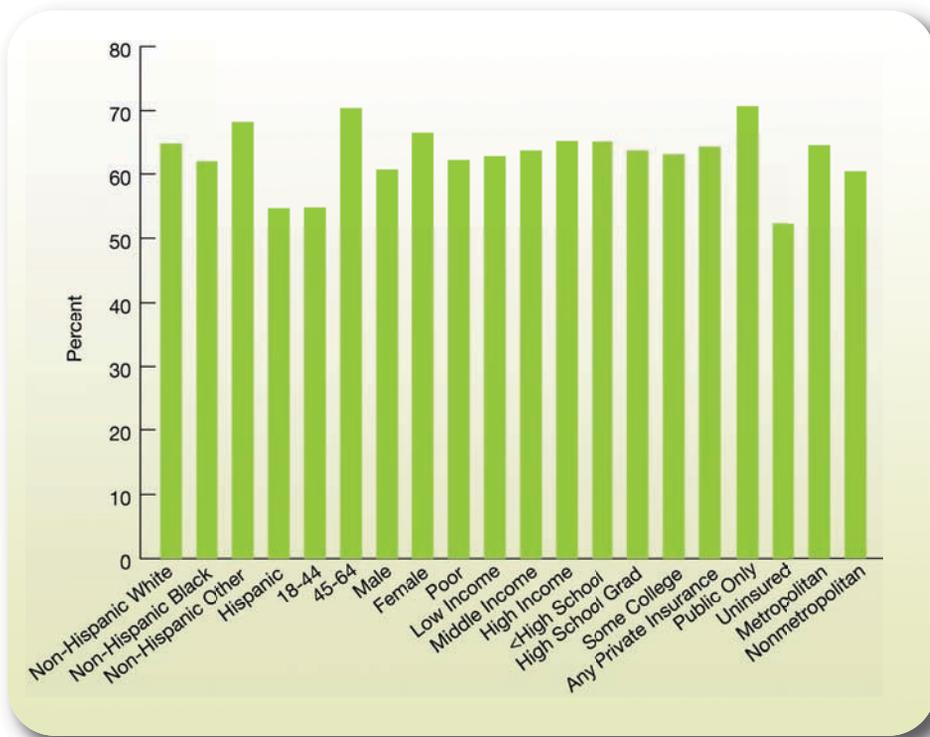
Source: Agency for Healthcare Research and Quality, Medical Expenditure Panel Survey, 2007.
Denominator: Civilian noninstitutionalized adult current smokers under age 65 who had a checkup in the last 12 months.
Note: Adjusted percentages are predicted marginals from a statistical model that includes the covariates race/ethnicity, family income, education, health insurance, and residence location.

- In the multivariate model used, after adjustment, 54.7% of Hispanic adult smokers ages 18-64 received advice to quit smoking compared with 64.8% of White adults (Figure 2.36).

- After adjustment, male adult smokers ages 18-64 were less likely than females to receive advice to quit smoking (60.7% compared with 66.5%).

- After adjustment, compared with adult smokers ages 18-64 with any private insurance (65.2%), adults with public insurance were more likely (70.7%) and adults with no insurance were less likely (52.3%) to receive advice to quit smoking.

- After adjustment, adult smokers ages 18-64 who lived in metropolitan areas (64.6%) were more likely than adults in nonmetropolitan areas (60.5%) to receive advice to quit smoking.

Effectiveness

Prevention: Counseling Obese Adults About Overweight

More than 34% of adults age 20 and over in the United States are obese (defined as having a BMI of 30 or higher),[82] putting them at increased risk for many chronic, often deadly conditions, such as hypertension, cancer, diabetes, and CHD.[90] Although physician guidelines recommend that health care providers screen all adult patients for obesity,[91] obesity remains underdiagnosed among U.S. adults.[92]

Figure 2.37. Adults with obesity who reported being told by a doctor they were overweight, by race/ethnicity, income, and education, 2005-2008
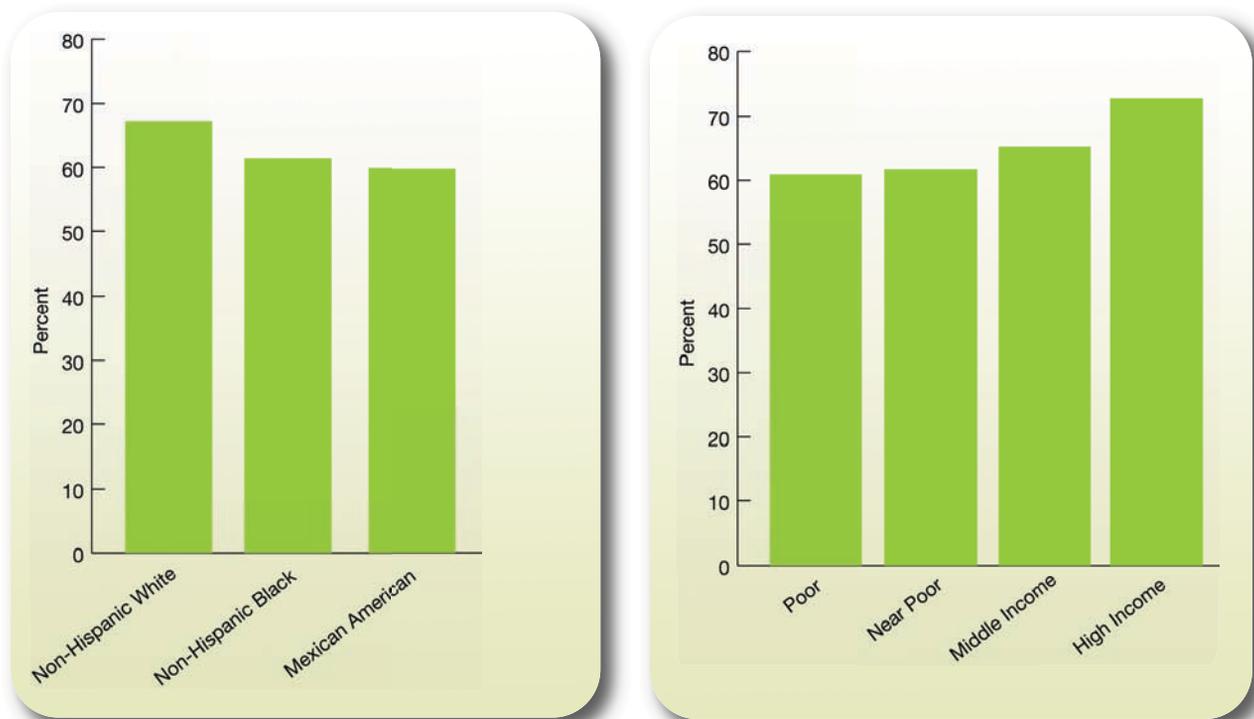
Effectiveness
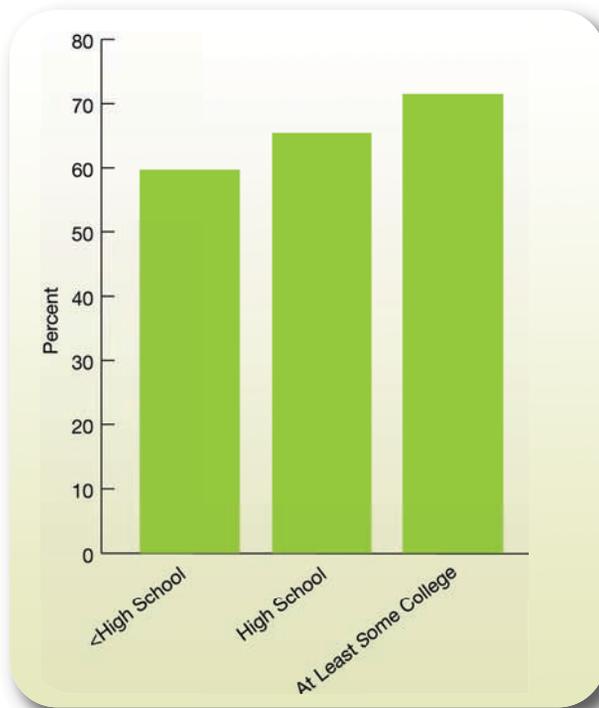
Source: Centers for Disease Control and Prevention, National Center for Health Statistics, National Health and Nutrition Examination Survey, 2005-2008.
Denominator: Civilian noninstitutionalized obese adults age 20 and over.
Note: Estimates are age adjusted to the 2000 standard population using three age groups: 20-44, 45-64, and 65 and over for total, race, ethnicity, and family income and 25-44, 45-64, and 65 and over for education.

- Overall, in 2005-2008, 65.9% of obese adults age 20 and over reported being told by a doctor or health professional that they were overweight (data not shown).

- Non-Hispanic Black and Mexican-American obese adults were less likely than non-Hispanic White obese adults to report being told by a doctor that they were overweight (61.4% and 59.9%, respectively, compared with 67.2%; Figure 2.37).

- Poor (60.8%), near-poor (61.6%), and middle-income (65.1%) obese adults were less likely than high-income (72.8%) obese adults to report being been told by a doctor that they were overweight.

- Obese adults with less than a high school education (59.7%) and those with a high school education (65.4%) were less likely than obese adults with at least some college (71.5%) to report being told by a doctor that they were overweight.

Also, in the NHQR:

- Obese adults ages 45-64 and age 65 and over were more likely than obese adults ages 20-44 to report being told by a doctor that they were overweight.

- Female obese adults age 20 and over were more likely than males to report being told by a doctor or health professional that they were overweight.

Prevention: Counseling Obese Adults About Exercise

Physician-based exercise and diet counseling is an important component of effective weight loss interventions,[91] and it has been shown to produce increased levels of physical activity among sedentary patients.[93] Although every obese person may not need counseling about exercise and diet, many would likely benefit from improvements in these activities. Regular exercise and a healthy diet aid in maintaining normal blood cholesterol levels, weight, and blood pressure, reducing the risk of heart disease, stroke, diabetes, and other comorbidities of obesity.

Effectiveness

Figure 2.38. Adults with obesity who ever received advice from a health provider to exercise more, by race/ethnicity, income, education, and language at home, 2002-2007
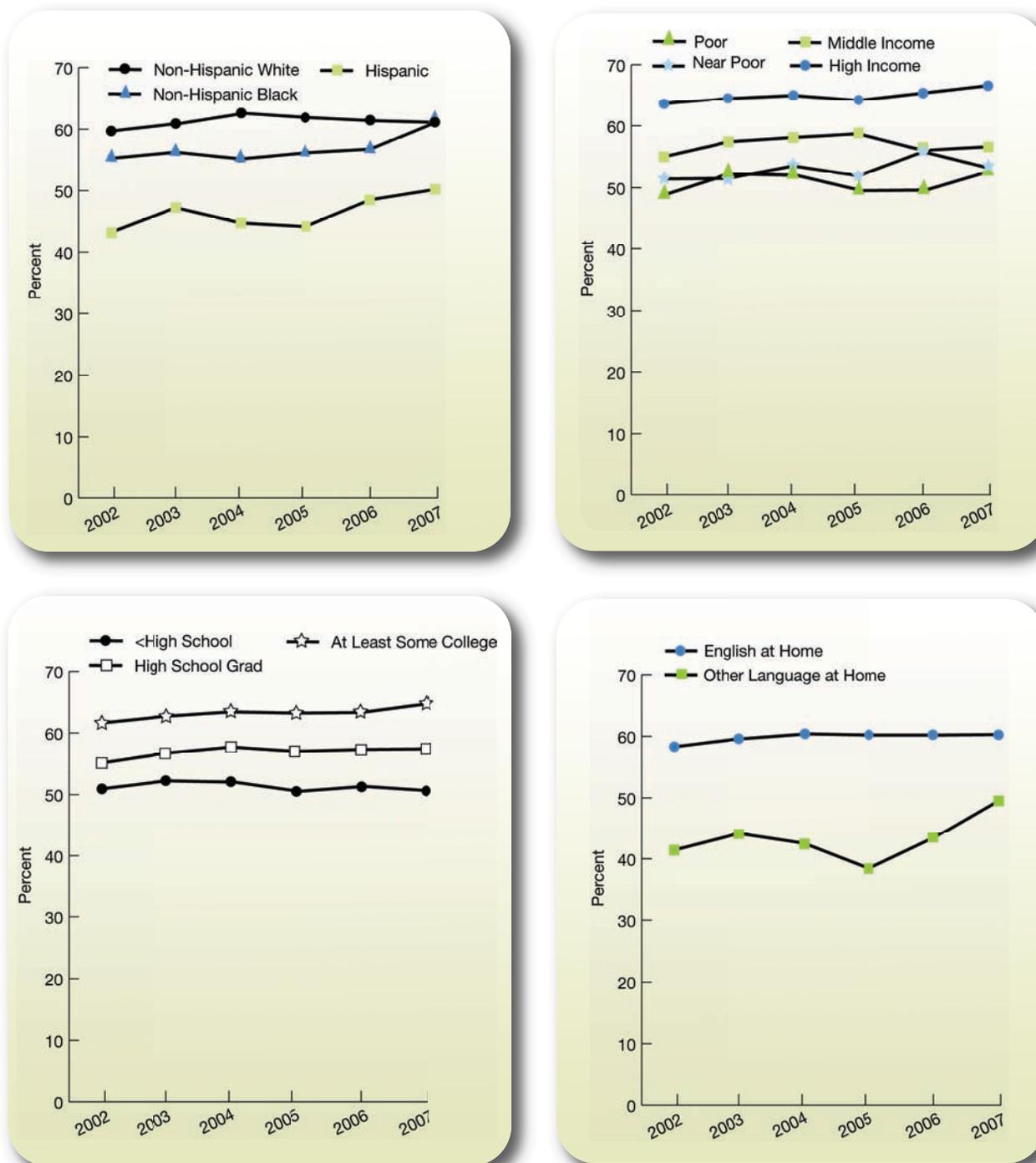
Source: Agency for Healthcare Research and Quality, Medical Expenditure Panel Survey, 2002-2007.
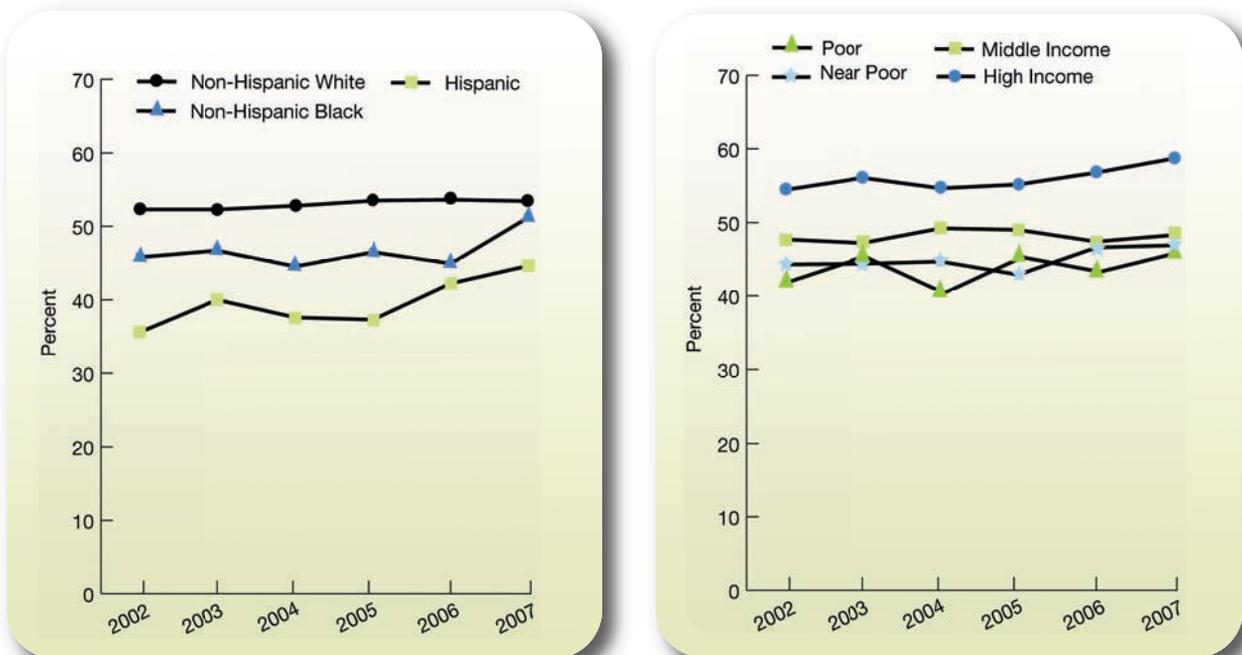**Denominator:** Civilian noninstitutionalized population age 18 and over.
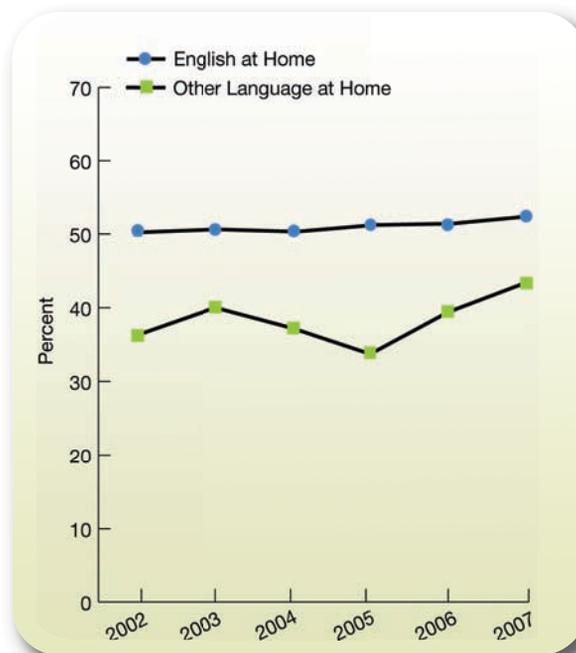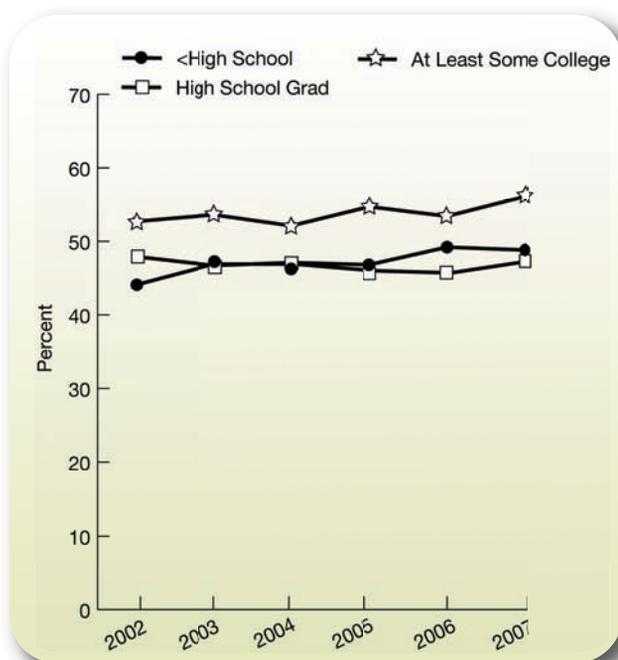**Note:** Obesity is defined as a body mass index of 30 or higher.

Effectiveness

- Overall, in 2007, 59.2% of adults with obesity had ever received advice from a health provider to exercise more (data not shown).

- There was no statistically significant difference between non-Hispanic Black adults with obesity and non-Hispanic White adults with obesity in the percentage who received advice from a health provider to exercise more (Figure 2.38).

- From 2002 to 2007, the percentage of Hispanic adults with obesity who ever received advice to exercise more improved (from 43.2% to 50.2%). However, Hispanics were less likely than non-Hispanic Whites to ever receive advice to exercise more (50.2% compared with 61.1%).

- In 2007, the percentage of obese adults who had ever received advice to exercise more was lower for poor (52.7%), near-poor (53.2%), and middle-income people (56.6%) compared with high-income people (66.6%).

- In 2007, the percentage of obese adults who had ever received advice to exercise more was lower for people with less than a high school education (50.6%) and people with a high school education (57.4%) compared with people with at least some college (64.7%).

- In 2007, adults with obesity who spoke a language other than English at home were less likely to ever receive advice from a health provider about exercise than adults with obesity who spoke English at home (49.5% compared with 60.3%).

Prevention: Counseling Obese Adults About Healthy Eating

Figure 2.39. Adults with obesity who ever received advice from a health provider about eating fewer high-fat or high-cholesterol foods, by race/ethnicity, income, education, and language spoken at home, 2002-2007

Effectiveness

Source: Agency for Healthcare Research and Quality, Medical Expenditure Panel Survey, 2002-2007.
Denominator: Civilian noninstitutionalized population age 18 and over.
Note: Obesity is defined as a body mass index of 30 or higher.

- Overall, in 2007, about 51.6% of adults with obesity received advice from a health provider about healthy eating. This percentage improved from 2002, when 48.9% said they received this advice (data not shown).

- From 2002 to 2007, the percentage of non-Hispanic Black adults with obesity who received advice from a health provider about healthy eating increased (from 45.8% to 51.2%; Figure 2.39). There was no statistically significant difference for non-Hispanic Whites.

- From 2002 to 2007, the percentage of Hispanic adults with obesity who received advice from a health provider about healthy eating increased (from 35.6% to 44.6%). In 2007, Hispanics were less likely to receive this advice than non-Hispanic Whites (44.6% compared with 53.4%).

- In 2007, the percentage of obese adults who received advice about eating fewer high-fat or high-cholesterol foods was significantly lower for poor, near-poor, and middle-income adults compared with high-income adults (45.9%, 46.9%, and 48.3%, respectively, compared with 58.7%).

- In 2007, the percentage of obese adults who were given advice about eating fewer high-fat or high-cholesterol foods was significantly lower for people with less than a high school education and people with a high school education compared with people with at least some college (47.3% and 48.8%, respectively, compared with 56.1%).

- In 2007, the percentage of adults with obesity who spoke another language at home who received advice about healthy eating was lower than it was for adults with obesity who spoke English at home (43.4% compared with 52.4%).

Effectiveness

Also, in the NHQR:

● Adults with obesity ages 18-44 were least likely to receive advice about healthy eating.

● The percentage of adults with obesity who received advice from a health provider about healthy eating was lower for people who lived in nonmetropolitan areas than for people who lived in metropolitan areas.

● From 2002 to 2007, the percentage of adults with obesity who received advice about healthy eating improved for females. In 2007, there was no statistically significant difference between males and females.

Outcome: Obese Adults Who Exercise

Figure 2.40. Adults with obesity who spend half an hour or more in moderate or vigorous physical activity at least 3 times a week, by race/ethnicity, income, and education, 2002-2007
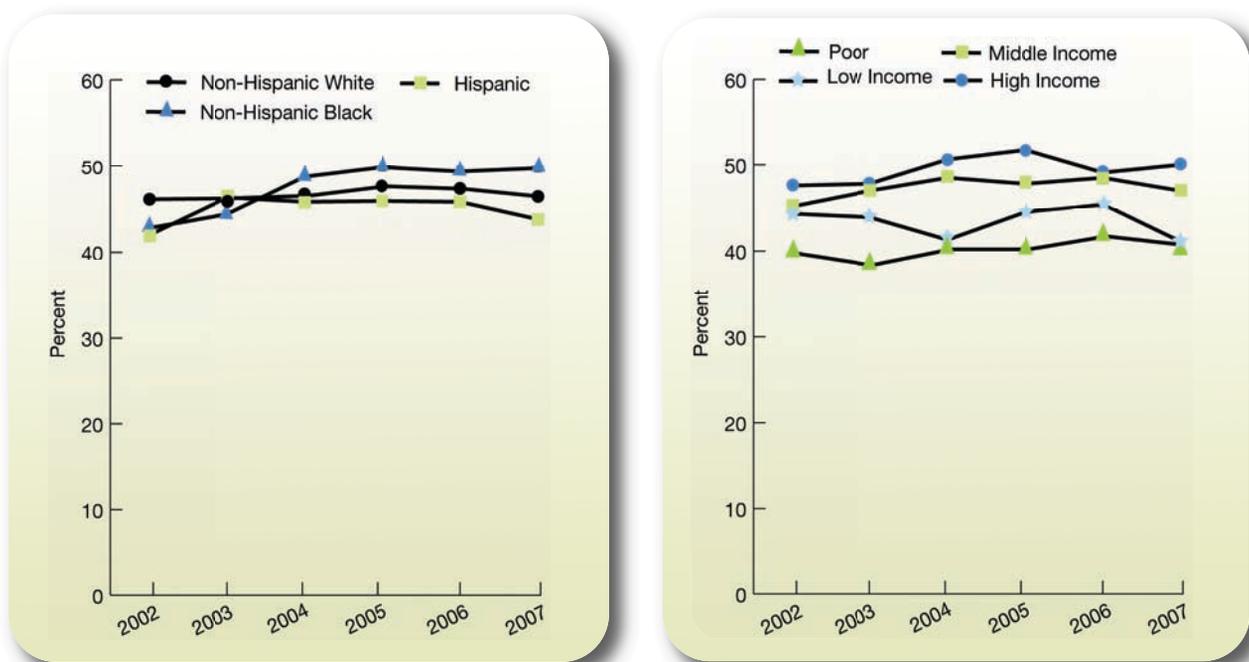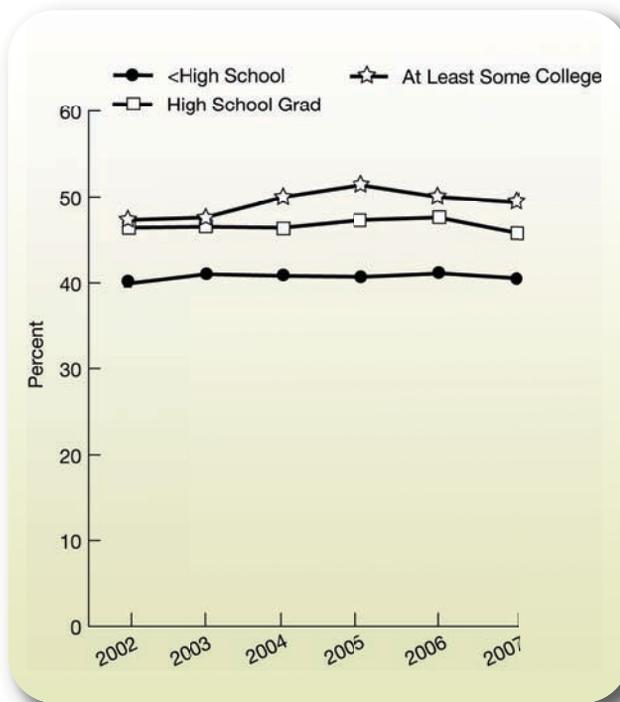
Effectiveness

Source: Agency for Healthcare Research and Quality, Medical Expenditure Panel Survey, 2002-2007.
Denominator: Civilian noninstitutionalized population age 18 and over.
Note: Obesity is defined as a body mass index of 30 or higher.

- Overall, about 46.3% of adults with obesity spent half an hour or more in moderate or vigorous activity at least 3 times a week (data not shown).

- From 2002 to 2007, the percentage of adults with obesity who exercised at least 3 times a week increased for non-Hispanic Blacks and Hispanics (Figure 2.40). In 2007, Hispanics were less likely than non-Hispanic Whites to exercise at least 3 times a week.

- In 2007, poor and low-income adults with obesity were less likely than high-income adults to exercise as least 3 times a week. Obese adults who had less than a high school education were less likely than adults with at least some college to exercise at least 3 times a week.

- Obese adults who spoke a language other than English at home were less likely than adults who spoke English at home to exercise at least 3 times a week (data not shown).

Also, in the NHQR:

- Adults age 65 and over with obesity were least likely of all age groups to exercise at least 3 times a week.

- Female adults with obesity were less likely than males to exercise at least 3 times a week.

- Among those living in metropolitan areas, adults with obesity in large central metropolitan and small metropolitan areas were less likely to exercise at least 3 times a week compared with adults with obesity in large fringe metropolitan areas.

Effectiveness

Functional Status Preservation and Rehabilitation

Importance

Demographics

Noninstitutionalized adults needing help of another person with activities of daily living (ADLs)[xxix] (2009) ....4.4 million[94]

Noninstitutionalized adults age 75 and over needing help of another person with ADLs (2009) ....10%[94]

Noninstitutionalized adults needing help with instrumental activities of daily living (IADLs)[xxx] (2009)...9.2 million[94]

Noninstitutionalized adults age 75 and over needing help with IADLs (2009) ....20%[94]

Nursing home residents needing help with ADLs (2004)..1.5 million[95]

Costs

Medicare payments for outpatient physical therapy (2006 est.)...$3.1 billion[96]

Medicare payments for outpatient occupational therapy (2006 est.)...$747 million[96]

Medicare payments for outpatient speech-language pathology services (2006 est.)...................$270 million[96]

Measures

A person's ability to function can decline with disease or age, but it is not always an inevitable consequence. Threats to function span a wide variety of medical conditions. Services to maximize function are delivered in a variety of settings, including providers' offices, patients' homes, long-term care facilities, and hospitals. Some health care interventions can help prevent diseases that commonly cause declines in functional status. Other interventions, such as physical therapy, occupational therapy, and speech-language pathology services, can help patients regain function that has been lost or minimize the rate of decline in functioning.

The NHDR tracks several measures related to functional status preservation and rehabilitation. Three core report measures are highlighted in this section:

- Osteoporosis screening among older women.
- Improvement in ambulation among home health care patients.
- Nursing home residents needing more help with daily activities.

[xxix] ADLs consist of basic self-care tasks, such as bathing, dressing, eating, transferring, using the toilet, and walking.
[xxx] IADLs consist of tasks needed for a person to live independently, such as shopping, doing housework, preparing meals, taking medications, using the telephone, and managing money.
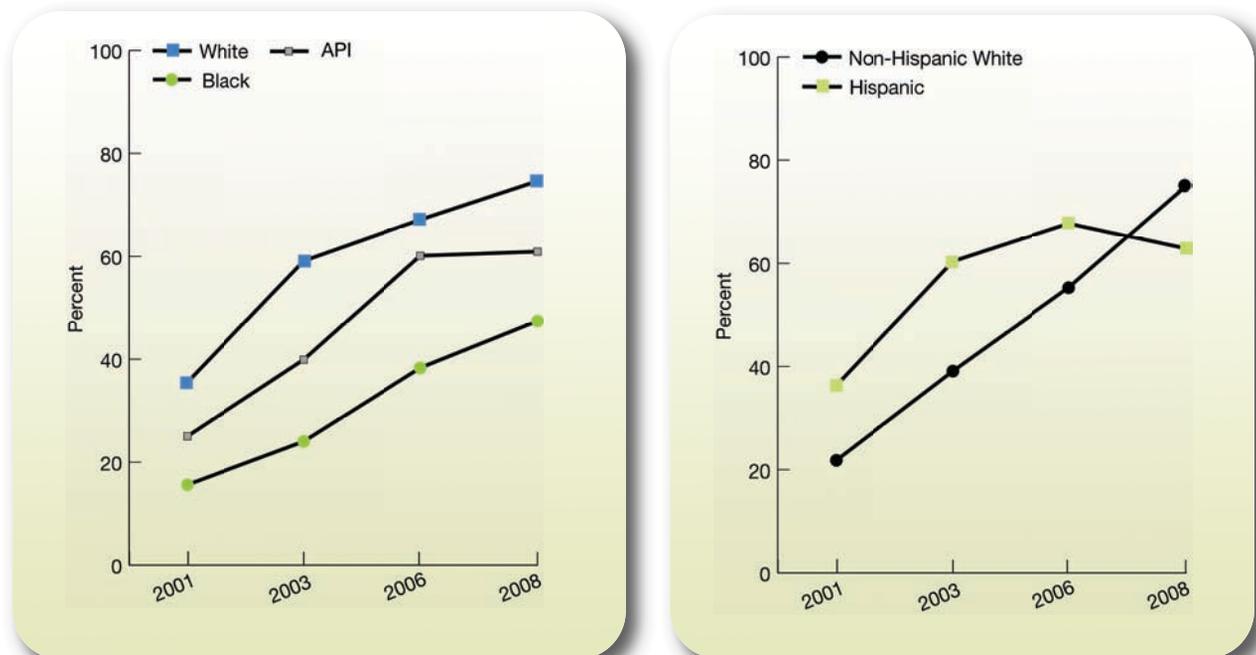
Effectiveness

Findings

Prevention: Osteoporosis Screening Among Older Women

Osteoporosis is a disease characterized by loss of bone tissue. About 10 million people in the United States have osteoporosis, and another 34 million with low bone mass are at risk for developing the disease. Osteoporosis increases the risk of fractures of the hip, spine, and wrist, and about half of all postmenopausal women will experience an osteoporotic fracture. Osteoporotic fractures cost the health care system $17 billion each year and cause considerable morbidity and mortality. For example, of patients with hip fractures, one-fifth will die during the first year, one-third will require nursing home care, and only one-third will return to the functional status they had before the fracture.[97]

Because older women are at highest risk for osteoporosis, the U.S. Preventive Services Task Force recommends routine osteoporosis screening of women age 65 and over. Women with low bone density can reduce their risk of fracture and subsequent functional impairment by taking appropriate medications.[98]

Figure 2.41. Female Medicare beneficiaries age 65 and over who reported ever being screened for osteoporosis with a bone mass or bone density measurement, by race, ethnicity, income, and level of functioning, 2001, 2003, 2006, and 2008

Effectiveness
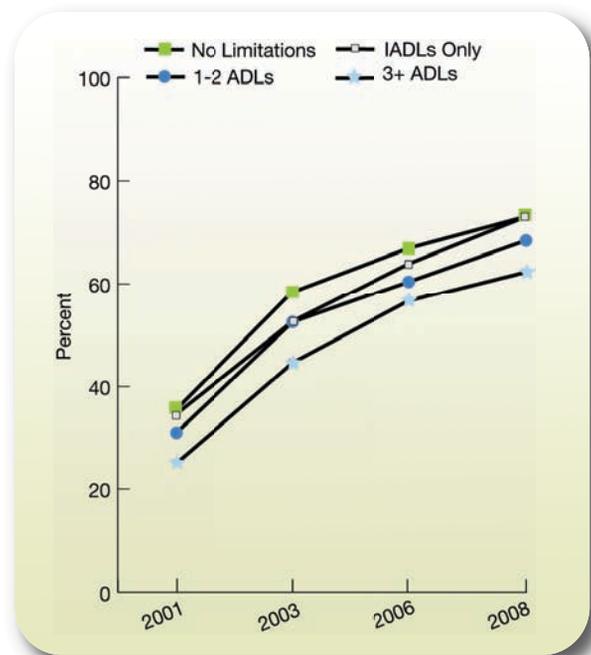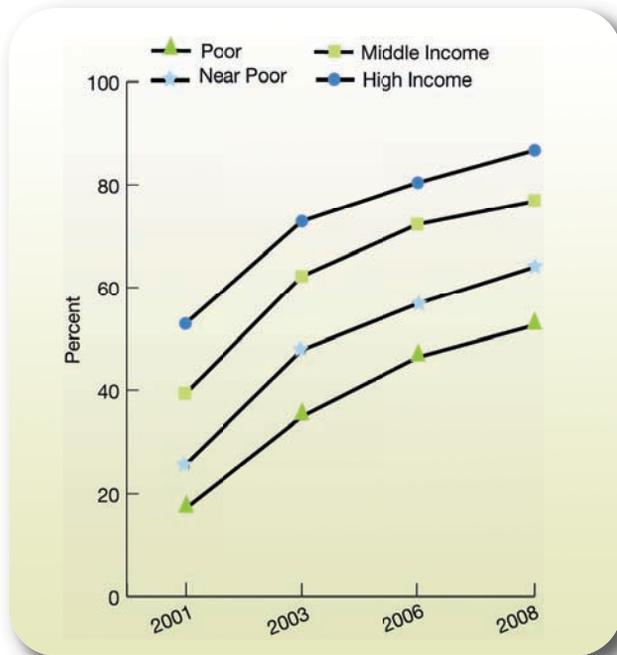
Key: API = Asian or Pacific Islander; ADLs = activities of daily living; IADLs = instrumental activities of daily living.
Source: Medicare Current Beneficiary Survey, 2001, 2003, 2006, and 2008.
Denominator: Female Medicare beneficiaries age 65 and over living in the community.

● From 2001 to 2008, the percentage of female Medicare beneficiaries age 65 and over who reported ever being screened for osteoporosis with a bone mass or bone density measurement increased among all racial, ethnic, income, and disability groups.

● In all years, the percentage of female Medicare beneficiaries age 65 and over who reported ever being screened for osteoporosis was significantly lower among Blacks and APIs compared with Whites; Hispanics compared with non-Hispanic Whites; poor, near-poor, and middle-income beneficiaries compared with high-income beneficiaries; and beneficiaries with limitations in three or more ADLs compared with beneficiaries with no functional limitations (Figure 2.41).

Also, in the NHQR:

● From 2001 to 2008, the percentage of female Medicare beneficiaries age 65 and over who reported ever being screened for osteoporosis with a bone mass or bone density measurement increased overall.

● Since 2003, the percentage of older female Medicare beneficiaries who reported ever being screened for osteoporosis was lower among those living in nonmetropolitan areas compared with those living in metropolitan areas.

Outcome: Improvement in Ambulation in Home Health Care Patients

After an illness or injury, many patients receiving home health care may need temporary help to walk safely. This assistance can come from another person or from equipment, such as a cane. Patients who use a wheelchair may have difficulty moving around safely, but if they can perform this activity with little assistance, they are more independent, self-confident, and active.

Effectiveness

As patients recover from illness or injury, many experience improvements in walking and moving with a wheelchair, which can be facilitated by physical therapy. However, in cases of patients with some neurologic conditions, such as progressive multiple sclerosis or Parkinson's disease, ambulation may not improve even when the home health agency provides good care. In addition, the characteristics of patients referred to home health agencies vary across States.

Figure 2.42. Adult home health care patients whose ability to walk or move around improved, by race and ethnicity, 2002-2008
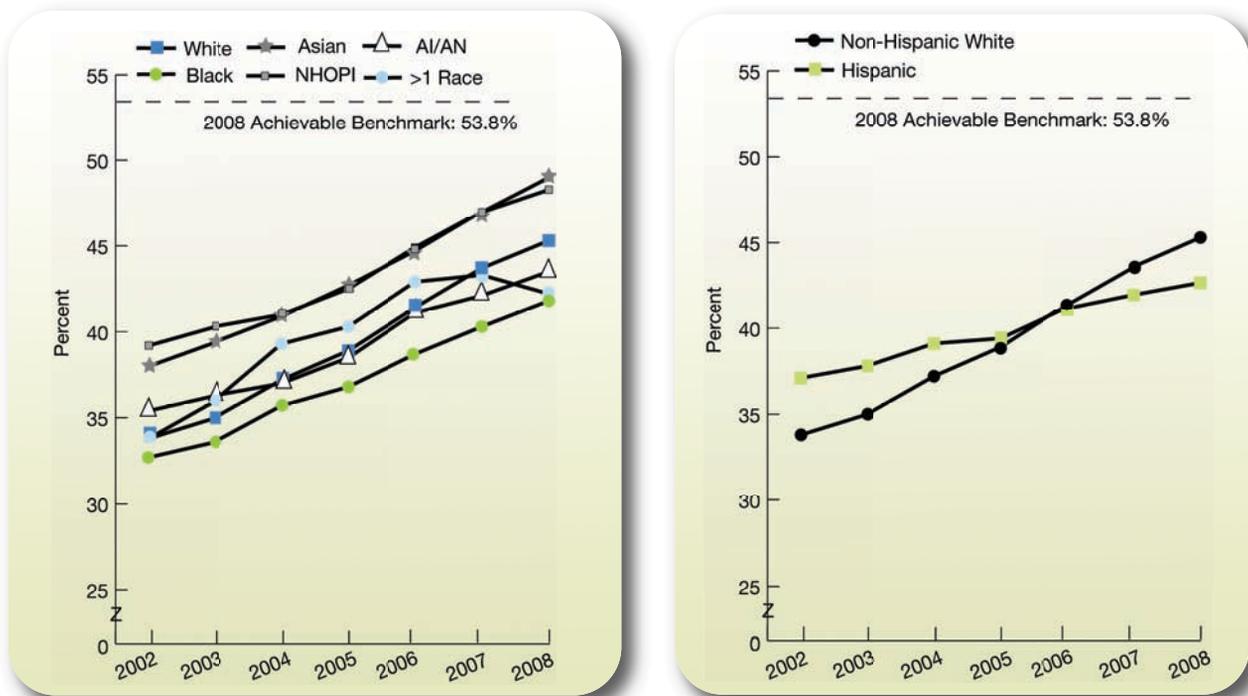
Key: AI/AN = American Indian or Alaska Native; NHOPI = Native Hawaiian or Other Pacific Islander.
Source: Centers for Medicare & Medicaid Services, Outcome and Assessment Information Set (OASIS), 2002-2008.
Denominator: Adult nonmaternity patients completing an episode of skilled home health care and not already performing at the highest level according to the OASIS question on ambulation at the start of the episode.

- From 2002 to 2008, the percentage of home health care patients who got better at walking or moving around improved for each racial and ethnic group (Figure 2.42).

- The 2008 top 5 State achievable benchmark was 53.8%.[xxxi] At the current 5% annual rate of increase, this benchmark could be attained overall in about 5 years.

- Rates of improvement varied across racial and ethnic groups. Whites could attain the achievable benchmark in about 4 years. Asians and NHOPIs could attain the benchmark sooner, while Blacks, AI/ANs, multiple-race individuals, and Hispanics would not attain the benchmark for between 7 and 11 years.

[xxxi] The top 5 States contributing to the achievable benchmark are District of Columbia, Hawaii, Kansas, South Carolina, and Utah.

Effectiveness

Also, in the NHQR:

● From 2002 to 2008, the percentage of home health care patients who got better at walking or moving around improved for the total population.

● Populations with lower rates of improvement include patients age 85 years and over.

Outcome: Nursing Home Residents Needing More Help With Daily Activities

Long-stay residents enter a nursing facility typically because they can no longer care for themselves at home; they tend to remain in the facility for several months or years. While almost all long-stay nursing home residents have limitations in their activities of daily living, nursing home staff help residents stay as independent as possible. Most residents want to care for themselves, and the ability to perform daily activities is important to their quality of life. Some functional decline among residents cannot be avoided, but optimal nursing home care seeks to minimize the rate of decline.

Figure 2.43. Long-stay nursing home residents whose need for help with daily activities increased, by race/ethnicity, 2000-2008
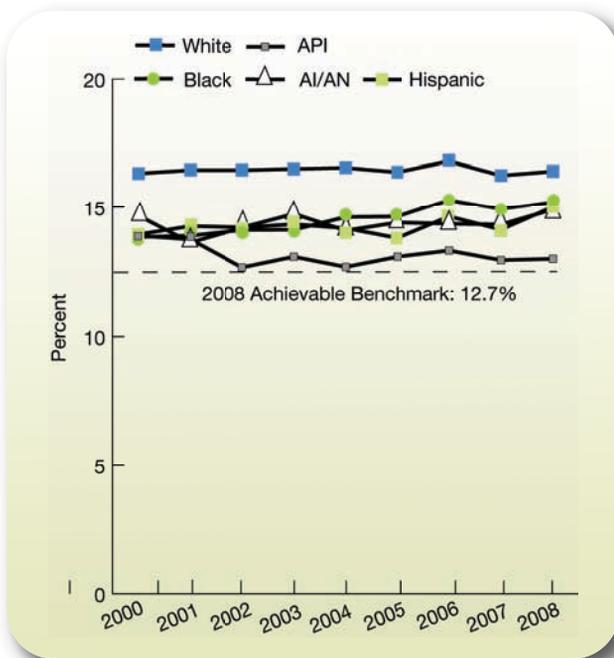
Key: API = Asian or Pacific Islander; AI/AN = American Indian or Alaska Native.
Source: Centers for Medicare & Medicaid Services, Minimum Data Set, 2000-2008. Data are from the third quarter of each calendar year.
Denominator: All long-stay residents in Medicare or Medicaid certified nursing home facilities.

● Between 2000 and 2008, the percentage increased among Blacks of long-stay nursing home residents whose need for help with daily activities increased (Figure 2.43).

Effectiveness

- In all years, API residents were less likely than White residents to need increased help with daily activities. In all years before 2008, AI/AN and Hispanic residents were also less likely to need increased help with daily activities.

- The 2008 top 5 State achievable benchmark was 12.7%.[xxxii] In 2008, API residents had almost attained the benchmark. There was no evidence that the overall rate or rates for other groups were getting closer to the benchmark.

Also, in the NHQR:

- In 2008, 16.2% of long-stay nursing home residents had increased need for help with daily activities. The overall percentage of long-stay nursing home residents whose need for help with daily activities did not change between 2000 and 2008.

- Residents ages 0-64 were less likely to need increased help with daily activities compared with residents ages 65-74.

[xxxii] The top 5 States contributing to the achievable benchmark are Alabama, Alaska, New Jersey, Oklahoma, and Oregon.

Effectiveness

Supportive and Palliative Care

Importance

Demographics

Number of nursing home residents ever admitted during the calendar year (2007).........................3,196,310[99]

Number of Medicare fee-for-service (FFS) home health patients[xxxiii] (2006)...................................3,031,814[100]

Number of Medicare FFS beneficiaries using Medicare hospice services (2006)..............................935,565[101]

Cost

Total costs of nursing home care[xxxiv] (2007 est.)...$131.3 billion[102]

Total costs of home health care[xxxiv] (2007 est.)..$59.0 billion[102]

Medicare FFS payments for hospice services (2008 est.) ....$11.2 billion[103]

Measures

Disease cannot always be cured, and disability cannot always be reversed. For patients with long-term health conditions, managing symptoms and preventing complications are important goals. Supportive and palliative care cuts across many medical conditions and is delivered by many health care providers. Supportive and palliative care focuses on enhancing patient comfort and quality of life and preventing and relieving symptoms and complications. Toward the end of life, hospice care provides patients and families with practical, emotional, and spiritual support to help cope with death and bereavement. Honoring patient values and preferences for care is also critical.[104]

The National Priorities Partnership (NPP) identified palliative and end-of-life care as one of six national priorities.[105] The vision is health care "capable of promising dignity, comfort, companionship, and spiritual support to patients and families facing advanced illness or dying." Key goals include relief of suffering, help with emotional and spiritual needs, effective communication about options for care, and high-quality hospice services.

The NHDR tracks several measures of supportive and palliative care delivered by home health agencies, nursing homes, and hospices. The 5 presented supporting measures are organized around the NPP goals:

● Relief of suffering

   • Shortness of breath among home health care patients

   • Pressure sores among nursing home residents

[xxxiii] Medicare FFS patients represent only a portion of all home health patients.

[xxxiv] Cost estimates for nursing home and home health services include only costs for freestanding skilled nursing facilities, nursing homes, and home health agencies and not those that are hospital based.

Effectiveness

● Help with emotional and spiritual needs

  • Right amount of emotional support among hospice patients

● Effective communication

  • Enough information about what to expect among hospice family caregivers

● High-quality palliative care services

 • Care consistent with patient's wishes among hospice patients

Findings

Relief of Suffering

Outcome: Shortness of Breath Among Home Health Care Patients

Shortness of breath is uncomfortable. Many patients with heart or lung problems experience difficulty breathing and may tire easily or be unable to perform daily activities. Doctors and home health staff should monitor shortness of breath and may give advice, therapy, medication, or oxygen to help lessen this symptom.

Figure 2.44. Adult home health care patients who had less shortness of breath between the start and end of a home health care episode, by race and ethnicity, 2002-2008
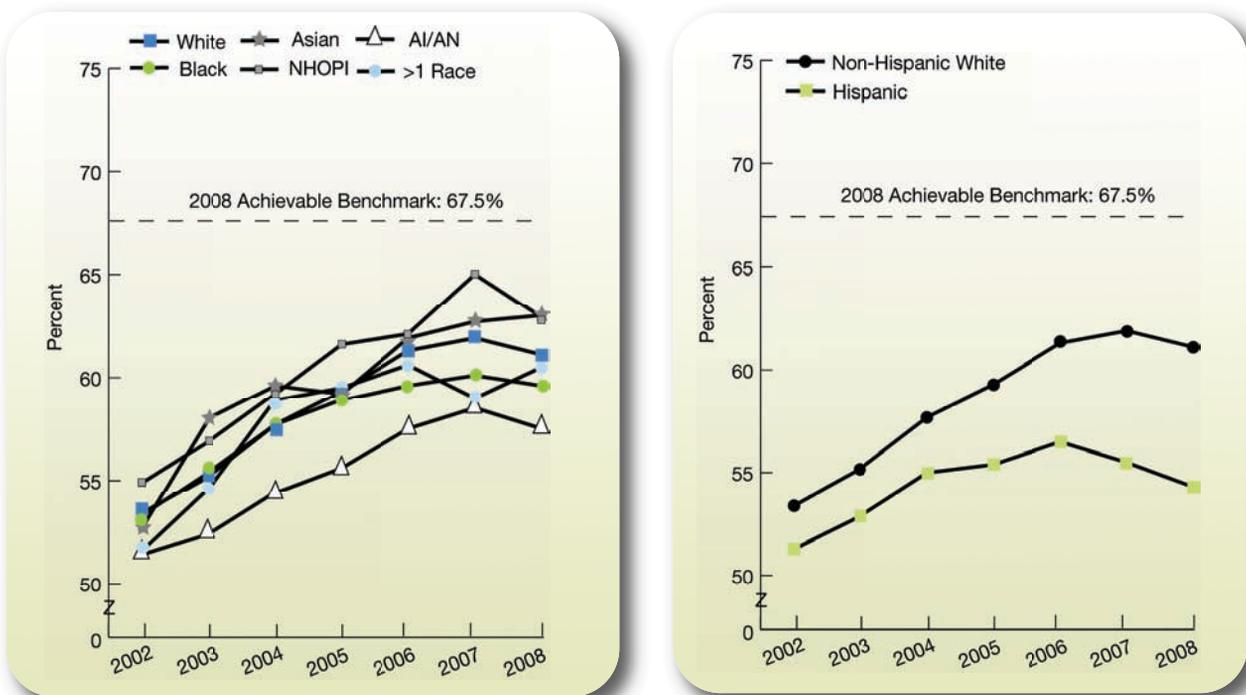
Key: NHOPI = Native American or Other Pacific Islander; AI/AN = American Indian or Alaska Native.
Source: Centers for Medicare & Medicaid Services, Outcome and Assessment Information Set, 2002-2008.
Denominator: Adult nonmaternity patients completing an episode of skilled home health care.

Effectiveness

- Between 2002 and 2008, the percentage of adult home health care patients who had less shortness of breath increased for the total population from 53.3% to 60.5% (see NHQR), as well as for each racial and ethnic group.

- From 2005 to 2008, Hispanics were significantly less likely than non-Hispanic Whites to have experienced less shortness of breath.

- The 2008 top 5 State achievable benchmark was 67.5%.[xxxv] At the current 2% annual rate of increase, this benchmark could be attained overall in about 5 years.

- Whites, Asians, and NHOPIs could attain the benchmark in under 5 years, while Blacks and AI/ANs would not attain the benchmark for between 7 and 9 years. Hispanics would not attain the benchmark for 23 years.

Also, in the NHQR:

- Between 2002 and 2008, the percentage of adult home health care patients who had less shortness of breath improved for every age group.

- Populations with lower rates of improvement include patients ages 18-64 and age 85 and over.

Outcome: Pressure Sores Among Nursing Home Residents

A pressure ulcer, or pressure sore, is an area of broken-down skin caused by sitting or lying in one position for an extended time and can be very painful. Residents should be assessed by nursing home staff for presence or risk of developing pressure sores. Nursing homes can help to prevent or heal pressure sores by keeping residents clean and dry and by changing their position frequently or helping them move around. Other interventions include making sure residents get proper nutrition and using soft padding to reduce pressure on the skin. However, some residents may get pressure sores even when a nursing home provides good preventive care.

[xxxv] The top 5 States contributing to the achievable benchmark are Georgia, Hawaii, New Jersey, Rhode Island, and South Carolina.

Effectiveness

Figure 2.45. Short-stay (left) and high-risk long-stay (right) nursing home residents with pressure sores, by race/ethnicity, 2000-2008
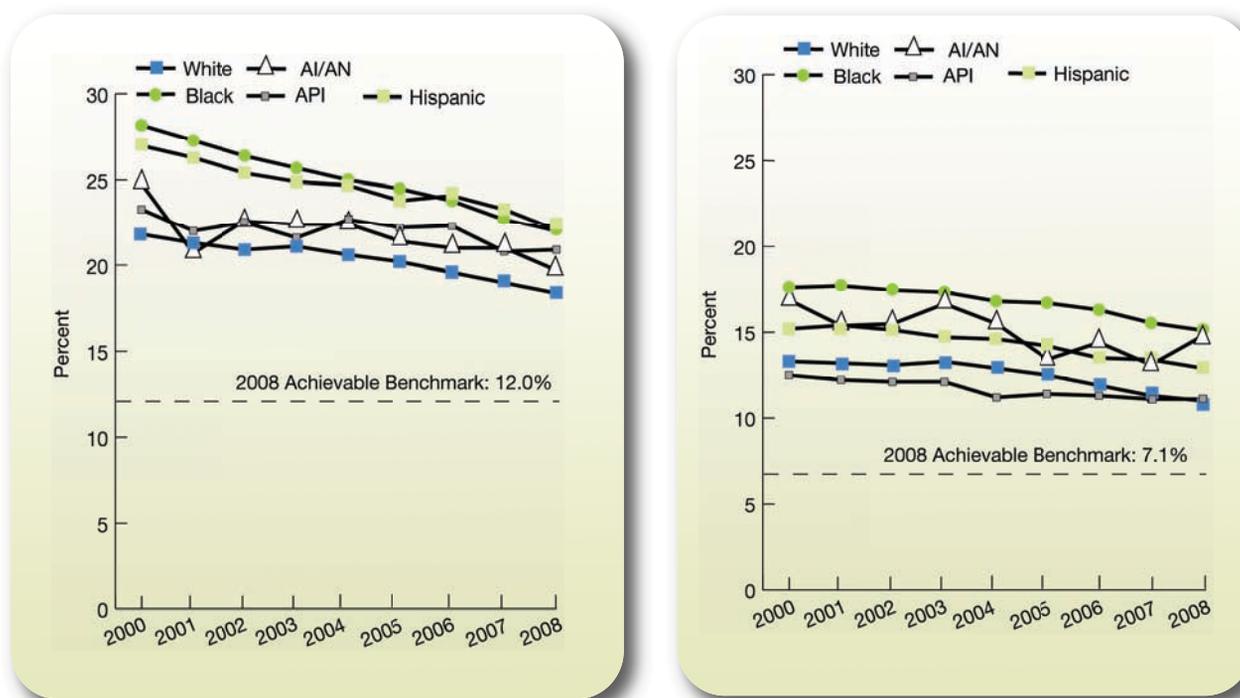
Key: AI/AN = American Indian or Alaska Native; API = Asian or Pacific Islander.
Source: Centers for Medicare & Medicaid Services, Minimum Data Set, 2000-2008. Data for long-stay residents are from the third quarter of each calendar year. Data for short-stay residents are full calendar-year estimates.
Denominator: Short-stay and high-risk long-stay nursing home residents in Medicare or Medicaid certified nursing and long-term care facilities.
Note: White, Black, API, and AI/AN are non-Hispanic groups.

- In all years, Blacks and Hispanics were more likely than Whites to have pressure sores (Figure 2.45).

- The 2008 top 5 State achievable benchmark for short-stay residents was 12.0%.[xxxvi] At the current 2% annual rate of decrease, this benchmark could be attained overall in about 16 years. APIs, AI/ANs, and Hispanics would take between 18 and 41 years to attain this benchmark.

- The 2008 top 5 State achievable benchmark for high-risk long-stay residents was 7.1%.[xxxvii] At the current 2% annual rate of decrease, this benchmark could be attained overall in about 16 years. Blacks, APIs, AI/ANs, and Hispanics would take between 18 and 25 years to attain this benchmark.

[xxxvi] The top 5 States contributing to the achievable benchmark are Colorado, Iowa, Minnesota, Nebraska, and Utah.
[xxxvii] The top 5 States contributing to the achievable benchmark are Hawaii, Minnesota, Nebraska, New Hampshire, and North Dakota.

Effectiveness

Also, in the NHQR:

- From 2000 to 2008, the rate of short-stay residents with pressure sores fell.[xxxviii] For high-risk long-stay residents, the rate also fell.[xxxix] Improvements were observed for all groups.

- Males had lower rates of improvement than females.

- Short-stay residents have higher rates of pressure sores; some of these patients may be admitted to nursing homes because of sores acquired during an acute care hospitalization.

Help With Emotional and Spiritual Needs

Hospice care is generally delivered at the end of life to patients with a terminal illness or condition who desire palliative medical care; it also includes practical, psychosocial, and spiritual support for the patient and family. The goal of end-of-life care is to achieve a "good death," defined by the Institute of Medicine (IOM) as one that is "free from avoidable distress and suffering for patients, families, and caregivers; in general accord with the patients' and families' wishes; and reasonably consistent with clinical, cultural, and ethical standards."[106]

The National Hospice and Palliative Care Organization's Family Evaluation of Hospice Care survey examines the quality of hospice care for dying patients and their family members. Family respondents report how well hospices respect patients' wishes, communicate about illness, control symptoms, support dying on one's own terms, and provide family emotional support.[107,xl]

Management: Right Amount of Emotional Support Among Hospice Patients

Dying is stressful. Patients at the end of life may develop depression or anxiety disorders. Health care systems and providers need to be attuned to recognizing and responding to the emotional and spiritual needs of patients with life-limiting illness and their families.


[xxxviii] Short-stay residents stay fewer than 30 days in a nursing home, typically following an acute care hospitalization.

[xxxix] Long-stay residents enter a nursing facility typically because they are no longer able to care for themselves at home; they tend to remain in the facility for several months or years. High-risk residents are those who are in a coma, do not get the nutrients needed to maintain skin health, or cannot change position on their own.

[xl] This survey provides unique insight into end-of-life care and captures information about a large percentage of hospice patients but is limited by nonrandom data collection and a response rate of about 40%. Survey questions were answered by family members, who might not be fully aware of the patients' wishes and concerns. These limitations should be considered when interpreting these findings.

Effectiveness

Figure 2.46. Hospice patients age 18 and over who did NOT receive the right amount of help for feelings of anxiety or sadness, by race, ethnicity, education, and gender, 2008-2009
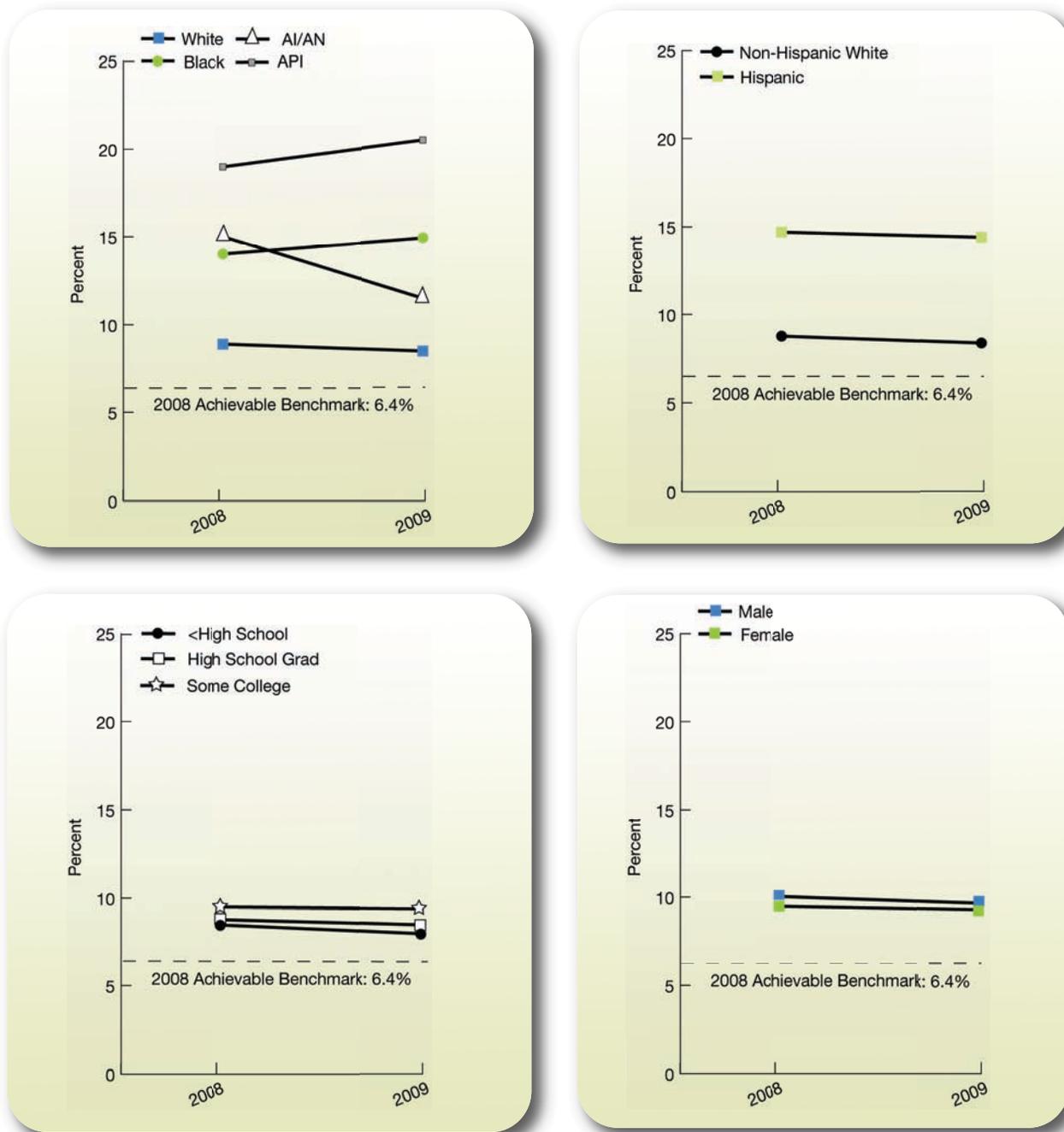
Key: AI/AN = American Indian or Alaska Native; API = Asian or Pacific Islander.
Source: National Hospice and Palliative Care Organization, Family Evaluation of Hospice Care, 2008-2009.
Denominator: Adult hospice patients.

Effectiveness

- The proportion of hospice patients whose families reported that they did not receive the right amount of help for feelings of anxiety or sadness was 9.4% in 2009 (see NHQR).

- In all years, Blacks, APIs, and AI/ANs were less likely than Whites and Hispanics were less likely than non-Hispanic Whites to receive the right amount of emotional support. High school graduates were more likely than hospice patients with some college education to receive the right amount of emotional support.

- The 2009 top 5 State achievable benchmark was 6.4%.[xli] Data are insufficient to assess progress toward this goal.

Also, in the NHQR:

- In all years, hospice patients ages 18-44 and ages 45-64 were less likely to receive the right amount of emotional support.

Effective Communication

### Management: Enough Information About What To Expect

Patients at the end of life and their families need clear information about treatment options, prognosis, advance directives, and what to expect while the patient is dying. Health care providers need to be skilled at eliciting patient's values and preferences, accepting of different cultural and religious choices, and committed to continuing care regardless of patient treatment decisions.

Figure 2.47. Hospice patients age 18 and over whose family caregivers wanted more information about what to expect while the patient was dying, by race, ethnicity, education, and gender, 2008-2009
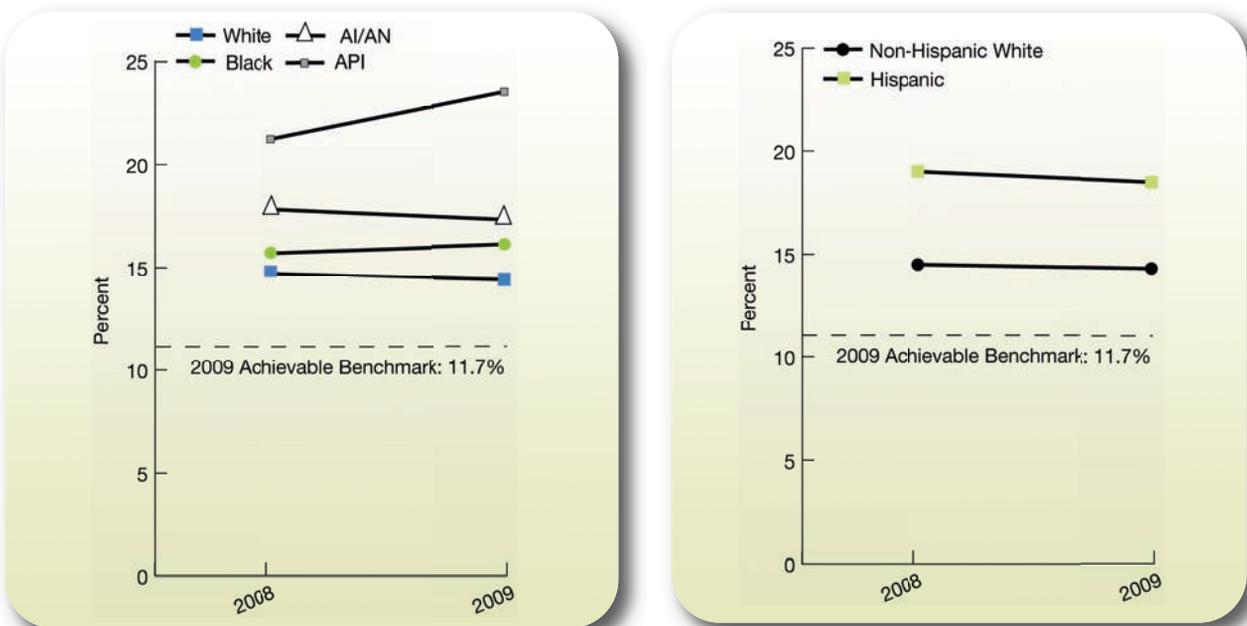
[xli] The top 5 States contributing to the achievable benchmark are Alabama, Alaska, Arkansas, Kansas, and South Carolina.
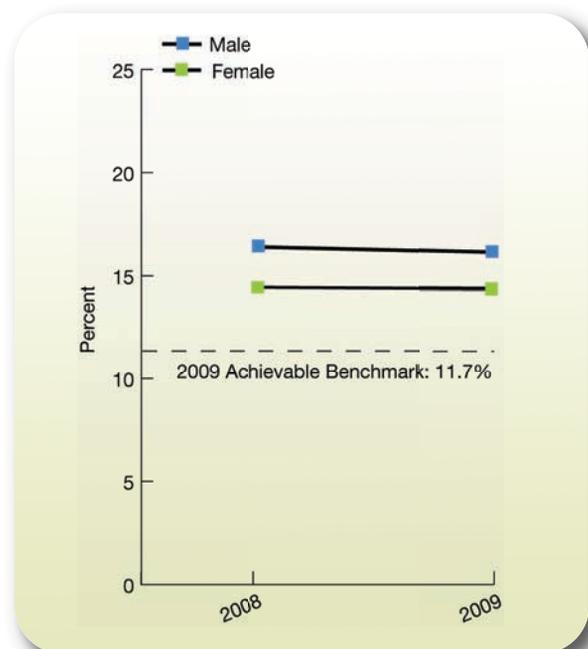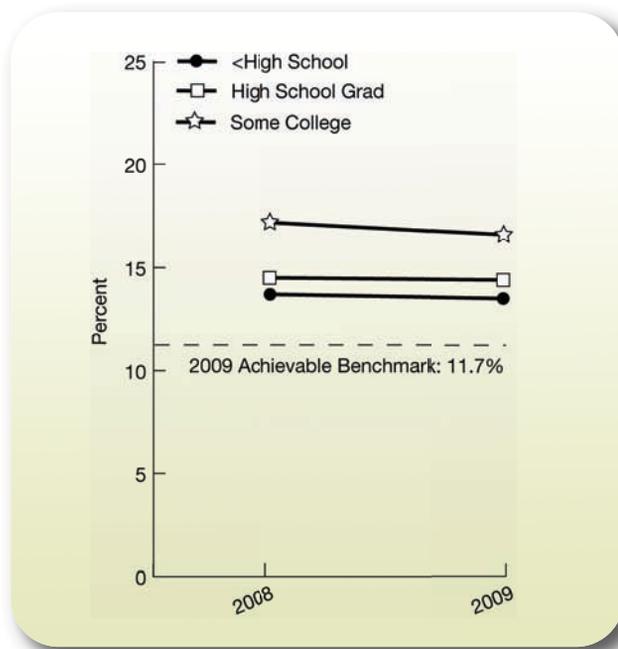
Effectiveness

Key: AI/AN = American Indian or Alaska Native; API = Asian or Pacific Islander.
Source: National Hospice and Palliative Care Organization, Family Evaluation of Hospice Care, 2008-2009.
Denominator: Adult hospice patients.

- In all years, family caregivers of API and AI/AN hospice patients were more likely than family caregivers of White patients, family caregivers of Hispanic hospice patients were more likely than family caregivers of non-Hispanic White patients, and family caregivers of male patients were more likely than family caregivers of female patients to want more information about dying. Family caregivers of hospice patients with less than a high school education and high school graduates were less likely than family caregivers of patients with some college education to want more information about dying.

- The 2009 top 5 State achievable benchmark was 11.7%.[xlii] Data are insufficient to assess progress toward this goal.

Also, in the NHQR:

- The proportion of hospice patient family caregivers who reported that they wanted more information about what to expect while the patient was dying was 15% in 2009.

- In all years, family caregivers of hospice patients ages 18-44 and ages 45-64 were more likely than family caregivers of patients age 65 and over to want more information about dying.


[xlii] The top 5 States contributing to the achievable benchmark are Iowa, Kansas, Kentucky, Nebraska, and West Virginia.

Effectiveness

Hospice Services

Management: Care Consistent With Patient's Wishes

Hospice care should respect patients' stated goals for care. This includes shared communication and decisionmaking between providers and hospice patients and their family members and respect for cultural and religious beliefs.

Figure 2.48. Hospice patients age 18 and over who did NOT receive care consistent with their stated end-of-life wishes, by race, ethnicity, education, and gender, 2008-2009
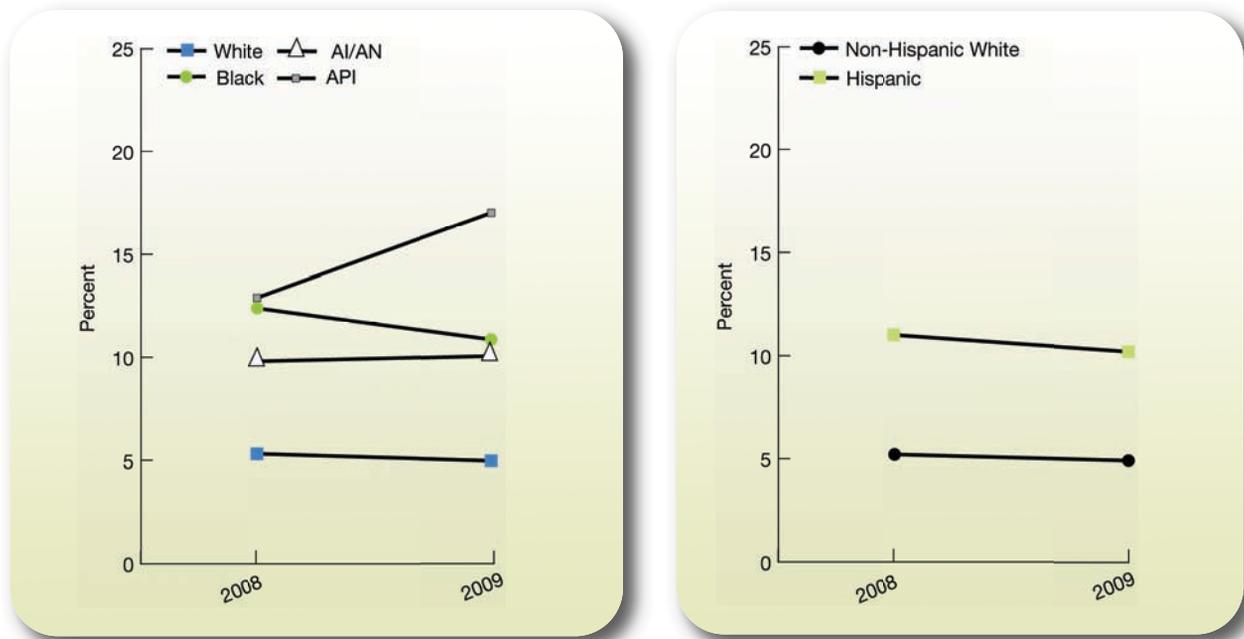
Effectiveness
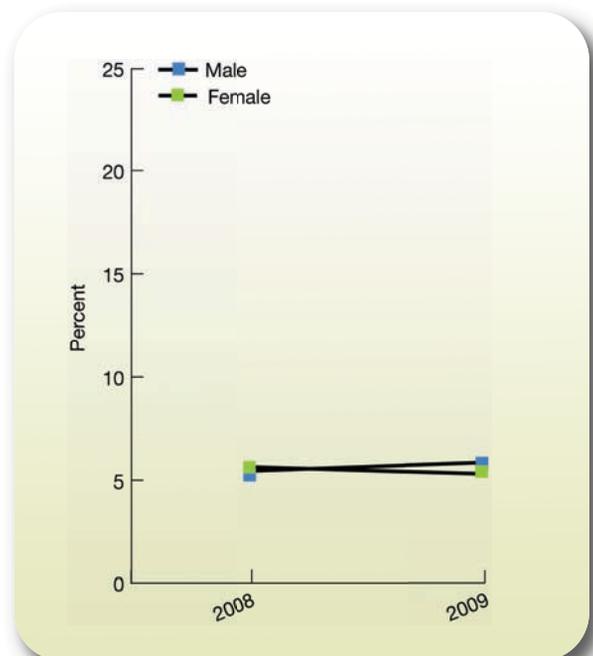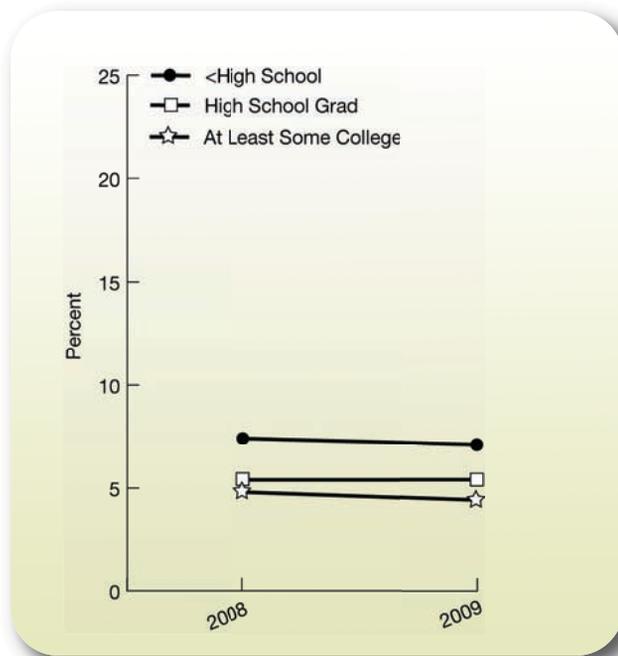
Key: AI/AN = American Indian or Alaska Native; API = Asian or Pacific Islander.
Source: National Hospice and Palliative Care Organization, Family Evaluation of Hospice Care, 2008-2009.
Denominator: Adult hospice patients.

● The overall proportion of hospice patients whose families reported that they did not receive end-of-life care consistent with their stated wishes was 5.4% in 2009 (data not shown).

● In both 2008 and 2009, Blacks, APIs, and AI/ANs were less likely than Whites, Hispanics were less likely than non-Hispanic Whites, and hospice patients with less than a high school education and high school graduates were less likely than patients with some college education to receive end-of-life care consistent with their wishes.

Effectiveness

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