2010

National Healthcare Disparities Report

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2010

U.S. Department of Heath and Human Services

Agency for Healthcare Research and Quality
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A reformatted, typeset version of this report will replace the current version.

Acknowledgments

Note: Appendixes will be available at a later date and will include Data Sources, Detailed Methods, Measure Specifications, and Data Tables.

Highlights From the National Healthcare Quality and Disparities Reports

Health care seeks to prevent, diagnose, and treat disease and to improve the physical and mental well-being of all Americans. Across the lifespan, health care helps people stay healthy, recover from illness, live with chronic disease or disability, and cope with death and dying. Quality health care delivers these services in ways that are safe, timely, patient centered, efficient, and equitable.

Unfortunately, Americans too often do not receive care that they need, or they receive care that causes harm. Care can be delivered too late or without full consideration of a patient's preferences and values. Many times, our system of health care distributes services inefficiently and unevenly across populations. Some Americans receive worse care than other Americans. These disparities may be due to differences in access to care, provider biases, poor provider-patient communication, and poor health literacy.

Each year since 2003, the Agency for Healthcare Research and Quality (AHRQ) has reported on progress and opportunities for improving health care quality and reducing health care disparities. Guided by a subcommittee of AHRQ's National Advisory Council and a Department of Health and Human Services (HHS) Interagency Work Group,[i] past reports were built on more than 250 measures categorized across six dimensions: effectiveness, patient safety, timeliness, patient centeredness, efficiency, and access to care. As mandated by the U.S. Congress, the National Healthcare Quality Report (NHQR) focuses on "national trends in the quality of health care provided to the American people" (42 U.S.C. 299b-2(b)(2)) while the National Healthcare Disparities Report (NHDR) focuses on "prevailing disparities in health care delivery as it relates to racial factors and socioeconomic factors in priority populations" (42 U.S.C. 299a-1(a)(6)).

The 2010 reports and this summary incorporate a number of recommendations made by the Institute of Medicine (IOM). The IOM first provided guidance to AHRQ on the NHQR and NHDR in 2002. In 2008, AHRQ again asked the IOM to offer suggestions for enhancing future reports and associated products to ensure that these reports raise awareness of the performance of the U.S. health care system. In April 2010, AHRQ received advice from the IOM Committee on Future Directions for the National Healthcare Quality and Disparities Reports.[ii]

In the past, separate Highlights were produced for each report. This year, we have integrated findings from the 2010 NHQR and 2010 NHDR to produce a single summary document. This is intended to reinforce the need to consider simultaneously the quality of health care and disparities across populations when assessing our health care system. The National Healthcare Reports Highlights seeks to address three questions critical to guiding Americans toward the optimal health care they need and deserve:

- What is the status of health care quality and disparities in the United States?
- How have health care quality and disparities changed over time?
- Where is the need to improve health care quality and reduce disparities greatest?

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[i] The HHS Interagency Work Group represents 18 HHS agencies and offices.
[ii] The full report of this committee's recommendations can be found at www.ahrq.gov/research/iomqrdrreport.

Consistent with past reports, the 2010 reports emphasize one of AHRQ's priority populations as a theme. This year, we present expanded analyses of care across the urban-rural continuum, and the National Healthcare Reports Highlights includes a summary of care received by residents of different types of geographic areas. Finally, this document summarizes information on eight national priorities identified by the IOM Committee and presents novel strategies for improving quality and reducing disparities from AHRQ's Health Care Innovations Exchange (HCIE).

Four themes from the 2010 NHQR and 2010 NHDR emphasize the need to accelerate progress if the Nation is to achieve higher quality and more equitable health care in the near future.

- Health care quality and access are suboptimal, especially for minority and low-income groups.
- Quality is improving; access and disparities are not improving.
- Urgent attention is warranted to ensure improvements in quality and progress on reducing disparities with respect to certain services, geographic areas, and populations, including:
    o Cancer screening and management of diabetes.
    o States in the central part of the country.
    o Residents of inner-city and rural areas.
    o Disparities in preventive services and access to care.
- Progress is uneven with respect to eight national priority areas:
    o Two are improving in quality: (1) Palliative and End-of-Life Care and (2) Patient and Family Engagement.
    o Three are lagging: (3) Population Health, (4) Safety, and (5) Access.
    o Three require more data to assess: (6) Care Coordination, (7) Overuse, and (8) Health System Infrastructure.
    o All eight priority areas showed disparities related to race, ethnicity, and socioeconomic status.

Health Care Quality and Access Are Suboptimal, Especially for Minority and Low-Income Groups

A key function of the reports is to summarize the state of health care quality, access, and disparities for the Nation. This undertaking is difficult, as no single national health care database collects a comprehensive set of data elements that can produce national and State estimates for all population subgroups each year. Rather, data come from more than three dozen databases that provide estimates for different population subgroups and data years. While most data are gathered annually, some data are not collected regularly or are old. Despite the data limitations, our analyses indicate that health care quality in America is suboptimal. The gap between best possible care and that which is routinely delivered remains substantial across the Nation.

In the reports, measures are classified as either process measures or outcome measures. Process measures are further subdivided, when possible, into preventive care, acute treatment, and chronic disease management.

On average, people received the preventive services tracked in the reports two-thirds of the time. Moreover, wide variation was found in receipt of different types of preventive services. For

instance, 20% of high-risk adults ages 18-64 ever received pneumococcal vaccination, but 94% of children ages 19-35 months received 3 doses of polio vaccine.

On average, people received appropriate acute care services three-quarters of the time. Rates of receipt of acute care services ranged from a low of 8% among patients who needed and received treatment for an alcohol problem at a specialty facility to a high of 94% of hospitalized patients who indicated that communication with their doctors was good.

On average, patients received recommended chronic disease management services three-quarters of the time. Again, receipt of chronic disease management services varied widely, from 17% of dialysis patients being registered on a kidney transplant waiting list to 95% of hospice patients receiving the right amount of pain medication.

Access to care is also far from optimal. On average, Americans report barriers to care one-fifth of the time, ranging from 3% of people saying they were unable to get or had to delay getting prescription medications to 60% of people saying their usual provider did not have office hours on weekends or nights.

All Americans should have equal access to high-quality care. Instead, we find that racial and ethnic minorities and poor people often receive poorer quality of care and face more barriers when trying to access care. To assess disparities, we focus on a set of "core" measures,[iii] which includes the most important and scientifically supported measures in the full reports measure set.

For each measure, we examine the relative difference between a selected group and its reference group. Differences that are statistically significant, are larger than 10%, and favor the reference group are labeled as indicating poor quality or access for the selected group. Differences that are statistically significant, are larger than 10%, and favor the selected group are labeled as indicating better quality or access for the selected group. Differences that are not statistically significant or are smaller than 10% are labeled as the same between the selected group and the reference group.

[iii] A list of core measures can be found in the Introduction and Methods chapter. Analyses of disparities presented in these Highlights focus on core measures and are so labeled. Other analyses use the entire measure set.

Figure H.1. Distribution of core quality measures for which members of selected groups experienced better, same, or worse quality of care compared with reference group
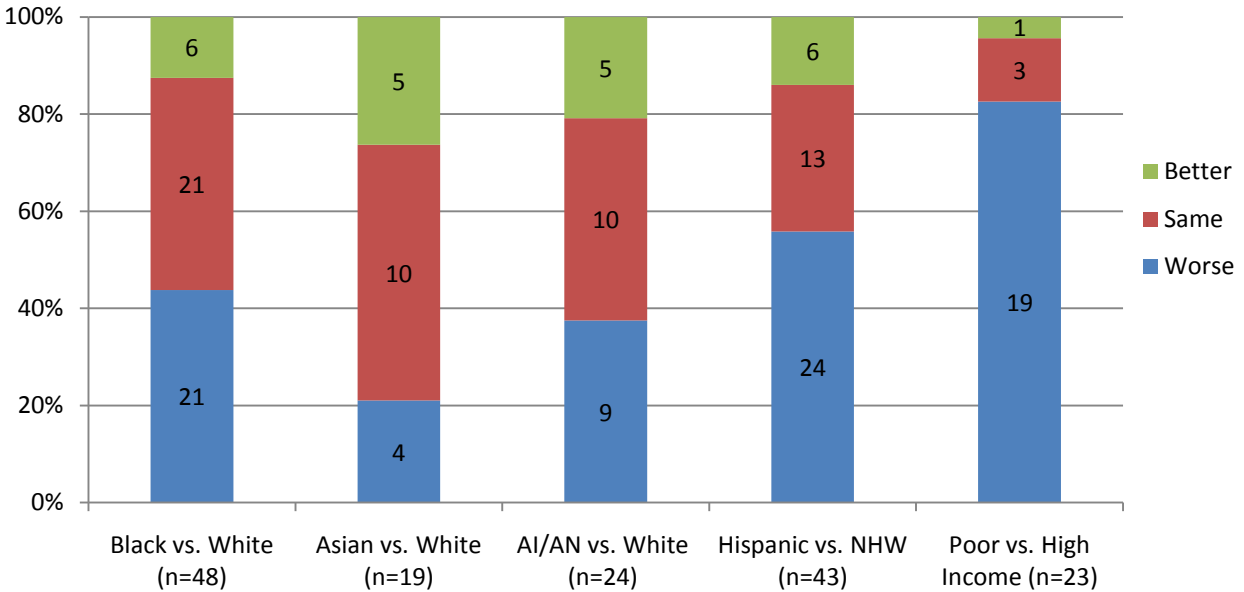
Key: AI/AN = American Indian or Alaska Native; NHW = non-Hispanic White; n = number of measures.
Better = Population received better quality of care than reference group.
Same = Population and reference group received about the same quality of care.
Worse = Population received worse quality of care than reference group.

- **Disparities in quality of care are common:**
  o Blacks and American Indians and Alaska Natives received worse care than Whites for about 40% of core measures.
  o Asians received worse care than Whites for about 20% of core measures.
  o Hispanics received worse care than non-Hispanic Whites for about 60% of core measures.
  o Poor people received worse care than high-income people[iv] for about 80% of core measures.

[iv] Throughout these highlights and reports, unless otherwise specified, poor indicates individuals whose household income is below the Federal poverty level and high income indicates individuals whose household income is at least four times the Federal poverty level.

Figure H.2. Distribution of core access measures for which members of selected groups experienced better, same, or worse access to care compared with reference group
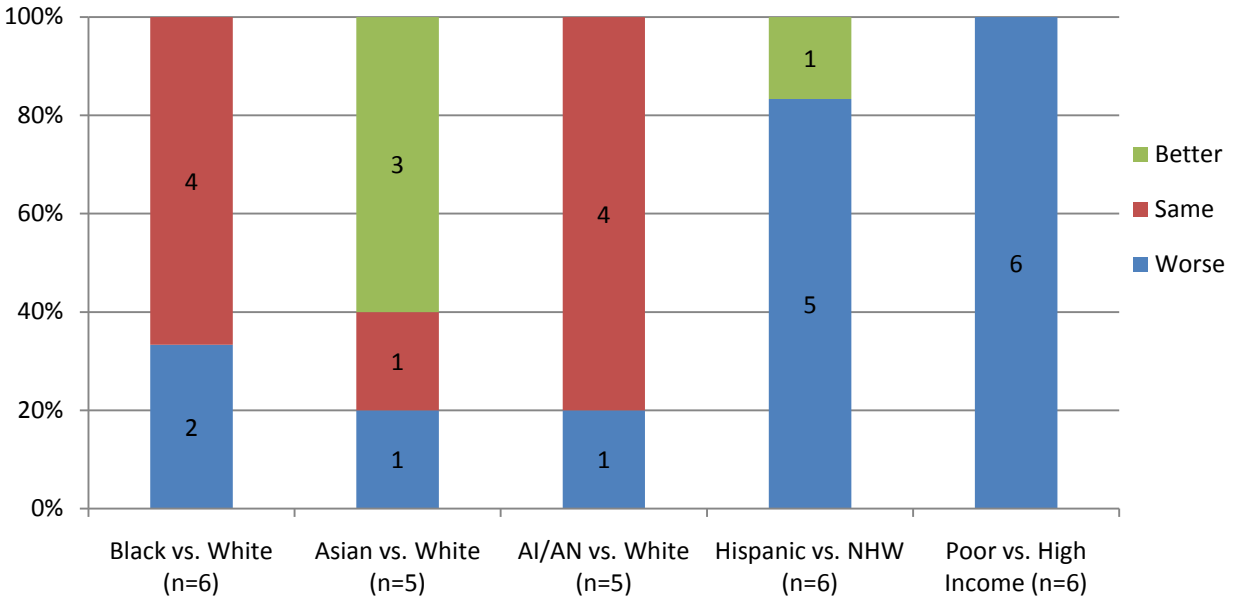
Key: AI/AN = American Indian or Alaska Native; NHW = non-Hispanic White; n = number of measures.
Better = Population had better access to care than reference group.
Same = Population and reference group had about the same access to care.
Worse = Population had worse access to care than reference group.

- **Disparities in access are also common, especially among Hispanics and poor people:**
  - Blacks had worse access to care than Whites for one-third of core measures.
  - Asians and American Indians and Alaska Natives had worse access to care than Whites for 1 of 5 core measures.
  - Hispanics had worse access to care than non-Hispanic Whites for 5 of 6 core measures.
  - Poor people had worse access to care than high-income people for all 6 core measures.

Quality Is Improving; Access and Disparities Are Not Improving

Suboptimal health care is undesirable, but we may be less concerned if we observe evidence of vigorous improvement. Hence, the second key function of the reports is to examine change over time. To track the progress of health care quality and access in this country, the reports present annual rates of change, which represent how quickly quality of and access to services delivered by the health care system are improving or declining. Another way to describe rate of change is the speed of improvement or decline in health care quality and access.

As in past NHQRs, regression analysis is used to estimate annual rate of change for each measure. Annual rate of change is calculated only for measures with at least 3 years of data. For most measures, trends include data points from 2001-2002 to 2007-2008. We label measures going in a favorable direction at a rate exceeding 1% per year as improving, going in an unfavorable direction at a rate exceeding 1% per year as worsening, and changing at a rate less than 1% per year as not changing.

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This year, for the first time, we introduce a similar method for assessing change in disparities using regression results. When a selected group's rate of change is at least 1% higher than the reference group's rate of change, we label the disparity as improving. When a selected group's rate of change is at least 1% lower than the reference group's rate of change, we label the disparity as worsening. When the difference in rates is less than 1%, we label the disparity as no change.

Figure H.3. Change in quality and access over time
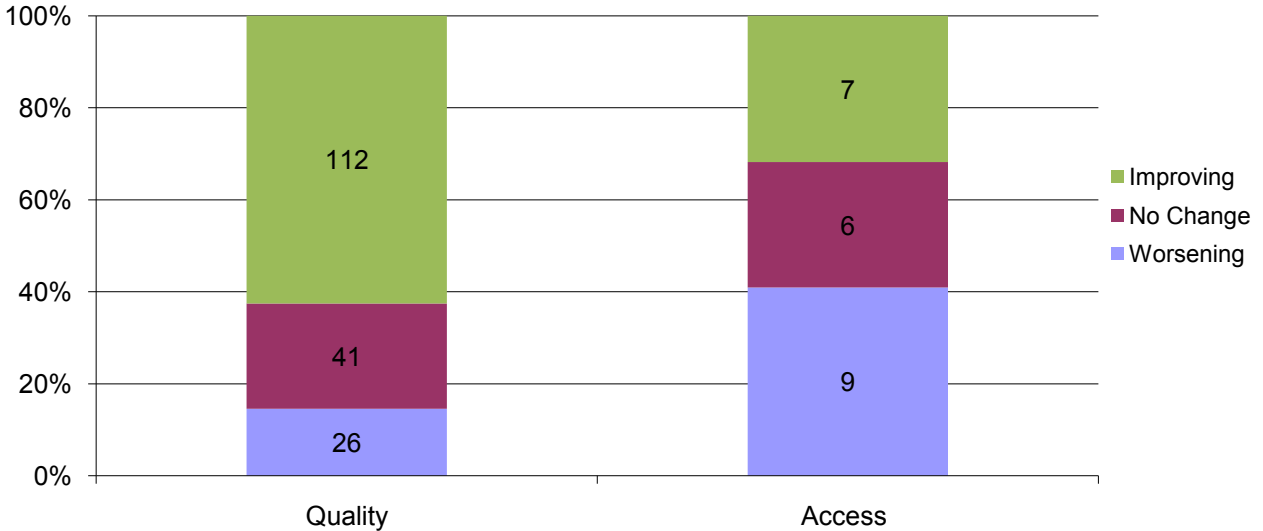
Improving = Quality or access is going in a positive direction at an average annual rate greater than 1% per year.
No Change = Quality or access is not changing or is changing at an average annual rate less than 1% per year.
Worsening = Quality or access is going in a negative direction at an average annual rate greater than 1% per year.

- **Quality is improving slowly.** Across all 179 measures of health care quality tracked in the reports, almost two-thirds showed improvement. However, median rate of change was only 2.3% per year.
- **Access is not improving.** Across the 22 measures of health care access tracked in the reports, about 60% did not show improvement and 40% were headed in the wrong direction. Median rate of change was -0.6% per year, indicating no change over time.

Figure H.4. Distribution of changes over time in racial, ethnic, and socioeconomic disparities for core quality measures
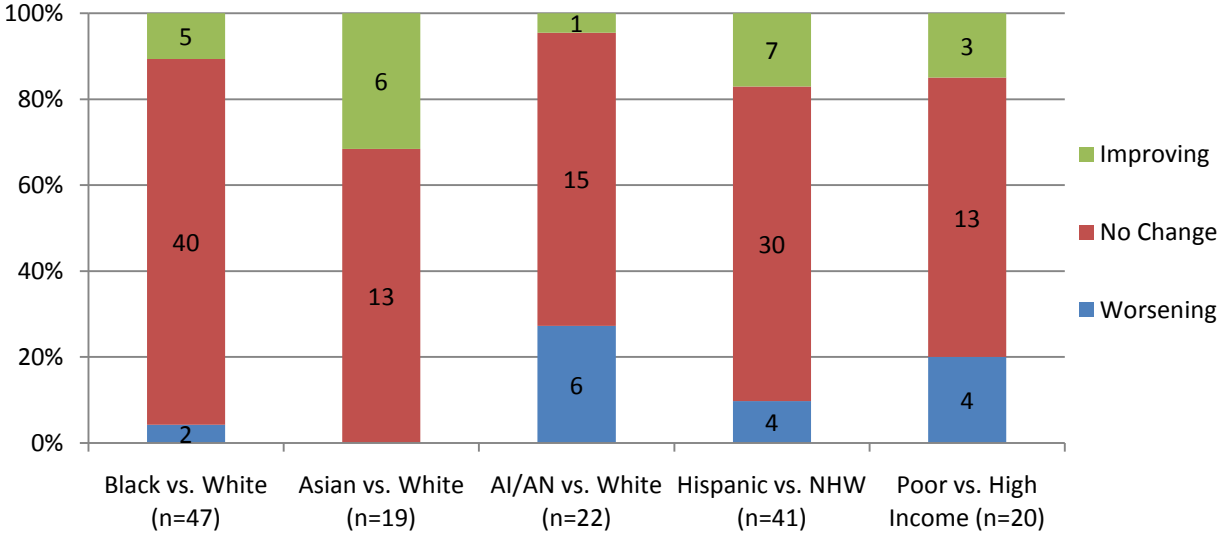
Key: AI/AN = American Indian or Alaska Native; NHW = non-Hispanic White; n = number of measures.
Improving = Disparity is getting smaller at a rate greater than 1% per year.
No Change = Disparity is not changing or is changing at a rate less than 1% per year.
Worsening = Disparity is getting larger at a rate greater than 1% per year.

- **Few disparities in quality of care are getting smaller.**
  - Fewer than 20% of disparities faced by Blacks, American Indians and Alaska Natives, Hispanics, and poor people showed evidence of narrowing.
  - The Asian-White gap was narrowing for about 30% of core measures, the largest proportion of any group, but most disparities were not changing.

Figure H.5. Distribution of changes over time in racial, ethnic, and socioeconomic disparities for core access measures
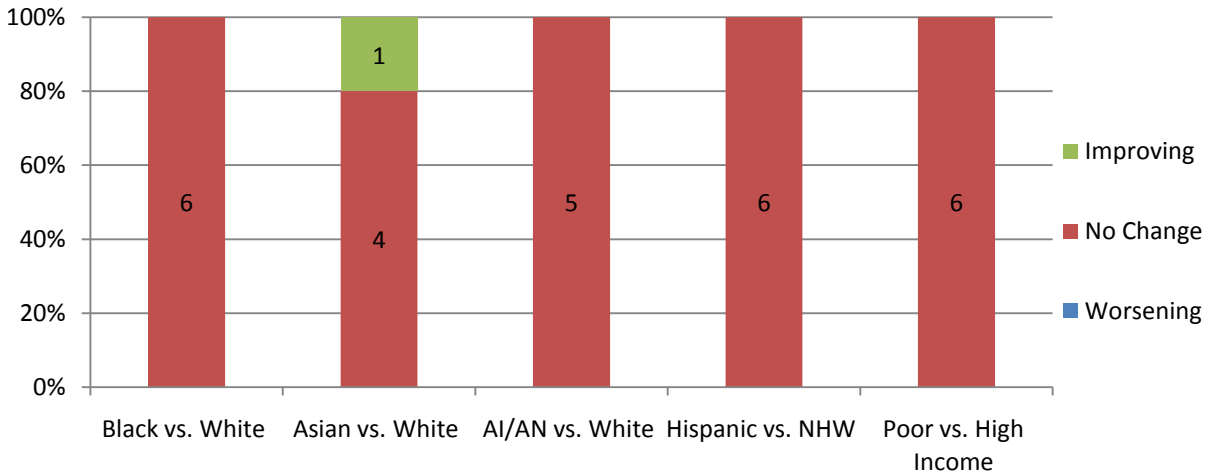
Key: AI/AN = American Indian or Alaska Native; NHW = non-Hispanic White.
Improving = Disparity is getting smaller at a rate greater than 1% per year.
No Change = Disparity is not changing or is changing at a rate less than 1% per year.
Worsening = Disparity is getting larger at a rate greater than 1% per year.

- **Almost no disparities in access to care are getting smaller.**
  - Among disparities in core access measures, only one showed reduction.

Urgent Attention Is Warranted To Ensure Improvements in Quality and Progress on Reducing Disparities

The third key function of the reports is to identify which areas are in greatest need of improvement. Potential problem areas can be defined in terms of types of services, parts of the country, and populations at risk.

Variation Across Types of Services

Pace of improvement varies across preventive services, acute treatment, and chronic disease management.

Figure H.6. Change in quality over time by type of measure
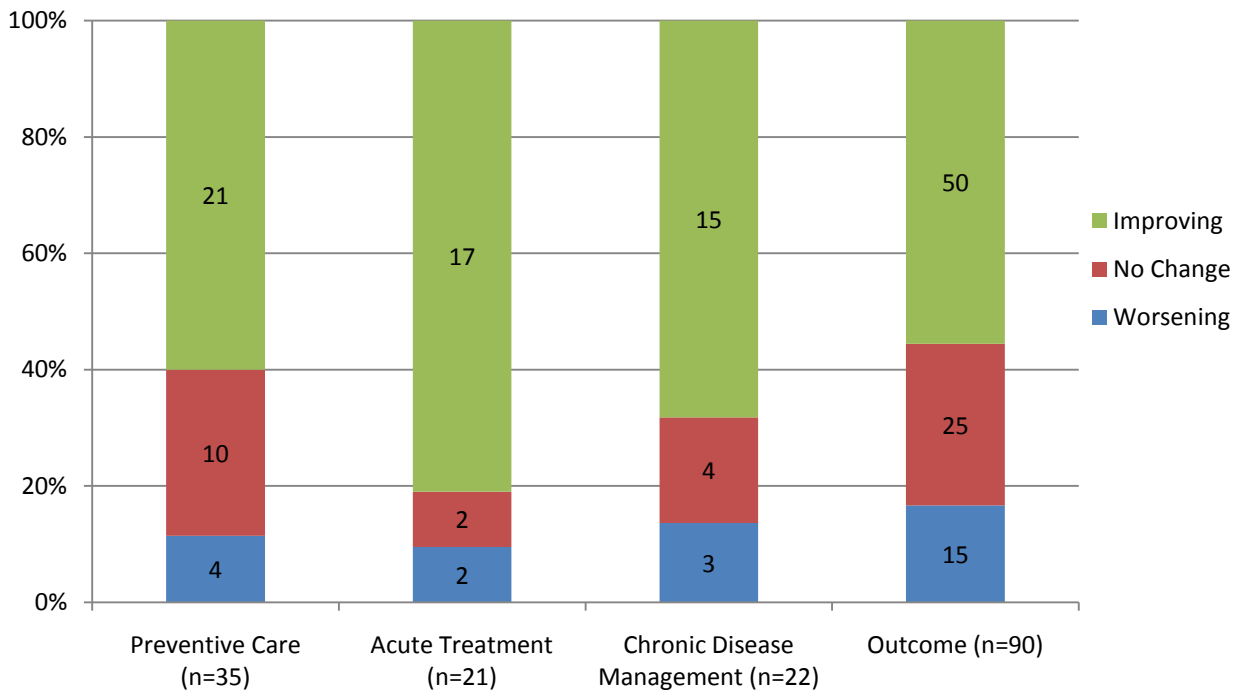
Key: n = number of measures.
Improving = Quality is going in a positive direction at an average annual rate greater than 1% per year.
No Change = Quality is not changing or is changing at an average annual rate less than 1% per year.
Worsening = Quality is going in a negative direction at an average annual rate greater than 1% per year.

- **Measures of acute treatment are improving; measures of preventive care and chronic disease management are lagging.**
  - While both process and outcome measures are improving, rates of improvement are faster among processes of care. Median rate of improvement of process measures was 2.6% per year compared with 1.6% per year for outcome measures.
  - Among process measures, the highest rate of improvement was in measures related to treatment of acute illnesses or injuries. Of the 21 process of care measures related to acute treatment, about 80% showed improvement.
  - In contrast, of the 35 process measures related to preventive services, only 60% showed improvement. Of the 22 process measures related to chronic disease management, about 70% showed improvement. This may reflect the high

proportion of hospital measures included in acute treatment, many of which are tracked by the Centers for Medicare & Medicaid Services and publicly reported.

Table H.1. Process measures getting worse over time

Preventive Care	Acute Treatment	Chronic Disease Management
Women age 40+ who received a mammogram in the last 2 years Women age 18+ who received a Pap smear in the last 3 years Adults age 50+ who received a fecal occult blood test in the last 2 years Children ages 19-35 months who received 3 doses of *Haemophilus influenzae* type B vaccine	Emergency department (ED) visits lasting 6+ hours and resulting in admission to the hospital or transfer to another facility per 1,000 ED visits	Adults age 40+ with diabetes who received a hemoglobin A1c measurement in the calendar year Adults age 40+ with diabetes who received a dilated eye examination in the calendar year Adults age 40+ with diabetes who had their feet checked for sores in the calendar year

- **Several measures related to cancer screening and management of patients with diabetes have worsened over time.**

Variation Across Parts of the Country

Quality of care varies not only across types of care but also across parts of the country. Knowing where to focus efforts improves the efficiency of interventions. Delivering data that can be used for local benchmarking and improvement is a key step in raising awareness and driving quality improvement. Since 2005, AHRQ has examined variation across States in the State Snapshots tool (http://statesnapshots.ahrq.gov). This Web site helps State health leaders, researchers, consumers, and others understand the status of health care quality in individual States and the District of Columbia. The State Snapshots are based on more than 100 NHQR measures, each of which evaluates a different aspect of health care performance and shows each State's strengths and weaknesses.

The 2010 reports introduce a new method for examining variation across States and benchmarking quality of care. For measures with State data, we calculate the benchmark as the average for the top 10% of States; this average is referred to as the "achievable benchmark." Achievable benchmarks are believed to be more actionable because they represent a level of performance that has been demonstrated in the real world. Here, we examine the frequency with which States perform in the top 10% of States and contribute to the achievable benchmark.

Data are not available for all States for all measures. Thus, States that have less health care data, either because it is not collected or because samples are too small to generate reliable estimates, have fewer opportunities to be in the top 10%. In addition, State data are more readily available from vital statistics and from hospitals, nursing homes, and home health agencies, while State data are much more limited for important topics such as quality of HIV or mental health care and care coordination. Policies that improve data collection at the State level would allow benchmarking across a broader array of measures. It is hoped that as health information technologies continue to expand, more information will become available for finer geographic units as well as for more granular subpopulations.

Figure H.7. Number of measures for which a State was in the top 10% by quartile

Highest quartile / 2nd quartile / 3rd quartile / Lowest quartile
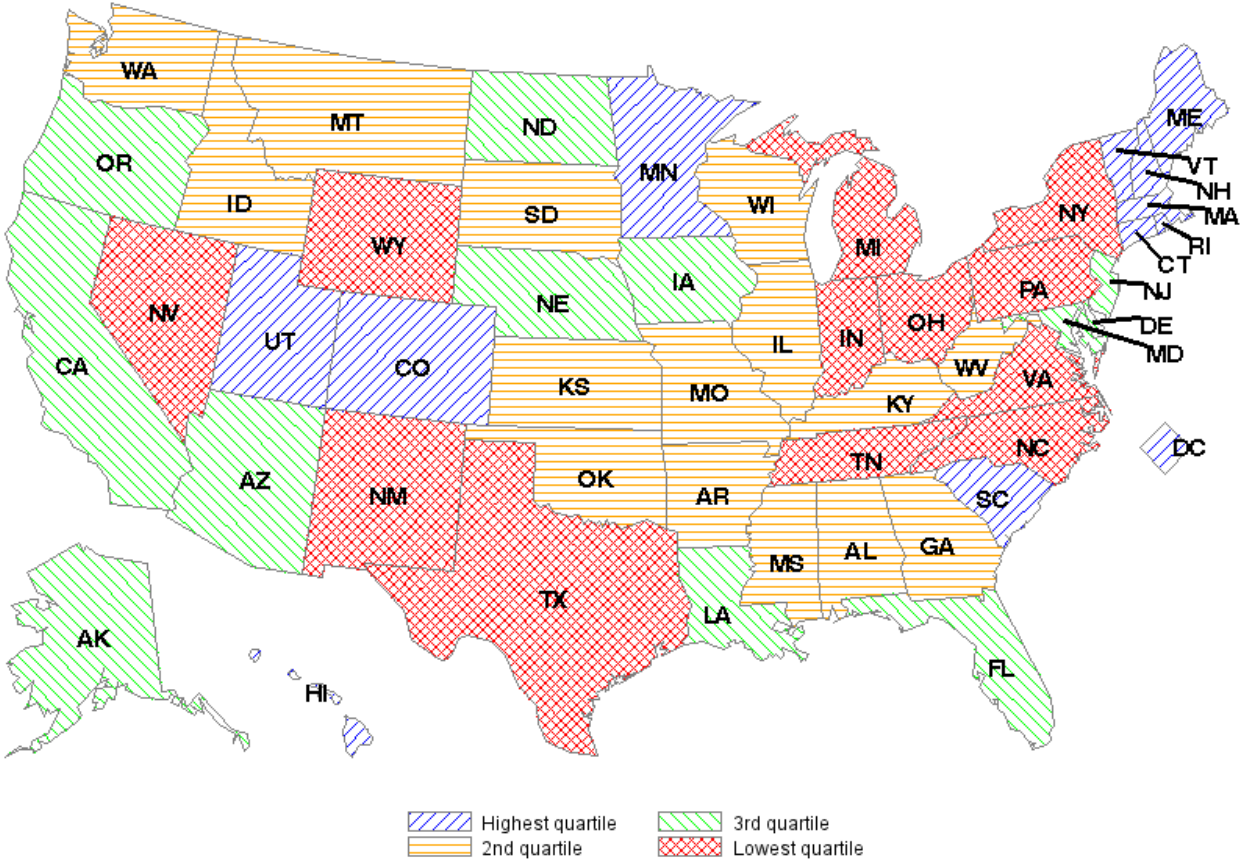
Highest quartile = State in the top 10% for the largest number of measures.
Lowest quartile = State in the top 10% for the smallest number of measures.

- **Two parts of the country led in performance.** While every State was in the top 10% for some measure and was part of a benchmark, States in the New England (CT, MA, ME, NH, RI, VT) and Pacific (AK, CA, HI, OR, WA) census divisions were benchmark States most often and States in the East North Central (IL, IN, MI, OH, WI), East South Central (AL, KY, MS, TN), and West South Central (AR, LA, OK, TX) divisions were benchmark States less often.

Table H2. States most often contributing to the top 10%

Preventive Care	Acute Treatment	Chronic Disease Management	Outcome
Delaware	Maine	Hawaii	Arizona
Massachusetts	New Hampshire	Minnesota	District of Columbia
New Hampshire	New Jersey	New Hampshire	Hawaii
	Vermont	South Carolina	Utah

- **New England did best on preventive care and acute treatment; western States did best on outcomes of care.**

Variation Across Populations at Risk

Previous reports have emphasized one of AHRQ's priority populations as a theme. This year, we present expanded analyses of care across the urban-rural continuum. AHRQ is charged with examining the care received by residents of inner-city and rural areas. People who live in these areas often face unique barriers to care related to provider availability and transportation. As in past reports, we have categorized areas into the following urban-rural categories:

- Large central metropolitan statistical area (MSA): Central counties (inner city) in metropolitan area of 1 million+ inhabitants.
- Large fringe MSA: Outlying counties (suburbs) in metropolitan area of 1 million+ inhabitants.
- Medium MSA: Counties in metropolitan area of 250,000 to 1,000,000 inhabitants.
- Small MSA: Counties in metropolitan area of 50,000 to 250,000 inhabitants.
- Micropolitan statistical area: Counties with an urban cluster of 10,000 to 50,000 inhabitants.
- Noncore statistical area: Counties outside of metropolitan or micropolitan areas.

For comparisons across areas, residents of large fringe MSAs (large city suburbs) are used as the reference group since these counties have the lowest levels of poverty and typically have the best quality and access to health care.

Figure H.8. Distribution of quality measures for which residents of specific areas experienced better, same, or worse quality of care compared with residents of large fringe metropolitan areas
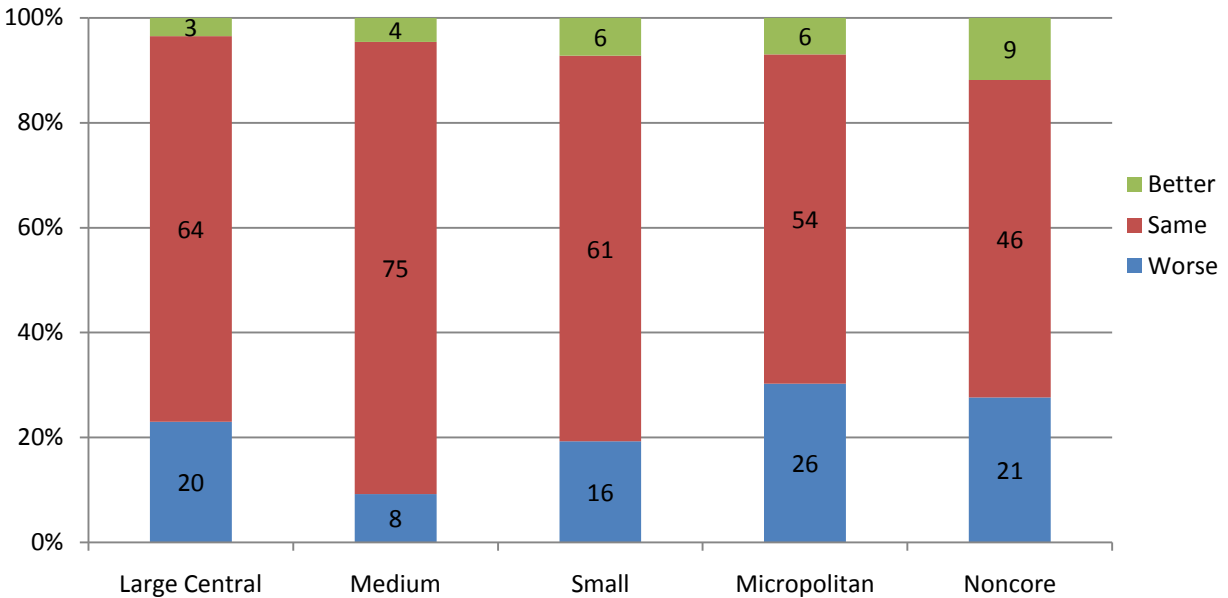
Better = Population received better quality of care than reference group.
Same = Population and reference group received about the same quality of care.
Worse = Population received worse quality of care than reference group.
Note: Number of measures varies for each group because for some measures, data for some groups were not available.

- **Residents of the inner-city and rural areas sometimes receive worse quality of care.** For most measures of quality of health care, differences across the urban-rural continuum

were small. However, some disparities are noted. Compared with residents of large city suburbs, residents of large inner cities received worse care for about a quarter of quality measures tracked in the reports. Residents of micropolitan and noncore areas (areas typically regarded as "rural") received worse care for about 30% of measures.

- Disparities related to preventive care were common across urban and rural areas while disparities related to diabetes were largest for residents of large inner cities and noncore rural areas.

Figure H.9. Distribution of access measures for which residents of specific areas experienced better, same, or worse access to care compared with residents of large fringe metropolitan areas
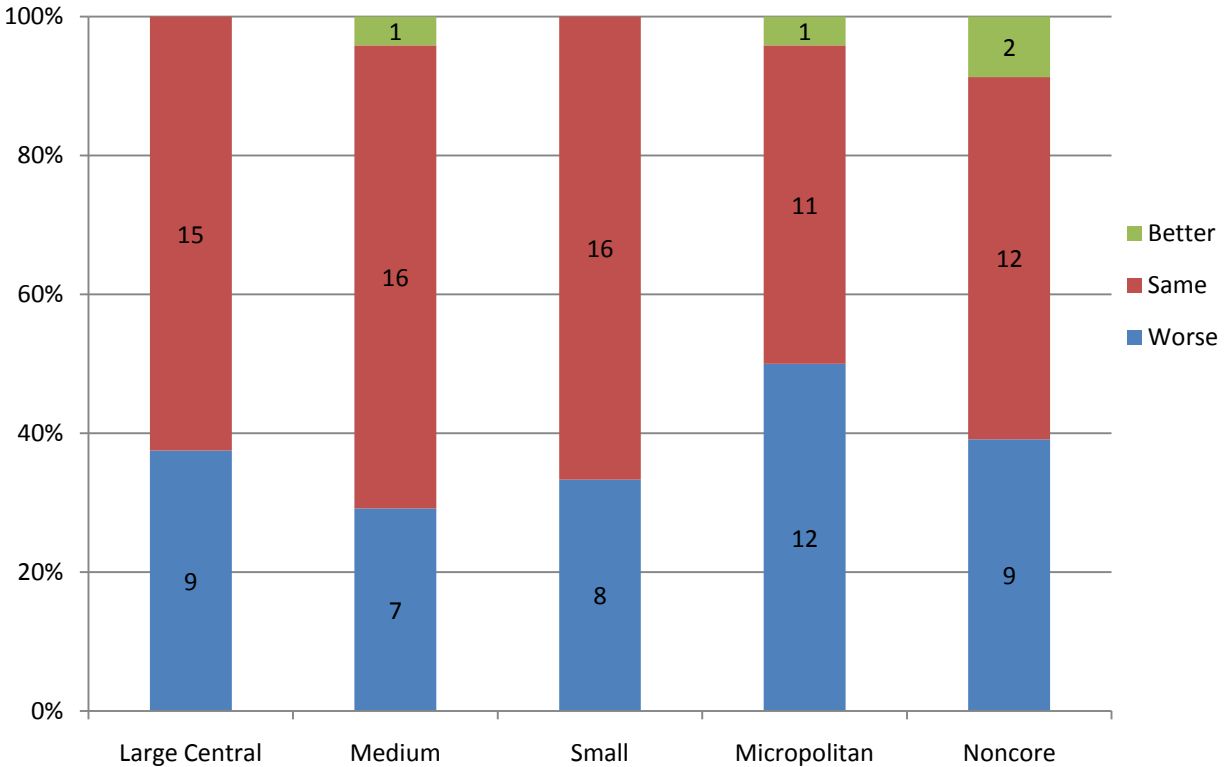
Better = Population received better quality of care than reference group.
Same = Population and reference group received about the same quality of care.
Worse = Population received poorer quality of care than reference group.
Note: Number of measures varies for each group because for some measures, data for some groups were not available.

- **Disparities in access to care across the urban-rural continuum tended to be more common than disparities in quality of care.** Compared with residents of large city suburbs, residents of large inner cities had worse access to care for about 35% of access measures tracked in the reports. Residents of micropolitan areas had worse access to care for 50% of access measures. Residents of noncore areas had worse access to care for about 40% of access measures.

The NHDR focuses on disparities related to race, ethnicity, and socioeconomic status. Table H.3 summarizes the largest disparities for each major group tracked in the reports that are either getting larger or staying the same. The table shows that many groups experience disparities related to preventive services and access to care.

Table H3. Largest racial, ethnic, and socioeconomic disparities in core quality and access measures that are not improving

Groups	Measure	RR
Black compared with White	Hospital admissions for lower extremity amputations per 1,000 population age 18 and over with diabetes	2.0
	Emergency department visits where patients left without being seen	1.7
	Adults age 65 and over who ever received pneumococcal vaccination	1.5
Asian compared with White	Adults age 65 and over who ever received pneumococcal vaccination	1.4
	People with a usual primary care provider	1.3
	Adults who had a doctor's office or clinic visit in the last 12 months whose health providers listened carefully, explained things clearly, respected what they had to say, and spent enough time with them	1.2
American Indian/ Alaska Native compared with White	People under age 65 with health insurance	1.7
	Hospital patients with heart failure who received recommended hospital care	1.7
	Adults age 50 and over who received colorectal cancer screening (colonoscopy, sigmoidoscopy, proctoscopy, or fecal occult blood test)	1.6
Hispanic compared with Non-Hispanic White	New AIDS cases per 100,000 population age 13 and over	3.3
	People under age 65 with health insurance	2.7
	People with a specific source of ongoing care	2.0
Poor compared with High Income	People under age 65 with health insurance	4.7
	Female Medicare beneficiaries age 65 and over who reported ever being screened for osteoporosis with a bone mass or bone density measurement	3.6
	People with a specific source of ongoing care	2.9

Key: RR indicates rate relative to reference group.
Note: To compare RRs, measures were framed negatively. Hence, an RR greater than 1 indicates that a group is receiving poorer quality of care or facing larger problems with access to care compared with the reference group. For example, an RR of 1.3 indicates that Asians are 1.3 times more likely than Whites not to have a usual primary care provider.

Progress Is Uneven With Respect to Eight National Priority Areas

A key IOM recommendation was that AHRQ highlight progress in selected priority areas that are expected to yield the greatest gains in health care quality. These priorities include six areas identified by the National Priorities Partnership (NPP), a coalition representing 48 key health care organizations, as well as two areas proposed by the IOM. In this section, we report on progress in each of these priority areas. Findings are organized around key goals for each priority and include information from both the NHQR and NHDR.

In addition, the IOM encouraged the reports to go beyond problem identification and to include information that might help users address the quality and disparities concerns we identify. To that end, we present novel strategies for improving quality and reducing disparities, gathered from the AHRQ Health Care Innovations Exchange (HCIE). The HCIE is a repository of more than 1,500 quality improvement tools and more than 500 quality improvement stories. For each priority area, stories of successful innovations were searched. Innovations that were most clearly described and yielded significant improvements in outcomes are displayed here.[v] By demonstrating that improvement can be achieved, we hope that these anecdotes inspire others to act.

Five of the eight priorities recommended by the IOM aligned with existing chapters of the 2009 NHQR and NHDR; new chapters were developed to address care coordination and health system infrastructure. Detailed findings related to these seven priorities can be found in the body of the reports. One priority area, population health, cuts across many sections of the reports. Hence, a more detailed summary of this priority is presented here in the Highlights. Table H.4 aligns the priorities with this year's reports.

Table H.4. National Priorities Partnership priorities and location in NHQR and NHDR

National Priority Area	NHQR/NHDR Chapter
Population Health	Highlights only
Palliative and End-of-Life Care	Palliative and Supportive Care section of Effectiveness chapter
Safety	Patient Safety
Patient and Family Engagement	Patient Centeredness
Care Coordination	New Care Coordination chapter
Overuse	Efficiency
Access	Access to Health Care
Health System Infrastructure	New Health System Infrastructure chapter

National Priority: Population Health

Population health is influenced by many factors, including genetics, lifestyle, health care, and the physical and social environment. The reports focus on health care and counseling about lifestyle modification and do not address biological and social determinants of health that are currently not amenable to alteration through health care services. Nevertheless, it is important to acknowledge that the fundamental purpose of health care is to improve the health of populations. Acute care is needed to treat injuries and illnesses with short courses, and chronic disease management is needed to minimize the effects of persistent health conditions. But preventive services that avert the onset of disease, foster the adoption of healthy lifestyles, and help patients to avoid environmental health risks hold the greatest potential for maximizing population health.

The NPP envisioned "communities that foster health and wellness as well as national, state, and local systems of care fully invested in the prevention of disease, injury, and disability." Key goals include promoting effective preventive services, adopting healthy lifestyle behaviors, and developing a national index of health.

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[v] Identification numbers of items from the HCIE are included to help users find more information. To access detailed information about each novel strategy, insert the identification numbers at the end of this link and copy it into your browser window: http://www.innovations.ahrq.gov/content.aspx?id=

Progress Toward Key Goals

Figure H.10 shows progress on measures related to population health:

- **Preventive services:** The NHQR and NHDR track 10 measures related to screening recommended by the U.S. Preventive Services Task Force, 11 measures related to adult immunizations, and 6 measures related to childhood immunizations.[vi]
  - **Screening measures:** Across the screening measures, most showed improvement. Median rate of improvement was 2.8% per year. In contrast, most disparities did not change, with the exception of mammography, in which the Asian-White gap was narrowing. In addition, the Black-White gap in rates of advanced stage breast cancer and the AI/AN-White, Hispanic-non-Hispanic White, and poor-high income gaps in colorectal cancer screening all widened.
  - **Adult immunizations:** Across the adult immunization measures, most showed improvement. Median improvement across measures was 11% per year. Receipt of adult immunizations varied dramatically by setting. Among outpatient measures, median rate of improvement was 0.8% per year, and most disparities did not change. Among inpatient measures, median rate of improvement was 22% per year, and most racial and ethnic disparities were getting smaller.
  - **Childhood immunizations:** Across the childhood immunization measures, most showed improvement. The childhood immunization measures all come from the Centers for Disease Control and Prevention's National Immunization Survey, so we can report them as a composite. The percentage of children who received the 4:3:1:3:3 vaccine[vii] series peaked in 2004 and has fallen since that time. There are few racial or ethnic disparities in childhood immunization, but income-related disparities persist.
- **Healthy lifestyles:** The NHQR and NHDR track five measures related to obesity, diet, and exercise; four measures related to nicotine and other substance addictions; and four measures related to transportation safety for children.[viii] Across these measures, most showed no improvement. Median rate of improvement was 0.9% per year. Most disparities did not change, but the Hispanic-non-Hispanic White and poor-high income gaps in counseling about smoking cessation narrowed.
- **National index of health:** The NHQR and NHDR track eight mortality measures.[ix] Across these measures, most showed improvement. Median rate of improvement was 1.3% per year. Most disparities did not change; the Black-White gap in prostate cancer mortality narrowed while education-related disparities in lung cancer mortality widened.

[vi] Screening: Mammogram, Pap test, colonoscopy/sigmoidoscopy; late-stage breast, cervical, and colorectal cancer screening; blood pressure, cholesterol, and osteoporosis screening; and vision check. Adult immunizations: Influenza and pneumococcal vaccine among elderly, high-risk, and diabetic patients; patients hospitalized for pneumonia; and long-stay and short-stay nursing home residents. Childhood immunizations: 4 doses of diphtheria-tetanus-acellular pertussis (DTaP), 3 doses of polio, 1 dose of measles-mumps-rubella (MMR), 3 doses of *Haemophilus influenzae* B (Hib), and 3 doses of hepatitis B vaccines, and 1 dose of varicella vaccine.
[vii] Number of children ages 19-35 months receiving first five childhood immunizations listed above.
[viii] Screening, diet counseling, exercise counseling for children and obese adults; smoking cessation and treatment for alcohol and other substance abuse; car seat, booster seat, seat belt, and bicycle helmet use.
[ix] Breast, colorectal, prostate, and lung cancer; HIV; suicide; and infant and maternal mortality.

Figure H.10. Change in measures of population health
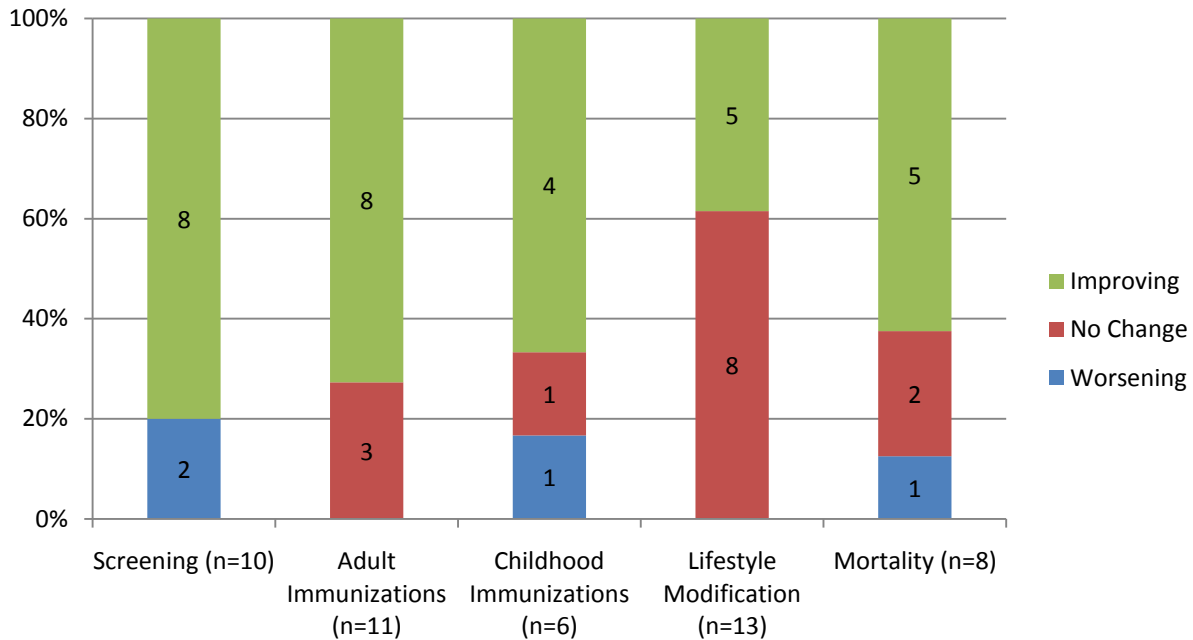
Key: n = number of measures.
Improving = Quality is going in a positive direction at an average annual rate greater than 1% per year.
No Change = Quality is not changing or is changing at an average annual rate less than 1% per year.
Worsening = Quality is going in a negative direction at an average annual rate greater than 1% per year.

Successful Strategies From AHRQ Health Care Innovations Exchange

El Rio Health Center, AZ (2252)
- **Intervention:** Ongoing immunization training for pediatricians and nurses; nurse-run immunization clinics offered at the center and in the community; computerized data system tracking immunizations and reminders for both patients and providers.
- **Impact:** Program tripled childhood immunization rates, exceeding Federal standards.

Wayne Action Teams for Community Health (WATCH), NC (2929)
- **Intervention:** Created new processes to identify and provide individuals in need of colorectal cancer screening and smoking cessation education by forming partnerships with community-based organizations and providers. Patients participated in ongoing performance monitoring and evaluation.
- **Impact:** Over 1 year, colorectal cancer screening rose from 16% to 98%. Smokers receiving cessation education increased from 66% to 98%.

Bienestar Health Program, TX (2085)
- **Intervention:** Culturally competent school-based behavior modification program intended to prevent or delay the onset of type 2 diabetes among Mexican-American and other at-risk youth. The five key components of the program are: health education, physical education, family education, student health club, and lessons for the school cafeteria.
- **Impact:** Program increased physical fitness and dietary fiber intake and reduced blood sugar levels, changes that reduce the risk of type 2 diabetes**.**

National Priority: Palliative and End-of-Life Care

Disease cannot always be cured, and disability cannot always be reversed. For patients with long-term health conditions, relieving symptoms, enhancing quality of life, and preventing complications are important goals. Providing emotional and spiritual support to patients and their families during serious and advanced illness and honoring patient values and preferences for care is critical.

The NPP vision for this priority 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 treatment and dying, and high-quality hospice services.

Progress Toward Key Goals

- **Relief of suffering:** Among patients receiving home health care and nursing home care, management of symptoms, such as shortness of breath or pressure sores, is improving. However, most quality of care measures are far below achievable benchmarks, and considerable disparities persist related to age, gender, race, and ethnicity.
- **Help with emotional support:** Among hospice patients, fewer than 10% do not receive the right amount of help for feelings of anxiety or sadness. However, considerable disparities related to age, race, and ethnicity are observed.
- **Communication about dying:** Among family caregivers of hospice patients, about one in six wanted more information about what to expect while the patient was dying. In addition, considerable disparities related to age, gender, race, and ethnicity are observed.
- **Palliative care and hospice services:** Among hospice patients, few received care inconsistent with their stated end-of-life wishes. However, considerable disparities related to age, race, ethnicity, and education are observed. Availability of nonhospice palliative care providers also is a problem; roughly half of U.S. hospitals have yet to develop palliative care programs.

Successful Strategies From AHRQ Health Care Innovations Exchange

North Florida/South Georgia Veterans Health System Advanced Illness Palliative Care Program, FL (1850)
- **Intervention:** Multidisciplinary initiative that provides care management and palliative care to chronically or terminally ill veterans in their homes via telehealth technology.
- **Impact:** In a 2-year period, 98% of participants reported adherence to their medications; 92% felt more connected to their providers; overall health care expenditures for program participants decreased by 67%.

Dana-Farber Cancer Institute Pediatric Advanced Care Team (PACT), MA (2195)
- **Intervention:** Pediatric palliative care consultation service that addresses the physical, psychosocial, and spiritual needs of children with life-threatening illnesses and their families. PACT services focus on providing intensive symptom management, as well as honest, complete, and sensitive communication with patients and families.

- **Impact:** Improved communication and documentation related to care goals helped ease patient suffering at the end of life and helped parents feel more prepared for their child's end-of-life experience.

National Priority: Patient Safety

An inherent level of risk is involved in performing procedures and services to improve the health of patients. Although degree of risk is often related to the severity of illness, variations in adverse event rates occur between different facilities and between caregivers. Avoidable medical errors account for an immense number of deaths annually. Even if patients do not die from a medical error, they will often have longer and more expensive hospital stays. Clearly, some risk can be reduced and some cannot, but research has shown that large numbers of errors and adverse events can be markedly reduced if addressed with appropriate interventions and efforts.

The NPP's vision is "a healthcare system that is relentless in continually reducing the risks of care, aiming for a 'zero' harm wherever possible—a system that can promise absolute care, guaranteeing that every patient, every time, receives the benefits of care based solidly on science." The vision sees health care leaders and professionals as leading this effort and being resolute in eliminating defects and errors in care, regardless of their current safety performance levels. Key goals are reducing healthcare-associated infections (HAIs) and serious adverse events (SAEs), reducing preventable and premature hospital-level mortality rates, and improving 30-day mortality rates following hospitalization for selected conditions (acute myocardial infarction, heart failure, pneumonia).

Progress Toward Key Goals

Figure H.11 shows progress in measures related to patient safety:

- **Reducing HAIs and SAEs:** The reports track 36 safety measures related to HAIs and other SAEs that can occur during hospitalization. Of these measures, most showed improvement. Across all measures, median improvement was 3.6% per year. By comparison, among 14 hospital quality measures not related to safety, median improvement was 21% per year. While progress in safety is clearly being made, it lags behind improvement in other hospital quality measures. In both process and outcome measures, disparities have been observed mainly across geographic locations and among racial and ethnic groups and are especially prominent among Hispanics. Although progress has been made, with some gaps closing, disparities continue over time. In addition, we are unable to examine many adverse events outside of hospital settings due to insufficient data and measures.
- **Reducing preventable and premature hospital-level mortality rates:** To track preventable and premature hospital-level mortality rates, the NHQR and NHDR monitor failure to rescue (deaths per 1,000 discharges having developed specified complications of care during hospitalization). Although an overall trend cannot be drawn from this single measure, it is noteworthy to mention that this rate has been decreasing for a number of years. Disparities have been observed for failure to rescue, mainly among racial and ethnic populations and less so across income groups. Over time, these disparities have not changed significantly.

- **Improving mortality rates for selected conditions:** Data do not support tracking 30-day mortality rates for all payers across the Nation. Instead, the NHQR and NHDR track inpatient mortality, which correlates well with 30-day mortality rates. Across six inpatient mortality measures, all showed improvements. Significant disparities were observed across racial and ethnic populations, with gaps not changing over time.

Figure H.11. Change in measures of safety versus other hospital measures
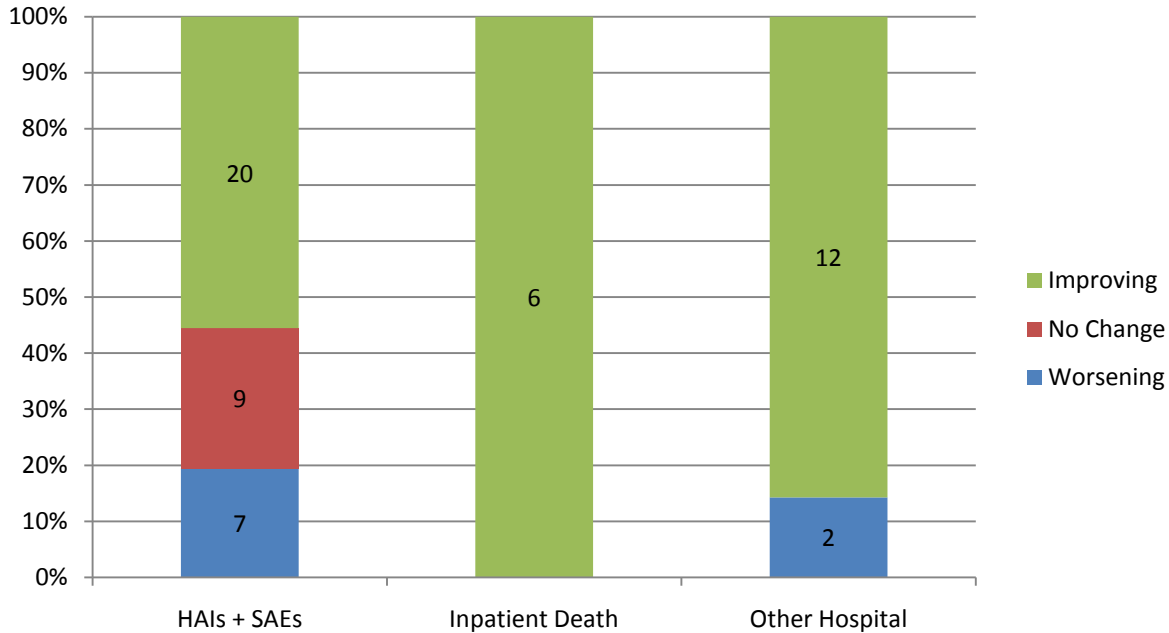
Improving = Quality is going in a positive direction at an average annual rate greater than 1% per year.
No Change = Quality is not changing or is changing at an average annual rate less than 1% per year.
Worsening = Quality is going in a negative direction at an average annual rate greater than 1% per year.

Successful Strategies From AHRQ Health Care Innovations Exchange

St. John Hospital and Medical Center, MI (2333)
- **Intervention:** Standardized, nurse-enforced protocols were developed to prevent catheter-related bloodstream infections, including tools to assist in following these protocols and an education program for physicians and nurses.
- **Impact:** Catheter-related bloodstream infections were reduced from 9.6 to 3 per 1,000 central line days, delaying the onset of infections in those who develop them; the reduction in such infections has led to substantial cost savings.

Barnes-Jewish Hospital, St. Louis, MO (2262)
- **Intervention:** Initiative integrates technology with a procedural checklist during the preoperative process to prevent wrong-site surgery. Checklist enables clinicians to confirm that the patient's history and physical examination reports are in the chart, circulating nurse visits the patient before surgery, and surgical site is inkmarked. An electronic patient wristband with an embedded sensor is deactivated when the correct surgical site is definitively marked.

- **Impact:** Program has eliminated wrong-site surgeries and near-misses at Barnes-Jewish Hospital's ambulatory center and the short-stay operating room suite has full compliance with required preoperative processes.

National Priority: Patient and Family Engagement

In order to effectively navigate the complicated health care system, providers need to ensure that patients can access culturally and linguistically appropriate tools. Strategies to support patient and family engagement enable patients to understand all treatment options and to make decisions consistent with their values and preferences.

The vision of the NPP is health care "that honors each individual patient and family, offering voice, control, choice, skills in self-care, and total transparency, and that can and does adapt readily to individual and family circumstances, and to differing cultures, languages, and social backgrounds." Key goals include enabling patients to effectively navigate and manage their care and enabling patients to make informed decisions about their treatment options.

Progress Toward Key Goals

- **Effectively navigating and managing care:** More than 90% of U.S. adults were able to easily read their prescription instructions. However, disparities were observed among groups varying by insurance status, English proficiency, education, and income. Ethnicity, income, and education also were associated with the need for language assistance when navigating the health care system.

- **Making informed decisions about treatment options:** Most adults felt it was easy to understand written instructions from a doctor's office but nearly one-fifth of adults were sometimes or never asked to help with decisions on treatment. Disparities were observed related to insurance status, English proficiency, education, and race/ethnicity.

Successful Strategies From AHRQ Health Care Innovations Exchange

UC San Francisco Breast Care Center Decision Services Unit, CA (95)
- **Intervention:** Initiative offers a consultation planning, recording, and summarizing service in which trained interns help patients brainstorm and write down a list of questions and concerns for their providers.
- **Impact:** Program improved patient decisionmaking and communication between provider and patient. The preappointment planning session and the assistance during the appointment resulted in a 19% reduction in decisional conflict.

Health Literacy Collaborative of the Iowa Health System, IA (1855)
- **Intervention:** Educates staff on the importance of communicating health information clearly to patients and families regardless of reading ability, creates easy-to-understand materials based on patients' needs and preferences, and trains health care workers to use these materials with their patients.

- **Impact:** Patients have access to more understandable health information and report high levels of satisfaction with provider-patient communication.

University of Massachusetts Memorial Medical Center's Language Services Department, MA (2657)
- **Intervention:** Developed a comprehensive process to ensure that patients with limited English proficiency and patients who are deaf or hard of hearing have timely access to interpreter services.
- **Impact:** Program reduced patient waiting time for an interpreter; 86% of patients waited 15 minutes or less. The number of languages in which interpreter services are available increased from 51 in 2007 to 75 in 2009.

National Priority: Care Coordination

Care coordination is a conscious effort to ensure that all key information needed to make clinical decisions is available to patients and providers. Health care in the United States was not designed to be coordinated. Patients commonly receive medical services, treatments, and advice from multiple providers in many different care settings, each scrutinizing a particular body part or system. Attending to the patient as a whole is rare. Less than sufficient provider-provider and provider-patient communication is common and may lead to delays in treatment and inaccuracies in medical information. Enhancing teamwork and increasing use of health information technologies to facilitate communication among providers and patients can improve care coordination.

The NPP envisioned health care that "guides patients and families through their healthcare experience, while respecting patient choice, offering physical and psychological supports, and encouraging strong relationships between patients and the healthcare professionals accountable for their care." Key goals include coordinating transitions of care, communicating medication information, and reducing hospital readmissions and preventable emergency department visits.

Progress Toward Key Goals

- **Transitions of care:** Among patients hospitalized for heart failure, the quality of patient discharge instructions is improving. However, race-related disparities are observed.
- **Hospital readmissions:** While not all rehospitalizations can be prevented, better coordination at the point of discharge can prevent some readmissions. About 20% of patients hospitalized for heart failure are rehospitalized for a condition related to heart failure within 30 days. Considerable variation across States and by race is also observed.
- **Medication information:** Most providers ask patients about medications prescribed by other providers, and rates are improving. However, age- and education-related disparities are observed. Moreover, few hospitals currently support the electronic exchange of medication information with ambulatory care providers outside of their own system.
- **Preventable emergency department visits:** In patients with asthma, emergency department visits are 5 times as likely as hospitalizations, and some of these emergency department visits could be prevented with better coordination of outpatient care. Residents of inner cities and low-income neighborhoods have particularly high rates of emergency department visits.

Successful Strategies From AHRQ Health Care Innovations Exchange

University of Colorado at Denver Care Transitions Interventions, CO (1833)
- **Intervention:** A transition coach works directly with patients and family members for 30 days after discharge to help them understand and manage their complex postdischarge needs and ensure continuity of care across settings.
- **Impact:** The program reduced hospital readmissions and costs.

Aurora Health Care, WI (1766)
- **Intervention:** A communitywide medication collaborative, involving health care consumers, providers, pharmacists, and community stakeholders, to give elderly patients and their providers the tools and education needed to assemble and verify accurate medication lists, and communicate effectively to prevent medication errors.
- **Impact:** The rate of accurate medication lists among patients improved from 55 to 72%.

National Priority: Overuse of Services

Some diagnostic tests, procedures, and other services are performed even when they are unlikely to benefit the patient. These instances represent overuse of health services. Apart from causing discomfort and distress for patients, overuse can be harmful to the patient's health and increase costs.

The NPP's vision is "healthcare that promotes better health and affordable care by continually and safely reducing the burden of unscientific, inappropriate, and excessive care including tests, drugs, procedures, visits, and hospital stays." The key goal is that all health care organizations will continually strive to improve the delivery of appropriate patient care and substantially and measurably reduce extraneous services and treatment.

Progress Toward Key Goals

- **Inappropriate medication use:** Inappropriate medication use among older adults has been stable over time. No significant disparities among groups persisted over the observed study period for inappropriate medications for older adults.
- **Preventable emergency department visits and hospitalizations:** Preventable emergency department visits and hospitalizations have decreased gradually over the past decade. However, hospitalizations within 30 days of admission to nursing homes have not markedly changed. Significant disparities are observed for potentially avoidable hospitalization rates among different racial, ethnic, and income groups.
- **Potentially harmful preventive services with no benefit:** A preventive service without benefit tracked in the NHQR and NHDR is prostate-specific antigen (PSA) testing of men age 75 and over to screen for prostate cancer. During the time measured, there has been a slight increase in testing. Disparities among racial, ethnic, and income groups are observed although typically the reference groups experienced higher rates of PSA testing.

Successful Strategies From AHRQ Health Care Innovations Exchange

MaineHealth AH! (Asthma Health) Program, ME (2476)
- **Intervention:** Initiative uses hospital-based educators to support providers and other caregivers in providing quality asthma care. Asthma educators meet one on one with patients and their families to promote better asthma self-management.
- **Impact:** Asthma-related hospitalizations declined from 23.8% to 0% after the education sessions, and the percentage of children and parents who missed school or work declined from 49.4 to 7.8%.

Summa Health System Care Coordination Network, OH (2162)
- **Intervention:** Ensures smooth transitions between the hospitals and 37 local skilled nursing facilities. The network uses a simplified transfer form, an electronic referral system, regular meetings, and other communication tools to boost patients' discharge to a facility that meets their medical needs. The network also works to ensure smooth transitions when patients need to return to a hospital for surgery or testing.
- **Impact:** Program has led to fewer patients being readmitted to hospitals, lower hospital length of stay for patients transferred to skilled nursing facilities (which increased the bed capacity to an additional 130 inpatient admissions each year), and fewer cancellations of tests and surgeries for patients transferred from skilled nursing facilities.

National Priority: Access

Access to care is defined as "the timely use of personal health services to achieve the best health outcomes." The NPP's vision for the access priority is a health care system that is "accessible and affordable for all segments of the U.S. population." Access to health care has a significant effect on health disparities. There is substantial evidence that access to the health care system varies by socioeconomic factors and geographic location. Individuals with limited or no access to care (uninsured and underinsured people and those without a usual source of care) experience poor health outcomes, as well as worse quality of care. The NHQR and NHDR examine disparities in care related to insurance status, usual source of care, and financial barriers to care.

Progress Toward Key Goals

- **Health insurance:** Adults ages 18-44 were least likely to have health insurance compared with other age groups. Hispanics were least likely to have health insurance compared with other racial and ethnic groups. While the percentage of people with health insurance increased for poor people, the percentage worsened for middle-income people. The percentage of poor people and near-poor people who were uninsured all year was about four times as high as that for high-income people.
- **Usual source of care:** Slightly more than one-half of uninsured people had a specific source of ongoing care. Blacks and Hispanics were much less likely than Whites and non-Hispanic Whites to have a specific source of ongoing care. About 1 in 5 uninsured children did not have a usual source of care. Minority children were also less likely than White children to have a usual source of care.
- **Financial burden:** Individuals with private nongroup insurance were nearly three times as likely as individuals with private employer-sponsored insurance to have high health insurance premiums and out-of-pocket medical expenses. Poor individuals were five

times as likely as high-income individuals to have high health care expenses. Overall in 2007, 1 in 10 individuals reported that they were unable to receive or were delayed in receiving needed medical care, dental care, or prescription medicines due to financial or insurance reasons. Poor people were twice as likely as high-income people to report that they had this problem.

Successful Strategies From AHRQ Health Care Innovations Exchange

CarePartners, ME (1689)

- **Intervention:** Program matches uninsured Maine residents with local primary care physicians, specialists, and hospitals that are willing to provide free care and helps patients access free or low-cost drugs through prescription assistance programs.
- **Impact:** Program has helped to reduce emergency department visits, hospitalizations, and costs among participants to levels that are well below the average for Medicaid patients.

MinuteClinic, MN (1772)

- **Intervention:** Walk-in primary care clinics are located within retail stores. Staffed by nurse practitioners and physician assistants, clinics use electronic health records and decision-support tools to provide low-cost, evidence-based primary care services, including diagnosis and treatment of common illnesses and routine vaccinations.
- **Impact:** Patients are highly satisfied with the quality and convenience of services. Various studies suggest that clinic services cost less than similar services provided in other settings and conform with evidence-based guidelines.

National Priority: Health System Infrastructure

Health system infrastructure is a priority area that requires national attention. The development of organizational capacity, adoption of health information technology (IT), and provision of a sufficient, culturally competent workforce are important areas of infrastructure that are central to improving health care quality and reducing disparities. The vision for this priority is to improve the foundation of health care systems, including infrastructure for data and quality improvement, culturally diverse workforce capacity and distribution, and systems to coordinate care.

Progress Toward Key Goals

- **Organizational capacity:** In surveys of patient safety culture, Teamwork Within Units and Supervisor Expectations and Actions Promoting Patient Safety were the two areas that consistently received the most positive response regardless of the hospital's teaching status, ownership, geographic region, or bed size. Handoffs and Transitions and Nonpunitive Response to Error were the two areas that had the lowest percentage of positive response. This observation was consistent across hospitals, even after controlling for teaching status, ownership, size, and geographic region.
- **Health IT:** Currently, less than half of office-based providers have fully implemented e-prescribing. Physicians practicing in urban areas, the western United States, and larger groups had the highest adoption rates, as did younger physicians. Among hospitals, size, location, ownership, and teaching status were shown to be determinants of the adoption of e-prescribing. Larger hospitals, hospitals in urban areas, government-owned hospitals,

and hospitals that were members of the Council of Teaching Hospitals (COTH) had higher rates of adoption.

- **Workforce:** Previous reports have examined the physician and nursing workforce; this year, the focus is on pharmacists. The pharmacy workforce is distributed in proportion to population across all four regions of the United States. In contrast, relative to population, Hispanics and non-Hispanic Blacks are underrepresented in the pharmacy workforce while non-Hispanic Whites and Asians are overrepresented.

Successful Strategies From AHRQ Health Care Innovations Exchange

HealthSpring, TN (264)
- **Intervention:** Program offers financial bonuses to selected medical practices, onsite practice coordinators, and dedicated disease management support. Bonuses equal to 20% of health plan payments are awarded if physicians meet clinical care improvement goals.
- **Impact:** In eight practices, the program led to significant improvements in a broad range of clinical quality indicators, along with decreases in members' emergency department visits, hospitalizations, and total medical expenses.

Arizona Medical Information Exchange, AZ (2599)
- **Intervention:** Enables clinicians to immediately access hospital discharge, laboratory test, and medication data on specific patients from other providers, allowing them to make more fully informed clinical decisions, avoid test duplication, ensure safe medication prescribing, and provide continuity of care.
- **Impact:** Users report that it has led to greater efficiency, increased safety, and a reduction in costs associated with unnecessary procedures and laboratory tests.

Table H5 summarizes progress on the national priorities, categorizing each as making progress, progress lagging, or lacking sufficient data to assess.

Table H5. Summary of progress on national priorities

Making Progress	Progress Lagging	Need More Data
Palliative and End-of-Life Care Patient and Family Engagement	Population Health Safety Access	Care Coordination Overuse Health System Infrastructure

- **Palliative and End-of-Life Care:** Quality generally high; more problems with access to palliative care.
- **Patient and Family Engagement:** Quality generally high; most measures improving.
- **Population Health:** Most measures improving slowly; healthy lifestyles not improving.
- **Safety:** Most measures improving but more slowly than other hospital measures.
- **Access:** Not improving.
- **Care Coordination, Overuse, Health System Infrastructure:** Measures and data are limited; more information is needed to assess performance.
- **Disparities:** Present in all national priorities with little evidence of improvement.

Conclusion

Improving quality and reducing disparities require measurement and reporting, but these are not the ultimate goals. The fundamental purpose of improvement in health care is to make all patients' and families' lives better. The NHQR and NHDR concentrate on tracking health care quality and disparities at the national level, but the statistics reported in the reports reflect the aggregated everyday experiences of patients and their providers across the Nation.

It makes a difference in people's lives when breast cancer is diagnosed early; when a patient suffering from a heart attack is given the correct lifesaving treatment in a timely fashion; when medications are correctly administered; and when doctors listen to their patients and their families, show them respect, and answer their questions in a culturally and linguistically skilled manner. All Americans should have access to quality care that helps them achieve the best possible health.

With the publication of this eighth NHQR and NHDR, AHRQ stands ready to contribute to efforts that encourage and support the development of national, State, tribal, and "neighborhood" solutions using national data and achievable benchmarks of care. These documents identify areas where novel strategies have made a difference in improving patients' quality of life, as well as many areas where much more should be done. Future reports will track the success of the National Health Care Quality Strategy, the National Prevention and Health Promotion Strategy, and the National Plan for Action to End Health Disparities.

We need to improve access to care, reduce disparities, and accelerate the pace of quality improvement, especially in the areas of preventive care, chronic disease management, and safety. More data are needed to assess progress in care coordination, efficiency, and health system infrastructure. Information needs to be shared with partners who have the skills and commitment to change health care. Building on data in the NHQR, NHDR, and State Snapshots, we believe that stakeholders can design and target strategies and clinical interventions to ensure that all patients receive the high-quality care needed to make their lives better.

Chapter 1. Introduction and Methods

In 1999, Congress directed the Agency for Healthcare Research and Quality (AHRQ) to produce an annual report, starting in 2003, on "national trends in the quality of health care provided to the American people."[i] With support from the Department of Health and Human Services and private-sector partners, AHRQ has designed and produced the National Healthcare Quality Report (NHQR) to respond to this legislative mandate. The NHQR provides a comprehensive overview of the quality of health care received by the general U.S. population and is designed to summarize data across a wide range of patient needs—staying healthy, getting better, living with chronic illness and disability, and coping with the end of life.

AHRQ was further tasked with producing an annual report that tracks "prevailing disparities in health care delivery as it relates to racial factors and socioeconomic factors in priority populations."[ii] The National Healthcare Disparities Report (NHDR) has also been produced since 2003. The referenced priority populations consist of groups with unique health care needs or issues that require special focus, such as racial and ethnic minorities, low-income populations, and people with special health care needs. AHRQ's charge includes a directive to examine disparities in health care access, utilization, costs, outcomes, satisfaction, and perceptions of care.

The NHQR and NHDR are complementary and are designed to be used together. Combined, they provide an annual snapshot of how our Nation's health care system is performing and the extent to which health care quality and disparities have improved or worsened over time.

With support from a Department of Health and Human Services (HHS) Interagency Work Group and AHRQ's National Advisory Council, AHRQ has designed and produced the NHQR and NHDR since 2003. This is the eighth in the series of reports. Over the years, the NHQR and NHDR have introduced refinements to the measure set and methodology, which has led to a focus on a subset of the most important and scientifically supported measures. These are referred to as the core measure set and are again the focus of the reports this year.

Refinements include the addition in 2004 of a second critical goal of the report series: tracking the Nation's quality improvement progress. The 2005 reports introduced a set of core measures and a variety of new composite measures. The 2006 reports continued to improve data, measures, and methods, adding databases and measures and refining methods for quantifying and tracking changes in health care. The 2007 reports launched a new chapter on health care efficiency. The 2008 reports included an expanded chapter on patient safety, while the 2009 reports included new sections on lifestyle modification, health care-associated infection, and care coordination.

From the beginning, the Institute of Medicine (IOM) has helped shape these reports. Early planning for the first NHQR benefited from the IOM reports *Crossing the Quality Chasm* and *To Err Is Human*. Similarly, early planning for the first NHDR profited from the extensive literature review included in the IOM report *Unequal Treatment*. Moreover, before the publication of the

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[i] 42 U.S.C. 299b-2(b)(2).
[ii] 42 U.S.C. 299a-1(a)6).

first reports, AHRQ specifically requested that the IOM assist the Agency in meeting its congressionally mandated charge. The IOM was tasked with developing a vision for the two quality reports. With rapid changes in health care, AHRQ saw the need to review the reports for their appropriateness to the current health care environment.

In 2008, AHRQ again commissioned the IOM to review past reports and offer recommendations for enhancing future reports and associated products. To this end, the IOM established a consensus committee, the Committee on Future Directions for the National Healthcare Quality and Disparities Reports.[iii] The committee has offered recommendations on priority areas for health care quality improvement, measure selection, methodological approaches, and formatting and presentation of report findings.[iv]

This chapter summarizes AHRQ's methodological approach to producing the 2010 reports. While the 2010 reports contain almost all of the same measures tracked in previous versions of the NHQR and NHDR, many of the IOM's recommendations have been implemented, and the organization and content of the reports have changed extensively. Significant enhancements have been made to the reports to strengthen understanding of performance across the multiple dimensions of health care quality, better capture and track trends in disparities, and quantify the potential for future progress in meeting quality goals.

Consistent with past reports, the 2010 reports focus on a specific theme. In the 2010 reports, analyses include contrasts along the urban-rural continuum wherever data are available. With these refinements, the 2010 NHQR and NHDR substantively advance our Nation's understanding of the progress that is being made in improving quality and reducing disparities in the U.S. health care system.

IOM Recommendations for Enhancing the NHQR and NHDR

The 2010 reports begin the process of incorporating suggestions from the IOM about how to maximize the utility of the reports and related products. AHRQ received recommendations from the IOM in April 2010. These recommendations guided the redesign of the 2010 NHQR and NHDR and are reflected throughout these reports. Some of the key recommendations from the IOM Future's Committee are discussed below.

[iii] The committee's report is available at: www.ahrq.gov/research/iomqrdrreport/.

[iv] In addition to guidance specific to the reports, the IOM provided recommendations about standardizing collection and coding of data on race, ethnicity, and language in the report *Race, Ethnicity, and Language Data*. We continue to seek opportunities to show data in the reports on disparities related to granular ethnicity and language preference, but such health care data are rare.

Identify Priority Areas for Quality Improvement

The IOM recommended that AHRQ report on progress in selected priority areas. These priority areas are expected to yield the greatest gains in health care quality. Priorities include six areas identified by the National Priorities Partnership (NPP),[v] as well as two areas proposed by the IOM Committee. Measures selected for reporting reflect concepts captured in the priority areas, as listed below:

Priority areas designated by the NPP

- Patient and family engagement
- Population health
- Safety
- Care coordination
- Palliative care
- Overuse of services

Priority areas designated by the IOM Committee

- Access to care
- Health system infrastructure

Some of these areas mapped directly into existing report sections and are included in those sections of each report. Patient and family engagement is covered in the chapter on Patient Centeredness. Safety is covered in the chapter on Patient Safety. Palliative care is covered in the section on Supportive and Palliative Care in the Effectiveness chapter.

Some areas mapped to sections in one report but not the other. Overuse is covered in the Efficiency chapter of the NHQR, but a corresponding chapter had to be developed for the NHDR. Access is covered in the Access to Care chapter of the NHDR, but a corresponding chapter had to be developed for the NHQR. Care coordination and health systems infrastructure were not covered well in any existing chapter, so new chapters were developed for both reports.

Population health measures cut across several of the quality dimensions and are included in multiple sections throughout both existing reports. Hence, performance on population health measures is not included as a separate chapter in this report. As appropriate, population health performance measures are reported in relevant chapters. For example, the population measure "adults with obesity who ever received advice from a health provider to exercise" is reported in Chapter 2, "Effectiveness," in the Lifestyle Modification section. The concept of population health is also presented as an important focus of the Highlights.

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[v] The NPP is a partnership of public and private health care stakeholders who have come together to establish priorities and goals to eliminate harm to patients, eliminate health care disparities, and reduce disease burden and health system waste. More information on the National Priorities Partnership is available at: www.nationalprioritiespartnership.org/Partners.aspx.

Adopt Updated Quality Framework

Measures selected for inclusion in the NHQR and NHDR examine performance in each of the priority areas listed above and are organized along the elements of a quality framework developed by the IOM Committee. The framework guiding the 2009 NHQR was focused around five dimensions of quality: (1) effectiveness, (2) patient safety, (3) timeliness, (4) patient/family centeredness, and (5) efficiency. The 2010 reports retain these quality dimensions and, in keeping with the suggestions offered by the IOM, introduce three others: access, care coordination, and health system infrastructure.

Similarly, the 2009 NHDR encompassed many of the NHQR measures focused on effectiveness of care, as well as access and care rendered to priority populations. The quality framework presented in Figure 1.1 applies equally well to the NHQR and NHDR. As such, the 2010 NHDR substantively expands the dimensions of quality by paralleling the structure and measures presented in the NHQR. "Efficiency," a dimension of quality that was not included in previous disparities reports, has been added to the 2010 NHDR.

Figure 1.1. Quality Framework for the 2010 NHQR and NHDR

Source: Ulmer C, Bruno M, Burke S, eds. Future directions for the National Healthcare Quality and Disparities Reports. Committee on Future Directions of the National Healthcare Quality and Disparities Reports, Institute of Medicine. Washington, DC: National Academies Press; 2010.

The revised quality framework posits that care coordination and health system infrastructure are foundational components that must be in place to achieve quality objectives in each of the other quality areas. Measures corresponding to elements of this quality framework are further described below in the section titled "Measure Set for NHQR and NHDR."

Use Subnational Data

National data to assess performance and the presence of disparities in health care are unavailable for several key measures of quality. In many cases, these data are simply not being collected. The IOM recommends the use of subnational data (e.g., State-level data) to construct performance measures when national data are unavailable. For example, national data on the quality of care rendered to people with HIV/AIDS are generally unavailable. Data from the HIV Research Network, which represents 18 medical practices across the United States treating more than 14,000 patients with HIV/AIDS, were used in both the NHQR and NHDR to gather information on the care received by this population. Although not nationally representative, the data provide some insight into the care received by people with HIV/AIDS and may serve as a catalyst to expanded data collection at the national level.

Expand Stratification

The IOM recommended that the NHDR stratify quality measures by the race and ethnicity categories identified by the Office of Management and Budget (OMB), primary language or English proficiency, and socioeconomic and insurance status. Past versions of the NHDR have reported quality measures according to these sociodemographic characteristic. The 2010 NHDR report continues to include these categories and to show economic and insurance strata. The NHQR expands assessments of performance based on geographic region, specifically, analyses of quality and disparities across the urban-rural continuum.

Modify Benchmarking Strategy

Performance and the potential for quality improvement are best evaluated relative to the evidence on what is achievable. Achievable benchmarks, which demonstrate the "best" attained performance on individual quality measures, were incorporated into the 2010 reports, per the recommendation of the Future's Committee. Identical benchmarks were used to characterize performance in both the NHDR and NHQR.

Benchmarks have been identified based on data from the top-performing States. In identifying the top-performing States, we calculated performance on selected measures separately with data from each of the 50 States.

States were ranked in order of performance and the top 10% were identified. The average performance among these top- ranking States was designated as the measure benchmark. Because data were not always available to estimate performance for each State, the 10% criterion was used only when data for a minimum of 30 States were reported.

Create Action-Oriented Products

The NHQR and NHDR and related products should guide or support action. These reports may be made more actionable by including priority areas and benchmarks. Including examples of "best practices" would further emphasize the opportunities available to improve quality and reduce disparities.

Track Access Better

The NHDR has traditionally included a chapter on access to care, identifying the facilitators and barriers to care and health care utilization experiences of subgroups defined by race and ethnicity, income, education, and type of health insurance. Pursuant to the IOM's recommendations, a chapter on access to care, which has not been specifically tracked in the NHQR, has been added to the 2010 NHQR.

How This Report Is Organized

NHQR and NHDR chapters are organized along the elements of the quality framework. Several of the proposed priority areas that are reflected in this framework have been monitored in previous quality and disparities reports; however, labels and organization of measures within chapters slightly differed. Measures that reflect the concepts underlying the newly defined priority list have been carried over to the 2010 reports and organized in chapters corresponding to the revised quality framework. Measures corresponding to priority areas that are new to the 2010 reports were identified with the assistance of the Interagency Work Group and are noted in the description of chapters below.

For the first time, key findings from the NHDR are incorporated into relevant sections of the NHQR and major findings from the NHQR are mentioned in the NHDR. Integration of findings across the two reports emphasizes the interrelatedness of the two reports and provides a more robust description of the health care system's performance overall and for population subgroups.

Continuing Chapters From Past Reports

- **Highlights**, which precedes this chapter, provides information to understand patterns of performance within priority areas, insight on the progress that has been made in advancing health care quality in the United States, and implications of report findings for meeting national performance objectives. The Highlights incorporate findings from both the NHQR and NHDR and the same Highlights chapter is used in both reports.
- **Chapter 1: Introduction and Methods** describes changes that have occurred between the 2009 and 2010 reports, such as modifications to the quality framework, measures added and excluded, and methodological changes in estimating and presenting data. An overall description of the measure set is also presented.
- **Chapter 2: Effectiveness** examines effectiveness of health care in the general U.S. population. The 2010 report is organized around eight clinical areas: cancer, diabetes, end stage renal disease (ESRD), heart disease, HIV and AIDS, maternal and child health, mental health and substance abuse, and respiratory diseases. Three types of health care services that typically cut across clinical conditions are also examined: lifestyle modification, functional status preservation and rehabilitation, and supportive and palliative care.
- **Chapter 3: Patient Safety** tracks measures of safety, including health care-associated infections, postoperative and other hospital complications, and preventable hospital deaths.
- **Chapter 4: Timeliness** examines the delivery of time-sensitive clinical care and patient perceptions of how quickly they receive care.

- **Chapter 5: Patient Centeredness** examines patients' experiences with care in an office or clinic setting, as well as during a hospital stay. Measures reported in this chapter focus on perceptions of communication with providers and satisfaction with the physician-patient relationship.
- **Chapter 10: Priority Populations** continues to be unique to the NHDR. This chapter summarizes quality and disparities in care for populations identified as particularly significant to quality improvement efforts:
  - Racial and ethnic minorities.
  - Low-income groups.
  - Women.
  - Children.
  - Older adults.
  - Residents of rural areas and inner cities.
  - Individuals with disabilities and special health care needs.

New Chapters for the 2010 Reports

- **Chapter 6: Care Coordination** is new to both the NHQR and NHDR. This chapter presents data to assess the performance of the U.S. health care system in coordinating care across providers or services. The quality framework identifies care coordination as a foundational dimension of quality, a component that facilitates the achievement of other health care system goals. Care coordination is represented by systems and processes that help patients successfully navigate across often disconnected health care components (e.g., physicians, hospitals, postacute services, social services) to meet their ongoing health needs. Measures of care coordination in the 2010 NHQR and NHDR address NPP goals, focusing on the adequacy of medical information received or obtained by providers, facilitators and barriers to care coordination, and outcomes associated with poorly coordinated care.

  Measures included in both the quality and disparities reports are:
  - Heart failure patients who receive complete discharge information.
  - Readmissions for congestive heart failure.
  - Provider communication with other physicians concerning a patient's medications.
  - Hospital electronic exchange of information.
  - Preventable emergency department visits for asthma.

- **Chapter 7: Efficiency** focuses in part on overuse of health services. Measures of health system efficiency, which capture information on how well the health care system promotes quality, affordable care, and appropriate use of services, have typically been reported in the NHQR but not the NHDR.

  For the first time, the 2010 NHDR includes a chapter focusing on efficiency measures. These measures capture information on overuse, underuse, and misuse of health care among population subgroups. Efficiency measures reported in the 2010 NHDR are:
  - Rates of potentially avoidable hospitalizations.
  - Hospitalizations for conditions covered in AHRQ's Prevention Quality Indicators (PQIs).

- ○ Potentially avoidable hospitalizations among home health and nursing home patients.
- ○ Unnecessary services and costs, as measured by the percentage of males over age 75 who had a prostate-specific antigen test or a digital rectal exam within the previous year.

- **Chapter 8: Health Systems Infrastructure**, which explores the capacity of health care systems to support high-quality care, is new to both reports. The IOM recommended including health system infrastructure as a priority area because measuring performance in terms of health care infrastructure capacity can "[i]mprove the foundation of health care systems (including infrastructure for data and quality improvement; communication across settings for coordination of care; and workforce capacity and distribution…to support high-quality care."
Unlike most measures, health system capabilities were not assessed at the person level but according to region and provider characteristics. Infrastructure measures, which are primarily structural measures of quality, include:
- ○ Distribution of U.S. pharmacy professionals.
- ○ Adoption of office-based computerized systems.
- ○ Hospital use of fully implemented computerized systems, by key functions.
- ○ Presence of hospital patient safety culture components (e.g., teamwork within units).

- **Chapter 9:** Access includes measures that focus on barriers to care, such as the U.S. population that is uninsured, financial barriers to care experienced by the population with health insurance, and people with a usual source of care. The NHDR has traditionally included a chapter on access to care, identifying facilitators and barriers to care and health care utilization of subgroups defined by race and ethnicity, income, education, and type of health insurance. Pursuant to the IOM's recommendations, a chapter on access to care, which has not been specifically tracked in the NHQR, has been added to the 2010 NHQR. Access is measured based on the following:
- ○ Availability of health insurance.
- ○ Availability of a usual source of care.
- ○ Patient assessment of how easy it is to gain access to health care.
- ○ Successful receipt of needed services.

Appendixes are available online for both the NHQR and NHDR at www.ahrq.gov/qual/qrdr10.htm. These appendices include:

- **Data Sources,** which provides information about each database analyzed for the reports, including data type, sample design, and primary content.
- **Measure Specifications,** which provides information about how measures are generated and analyzed for the reports. Measures highlighted in the report are described, as well as other measures that were examined but not included in the text of the report.
- **Detailed Methods,** which provides detailed methodological and statistical information about selected databases analyzed for the reports.
- **Data Tables,** which contains detailed data tables for most measures analyzed for the reports, including measures highlighted in the report text and measures examined but not included in the text. A few measures cannot support detailed tables and are not included in the appendix.

Theme of 2010 Reports

This year's focus on health care performance in rural and inner-city areas required the identification of a standardized approach to identifying communities by level of urbanization. With input from the Interagency Work Group, AHRQ selected the National Center for Health Statistics (NCHS) Urban-Rural Classification Scheme to guide analyses involving geographic location. The 2006 NCHS classification system is derived from data gathered from three sources: the OMB metropolitan and nonmetropolitan designations, the Rural-Urban Continuum and Urban Influence coding systems, and the U.S. Census. NCHS includes six urbanization categories, including four metropolitan and two nonmetropolitan county designations. Definitions of metropolitan and nonmetropolitan designations are shown in Table 1.1.

Although an effort was made to standardize reporting of data according to the NCHS classification system, a number of data sources collected this information using alternative classification models. For example, data in the National Survey on Drug Use and Health (NSDUH) were organized according to the classification system shown in Table 1.2. To the extent feasible, this classification system was modified to correspond to the 2006 NCHS classification scheme. Because correspondence between the NSDUH's nonmetropolitan subgroups and that of the NCHS classification system was poor, for purposes of analysis, nonmetropolitan regions were not subset. Thus, NSDUH performance measures are reported for three metropolitan subgroups and for nonmetropolitan regions as a whole. In other cases, where source data did not provide sufficient detail to adapt to the NCHS model, analyses of performance used aggregated categories (e.g., metropolitan versus nonmetropolitan.)

Table 1.1. 2006 NCHS Urban-Rural Classification System

Metropolitan	
Large central metropolitan	Counties in a metropolitan statistical area of 1 million or more population: 1. That contain the entire population of the largest principal city of the metropolitan statistical area, or 2. Whose entire population resides in the largest principal city of the metropolitan statistical area, or 3. That contain at least 250,000 of the population of any principal city in the metropolitan statistical area
Large fringe metropolitan	Counties in a metropolitan statistical area of 1 million or more population that do not qualify as large central
Medium metropolitan	Counties in a metropolitan statistical area of 250,000 to 999,999 population
Small metropolitan	Counties in a metropolitan statistical area of 50,000 to 249,999 population
Nonmetropolitan	
Micropolitan	Counties with urban population of 20,000-49,999, adjacent to metro area
Noncore	Counties that are neither metropolitan nor micropolitan

Source: Ingram D, Franco S. 2006 Rural-Urban Classification Scheme for Counties. CDC, NCHS, 2006. Available at www.cdc.gov/nchs/data_access/urban_rural.htm.

Table 1.2. NSDUH data classification and modified classification for metropolitan and nonmetropolitan communities

NSDUH Rural/Urban Classification	Modified NSDUH Classification for NHQR and NHDR
Metropolitan	
Large metropolitan	Large central and fringe metropolitan
Small metropolitan 250K-1,000,000	Medium metropolitan
Small metropolitan <250K	Small metropolitan
Nonmetropolitan	
Urbanized = 20,000 or more	Excluded from analyses
Less urbanized = 2,500-20,000	Excluded from analyses
Completely rural = 2,500 or less	Excluded from analyses

Measure Set for the 2010 NHQR and NHDR

Retired Measures

Previous reports have demonstrated that some measures of health care quality have improved. Since the first NHQR and NHDR, significant improvements in a number of measures of quality of care have occurred, with U.S. health care providers achieving overall performance levels exceeding 95%. The success of these measures limits their utility for tracking improvement over time. Because these measures cannot improve further to a significant degree, including them in the measure set creates a ceiling effect that may distort quantification of rate of change over time. Data on retired measures will continue to be collected and these measures will be added back to the reports if their performance falls below 95%. For the 2010 report, no measures have been retired or added back.

The measures that were retired in 2009 and therefore not presented in the 2010 report are:

- Adults with diabetes who had their blood cholesterol checked.
- Hospital patients with heart attack who received aspirin within 24 hours of admission.
- Hospital patients with heart attack who were prescribed aspirin at discharge.
- Hospital patients with heart attack who were prescribed a beta blocker at discharge.
- Smokers with heart attack who received smoking cessation counseling while hospitalized.

Core Measures

The NHQR and NHDR track a broad array of health care measures and have added measures each year. The 2010 reports continue to focus on a consistent subset of measures, the "core" measures, which includes the most important and scientifically supported measures in the full measure set. In 2005, the Interagency Work Group selected the core measures from the full measure set. For most core measures, findings are presented each year. A subset of the core measure group is presented on an alternating basis, typically rotating across odd or even years of the report. All alternating core measures are included in trend analyses. "Noncore" measures are included in summary statistics and may be presented to complement core measures in key areas.

Examples of alternating measures include the set of measures focusing on breast cancer and colorectal cancer. While measures are annually tracked, breast cancer measures are presented in

odd calendar years; these measures were contained in the 2009 reports. Colorectal cancer measures are also tracked annually, but results are presented in even calendar years, such as in the 2010 quality and disparities reports.

Composite Measures

Policymakers and others have voiced their support for composite measures of quality because they can be used to facilitate understanding of information from many different measures. A composite measure summarizes care that is represented by individual measures that are often related in some way, such as components of care for a particular disease or illness. Composite measures are composed of two or more process[vi] or outcome[vii] measures that have been recommended or identified as a "best practice" in the treatment or prevention of complications associated with specific conditions, such as diabetes. Since measures used to construct composites represent various dimensions or processes of care, they provide a more complete understanding of the quality of the U.S. health care system. To ensure that actionable information is available, estimates of performance on the individual measures that make up a composite measure are available in an appendix to these reports.

Decisions concerning the appropriateness of pooling data to generate a composite measure were discussed with data sources. Several of the composite measures included in the reports were developed, tested, and estimated by the data source or other public or private organizations for use in quality assessment, monitoring, and improvement activities.

Composite measures in the NHQR and NHDR are created in a variety of different ways. The appropriateness model is sometimes referred to as the "all-or-none" approach because it is calculated based on the number of patients who received all of the services they needed. One example of this model is the diabetes composite, in which a patient who receives only one or two of the three recommended services would not be counted as having received all recommended care.

The opportunities model assumes that each patient needs and has the opportunity to receive one or more processes of care, but not all patients need the same care. Composite measures that use this model summarize the proportion of appropriate care that is delivered. The denominator for an opportunities model composite is the sum of opportunities to receive appropriate care across a panel of process measures. The numerator is the sum of the components of appropriate care that are actually delivered.

The composite measure of recommended hospital care for heart failure is an example of the use of the opportunities model. The total number of patients who receive treatments represented by individual components of the composite measure (e.g., evaluation of left ventricular ejection

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[vi] " Receipt of three recommended diabetes services" is one example of a composite process measure. This composite was formed by combining information on adults with diabetes who received the following clinical preventive services: hemoglobin A1c measurement, a dilated eye exam, and a foot exam.
[vii] "Adults with ambulatory visits who reported poor communication with health providers" is an example of a composite outcome measure. This composite was formed by combining information on patient perceptions of their providers, including the extent to which the provider listened to the patient, respect shown by the provider, time spent with the patient, and explanations offered by providers.

fraction and use of angiotensin-converting enzyme (ACE) inhibitor or angiotensin receptor blocker (ARB) among patients with left ventricular systolic dysfunction) is divided by the sum of all of the opportunities to receive appropriate care.

The CAHPS® (Consumer Assessment of Healthcare Providers and Systems) surveys have their own method for computing composite measures that has been in use for many years. These composite measures average individual components of patient experiences of care and are presented as the proportion of respondents who indicate that providers sometimes or never, usually, or always performed well.

Composite measures that relate to rates of complications of hospital care are postoperative complications and complications of central venous catheters. For these complication rate composites, an additive model is used that sums individual complication rates. Thus, for these composites, the numerator is the sum of individual complications and the denominator is the number of patients at risk for these complications. The composite rates are presented as the overall rate of complications. The postoperative complications composite is a good example of this type of composite measure: if 50 patients had a total of 15 complications among them (regardless of their distribution), the composite score would be 30%.

Other Measure Characteristics

Core and noncore measures may be characterized as "process" or "outcome" measures. Process measures track receipt of medical services and whether providers rendered care according to accepted standards. Outcome measures are indicative of the result or impact of medical care. Many factors other than the care received affect health outcomes; these include lifestyle, social and physical environment, and genetic predisposition to disease. Therefore, outcome measures are typically adjusted for risk or patient characteristics that may influence outcomes.

Both process and outcome measures are included in the 2010 NHQR and NHDR; both types of measures are not reported for all conditions due to data limitations. For example, data on HIV care are suboptimal, so no HIV process measures are included as core measures. In addition, not all core measures are included in trending analysis, because 3 or more years of data are not always available. Ideally, process measures and related outcome measures would be tracked in tandem. In reality, data are typically unavailable to examine the relationship between structural, process, and outcome measures.

Process measures reported in the NHQR and NHDR, particularly in the chapter on effectiveness, are grouped into categories related to the type of care: prevention, acute treatment, and chronic disease management. There is a sizable overlap among the care types and some measures may be considered to belong in more than one type of care category.

- **Prevention.** Caring for healthy people is an important component of health care. Educating people about healthy behaviors and lifestyle modification can help to postpone and avoid illness and disease. In addition, detecting health problems at an early stage increases the chances of effectively treating them, often reducing suffering and costs. Many of the preventive measures tracked in the reports come from the U.S. Preventive Services Task Force and the Centers for Disease Control and Prevention Advisory Committee on Immunization Practices.

- **Treatment.** Even when preventive care is ideally implemented, it cannot entirely avert the need for acute care. Delivering optimal treatment for acute illness can help reduce the effects of illness and promote the best recovery possible.
- **Management.** Some diseases, such as diabetes and ESRD, are chronic, which means they cannot simply be treated once; they must be managed across a lifetime. Management of chronic disease often involves lifestyle changes and regular contact with a provider to monitor the status of the disease. For patients, effective management of chronic disease can mean the difference between healthy living and frequent medical problems.

A list of core measures included in the 2010 NHQR and NHDR is shown in Table 1.3 at the end of this chapter. Measures are identified according to the priorities addressed, dimension or type of care, and focus on structure (access), process (prevention, acute care, chronic care), or outcome of care. The table also notes whether a measure is a composite measure.

Analyses

In the NHQR, measures are tracked for different groups, such as age, gender, and geographic location. In the NHDR, comparisons are made across groups defined by race, ethnicity, income, education, activity limitations, and geographic location. In general, either the largest subgroup or the best performing subgroup is used as the reference; unless specified, this would typically be individuals ages 18-44 for age contrasts, individuals with private health insurance for insurance contrasts, and non-Hispanic Whites for racial contrasts.

Two criteria are applied to determine whether the difference between two groups is meaningful:

1. First, the difference between the two groups must be statistically significant with $p \leq 0.05$ on a two-tailed test.
2. Second, the relative difference between the comparison group and the reference group must be at least 10% when the measure is framed positively as a favorable outcome or negatively as an adverse outcome.

To further address the interrelationships among measures, group demographic characteristics, and socioeconomic factors, multivariate regression analyses were conducted for a small number of measures that had data available to examine the relationship between the measure, race/ethnicity, and socioeconomic factors. These analyses, which are shown for selected measures in the NHDR chapter on priority populations, generated adjusted percentages that quantify the magnitude of disparities after controlling for a number of confounding factors. For example, results of multivariate analyses are shown for an effectiveness measure—the percentage of people with diabetes who received recommended care for diabetes. Values of these measures are compared for different racial and ethnic groups after adjusting for differences in the distributions of income, education, insurance, age, gender, and geographic location.

Annual Rates of Change and Trend Analyses

For all measures for which reliable trend data are available, analyses are conducted to assess the annual rate of change. The 2010 reports use regression analysis to estimate average annual rate of change. Regression models were specified as follows:

- $\ln(M) = \beta_0 + \beta_1(Y)$, where

    $\ln(M)$ = natural logarithm of the measure value (M)

    β_0 = intercept or constant

    $\beta_1(Y)$ = coefficient corresponding to year (Y)

Using regression results, the average annual rate of change was calculated as $100 \times (\exp(\beta_1) - 1)$.

Data in the NHQR and NHDR are unavailable at the person level, and aggregated estimates are used throughout analyses. The regression-estimated annual rate of change was reported only when at least three data points—or 3 years of aggregated data—were available for a measure. For inclusion as either improving or getting worse, the average annual rate of change must be at least 1% per year when the measure is framed positively as a favorable outcome or negatively as an adverse outcome.

Progress on individual measures is reported as follows:

- Progress on a measure is deemed to be improving or getting better if the annual rate of change is 1% or greater, in the desirable direction.
- Progress on a measure is deemed to be getting worse when the annual rate of change is 1% or greater, in the undesirable direction.
- Progress has remained the same if the annual rate of change is ≤1% in either the desirable or undesirable direction.

Across subpopulation groups, average annual change was estimated to ascertain the extent to which disparities in quality and access measures were increasing, decreasing, or remaining the same over time. Calculation of change in disparities was conducted in a manner similar to that described above, with the exception that a linear regression (as opposed to a log-linear regression) was used to estimate annual change for population subgroups. Change in disparities was estimated as the difference in the average annual change between the comparison and reference groups.

Measures for which the difference between groups was >1 indicate that the disparity is getting larger whereas differences < −1 indicate that the size of the disparity is getting smaller. Values between −1 and 1 suggest that group differences have not changed over time. Due to methodological changes over time, changes in data used to construct measures across years, and changes to the measure set, it is not appropriate to compare the annual change or rates of change for measure groups discussed in this year's report with those from prior years.

Summary Measures in the Highlights

The Highlights chapter reports findings across broad panels of measures. Contained in the highlights are summary data detailing:

- Measures or groups of measures for which selected population groups (e.g., race/ethnicity, income, metropolitan and nonmetropolitan groups) performed better, worse, or the same as the reference group;
- Distribution of change over time in quality and access measures for population subgroups; and
- Change in quality and access over time, by type of service (preventive care, acute care, chronic disease management) and outcomes.

This process is more complicated because data on all measures are not collected each year. In the summary trend analyses, we obtain all available data points between the year 2000 and the current data year for each measure. For more measures, trends include data points from 2001-2002 to 2007-2008.

Composite measures are included in the core measure category. To avoid duplication of estimates within the other categories, composite measures are not included in other categories where estimates from their component measures are used. For example, the diabetes composite measure (which includes hemoglobin A1c measurement, eye exam, and foot exam) contributes to the overall rate for the core measures group but not to the diabetes group rate, which uses the estimates from the three noncore component measures.

Using the analytic approach previously described, we calculated the sum of measures that were identified as better, worse, or the same (when considering subgroup differences) or that were improving, worsening, or remaining the same over time (when considering trend data). The distribution of measures by subpopulation, type of service, or type of measure (i.e., quality or access) are presented as a way to summarize the status of health care quality and disparities in the United States.

Standardization of language to describe differences in the value of a measure across time and subgroups is part of the effort by HHS and AHRQ to provide information on where the Nation is—and is not—making progress in reducing disparities in health care. Furthermore, as detailed below, the use of benchmarks, or "best known level of attained performance," provides an additional way to monitor progress. It also offers an approach to measuring disparities by projecting the amount of time that would be needed for selected groups to achieve the benchmarks.

Benchmarks

Pursuant to the IOM's recommendations, when data were available, the 2010 NHQR and NHDR include measure-specific benchmarks that reflect the highest level of performance documented for individual measures. Benchmarks enable readers to assess national and State performance relative to that of the highest performing States, organizations, and other entities. They also aid in establishing reasonable performance improvement goals. From an equity perspective,

standards of performance should not differ across population groups. As such, benchmarks corresponding to measures included in both the NHQR and NHDR were identical.

For measures for which they are reported, benchmarks were estimated as the measure average for the 10% of States that had the best performance on the measure of interest. Benchmarks were estimated only if data were available for a minimum of 30 States. Before settling on the approaches used, we considered alternative methods for designating benchmarks. One method would have limited "best attained performance" to the one State with the highest performance on a measure. This approach was rejected because of concerns about the reliability of data from one State, especially if the State is unique in terms of the characteristics of the population, health care infrastructure, or practice patterns. The top-performing State may simply be an outlier.

State-level estimates used in constructing benchmarks were primarily calculated from the same data source as the measure. In some cases, such as when the number of individuals sampled from a specific State was too small, data did not support estimation at a subnational level and benchmarks were not identified. We made exceptions for three measures derived from the Medical Expenditure Panel Survey (MEPS) and the National Health Interview Survey (NHIS).

For these measures of colorectal cancer screening, diabetes care, and pneumococcal vaccination, almost identical data were available from Behavioral Risk Factor Surveillance System (BRFSS) State data. However, BRFSS sampling and mode of administration differ from MEPS and NHIS. Hence, to calculate a benchmark for these measures, we first calculated the ratio of the top 10% achievable benchmark to the overall national estimate from BRFSS. We then applied this ratio to the overall national estimates from MEPS or NHIS. For example, if the BRFSS benchmark to national estimate for a measure was 1.5, we would multiply the national estimate for that measure from MEPS by 1.5 to obtain a corresponding benchmark.

Time To Achieve Benchmark

Also new to the 2010 reports are projections of the time expected for population subgroups to achieve the designated benchmark, based on past performance. Using standard linear regression of the actual values over time and extrapolating to future years, we calculated the time required for the population, or population subgroup, to perform at the level of the top-performing States. Since projections of future performance were based on past performance data, it was necessary to ensure reliability by limiting estimates to those cases in which at least three data points were available.

An important caveat to consider in using information on time to achieve benchmarks is that the linear estimation approach used to derive these estimates assumes that characteristics of the population, technology, and health care infrastructure remain constant. Changes in the characteristics of the population or health care system may be expected to alter achievement of benchmarks. Advancements in medical science, changes in the organization of health services, or reductions in the uninsured population following implementation of the Patient Protection and Affordable Care Act (P.L. 11-148) would be expected to alter the performance trajectory. In some cases, the time to achieve the benchmark will drop, while in other cases it may increase.

Time to achieve the benchmark was not estimated for all measures in the NHQR and NHDR. Time to benchmark is not reported if:

- The average annual rate of change in a measure is less than 1%.
- The time to benchmark is estimated at 25 or more years.
- Trends over time show movement away from the benchmark (these occurrences are mentioned in the reports).
- The direction or trend changes over time; operationally, these were identified as cases in which there are at least 4 years of data showing "upward" movement and at least 4 years of data showing "downward" movement.

Quantifying Disparities

In the Highlights and Priority Populations chapters of the NHDR, the extent of disparities across the core measures is summarized for Black, Hispanic, Asian, Native Hawaiian and Other Pacific Islander (NHOPI), American Indian and Alaska Native (AI/AN), and poor populations. Racial, ethnic, and socioeconomic groups are compared with a designated reference group for each core measure. Each group could receive care that is worse than, about the same as, or better than the reference group. For each group, the percentages of measures for which the group received worse care, similar care, or better care were calculated.

In the Priority Populations chapter of the NHDR, which presents information on each population separately, all core measures with available data are used when summarizing trends in disparities across groups. For example, much less information is available for income groups than for racial and ethnic groups. Rates relative to standard reference groups are used to quantify the magnitude of disparities and to identify the largest disparities specific groups face. For each group, the group rate was divided by the reference group rate to calculate the relative rate for each core measure, with each core measure framed negatively (e.g., for immunization, the likelihood of not receiving the vaccine). Relative rates of selected core measures are presented in the Highlights chapter of the reports.

Presentation of Reports

As in past reports, the NHQR and its companion NHDR continue to be formatted as chartbooks. Each chapter begins with a description of the importance of the topic. After introductory text, charts and accompanying findings highlight a small number of measures relevant to the topic. Where applicable, key findings from the NHDR are included in the NHQR, and NHQR findings are reported in the text of the NHDR. Readers should refer to the report from which results have been drawn to gather additional details on the data presented.

Unless otherwise stated, only those findings that meet the "meaningfulness criteria," as previously described, are presented in the bullets that accompany each figure. When these data are available and relevant, the NHQR charts show contrasts by:

- Age.[viii]
- Gender.
- Insurance status.
- Geographic location (rural versus urban).

To the extent that data are available, charts in the NHDR typically show contrasts by:

- Race: Whites, Blacks, Asians,[ix] NHOPIs, AI/ANs, and people of more than one race.
- Ethnicity: Hispanics and non-Hispanics.[x]
- Income: Poor, near poor, middle income, and high income.[xi]
- Education: People with less than a high school education, high school graduates, and people with at least some college education.

When data support stratified analyses, a figure showing racial and ethnic differences stratified by socioeconomic factors is included. These data are summarized in bullet format. Figures include a note about the reference group for population-based measures and the unit of analysis for measures based on services or events.

Many of the core and composite measures have multiple years of data, so figures typically illustrate trends over time. Figures include a notation about the denominator, which is either the reference population for population-based measures or the unit of analysis for measures based on services or events from provider- or establishment-based data collection efforts.

To systematically identify the relationship between geographic location and quality of care, when possible, findings in the NHQR and NHDR show measures of quality of care for individuals residing along the urban-rural continuum described above.

Defining Individuals With Disabilities

For the purpose of the NHDR, people with disabilities are those with physical, sensory, and/or mental health conditions who also have an associated decrease in functioning in such day-to-day activities as bathing, walking, doing everyday chores, and/or engaging in work or social

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[viii] Unless otherwise specified, the NHQR and NHDR define children as individuals under the age of 18; adults include people age 18 and over.

[ix] Asian includes the former category of Asian or Pacific Islander prior to Office of Management and Budget guidelines, when information was not collected separately by group.

[x] Not all data sources used in the NHDR collect information by race and ethnicity separately. In such cases, comparisons are made by combining racial/ethnic group categories (e.g., comparing non-Hispanic Blacks and Hispanics with non-Hispanic Whites.)

[xi] Unless otherwise indicated, throughout this report, poor is defined as having family income less than 100% of the Federal poverty level (FPL); near poor refers to incomes between 100% and 200% of the FPL; middle income refers to incomes between 200% and 400% of the FPL, and high income includes incomes 400% or more of the FPL. These are based on U.S. Census poverty thresholds for each data year, which are used for statistical purposes.

activities. This is consistent with the Americans With Disabilities Act (ADA) of 1990, which defines disability to include "a physical or mental impairment that substantially limits one or more major life activities of such individual"[xii] as well as with Federal program definitions based on the ADA.

In displaying the data on disability, paired measures are shown to preserve the qualitative aspects of the data:

- Limitations in basic activities represent problems with mobility and other basic functioning at the person level.
- Limitations in complex activities represent constraints encountered when people, in interaction with their environment, attempt to participate in community life.

The use of paired measures of basic and complex activity limitations is conceptually similar to the way others have defined "disability." It is also consistent with the International Classification of Functioning, Disability, and Health separation of activities and participation domains. These two categories are not mutually exclusive; people may have limitations both in basic activities and complex activities. Further information can be found in the Individuals With Disabilities or Special Health Care Needs section of the NHDR, in the chapter on Priority Populations.

[xii] 42 U.S.C. 12102.

Table 1.3. Core measures included in the 2010 NHQR and NHDR, by measure characteristic

Measure	Dimension or Type of Care					Composite Measure
	Access	Prevention	Acute Care	Chronic Care	Outcome	
Effectiveness						
Cancer (alternating measures)[xiii]						
Adults age 50 and over who ever received colorectal cancer screening		√				√
Rate of advanced stage colorectal cancer per 100,000 adults age 50 and over		√			√	
Diabetes						
Hospital admissions for lower extremity amputations per 1,000 adult patients with diagnosed diabetes					√	
Adults age 40 and over with diagnosed diabetes who received all three recommended services for diabetes in the calendar year (hemoglobin A1c measurement, dilated eye examination, and foot examination)				√		√
End Stage Renal Disease						
Adult hemodialysis patients with adequate dialysis (urea reduction ratio 65% or greater)				√	√	
Dialysis patients under age 70 who were registered on a waiting list for transplantation				√		
Heart Disease						
Hospital patients with heart attack and left ventricular systolic dysfunction who received ACE inhibitor or ARB			√			
Hospital patients with heart failure who received recommended hospital care (evaluation of left ventricular ejection fraction and ACE inhibitor or ARB prescription at discharge, if indicated)			√			√
Deaths per 1,000 adult hospital admissions with heart attack					√	
HIV/AIDS						
New AIDS cases per 100,000 population age 13 and over					√	
Maternal and Child Health						
Women who completed a pregnancy in the last 12 months who first received prenatal care in the first trimester		√				

[xiii] Cancer measures alternate by year. Data on colorectal cancer are presented in "even year" reports, and data on breast cancer are presented in "odd year" reports.

Measure	Dimension or Type of Care					Composite Measure
	Access	Prevention	Acute Care	Chronic Care	Outcome	
Children ages 19-35 months who received all recommended vaccines		√				√
Children ages 3-6 who ever had their vision checked by a health provider (alternating measure)		√				
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		√				
Children ages 2-17 for whom a health provider ever gave advice about healthy eating		√				
Infant deaths per 1,000 live births, birth weight less than 1,500 g					√	
Mental Health and Substance Abuse						
Adults with a major depressive episode in the last 12 months who received treatment for depression			√			
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			√			
Suicide deaths per 100,000 population		√			√	
Respiratory Diseases						
Adults age 65 and over who ever received pneumococcal vaccination		√				
People with current asthma who are now taking preventive medicine daily or almost daily (either oral or inhaler)				√		
Hospital patients with pneumonia who received recommended hospital care (initial antibiotics within 6 hours of hospital arrival; antibiotics consistent with current recommendations; blood culture before antibiotics are administered; influenza vaccination status assessment/vaccine provision; and pneumococcal vaccination status assessment/vaccine provision			√			√
Patients with tuberculosis who completed a curative course of treatment within 1 year of initiation of treatment			√		√	
Lifestyle Modification						
Adult current smokers with a checkup in the last 12 months who received advice to quit smoking		√				
Adults with obesity who ever received advice from a health provider to exercise more		√				

Measure	Dimension or Type of Care					Composite Measure
	Access	Prevention	Acute Care	Chronic Care	Outcome	
Functional Status Preservation and Rehabilitation						
Older women who reported ever being screened for osteoporosis		√				
Adult home health care patients whose ability to walk or move around improved				√	√	
Long-stay nursing home residents whose need for help with daily activities increased				√	√	
Supportive and Palliative Care						
Adult home health care patients with shortness of breath				√	√	
High-risk long-stay nursing home residents with pressure sores				√	√	
Short-stay nursing home residents with pressure sores				√	√	
Long-stay nursing home residents with physical restraints				√		
Patient Safety						
Adult surgery patients who received appropriate timing of antibiotics (prophylactic antibiotics begun at the right time and ended at the right time)			√			√
Adults age 65 and over who received potentially inappropriate prescription medications			√		√	
Adult surgery patients with postoperative complications					√	
Bloodstream infections or mechanical adverse events associated with central venous catheter placement					√	
Deaths per 1,000 discharges potentially resulting from care (failure to rescue)					√	
Timeliness						
Adults who needed care right away for an illness, injury, or condition in the last 12 months who got care as soon as wanted					√	
Emergency department visits in which patients left without being seen					√	
Patient Centeredness						
Children with ambulatory visits whose parents reported poor communication with health providers					√	√
Adults with ambulatory visits who reported poor communication with health providers					√	√

Measure	Dimension or Type of Care					Composite Measure
	Access	Prevention	Acute Care	Chronic Care	Outcome	
Access						
People under age 65 with health insurance	√					
People under age 65 who were uninsured all year	√					
People with a usual primary care provider	√					
People without a usual source of care who indicated a financial or insurance reason for not having a source of care	√					
People with a specific source of ongoing care	√					
People who were unable to get or delayed in getting needed medical care, dental care, or prescription medicines in the last 12 months	√					√

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.

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.

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.

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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.

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
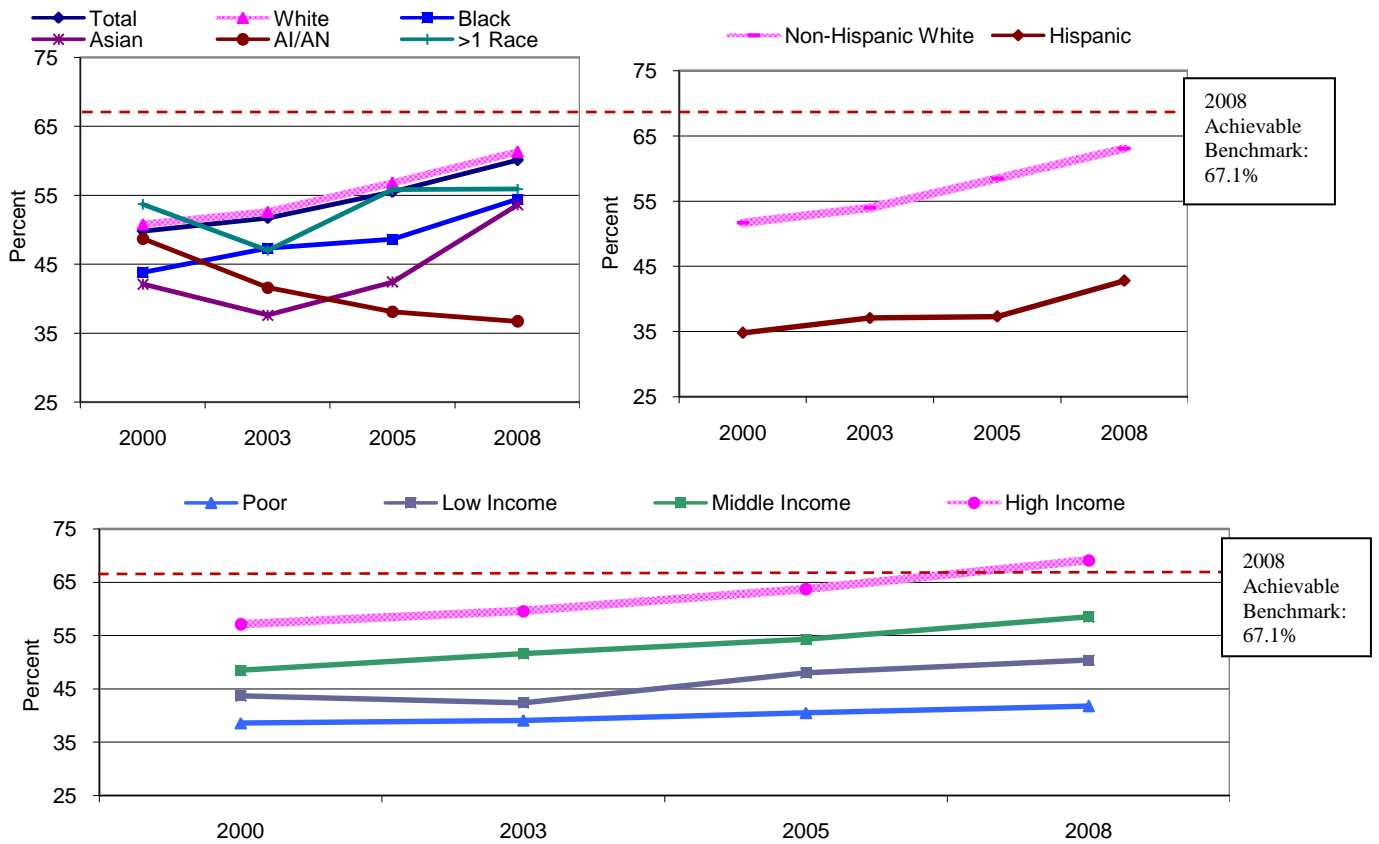
Key: AI/AN = American Indian or Alaska Native.
Source: Centers for Disease Control and Prevention, National Center for Health Statistics, National Health Interview Survey, 2000, 2003, 2005, and 2008.
Denominator: Adults age 50 and over in the civilian noninstitutionalized population. Benchmark is derived 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.

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

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
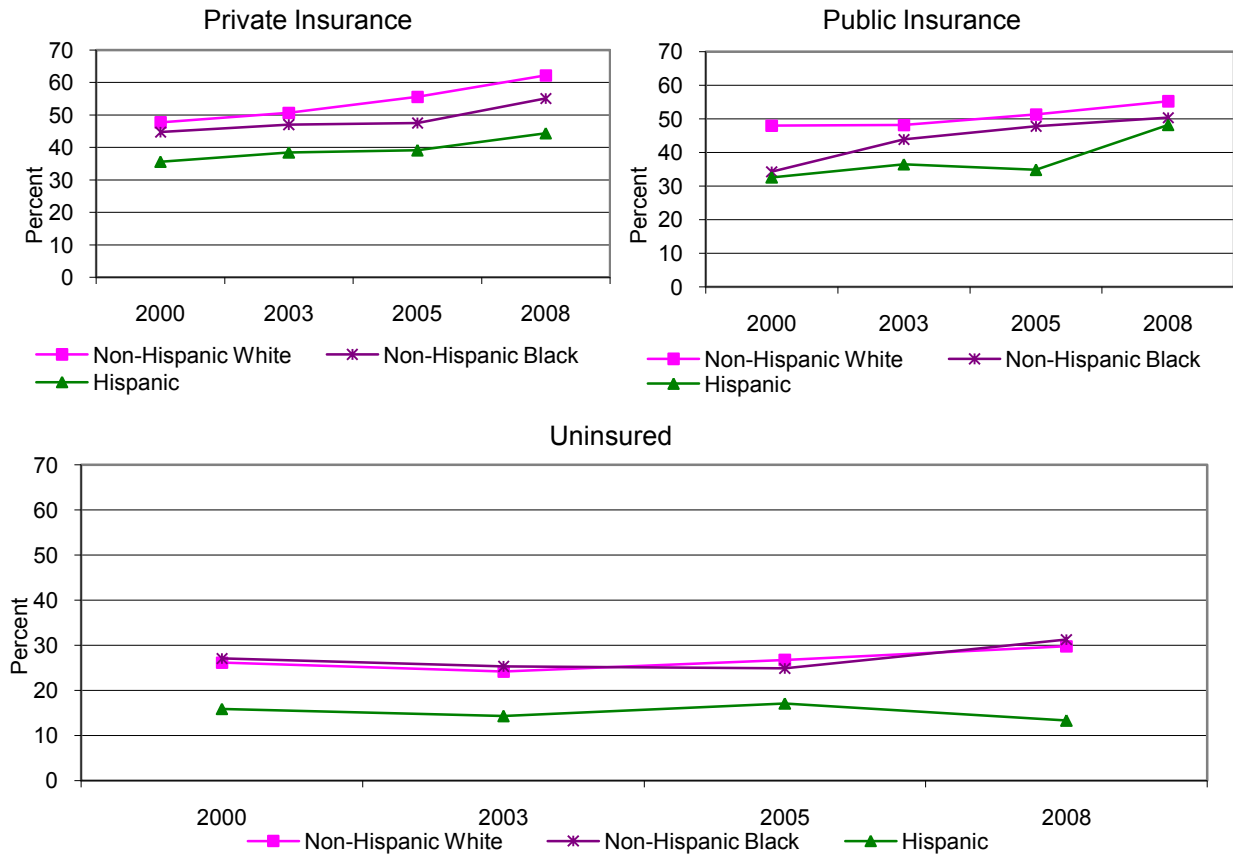
Source: Centers for Disease Control and Prevention, National Center for Health Statistics, National Health Interview Survey (NHIS), 2000, 2003, 2005, and 2008.

Denominator: Adults ages 50-64 in the civilian noninstitutionalized population.

- 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.

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
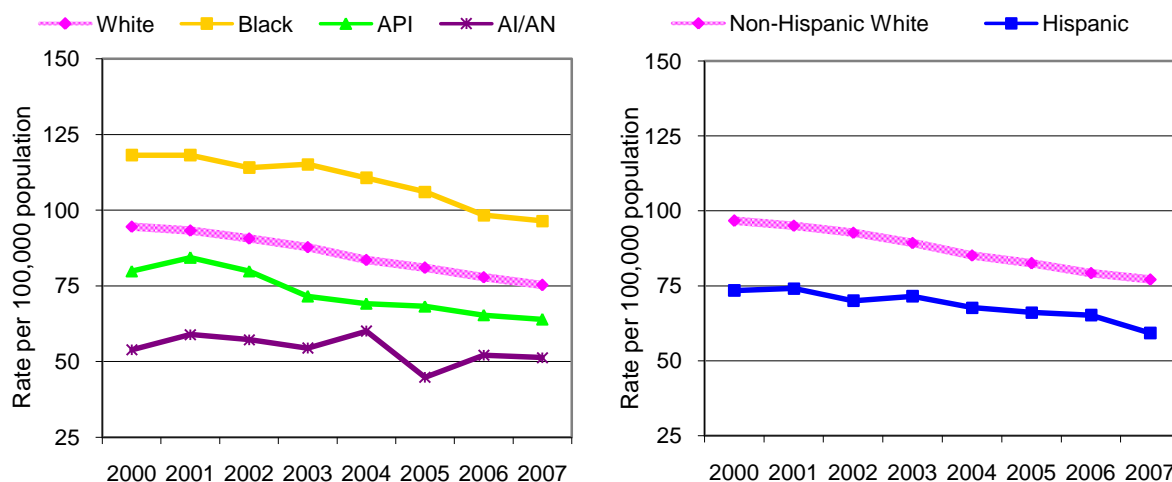
Key: API = Asian or Pacific Islander; AI/AN = American Indian or Alaska Native.
Source: National Cancer Institute, Surveilance, Epidemiology, and End Results Program (SEER), 2000-2007.
Denominator: Adults age 50 and over in the civilian noninstitutionalized population.
Note: Advanced stage colorectal 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-used database, 17 registries, released April 2010, based on the November 2009 submission. Rates are age adjusted.

- 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.

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
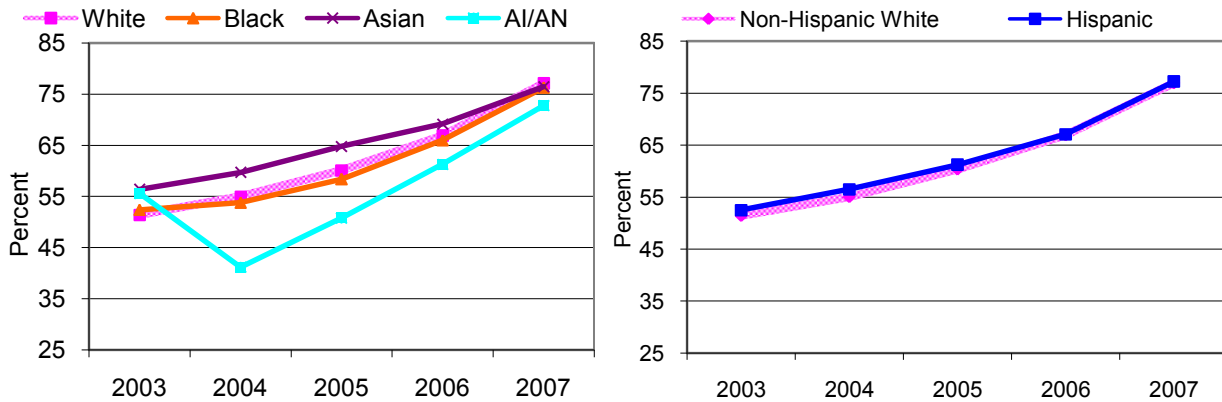
Key: AI/AN = American Indian or Alaska Native.
Source: Commission on Cancer, American College of Surgeons and American Cancer Society, National Cancer Data Base, 2003-2007.

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.

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) tests and dilated eye and foot examinations[v] 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.

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).

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[v] HbA1c, or glycosylated hemoglobin, is a measure of average levels of glucose in the blood.
[vi] More information on the PQIs is available at:
www.qualityindicators.ahrq.gov/downloads/pqi/word/pqi_guide_v31.doc.

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
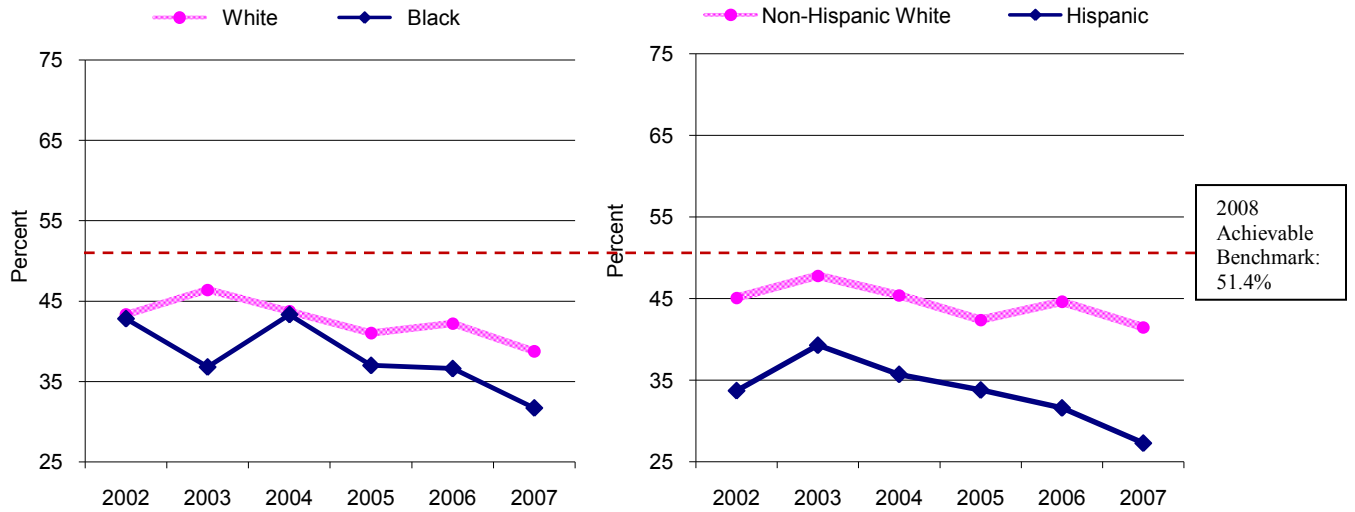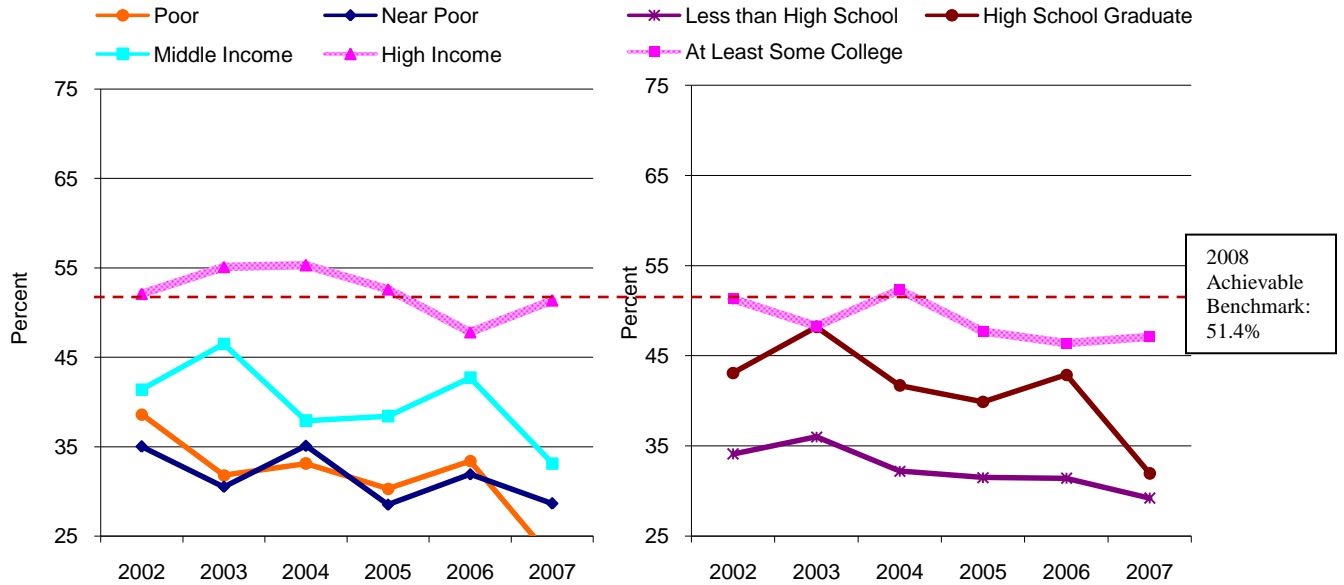
Source: Agency for Healthcare Research and Quality, Medical Expenditure Panel Survey, 2002-2007.
Denominator: Civilian noninstitutionalized population with diagnosed diabetes, age 40 and over.
Note: Data include people with both type 1 and type 2 diabetes. Rates are age adjusted to the 2000 U.S. standard 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, where 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).
- 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

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

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
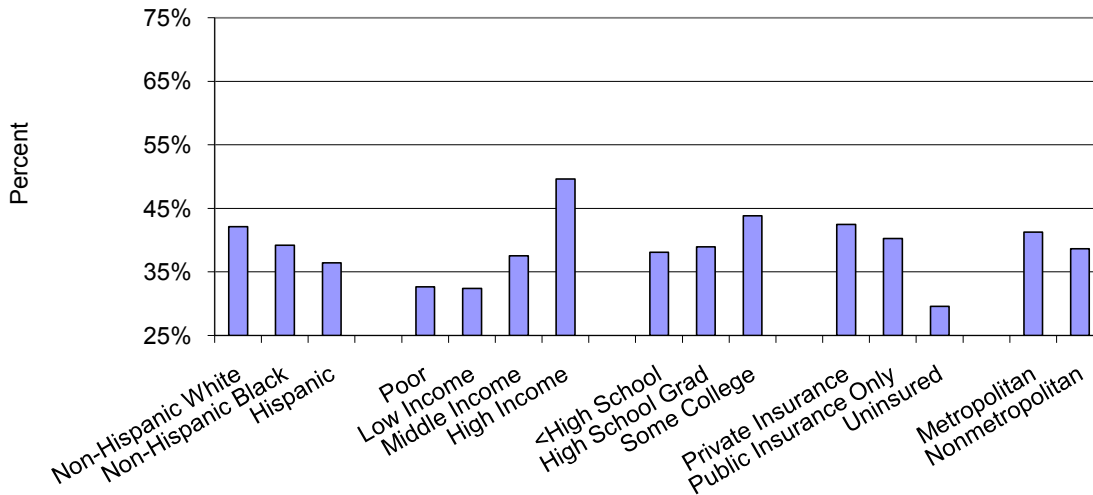
Source: Agency for Healthcare Research and Quality, Medical Expenditure Panel Survey, pooled 2002-2007.
Note: Adjusted percentages are predicted marginals from a statistical model that includes the covariates race/ethnicity, family income, education, health insurance, and residence location. Chapter 1, Introduction and Methods, provides more information.

- 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.

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
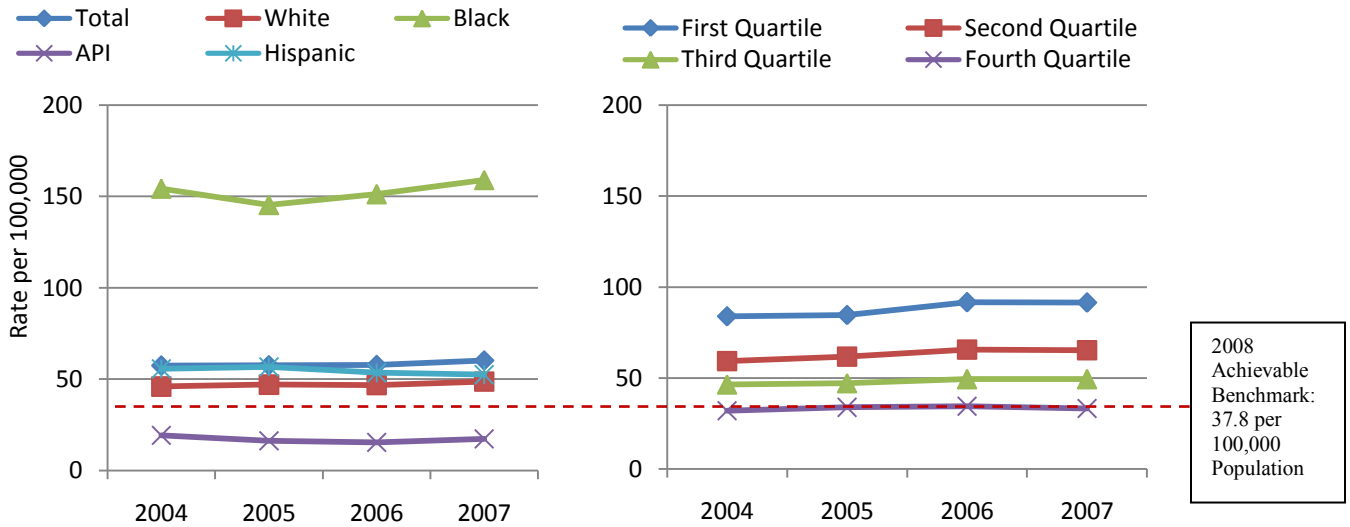
Key: API = Asian or Pacific Islander. First quartile represents the lowest income and the fourth quartile represents the highest income.
Source: Agency for Healthcare Research and Quality, Healthcare Cost and Utilization Project (HCUP), State Inpatient Databases (SID) disparities analysis file, 2004-2007.
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 3 times the rate of Whites in all years (Figure 2.7).
- With the exception of 2004 and 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 2008 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.

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.

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

[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.

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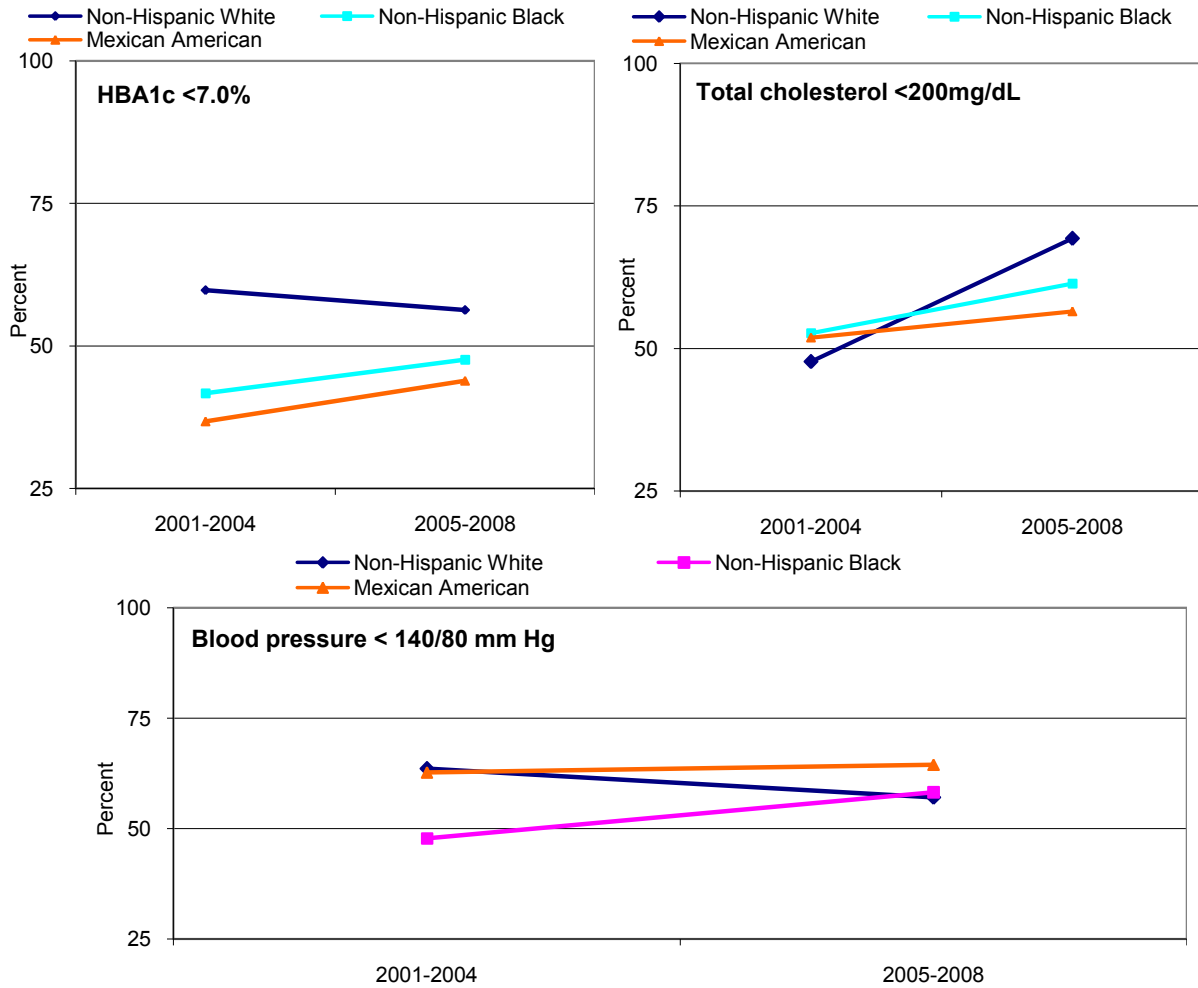
Source: Centers for Disease Control and Prevention, National Center for Health Statistics, National Health and Nutrition Examination Survey, 2001-2008.
Denominator: Civilian noninstitutionalized population with diagnosed diabetes, age 40 and over.
Note: Age adjusted to the 2000 standard population using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

Prevention: Lower Extremity Amputations

People living with diabetes represent more than 60% of nontraumatic lower extremity amputations[7] 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
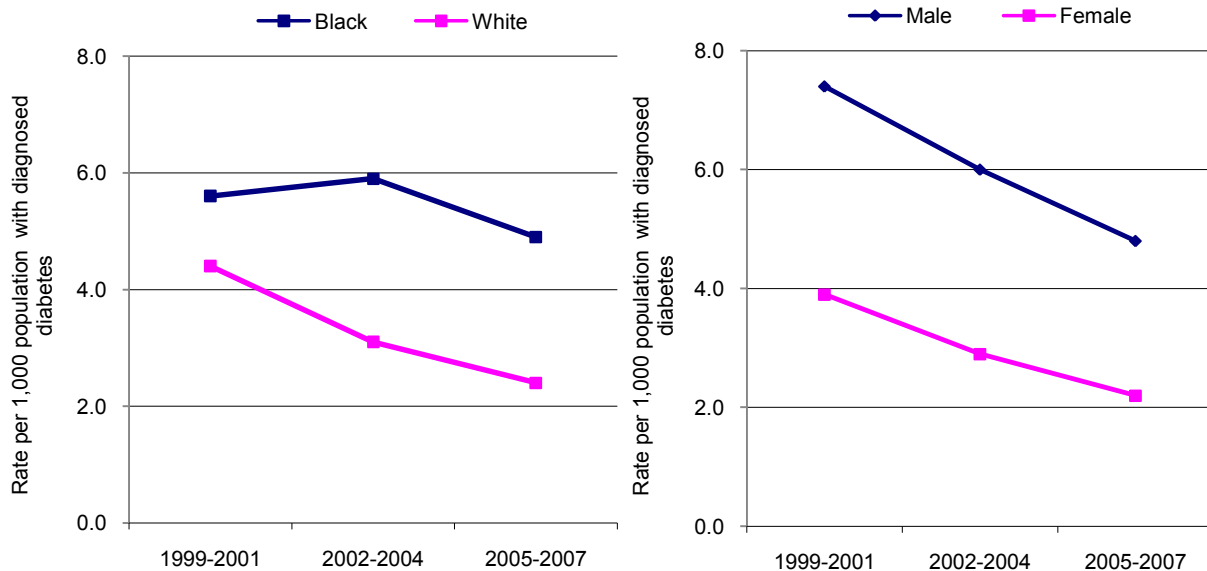
Source: Centers for Disease Control and Prevention, National Center for Health Statistics, National Hospital Discharge Survey and National Health Interview Survey.
Denominator: Civilian noninstitutionalized population 18 years and over who report they have ever been told they have diabetes.
Note: Data 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 White.
- 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.
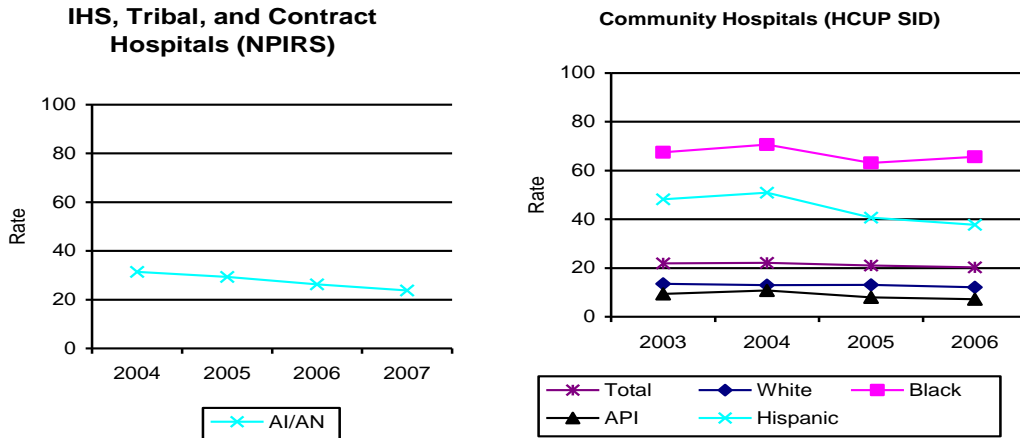
Indian Health Service Facilities

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.

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.
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.

End Stage Renal Disease

Importance

Mortality

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

Prevalence

Total cases (2007) ....514,642[13]

Incidence

Number of new cases (2007) ....111,000[13]

Cost

Total ESRD Medicare program expenditures (2007 est.).. $20.8 billion[14]

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.

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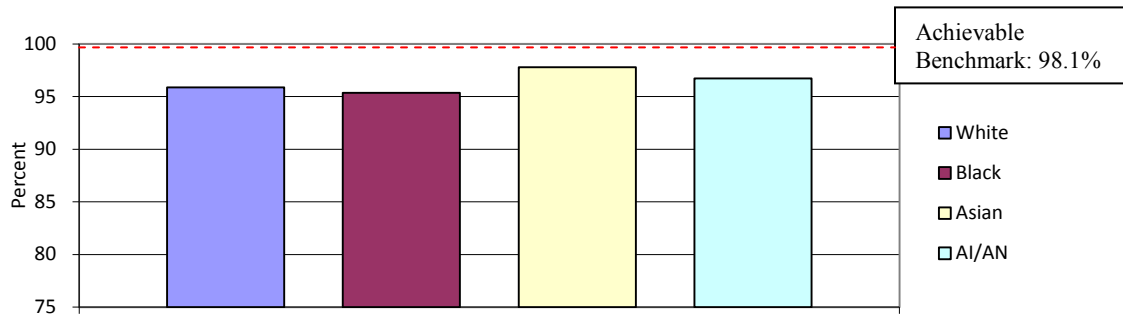
Key: AI/AN = American Indian or Alaska Native.
Source: University of Michigan Kidney Epidemiology and Cost Center, 2009 Dialysis Facility Report.
Denominator: End stage renal disease hemodialysis patients age 20 and over.

- 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.

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]

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

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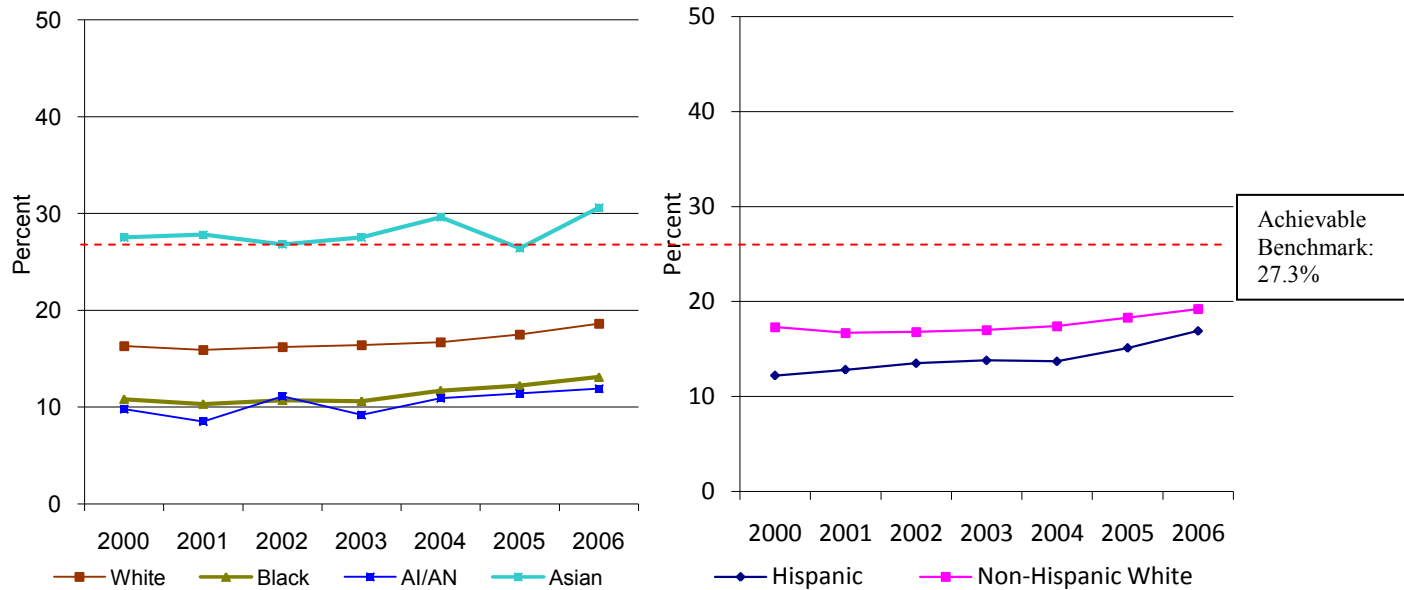
Key: AI/AN = American Indian or Alaska Native.
Source: National Institute of Diabetes and Digestive and Kidney Diseases, U.S. Renal Data System, 2000-2006.
Denominator: End stage renal disease hemodialysis patients and peritoneal dialysis patients under age 70.

- 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.
- 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.


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

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%.

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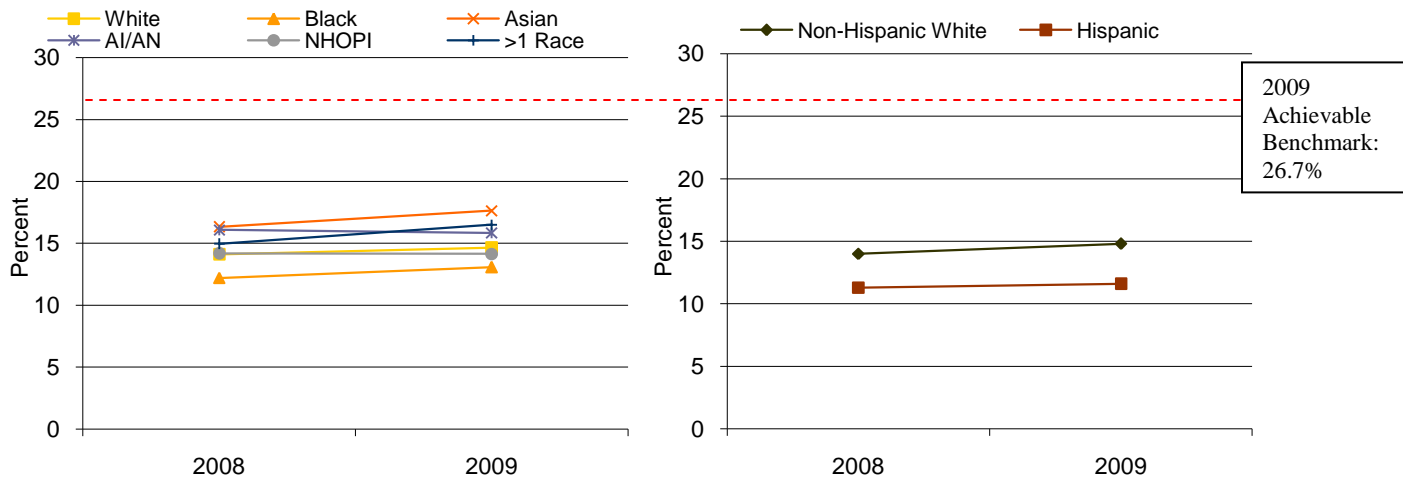
Key: AI/AN = American Indian or Alaska Native; NHOPI = Native Hawaiian or Other Pacific Islander.
Source: Medicare eligibility forms (Centers for Medicare & Medicaid Services [CMS] Form 2728) (2008-2009), Fistula First Incident AVF Dataset, CMS.
Denominator: New end stage renal disease hemodialysis patients.

- 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.

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.

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
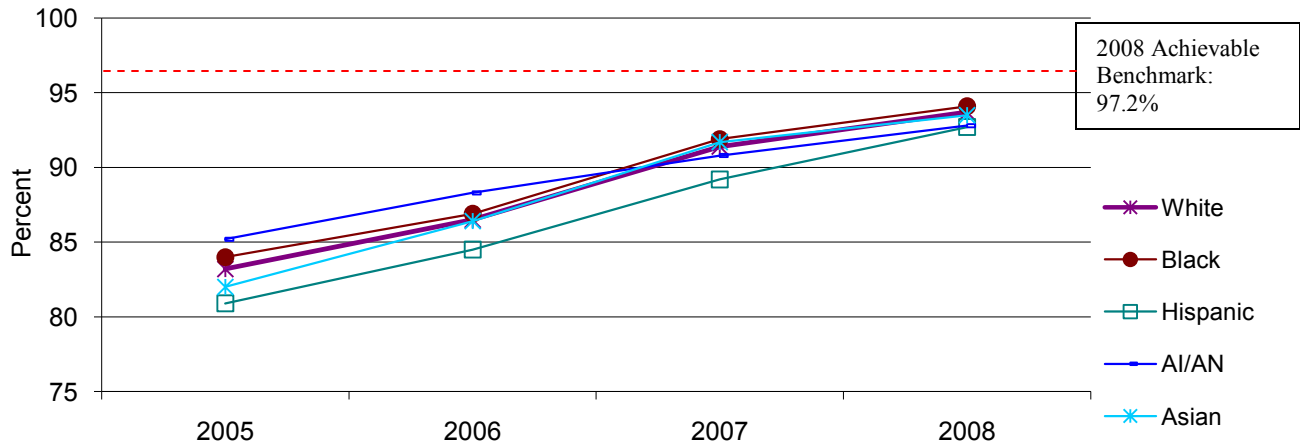
Key: AI/AN = American Indian or Alaska Native.
Source: Centers for Medicare & Medicaid Services, Medicare Quality Improvement Organization Program, 2005-2008.
Denominator: Patients hospitalized with a principal diagnosis of acute myocardial infarction and left ventricular systolic dysfunction.

- 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
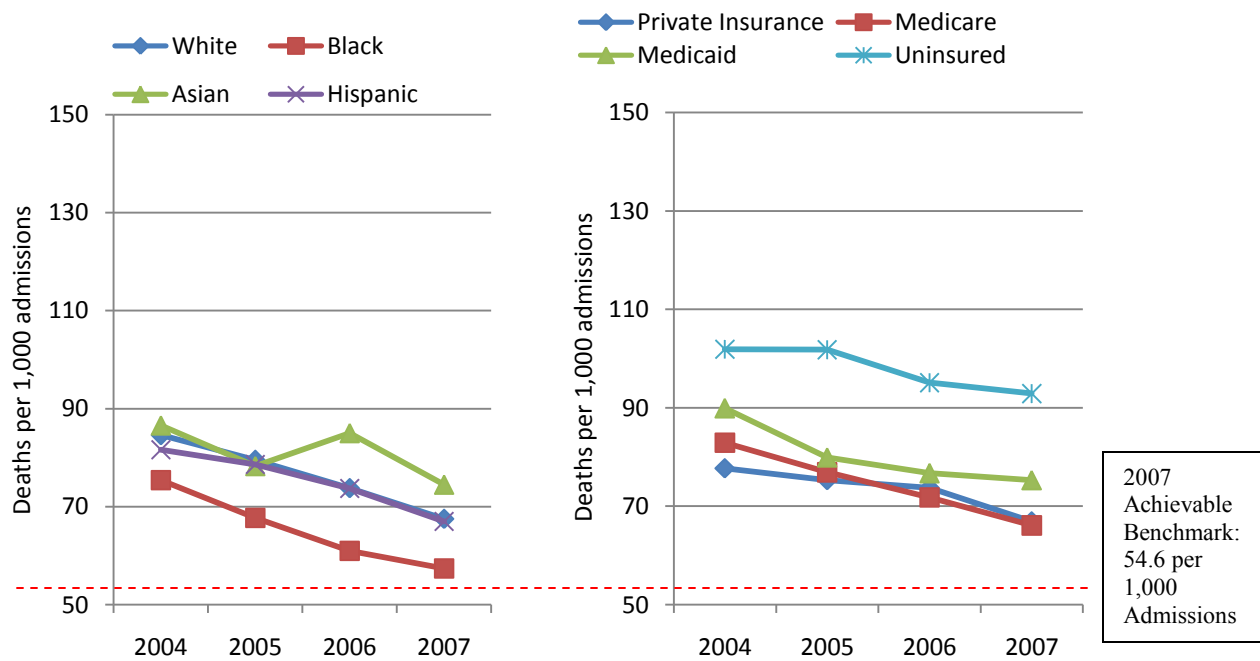
Source: Agency for Healthcare Research and Quality, Healthcare Cost and Utilization Project, Nationwide Inpatient Sample, 2004-2007.
Denominator: Adults age 18 and over admitted to a non-Federal community hospital in the United States with acute myocardial infarction as principal discharge diagnosis.
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.

- 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 admission 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:

- 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.

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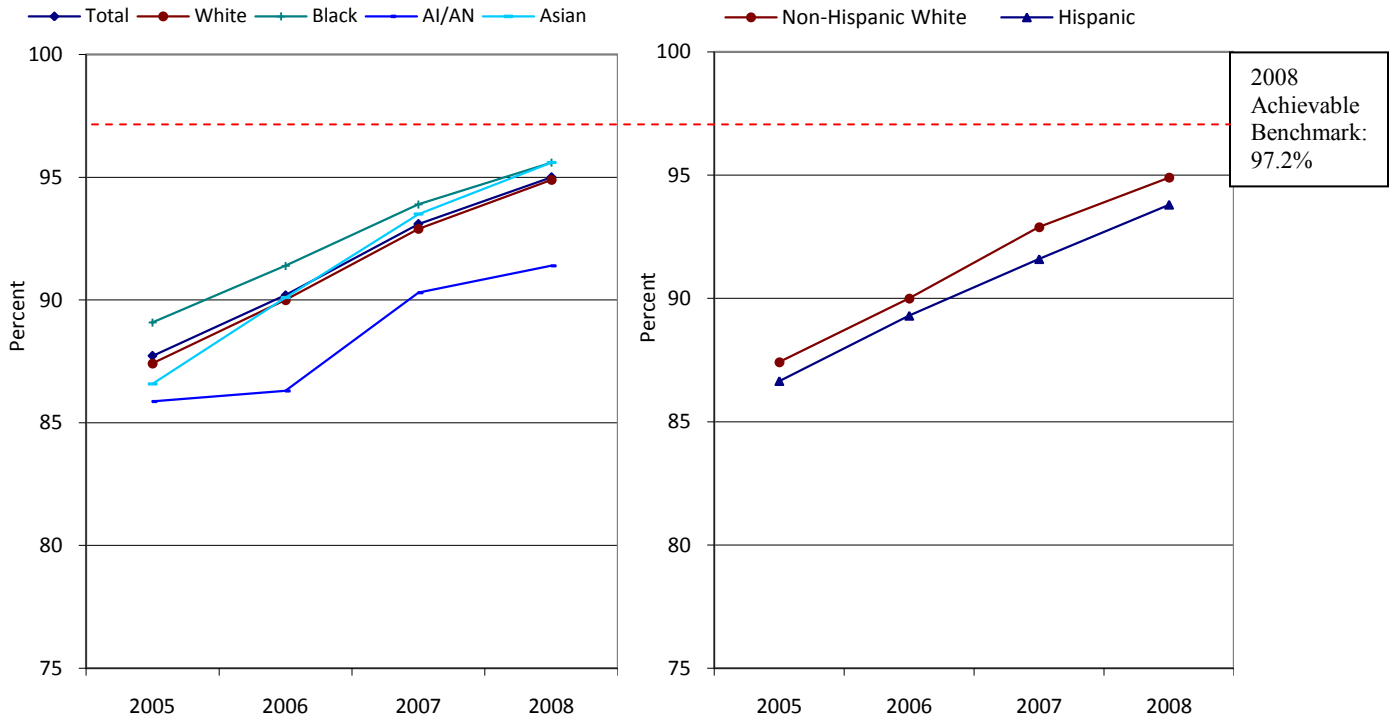
Key: AI/AN = American Indian or Alaska Native.
Source: Centers for Medicare & Medicaid Services, Medicare Quality Improvement Organization Program, 2005-2008.
Denominator: Patients hospitalized with a principal diagnosis of acute heart failure.

- 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.

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.

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 AIDS patients and on HIV infection deaths:

- Eligible AIDS patients receiving prophylaxis for *Pneumocystis* pneumonia (PCP).
- Eligible AIDS patients receiving prophylaxis for *Mycobacterium avium* complex (MAC).
- Adult HIV patients who had at least two outpatients 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.

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
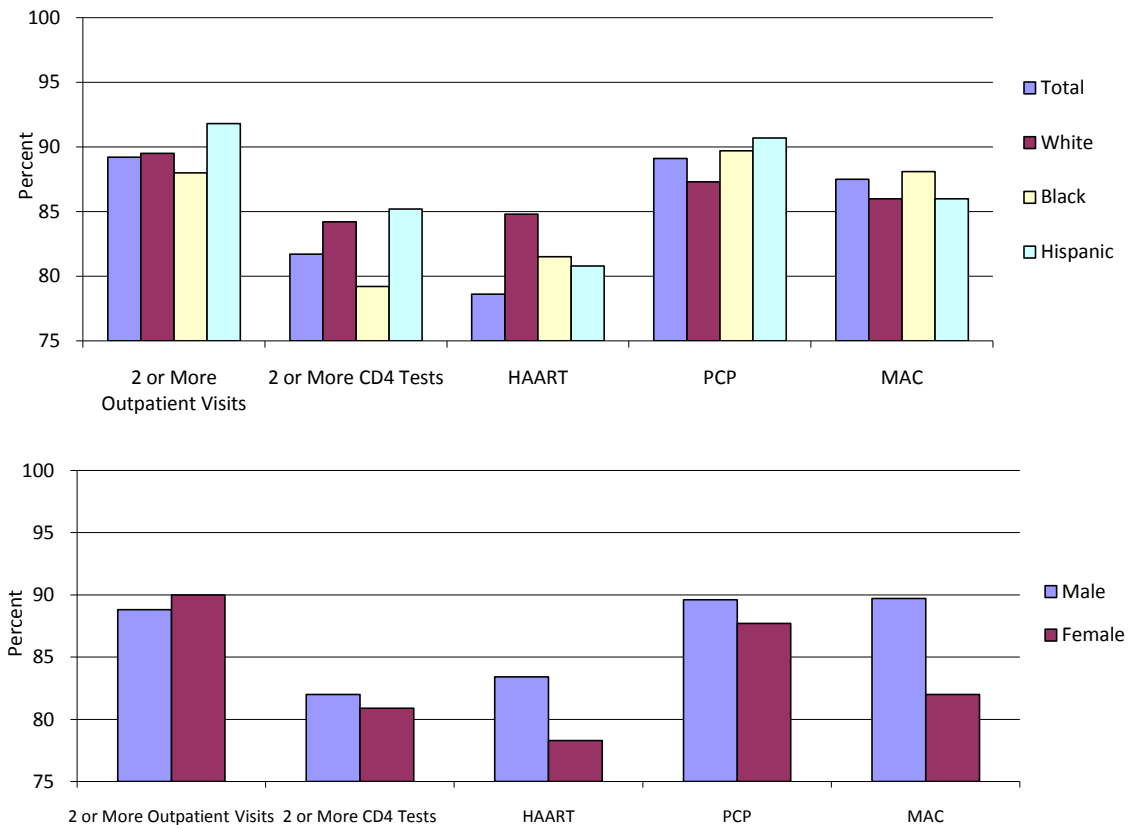
Key: HAART = highly active antiretroviral therapy; PCP = *Pneumocystis* pneumonia; MAC = *Mycobacterium avium* complex.
Source: Agency for Healthcare Research and Quality, HIV Research Network, 2007.
Note: For HAART measure, adult HIV patients had to be enrolled in an HIV network clinic and receive at 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.

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 AIDS Diagnosis

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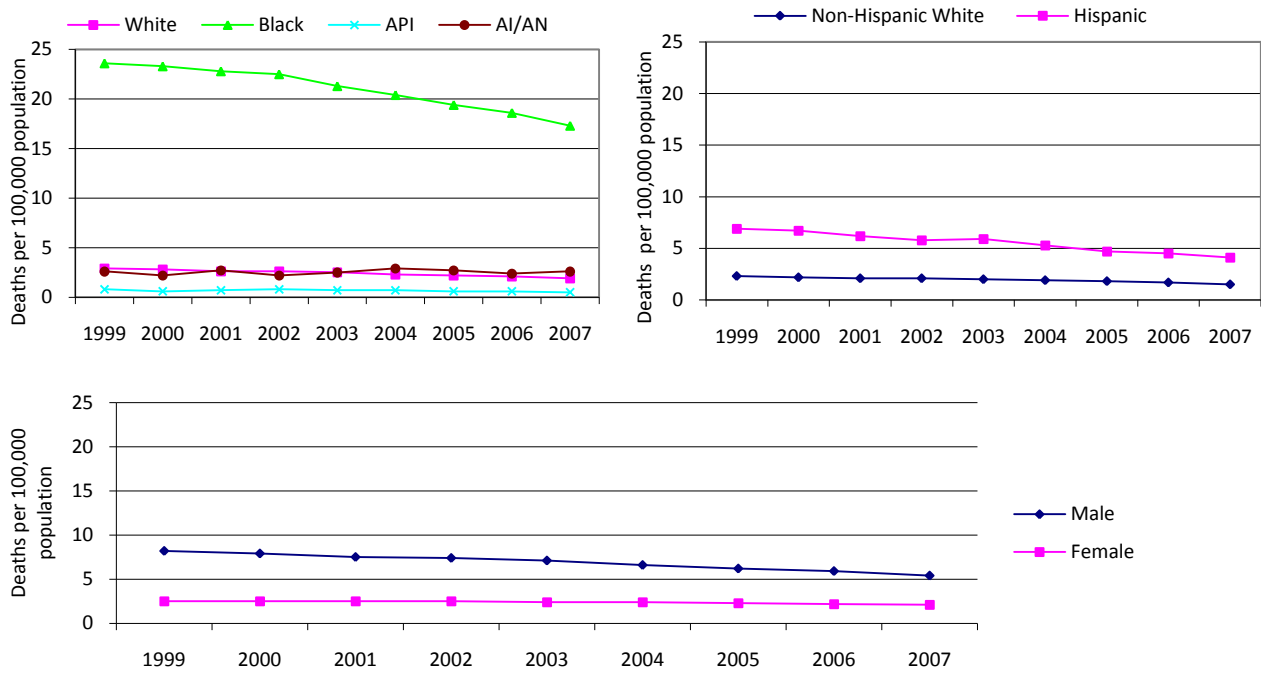
Key: API = Asian or Pacific Islander; AI/AN = American Indian or Alaska Native.
Source: Centers for Disease Control and Prevention, National Center for Health Statistics, National Vital Statistics System – Mortality, 1999-2007.
Note: Rates are age adjusted to the 2000 standard population.

- 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.

2-30

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) .... 73,590,243[31]
Number of babies born in 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.

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

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[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.

delivery can result in trauma, existing evidence shows that severe periRaneal 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
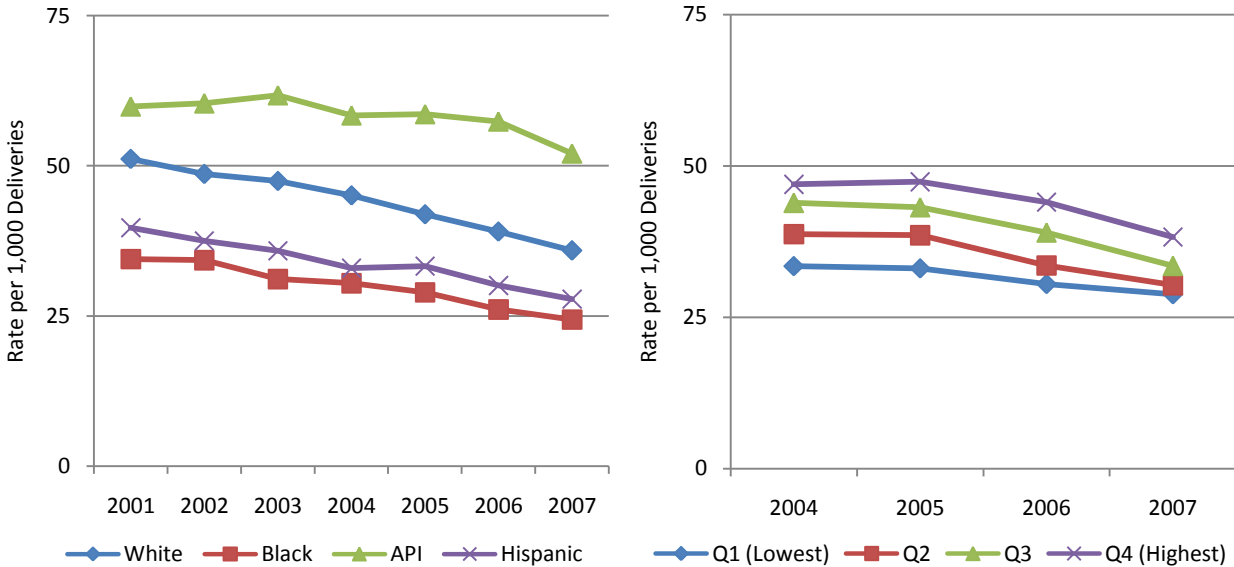
Key: API = Asian or Pacific Islander; Q = Quartile; Q1 indicates the lowest area income quartile while Q4 indicates the highest area income quartile.
Source: Agency for Healthcare Research and Quality, Healthcare Cost and Utilization Project, State Inpatient Databases disparities analysis file, 2001-2007, 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.
- 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.


[xix] The top 3 States contributing to the achievable benchmark are Massachusetts, Utah, and Wyoming.

- 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
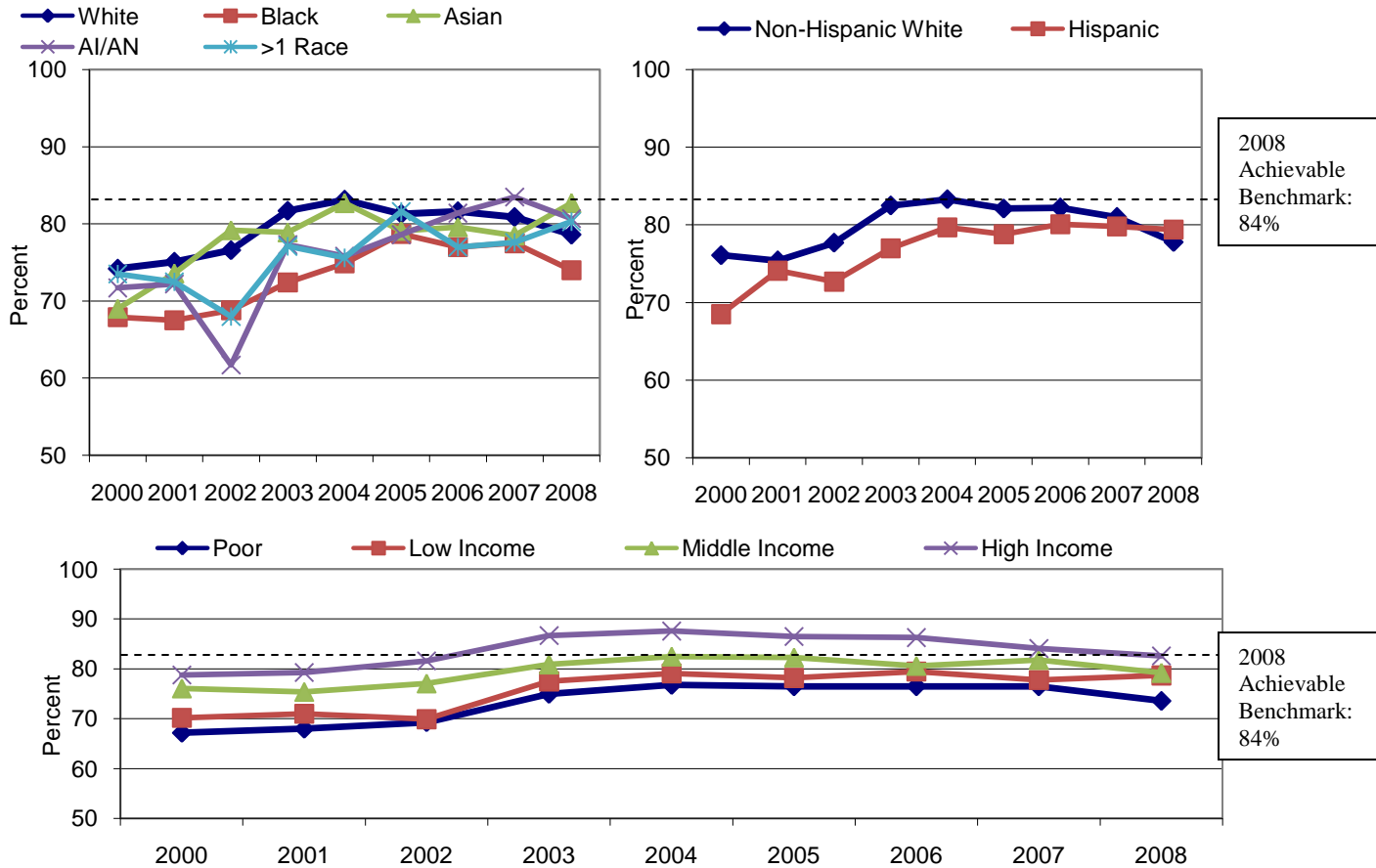
Key: AI/AN = American Indian or Alaska Native.
Source: Centers for Disease Control and Prevention, National Center for Health Statistics and National Center for Immunization and Respiratory Diseases, National Immunization Survey, 2000-2008.
Denominator: U.S. civilian noninstitutionalized population ages 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, although rates among Asians and high-income children are still above 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.

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.

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

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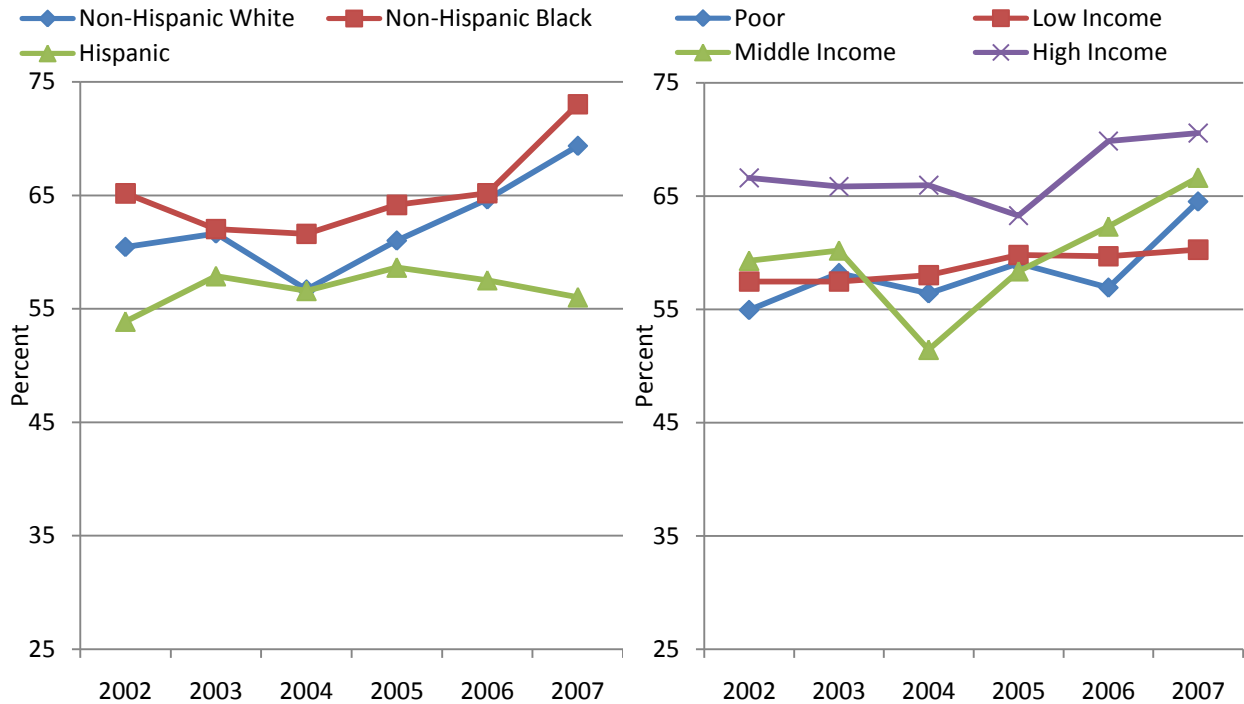
Source: Agency for Healthcare Research and Quality, Medical Expenditure Panel Survey, 2002-2007.
Denominator: U.S. civilian noninstitutionalized population ages 3-6.

- 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.

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
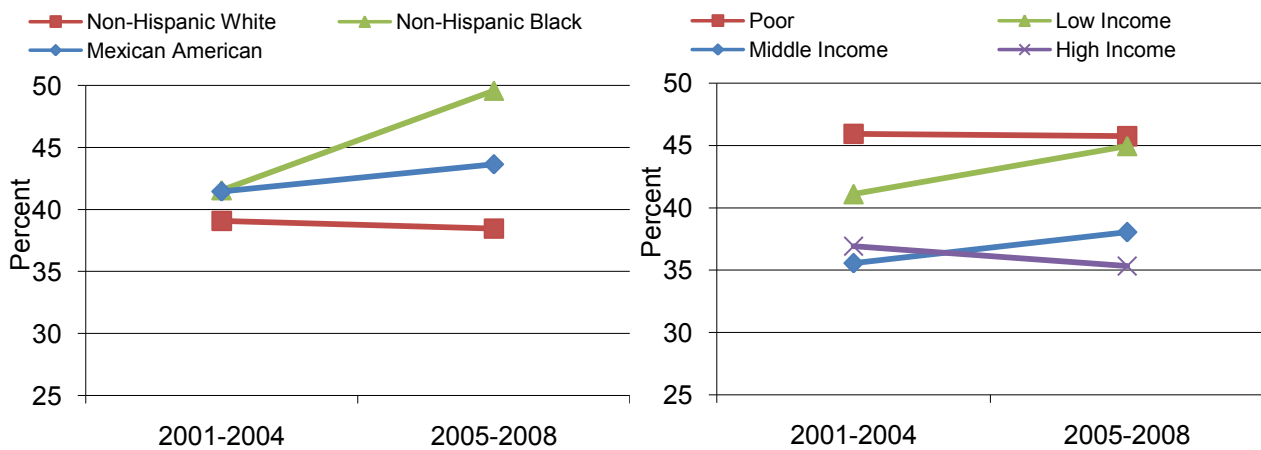
Source: Centers for Disease Control and Prevention, National Center for Health Statistics, National Health and Nutrition Examination Survey, 2001-2004 and 2005-2008.
Denominator: U.S. civilian noninstitutionalized population ages 2-19 who were overweight.
Note: Overweight children are identified using 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.

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.


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

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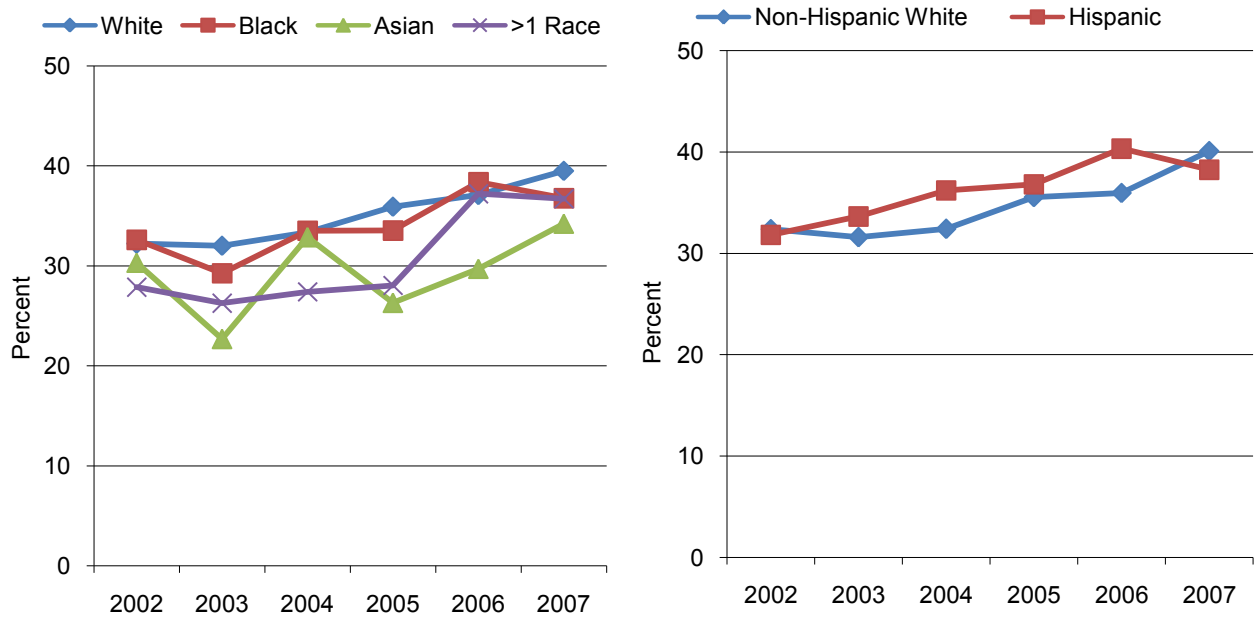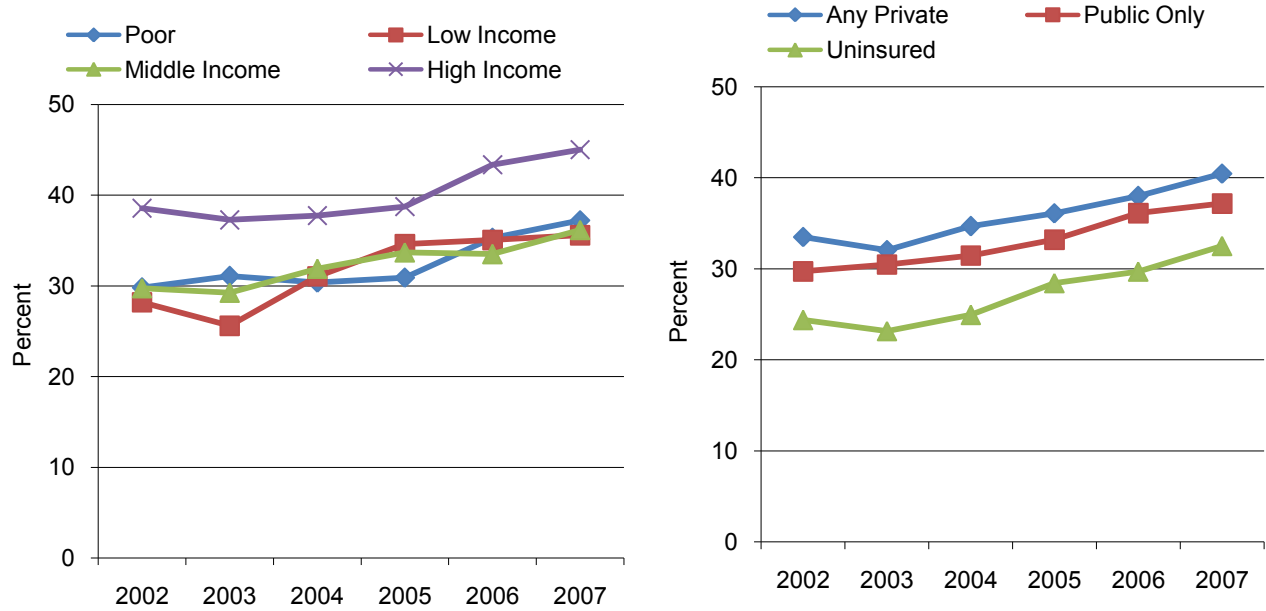
Source: Agency for Healthcare Research and Quality, Medical Expenditure Panel Survey, 2002-2007.
Denominator: U.S. civilian noninstitutionalized population ages 2-17.

- 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.
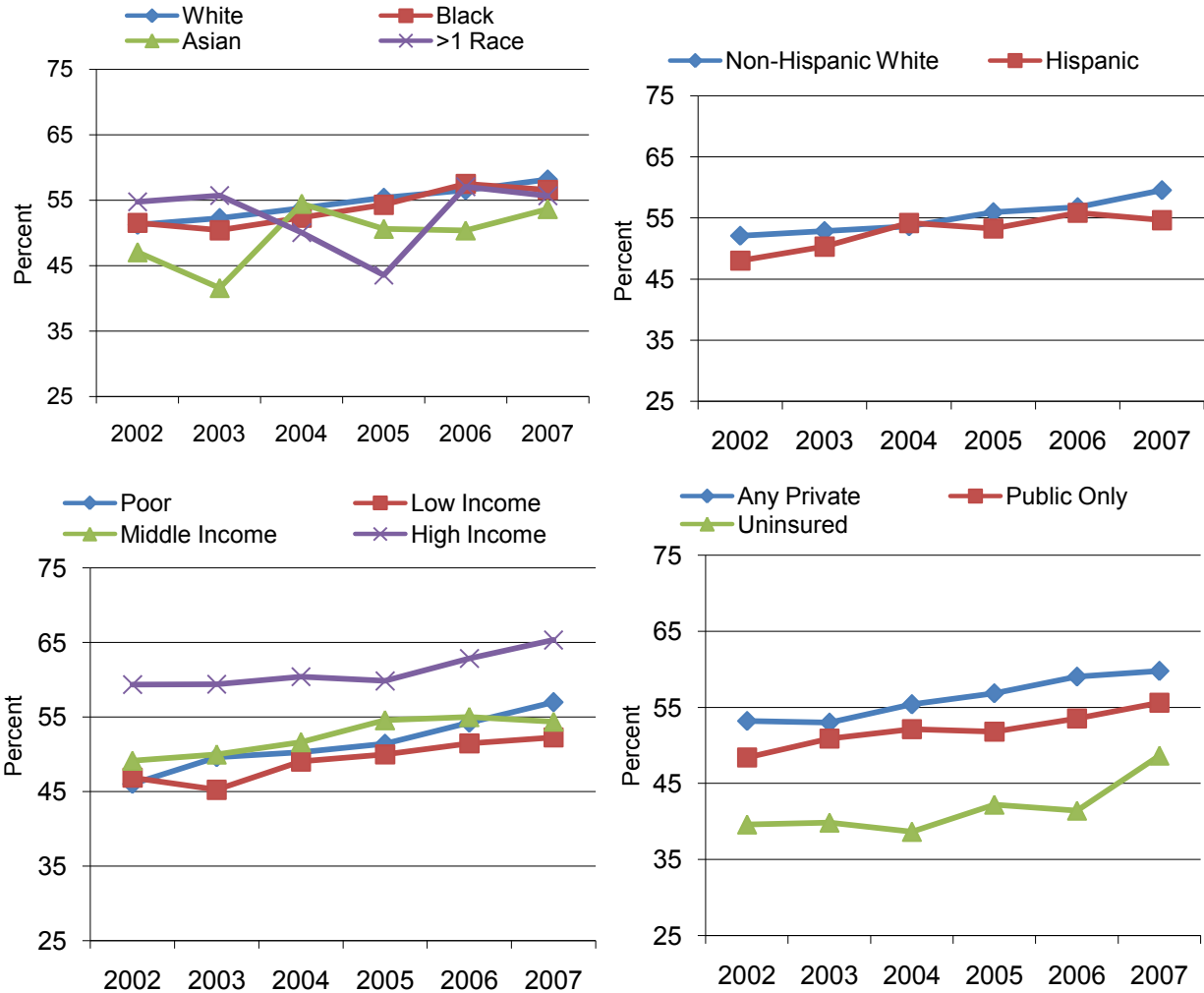
Also, in the NHQR:

- 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]

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.

- 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.

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.

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.

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

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[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.

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
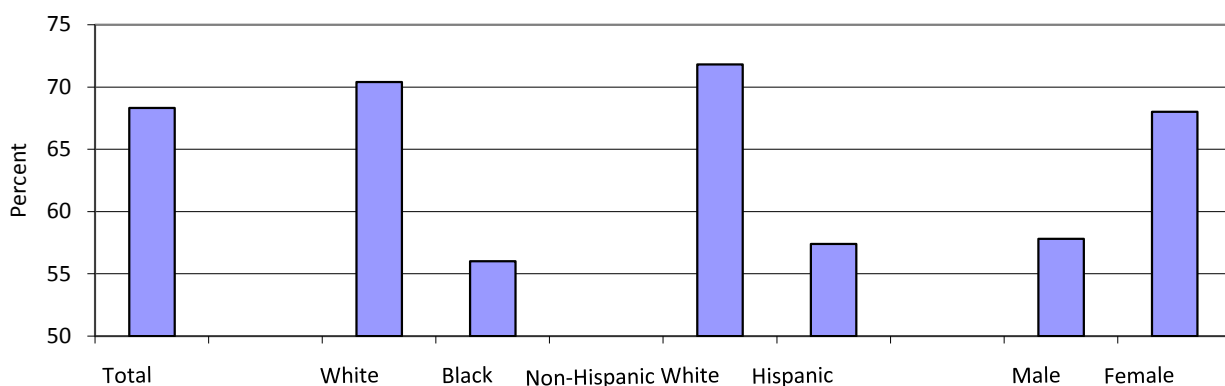
Source: Substance Abuse and Mental Health Services Administration, National Survey on Drug Use and Health, 2008.
Denominator: U.S. population age 18 and over who had a major depressive episode in the last 12 months.
Note: Major depressive episode is defined as a period of at least 2 weeks when a person 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* with a major depressive episode in the last 12 months who received any treatment for depression. 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.

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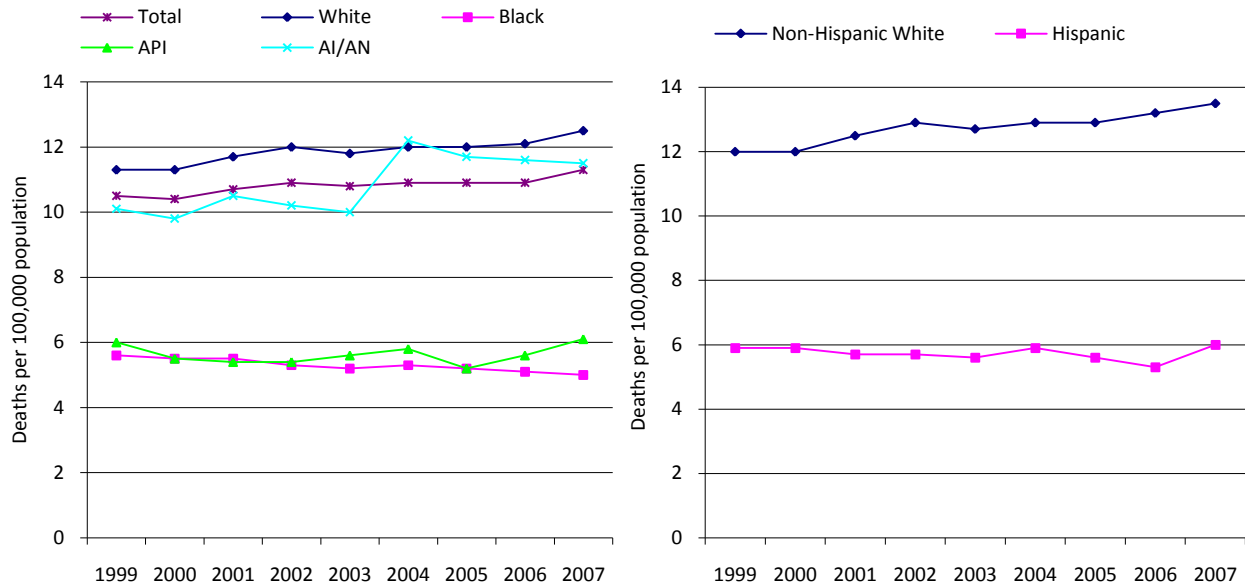
Key: API = Asian and Pacific Islander; AI/AN = American Indian or Alaska Native.
Source: Centers for Disease Control and Prevention, National Center for Health Statistics, National Vital Statistics System—Mortality.
Denominator: Civilian noninstitutionalized population.
Note: Estimates are age adjusted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

- 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.

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
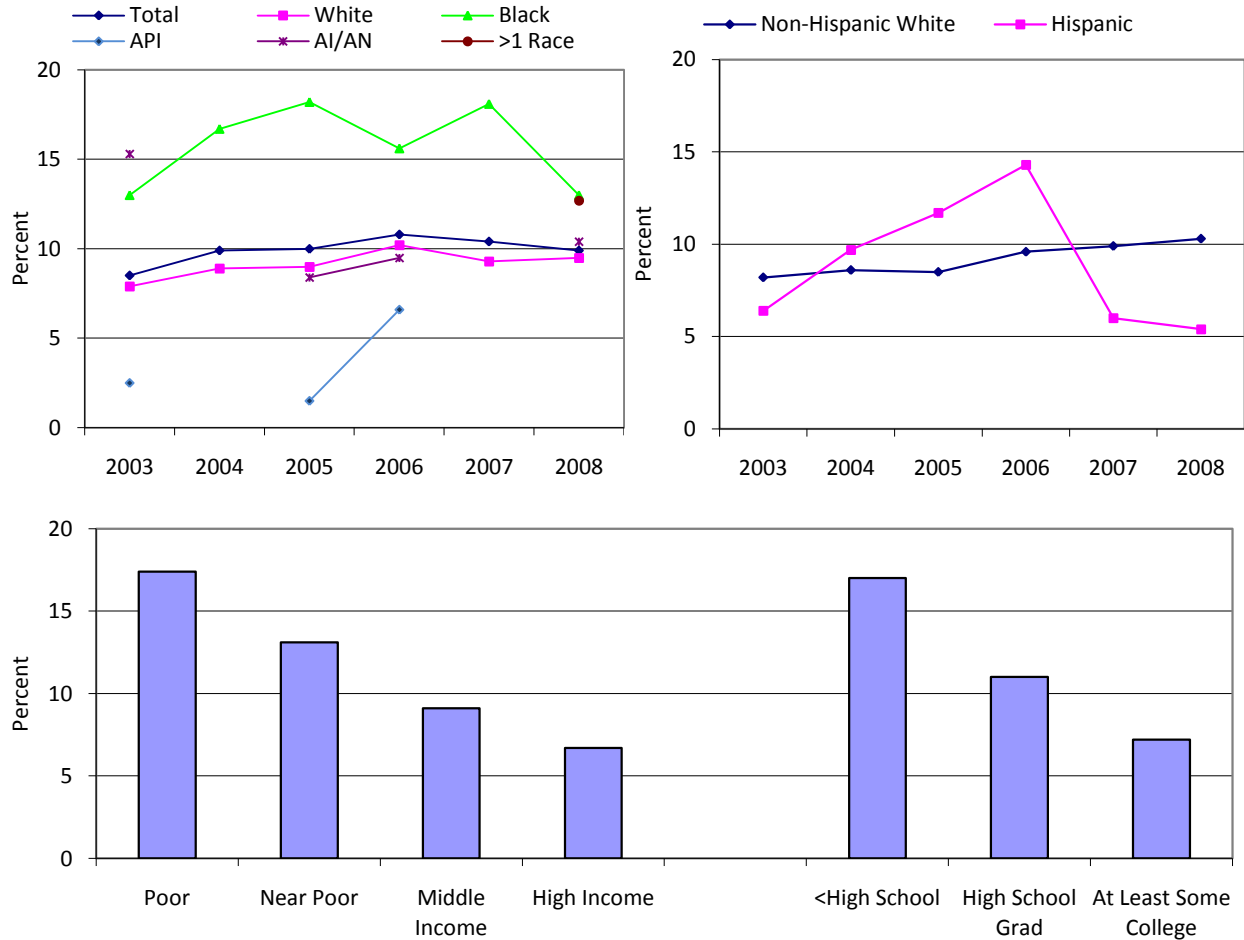
Key: API = Asian or Pacific Islander; AI/AN = American Indian or Alaska Native.

[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).

- 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 for illicit drug use.

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
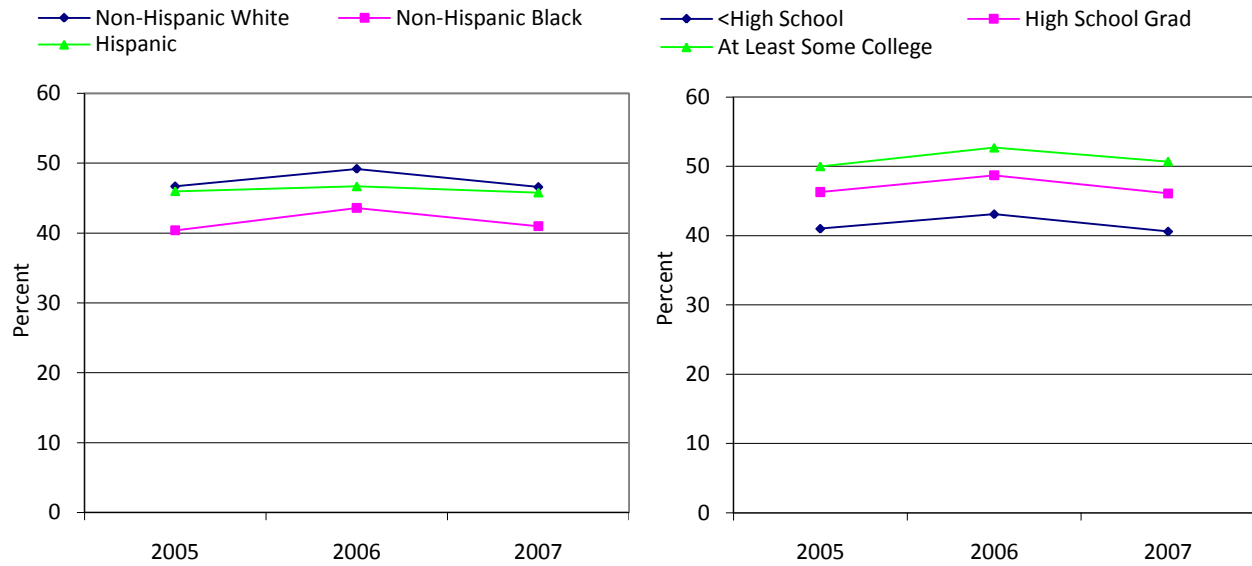
Source: Substance Abuse and Mental Health Services Administration, Treatment Episode Data Set, Discharge Data Set, 2005-2007.
Denominator: Discharges age 12 and over from publicly funded substance abuse treatment facilities.

- 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.

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]

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]

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

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

2008 Achievable Benchmark: 66.4%

2008 Achievable Benchmark: 66.4%

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.

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

- 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 yearsAlso, in the NHQR:
- From 2000 to 2008, the overall percentage of adults age 65 and over who reported ever having pneumococcal vaccination increased.

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
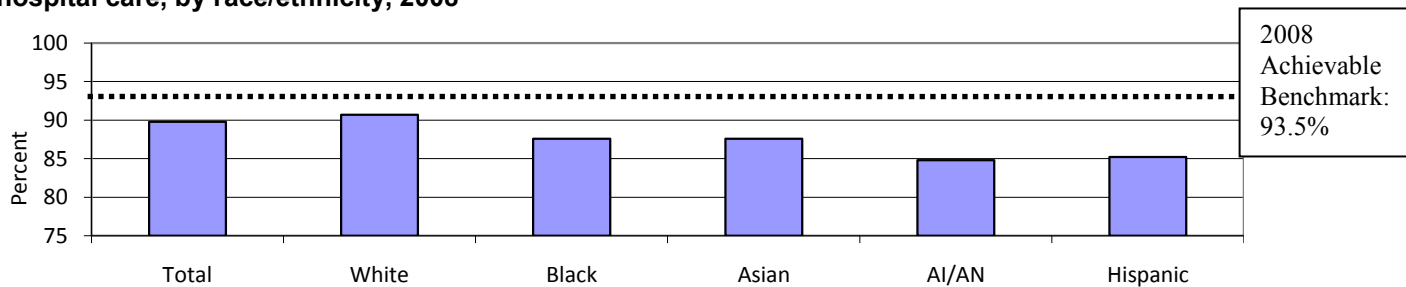
Key: AI/AN = American Indian or Alaska Native.
Source: Centers for Medicare & Medicaid Services, Quality Improvement Organization Program, 2008.
Denominator: Patients hospitalized with a principal discharge diagnosis of pneumonia or a principal discharge diagnosis of either septicemia or respiratory 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%).
- The percentage of patients with pneumonia who received recommended hospital care was also lower for females than 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.

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

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
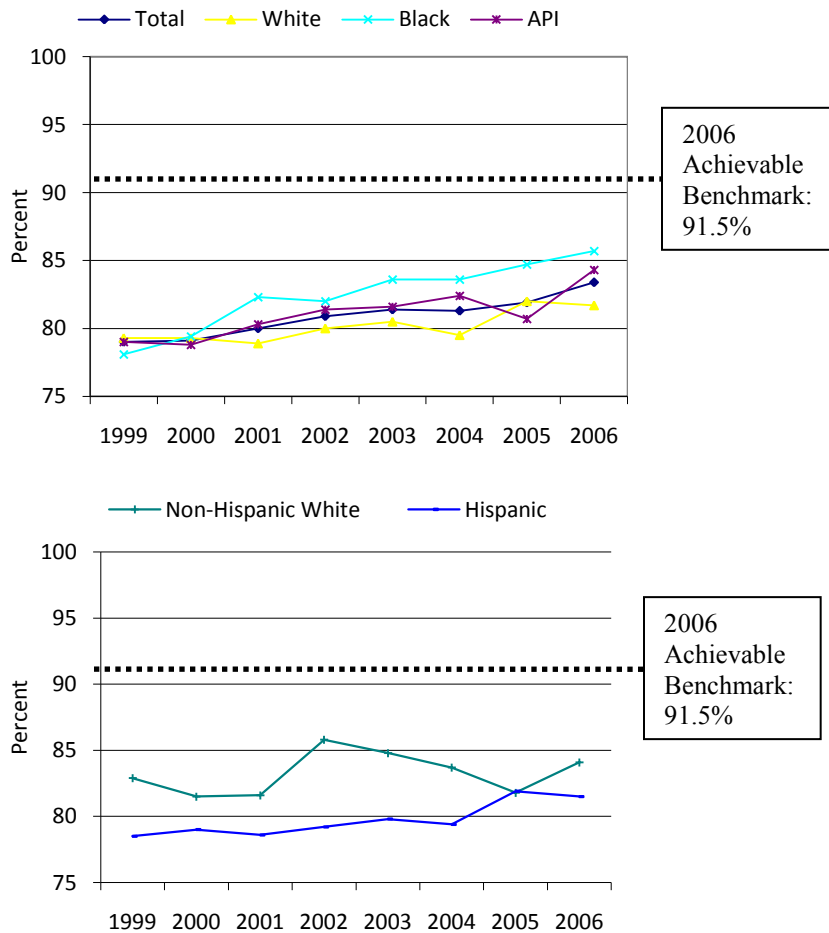
Key: API = Asian or Pacific Islander.
Source: Centers for Disease Control and Prevention, National Tuberculosis Surveillance System, 1999-2006.
Denominator: Foreign-born U.S. resident population with verified tuberculosis, all ages.

- In 2006, among the foreign-born population, Blacks and Asians 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).

- 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.

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
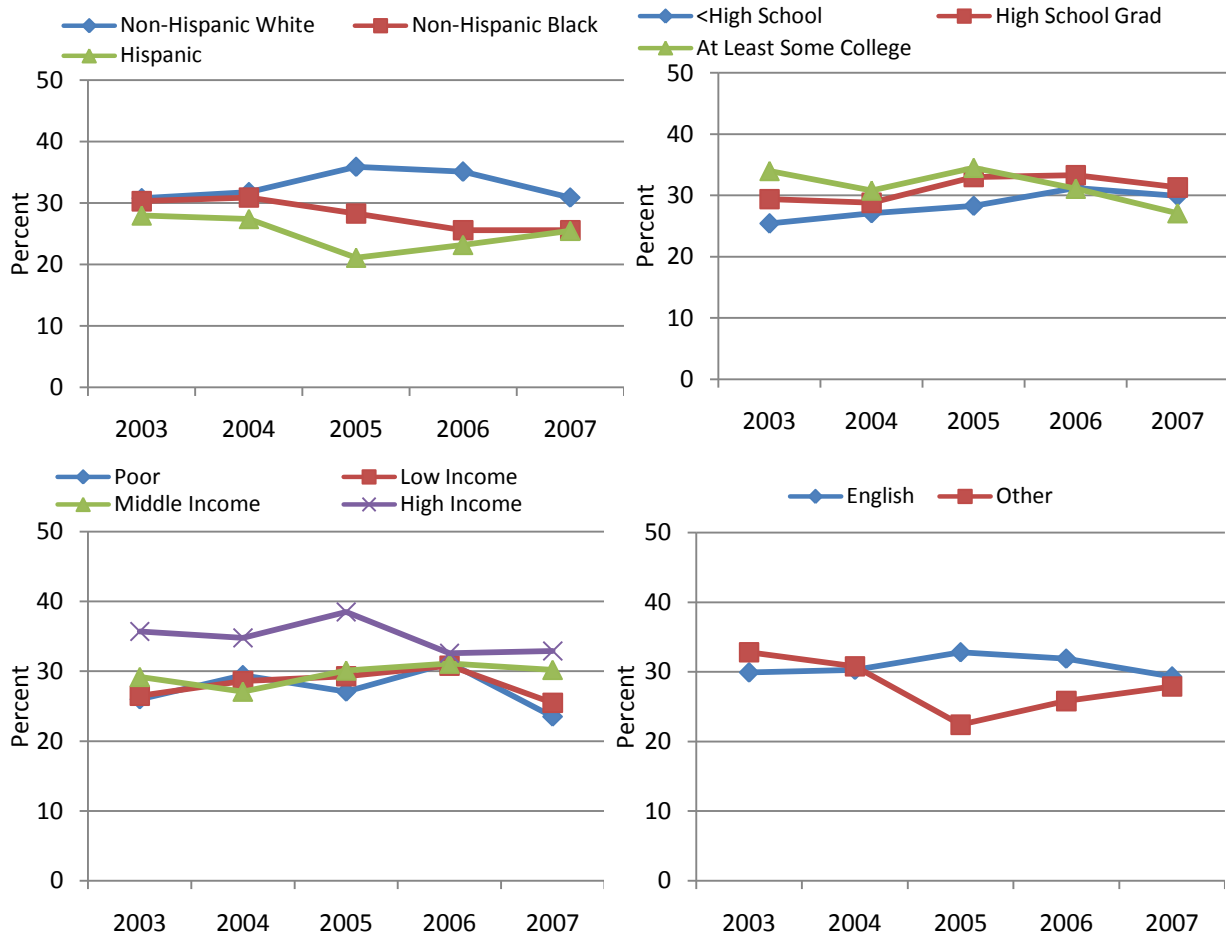
Source: Agency for Healthcare Research and Quality, Medical Expenditure Panel Survey, 2003-2007.
Denominator: Noninstitutionalized population with asthma, as defined below.
**Note:** People with current asthma report they still have asthma or had an asthma attack in the last 12 months.

- 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.

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
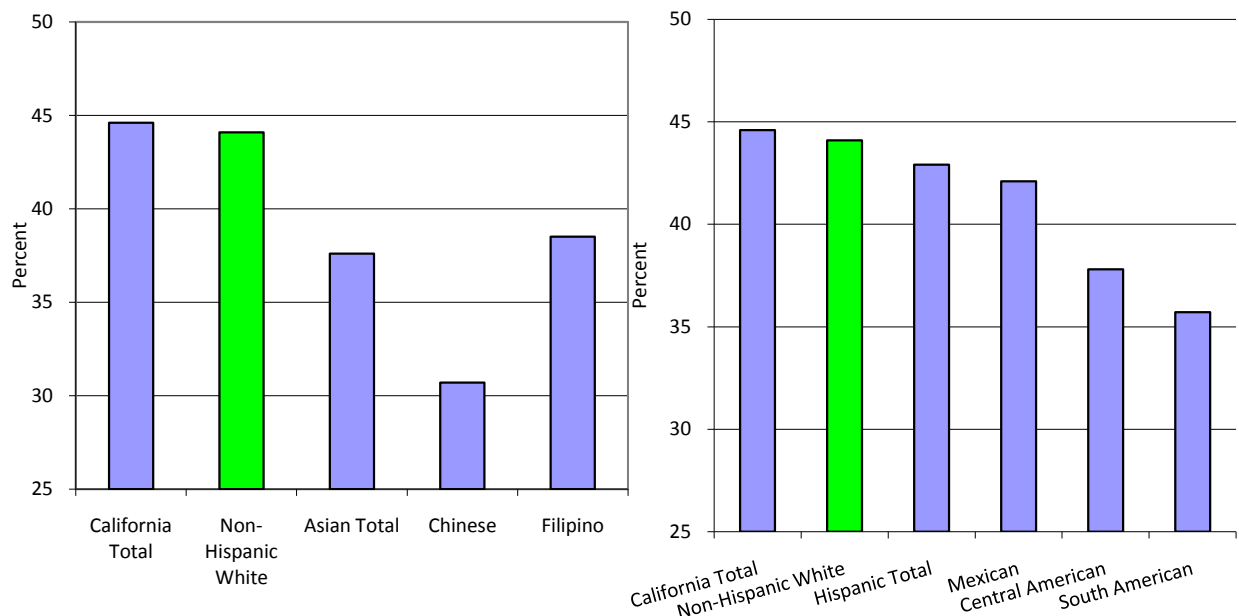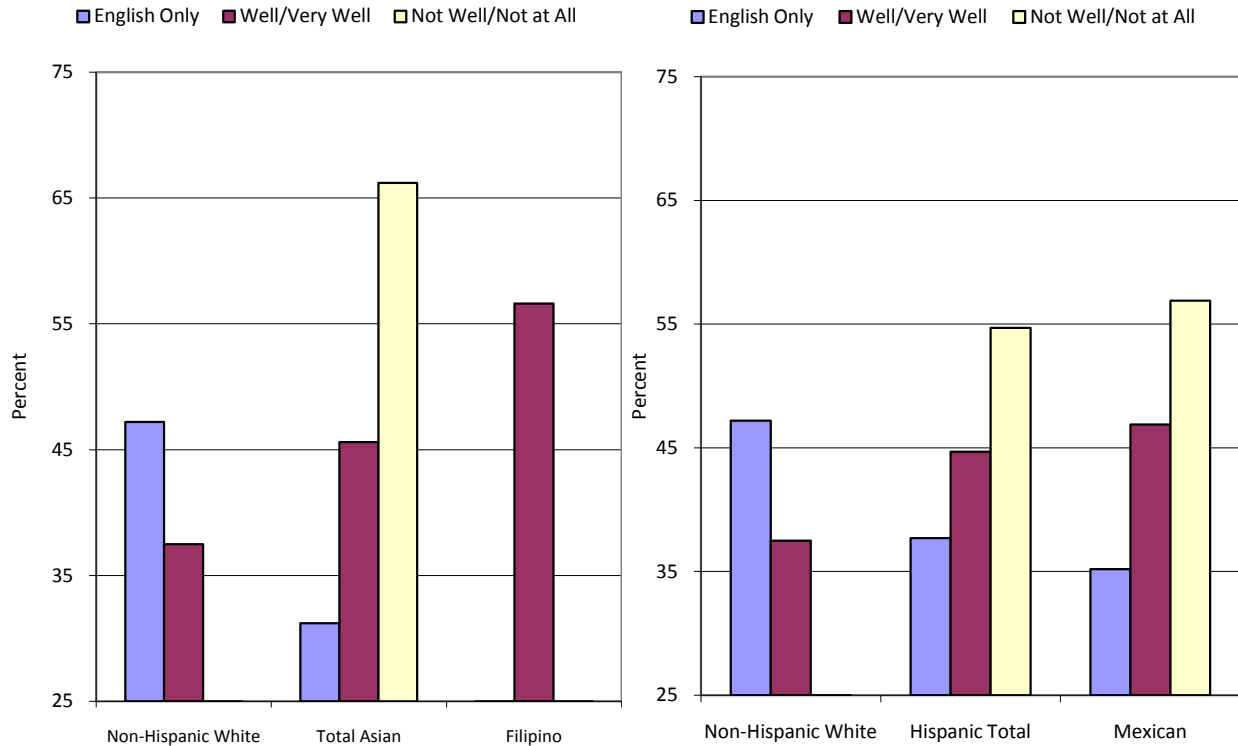

Source: University of California, Los Angeles, Center for Health Policy Research, California Health Interview Survey, 2007.
Denominator: Civilian noninstitutionalized population in California.

- 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.

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%).

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.

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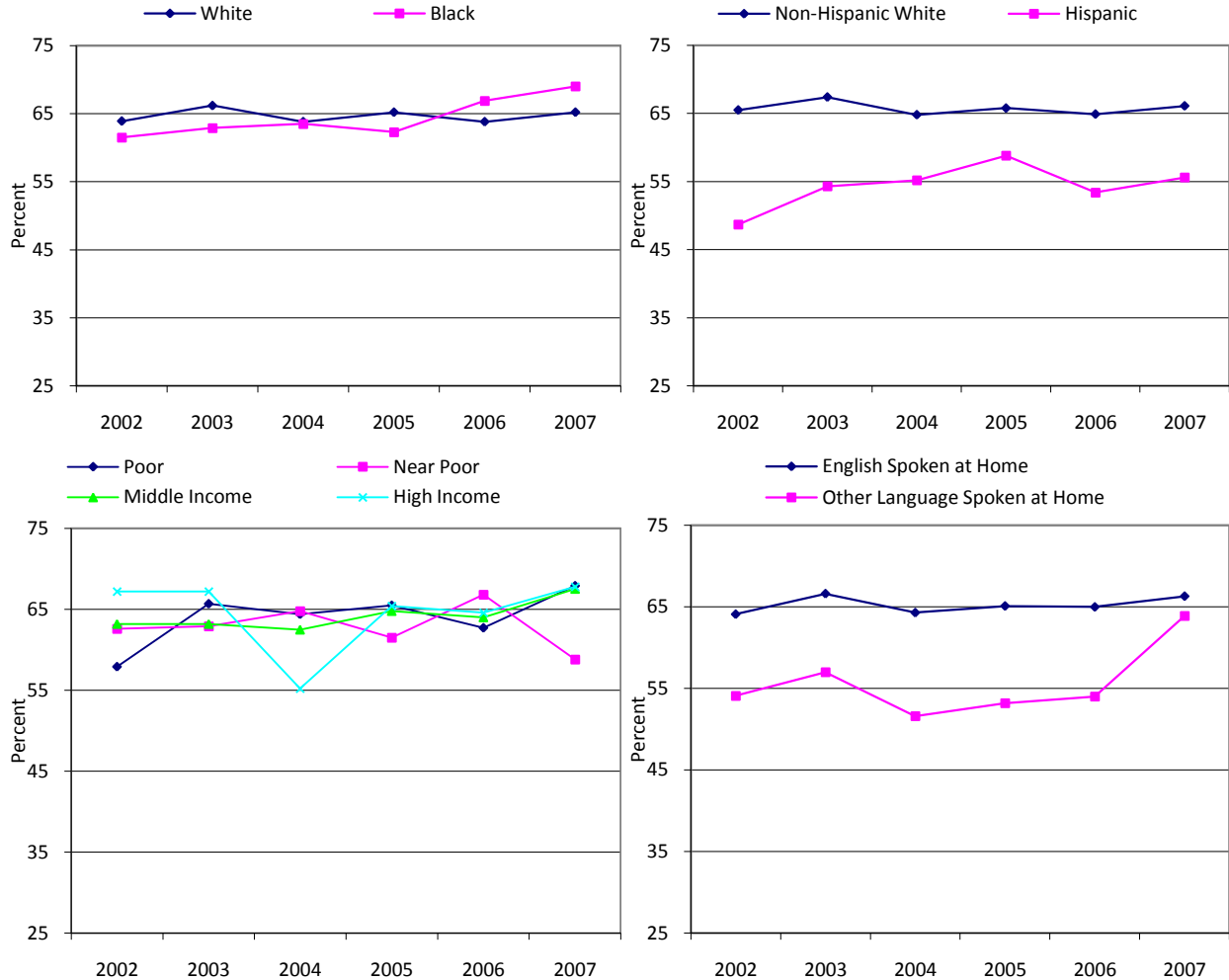
Source: Agency for Healthcare Research and Quality, Medical Expenditure Panel Survey, 2002-2007.
Denominator: Civilian noninstitutionalized adult current smokers under age 65 who had a checkup in the last 12 months.

- 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.

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
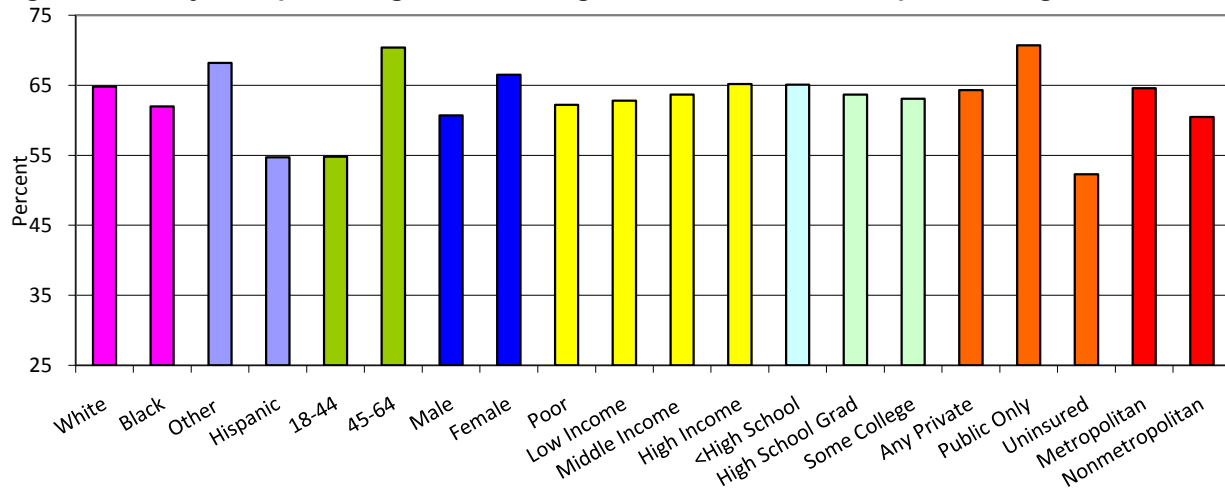
Source: Agency for Healthcare Research and Quality, Medical Expenditure Panel Survey, 2007.
Denominator: Civilian noninstitutionalized adult current smokers under age 65 who had a checkup in the last 12 months.
Note: Adjusted percentages are predicted marginals from a statistical model that includes 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.

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
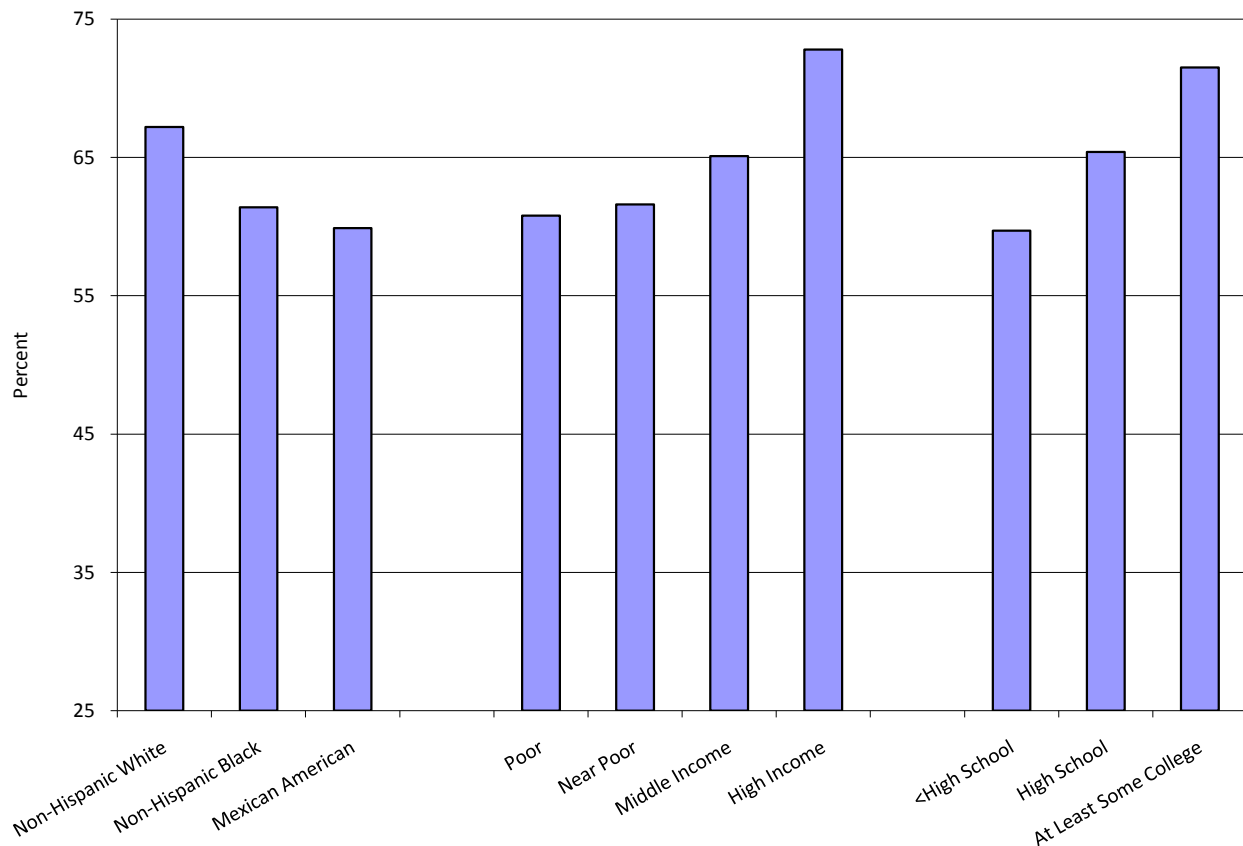
Source: Centers for Disease Control and Prevention, National Center for Health Statistics, National Health and Nutrition Examination Survey, 2005-2008.
Denominator: Civilian noninstitutionalized obese adults age 20 and over.
Note: Estimates are age adjusted to the 2000 standard population using three 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 who 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 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 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.

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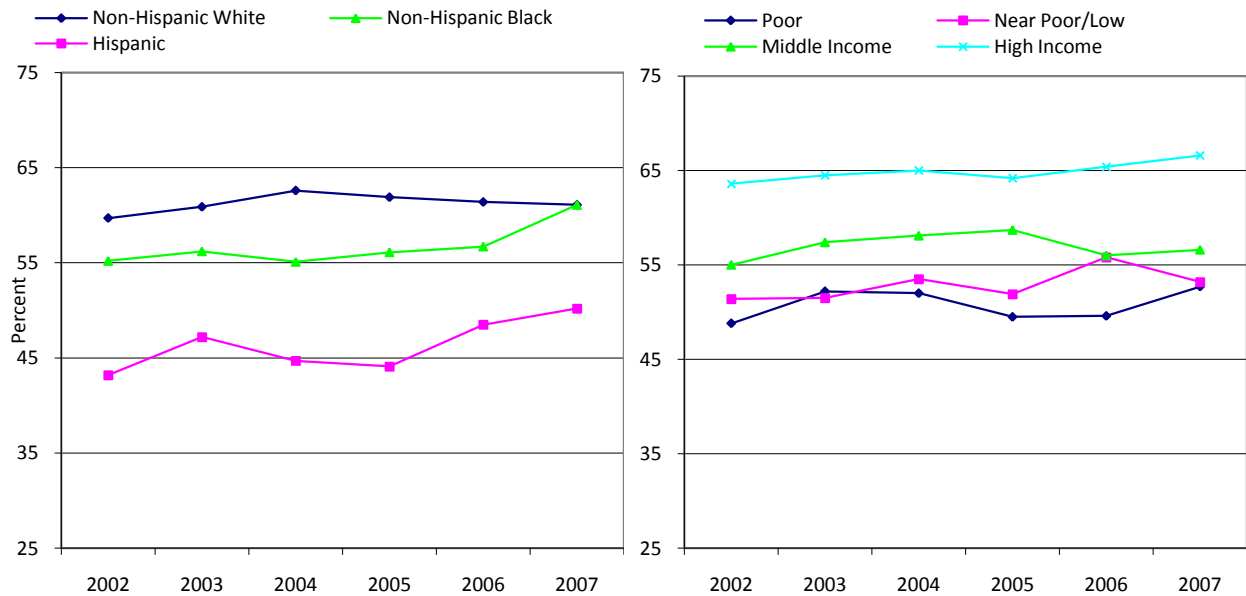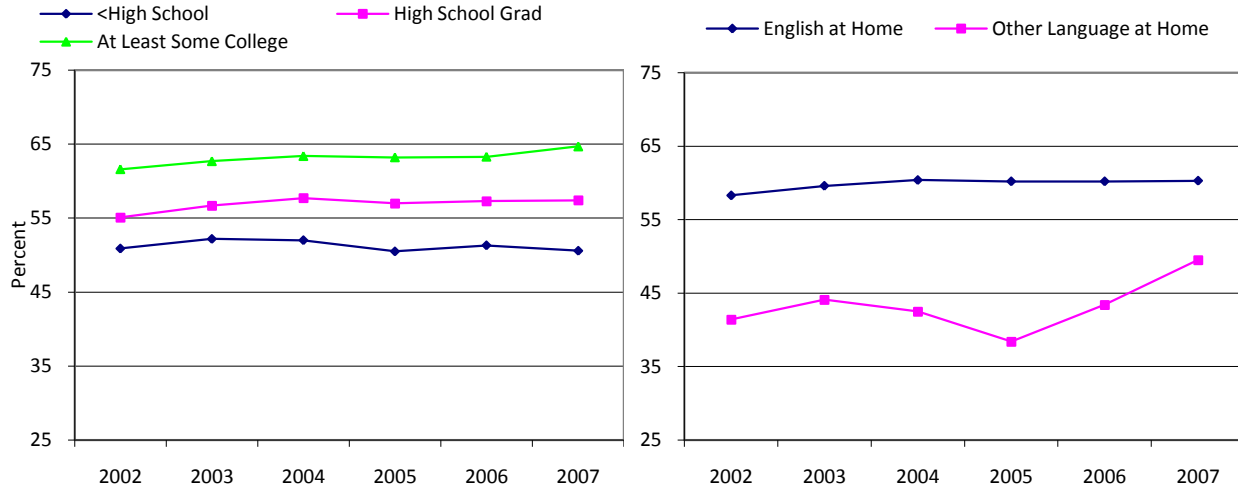
Source: Agency for Healthcare Research and Quality, Medical Expenditure Panel Survey, 2002-2007.
Denominator: Civilian noninstitutionalized population age 18 and over.
Note: Obesity is defined as a body mass index of 30 or higher.

- 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 people (52.7%), low-income people (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

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 also 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%).

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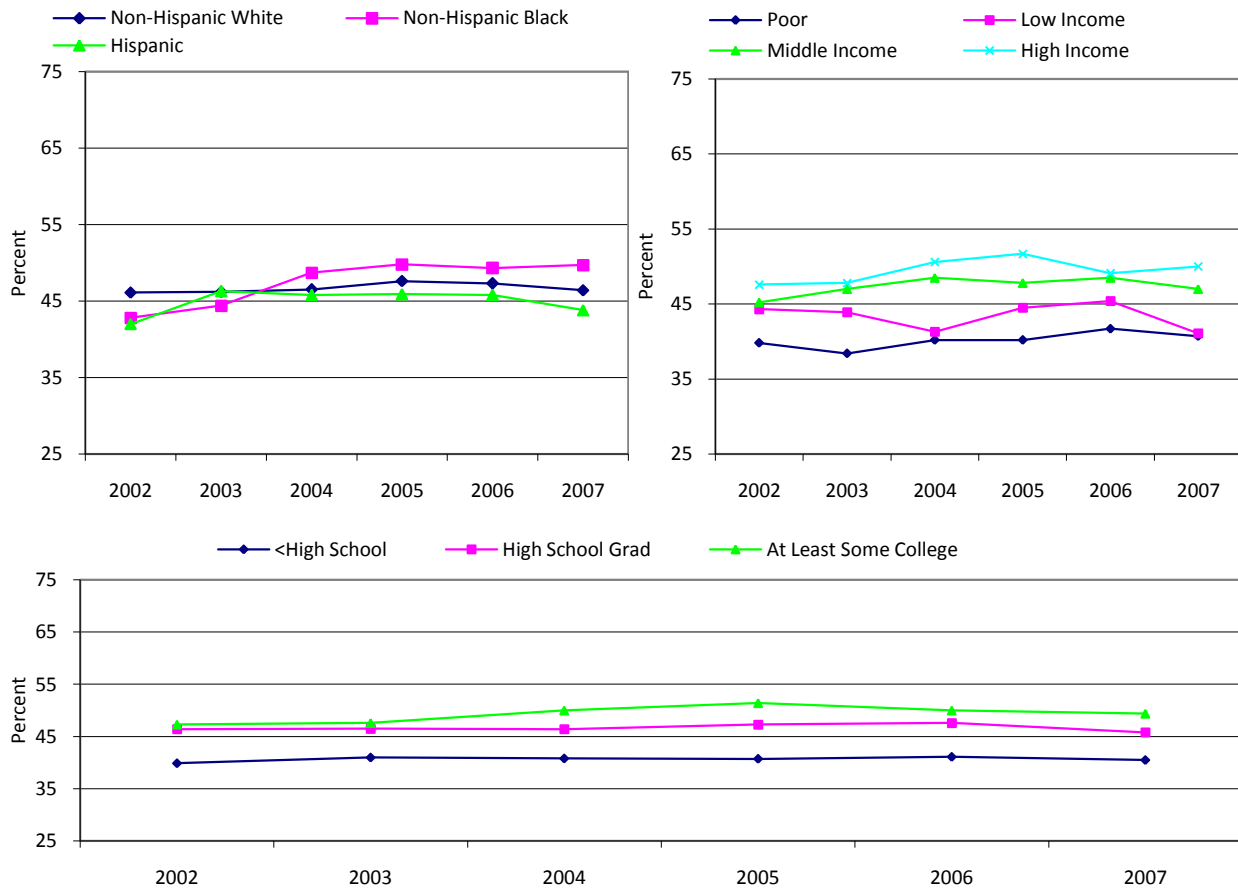
Source: Agency for Healthcare Research and Quality, Medical Expenditure Panel Survey, 2002-2007.
Denominator: Civilian noninstitutionalized population age 18 and over.
Note: Obesity is defined as a body mass index of 30 or higher.

- 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.

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.

Findings

Prevention: Osteoporosis Screening in 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.


[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.

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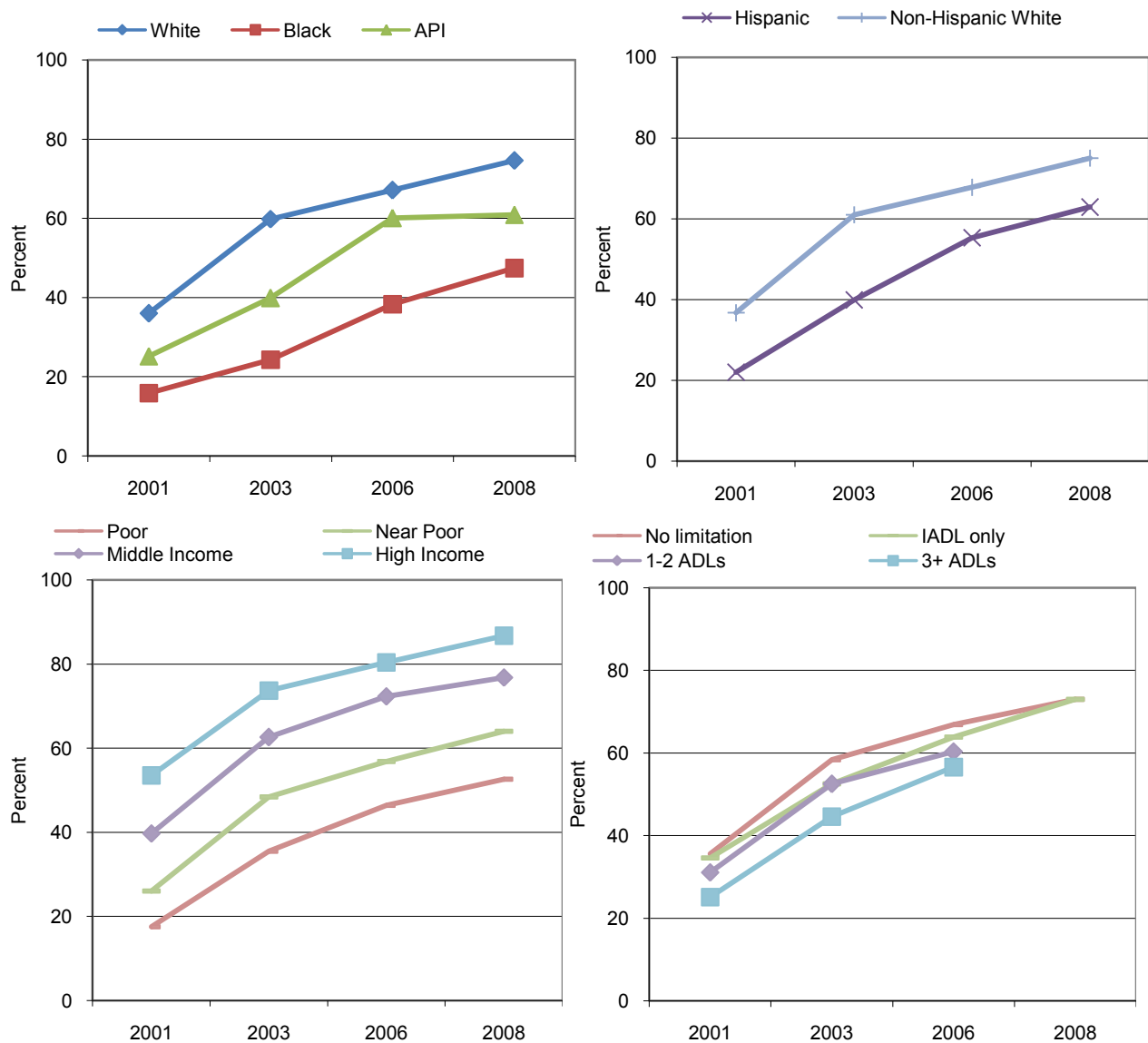
Key: API = Asian or Pacific Islander; ADLs = activities of daily living; IADLs = instrumental activities of daily living.
Source: Medicare Current Beneficiary Survey, 2001, 2003, 2006, and 2008.
**Denominator:** Female Medicare beneficiaries age 65 and over living in the community.

- 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 also 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.

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
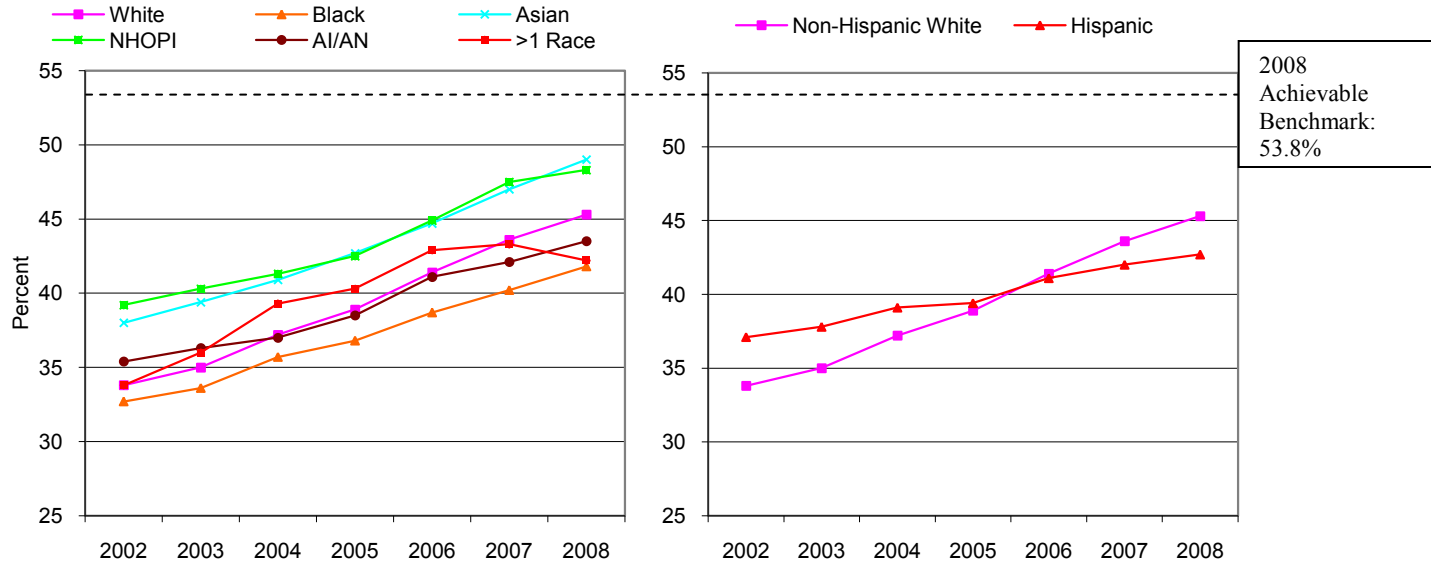
Key: AI/AN = American Indian or Alaska Native; NHOPI = Native Hawaiian or Other Pacific Islander.
Source: Centers for Medicare & Medicaid Services, Outcome and Assessment Information Set (OASIS), 2002-2008.
Denominator: Adult nonmaternity patients completing an episode of skilled home health care and 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.

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

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

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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
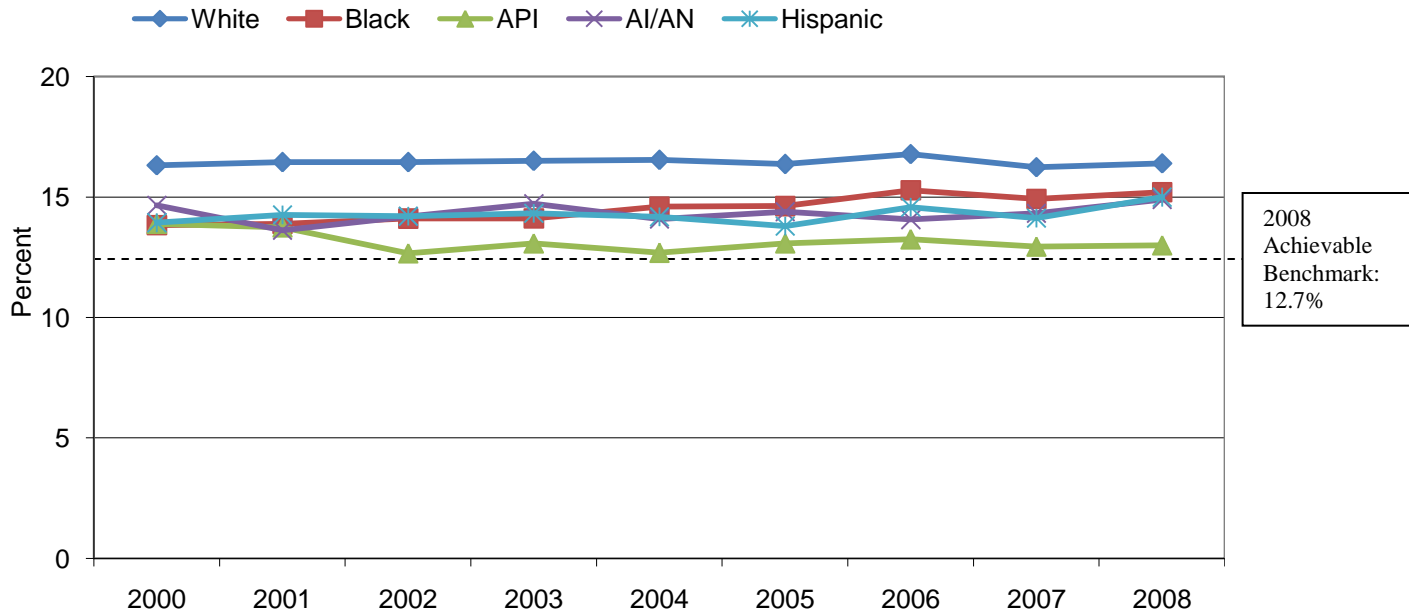
Source: Centers for Medicare & Medicaid Services, Minimum Data Set, 2000-2008. Data are from the third quarter of each calendar year.
Denominator: All long-stay residents in Medicare or Medicaid certified nursing home facilities.

- 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).
- 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 States contributing to the achievable benchmark are Alabama, Alaska, New Jersey, Oklahoma, and Oregon.

2-68

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 forcare, 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
- 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

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[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.

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
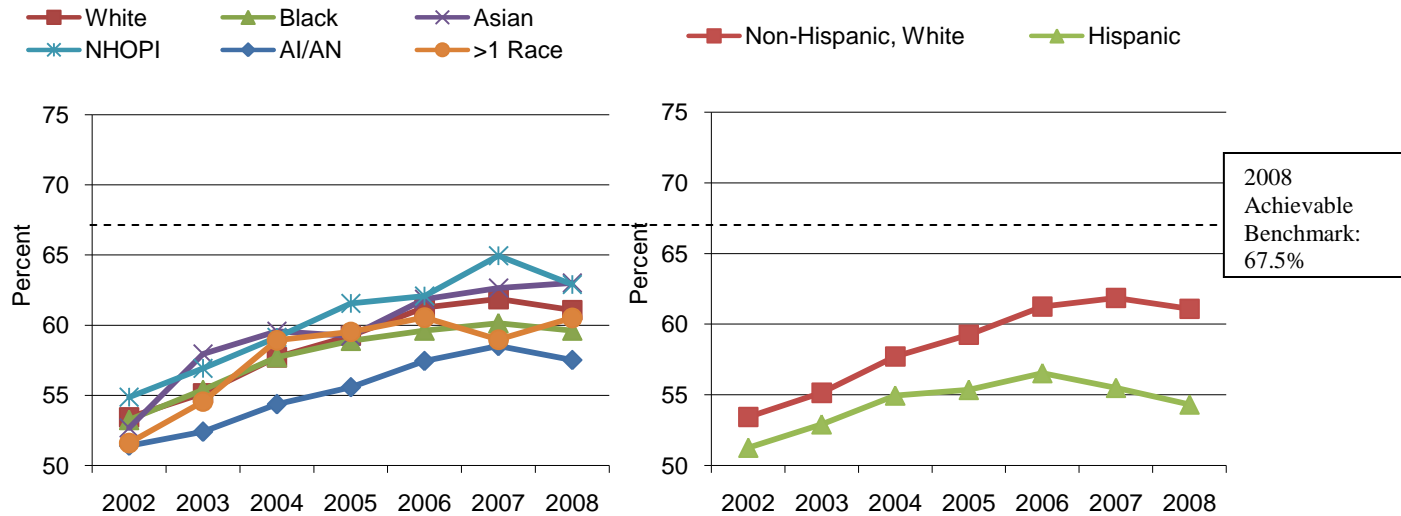
Source: Centers for Medicare & Medicaid Services, Outcome and Assessment Information Set, 2002-2008.
Denominator: Adult nonmaternity patients completing an episode of skilled home health care.

- 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.

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

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.

Figure 2.45. Short-stay (left) and high-risk long-stay (right) nursing home residents with pressure sores, by race/ethnicity, 2000-2008
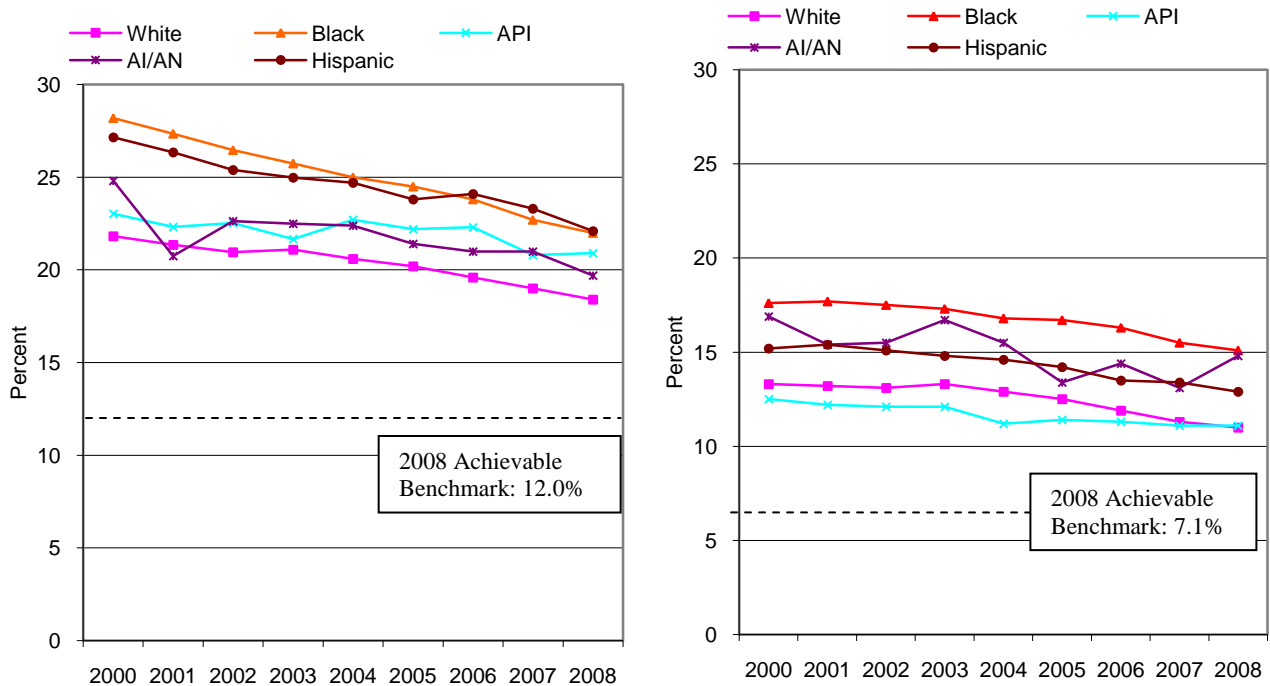
Key: AI/AN = American Indian or Alaska Native; API = Asian or Pacific Islander.
Source: Centers for Medicare & Medicaid Services, Minimum Data Set, 2000-2008. Data for long-stay residents are from the third quarter of each calendar year. Data for short-stay residents are full calendar-year estimates.
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. API, AI/AN, 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, API, AI/AN, and Hispanics would take between 18 and 25 years to attain this benchmark.

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.

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

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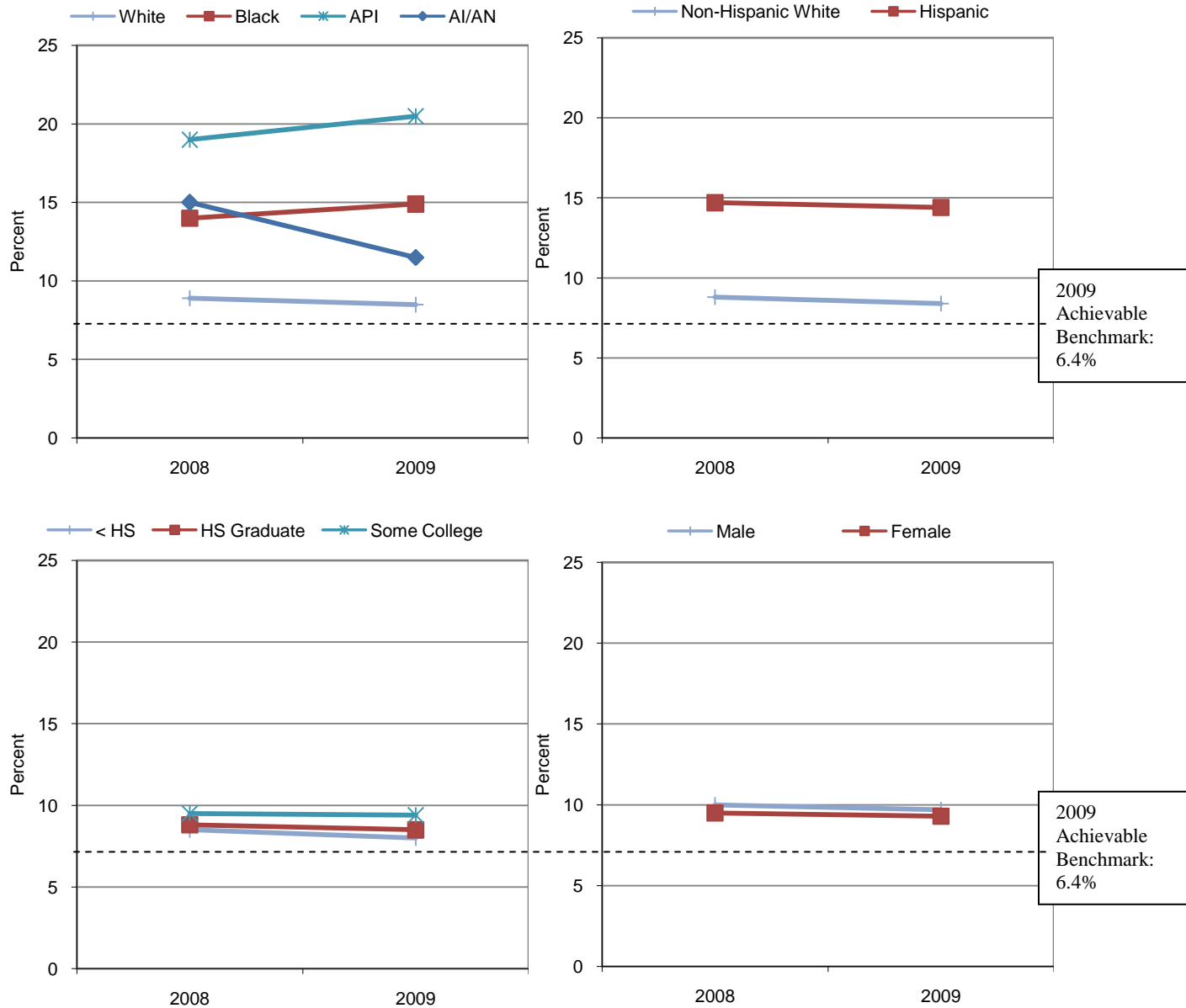
Key: AI/AN = American Indian or Alaska Native; API = Asian or Pacific Islander; HS = High School.
Source: National Hospice and Palliative Care Organization, Family Evaluation of Hospice Care, 2008-2009.
Denominator: Adult hospice patients.

- 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 towards this goal.

Also, in the NHQR:

- In all years, hospice patients ages 18-44 and ages 45-64 were also 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
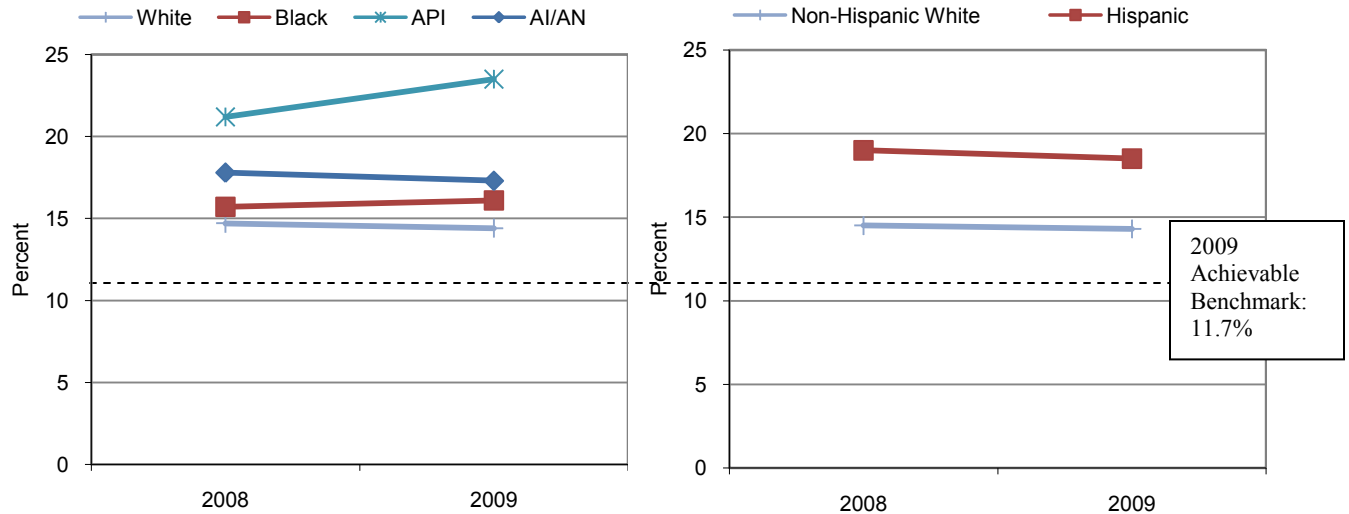
[xli] The top 5 States contributing to the achievable benchmark are Alabama, Alaska, Arkansas, Kansas, and South Carolina.
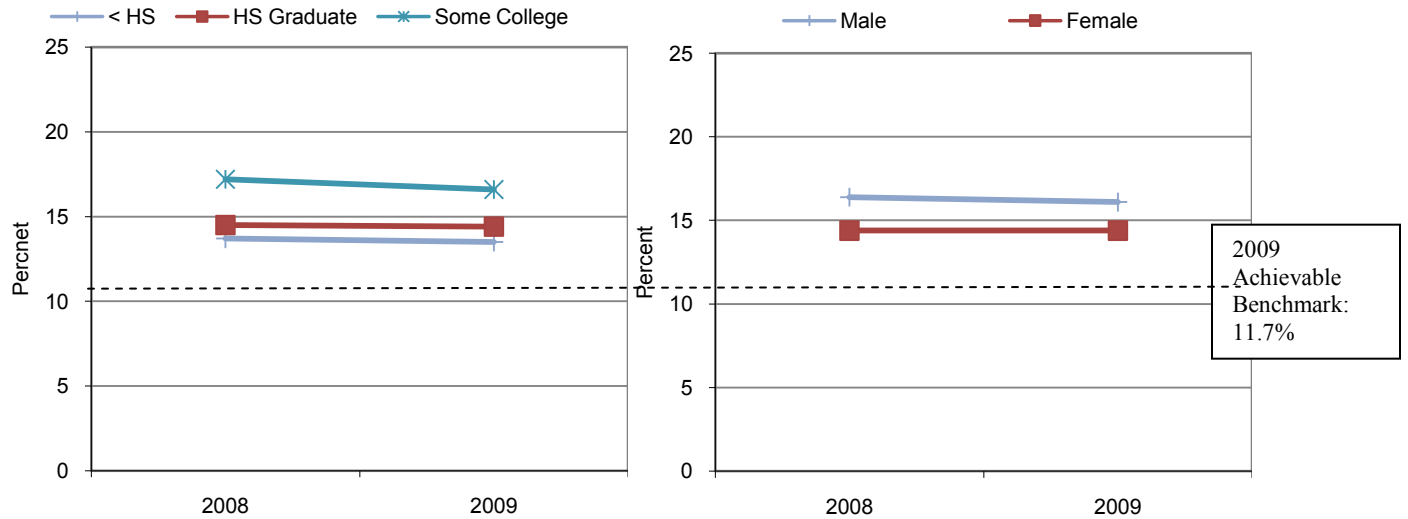
Key: AI/AN = American Indian or Alaska Native; API = Asian or Pacific Islander; HS = High School.
Source: National Hospice and Palliative Care Organization, Family Evaluation of Hospice Care, 2008-2009.
Denominator: Adult hospice patients.

- 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 sufficient to assess progress towards 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 also 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.

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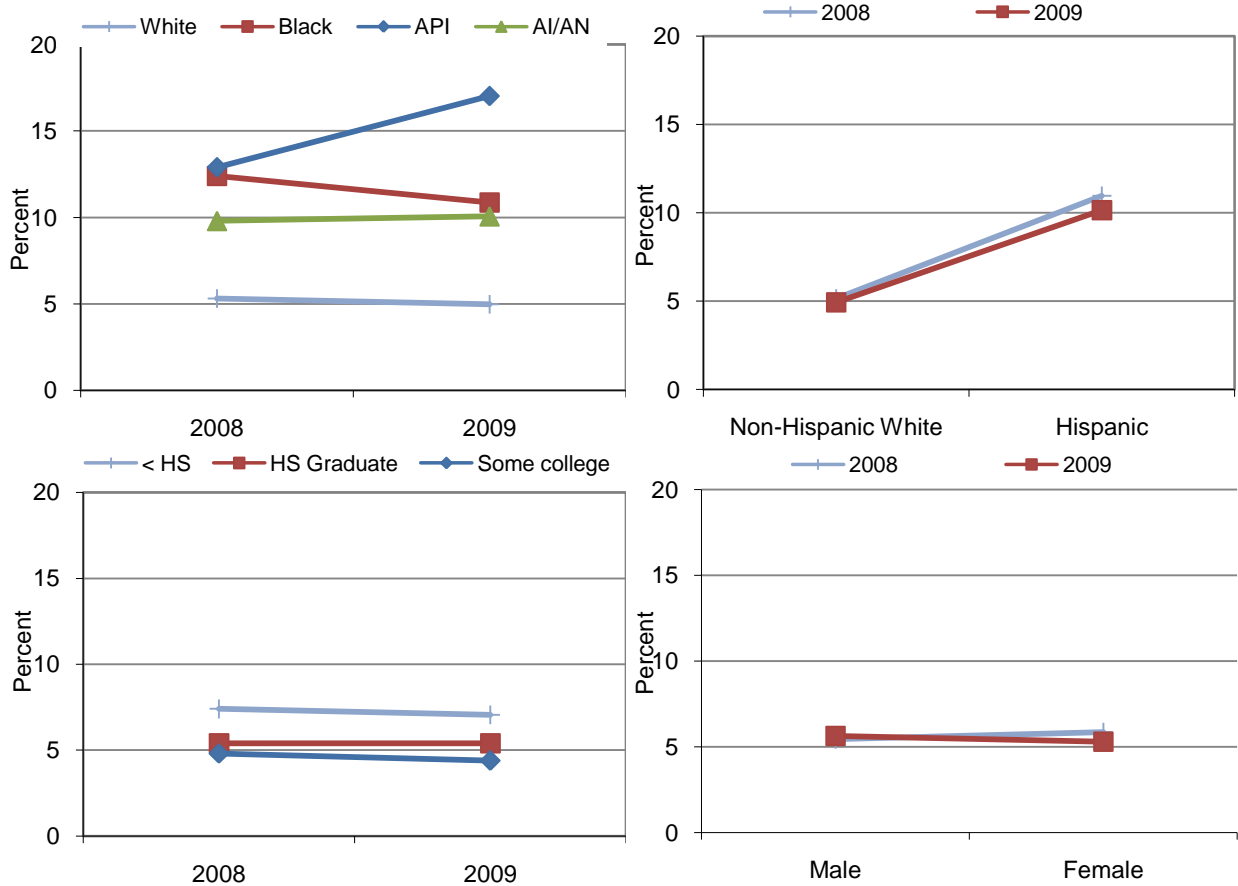
Key: AI/AN = American Indian or Alaska Native; API = Asian or Pacific Islander; HS = High School.
Source: National Hospice and Palliative Care Organization, Family Evaluation of Hospice Care, 2008-2009.
Denominator: Adult hospice patients.

- 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.
- 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.

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Chapter 3. Patient Safety

Importance

Mortality

Number of Americans who die each year from medical errors (1999 est.)..............44,000-98,000[1]

Prevalence

Rate of adverse events for hospitalized patients (annual estimates)............................2.9%-3.7%[1]

Rate of adverse drug reactions during hospital admissions (annual estimates)...........2.0%-6.7%[2-4]

Rate of adverse drug events among Medicare beneficiaries
in ambulatory settings...50 per 1,000 person-years[5]

Cost

Cost attributable to medical errors (2008 est.)..$19.5 billion[6]

Total cost per error (2008 est.).. $13,000[6]

Annual cost attributable to surgical errors (2008 est.)..$1.5 billion[7]

Measures

The Institute of Medicine (IOM) defines patient safety as "freedom from accidental injury due to medical care or medical errors."[1] In 1999, the IOM published *To Err Is Human: Building a Safer Health System*, which called for a national effort to reduce medical errors and improve patient safety.[1] In response to the IOM's report, President George W. Bush signed the Patient Safety and Quality Improvement Act of 2005 (Patient Safety Act).[i] The act was designed to spur the development of voluntary, provider-driven initiatives to improve the quality, safety, and outcomes of patient care. The Patient Safety Act addresses many of the current barriers to improving patient care.

Central to this effort is the ability to measure and track adverse events. Measuring patient safety is complicated by difficulties in assessing and ensuring the systematic reporting of medical errors and adverse events. All too often, adverse event reporting systems are laborious and cumbersome. Health care providers may also fear that if they participate in the analysis of medical errors or patient care processes, the findings may be used against them in court or harm their professional reputations. Many factors limit the ability to aggregate data in sufficient numbers to rapidly identify prevalent risks and hazards in the delivery of patient care, their underlying causes, and practices that are most effective in mitigating them. These include difficulties aggregating and sharing data confidentially across facilities or State lines.

In addition, although *To Err Is Human* does not mention race or ethnicity when discussing the problem of patient safety, such data are limited. Any differences that suggest patient race and/or ethnicity might influence the risk of experiencing a patient safety event must be investigated to

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[i]Patient Safety and Quality Improvement Act of 2005, 42 U.S.C. 299b-21 to 299b-26.

better understand the underlying reasons for any differences before the differences can be eliminated.

Despite these limitations, a better picture of patient safety is emerging. Progress has been made in recent years in raising awareness, developing reporting systems, and establishing national data collection standards. Examining patient safety using a combination of administrative data, medical record abstraction, spontaneous adverse event reports, and patient surveys allows a more robust understanding of what is improving and what is not. Still, data remain incomplete for a comprehensive national assessment of patient safety.[8]

The National Priorities Partnership (NPP) identified safety in health care as one of six national priorities. The goal is a health care system that is:

> …relentless in continually reducing the risks of injury from care, aiming for "zero" harm wherever and whenever possible—a system that can promise absolutely reliable care, guaranteeing that every patient, every time, receives the benefits of care based solidly on science.[9]

The key goals include: (1) health care organizations and staff ensuring a culture of safety to reduce health care-associated infections (HAIs) and serious adverse events (SAEs), (2) hospitals reducing preventable and premature hospital-level mortality rates, and (3) hospitals improving their 30-day mortality rates for selected conditions (e.g., acute myocardial infarction, pneumonia).

The National Healthcare Disparities Report (NHDR) has tracked a growing number of patient safety measures. Organized around the NPP priority of Safety, the 2010 NHDR presents the following measures:

- Reduction of HAIs:
  - Appropriate timing of antibiotics (core measure).
  - Postoperative sepsis.
- Reduction of SAEs:
  - Ambulatory care visits due to adverse effects of medical care.
  - Mechanical adverse events.
  - Postoperative respiratory failure.
- Preventable and premature mortality rates:
  - Failure to rescue (core measure).
- 30-day mortality rates:
  - Pneumonia mortality rates.

Findings

Health Care-Associated Infections

Infections acquired during hospital care (nosocomial infections) are one of the most serious patient safety concerns. They are the most common complication of hospital care.[10] An estimated 1.7 million HAIs occur each year in hospitals, leading to about 100,000 deaths. The most common infections are urinary tract, surgical site, and bloodstream infections.[11]

A specific medical error cannot be identified in most cases of HAIs. However, better application of evidence-based preventive measures can reduce HAI rates within an institution. For example,

one such measure includes the administration of prophylactic antibiotics at the right time prior to surgery.

Prevention: Appropriate Timing of Antibiotics Among Surgical Patients

Wound infection following surgery is a common HAI. Hospitals can reduce the risk of surgical site infection by making sure patients get the right antibiotics at the right time on the day of their surgery. Surgery patients who get antibiotics within 1 hour before their operation are less likely to get wound infections than those who do not. Getting an antibiotic earlier or after surgery begins is not as effective. However, taking these antibiotics for more than 24 hours after routine surgery is usually not necessary and can increase the risk of side effects, such as antibiotic resistance and serious types of diarrhea. Among adult Medicare patients having surgery, the NHDR tracks receipt of antibiotics within 1 hour prior to surgical incision, discontinuation of antibiotics within 24 hours after end of surgery, and a composite of these two measures.

Figure 3.1. Adult surgery patients who received appropriate timing of antibiotics: Overall composite, by race/ethnicity and gender, 2005-2008
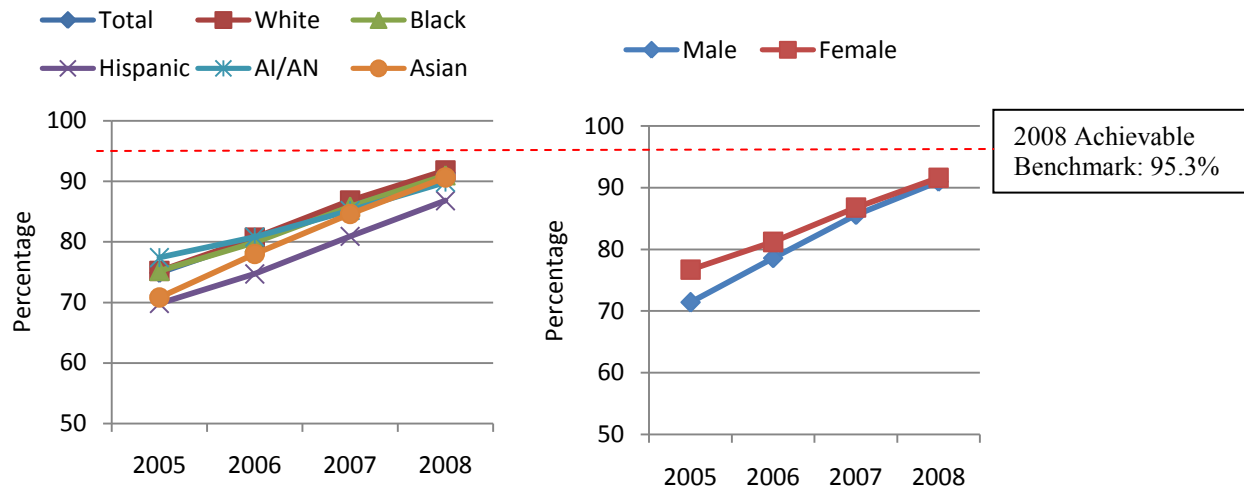
Key: AI/AN = American Indian or Alaska Native.
Source: Centers for Medicare & Medicaid Services, Medicare Quality Improvement Organization Program, 2005-2008.
Denominator: Hospitalized patients having surgery.
Note: Populations not specifically noted as Hispanic are non-Hispanic.

- The percentage of adult surgery patients who received appropriate timing of antibiotics improved from 2005 to 2008 (from 74.9% to 91.4%; Figure 3.1). Significant improvement was also seen among all racial, ethnic, and gender groups during this period.
- There were no statistically significant differences between racial and ethnic minority groups and Whites in the percentage of adult surgery patients who received appropriate timing of antibiotics.
- The 2008 top 5 State achievable benchmark was 95.3%.[ii] At the current 5.6% annual rate of increase, this benchmark could be attained in about 1 year. Whites, Blacks, and Asians


[ii] The top 5 States that contributed to the achievable benchmark are Hawaii, Maine, New Hampshire, South Dakota, and Vermont.

could attain the achievable benchmark within 1 year. American Indians or Alaska Natives and Hispanics could attain the benchmark within 2 years.

Outcome: Postoperative Sepsis

Sepsis, a severe bloodstream infection, can occur after surgery. In a recent study, postoperative sepsis occurred in 4.5% of emergency surgery patients and 2.0% of elective surgery patients.[12] Regarding racial disparities, a recent study revealed that higher rates of infection as well as higher risk for acute organ dysfunction both contribute to higher rates sepsis among Blacks compared with Whites.[13] Rates can be reduced by giving patients appropriate prophylactic antibiotics 1 hour prior to surgical incision.

Figure 3.2. Postoperative sepsis per 1,000 elective-surgery discharges with an operating room procedure, by race/ethnicity and insurance status, 2004-2007
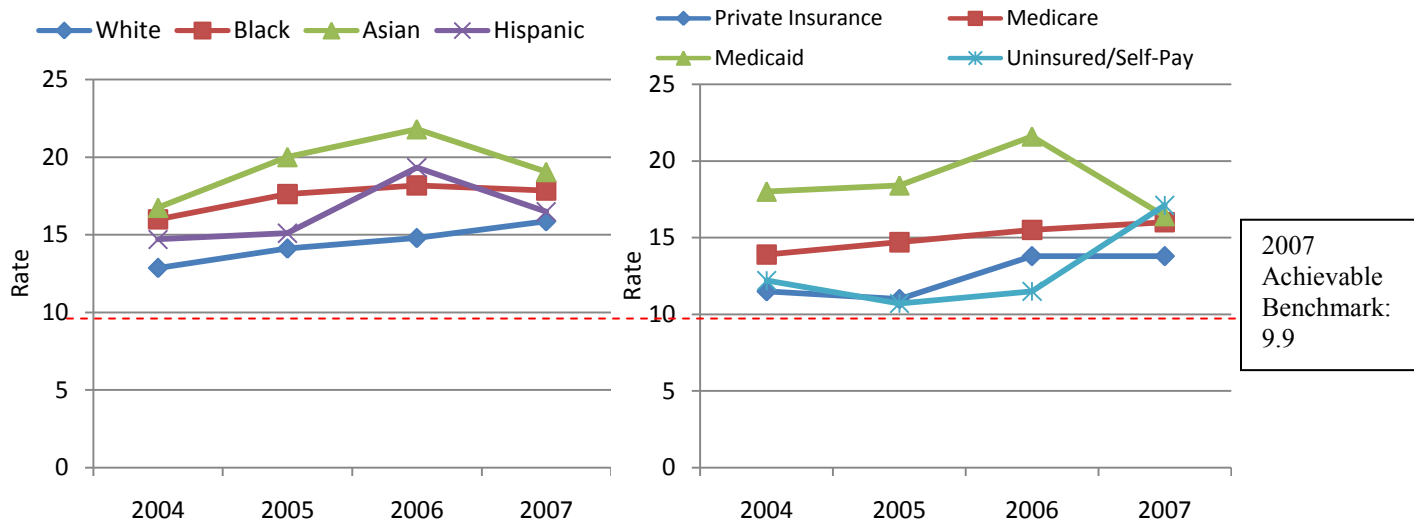
Source: Agency for Healthcare Research and Quality (AHRQ), Healthcare Cost and Utilization Project, Nationwide Inpatient Sample, and AHRQ Quality Indicators, version 3.1, 2004-2007.
Denominator: All elective hospital surgical discharges, age 18 and over, with length of stay of 4 or more days, excluding patients admitted for infection, patients with cancer or immunocompromised states, patients with obstetric conditions, and admissions specifically for sepsis.
Note: White, Black, and Asian are non-Hispanic. Rates are adjusted by age, gender, age-gender interactions, comorbidities, and diagnosis-related group clusters.

- From 2004 to 2007, the overall rate of postoperative sepsis increased from 13.2 per 1,000 discharges to 15 (data not shown). During the same period, a significant increase was also seen among all racial, ethnic, and insurance groups, except for the Medicaid group, which did not change significantly (Figure 3.2).
- In 2007, Blacks and Asians had a significantly higher rate of postoperative sepsis than non-Hispanic Whites (17.8 and 19.0 per 1,000 hospital discharges compared with 15.9).
- People with Medicare, Medicaid, and no insurance had significantly higher postoperative sepsis rates than people with private insurance (16, 16.4, and 17.1 per 1,000 hospital discharges, respectively, compared with 13.8).

- The 2007 top 4 State achievable benchmark was 9.9 per 1,000 hospital discharges.[iii] The overall rate of postoperative sepsis, as well as the rates among all racial, ethnic, and insurance groups were increasing (moving away from the benchmark).

Adverse Events

Adverse effects of medical care can arise from medical and surgical procedures as well as from adverse drug reactions. Although patient safety initiatives are predominantly focused on inpatient hospital events, adverse effects of medical care are much more commonly treated at visits to outpatient settings with more than 12 million such visits occurring annually. Providers treating adverse events in outpatient settings may include office-based physicians, hospital outpatient departments, and hospital emergency departments. Events treated in ambulatory settings may be less severe than those occurring in inpatient settings. Some adverse events, such as known side effects of appropriately prescribed medications may be unavoidable, while others may be considered medical errors. Although the following measure does not distinguish between the two types of events, it provides an overall sense of the burden these events place on the population.

Outcome: Ambulatory Care Visits Due to Adverse Effects of Medical Care

Figure 3.3. Ambulatory medical care visits due to adverse effects of medical care per 1,000 people, by race and gender, 2007-2008
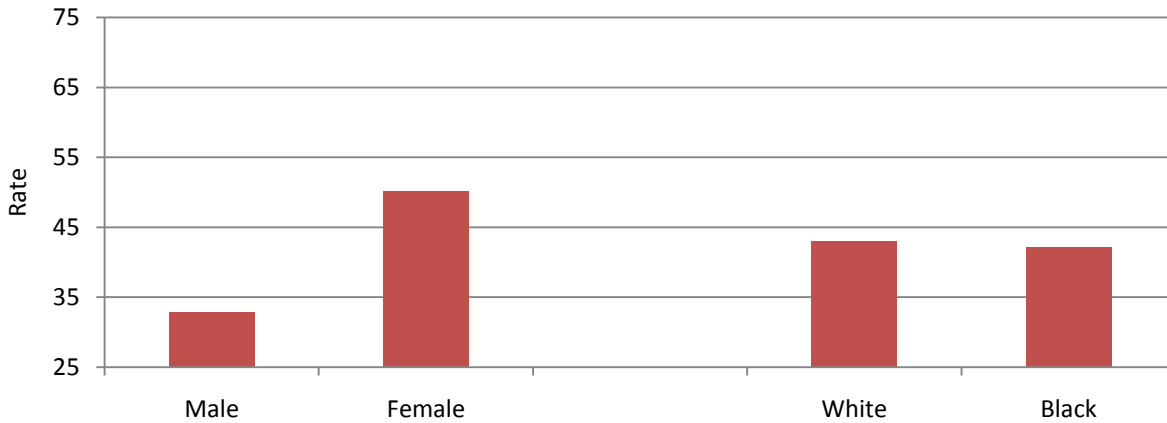
Source: Centers for Disease Control and Prevention, National Center for Health Statistics, National Ambulatory Medical Care Survey and National Hospital Ambulatory Medical Care Survey, 2007-2008.
Denominator: U.S. Census Bureau estimated civilian noninstitutionalized population on July 1, 2007, and July 1, 2008.
Note: Ambulatory care includes visits to office-based physicians, hospital outpatient departments, and hospital emergency departments.

- In 2007-2008, the rate of ambulatory care visits due to adverse effects of medical care was higher for females compared with males (Figure 3.3).

[iii] The top 4 States that contributed to the achievable benchmark are Arkansas, Massachusetts, Nebraska, and Rhode Island.

Also, in the NHQR:

- In 2007-2008, the rates of ambulatory care visits due to adverse effects of medical care were higher for residents of metropolitan areas compared with residents of nonmetropolitan areas and for all age groups compared with the group ages 0-17.

Outcome: Mechanical Adverse Events

Sometimes patients need a central venous catheter inserted into a major vein in the neck, chest, or groin to administer medication or fluids, obtain blood for tests, and take cardiovascular measurements. Patients who require a central venous catheter tend to be severely ill. The placement and use of these catheters can result in mechanical adverse events, including bleeding; hematoma; perforation; pneumothorax; air embolism; and misplacement, occlusion, shearing, or knotting of the catheter.

Figure 3.4. Composite: Mechanical adverse events associated with central venous catheter placement, by race and gender, 2005-2007
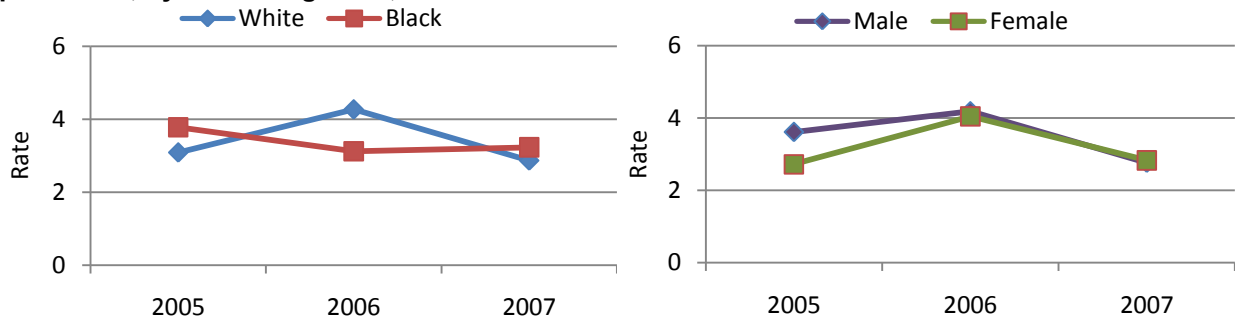
Source: Centers for Medicare & Medicaid Services, Medicare Patient Safety Monitoring System (MPSMS), 2005-2007.
Denominator: Adult hospitalized Medicare fee-for-service discharges from the MPSMS sample with central venous catheter placement.
Note: Mechanical adverse events include allergic reaction to the catheter, tamponade, perforation, pneumothorax, hematoma, shearing off of the catheter, air embolism, misplaced catheter, thrombosis or embolism, knotting of the pulmonary artery catheter, and certain other events.

- From 2005 to 2007, there was no statistically significant change overall or for any race or gender for medical adverse events associated with central venous catheter placement (Figure 3.4).

Preventable and Premature Mortality Rates

Outcome: Postoperative Respiratory Failure

Respiratory failure is not uncommon after surgery and may necessitate reintubation or prolonged mechanical ventilation. Causes include: oversedation, exacerbation of underlying cardiovascular or respiratory conditions, and ventilator-associated pneumonia. Although some cases of respiratory failure cannot be prevented, close attention to risk factors can reduce rates.

Figure 3.5. Postoperative respiratory failure per 1,000 elective-surgery discharges after an operating room procedure, by race/ethnicity and income, 2004-2007
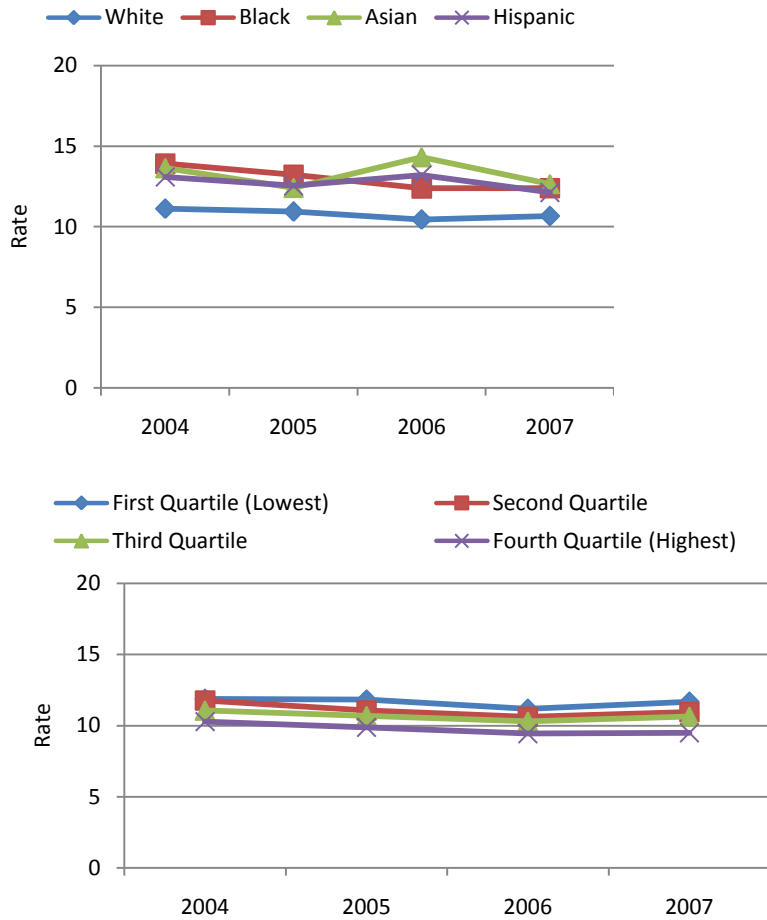
Source: Agency for Healthcare Research and Quality, Healthcare Cost and Utilization Project, Nationwide Inpatient Sample, 2004-2007.
Denominator: All elective hospital surgical discharges age 18 and over, excluding patients with respiratory disease, circulatory disease, neuromuscular disorders, obstetric conditions, and secondary procedure of tracheostomy before or after surgery or as the only procedure.
Note: White, Blacks, and Asians are non-Hispanic. Rates are adjusted by gender, age-gender interactions, comorbidities, and diagnosis-related group clusters.

- In 2007, the rate of postoperative respiratory failure for all other income groups was higher than for the highest income group (fourth quartile) (Figure 3.5).

Also, in the NHQR:

- In 2007, there were no statistically significant differences in the rate of postoperative respiratory failure among patients living in different geographic areas.

Outcome: Deaths Following Complications of Care

Many complications that arise during hospital stays cannot be prevented. However, rapid identification and aggressive treatment of complications may prevent these complications from leading to death. The indicator "deaths following complications of care," also called "failure to rescue," tracks deaths among patients whose hospitalizations are complicated by pneumonia,

thromboembolic events, sepsis, acute renal failure, gastrointestinal bleeding or acute ulcer, shock, or cardiac arrest.[14]

Figure 3.6. Deaths per 1,000 discharges with complications potentially resulting from care (failure to rescue), ages 18-74, by race/ethnicity and income, 2004-2007
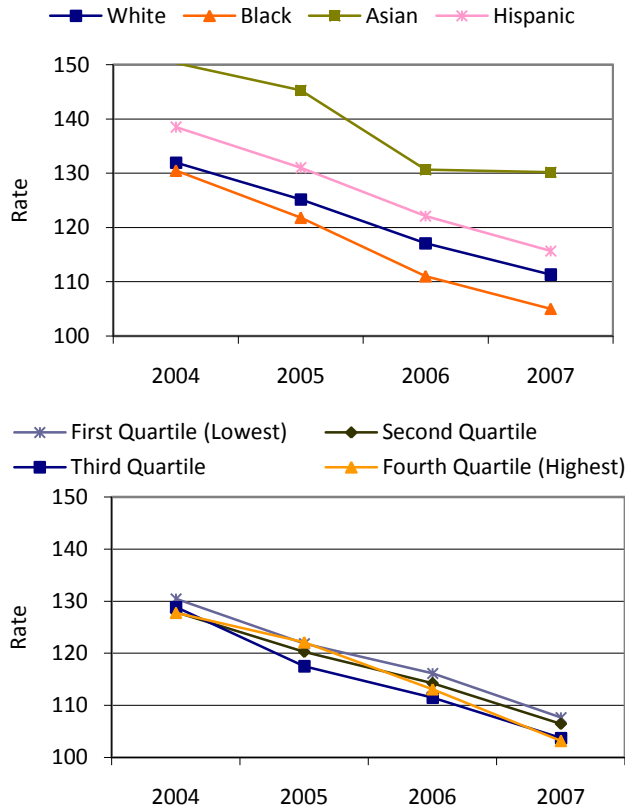
Source: Agency for Healthcare Research and Quality, Healthcare Cost and Utilization Project, Nationwide Inpatient Sample, 2004-2007.
Denominator: Patients ages 18-74 years from U.S. community hospitals whose hospitalizations are complicated by pneumonia, thromboembolic events, sepsis, acute renal failure, gastrointestinal bleeding or acute ulcer, shock, or cardiac arrest.
Note: Whites, Blacks, and Asians are non-Hispanic. Rates are adjusted by age, gender, comorbidities, and diagnosis-related group clusters.

- From 2004 to 2007, the rate of deaths following complications of care declined from 123.9 to 105.7 per 1,000 admissions of adults ages 18-74 (data not shown). A significant decrease was also seen among all racial, ethnic, and income groups during the same period (Figure 3.6).
- In 2007, Asians had a significantly higher rate of deaths following complications of care compared with Whites (130.2 per 1,000 compared with 111.3).

Also, in the NHQR:

- For those who were uninsured, the rates of deaths following complications of care were higher than for those with private insurance.

30-Day Mortality Rates

One of the goals for measurement specified by the NPP under the Safety priority is to reduce 30-day hospital mortality rates for conditions such as pneumonia. While national 30-day mortality rates due to pneumonia are not currently available for reporting, the in-hospital mortality rates per 1,000 hospital admissions with pneumonia are reported here. About two-thirds of patients who die within 30 days of hospital admission die inside the hospital, and the correlation between in-patient and 30-day mortality is high.[15]

Outcome: Inpatient Pneumonia Deaths

Figure 3.7. Deaths per 1,000 hospital admissions with pneumonia as principal diagnosis, age 18 and over, by race/ethnicity and income, 2004-2007
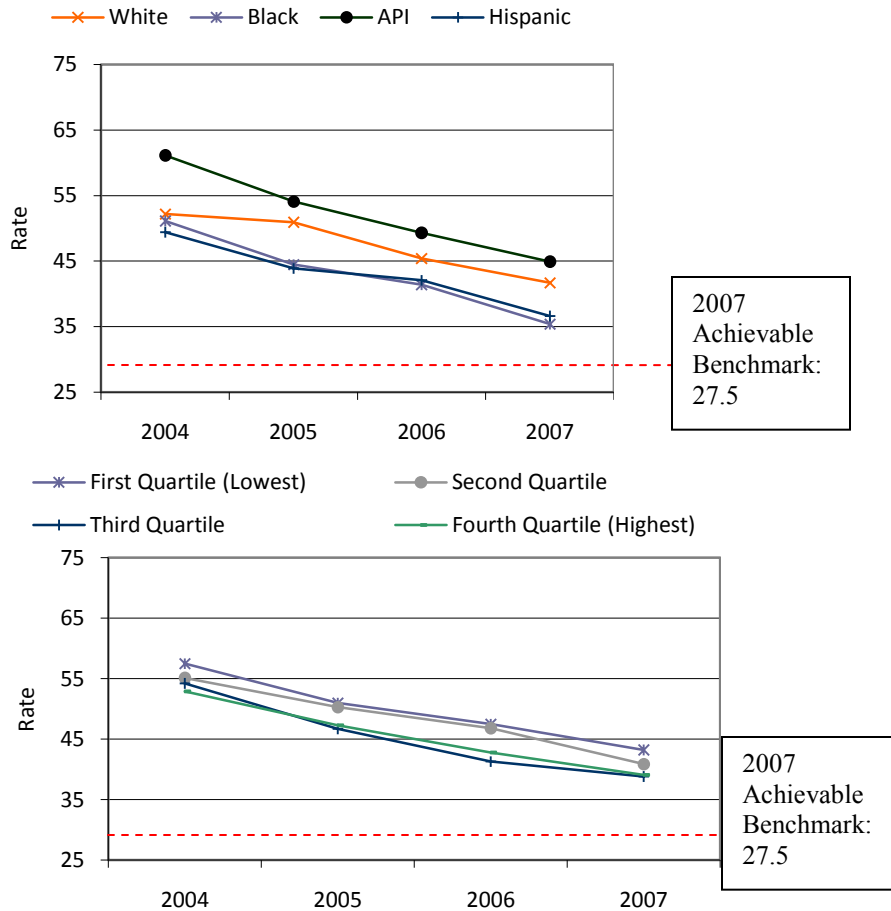
Source: Agency for Healthcare Research and Quality (AHRQ), Healthcare Cost and Utilization Project, Nationwide Inpatient Sample, and AHRQ Quality Indicators, version 3.1.
Denominator: All discharges age 18 and over with principal diagnosis code of pneumonia, excluding patients transferred to another short-term hospital and obstetric and neonatal admissions.
Note: Whites, Blacks, and Asians are non-Hispanic. Rates are adjusted by age, gender, age-gender interactions, and all patient refined-diagnosis related group risk of mortality score.

- From 2004 to 2007, the overall inpatient pneumonia mortality rate decreased from 55.2 per 1,000 admissions to 40.8 (data not shown). A significant decrease was also seen among all racial, ethnic, and income groups during the same period (Figure 3.7).

- In 2007, Blacks and Hispanics had a significantly lower inpatient pneumonia mortality rate than Whites (35.4 and 36.6 per 1,000 hospital admissions, respectively, compared with 41.7).
- In 2007, the lowest income group had a significantly higher inpatient pneumonia mortality rate than the highest income group (43.2 per 1,000 hospital admissions compared with 39.1).
- The 2007 top 4 State achievable benchmark was 27.5 per 1,000 hospital admissions.[iv] At the current rate of improvement, this benchmark could be attained in less than 3 years.
- Rates of improvement varied by race and ethnicity. Blacks could attain the benchmark in just over 1.5 years and Hispanics in just over 2 years. Whites and Asians would not attain the benchmark for almost 3 years.

[iv] The top 4 States that contributed to the achievable benchmark are Arizona, Colorado, Maryland, and Michigan.

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Chapter 4. Timeliness

Timeliness is the health care system's capacity to provide care quickly after a need is recognized. It is one of the six dimensions of quality the Institute of Medicine established as a priority for improvement in the health care system.[1] Measures of timeliness include time spent waiting in doctors' offices and emergency departments (EDs), and the interval between identifying a need for specific tests and treatments and actually receiving services.

Importance

Morbidity and Mortality

- Lack of timeliness can result in emotional distress, physical harm, and higher treatment costs.[2, 3] Stroke patients' mortality and long-term disability are largely influenced by the timeliness of therapy.[4, 5] Timely delivery of appropriate care also can help reduce mortality and morbidity for chronic conditions such as kidney disease.[6]
- Timely delivery of childhood immunizations helps maximize protection from vaccine-preventable diseases while minimizing risks to the child and reducing the chance of disease outbreaks.[7]
- Timely antibiotic treatments are associated with improved clinical outcomes.[8]

Cost

- Early care for comorbid conditions has been shown to reduce hospitalization rates and costs for Medicare beneficiaries.[9] Some research suggests that, over the course of 30 years, the costs of treating diabetic complications can approach $50,000 per patient.[10] Early care for complications in patients with diabetes can reduce overall costs of the disease.[11]

Timely outpatient care also can reduce admissions for pediatric asthma, which account for $1.25 billion in total hospitalization charges annually.[12]

Measures

This report focuses on one core report measure related to timeliness of primary, emergency, and hospital care: getting care for illness or injury as soon as wanted. In addition, two noncore measures are presented: emergency department waiting times, and timeliness of cardiac reperfusion for heart attack patients.

Findings

Getting Care for Illness or Injury As Soon As Wanted

A patient's primary care provider should be the first point of contact for most illnesses and injuries. A patient's ability to receive timely treatment for illness and injury is a key element in a patient-centered health care system.

Figure 4.1 Adults who needed care right away for an illness, injury, or condition in the last 12 months who sometimes or never got care as soon as wanted, by race, ethnicity, and education, 2002-2007
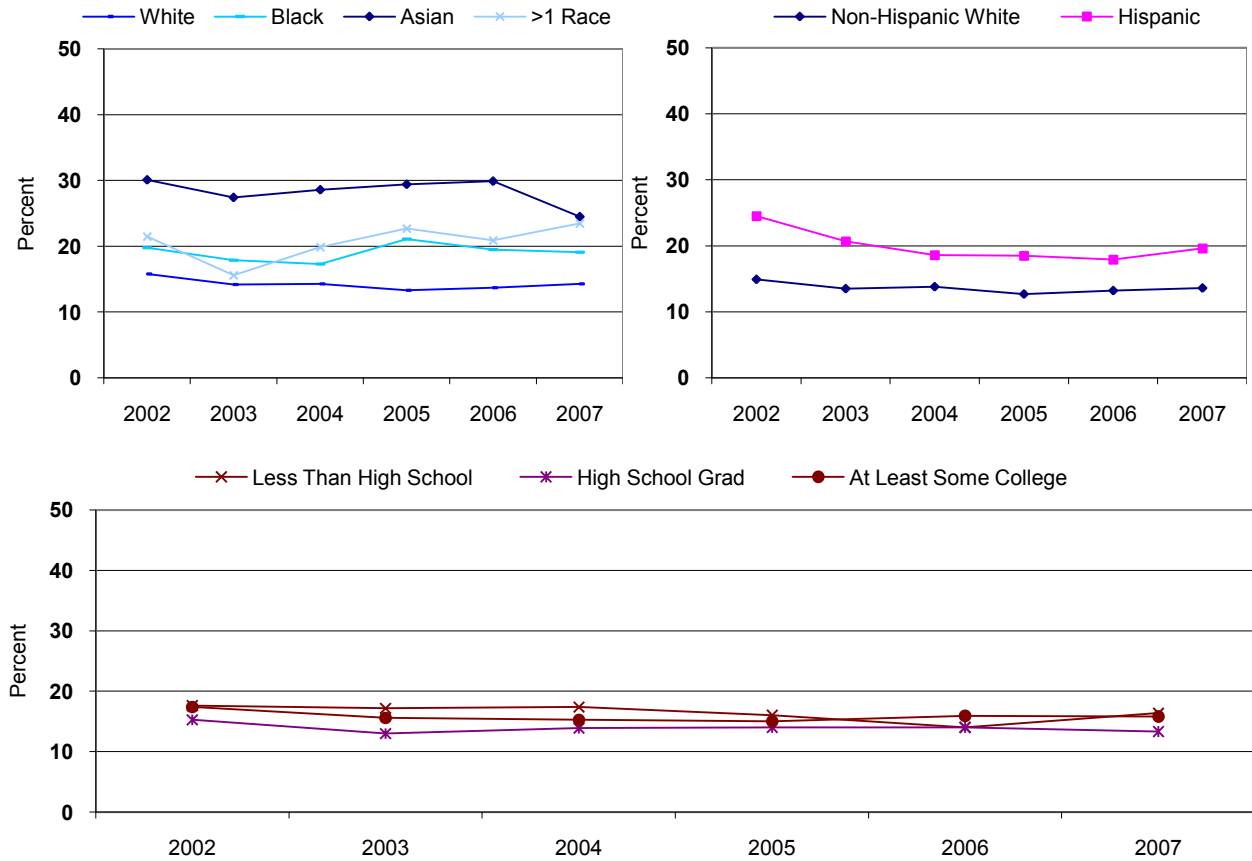
Source: Agency for Healthcare Research and Quality, Medical Expenditure Panel Survey, 2002-2007.
Denominator: Civilian noninstitutionalized population age 18 and over.
Note: Data were insufficient for this analysis for Native Hawaiians and Other Pacific Islanders and for American Indians and Alaska Natives.

- From 2002 to 2007, the overall percentage of adults who needed care right away for an illness, injury, or condition in the last 12 months who sometimes or never got care as soon as wanted decreased (from 16.8% to 15.3%; data not shown).
- During the same period, the percentages improved for Whites, Hispanics, and high school graduates (15.8% compared with 14.3%, 24.5% compared with 19.6%, and 15.3% compared with 13.3%, respectively; Figure 4.1).
- In 2007, Blacks, Asians, and those of multiple races were more likely than Whites to report problems getting care as soon as wanted (19.1%, 24.5%, and 23.5% compared with 14.3%). Also, Hispanics fared worse than non-Hispanic Whites (19.6% compared with 13.6%). However, high school graduates fared better than those with some college (13.3% compared with 15.8%).

Figure 4.2 Children who needed care right away for an illness, injury, or condition in the last 12 months who sometimes or never got care as soon as wanted, by race, ethnicity, and income, 2002-2007

Source: Agency for Healthcare Research and Quality, Medical Expenditure Panel Survey, 2002-2007.
Denominator: Civilian noninstitutionalized population under age 18.
Note: The 2007 data for high-income people did not meet criteria for statistical reliability, data quality, or confidentiality.

- In 2007, there were no statistically significant differences among children who needed care right away for an illness, injury, or condition in the last 12 months (Figure 4.2).

Emergency Department Visit Waiting Times

- In 2007, an estimated 116.8 million visits were made to hospital EDs compared with 110.2 million visits in 2004.[13, 14]
- The median waiting time for patients to be seen by a physician during an ED visit in the United States was 33 minutes.[13]
- Not all patients seeking care in an ED need urgent care, and use of EDs for nonurgent care could lead to longer waiting times.

The National Hospital Ambulatory Medical Care Survey defines five levels of urgency of ED visits:

- Immediate, requiring immediate care;
- Emergent, requiring care in less than 15 minutes;
- Urgent, requiring care within 1 hour;
- Semiurgent, requiring care within 2 hours; and
- Nonurgent, not requiring care within 2 hours.

Figure 4.3. Emergency department visits in which patient had to wait an hour or more by urgency, race, and insurance status, 2007-2008

Key: NHOPI = Native Hawaiian or Other Pacific Islander; AI/AN = American Indian or Alaska Native.
Source: Centers for Disease Control and Prevention, National Center for Health Statistics, National Hospital Ambulatory Medical Care Survey (NHAMCS).
Denominator (Immediate or Emergent): Visits to U.S. emergency departments with triage assessments of immediate or emergent, 2007-2008.
Denominator (Urgent): Visits to U.S.emergency departments with triage assessments of urgent, 2007-2008.
Note: Race data were missing for 13.3% of total visits included in this table. Missing race data were imputed. Standard errors were inflated as described at 2007 NHAMCS Microdata File Documentation ftp://ftp.cdc.gov/pub/Health_Statistics/NCHS/Dataset_Documentation/NHAMCS/. Insurance status shown for patients under age 65 and classified based on all expected payment sources. Public insurance includes Medicare, Medicaid, and State Children's Health Insurance Program. Uninsured is defined as having "only self-pay" or "no charge/charity" as payment sources.

- In 2007-2008, among ED visits for immediate/emergent conditions, the percentage that had to wait an hour or more was higher among Blacks compared with Whites (Figure 4.3).
- Among visits for urgent conditions, the percentage of patients who had to wait an hour or more was higher for Blacks compared with Whites and for uninsured patients under age 65 compared with privately insured patients under age 65.

Also, in the NHQR:

- In 2007-2008, among ED visits for immediate/emergent conditions, there was no significant difference in the percentage that had to wait an hour or more between patients living in metropolitan and nonmetropolitan areas. Among visits for urgent conditions, the percentage that had to wait an hour or more was lower among nonmetropolitan patients compared with metropolitan patients.
- Differences related to age were not significant.

Timeliness of Cardiac Reperfusion for Heart Attack Patients

The capacity to treat hospital patients in a timely manner is especially important for emergency situations such as heart attacks. Some heart attacks are caused by blood clots. Early actions, such as percutaneous coronary intervention (PCI) or fibrinolytic medication, may open blockages caused by blood clots, reduce heart muscle damage, and save lives.[15] To be effective, these actions need to be performed quickly after the start of a heart attack. In this report, we present two measures of timeliness of cardiac reperfusion:

- PCI within 90 minutes among appropriate patients.
- Fibrinolytic medication within 30 minutes among appropriate patients.

Figure 4.4. Hospital patients with heart attack who received percutaneous coronary intervention within 90 minutes, by race/ethnicity, 2005-2008
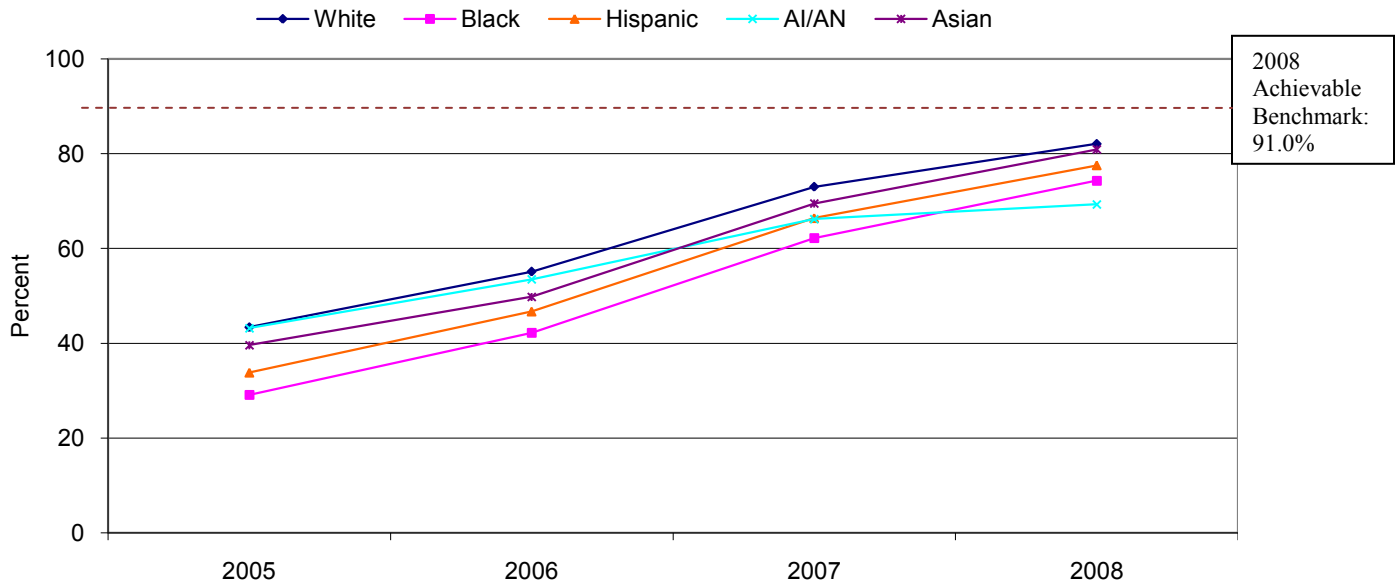
Key: AI/AN = American Indian or Alaska Native.
Source: Centers for Medicare & Medicaid Services, Medicare Quality Improvement Organization Program, 2005-2008.
Denominator: Patients hospitalized with a principal diagnosis of acute myocardial infarction who were appropriate candidates for percutaneous coronary intervention.
Note: Data were insufficient for this analysis for Native Hawaiians and Other Pacific Islanders.
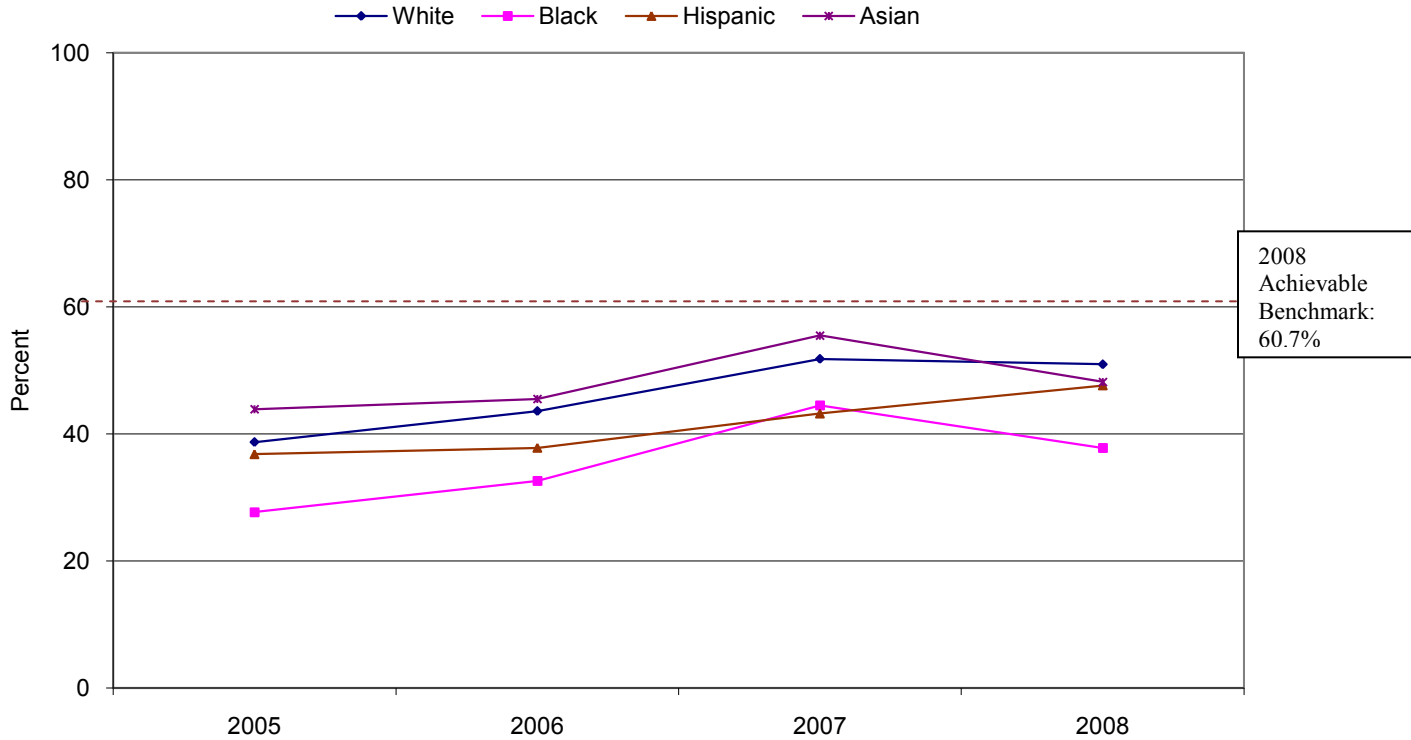
- Among heart attack patients, except for Asians, the percentage of patients receiving timely PCI improved for all racial/ethnic groups from 2005 to 2008 (Figure 4.4). In 2008,

Blacks and American Indians/Alaskan Natives were less likely to receive timely PCI compared with Whites (74.3% and 69.3%, respectively, compared with 82.1%).

- The 2008 top 5 State benchmark was 91.0%.[i] At the current rate of improvement, the achievable benchmark could be attained in less than 1 year.
- All racial/ethnic groups should reach the achievable benchmark within 1 year, with the exception of Blacks, who reach the benchmark in a little over 1 year.

Figure 4.5. Hospital patients with heart attack who received fibrinolytic medication within 30 minutes, by race/ethnicity, 2005-2008

Source: Centers for Medicare & Medicaid Services, Medicare Quality Improvement Organization Program, 2005-2008.
Denominator: Patients hospitalized with a principal diagnosis of acute myocardial infarction who were appropriate candidates for fibrinolytic medication.

- Among heart attack patients, the percentage of patients receiving timely fibrinolytic medication improved for all racial/ethnic groups from 2005 to 2008 (Figure 4.5). In 2008, Blacks were less likely to receive timely fibrinolytic medication compared with Whites (37.8% compared with 51.0%).
- In 2008, the top 5 State benchmark was 60.7%.[ii] At the current rate of improvement, the achievable benchmark could be attained in about 2.5 years.
- At their current rates of improvement, Whites should reach the achievable benchmark in a little over 2 years; however, Hispanics would not reach the benchmark for about 3.5 years, and Asians and Blacks would not reach the benchmark for about 5.5 years.

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[i] The top 5 States that contributed to the achievable benchmark are Massachusetts, Minnesota,, North Carolina, Rhode Island, and South Carolina.
[ii] The top 5 States that contributed to the achievable benchmark are Arkansas, California Georgia, Kentucky, and Tennessee.

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Chapter 5. Patient Centeredness

The Institute of Medicine identifies patient centeredness as a core component of quality health care.[1] Patient centeredness is defined as:

> [H]ealth care that establishes a partnership among practitioners, patients, and their families (when appropriate) to ensure that decisions respect patients' wants, needs, and preferences and that patients have the education and support they need to make decisions and participate in their own care.[2]

Patient centeredness "encompasses qualities of compassion, empathy, and responsiveness to the needs, values, and expressed preferences of the individual patient."[1] In addition, translation and interpretation services facilitate communication between the provider and the patient and are often a legal requirement.[i] The patient-centered approach includes viewing the patient as a unique person, rather than focusing strictly on the illness, building a therapeutic alliance based on the patient's and the provider's perspectives.

Patient centered care is supported by good provider-patient communication so that patients' needs and wants are understood and addressed and patients understand and participate in their own care.[2-5] This approach to care has been shown to improve patients' health and health care.[3,4,6-8] Unfortunately, many barriers exist to good communication.

Providers also differ in communication proficiency, including varied listening skills and different views from their patients' of symptoms and treatment effectiveness.[9] Additional factors influencing patient centeredness and provider-patient communication include:

- Language barriers.
- Racial and ethnic concordance between the patient and provider.
- Effects of disabilities on patients' health care experiences.
- Providers' cultural competency.

Efforts to remove these possible impediments to patient centeredness are underway within the Department of Health and Human Services (HHS). For example, the Office of Minority Health has developed a set of Cultural Competency Curriculum Modules that aim to equip providers with cultural and linguistic competencies to help promote patient-centered care.[10, ii] These modules are based on the National Standards on Culturally and Linguistically Appropriate Services. The standards are directed at health care organizations and aim to improve the patient centeredness of care for people with limited English proficiency (LEP). Another example, which is being administered by the Health Resources and Services Administration, is *Unified Health*

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[i] For example, Title VI of the Civil Rights Act of 1964, 42 U.S.C. 2000d, may require the practitioner or hospital to provide language interpreters and translate vital documents for limited-English-proficient persons. Section 504 of the Rehabilitation Act of 1973, 29 U.S.C. 794, may require the practitioner or hospital to provide sign language interpreters, materials in Braille, and/or accessible electronic formats for individuals with disabilities.

[ii] This online program (available at http://www.thinkculturalhealth.org) is accredited for Continuing Medical Education credits for physicians and Continuing Education Units for nurses and pharmacists.

Communication, a new Web-based course for providers that integrates concepts related to health literacy with cultural competency and LEP.[iii]

In addition, the HHS Office for Civil Rights has issued Guidance to Federal Financial Assistance Recipients Regarding Title VI Prohibition Against National Origin Discrimination Affecting Limited English Proficient Persons. This guidance explains that recipients of Federal financial assistance must take reasonable steps to provide LEP people with a meaningful opportunity to participate in HHS-funded programs. Failure to do so may violate the prohibition under Title VI of the Civil Rights Act of 1964, 42 U.S.C. 2000d, against national origin discrimination.[11]

Importance

Morbidity and Mortality

- Patient centered approaches to care have been shown to improve patients' health status. These approaches rely on building a provider-patient relationship, improving communication, fostering a positive atmosphere, and encouraging patients to actively participate in provider-patient interactions.[3, 4]
- A patient centered approach has been shown to lessen patients' symptom burden.[6]
- Patient centered care encourages patients to comply with treatment regimens.[8]
- Patient centered care can reduce the chance of misdiagnosis due to poor communication.[7]

Cost

- Patient centeredness has been shown to reduce underuse and overuse of medical care.[12]
- Patient centeredness can reduce the strain on system resources and save money by reducing the number of diagnostic tests and referrals.[6]
- Although some studies have shown that being patient centered reduces medical costs and use of health service resources, others have shown that patient centeredness increases providers' costs, especially in the short run.[13]

Measures

The National Healthcare Quality Report (NHQR) and the National Healthcare Disparities Report (NHDR) track several measures of patients' experience of care. The reports also include one priority and two goals recommended by the National Priorities Partnership (NPP). NPP identified patient and family engagement as one of six national priorities. The vision is health care "…that honors each individual patient and family, offering voice, control, choice, skills in self-care, and total transparency, and that can and does adapt readily to individual and family circumstances, and to differing cultures, languages, and social backgrounds." Key goals include enabling patients to effectively navigate and manage their care and enabling patients to make informed decisions about their treatment options.

The core measure presented in this report is adults and children who reported poor communication at the doctor's office. This measure is a composite of four measures—patients'

[iii] This online program (available at http://www.hrsa.gov/publichealth/healthliteracy/) is accredited for Continuing Medical Education credits for physicians and Continuing Education Units for nurses, physician assistants, pharmacists, and Certified Health Education Specialists.

assessments of how often their provider listened carefully to them, explained things clearly, respected what they had to say, and spent enough time with them. This measure is presented separately for adults and children.

In addition, the NHQR includes a supporting measure on adults who reported poor communication during a hospital stay. This measure is a composite of three measures—patients' assessments during a hospital stay of how often their doctors/nurses listened carefully to them, explained things clearly, and treated them with courtesy and respect. This measure is presented separately for communication with nurses and communication with doctors.

The measures related to the NPP goals are:

- Enabling patients to effectively navigate and manage their care.
  - Usual source of care with or without language assistance.
  - Need for a translator.
  - Ability to read the instructions on a prescription bottle.
- Enabling patients to make informed decisions about their treatment options.
  - Ability to understand information from a doctor's office.
  - Patient participation in treatment decisions.

Findings

Patients' Experience of Care—Adults

Optimal health care requires good communication between patients and providers, yet barriers to provider-patient communication are common. To provide all patients with the best possible care, providers must be able to understand patients' diverse health care needs and preferences and communicate clearly with patients about their care.

Figure 5.1. Adults who had a doctor's office or clinic visit in the last 12 months who reported poor communication with health providers, by race, ethnicity, and income, 2002-2007
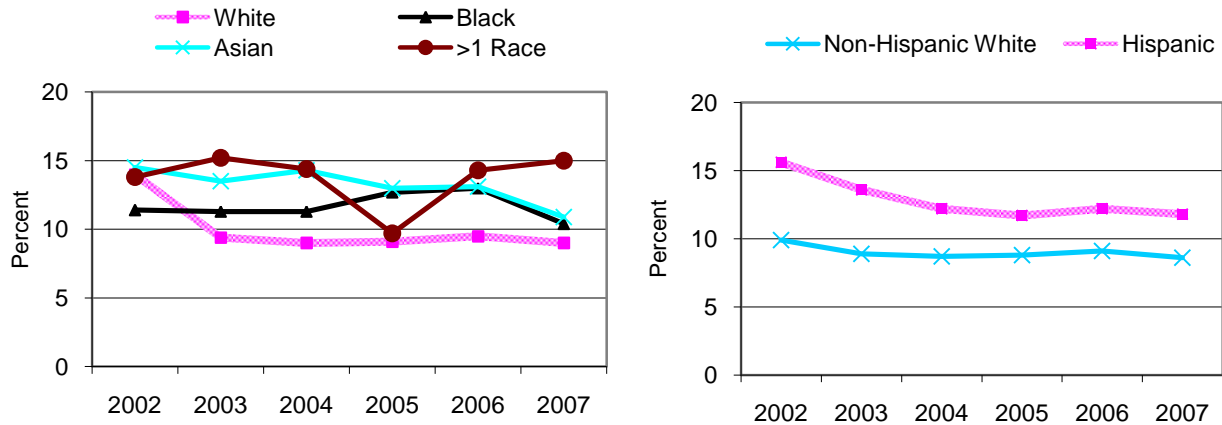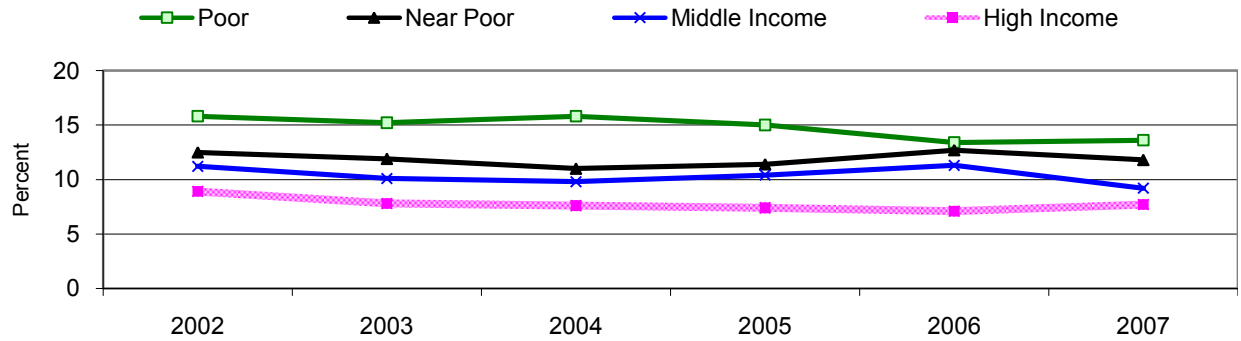
Source: Agency for Healthcare Research and Quality, Medical Expenditure Panel Survey, 2002-2007.
Denominator: Civilian noninstitutionalized population age 18 and over who had a doctor's office or clinic visit in the last 12 months.
Note: Patients who report that their health providers sometimes or never listened carefully, explained things clearly, showed respect for what they had to say, or spent enough time with them are considered to have poor communication.

- Between 2002 and 2007, the percentage of White, middle-income, and high-income adults who reported poor communication with their health providers significantly decreased (Figure 5.1).
- In all years, the percentage of adults who reported poor communication was significantly higher for poor, near-poor, and middle-income people than for high-income people.
- In all years, Hispanics were significantly more likely than non-Hispanic Whites to report poor communication.
- In 4 of 6 years, Black patients were more likely than Whites to report poor communication with health providers; the exceptions were 2006 and 2007.
- In 5 of 6 years, Asians were more likely than Whites to report poor communication; the exception was 2007.

Also, in the NHQR:

- In 5 of 6 years, a significantly lower percentage of adults in large fringe metropolitan areas reported poor communication with their health providers; 2006 was the exception.

Racial and ethnic minorities are disproportionately of lower education levels. To distinguish the effects of race, ethnicity, education, and activity limitation on provider-patient communication, this measure is stratified by education level and activity limitation.

Figure 5.2. Adult ambulatory patients who reported poor communication with health providers, by race and ethnicity, stratified by education and activity limitation, 2007
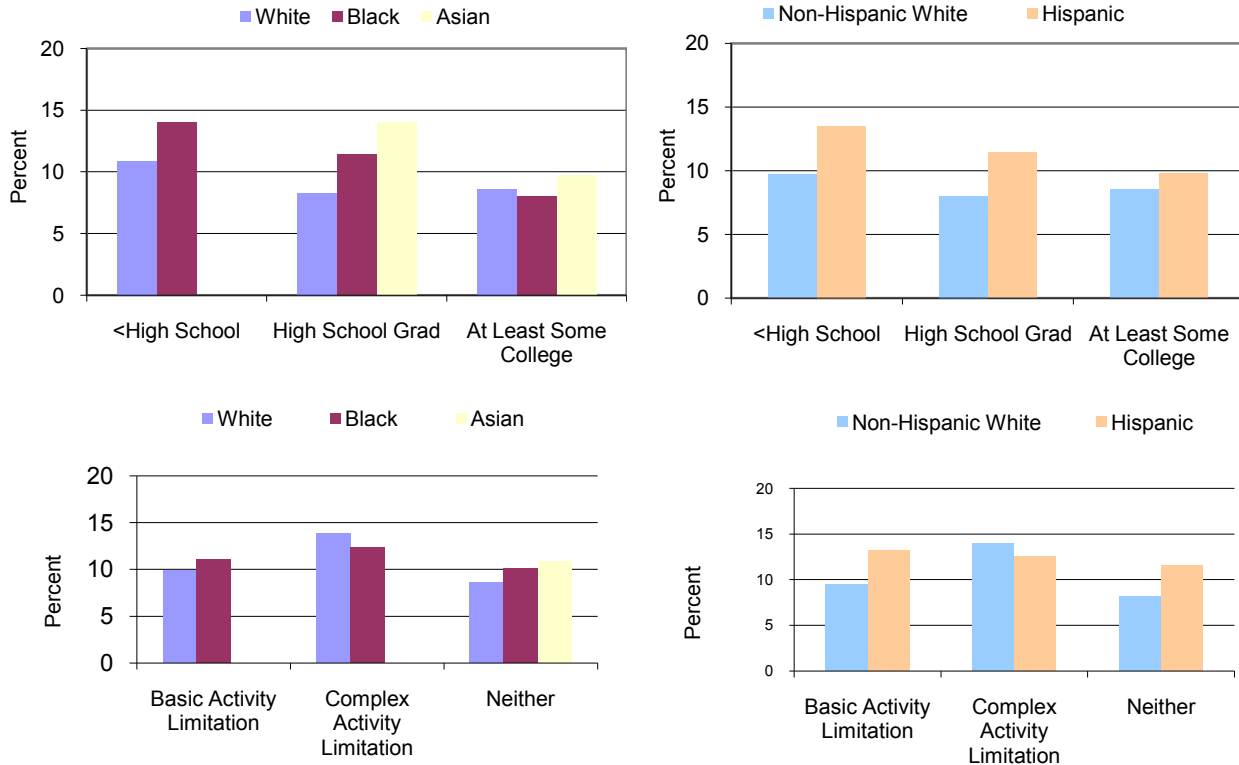
Source: Agency for Healthcare Research and Quality, Medical Expenditure Panel Survey, 2007.
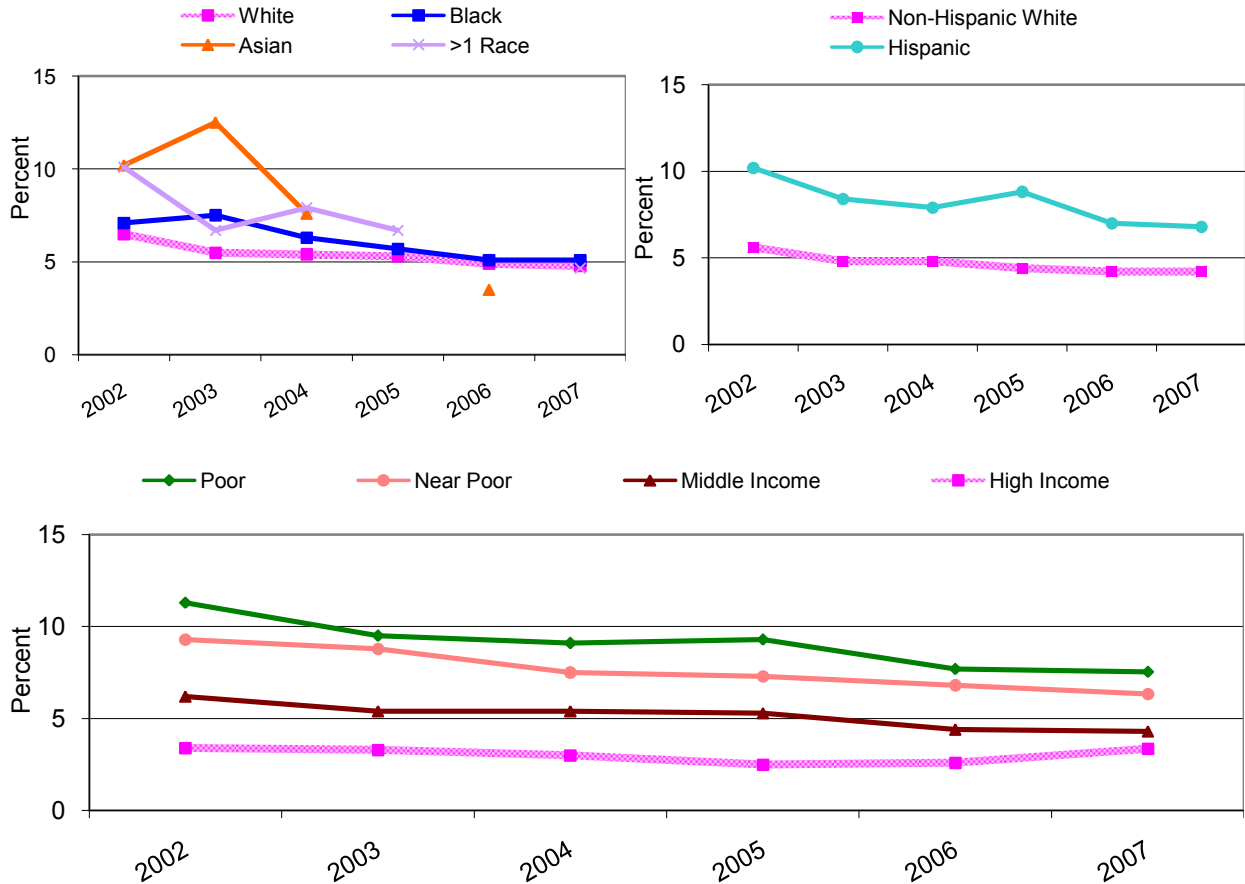**Denominator:** Civilian noninstitutionalized population age 18 and over.
Note: Sample sizes were too small to provide estimates for Asians with less than a high school education and Asian high school graduates. Patients who report that their health providers sometimes or never listened carefully, explained things clearly, showed respect for what they had to say, or spent enough time with them are considered to have poor communication.

- The amount of education attained and activity limitation status explains some of the racial and ethnic differences in provider-patient communication for patients age 18 and over. A significantly higher percentage of Blacks and Hispanics with no college education reported poor communication with their health provider compared with Whites and non-Hispanic Whites with no college education. However, there is no statistically significant difference between Blacks and Whites with at least some college education.
- Among high school graduates, Blacks (11.4%) were more likely than Whites (8.3%) and Hispanics (11.4%) were more likely than non-Hispanic Whites (8.0%) to report poor communication with their health providers.
- Although Blacks were more likely than Whites to report poor communication overall in 2007 (10.4% compared with 9.0%), the Black versus White differences in reporting poor communication were not statistically significant within any of the three activity limitation groups: basic, complex, or neither basic nor complex.
- In 2007, Hispanics were more likely to report poor communication than non-Hispanic Whites overall (11.8% compared with 8.6%) and for adults with neither basic nor complex activity limitations (11.6% compared with 8.2%).

Patients' Experience of Care—Children

Communication in children's health care can be challenging since the child's experiences are interpreted through the eyes of a parent or guardian. During a health care encounter, a responsible adult caregiver will be involved in communicating with the provider and interpreting decisions in an age-appropriate manner to the patient. Optimal communication in children's health care can therefore have a significant impact on receipt of high-quality care and subsequent health status. This is especially true for children with special health care needs.

Figure 5.3. Children who had a doctor's office or clinic visit in the last 12 months whose parents reported poor communication with health providers: Overall composite, by race, ethnicity, and family income, 2002-2007

Source: Agency for Healthcare Research and Quality, Medical Expenditure Panel Survey, 2002-2007.
Denominator: Civilian noninstitutionalized population under age 18.
Note: Data for Asians (2005 and 2007) and multiple-race children (2006 only) did not meet criteria for statistical reliability. Parents who report that their child's health providers sometimes or never listened carefully, explained things clearly, showed respect for what they had to say, or spent enough time with them are considered to have poor communication.

- Overall, the percentage of children whose parents or guardians reported poor communication with their health providers significantly decreased from 6.7% in 2002 to 4.9% in 2007 (data not shown).
- From 2002 to 2007, Whites, Blacks, people of more than one race, non-Hispanic Whites, Hispanics; and poor, near-poor, and middle-income people all had a significant decrease

in the percentage of children whose parent or guardian reported poor communication (Figure 5.3).

- From 2002 to 2007, the percentage of children whose parents or guardians reported poor communication with their health providers remained significantly higher for Hispanics than for non-Hispanic Whites. Similarly, the percentage of children from poor families whose parents or guardians reported poor communication with their health provider was significantly higher than children from high-income families.
- In all years, poor and near-poor parents reported a significantly higher percentage of poor communication than parents with high incomes. In 5 of 6 years, there was also a higher percentage of middle-income parents than high-income parents reporting poor communication; 2007 was the exception.

Also, in the NHQR:

- In 4 of 6 years, a significantly lower percentage of parents residing in large fringe metropolitan areas reported poor communication with their health provider than parents residing in large central metropolitan areas; 2006 and 2007 were the exceptions.

Racial and ethnic minorities have disproportionately lower incomes. To distinguish the effects of race, ethnicity, and income on provider-patient communication, this measure is stratified by income level.

Figure 5.4. Composite measure: Children with ambulatory visits whose parents reported poor communication with health providers, by ethnicity, stratified by income, 2007
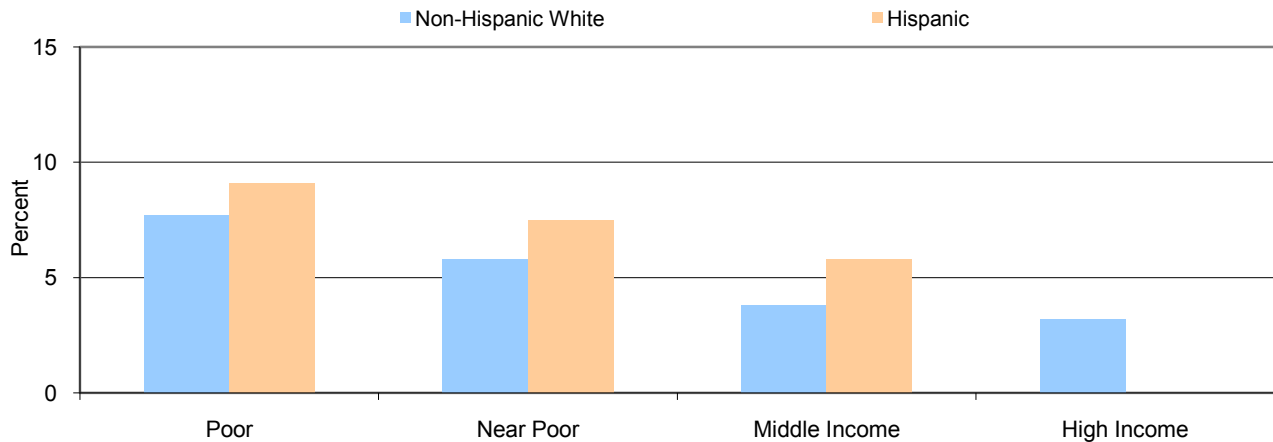
Source: Agency for Healthcare Research and Quality, Medical Expenditure Panel Survey, 2007.
Denominator: Civilian noninstitutionalized population under age 18.
Note: Data were not available for high-income Hispanics. Parents who report that their child's health providers sometimes or never listened carefully, explained things clearly, showed respect for what they had to say, or spent enough time with them are considered to have poor communication.

- Overall, there was no statistically significant difference between non-Hispanic Whites and Hispanics who reported poor communication with their health care providers (Figure 5.4).
- Among poor individuals, Hispanics were as likely as non-Hispanic Whites to report poor communication with their health providers.

Also, in the NHQR:

- Children residing in large central and small metropolitan areas showed significant decreases in poor communication from 2002 to 2007.

Patients' Experience of Care—Hospital

Using methods developed for the CAHPS® (Consumer Assessment of Healthcare Providers and Systems) survey,[14] the NHQR and NHDR use a composite measure that combines four measures of provider-patient communication into a single core measure. The four measures are: providers who sometimes or never listen carefully, explain things clearly, respect what patients say, and spend enough time with patients. These data are presented separately for communication with doctors and communication with nurses.

Figure 5.5. Adult hospital patients who reported poor communication with nurses and with doctors, by race, ethnicity, education, and language, 2007
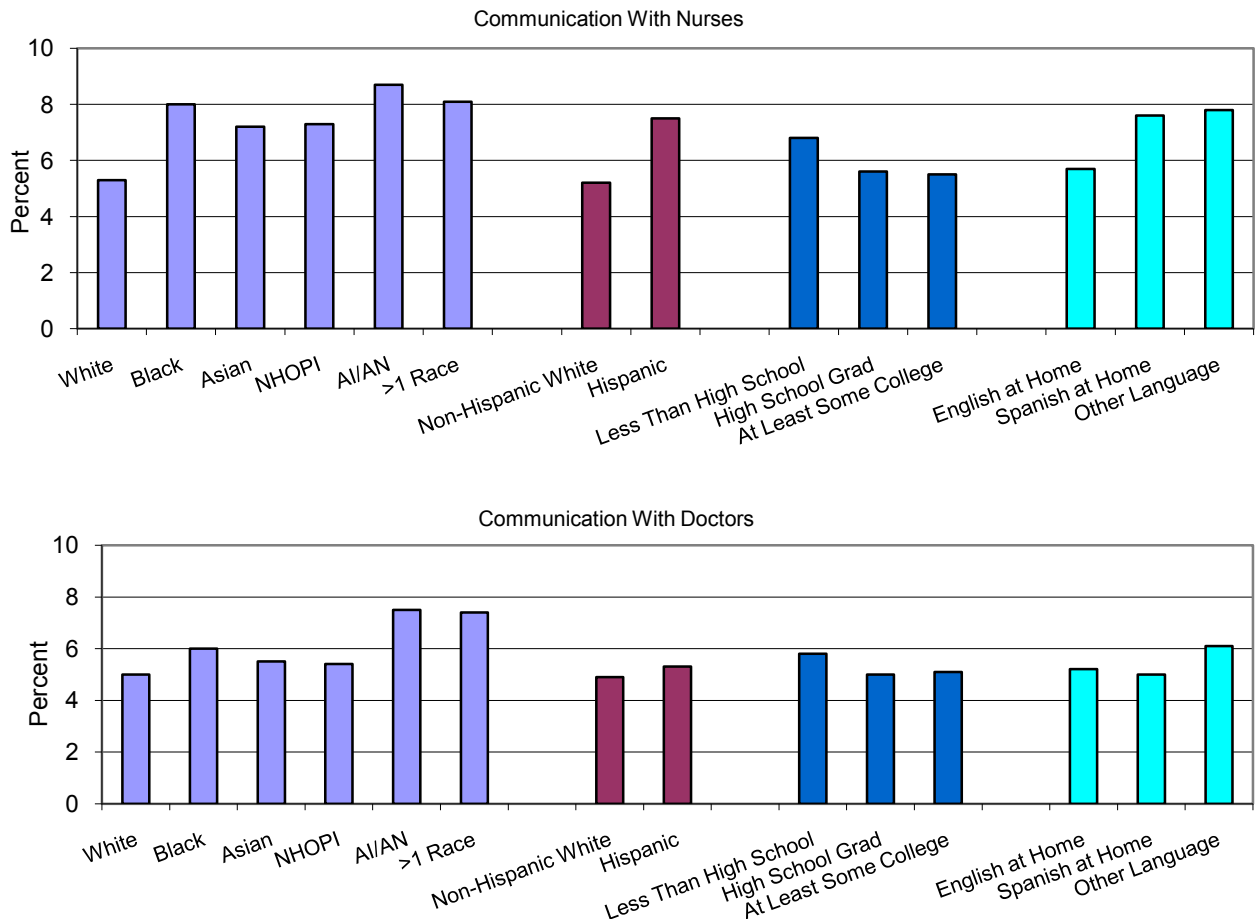
Key: NHOPI = Native Hawaiian or Other Pacific Islander; AI/AN = American Indian or Alaska Native.
Source: Agency for Healthcare Research and Quality, Hospital Consumer Assessment of Health Plans Survey, 2007.
Note: Poor communication is defined as responded "sometimes" or "never" to the set of survey questions: "During this hospital stay, how often did doctors/nurses treat you with courtesy and respect?" "During this hospital stay, how often did doctors/nurses listen carefully to you?" and "During this hospital stay, how often did doctors/nurses explain things in a way you could understand?"

- Overall, 5.9% of adult hospital patients reported poor communication with nurses during their hospital stay, and 5.3% reported poor communication with doctors (data not shown).
- Compared with Whites, all minority groups were more likely to report poor communication with nurses (Figure 5.5). Blacks, American Indians or Alaska Natives, and patients of more than one race were more likely to report poor communication with doctors.
- Compared with non-Hispanic Whites, Hispanics were more likely to report poor communication with nurses but not with doctors.
- Compared with patients with at least some college education, patients with less than a high school education were more likely to report poor communication with both nurses and doctors.
- Compared with patients who speak English at home, patients who speak Spanish at home were more likely to report poor communication with nurses while patients who speak some other language at home were more likely to report poor communication with both nurses and doctors.

Also, in the NHQR:

- Compared with patients ages 18-44, patients ages 45-64 were more likely to report poor communication with doctors.
- Patients age 65 and over were less likely to report poor communication with nurses.

Patient and Family Engagement: Enabling Effective Patient Navigation and Management of Care

To effectively navigate the complicated health care system, health care providers need to provide patients with access to culturally and linguistically appropriate tools to support patient engagement. Clear communication is an important component of effective health care delivery. It is vital for providers to understand patients' health care needs and for patients to understand providers' diagnoses and treatment recommendations. Communication barriers can relate to language, culture, and health literacy.

For people with limited English proficiency, having language assistance is of particular importance, so they may choose a usual source of care in part based on language concordance. Not having a language-concordant provider may limit or discourage some patients from establishing a usual source of care.

To fill the data gap that currently exists, we examined subnational data-gathering activities and identified the California Health Interview Survey (CHIS) as a unique source of this information. CHIS is conducted by the UCLA Center for Health Policy Research in collaboration with the California Department of Public Health, the Department of Health Care Services, and the Public Health Institute.

Every 2 years, CHIS involves random-dial telephone interviews with up to 50,000 California households. The people included in CHIS are a statistically representative sample of the entire State's diverse population. With each survey cycle, new households are selected to participate.

Beginning in 2007, CHIS also includes a sample of cell-phone-only households, which are often younger and more mobile Californians frequently overlooked in land-line surveys.

Language Assistance

Language barriers in health care are associated with decreases in quality of care, safety, and patient and clinician satisfaction and contribute to health disparities, even among people with insurance. The Federal Government has issued 14 culturally and linguistically appropriate services (CLAS) standards. These standards, which are directed at health care organizations, are also encouraged for individual providers to improve accessibility of their practices. The 14 standards are organized by themes: Culturally Competent Care (Standards 1-3), Language Access Services (Standards 4-7), and Organizational Supports for Cultural Competence (Standards 8-14). For people with limited English proficiency, having CLAS is of particular importance and may influence the patient's choice of a usual source of care.

Figure 5.6: Adults with limited English proficiency, by whether they had a usual source of care with or without language assistance, by race, ethnicity, income, and education, 2007
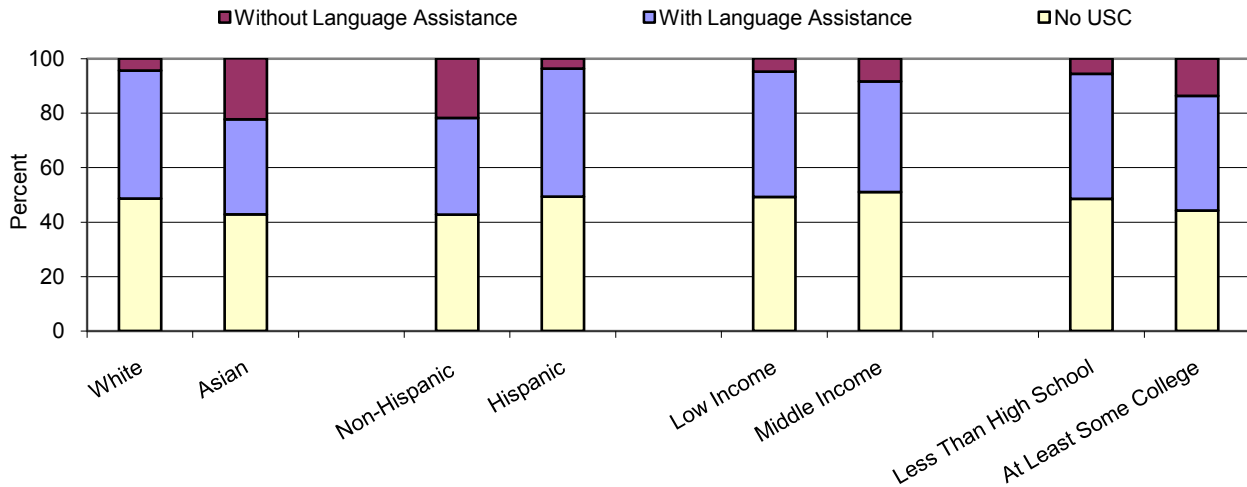

Source: Agency for Healthcare Research and Quality, Medical Expenditure Panel Survey, 2007.

- In 2007, Hispanic adults were significantly more likely than non-Hispanic adults to have a usual source of care with language assistance (Figure 5.6).
- In 2007, White adults with limited English proficiency were significantly more likely than Asians to have a usual source of care with language assistance.

Need for Translator

The ability of providers and patients to communicate clearly with each other can be compromised if they do not speak the same language. Quality may suffer if patients with limited English proficiency cannot express their care needs to providers who speak English only or who do not have an interpreter's assistance. Communication problems between the patient and provider can lead to lower patient adherence to medication regimens and decreased participation in medical decision making. It also can exacerbate cultural differences that impair the delivery of quality health care.

Figure 5.7. Adults age 18 and over who needed a translator during last doctor visit, California, by race/ethnicity, income, and education, 2007
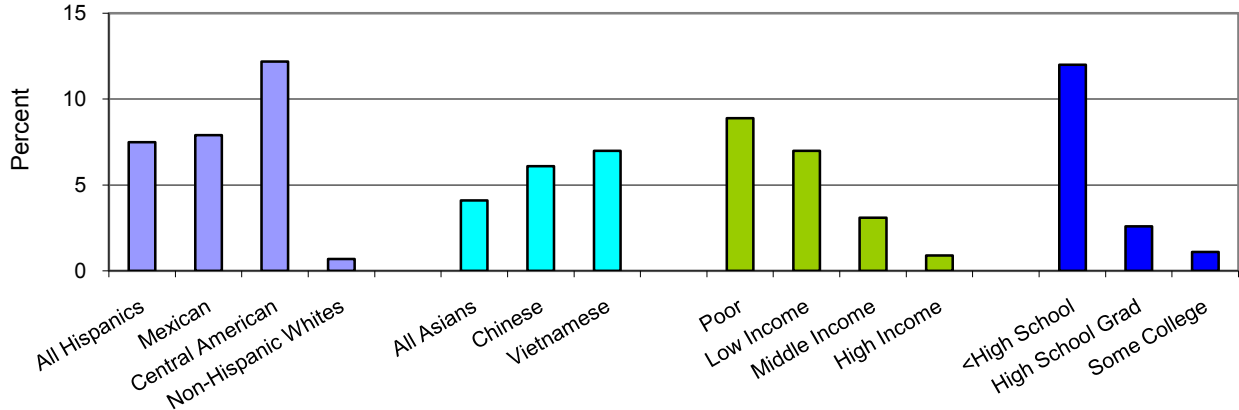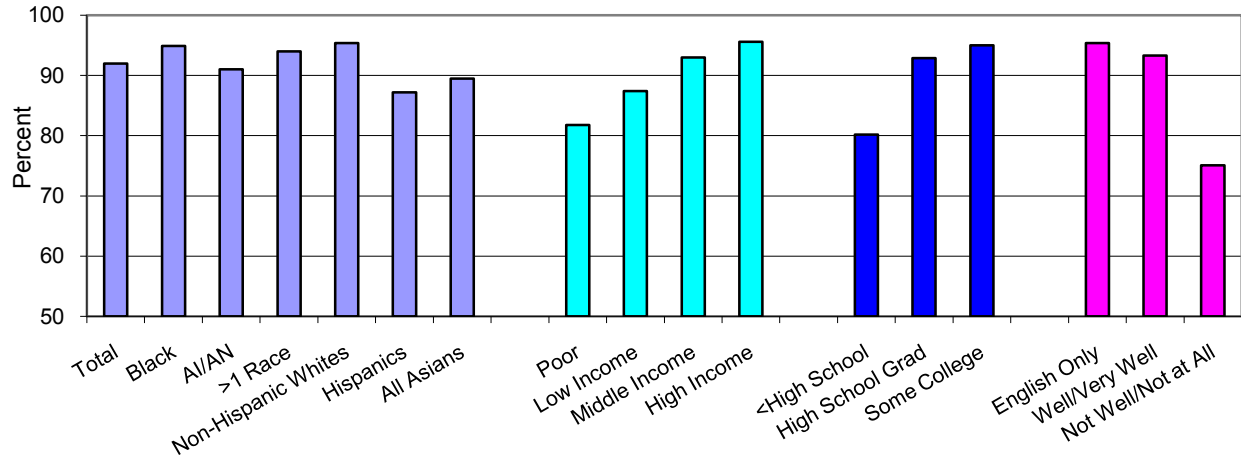

Source: University of California, Los Angeles, Center for Health Policy Research, California Health Interview Survey, 2007.

- In 2007, non-Hispanic White patients in California were significantly less likely than Hispanic patients to need a translator during their last doctor visit (Figure 5.7). Non-Hispanic Whites also were less likely than Mexicans and Central Americans to need a translator. Asians were significantly more likely than non-Hispanic Whites to need a translator during their last doctor visit (4.1% compared with 0.7%). There were however, no statistically significant differences between the overall Asian population and Chinese or Vietnamese patients. There also were no significant differences between Chinese and Vietnamese patients.

- Poor (8.9%), low-income (7.0%), and middle-income (3.1%) patients also were significantly more likely than high-income (0.9%) patients to need a translator.

- Patients in California with less than a high school education and high school graduates were significantly more likely to need a translator than patients with some college education (12.0% and 2.6, respectively, compared with 1.1%).

Reading Instructions on a Prescription Bottle

The effectiveness of a prescription is due in large part to the patient's ability to follow dosing instructions correctly. If the patient misinterprets the amount of medication to be taken or the dosing schedule, an adverse event can occur. This is particularly true for patients taking multiple medications that require strict adherence. This misunderstanding can be due to the patient's health literacy levels, cognitive abilities, or visual impairment. It is important that health care providers not only rely on patients saying they understand medication instructions, but also insist that the patients clearly demonstrate their understanding.

Figure 5.8. Adults who found it easy to read the instructions on a prescription bottle, by race/ethnicity, income, education, and English proficiency, California, 2007

Source: University of California, Los Angeles, Center for Health Policy Research, California Health Interview Survey, 2007.

- Poor patients in California were less likely than high-income patients to find it easy to read the instructions on a prescription bottle (81.8% compared with 95.6%; Figure 5.8).
- The percentage of patients in California who found it easy to read the instructions on a prescription bottle was higher for high school graduates and people with at least some college education compared with patients with less than a high school education. (92.9% and 95.0%, respectively, compared with 80.2%).
- In 2007, patients in California who did not speak English well or at all were less likely than patients who speak only English to find it easy to read the instructions on a prescription bottle (75.1% compared with 95.4%).

Also, in the NHQR:

- In California, patients under age 65 with public insurance and uninsured patients were less likely than patients with private health insurance to find it easy to read the instructions on a prescription bottle.

Important individual differences exist within each ethnic group. There are national differences as well as other subgroup differences that have to be acknowledged in order to provide appropriate cultural and linguistic care. To examine these differences, we present data on Hispanic and Asian subgroups in California.

Figure 5.9. Adults who found it easy to read the instructions on a prescription bottle, by Hispanic and Asian ethnicity, California, 2007
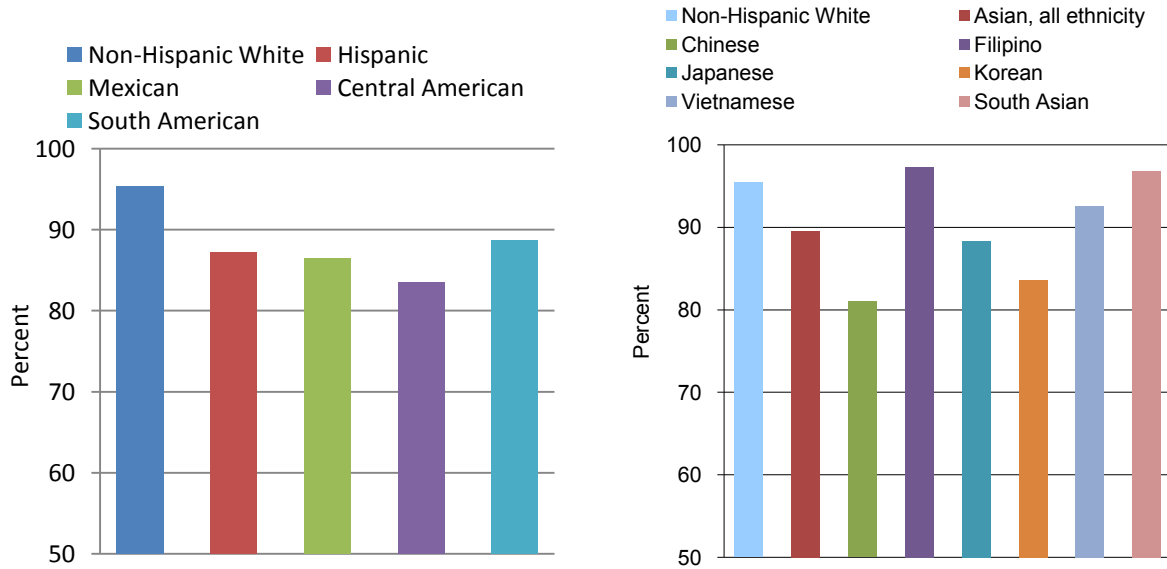
Source: University of California, Los Angeles, Center for Health Policy Research, California Health Interview Survey, 2007.

- In 2007, among different Hispanic ethnic groups in California, there were no statistically significant differences in patients who found it easy to read the instructions on a prescription bottle (Figure 5.9).
- In 2007, Filipinos, Vietnamese people, and South Asians living in California were significantly more likely than the overall Asian population to find it easy to read the instructions on a prescription bottle.
- In 2007, Filipinos, Japanese people, Vietnamese people, and South Asians living in California were all more likely than Chinese people to find it easy to read the instructions on a prescription bottle.
- In California overall, Asians were significantly more likely than Hispanics to find it easy to read the instructions on a prescription bottle (89.5% compared with 87.2%).

Patient and Family Engagement: Enabling Patients To Make Informed Decisions About Their Treatment Options

The NPP recommends that health care organizations and their staff use proven and culturally and linguistically appropriate strategies and tools to enable patients to understand all treatment options and to make decisions consistent with their values and preferences.

Understanding Information From a Doctor's Office

Recovery from illness and disease self-management depend in large part on patients' ability to follow their doctors' instructions at home. Patients can sometimes leave their doctors' office thinking they understand the instructions given to them only to realize later that some information is unclear. It is important that both patients and physicians not assume that instructions are understood but develop a means to show comprehension.

Figure 5.10. Adults who find it easy to understand written information from a doctor's office, by race, ethnicity, income, education, and English proficiency, California, 2007
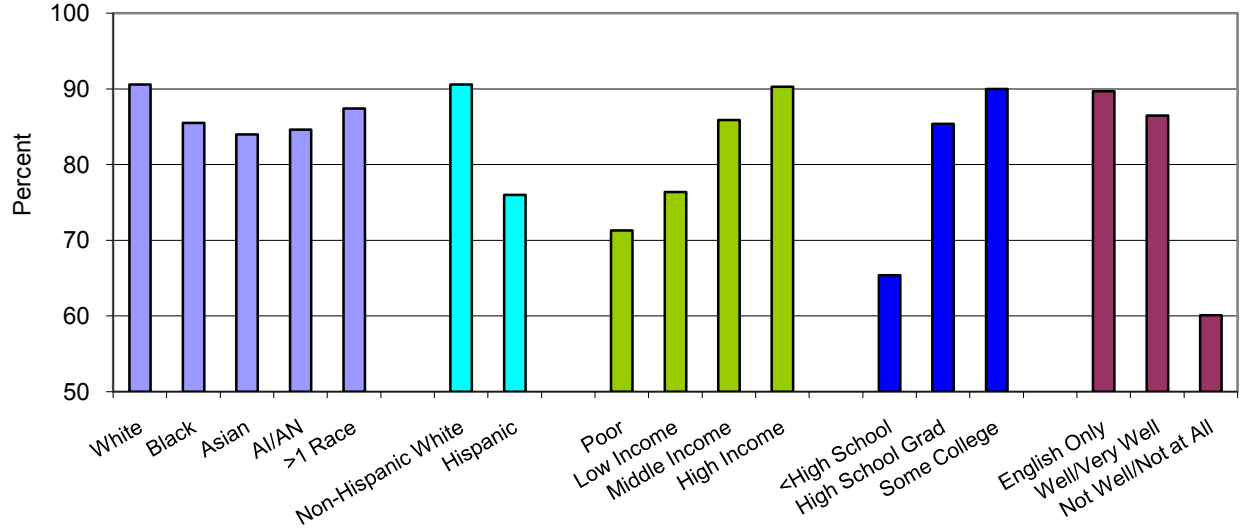
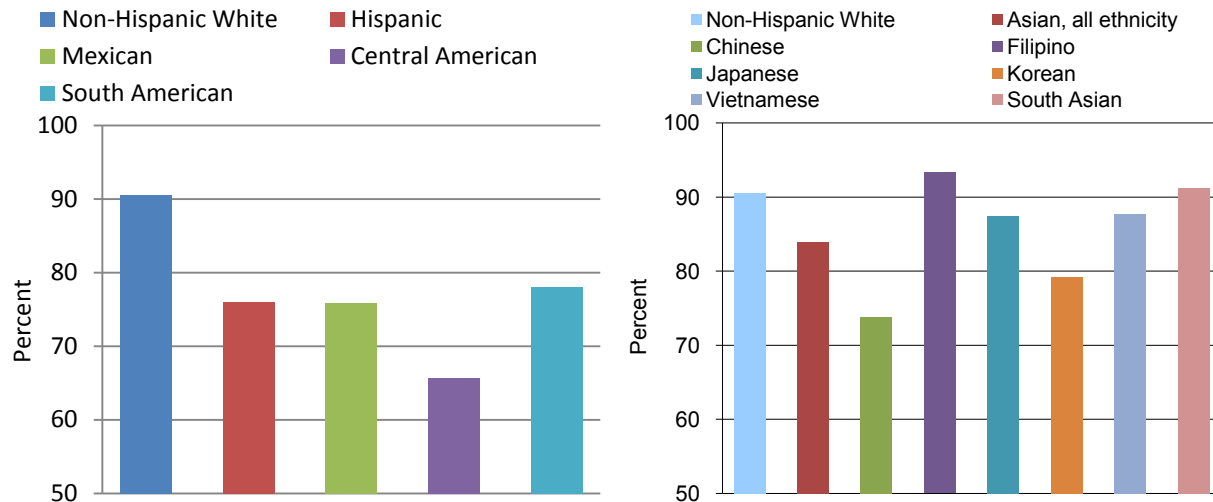**Key:** AI/AN = American Indian or Alaska Native..
Source: University of California, Los Angeles, Center for Health Policy Research, California Health Interview Survey, 2007.

- Non-Hispanic White patients living in California were more likely than all other racial and ethnic groups to find it easy to understand information from a doctor's office (Figure 5.10).
- In 2007, poor, low-income, and middle-income patients living in California were all significantly less likely than high-income patients to find it easy to understand information from a doctor's office.
- In 2007, patients living in California with less than a high school education were significantly less likely than patients with some college education to find it easy to understand information from a doctor's office (65.4% compared with 90.0%).
- In 2007, patients living in California who did not speak English well or at all were less likely than patients who only speak English or patients who speak English well or very well to find it easy to understand information from a doctor's office (60.1% compared with 89.7% and 86.5%, respectively).

Also, in the NHQR:

- California patients age 65 and over insured by Medicare and public insurance were less likely than patients age 65 and over with Medicare and private insurance to find it easy to understand information from a doctor's office.

Figure 5.11. Adults who find it easy to understand written information from a doctor's office, by Hispanic and Asian ethnicity, California, 2007
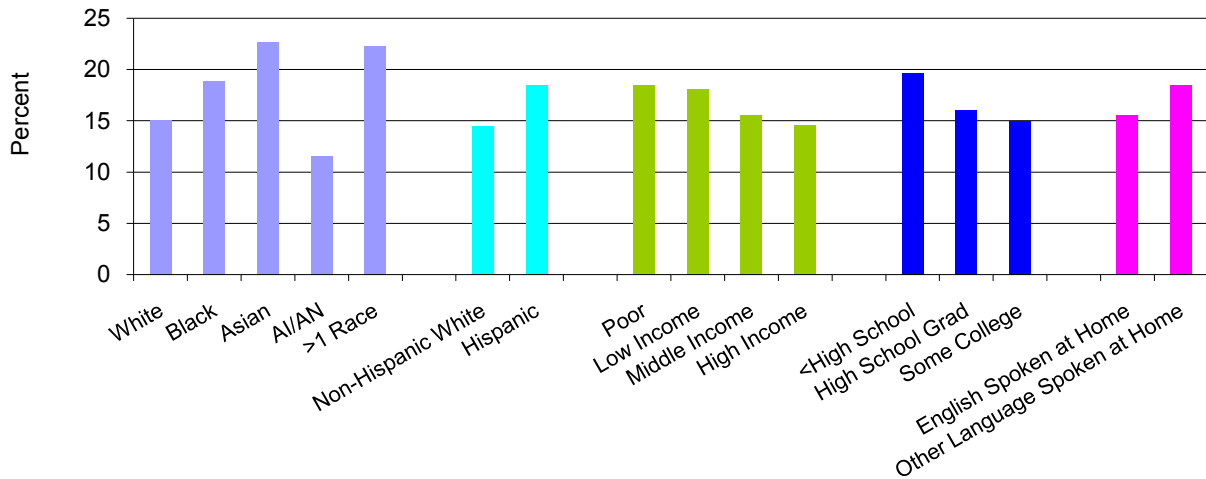

Source: University of California, Los Angeles, Center for Health Policy Research, California Health Interview Survey, 2007.

- In California in 2007, Asians were significantly more likely than Hispanics to find it easy to understand written information from a doctor's office (84.0% compared with 76.0%; Figure 5.11).
- In California in 2007, Central American patients were significantly less likely than the overall Hispanic population to find it easy to understand written information from a doctor's office (65.7% compared with 76.0%)
- In 2007, Mexican patients in California were significantly more likely than Central American patients to find it easy to understand written information from a doctor's office (75.9% compared with 65.7%). South American patients also were more likely than Central American patients to find it easy to understand information from a doctor's office.
- In 2007, Filipino and South Asian patients living in California were significantly more likely than the overall Asian population to find it easy to understand written information from a doctor's office (93.3% and 91.2%, respectively, compared with 84.0%).
- In 2007, Chinese patients living in California were significantly less likely than all other Asian ethnic groups except Koreans to find it easy to understand written information from a doctor's office.

Providers Asking Patients To Assist in Making Treatment Decisions

The high prevalence of chronic disease has placed more responsibility on patients. Conditions such as diabetes and hypertension require self-management by patients. It is vital that patients are provided with information that allows them to make informed decisions and feel engaged in their treatment and that it incorporates their values and preferences.

Figure 5.12. Adults with a usual source of care whose health providers sometimes or never asked for the patient's help to make treatment decisions, 2007

- In 2007, Whites were significantly less likely than Blacks, Asians, and people of more than one race to have a usual source of care sometimes or never ask for the patient's help to make treatment decisions (15.1% compared with 18.9%, 22.7%, and 22.3%, respectively; Figure 5.12).
- In 2007, Non-Hispanic White patients were significantly less likely than Hispanics to have a usual source of care sometimes or never ask for the patient's help to make treatment decisions (14.5% compared with 18.5%).
- In 2007, patients with some college education were significantly less likely than patients with less than a high school education to have a usual source of care sometimes or never ask for the patient's help to make treatment decisions (15.0% compared with 19.7%).
- In 2007, patients who usually spoke English at home were significantly less likely than patients who mostly spoke another language at home to have a usual source of care sometimes or never ask for the patient's help to make treatment decisions (15.6% compared with 18.5%).

Also, in the NHQR:

- In 2007, patients living in metropolitan areas were significantly more likely than patients living in nonmetropolitan areas to have a usual source of care not ask for their help in making treatment decisions.

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Chapter 6. Care Coordination

Health care in the United States is often fragmented. Clinical services are frequently organized around small groups of providers functioning autonomously and specializing in specific symptoms or organ systems. Therefore, many patients receive attention only for individual health conditions rather than receiving coordinated care for their overall health. For example, the typical Medicare beneficiary sees two primary care providers and five specialists each year.[1] Communication of important information among providers and between providers and patients may entail delays or inaccuracies or fail to occur at all.

Care coordination is a conscious effort to ensure that all key information needed to make clinical decisions is available to patients and providers. It is defined as the deliberate organization of patient care activities between two or more participants involved in a patient's care to facilitate appropriate delivery of health care services.[2] It is multidimensional and essential to preventing adverse events, ensuring efficiency, and making care patient centered.[3] Patients in greatest need of care coordination include those with multiple chronic medical conditions, concurrent care from several health professionals, or many medications and patients undergoing extensive diagnostic workups or transitions from one setting of care to another. Effective care coordination requires well-defined multidisciplinary teamwork principled on the notion that all who interact with a patient must work together to ensure the delivery of safe, high-quality care.

Importance

Morbidity and Mortality

- Care coordination interventions have been shown to:
    - Reduce mortality among patients with heart failure.
    - Reduce mortality and dependency among patients with stroke.
    - Reduce symptoms among patients with depression and at the end of life.
    - Improve glycemic control among patients with diabetes.[2]

Cost

- Care coordination interventions have been shown to:
    - Reduce hospitalizations among patients with heart failure.
    - Reduce readmissions among patients with mental health conditions.
    - Be cost-effective when applied to treatment of depression.[2]

Measures

The National Priorities Partnership (NPP) identified care coordination as one of six national priorities for health care.[4] The vision is health care that "guides patients and families through their healthcare experience, while respecting patient choice, offering physical and psychological supports, and encouraging strong relationships between patients and the healthcare professionals accountable for their care." While measurement of care coordination is at an early stage in development, key goals include: coordinating transitions of care, reducing hospital readmissions, communicating medication information, and reducing preventable emergency department visits.

Measures reported in this chapter are organized around these NPP goals:

- Transitions of care
    - Adequate hospital discharge information
- Hospital readmissions
    - Readmissions for congestive heart failure
- Medication information
    - Provider asks about medications from other doctors
    - Hospital electronic exchange of medication history
- Preventable emergency department visits
    - Emergency department visits for asthma

In addition, this chapter presents information from the National Survey of Children's Health on effective care coordination and having a medical home.

Findings

Transitions of Care

Management: Complete Written Discharge Instructions

As health care conditions and needs change, patients often need to move from one setting to another. These transitions of care place patients at heightened risk of adverse events. Important information may be lost or miscommunicated as responsibility is delivered to new parties.

Effective care coordination begins with ensuring that accurate clinical information is available to support medical decisions by patients and providers. A common transition of care is discharge from the hospital. Giving patients and caregivers self-management support after discharge has been shown to reduce readmissions to the hospital and lower costs.[5]

Discharge from a hospital typically indicates improvement in a patient's condition so that the patient no longer requires inpatient care. It also means that the patient and family must resume responsibility for the patient's daily activities, diet, medications, and other treatments. The patient also needs to visit his or her personal doctor and know what to do if his or her condition deteriorates. Written discharge instructions are critical to help ensure that a patient receives the information needed to stay healthy after leaving the hospital.

Figure 6.1. Hospitalized adult patients with heart failure who were given complete written discharge instructions, by race/ethnicity, 2005-2008
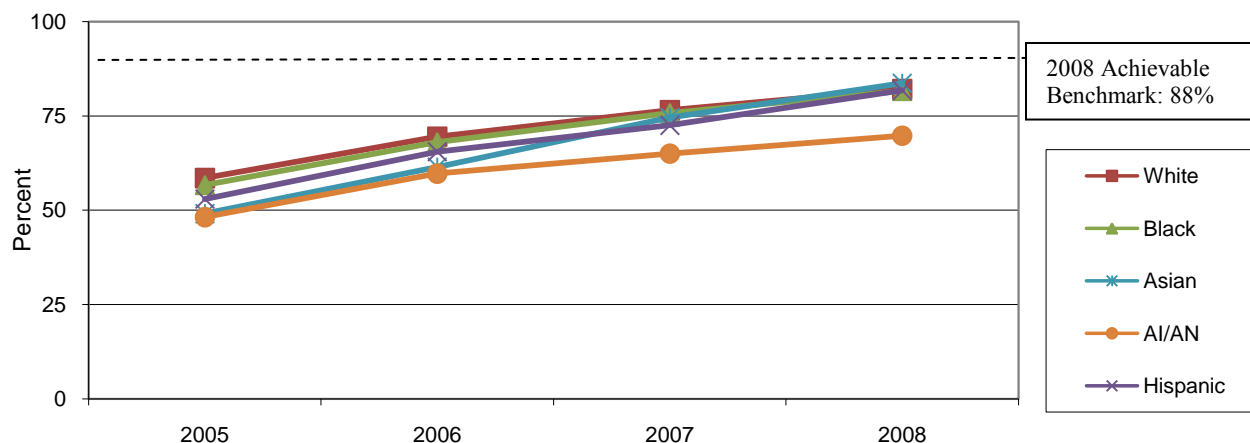
Key: AI/AN = American Indian or Alaska Native.
Source: Centers for Medicare & Medicaid Services, Quality Improvement Organization Program, 2005-2008.
Denominator: Hospitalized adult patients with a principal discharge diagnosis of heart failure.
Note: Complete written discharge instructions needed to address all of the following: activity level, diet, discharge medications, followup appointment, weight monitoring, and actions to take if symptoms worsen.

- From 2005 to 2008, the percentage of hospitalized adult patients with heart failure who were given complete written discharge instructions improved from 57.5% to 82.0% (data not shown).
- Improvements were observed among all racial and ethnic groups (Figure 6.1).
- In all years, American Indians and Alaska Natives were less likely to receive complete written discharge instructions compared with Whites. In 2005 and 2006, Asians and Hispanics were also less likely to receive written instructions than Whites, but these disparities were eliminated by 2008.
- The 2008 top 5 State benchmark was 88%.i At the current 12% annual rate of increase, this benchmark could be attained overall and by most racial and ethnic groups in less than a year. American Indians and Alaska Natives would require almost 3 years to reach the benchmark.

Also, in the NHQR:

- Significant differences in receipt of written instructions by sex were not observed.

Hospital Readmissions

Outcome: Readmissions for Congestive Heart Failure

After discharge from the hospital for a chronic condition such as congestive heart failure (CHF), many patients will be rehospitalized. Rehospitalization signals a worsened state of illness and may reflect care that is not optimally coordinated. Rehospitalization also has significant cost implications since it is much more resource intensive than outpatient treatment.

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i The top 5 States that contributed to the achievable benchmark are Colorado, Delaware, New Hampshire, New Jersey, and Utah.

Although not all rehospitalizations for CHF can be prevented, the risk of rehospitalization may increase when patients do not follow their discharge instructions. After discharge, patients need to take their medications regularly, adhere to recommendations related to diet and activity, monitor their weight, and look for signs and symptoms that their CHF is not under good control. When patients do not receive written discharge instructions that they understand, they may be less able to follow them. In addition, postdischarge care should be coordinated with patients' primary care physicians. Patients will need to arrange followup visits with their primary care physician, who can adjust medications early to help prevent rehospitalization.

The estimates below are derived from data for 13 States participating in the Healthcare Cost and Utilization Project (HCUP) State Inpatient Databases that include data on race and ethnicity. They are based on all CHF admissions from January 1 to November 30, 2007. Rehospitalizations are defined as admissions to any hospital in that State with any principal or secondary diagnosis of CHF within 30 days of the discharge date of an index CHF admission.

In previous years, we reported on readmissions with a principal diagnosis of CHF only, so comparisons with previous reports would not be appropriate. It is also important to note that the figures reported below are not national estimates. The States in the analysis account for about one-third of all adult discharges for CHF in the Nation and may provide an indication of patterns in CHF readmissions.

Costs of CHF rehospitalizations were also examined. Total hospital charges were converted to costs using HCUP cost-to-charge ratios based on hospital accounting reports from the Centers for Medicare & Medicaid Services. Cost estimates refer to hospital costs and do not include costs of physician services. In these 15 States, the average cost per CHF readmission was almost $13,000 and the total cost was more than $880 million.

Figure 6.2. Rehospitalization for congestive heart failure, by race/ethnicity and State, 13 States, 2007
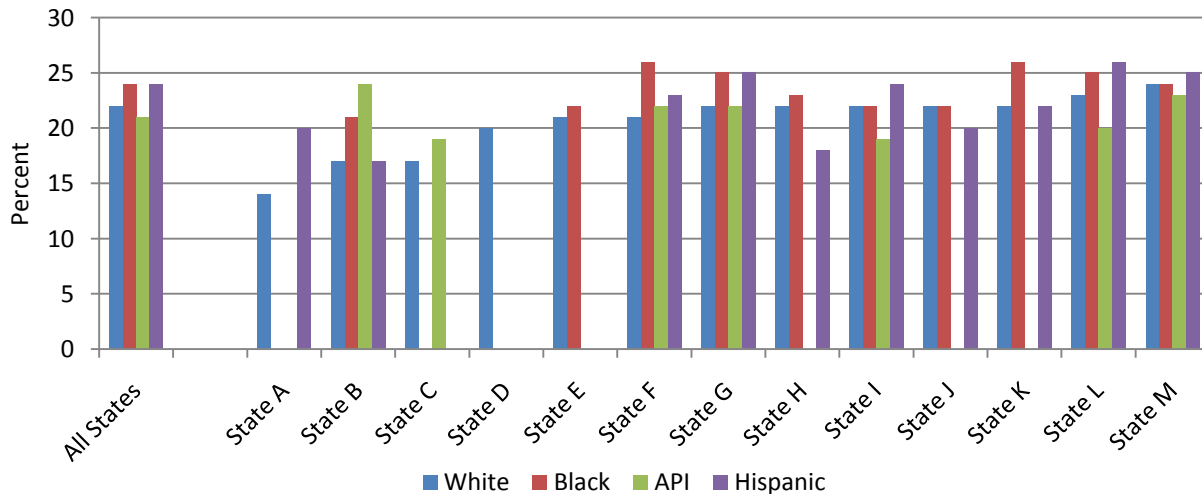
Key: API = Asian or Pacific Islander.
Source: Agency for Healthcare Research and Quality, Healthcare Cost and Utilization Project, State Inpatient Databases, 2007.
Denominator: Patients hospitalized for congestive heart failure.
Note: Some States had insufficient data for this analysis for Blacks, APIs, and Hispanics.

- The percentage of State-level CHF hospitalizations resulting in rehospitalization for CHF ranged from a low of 14% to a high of 24% (see NHQR).
- Aggregating over all States, Blacks had higher rehospitalization rates than Whites (Figure 6.2). This was also observed in States B, F, G, and K.
- Aggregating over all States, no statistically significant differences were observed between APIs and Whites or between Hispanics and Whites. However, Hispanics had higher rates than Whites in States A, G, I, and L, and APIs had a higher rate in State B.

Also, in the NHQR:

- Overall, rehospitalization rates did not vary by age. Rates were higher among patients ages 18-64 compared with patients age 65 and over in one State, but the reverse was true in two other States.

Medication Information

Patients often seek care from many providers, and different providers may prescribe medications for the same patient. Patients are responsible for keeping track of all their medications, but medication information can be confusing, especially for patients on multiple medications. When care is not well coordinated and each provider is not aware of all the medications a patient is taking, patients are at greater risk for adverse drug interactions and adverse events related to overdosing or underdosing. In addition, providers need to periodically review all of a patient's medications to ensure that they are taking what is needed and only what is needed. Medication reconciliation has been shown to reduce both medication errors and adverse drug events.[6]

Management: Provider Asks about Medications From Other Doctors

Medication information generated in different settings may not be sent to a patient's primary care provider. In the absence of communication from other providers, the patient is the primary source of medication information. Actively gathering and managing all of a patient's medical information is an important part of care coordination.

Figure 6.3. People with a usual source of care whose health provider usually asks about prescription medications and treatments from other doctors, by race, ethnicity, income, and education, United States, 2002-2007
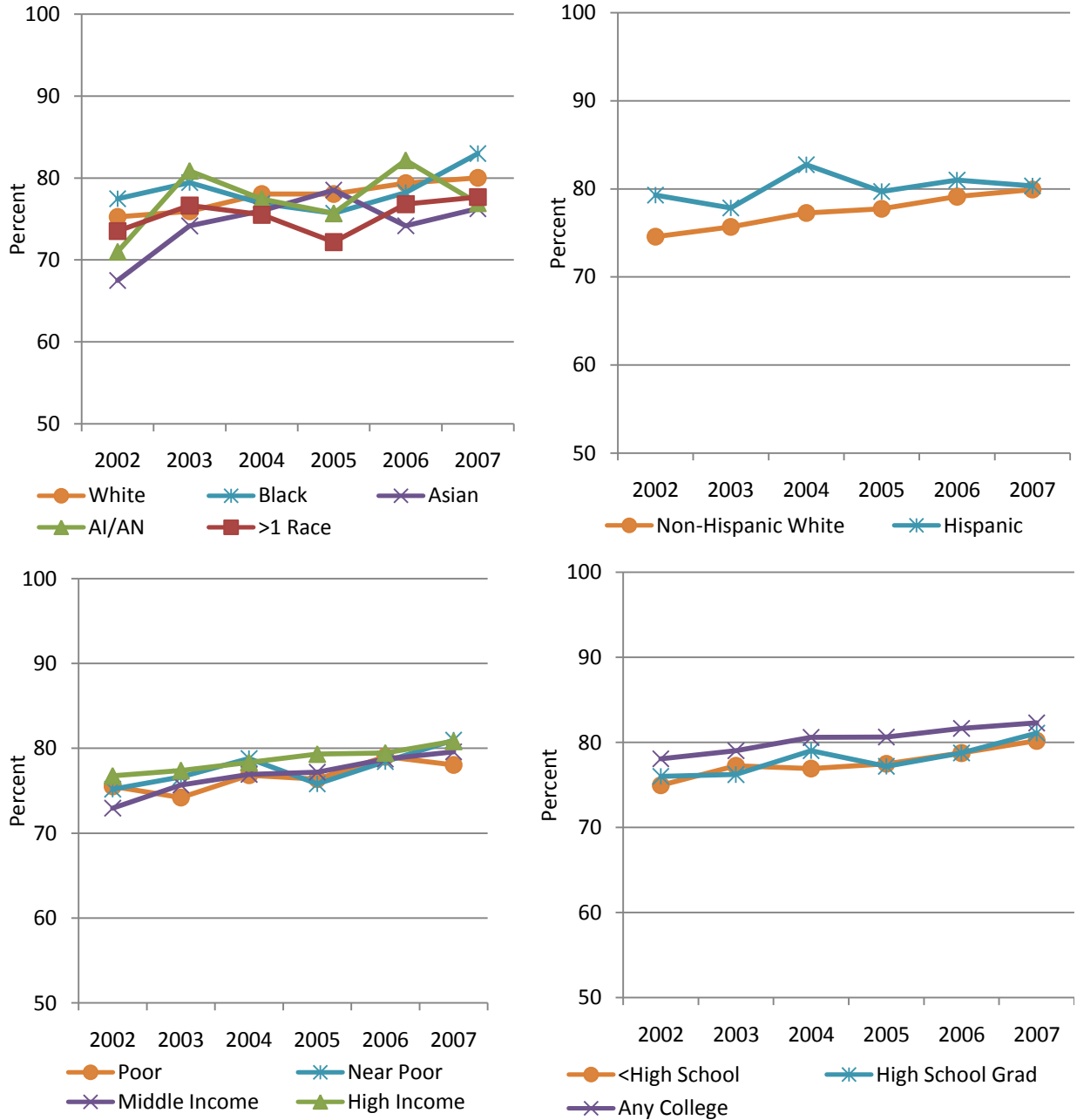
Key: AI/AN = American Indian or Alaska Native.
Source: Agency for Healthcare Research and Quality, Center for Financing, Access, and Cost Trends, Medical Expenditure Panel Survey, 2002-2007.
Denominator: Civilian noninstitutionalized population who report a usual source of care.

- From 2002 to 2007, the percentage of people with a usual source of care whose health provider usually asked about prescription medications and treatments from other doctors improved from 75% to 80% (see NHQR).

- Improvements were observed among all racial, ethnic, income, and education groups (Figure 6.3).
- Consistent disparities related to race, ethnicity, or income were not observed. In most years, providers of people with less than a high school education were less likely to ask about medication from other doctors compared with providers of people with any college education.

Also, in the NHQR:

- In most years, health providers of children and older adults were less likely to ask about medications from other doctors.

Structure: Electronic Exchange of Medication Information

Ideally, information about medications prescribed for a patient by one provider would be available to all providers taking care of that patient. One way to exchange this information efficiently is to build this function into health information technologies. The American Hospital Association recently surveyed hospitals about their use of health information technologies. Questions about whether a hospital electronically exchanged patient information on medication history with other providers were included and 1,963 hospitals responded.

Data are shown by teaching status and ownership of the hospitals. Teaching hospitals and public hospitals provide a disproportionate share of care to low-income and minority patients.

Figure 6.4. Hospitals with electronic exchange of patient information on medication history, by teaching status and ownership, 2008
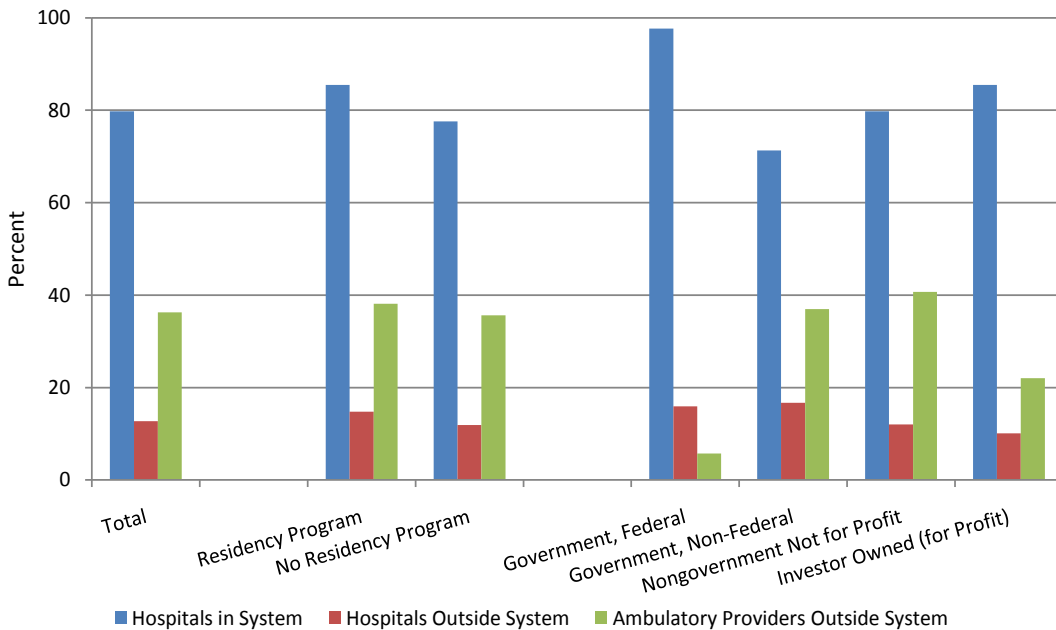
Source: American Hospital Association Annual Survey Information Technology Supplement, 2008.

- Overall, 80% of hospitals electronically exchanged patient information on medication history with other hospitals in their system, 13% exchanged information with hospitals outside their system, and 36% exchanged information with ambulatory providers outside their system (Figure 6.4).
- Hospitals with residency programs were more likely than non-teaching hospitals to exchange information with hospitals in their system.
- Federal hospitals were most likely to exchange information with hospitals in their system and least likely to exchange information with ambulatory providers outside their system.

Also, in the NHQR:

- Hospitals outside of metropolitan areas were less likely than metropolitan hospitals to exchange information with hospitals in their system but more likely to exchange information with hospitals outside their system. Hospitals with <100 or 100-399 beds were less likely than large hospitals to exchange information with hospitals in their system.

## Preventable Emergency Department Visits

Potentially preventable, high-cost encounters with the medical system occur not only in hospitals, but also in emergency departments (EDs). There were more than 125 million ED encounters in 2008.[7] ED crowding, boarding (i.e., holding patients until an inpatient bed is available), and ambulance diversion have become more prevalent and have given rise to increasing concerns about the quality of care delivered in EDs.

Some hospitalizations and ED encounters cannot be avoided, but appropriate ambulatory care can help keep some patients from having to visit an ED or from being hospitalized. Reducing potentially avoidable ED encounters, in particular, holds promise for reducing cost, improving quality, and enhancing efficiency.

Outcome: Emergency Department Visits for Asthma

Asthma is an ambulatory care-sensitive condition. Patients typically need to avoid environmental conditions that exacerbate their asthma, take their medications regularly, and monitor their symptoms. Good primary care can help patients with self-management and treatment adjustments before exacerbations of asthma become severe and require emergent attention. For this analysis, the adult and pediatric asthma measures from the AHRQ Pediatric Quality Indicator (PQI) software were applied to the 2007 HCUP Nationwide Emergency Department Sample (NEDS). Results related to area income are presented. While other studies have demonstrated higher ED visits for asthma among Blacks and Hispanics, the NEDS do not support analyses of race/ethnicity at this time.

Figure 6.5. Potentially avoidable emergency department encounters for asthma among adults (top) and children (bottom), by area income, 2007
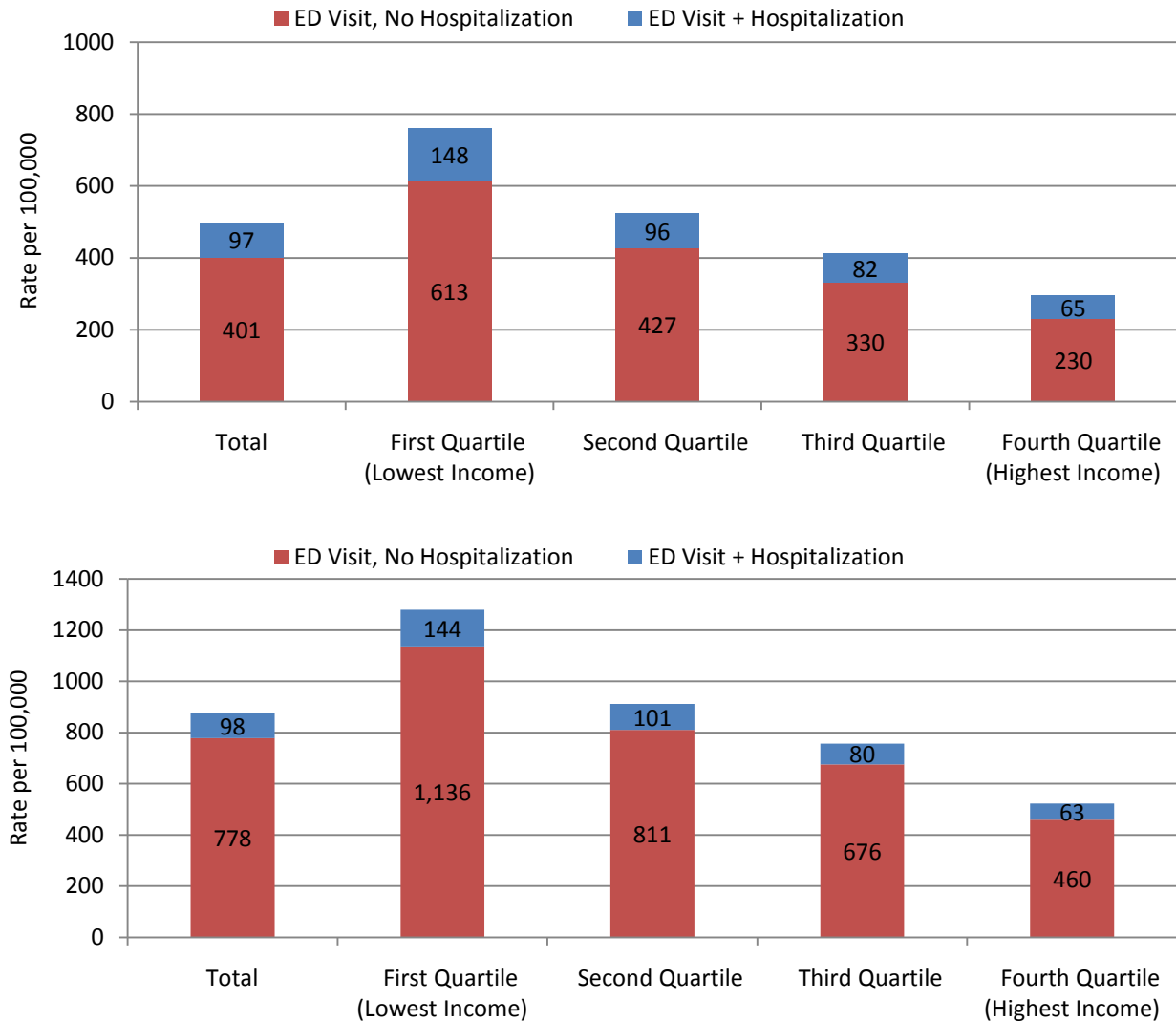
Key: ED = emergency department.
Source: Agency for Healthcare Research and Quality, Healthcare Cost and Utilization Project, Nationwide Emergency Department Sample, 2007.
Denominator: U.S. population.
Note: Annual rates are adjusted for age and gender.

- Overall, the rate of ED visits for asthma was 498 per 100,000 among adults (Figure 6.5). About 20% of ED visits for asthma among adults led to hospitalization (97 per 100,000) and 80% had other dispositions (401 per 100,000).
- Compared with adult residents of high-income neighborhoods, residents of all other income quartiles had higher rates of both ED visits for asthma that led to hospitalization and ED visits that did not end in hospitalization.
- Overall, the rate of ED visits for asthma was 876 per 100,000 among children, considerably higher than the adult rate. Only about 11% of ED visits for asthma among children led to hospitalization and 89% had other dispositions.

- Compared with children living in high-income neighborhoods, children living in the lower three income quartiles had higher rates of both ED visits for asthma that led to hospitalization and visits that did not end in hospitalization.

Also, in the NHQR:

- Compared with adult residents of large fringe metropolitan counties, residents of micropolitan and noncore counties had lower rates of ED visits for asthma that led to hospitalization and higher rates of visits that did not end in hospitalization, suggesting a different pattern of use of EDs in these areas.
- There were few significant differences in ED visits for asthma among children across urban-rural locations.

Focus on Care Coordination for Children

Children often have unique care coordination needs. Some children have or are at increased risk for chronic physical, developmental, behavioral, or emotional conditions. They may need services not only from medical specialists, but also from other therapists (e.g., nutritionists, occupational therapists, mental health care providers) and educational specialists. Therefore, appropriate and timely coordination of care across multiple providers may be particularly important during childhood.

Previously, the reports have presented information about care coordination for children using data from the National Surveys of Children With Special Health Care Needs. This year, we show information from the 2007 National Survey of Children's Health. This survey was sponsored by the Maternal and Child Health Bureau of the Health Resources and Services Administration and conducted by the National Center for Health Statistics of the Centers for Disease Control and Prevention. It collected information by telephone on more than 90,000 children under age 18, about 1,700 per State.

Two measures related to care coordination are presented here. One measure focuses on families who needed extra help arranging or coordinating a child's health care with two or more providers. Families that reported that they usually or always got as much help as needed in arranging or coordinating the child's health care were considered to have effective care coordination.

The second measure focuses on the medical home. The patient-centered medical home is one approach to organizing care around a person and helping each person stay as healthy as possible. A key characteristic of a medical home is a personal physician leading a team of health care professionals. These professionals collectively take responsibility for providing all the services that a patient needs or arranging for and coordinating care provided by others. In addition to coordinating care, medical homes provide care that is accessible, family-centered, continuous, comprehensive, compassionate, and culturally effective.[8]

In the 2007 National Survey of Children's Health, several questions were asked to determine whether a child had a medical home:

- First, a child had to have a personal doctor or nurse.
- The presence or absence of family-centered, compassionate, and culturally effective care was assessed through a series of questions about the relationship between the provider and the child and family.
- Comprehensive and accessible care was assessed by whether the child had a usual source of care (other than an ED) when sick or when parents needed advice and by the ease of receiving needed referrals.
- Coordinated care was assessed among children using health services from more than one health care provider by whether the child received needed help with coordinating that care and reported good communication across providers and between medical providers and schools.
- Continuous care, usually assessed by the length of relationship with the primary doctor or nurse, was not directly measured in the survey.[9]

Figure 6.6. Children with effective care coordination and with a medical home, by race/ethnicity and language, 2007
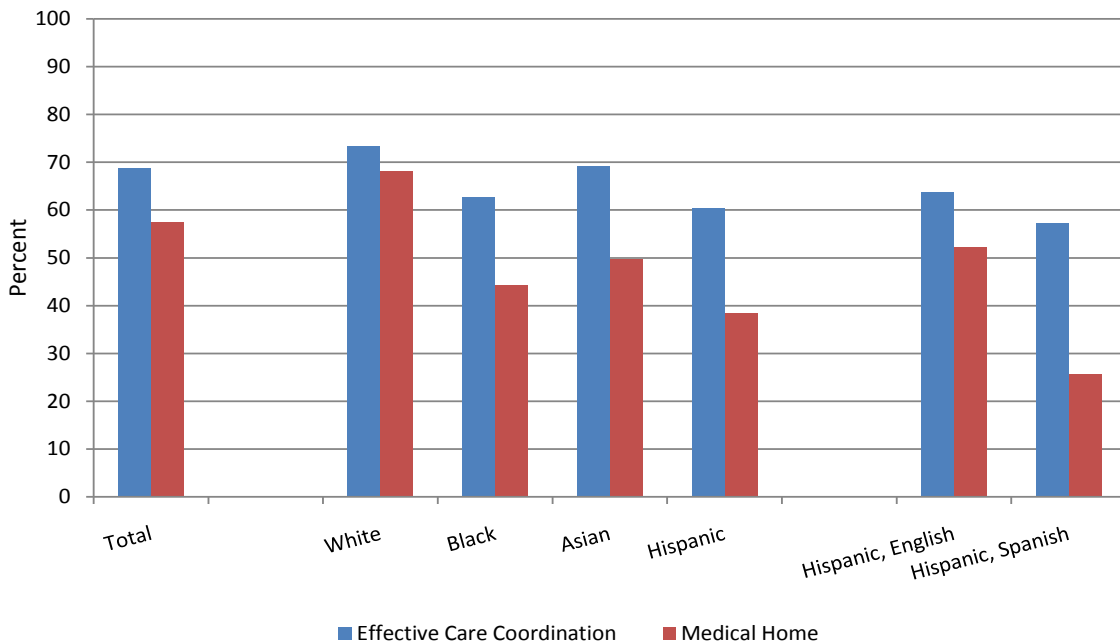
Key: Hispanic, English indicates that child is Hispanic and English is the primary language spoken at home; Hispanic, Spanish indicates that child is Hispanic and Spanish is the primary language spoken at home.
Source: Health Resources and Services Administration, Maternal and Child Health Bureau; Centers for Disease Control and Prevention, National Center for Health Statistics, National Survey of Children's Health, 2007.
Denominator: Children under 18 years of age.
Note: Analyses performed by the Child and Adolescent Health Measurement Initiative, Data Resource Center for Child and Adolescent Health (http://childhealthdata.org).

- Overall, among families who needed extra help arranging or coordinating a child's health care with two or more providers, only 69% reported receiving effective care coordination

(Figure 6.6). Black, Asian, and Hispanic children were less likely than White children and Hispanic children who speak Spanish at home were less likely than Hispanic children who speak English at home to receive effective care coordination.

- Overall, 58% of children had a medical home. Black, Asian, and Hispanic children were less likely than White children and Hispanic children who speak Spanish at home were less likely than Hispanic children who speak English at home to have a medical home.
- Of groups shown, Hispanic children who speak Spanish at home were least likely to receive effective care coordination or to have a medical home.

Also, in the NHQR:

- Children living in metropolitan areas were less likely than children living outside metropolitan areas and uninsured children were less likely than insured children to receive effective care coordination.
- Children ages 0-5 were more likely than children ages 12-17 to have a medical home.
- Uninsured children were less likely than insured children to have a medical home.

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Chapter 7. Efficiency

Health care cost increases continue to outpace the rise in wages, inflation, and economic growth. One approach to containing the growth of health care costs is to improve the efficiency of the health care delivery system. This would allow finite health care resources to be used in ways that best support high-quality care. Recent work examining variations in Medicare spending and quality shows that higher cost providers do not necessarily provide higher quality care, illustrating the potential for improvement.[1] Improving efficiency in the Nation's health care system is an important component of the Department of Health and Human Services' (HHS) efforts to support a better health care system.

Measures

Part of the discussion about how to improve efficiency involves the question about how best to measure it. Varying perspectives and definitions of health care efficiency exist, and the lack of consensus on what constitutes appropriate measurement of efficiency has stymied efforts to report on this area. To improve understanding of efficiency measures, AHRQ commissioned the RAND Corporation to systematically review measures of efficiency and to assess their potential to be tracked and reported at various levels.[2] The RAND report provides a typology of efficiency measures that emphasizes the multiple perspectives on efficiency. It also points out that measures must be considered from the standpoint of the measuring organization and its goal in assessing efficiency. In considering efficiency measures, AHRQ also built on another report that examined the question of efficiency from the cost-of-waste point of view. In that report, the authors outline another common typology for efficiency measurement: the tracking of overuse, underuse, and misuse in the health care system.[3]

For 2010, this chapter has been realigned around the National Priorities Partnership's (NPP) concept of overuse (one of the six national priorities). The vision is a health care system that "promotes better health and more affordable care by continually and safely reducing the burden of unscientific, inappropriate, and excessive care, including tests, drugs, procedures, visits, and hospital stays." The primary goal is to have "healthcare organizations that continually strive to improve the delivery of appropriate patient care, and substantially and measurably reduce extraneous services and treatments."

The measures this year are presented in the following layout.

- Inappropriate Medication Use:
  - Adults age 65 and over who received potentially inappropriate prescription medications
- Preventable Emergency Department Visits and Hospitalizations:
  - Potentially avoidable hospitalization rates for adults
  - Total national costs associated with potentially avoidable hospitalizations
  - Medicare home health patients with potentially avoidable hospitalizations
  - Nursing home residents with potentially avoidable hospitalizations
- Potentially Harmful Preventive Services With No Benefit:
  - Males age 75 and over who had a prostate-specific antigen (PSA) test or a digital rectal exam (DRE) within the last 12 months

Consensus has yet to emerge about the appropriate framework and acceptable measures of efficiency, and the examples provided are designed to stimulate productive ongoing discussion about health care efficiency. We anticipate regularly reporting several measures in Efficiency chapters in future years. Notably, however, some of the measures that we are presenting in this year's chapter will appear only intermittently in the future.

Findings

Inappropriate Medicine Use

Some drugs are potentially harmful for older patients but nevertheless are prescribed to them.[4, i]

Figure 7.1. Adults age 65 and over who received potentially inappropriate prescription medications in the calendar year, by race/ethnicity and income, 2002-2007
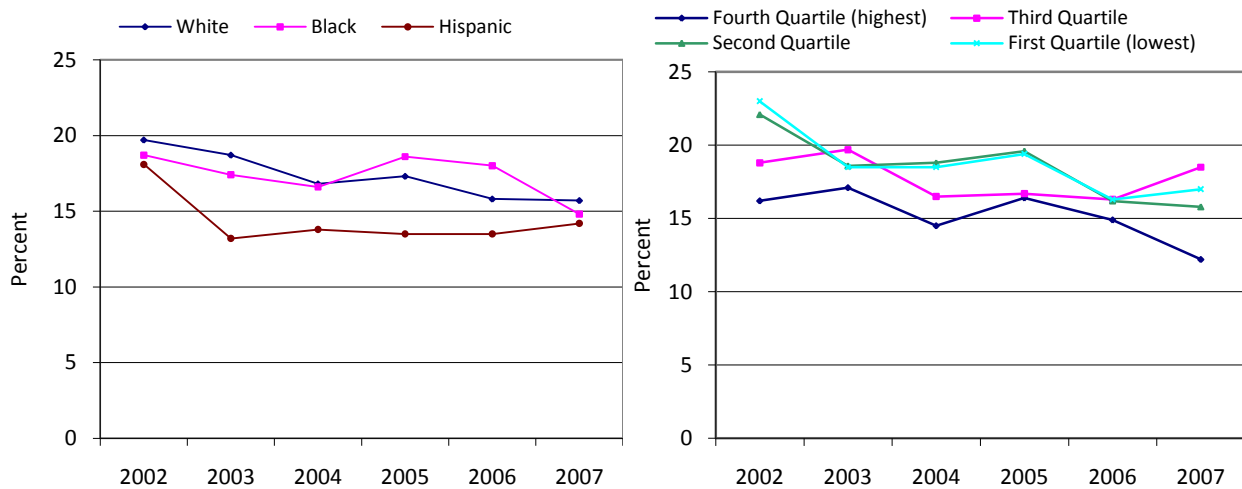
Source: Agency for Healthcare Research and Quality, Medical Expenditure Panel Survey, 2002-2007.
Denominator: Civilian noninstitutionalized population age 65 and over.
Note: Prescription medications received include all prescribed medications initially purchased or otherwise obtained, as well as any refills. Whites and Blacks are non-Hispanic.

- From 2002 to 2007, the percentage of older patients who received at least 1 of 33 potentially inappropriate drugs did not change significantly overall or for any race/ethnicity or income groups (Figure 7.1).
- For the first three income quartiles, the percentage of patients who received potentially inappropriate medications was higher than it was for the fourth quartile (highest income) (in 2007, first quartile, 17.0%; second quartile, 15.8%; third quartile, 18.5%; compared with 12.2%).

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[i] Drugs that should always be avoided for older patients include barbiturates, flurazepam, meprobamate, chlorpropamide, meperidine, pentazocine, trimethobenzamide, belladonna alkaloids, dicyclomine, hyoscyamine, and propantheline. Drugs that should often or always be avoided for older patients include carisoprodol, chlorzoxazone, cyclobenzaprine, metaxalone, methocarbamol, amitriptyline, chlordiazepoxide, diazepam, doxepin, indomethacin, dipyridamole, ticlopidine, methyldopa, reserpine, disopyramide, oxybutynin, chlorpheniramine, cyproheptadine, diphenhydramine, hydroxyzine, promethazine, and propoxyphene.

Also, in the NHQR:

- For those living in nonmetropolitan areas, the percentage of patients who received potentially inappropriate medications was significantly higher than for those living in metropolitan areas.
- The percentage of female patients who received potentially inappropriate medications was significantly higher than for male patients.

Disparities in Potentially Avoidable Hospitalizations

To address potentially avoidable hospitalizations from the population perspective, data on ambulatory care-sensitive conditions are summarized here using the AHRQ Prevention Quality Indicators (PQIs). Not all hospitalizations that the AHRQ PQIs track are preventable. But ambulatory care-sensitive conditions are those for which good outpatient care can prevent the need for hospitalization or for which early intervention can prevent complications or more severe disease. The AHRQ PQIs track these conditions using hospital discharge data.

A critical caveat should be noted regarding potentially avoidable hospitalizations. Comparatively high rates of potentially avoidable hospitalizations may reflect inefficiency in the health care system. Therefore, groups of patients should not be "blamed" for receiving less efficient care. Instead, examining disparities in efficiency may help make the business case for addressing disparities in care. Investments that reduce disparities in access to high-quality outpatient care may help reduce rates of avoidable hospitalizations among groups that have high rates.

Figure 7.2. Potentially avoidable hospitalization rates, by race/ethnicity and income, 2004-2007
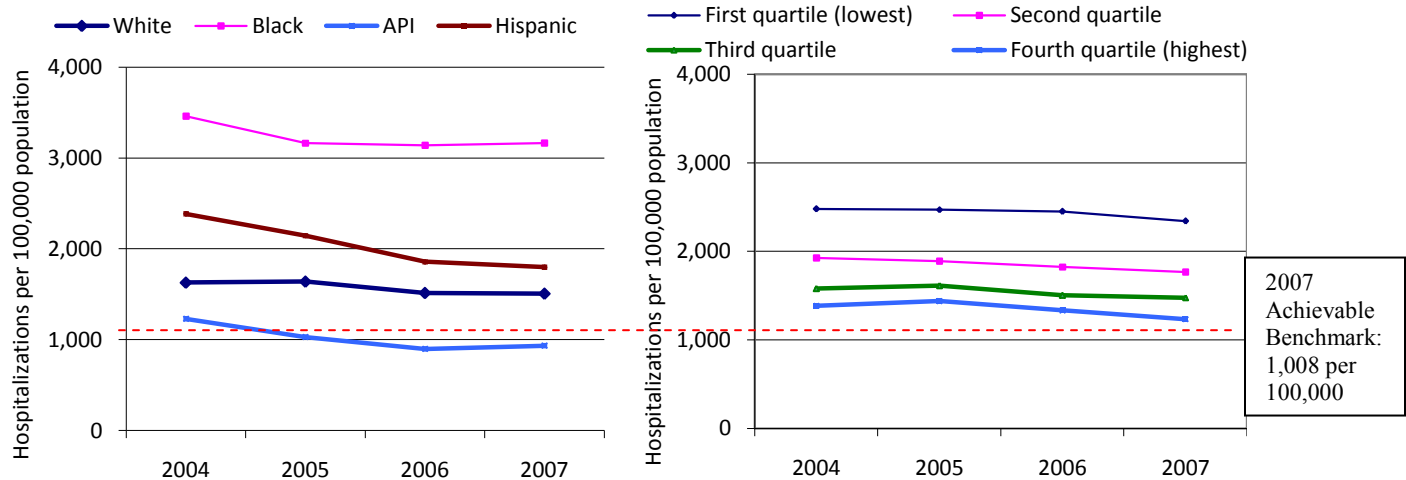
Key: API = Asian or Pacific Islander.
Source: Agency for Healthcare Research and Quality, Healthcare Cost and Utilization Project, Nationwide Inpatient Sample, 2004-2007.
Denominator: Civilian noninstitutionalized adults age 18 and over.
Note: Annual rates are adjusted for age and gender. White, Black, and Asian or Pacific Islander populations are non-Hispanic. Income quartiles are based on median income of Zip Code of patient's residence.

- In 2007, rates of potentially avoidable hospitalizations were higher among Blacks compared with Whites (3,164 compared with 1,508 per 100,000 population; Figure 7.2). Rates were lower among Asians and Pacific Islanders (936 per 100,000 admissions) compared with Whites.

- Rates of potentially avoidable hospitalizations were higher among residents of areas in the lowest and second income quartile compared with residents of the highest income quartile (2,341 and 1,766, respectively, compared with 1,234 per 100,000 population).
- Rates of avoidable hospitalizations for chronic conditions were higher among Blacks and Hispanics compared with Whites (2,113 and 1,020.6, respectively, compared with 863 per 100,000 population; data not shown). Rates were lower among Asians and Pacific Islanders (489 per 100,000 population) compared with Whites (data not shown).
- Rates of potentially avoidable hospitalizations for chronic conditions were higher among residents of areas in the lowest, and second income quartile compared with residents of the highest income quartile (1286.3, and 786.8, respectively, compared with 634 per 100,000 population; data not shown).
- Rates of potentially avoidable hospitalizations for acute conditions were higher among Blacks compared with Whites (840 compared with 645 per 100,000 population; data not shown).
- There were no significantly different rates of potentially avoidable hospitalizations for acute conditions among income (data not shown).
- In 2007, the overall top 4 State achievable benchmark for potentially avoidable hospitalizations was 1,008 hospitalizations per 100,000 population.[ii] The overall achievable benchmark could be attained in 14 years.
- The only racial/ethnic group to attain the achievable benchmark as of 2007 was Asians, whereas Whites could attain the benchmark in about 10 years, Blacks would not attain the benchmark for about 23 years, and Hispanics for just under 4 years.
- High-income groups would attain the benchmark sooner than lower income groups (first [lowest] quartile, about 31 years; second quartile, just under 13.9 years; third quartile, just over 11 years; and fourth [highest] quartile, 4 years).

Excess Hospitalizations

The following analysis estimates numbers of excess preventable hospitalizations for 2007 by comparing adjusted rates of the AHRQ PQI composite with the benchmark rate. The benchmark rate was set by the States with rates in the top 10%. For excess preventable hospitalizations to be calculated, the difference between a group's rate and the benchmark rate was multiplied by the number of persons in the group (for example, for the Hispanics, the difference between the Hispanic rate and the benchmark rate was multiplied by the number of Hispanics).

[ii] The top 4 States that contributed to the achievable benchmark are Hawaii, Oregon, Utah, and Washington.

Figure 7.3. Excess number of hospitalizations for AHRQ Prevention Quality Indicator composite conditions, by race/ethnicity, 2007
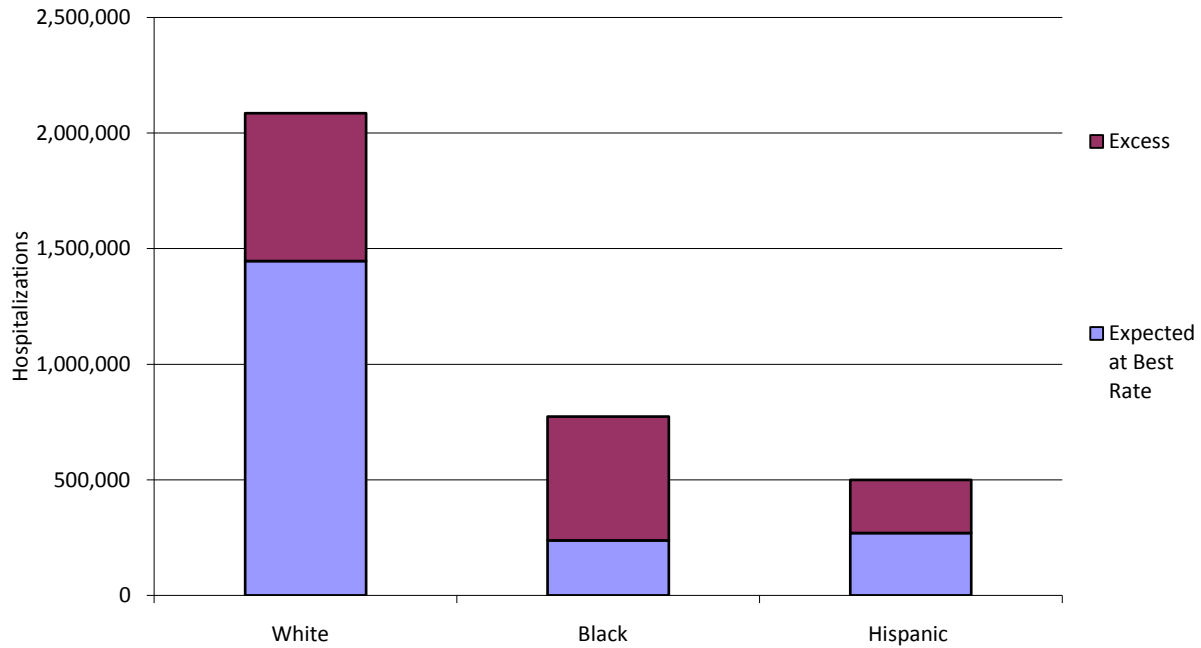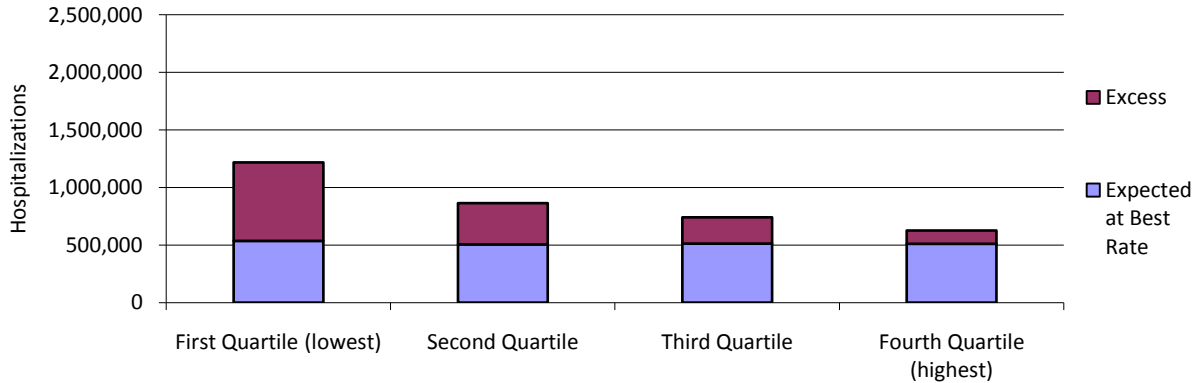

Source: Agency for Healthcare Research and Quality, Healthcare Cost and Utilization Project, State Inpatient Databases disparities analysis file, 2007.

- In 2007, if Whites had the benchmark rate of preventable hospitalizations, they would have had almost 640,000 fewer hospitalizations (Figure 7.3). Instead of costing $15.6 billion, preventable hospitalization among Whites would have cost only $10.8 billion, saving $4.8 billion.
- If Blacks had the benchmark rate of preventable hospitalizations, they would have had more than 530,000 fewer hospitalizations. Instead of costing $6.1 billion in 2007, preventable hospitalization among Blacks would have cost only $1.9 billion, saving $4.2 billion.
- If Hispanics had the benchmark rate of preventable hospitalizations, they would have had almost 230,000 fewer hospitalizations. Instead of costing $4.2 billion in 2007, preventable hospitalization among Hispanics would have cost only $2.3 billion, saving $1.9 billion.
- Because the overall rate among Asians and Pacific Islanders was below the benchmark rate, there are no estimated excess preventable hospitalizations for this group.

Comparisons with the 4 State achievable benchmark for the composite rate of preventable hospitalizations in 2007 are used to estimate excess preventable hospitalizations by area income. Area income refers to the median income of the ZIP Code in which the patient resides.

Figure 7.4. Excess number of hospitalizations for AHRQ Prevention Quality Indicator composite conditions, by income, 2007

Source: Agency for Healthcare Research and Quality, Healthcare Cost and Utilization Project, Nationwide Inpatient Sample, 2007.

- If residents of the neighborhoods in the lowest income quartile had the benchmark rate of preventable hospitalizations, they would have had more than 680,000 fewer hospitalizations (Figure 7.4). Instead of costing $8.8 billion in 200.7, preventable hospitalization among income quartile 1 residents would have cost only $3.9 billion, saving $4.9 billion.
- If residents of income quartile 2 neighborhoods had the benchmark rate of preventable hospitalizations, they would have had almost 360,000 fewer hospitalizations. Instead of costing $6.3 billion in 2007, preventable hospitalization would cost only $3.7 billion, saving $2.6 billion.
- If residents of income quartile 3 neighborhoods had the benchmark rate of preventable hospitalizations, they would have had almost 230,000 fewer hospitalizations. Instead of costing $5.7 billion in 2007, preventable hospitalization would cost only $4.0 billion, saving $1.7 billion.
- If residents of the highest income quartile neighborhoods had the benchmark rate of preventable hospitalizations, they would have had about 115,000 fewer hospitalizations. Instead of costing $5.4 billion in 2007, preventable hospitalization would cost only $4.4 billion, saving $1.0 billion.

Perforated Appendixes

Potentially avoidable admissions are hospitalizations that might have been averted by good outpatient care. They relate to conditions for which good outpatient care can prevent the need for hospitalization or for which early intervention can prevent complications or more severe disease. Although all admissions for these conditions cannot be avoided, rates in populations tend to vary with access to primary care.[5] For example, better access to care should reduce the percentage of appendicitis admissions in which rupture has occurred.

Nationwide, many AI/ANs who are members of a federally recognized Tribe rely on the IHS to provide access to health care in the counties on or near reservations. Because data on AI/ANs obtained from most Federal and State sources are incomplete, the NHDR addresses the data gap for this measure by examining data submitted to the IHS National Patient Information Reporting System (NPIRS) by IHS, Tribal, and contract hospitals.

Figure 7.5. Perforated appendixes per 1,000 admissions for appendicitis, age 18 and over, in IHS, Tribal, and contract hospitals, and community hospitals, by age and by gender, 2000-2007
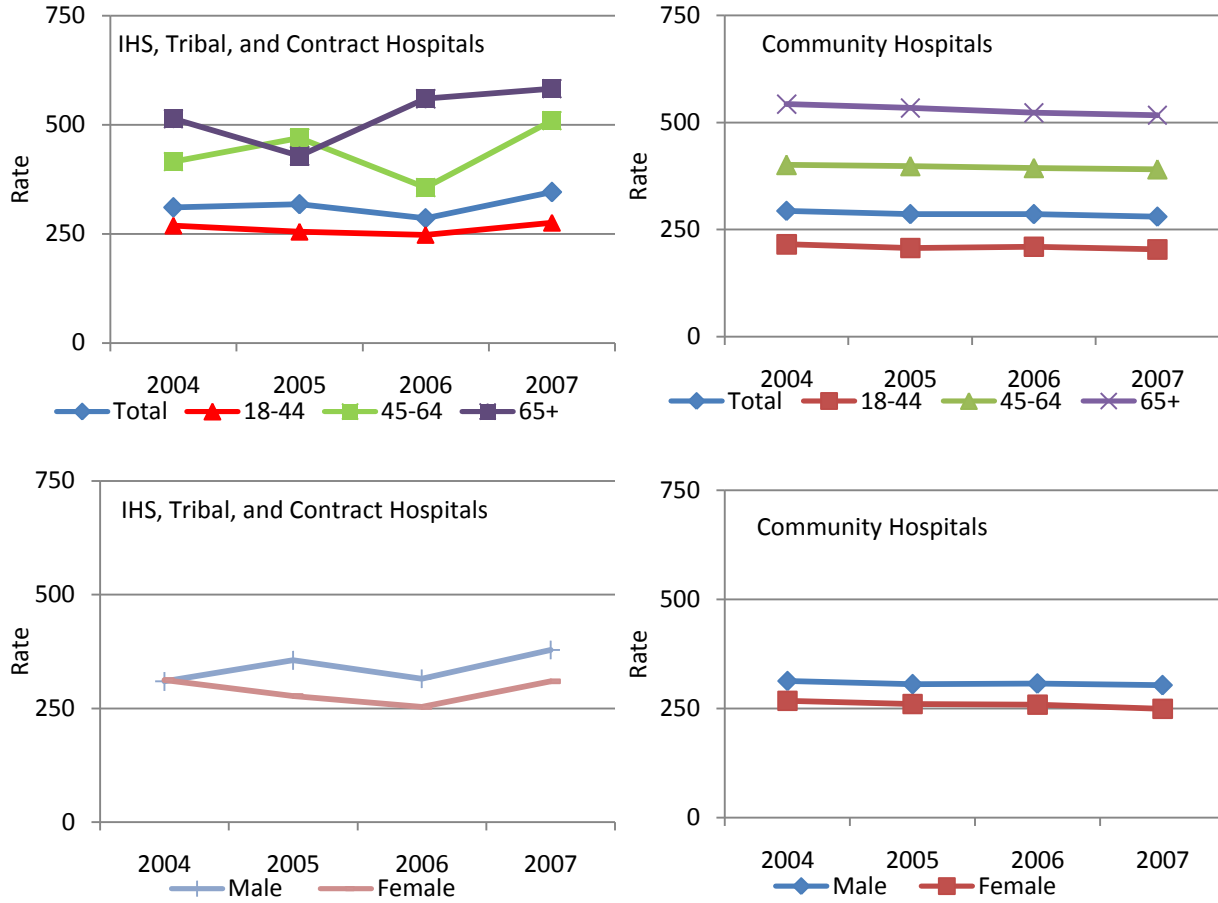
Source: IHS, Tribal, and contract hospitals: Indian Health Service, OIT/NPIRS, National Data Warehouse, Workload and Population Data Mart, 2004-2007; community hospitals: Agency for Healthcare Research and Quality, HCUP SID disparities analysis file, 2004-2007.

- Between 2004 and 2007, the overall rate of perforated appendixes at Indian Health Service facilities did not change significantly (Figure 7.5).
- In 2007, for IHS facilities, the rates of perforated appendixes for those ages 45 to 64 and those age 65 and over were higher than for those ages 18-44 (509.7 and 583.3 per 1,000 appendicitis admissions, respectively, compared with 275.4).

Potentially Avoidable Hospitalizations Among Medicare Home Health and Nursing Home Patients

Many patients are hospitalized while receiving care from home health agencies and nursing homes, with resulting high costs and care transition problems. A number of these hospitalizations are appropriate. However, some hospital admissions could be prevented with better primary care and monitoring in these settings, or the patient could receive appropriate treatment in a less resource-intense setting.

Using the AHRQ PQIs, we track potentially avoidable hospitalizations among Medicare patients occurring within 30 days of the start of home health or nursing home care. These patients may differ from patients discussed earlier in this chapter who are predominantly admitted for avoidable conditions from home. At home, some are receiving appropriate primary care and others have not visited a health care provider for years.

In contrast, Medicare home health and nursing home patients have regular contact with health providers, which should reduce rates of avoidable hospitalization. However, these patients are also more acutely ill, may become seriously ill when affected by a new illness, and may have multiple comorbidities. Medicare patients in these settings often have been hospitalized recently. Therefore, an avoidable hospitalization may represent a return to the hospital, perhaps against the expectation that the patient no longer needed acute care.

For application to home health and nursing home settings, the potentially avoidable stays are identified within a defined time period, 30 days, from the home health or nursing home admission date. If a patient is hospitalized more than once in that period, only the first stay is recognized for the measure.

Data on home health patients come from Medicare fee-for-service (FFS) home health claims and Outcome and Assessment Information Set patient assessment information. Data on nursing home patients come from Medicare skilled nursing facility FFS claims and Minimum Data Set patient assessment information. These data are linked with Medicare Part A acute care hospital claims to determine hospitalizations for potentially avoidable conditions.

Figure 7.6. Medicare home health patients with potentially avoidable hospitalizations within 30 days of start of care, by race/ethnicity, 2001-2008
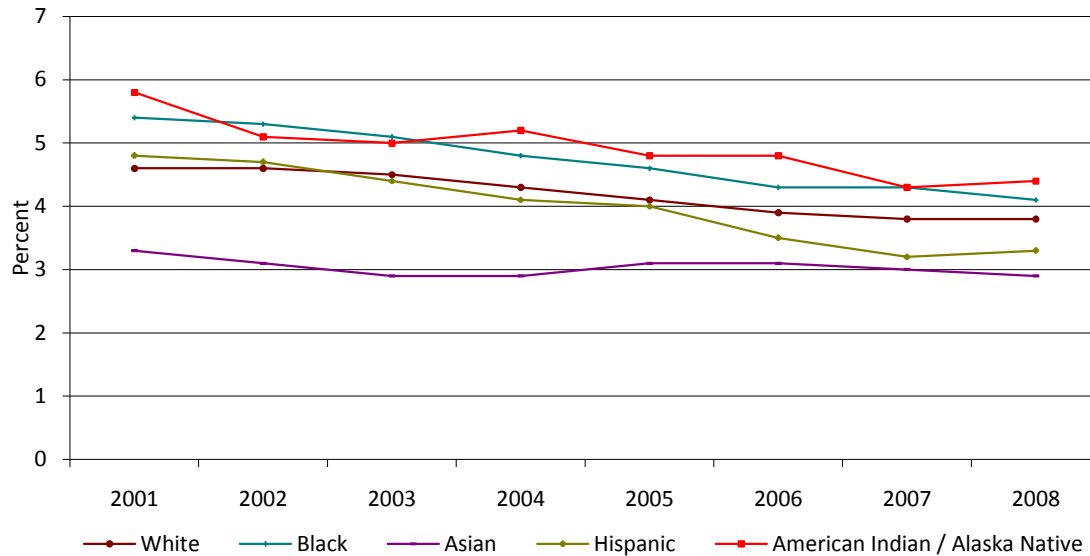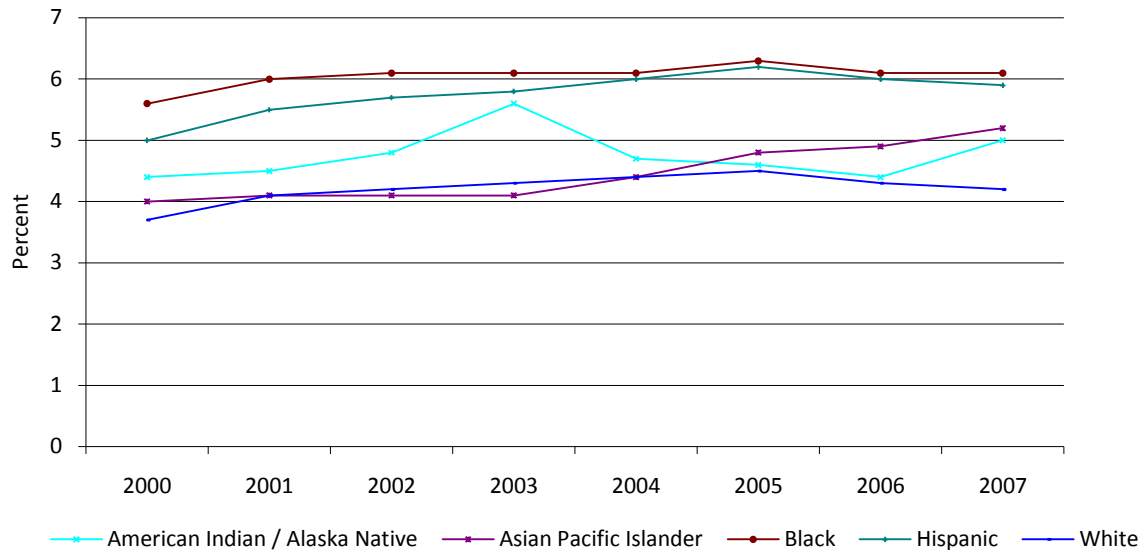

Source: Centers for Medicare & Medicaid Services, Outcome and Assessment Information Set linked with Medicare Part A claims (100%), 2001-2008.
Denominator: Adult nonmaternity patients starting an episode of skilled home health care.
Note: Rates standardized to the 2006 patient population according to Medicare enrollment category. Hispanics could include other races. All race categories could include Hispanics.

- Between 2001 and 2008, hospitalizations for potentially avoidable conditions within 30 days of home health episode start declined from 4.7% to 3.8% (data not shown).
- From 2001 to 2008, among all racial and ethnic groups except Asians, the percentage of potentially avoidable hospitalizations within 30 days of home health episode start significantly decreased (Figure 7.6).
- In 2001, the costs associated with hospitalizations for potentially avoidable conditions within 30 days of home health episode start were $675.4 million; by 2008, the costs had risen to $903.9 million.

Figure 7.7. Skilled nursing home residents with potentially avoidable hospitalizations within 30 days of admission, by race/ethnicity, 2000-2007

Source: Centers for Medicare & Medicaid Services, Minimum Data Set, 2000-2007, linked with Medicare Part A claims (100%).
Denominator: Residents who met the Medicare skilled nursing facility (SNF) criteria for nursing home admission.
Note: American Indian/Alaska Native, Asian / Pacific Islander, Blacks, and Whites are non-Hispanic populations.

- Between 2000 and 2002, potentially avoidable hospitalizations within 30 days of skilled nursing home episode start increased by about 0.5% for all racial and ethnic groups except Asians and Pacific Islanders (Figure 7.7). During this time, the percentage for Asians and Pacific Islanders did not change.
- From 2002 to 2007, potentially avoidable hospitalizations within 30 days of skilled nursing home episode start plateaued for all racial and ethnic groups, except for Asians and Pacific Islanders. This percentage gradually rose (from 4.1% to 5.2%).
- In 2000, the costs associated with hospitalizations for potentially avoidable conditions within 30 days of skilled nursing home episode start were $343.7 million; by 2007, the costs had risen to $724.4 million.

Potentially Harmful Preventive Services

This section highlights waste and opportunities to reduce unnecessary costs. Waste includes overuse, underuse, and misuse of health care services. As it is one of the NPP priorities, the focus of this section is on overuse. Nevertheless, underuse and misuse are addressed in various sections of this report. Many of the effectiveness measures relate to people not getting services they need, i.e., underuse. Many of the safety measures relate to people getting services in a hazardous manner, i.e., misuse.

An example of overuse that can be reduced through education is PSA screening or a DRE to check for prostate cancer among men age 75 and over. The U.S. Preventive Services Task Force recommended against these tests in 2008[6] and there is continued concern that administration of the PSA test or DRE in men age 75 and over will lead to false positives and subsequent unnecessary treatments. Reductions in costs and improvements in quality should result from reductions in unnecessary PSA screening and DREs.

Figure 7.8. Males age 75 and over who reported having a prostate-specific antigen test or a digital rectal exam within the last 12 months , by race, ethnicity, and income, 2004, 2006, and 2008
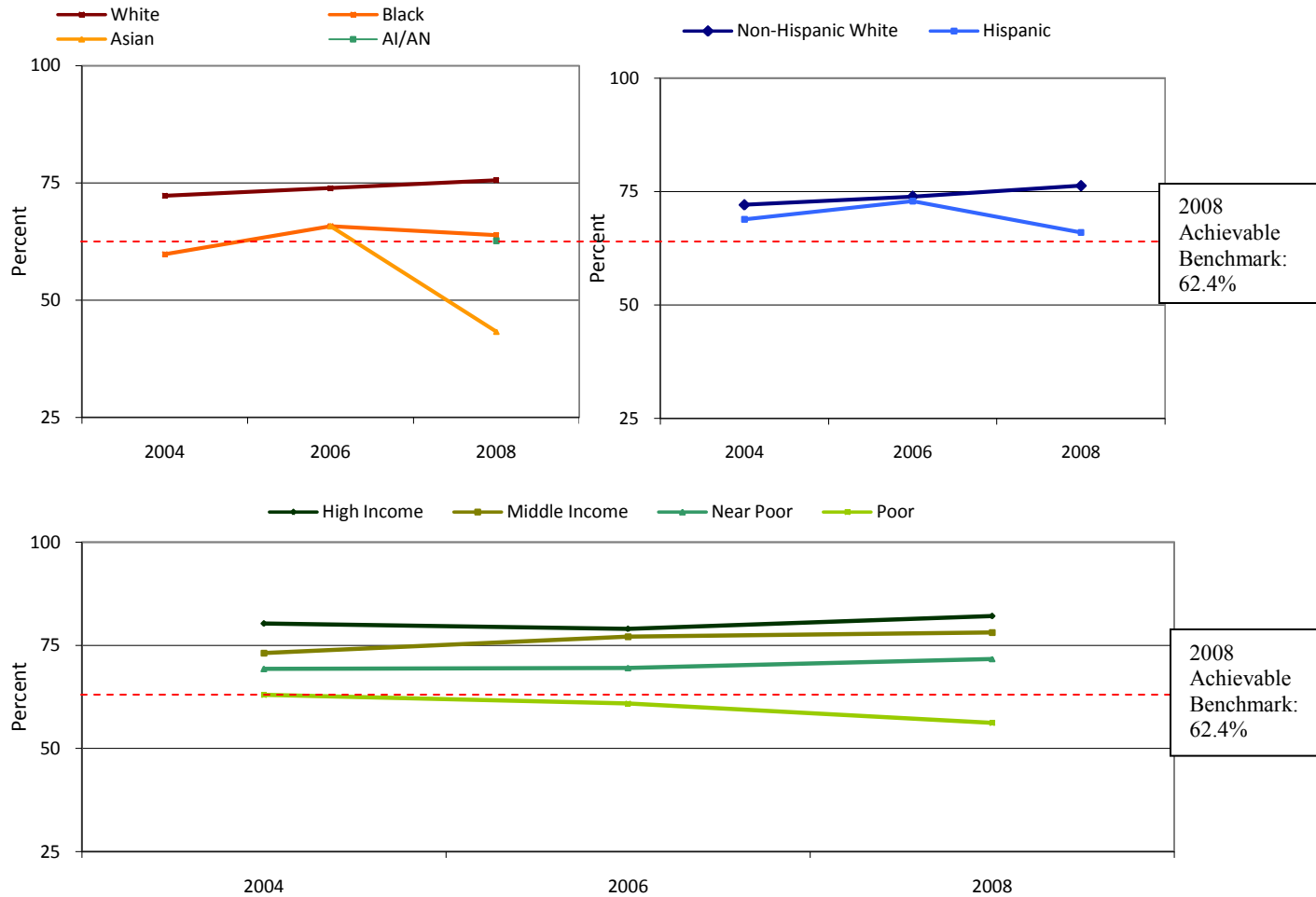
Key: AI/AN = American Indian/Alaska Native.
Source: Centers for Disease Control and Prevention, Behavioral Risk Factor Surveillance System.
Denominator: Adult males age 75 and over with no history of prostate cancer.
Note: Data for 2004, 2006, and part of 2008 precede the U.S. Preventive Services Task Force recommendation against screening men age 75 and over. It should be noted that PSA tests and DREs are provided to this population for purposes unrelated to prostate cancer screening. Data to determine the purpose of these services was unavailable and all reported PSA tests and DREs are reflected in the data shown.

- In 2008, the overall percentage of males age 75 and over who had a PSA test or a DRE within the last 12 months was 73.7% (data not shown).
- In 2008, the percentage of Black and Asian males age 75 and over who had a PSA test or a DRE within the last 12 months was lower than for White males (Figure 7.8).
- In 2008, the percentage of poor males age 75 and over who had a PSA test or a DRE within the last 12 months was lower than for high-income males.In 2008, the Top 5 State benchmark for males age 75 and over who had a PSA or DRE exam was 62.4%.[iii] There was no evidence of movement toward the benchmark.

[iii] The Top 5 States that contributed to this benchmark are California, Hawaii, Louisiana, New Jersey, and Tennessee.

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Chapter 8. Health System Infrastructure

Ensuring well-coordinated, high-quality health care requires the establishment of a supportive health system infrastructure. High-performance health systems require a well-distributed workforce, information systems for data collection, quality improvement analysis, and clinical communication support, as well as the organizational capacity to support culturally competent services and ongoing improvement efforts.[1]

Health care models such as Wagner's Chronic Care Model (CCM) and Patient-Centered Medical Home (PCMH) promote a safety culture for patients. CCM promotes health care delivery systems designed to support community-based resources, self-management of care, and information support systems. Information support systems provide the basis for much of the continuity in patient records and clinician communication. PCMH uses a team-based model led by a primary care physician who provides continuous and coordinated care throughout the patient's life. Features such as open scheduling, expanded hours, and new options for communication between patients and their personal physicians and practice staff enhance patient experiences and improve the quality of care.

A well-integrated, culturally competent health care delivery system that allows patient information to be readily available to providers positively affects the quality and efficiency of care and therefore patient outcomes. The adoption and use of health information technology (IT) can be an effective way to manage health care costs and improve the quality of care. Since the publication of the Institute of Medicine (IOM) report *Unequal Treatment: Confronting Racial and Ethnic Disparities in Healthcare*,[i] which emphasized the need for standardized collection and reporting of racial and ethnic data, the need for more granular detail on racial and ethnic subgroups has become apparent. This is an area where the adoption and use of health IT can be beneficial.

Another area of patient care that could be improved with the adoption and use of health IT is care coordination. A Commonwealth Fund study found that health IT can facilitate care coordination within a practice, but a lack of interoperability makes exchange of information between health care facilities difficult. Evidence has also shown that the adoption and effective use of health IT can help reduce medical errors and adverse events, enable better documentation and file organization, provide patients with information that assists their adherence to medication regimens and scheduled appointments, and assist doctors in tracking their treatment protocol.[1]

Having an adequate number of providers is an important aspect of the health system infrastructure and can be an indicator of quality of care. It is also important to have a large enough and appropriately distributed workforce to respond to expected increases in patient demand. Previous reports have presented data on diversity in the physician, nursing, and dental professions workforce. This year, the National Healthcare Quality Report (NHQR) and National Healthcare Disparities Report (NHDR) present data on the geographic and racial/ethnic distribution of the pharmacy workforce.

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[i] Available at the National Academies Press Web site at www.nap.edu/openbook.php?isbn=030908265X.

Measures

The IOM acknowledges that health system infrastructure measures such as the adoption and effective use of health IT are likely to be in the developmental stage, and evidence of the impact on quality improvement has not yet been strongly established. The IOM highlighted three infrastructure capabilities that should be further evaluated for reporting. These capabilities include care management processes, adoption and use of health IT, and workforce distribution and its relevance to minority and other underserved populations.

Previous reports have included information on the culture of patient safety in hospitals, and this information is updated here. Previous reports have also included information on the health care workforce and information about pharmacists is presented in this report. A new area where there is growing evidence of impact on health care quality is electronic prescribing (e-prescribing). Taking this into account, the 2010 reports include new e-prescribing measures for both hospital and ambulatory settings.

Findings

Care Management Processes: Focus on Patient Safety Culture

The 2010 NHQR and NHDR highlight the organizational capacity—resources, knowledge, and processes—of hospitals in the area of patient safety. High-reliability organizations that achieve low rates of adverse events establish "cultures of safety." A culture of safety is characterized by shared dedication to making work safe, blame-free reporting and communication about error, collaboration and teamwork across disciplines, and adequate resources to prevent adverse events.

AHRQ developed the Hospital Survey on Patient Safety Culture to help hospitals assess the culture of safety in their facilities. AHRQ began producing comparative database reports in 2007 to help hospitals assess their performance relative to similar institutions.

In this NHDR, we present data from the Hospital Survey on Patient Safety Culture: 2010 Comparative Database Report.[2] This report is based on survey responses collected in 2009 from more than 330,000 hospital staff in 885 hospitals representing 15% of the Nation's hospitals. The average hospital response rate was 56%, with an average of 383 completed surveys per hospital.

Most hospitals administered Web surveys, which resulted in lower response rates (50%) compared with response rates from paper (63%) or mixed-mode surveys (56%). In addition, most hospitals administered the survey to all staff or a sample of all staff from all hospital departments. Nurses accounted for more than one-third of respondents, followed by "other." More than three-quarters of respondents had direct interaction with patients.

Results are presented for the 12 patient safety culture composites addressed in the survey, expressed as average percent positive response. Percent positive refers to the percentage of responses that agree or strongly agree with a positively worded item (e.g., "People support one another in this work area") and the percentage that disagree or disagree strongly with a negatively worded item (e.g., "We have safety problems in this work area"). Hospitals contributing data to the comparative database mirror the population of U.S. hospitals as a whole, but participation is entirely voluntary. Thus, it may not be possible to generalize findings to all types of facilities.

Hospital ownership is affected by factors such as financial support and profitability, and these factors can affect the quality of patient care, including patient safety. Because many minority groups and low-income populations are served by public hospitals, we present patient safety culture survey results for government and nongovernment hospitals.

Figure 8.1. Patient safety culture composites by hospital control, 2009
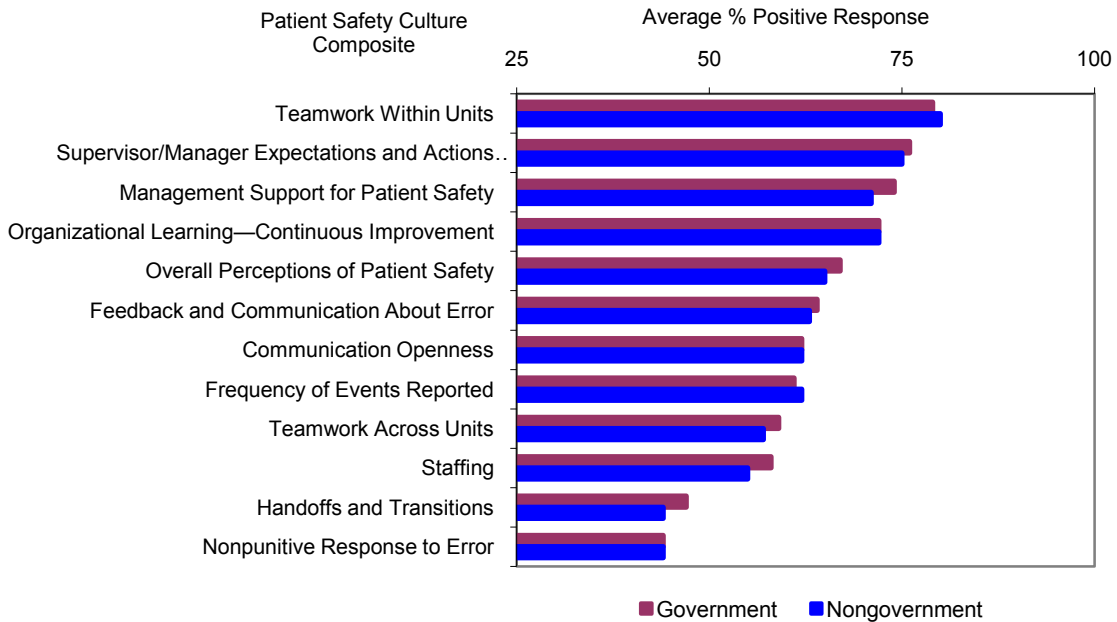
Source: Agency for Healthcare Research and Quality, *Hospital Survey on Patient Safety Culture: 2010 Comparative Database Report.*

- Nongovernment hospitals had higher percentages of positive response for Teamwork Within Units (80%; Figure 8.1) compared with government hospitals (79%) but government hospitals had a higher percentage of positive response for Supervisor Expectations and Actions Promoting Patient Safety (76%) than nongovernment hospitals (75%). Teamwork Within Units is the extent to which staff support each other, treat each other with respect, and work together. Supervisor/Manager Expectations and Actions Promoting Patient Safety refers to the extent to which supervisors/managers consider staff suggestions for improving patient safety, praise staff for following patient safety procedures, and do not overlook patient safety problems.
- Government hospitals had higher percentages of positive response for Handoffs and Transitions (47%) compared with nongovernment hospitals (44%). For Nonpunitive Response to Error, both government and nongovernment hospitals had 44% positive response.
- Across all composites, government hospitals had a slightly higher percent positive response than nongovernment hospitals (64% compared with 63%; data not shown).

Also, in the NHQR:

- Hospitals in the East South Central and West South Central regions had higher percentages of positive response for teamwork (81%) and Supervisor Expectations and Actions Promoting Patient Safety (78%) than hospitals in other regions.

Health Information Technology: Focus on Medication Management

E-prescribing uses technology to allow prescribers to electronically transmit prescriptions. The IOM report *Future Directions for the National Healthcare Quality and Disparities Reports* highlights the adoption and use of health IT as a tool to manage cost and improve the quality of care delivered. Medication errors occur during the prescribing, dispensing, administering, and monitoring phases of patient care. Adoption and use of e-prescribing can be a major step in reducing medication errors by improving the prescribing and dispensing aspects of medication management.[3]

Studies show that the elimination of handwriting interpretation decreases medication error rates and reduces communication time between pharmacies and office staff; It also can avoid costs resulting from adverse drug events.[4] It is estimated that between 380,000 and 450,000 adverse drug events occur annually in hospital settings, resulting in a cost of $3.5 billion annually in the United States.[5]

One aspect of e-prescribing, clinical decision support, encompasses a wide range of computerized tools directed at improving patient care, including computerized reminders and advice regarding drug selection, dosage, interactions, allergies, and the need for subsequent orders.[6] In addition, once an e-prescription is in the system, it will follow the patient, avoiding many of the "handoff errors".

Office-Based Physicians With Electronic Prescribing Systems

Populations that often experience health care disparities, including minorities, low-income families, rural residents, and older adults, can benefit from their health care providers adopting health information technologies such as e-prescribing. E-prescribing can improve medication therapy by sending prescriptions directly to pharmacies, alerting physicians to possible adverse drug events and allowing physicians to select drugs that are of lower cost but equally effective.

Figure 8.2. Office-based physicians with electronic prescribing system by physician age and percent non-Hispanic White population, 2009 (preliminary)
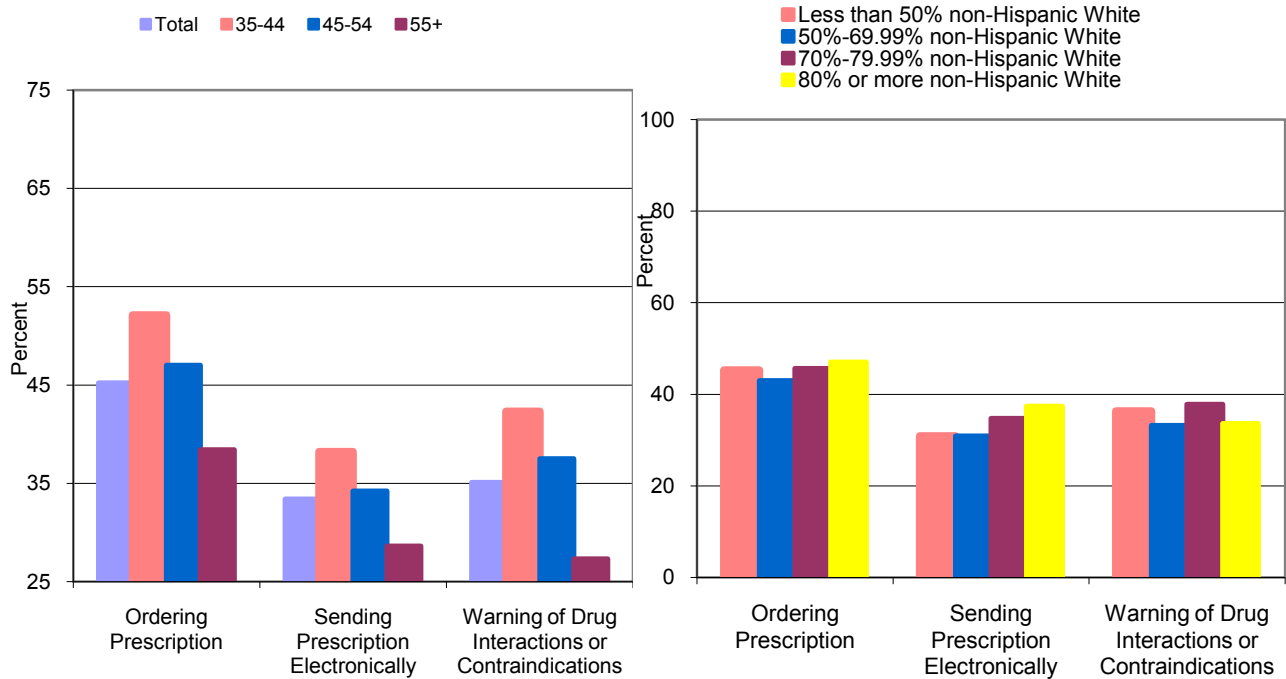
Source: Centers for Disease Control and Prevention, National Center for Health Statistics, National Ambulatory Medical Care Survey, Electronic Medical Record Mail Survey Supplement, preliminary 2009.
Note: Percent non-Hispanic White population for physician office's ZIP Code tabulation area is estimated from the 2000 U.S. Census.

Adopting Computerized Systems

- Preliminary estimates from 2009 indicated that office-based physicians ages 35-44 had the highest percentage of adoption of computerized systems for ordering prescriptions, sending prescriptions electronically, and warning of drug interactions or contraindications (Figure 8.2). The percentage of the non-Hispanic Whites population was not shown to significantly affect adoption.

Ordering Prescriptions

- Preliminary estimates from 2009 indicate that the percentage of office-based physicians ages 35-44 who had a computerized system for ordering prescriptions was significantly higher than that of physicians ages 55 and over.
- The percentage of physicians who had a computerized system for ordering prescriptions was comparable in areas with populations of less than 50% non-Hispanic Whites and areas with populations of 50% or more non-Hispanic Whites.

Sending Prescriptions Electronically

- Preliminary estimates from 2009 indicate that the percentage of office-based physicians ages 35-44 who had a computerized system for sending prescriptions electronically was significantly higher than that of physicians ages 55 and over.

- The percentage of physicians who had a computerized system for sending prescriptions electronically was comparable in areas with populations of less than 50% non-Hispanic Whites and areas with populations of 50% or more non-Hispanic Whites.

Providing Drug Warnings

- Preliminary estimates from 2009 indicate that the percentage of office-based physicians ages 35-44 who had a computerized system for warning of drug interactions or contraindications was significantly higher than that of physicians age 55 and over.
- The percentage of physician who had a computerized system for warning of drug interactions or contraindications was comparable in areas with populations of less than 50% non-Hispanic Whites and areas with populations of 50% or more non-Hispanic Whites.

Also, in the NHQR:

- Preliminary estimates from 2009 indicate that the percentage of office-based physicians practicing in metropolitan areas who had a computerized system for ordering prescriptions was significantly higher than that of physicians in nonmetropolitan areas.
- Physicians in the West also had a significantly higher percentage of computerized systems for ordering prescriptions than physicians in the South.
- Physicians in practices with more than 10 physicians had a significantly higher percentage of computerized systems for ordering prescriptions than practices with 10 or fewer physicians.

Medication Management in Hospitals

Patient handoffs and transitions of care have been identified as placing patients at increased risk of adverse events. Once a patient is admitted to the hospital, medication plays a vital role in his or her recovery. Doses of patients' medications may be altered, new drugs added, and others discontinued. Electronic medication management can aid in the reduction of adverse events by providing accurate, current medication information as patient care is transferred from one health care team to another.

Hospitals that are members of the Council of Teaching Hospitals (COTH) consist mainly of not-for-profit hospitals, including some government hospitals. Many are located in inner-city areas where they serve large populations that include minorities and Medicaid recipients who experience significant health care disparities. COTH hospitals provide a substantial portion of care to underserved populations. In 2007, teaching hospitals constituted just 6% of all hospitals but incurred 41% of charity care costs.

Figure 8.3. Electronic management of medication in hospitals, by COTH membership, hospital control, and hospital type, 2008
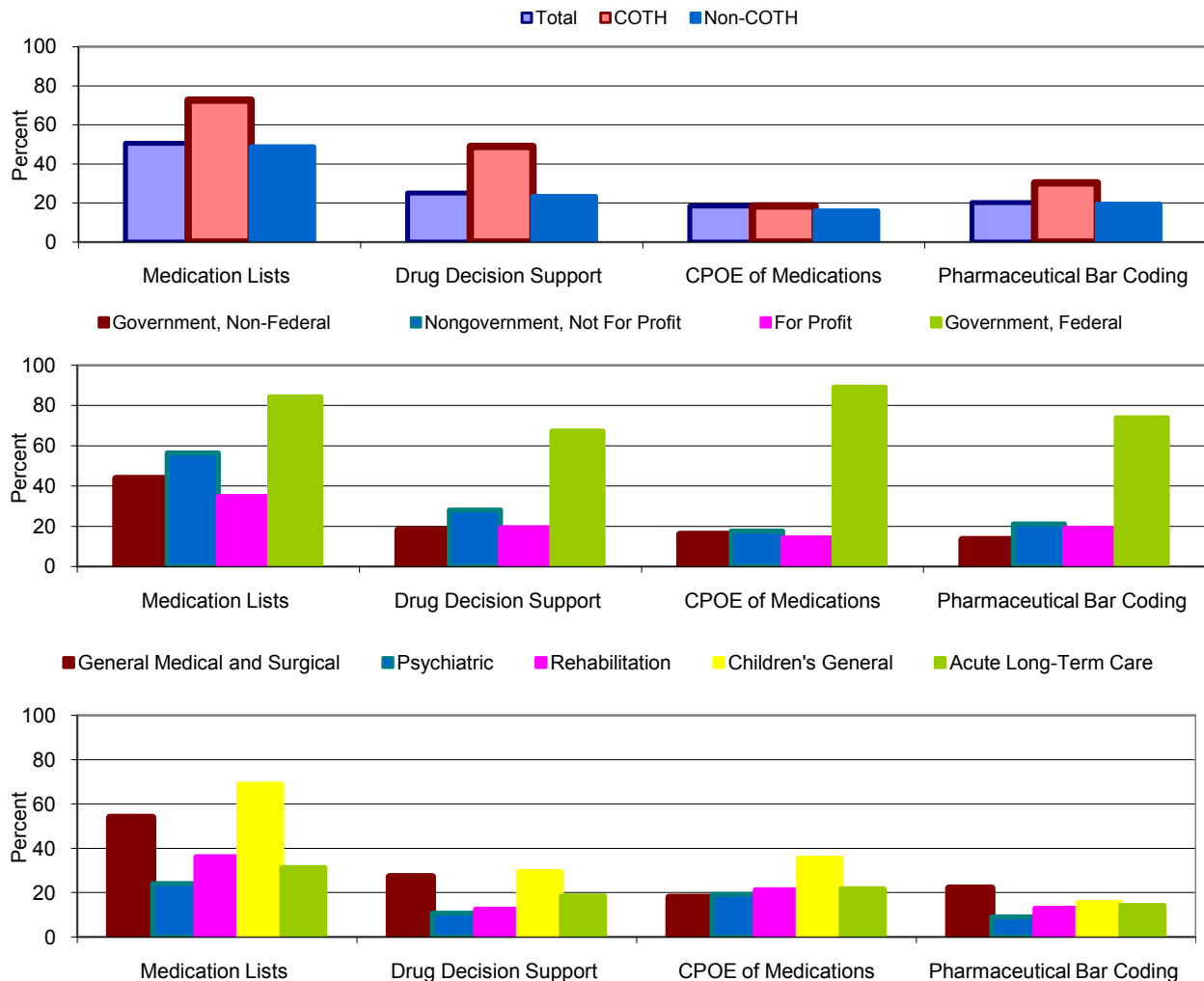
Key: COTH = Council of Teaching Hospitals; CPOE = computerized physician order entry.
Source: American Hospital Association, 2008 Information Technology Supplement.

Medication Lists

- In 2008, 50.5% of hospitals had an electronic system that supports medication lists (Figure 8.3).
- Hospitals that were members of COTH had a much higher percentage of electronic systems that support medication lists (72.6%) than hospitals that were not members (48.8%).
- Hospitals run by the Federal Government also had a much higher percentage (84.4%) of electronic systems that support medication lists than non-Federal (43.8%), not-for-profit (56.5%), and investor-owned hospitals (34.8%).
- Nearly 70% of children's general hospitals and 53.9% of general medical and surgical hospitals had an electronic system that supports medication lists.
- Between 24% and 36% of psychiatric, rehabilitation, and acute long-term care hospitals had an electronic system that supports medication lists.

Drug Decision Support

- In 2008, 25.1% of hospitals had a fully implemented electronic system for drug decision support.
- The percentage of COTH member hospitals with a fully implemented electronic system for drug decision support (48.9%) was more than twice that of nonmember hospitals (23.3%).
- Hospitals run by the Federal Government also had a much higher percentage (67.4%) of full implementation of electronic drug decision support systems compared with non-Federal (18.1%), not-for-profit (28.1%), and investor-owned hospitals (19.4%).
- Nearly 30% of children's general hospitals and 27.2% of general medical and surgical hospitals had a fully implemented electronic drug decision support system.
- Between 11% and 19% of psychiatric, rehabilitation, and acute long-term care hospitals had a fully implemented electronic drug decision support system.

CPOE for Medication

- In 2008, 18.4% of hospitals had a fully implemented computerized physician order entry (CPOE) system.
- Nearly 20% of COTH member hospitals (18.4%) had a fully implemented CPOE system compared with 15.9% of nonmember hospitals.
- Hospitals run by the Federal Government had a much higher percentage (89.1%) of full implementation of CPOE systems compared with non-Federal (16.0%), not-for-profit (17.7%), and investor-owned hospitals (14.3%).
- More than 35% of children's general hospitals, 21.7% of acute long-term care hospitals, and 21.3% of rehabilitation hospitals had a fully implemented CPOE system. Nearly 20% of psychiatric hospitals (19.2%) and 17.8% of general medical and surgical hospitals had full implementation of CPOE systems.

Pharmaceutical Bar Coding

- In 2008, 20.2% of hospitals had fully implemented electronic pharmaceutical bar coding systems.
- Nearly one-third of COTH member hospitals (30.3%) had a fully implemented pharmaceutical bar coding system compared with 19.4% of nonmember hospitals.
- Hospitals run by the Federal Government had a much higher percentage (73.9%) of full implementation of pharmaceutical bar coding systems compared with non-Federal (13.4%), not-for-profit (21.2%), and investor-owned hospitals (19.0%).
- More than 20% of general medical and surgical (22%), 15.6% of children's general, 14.2% of acute long-term care, 13% of rehabilitation, and 9.1% of psychiatric hospitals had a fully implemented pharmaceutical bar coding system.

Also, in the NHQR:

- In 2008, 25.1% of hospitals had a fully implemented electronic system for drug decision support.
- The largest difference in implementation was observed between large and small hospitals. Nearly 40% of hospitals with more than 400 beds had a fully implemented electronic

system for drug decision support, but only 17.5% of hospitals with fewer than 100 beds had a fully implemented system.

- In the Northeast, nearly 29% of hospitals had fully implemented electronic systems for drug decision support. In the Midwest, 25.6% of hospitals had a fully implemented electronic system for drug decision support. In the South, 24.4%, and in the West, 23% of hospitals had a fully implemented electronic system for drug decision support.

Workforce Diversity

In 2008, the Nation's overall minority population was 104.6 million, or 34 percent of the total population. Nearly half of the Nation's children younger than 5 were members of a racial or ethnic minority group; among all children under 18, 44% were part of a racial or ethnic minority group. It is estimated that by 2050, half of Americans will be members of minority groups.[7] Minority providers are more likely than their White colleagues to practice in underserved minority communities.[8, 9] Health care workforce diversity also is considered to be important for health care research, education, administration, and policy, both to provide role models and to shape a health care system that meets the needs of all individuals.

In 2007, 15.6% of the U.S. labor force was foreign born. Of the 281 million people age 5 and over in the United States in 2007, 55.4 million individuals (20%) reported speaking a language other than English at home. Workforce diversity increases the opportunities for race- and language-concordant health care visits. It also can improve cultural competency at the system, organization, and provider levels in several ways. These include appropriate program design and policies, organizational commitment to culturally competent care, and cross-cultural education of colleagues.[10] As such, diversity is an important element of a patient-centered health care encounter.

Previous reports have presented data on diversity in the physician, nursing, and dental professions workforce. This year, the NHDR presents data on diversity in the pharmacy workforce.

Pharmacists distribute prescription drugs to individuals. They also advise their patients, physicians, and other health practitioners on the selection, dosages, interactions, and side effects of medications. In addition, pharmacists monitor the health and progress of patients to ensure that they use their medications safely and effectively. Most pharmacists work in a community setting, such as a retail drugstore, or in a health care facility, such as a hospital.

Having an adequate number of providers is an important aspect of the health system infrastructure and can be an indicator of the quality of care. It is also important to have a large enough and appropriately distributed workforce to respond to expected increases in patient demand. Studies have shown that pharmacist involvement in patient care can result in better diabetes and hypertension management as well as a decrease in heart failure events and mortality.[11] Also, pharmacist involvement in patient care can reduce adverse drug reactions or medication errors and increase patient comprehension of treatment protocols and medication adherence.

Figure 8.4. U.S. pharmacy professionals compared with the U.S. population, by race/ethnicity, 2006-2008
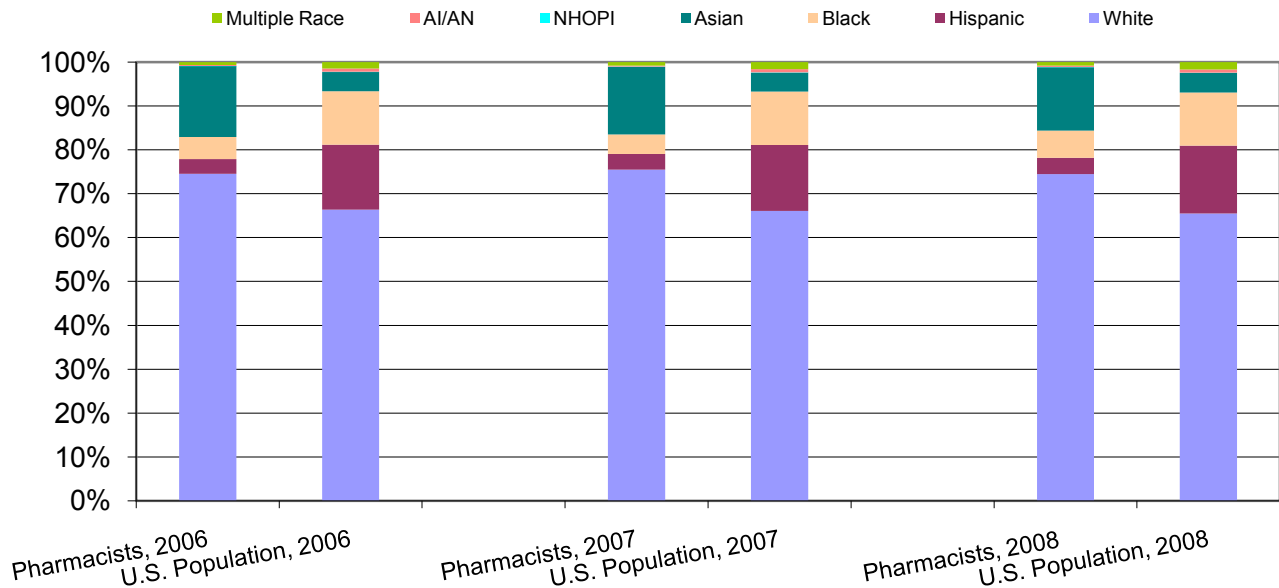
Key: AI/AN = American Indian or Alaska Native; NHOPI = Native Hawaiian or Other Pacific Islander.
Source: U.S. Census, American Community Survey, 2006-2008.
Note: All populations are non-Hispanic except for the population specifically noted as Hispanic.

- Although the number of pharmacists has increased over time, the racial and ethnic makeup of the pharmacist population continues to be disproportionate to the U.S. population. In 2008, 74.3% of the approximately 301,000 pharmacists in the United States were White, 6.2% were Black, 14.4% were Asian, and 3.7% were Hispanic (Figure 8.4). Compared with the general U.S. population, Whites and Asians were overrepresented, and Blacks and Hispanics were underrepresented.
- In 2007, 75.1% of the approximately 290,000 pharmacists were White, 4.4% were Black, 15.4% were Asian, and 3.6% were Hispanic. Relative to the U.S. population, Whites and Asians were overrepresented, and Blacks and Hispanics were underrepresented.
- In 2006, there were about 282,000 pharmacists, of whom 74.4% were White, 5.0% were Black, 16.2% were Asian, and 3.4% were Hispanic. Relative to the U.S. population, Whites and Asians were overrepresented, and Blacks and Hispanics were underrepresented.

Also, in the NHQR:

- In 2008, 37.8% of the approximately 301,000 pharmacists in the United States practiced in the South, 23.7% in the Midwest, 20.2% in the West, and 18.3% in the Northeast. In all regions, the pharmacist workforce was congruent with the U.S. population. No region had a disproportionate percentage of pharmacists.

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Chapter 9. Access to Health Care

Many Americans have good access to health care that enables them to benefit fully from the Nation's health care system. Others face barriers that make it difficult to obtain basic health care services. As shown by extensive research and confirmed in previous National Healthcare Disparities Reports (NHDRs), racial and ethnic minorities and people of low socioeconomic status (SES)[i] are disproportionately represented among those with access problems.

Previous findings from the National Healthcare Quality Report (NHQR) and NHDR showed that health insurance was the most significant contributing factor to poor quality of care for some of the core measures, and many are not improving. Uninsured people were less likely to get recommended care for disease prevention, such as cancer screening, dental care, counseling about diet and exercise, and flu vaccination. They also were less likely to get recommended care for disease management, such as diabetes care management.

Poor access to health care comes at both a personal and societal cost. For example, if people do not receive vaccinations, they may become ill and spread disease to others. This increases the burden of disease for society overall in addition to the burden borne individually.

Components of Health Care Access

Access to health care means having "the timely use of personal health services to achieve the best health outcomes."[1] Attaining good access to care requires three discrete steps:

- Gaining entry into the health care system.
- Getting access to sites of care where patients can receive needed services.
- Finding providers who meet the needs of individual patients and with whom patients can develop a relationship based on mutual communication and trust.2

Health care access is measured in several ways, including:

- Structural measures of the presence or absence of specific resources that facilitate health care, such as having health insurance or a usual source of care.
- Assessments by patients of how easily they are able to gain access to health care.
- Utilization measures of the ultimate outcome of good access to care (i.e., the successful receipt of needed services).

Facilitators and Barriers to Health Care

Facilitators and barriers to health care discussed in this section include health insurance, usual source of care (including having a usual source of ongoing care and a usual primary care provider), and patient perceptions of need.

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[i] As described in Chapter 1, Introduction and Methods, income and educational attainment are used to measure SES in the NHDR. Unless specified, poor = below the Federal poverty level (FPL), near poor = 100-199% of the FPL, middle income = 200-399% of the FPL, and high income = 400% or more of the FPL. The measure specifications and data source descriptions provide more information on income groups by data source.

Findings

Health Insurance

Health insurance facilitates entry into the health care system. Uninsured people are less likely to receive medical care[3] and more likely to have poor health status.[4] The costs of poor health among uninsured people total $65 billion to $130 billion annually.[5]

The financial burden of uninsurance is also high for uninsured individuals; almost 50% of personal bankruptcy filings are due to medical expenses.[6] Uninsured individuals report more problems getting care, are diagnosed at later disease stages, and get less therapeutic care.[6, 7] They are sicker when hospitalized and more likely to die during their stay.[7]

Figure 9.1. People under age 65 with health insurance, by race, ethnicity, income, and education, 1999-2008
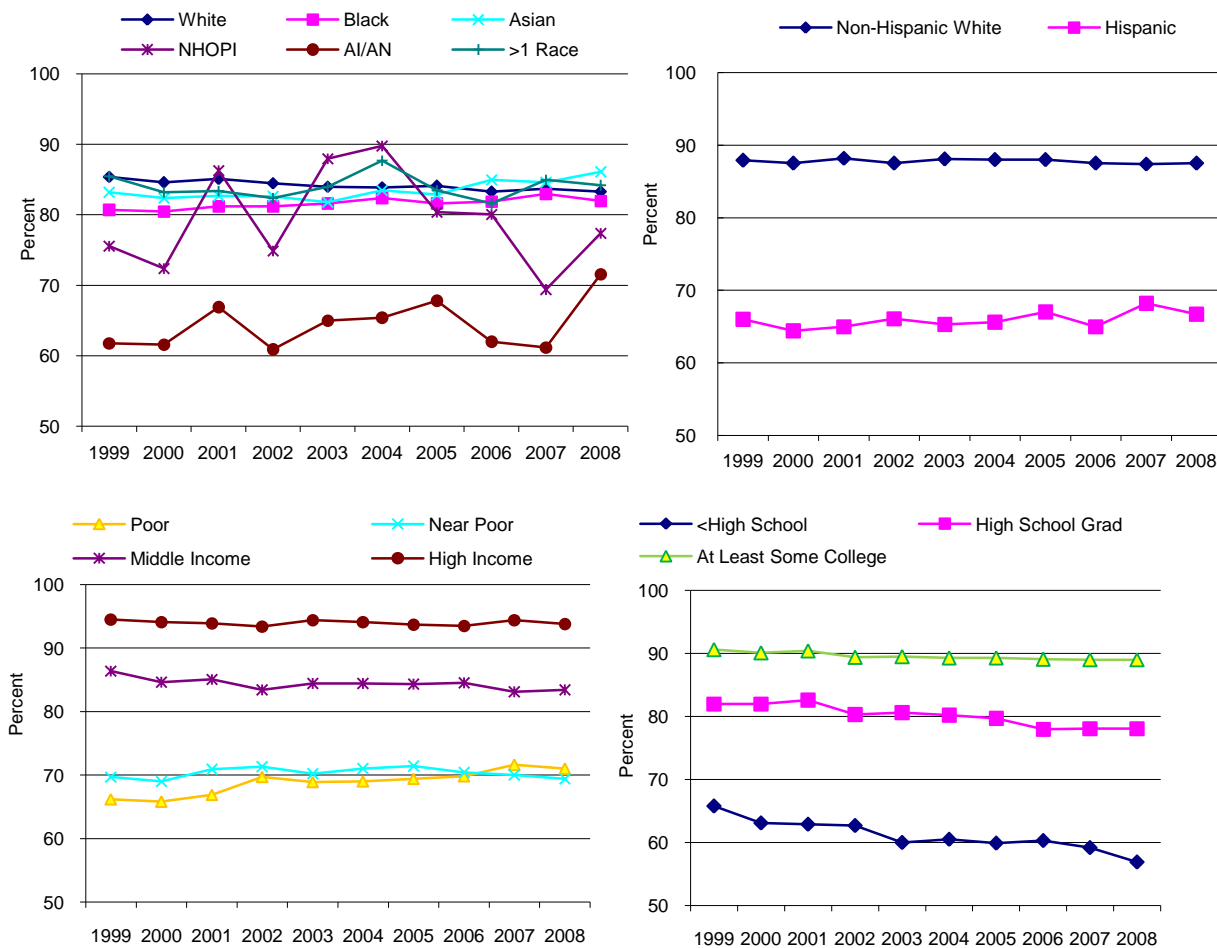
Key: AI/AN = American Indian or Alaska Native; NHOPI = Native Hawaiian or Other Pacific Islander.
Source: Centers for Disease Control and Prevention, National Center for Health Statistics, National Health Interview Survey (NHIS), 1999-2008.
Denominator: Analyses by race, ethnicity, and income performed for civilian noninstitutionalized population under age 65. Analyses by education performed for civilian noninstitutionalized population ages 25-64.
Note: NHIS respondents are asked about health insurance coverage at the time of interview. Respondents are considered uninsured if they lack private health insurance, Medicare, Medicaid, State Children's Health Insurance Program, a State-sponsored health plan, other government-sponsored health plan, or a military health plan, or if their only coverage is through the Indian Health Service.

- Overall, there was no significant change from 1999 to 2008 in the percentage of people with health insurance. In 2008, about 83.2% of people under age 65 had health insurance (data not shown).
- In 2008, Asians under age 65 were more likely than Whites to have health insurance (86.1% compared with 83.3%; Figure 9.1). American Indians and Alaska Natives under age 65 were less likely than Whites to have health insurance (71.6% compared with 83.3%). There were no statistically significant differences for other racial groups.
- In 2008, Hispanics under age 65 were less likely than non-Hispanic Whites to have health insurance (66.7% compared with 87.5%).
- From 1999 to 2008, while the percentage of people with health insurance increased for poor people (from 66.2% to 71.0%), the percentage worsened for middle-income people (from 86.4% to 83.4%). In 2008, the percentage of people with health insurance was significantly lower for poor, near-poor, and middle-income people than for high-income people (71.0% %, 69.4%, and 83.4%, respectively, compared with 93.8%).
- In 2008, the percentage of people with health insurance was about one-third lower for people with less than a high school education than for people with at least some college education (56.9% compared with 89.0%).

Also, in the NHQR:

- From 1999 to 2008, the percentage of children ages 0-17 who had health insurance increased. However, adults ages 18-44 and 45-64 were less likely than children to have health insurance, and the percentage decreased during this time.
- From 1999 to 2008, the percentage of males who had health insurance decreased and males were less likely than females to have health insurance.
- During this period, there were no statistically significant changes by residence location in the percentage of people who had health insurance. In 2008, residents of large fringe metropolitan areas and medium metropolitan areas were more likely than residents of large central metropolitan areas to have health insurance. There were no statistically significant differences within nonmetropolitan areas.

Research has shown that within-category variation (e.g., variation between Asian subpopulations) is sometimes as large as differences between minority groups and Whites.8, 9 Differences in English proficiency and place of birth are also significant. The following data show some of the significant disparities for racial and ethnic subgroups in California from the California Health Interview Survey (CHIS).

Asian Subgroups

To show differences within racial groups, this year's NHDR includes information from CHIS on Asians in California. The geographic distribution of Asian subpopulations allows such comparisons in California using CHIS data.

In 2008, an estimated 4.6 million people, or about 34% of the Asian population in the United States, lived in California.[10] The proportion of many Asian subpopulations in California is also greater than the proportion in the overall U.S. population. For example, the Vietnamese population is 1.3% of California's population compared with only 0.4% of the U.S. population,

and the Filipino population is 2.7% of California's population compared with only 0.7% of the U.S. population. This finding is especially important when examining data for these relatively smaller groups, as most national data sources do not have sufficient data to report estimates for these groups.

Figure 9.2. People under age 65 with health insurance in the past year, by Asian subgroup, California, 2007
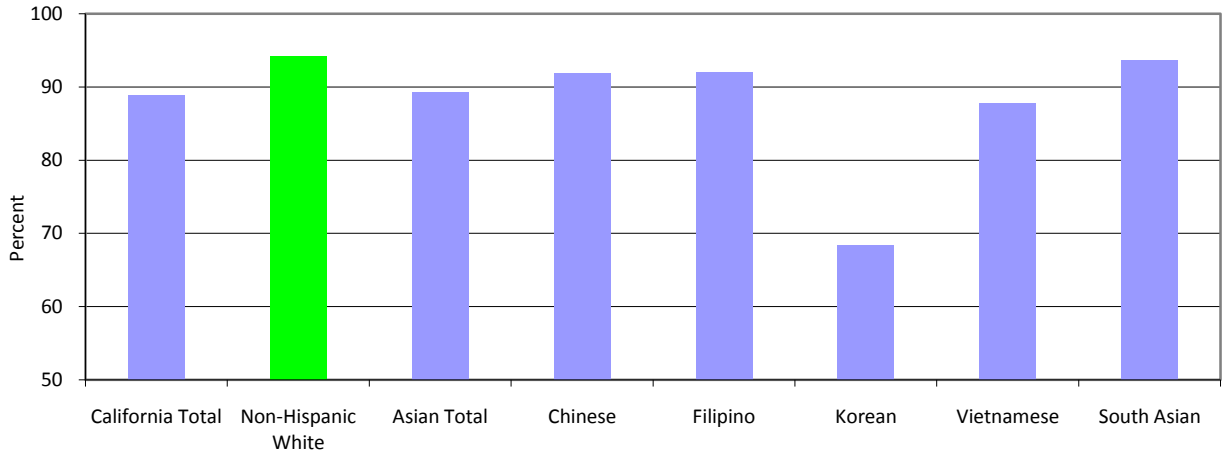
Source: University of California, Los Angeles, Center for Health Policy Research, California Health Interview Survey, 2007.
Denominator: Civilian noninstitutionalized adults under age 65 in California.
Note: Data for Japanese people did not meet criteria for statistical reliability, data quality, or confidentiality.

- In California, Asians overall were less likely than non-Hispanic Whites to have health insurance in the past year (89.2% compared with 94.2%; Figure 9.2).
- Among Asians, Koreans were the least likely to have health insurance compared with non-Hispanic Whites (68.3% compared with 94.2%). This finding was also true across all income groups (data not shown).
- Vietnamese people were also less likely than non-Hispanic Whites to have health insurance (87.7% compared with 94.2%).

Hispanic Subgroups

The Hispanic population in the United States is highly heterogeneous. Almost 60% of all Hispanics in the country are of Mexican extraction, making this group the largest subpopulation. People originating from Puerto Rico, Central America, and South America are the next largest subgroups. Variation is seen in access to care among Hispanics related to country of origin. Findings are presented below on differences among Hispanic subpopulations on health insurance.

In 2008, California's Hispanic population was more than twice the percentage in the United States overall (36.6% in California compared with 15.4% of the U.S. population).[10] Almost 30% of the Hispanic population in the United States lives in California.[11]

CHIS data show disparities among Hispanics in California, not only compared with non-Hispanic Whites but also within Hispanic subgroups (Mexican, Puerto Rican, Central American, and South American). The data also show disparities across Hispanic subgroups by income. This

section shows only some of the significant disparities for these groups in California from CHIS data.

Figure 9.3. People under age 65 with health insurance in the past year, by Hispanic subgroup, California, 2007
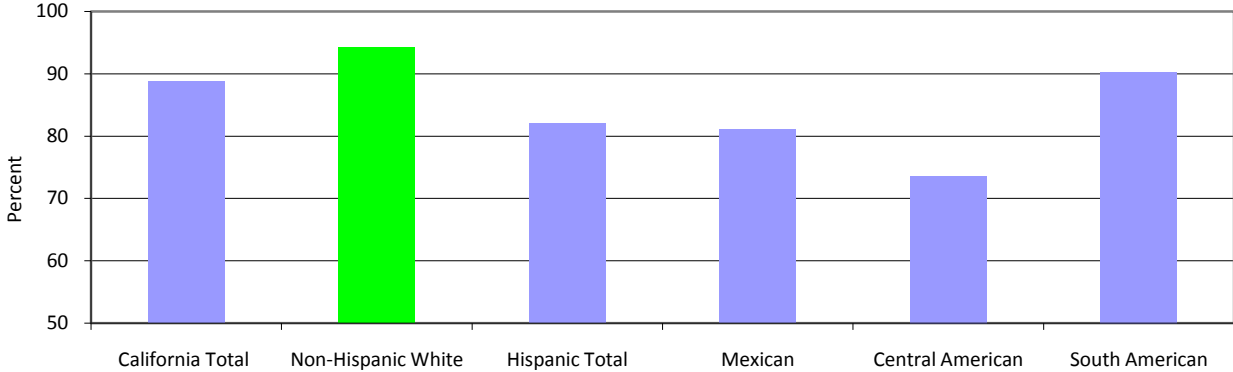
Source: University of California, Los Angeles, Center for Health Policy Research, California Health Interview Survey, 2007.
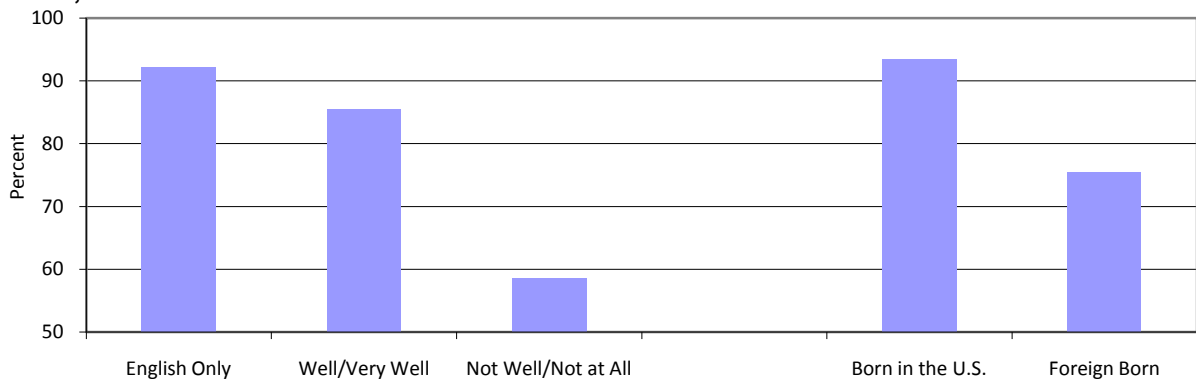**Denominator:** Civilian noninstitutionalized adults under age 65 in California.
Note: Data for Puerto Ricans did not meet criteria for statistical reliability, data quality, or confidentiality.

- In California, Hispanics overall were less likely than non-Hispanic Whites to have health insurance in the past year (82.0% compared with 94.2%; Figure 9.3).
- Among Hispanics, Central Americans were the least likely to have health insurance compared with non-Hispanic Whites (73.6% compared with 94.2%), followed by Mexicans (81.1% compared with 94.2%).
- Mexicans also were less likely than non-Hispanic Whites to have health insurance across all income groups (data not shown).

English Proficiency and Place of Birth

Figure 9.4. People under age 65 with health insurance, by English proficiency and place of birth, California, 2007

Source: University of California, Los Angeles, Center for Health Policy Research, California Health Interview Survey, 2007.
Denominator: Civilian noninstitutionalized adults under age 65 in California.

- People under age 65 who spoke English well or very well and people who did not speak English well or did not speak English at all were less likely than native English speakers

to have health insurance (85.4% and 58.5%, respectively, compared with 92.2%; Figure 9.4).

- People under age 65 who were not born in the United States were less likely to have health insurance than those who were born in the United States (75.4% compared with 93.4%).

Uninsurance

Prolonged periods of uninsurance can have a particularly serious impact on a person's health and stability. Uninsured people often postpone seeking care, have difficulty obtaining care when they ultimately seek it, and may have to bear the full brunt of health care costs. Over time, the cumulative consequences of being uninsured compound, resulting in a population at particular risk for suboptimal health care and health status.

Figure 9.5. People under age 65 who were uninsured all year, by race, ethnicity, income, education, and language spoken at home, 2002-2007

Key: AI/AN = American Indian or Alaska Native; NHOPI = Native Hawaiian or Other Pacific Islander.
Source: Agency for Healthcare Research and Quality, Medical Expenditure Panel Survey, 2002-2007.
Denominator: Analyses by race, ethnicity, and income performed for civilian noninstitutionalized population under age 65. Analyses by education performed for civilian noninstitutionalized population ages 18-64.

- Overall, from 2002 to 2007, the percentage of people under age 65 who were uninsured all year worsened (from 13.4% to 15.2%; data not shown).
- In 2007, Asians were less likely than Whites to be uninsured all year (11.9% compared with 15.5%; Figure 9.5). There was no statistically significant difference between Blacks and Whites.
- In 2007, Hispanics were much more likely than non-Hispanic Whites to be uninsured all year (29.5% compared with 11.8%).
- The percentage of poor people and near-poor people who were uninsured all year was about 4 times as high as that for high-income people (25.2% and 26.4%, respectively, compared with 6.6%). The percentage of middle-income people uninsured all year was more than twice as high as that for high-income people (15.8% compared with 6.6%).
- People with less than a high school education and people with a high school education were more likely to be uninsured all year than people with at least some college education (33.6% and 21.6%, respectively, compared with 10.8%).
- From 2002 to 2007, the percentage of people who were uninsured all year was nearly 3 times as high for people who spoke another language at home as that for people who spoke English at home (in 2007, 33.7% compared with 12.2%).

Also, in the NHQR:

- Children age 0-17 were less likely to be uninsured than adults age 18-44 and age 65 and over.
- From 2002 to 2007, females were less likely to be uninsured all year than males.
- Among metropolitan areas, residents of large fringe metropolitan areas were least likely to be uninsured all year while residents of large central metropolitan areas were most likely to be uninsured all year.

Each year, multivariate analyses are conducted in support of the NHDR to identify the independent effects of race, ethnicity, income, and education 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: people under age 65 who were uninsured all year. 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 residence location.

Figure 9.6. Adjusted percentages of people under age 65 who were uninsured all year, by race/ethnicity, family income, education, and residence location, 2002-2007
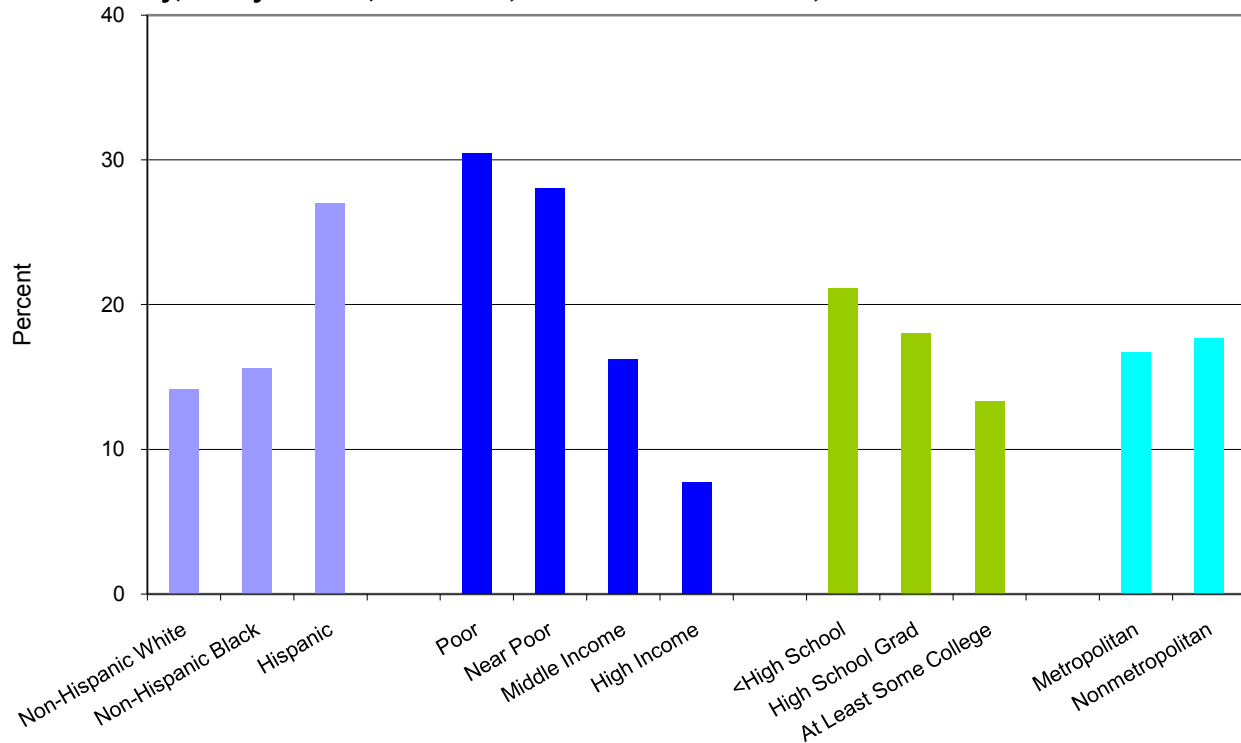
Source: Agency for Healthcare Research and Quality, Medical Expenditure Panel Survey, pooled 2002-2007 fiscal year files.
Note: Adjusted percentages are predicted marginals from a statistical model that includes the covariates race/ethnicity, family income, education, health insurance, and residence location.

- In the multivariate model used, after adjustment, 16% of non-Hispanic Blacks and 27% of Hispanics would have been uninsured all year compared with 14% of non-Hispanic Whites (Figure 9.6).
- After adjustment, about 30% of poor, 28% of near-poor, and 16% of middle-income individuals would have been uninsured all year compared with 8% of those with high income.
- After adjustment, 21% of people with less than a high school education and 18% of high school graduates would have been uninsured all year compared with 13% of those with at least some college education.
- After adjustment, 18% of people living in nonmetropolitan areas would have been uninsured all year compared with 17% of those living in metropolitan areas.

Financial Burden of Health Care Costs

Health insurance is supposed to protect individuals from the burden of high health care costs. However, even with health insurance, the financial burden for health care can still be high and is increasing.[12] High premiums and out-of-pocket payments can be a significant barrier to accessing needed medical treatment and preventive care.[13] One way to assess the extent of

financial burden is to determine the percentage of family income spent on a family's health insurance premium and out-of-pocket medical expenses.

Figure 9.7. People under age 65 whose family's health insurance premium and out-of-pocket medical expenses were more than 10% of total family income, by race, ethnicity, and family income, 2007
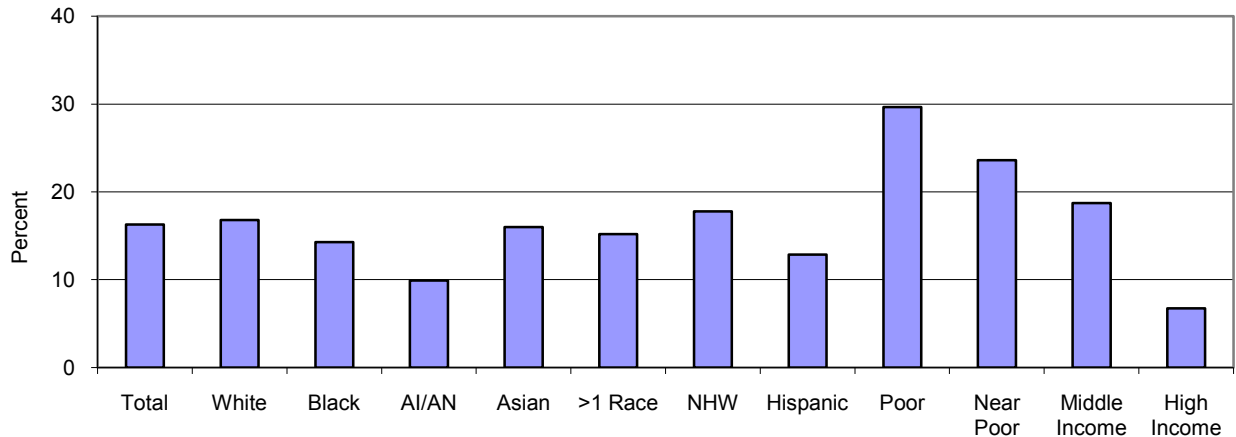
Key: AI/AN = American Indian or Alaska Native; NHW = non-Hispanic White.
Source: Agency for Healthcare Research and Quality, Medical Expenditure Panel Survey, 2007.
Denominator: Civilian noninstitutionalized population.
Note: Total financial burden includes premiums and out-of-pocket costs for health care services.

- Overall, in 2007, 16.3% of people under age 65 had health insurance premium and out-of-pocket medical expenses that were more than 10% of total family income (Figure 9.7).
- In 2007, the percentage of people under age 65 whose family's health insurance premium and out-of-pocket medical expenses were more than 10% of total family income was lower for American Indians and Alaska Natives than for Whites (9.9% compared with 16.8%). The percentage was also lower for Hispanics than for non-Hispanic Whites (12.8% compared with 17.8%).
- The percentage of people under age 65 whose family's health insurance premium and out-of-pocket medical expenses were more than 10% of total family income was about 5 times as high for poor individuals (29.7%), about 4 times as high for near-poor individuals (23.6%), and about 3 times as high for middle-income individuals (18.7%) compared with high-income individuals (6.7%).

Also, in the NHQR:

- The percentage of people under age 65 whose family's health insurance premium and out-of-pocket medical expenses were more than 10% of total family income was nearly 3 times as high for individuals with private nongroup insurance as for individuals with private employer-sponsored insurance.
- The percentage of people under age 65 whose family's health insurance premium and out-of-pocket medical expenses were more than 10% of total family income was higher for individuals living in nonmetropolitan areas than for those in metropolitan areas.

Usual Source of Care

People with a usual source of care (a provider or facility where one regularly receives care) experience improved health outcomes and reduced disparities (smaller differences between groups)[14] and costs.[15] Evidence suggests that the effect on quality of the combination of health insurance and a usual source of care is additive.[16] In addition, people with a usual source of care are more likely to receive preventive health services.[17]

Specific Source of Ongoing Care

More than 40 million Americans lack a specific source of ongoing care.[18] The term "specific source of ongoing care" accounts for patients who may have more than one source of care, such as women of childbearing age and older people, who tend to have more than one doctor.

Figure 9.8. People with a specific source of ongoing care, by race, ethnicity, income, education, and insurance status, 1999-2008
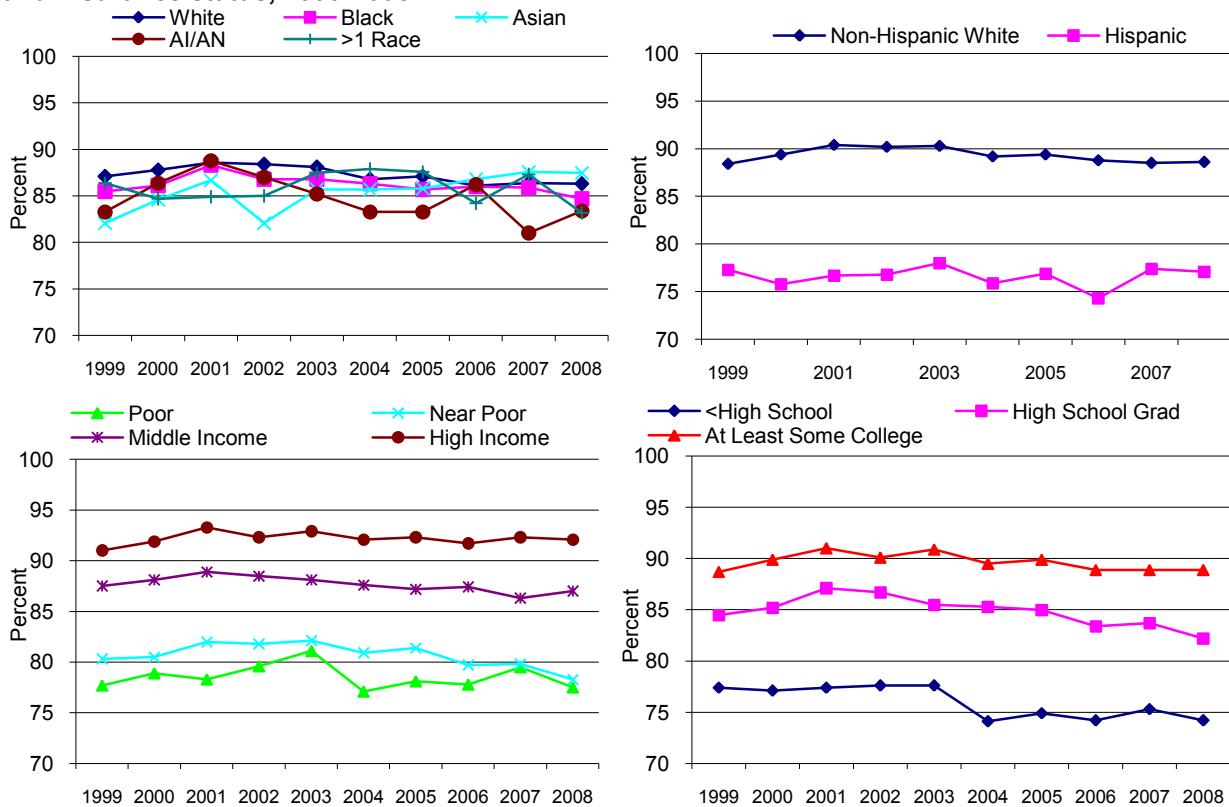
Key: AI/AN = American Indian or Alaska Native.
Source: Centers for Disease Control and Prevention, National Center for Health Statistics, National Health Interview Survey, 1999-2008.
Denominator: Analyses by race, ethnicity, and income performed for civilian noninstitutionalized population of all ages. Analyses by education performed for civilian noninstitutionalized population ages 25-64.
Note: Measure is age adjusted.

- Overall, 86.1% percent of people had a specific source of ongoing care in 2008 (data not shown).
- In 2008, the percentage of people with a specific source of ongoing care was lower for Blacks than Whites (84.7% compared with 86.3%; Figure 9.8) and significantly lower for Hispanics than for non-Hispanic Whites (77.1% compared with 88.6%).

- In 2008, the percentage of people with a specific source of ongoing care was significantly lower for poor people than for high-income people (77.5% compared with 92.1%).
- In 2008, the percentage of people with a specific source of ongoing care was lower for people with less than a high school education and for people with a high school education than for people with at least some college education (74.2% and 82.2% respectively, compared with 88.9%).

Also in NHQR:

- In 2008, the percentage of people with a specific source of ongoing care was much lower for uninsured people than for people with private insurance.
- In 2008, for people 65 and older, the percentage of people with a specific source of ongoing care was lower for people with Medicare only than for people with Medicare and private insurance.

Usual Primary Care Provider

Having a usual primary care provider (a doctor or nurse from whom one regularly receives care) is associated with patients' greater trust in their provider[19] and with good provider-patient communication. These factors increase the likelihood that patients will receive appropriate care.[20] By learning about patients' diverse health care needs over time, a usual primary care provider can coordinate care (e.g., visits to specialists) to better meet patients' needs.[21] Having a usual primary care provider correlates with receipt of higher quality care.[22, 23]

Figure 9.9. People with a usual primary care provider, by race, ethnicity, family income, education, and language spoken at home, 2002-2007
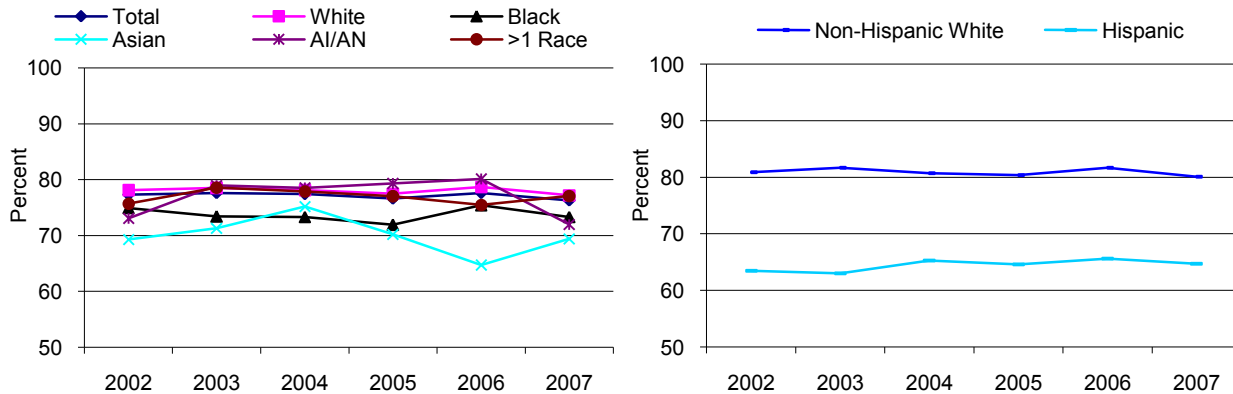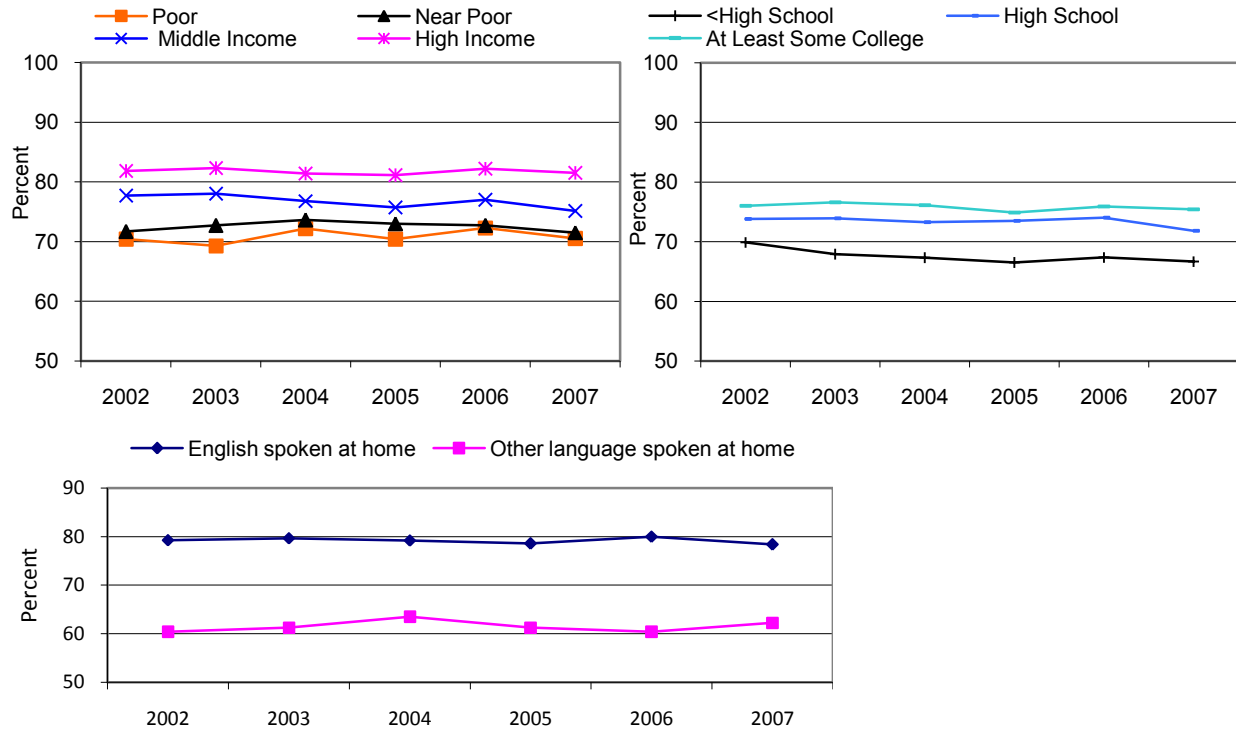
Key: AI/AN = American Indian or Alaska Native.
Source: Agency for Healthcare Research and Quality, Medical Expenditure Panel Survey, 2002-2007.
Denominator: Analyses by race, ethnicity, and income performed for civilian noninstitutionalized population of all ages. Analyses by education performed for civilian noninstitutionalized population age 18 and over.
Note: A usual primary care provider is defined as the source of care that a person usually goes to for new health problems, preventive health care, and referrals to other health professionals.

- In 2007, about 76.3% of people had a usual primary care provider (Figure 9.9).
- In 2007, Blacks and Asians were less likely than Whites to have a usual primary care provider (73.3% and 69.4%, respectively, compared with 77.2%).
- In 2007, Asians were less likely than Whites to have a usual primary care provider (69.4% compared with 77.2%).
- In 2007, the percentage of people with a usual primary care provider was significantly lower for Hispanics than for non-Hispanic Whites (64.7% compared with 80.1%).
- In 2007, the percentage of people with a usual primary care provider was significantly lower for poor people, near-poor people, and middle-income people than for high-income people (70.5%, 71.5%, and 75.1% respectively, compared with 81.5%).
- In 2007, the percentage of people with a usual primary care provider was significantly lower for people with less than a high school education and for people with a high school education, than for people with some college education (66.7% and 71.8% respectively, compared with 75.4%).
- In 2007, the percentage of people who had a primary care provider was lower for people who spoke a language other than English at home than the proportion for people who spoke English at home (62.3% compared with 78.4%).

Also, in the NHQR:

- People age 18-44 were least likely to have a usual primary care provider, while people age 65 and older were most likely to have a usual primary care provider.
- In 2007, uninsured people were almost half as likely as people with private insurance to have a usual primary care provider and people age 65 and over with Medicare only were less likely than people with Medicare and private insurance to have a usual primary care provider.
- Females were more likely to have a usual primary care provider than males.
- In 2007, residents of nonmetropolitan areas were more likely to have a usual primary care provider than residents of metropolitan areas overall.

Patient Perceptions of Need

Patient perceptions of need include perceived difficulties or delays in obtaining care and problems getting care as soon as wanted. Although patients may not always be able to assess their need for care, problems getting care when patients perceive that they are ill or injured likely reflect significant barriers to care.

Figure 9.10. People who were unable to get or delayed in getting needed medical care, dental care, or prescription medicines in the last 12 months, by race, ethnicity, income, education, and language spoken at home, 2002-2007
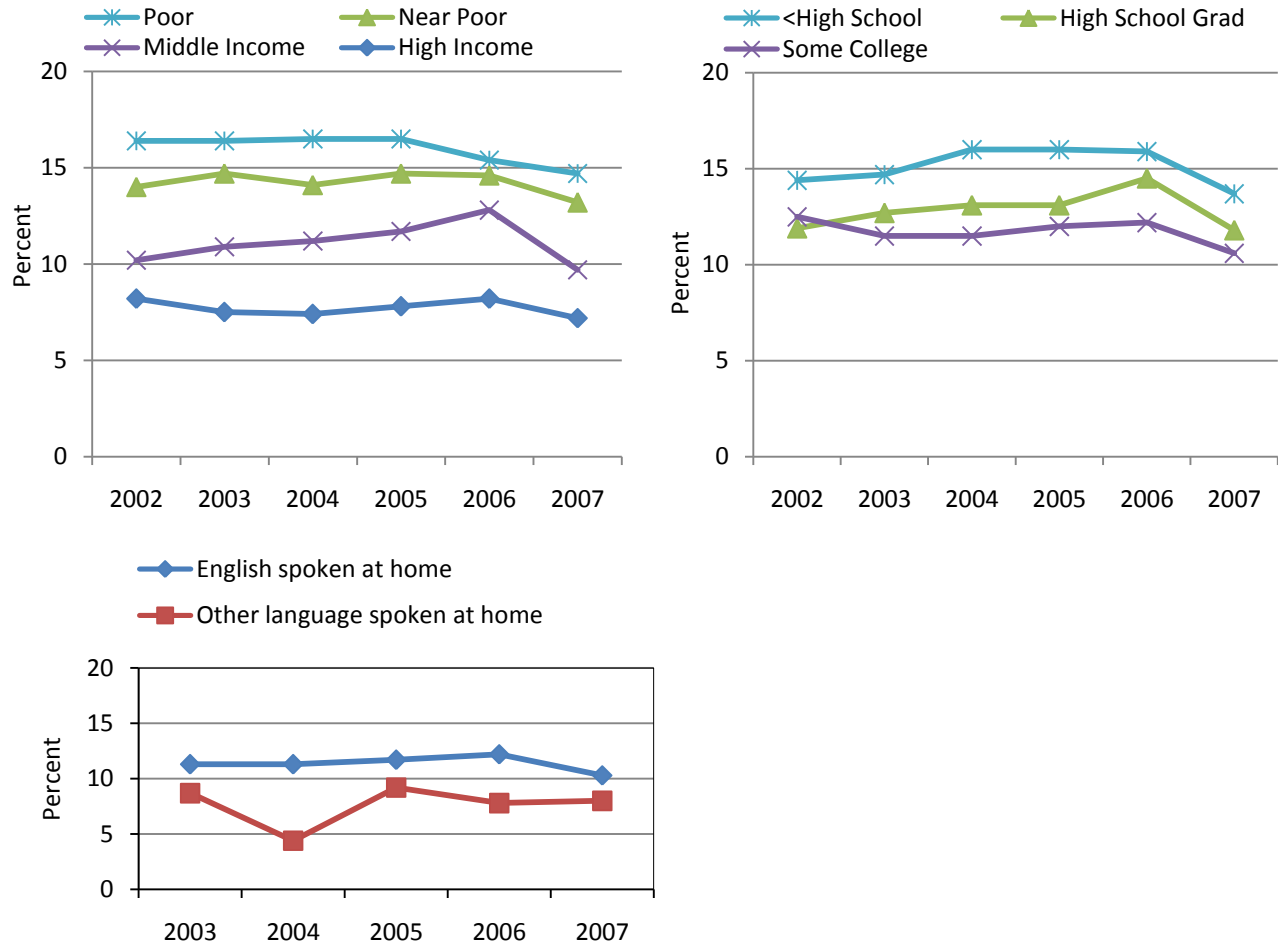
Source: Agency for Healthcare Research and Quality, Medical Expenditure Panel Survey, 2002-2007.
Denominator: Analyses by race, ethnicity, income, and insurance performed for civilian noninstitutionalized population, all ages. Analyses by education performed for civilian noninstitutionalized population age 18 and over.

- Overall in 2007, 10.0% of people were unable to receive or delayed in receiving needed medical care, dental care or prescription medicines due to financial or insurance reasons (data not shown).
- In 2007, the percentage of people who were unable to get or delayed in getting needed medical care, dental care, or prescription medicines was lower for Asians than for Whites (5.5% compared with 10.3%; Figure 9.10).
- In 2007, the percentage of people who were unable to get or delayed in getting needed medical care, dental care, or prescription medicines was lower for Hispanics than for non-Hispanic Whites (8.9% compared with 10.6%).
- In 2007, the percentage of people who were unable to get or delayed in getting needed medical care, dental care, or prescription medicines was significantly worse for poor (14.7%), near-poor (13.2%), and middle-income (9.7%) people than for high-income people (7.2%).
- People with less than high school education and people with a high school education were more likely than those with a college education to report they were unable to get or delayed in getting needed care (13.7% and 11.8%, respectively, compared with 10.6%).

- In 2007, the percentage of people who were unable to get or delayed in getting needed medical care, dental care, or prescription medicines was lower for people who spoke a language other than English at home than for people who spoke English at home (8.0% compared with 10.3%).

Also, in the NHQR:
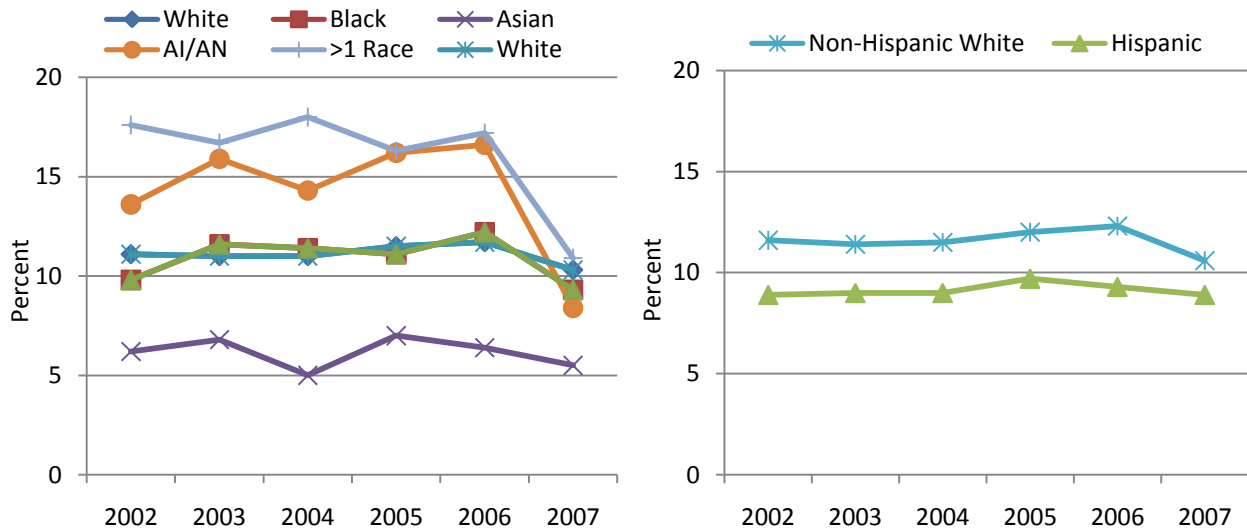
- For people under age 65, the percentage of people who were unable to get or delayed in getting needed medical care, dental care, or prescription medicines was more than twice as high for people with no health insurance as for people with private insurance and percentage was also worse for people with public insurance than people with private insurance.

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Chapter 10. Priority Populations

To examine the issue of disparities in health care, Congress directed the Agency for Healthcare Research and Quality (AHRQ) to produce an annual report to track disparities related to "racial factors and socioeconomic factors in priority populations."[i] Although the emphasis is on disparities related to race, ethnicity, and socioeconomic status, this directive includes a charge to examine disparities in "priority populations," which are groups with unique health care needs or issues that require special attention.

In 2009, the Institute of Medicine released recommendations on improving race, ethnicity, and language data in a report called *Race, Ethnicity, and Language Data: Standardization for Health Care Quality Improvement*.[1] The Subcommittee on Standardized Collection of Race/Ethnicity Data for Healthcare Quality Improvement recommends collecting data based on existing Office of Management and Budget race and Hispanic ethnicity categories. They also recommend using more fine-grained categories of ethnicity (referred to as granular ethnicity and based on one's ancestry) and language need (a rating of spoken English language proficiency of "less than very well" and preferred language for health-related encounters).[1] Standardized race, ethnicity, and language data are needed to support comparisons across organizations and regions, create pooled datasets, and track data over time. Standardized race, ethnicity, and language data also support reporting and measuring successes of disparities reduction initiatives.

This chapter of the National Healthcare Disparities Report (NHDR) addresses the congressional directive on priority populations in addition to what is presented throughout the NHDR and in the National Healthcare Quality Report (NHQR) this year.[ii] Chapters 2 through 9 of this report examine racial, ethnic, socioeconomic, gender, geographic location, and age differences in quality of and access to health care in the general U.S. population. Subpopulation data for Asians and Hispanics are also presented in these chapters where data are available.

This chapter summarizes differences for each of the racial and ethnic and low-income populations for which there is relatively more data from multiple sources. For other relatively smaller populations, such as Native Hawaiians and Other Pacific Islanders (NHOPIs), American Indians and Alaska Natives (AI/ANs), and people with disabilities, this chapter highlights some unique data and findings.

The approach taken in this chapter may help policymakers understand the impact of racial, ethnic, and socioeconomic differences on specific populations and target quality improvement programs toward groups in greatest need. The Data Tables appendix includes detailed tables that allow examination of racial, ethnic, and socioeconomic disparities both in the general population and across priority populations for most measures.

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[i] Available at: http://origin.www.gpo.gov/fdsys/pkg/USCODE-2000-title42/html/USCODE-2000-title42-chap6A-subchapVII-partA-sec299a-1.htm.

[ii] Populations of inner-city areas are also identified as one of AHRQ's priority populations pursuant to 42 U.S.C. 299(c)(l)(A). However, no data are available to support findings for this population.

AHRQ's Priority Populations

AHRQ's priority populations, specified by Congress in the Healthcare Research and Quality Act of 1999 (Public Law 106-129), are:

- Racial and ethnic minority groups.[iii]
- Low-income groups.[iv]
- Women.
- Children (under age 18).
- Older adults (age 65 and over).
- Residents of rural areas.[v]
- Individuals with special health care needs,[vi] including individuals with disabilities and individuals who need chronic care or end-of-life care.

How This Chapter Is Organized

This chapter provides the most recent information available on racial, ethnic, and income differences in quality and access for priority populations. It is presented in the following order:

- Racial and ethnic minorities.
- Low-income groups.
- Residents of rural areas.
- Individuals with disabilities or special health care needs.

Measures related to women, children, and older adults are presented in other chapters of this report and include comparisons by gender and age.

This chapter does not provide a comprehensive assessment of health care differences in each priority population. In general, most of the measures tracked in the NHQR and NHDR were selected to be applicable across many population groups to fulfill the purpose of these reports, which is to track quality and disparities at the national level. These general measures overlook some important health care problems specific to particular populations. For example, people with disabilities may face barriers in getting access to care and experience differences in quality of care that are not captured by data because of the limitations in the survey instruments.

[iii] Racial groups are White, Black, Asian, Native Hawaiian or Other Pacific Islander, American Indian and Alaska Native, and more than one race. Ethnic groups are Hispanic or Latino, non-Hispanic White, and non-Hispanic Black.

[iv] Thresholds for income categories—poor, near poor, middle income, and high income—vary by family size and composition and are updated annually by the U.S. Bureau of the Census. For example, in 2009 the Federal poverty threshold for a family of two adults and two children was $22,050.

[v] Rural areas can be defined differently depending on the data source. The NHDR uses Office of Management and Budget revised definitions of metropolitan and micropolitan statistical areas. Noncore areas are rural areas.

[vi] Individuals with special health care needs include children who have or are at increased risk for a chronic physical, developmental, behavioral, or emotional condition and who also require health and related services of a type or amount beyond that required by children generally.

In addition, national data may not address key health issues for specific population groups. It is not always possible to generate reliable estimates for many smaller groups, such as NHOPIs and AI/ANs. Instead, this chapter should be seen as a starting point, identifying some problem areas and indicating gaps in current data and understanding.

Racial and Ethnic Minorities

In 2000, about 33% of the U.S. population identified themselves as members of racial or ethnic minority groups.[2] By 2050, it is projected that these groups will account for almost half of the U.S. population. For 2007, the U.S. Census Bureau estimated that the United States had almost 38.8 million Blacks or African Americans[3] (12.9% of the U.S. population)[4]; more than 45.5 million Hispanics or Latinos (15.1%)[3]; almost 13.4 million Asians (4.4%); more than half a million NHOPIs (0.2%); and nearly 3 million AI/ANs (1.0%), of whom 57% reside on Federal trust lands.[5] Racial and ethnic minorities are more likely than non-Hispanic Whites to be poor or near poor.[6] In addition, Hispanics, Blacks, and some Asian subgroups are less likely than non-Hispanic Whites to have a high school education.[7]

Previous chapters of the NHDR describe health care differences by racial and ethnic categories as defined by the Office of Management and Budget and used by the U.S. Census Bureau.[8] In this section, quality of and access to health care for each minority group are summarized to the extent that statistically reliable data are available for each group.[vii] Criteria for importance are that the difference is statistically significant at the alpha ≤ 0.05 level (two-tailed test) and that the relative difference from the reference group is at least 10% when framed positively as a favorable outcome or negatively as an adverse outcome. Access measures focus on facilitators and barriers to health care and exclude health care utilization measures.

Changes Over Time

This section also examines changes over time in differences related to race and ethnicity. For each core report measure, racial, ethnic, and socioeconomic groups are compared with a designated comparison group. The time periods range from 2000-2002 to 2006-2008, depending on the data source. Consistent with Healthy People 2010, disparities are measured in relative terms as the percentage difference between each group and a comparison group. Changes in disparity are measured by subtracting the percentage difference from the comparison group at the baseline year from the percentage difference from the comparison group at the most recent year. The change in each disparity is then divided by the number of years between the baseline and most recent estimate to calculate change in disparity per year.

Core report measures (Table 1.3) for which the relative differences are changing less than 1% per year are identified as staying the same. Core report measures for which the relative differences are becoming smaller at a rate of 1% or more per year are identified as improving. Core report measures for which the relative differences are becoming larger at a rate of 1% or more per year are identified as worsening. Changes of greater than 5% per year are also differentiated from changes of between 1% and 5% per year in some figures.

[vii] Data are presented for each minority group except for people of multiple races due to unreliable estimates for this group.

Gaps in Information

As in previous NHDRs, this section includes information on programs and issues that may affect racial and ethnic disparities. In interpreting findings for racial and ethnic minorities, readers should note that considerable gaps exist in information for some racial and ethnic minorities. These gaps limit the NHDR's ability to identify the current state of disparities for some groups.

Gaps can relate to insufficient data to produce reliable estimates or, when estimates are possible, to inadequate power to detect large differences. For example, of core report measures of quality, it is rarely possible to provide estimates for NHOPIs and people of more than one race. For Asians, only about two-thirds of core report measures of quality support analyses. For AI/ANs, only about half of these same measures support analyses.

In addition, many data sources changed racial classifications for Asians and NHOPIs in 2003 to adhere to new Federal standards. This change has further constrained the ability to perform trend analyses for these groups. Chapter 1, Introduction and Methods, presents more detailed descriptions of current data limitations and ways data are gradually improving.

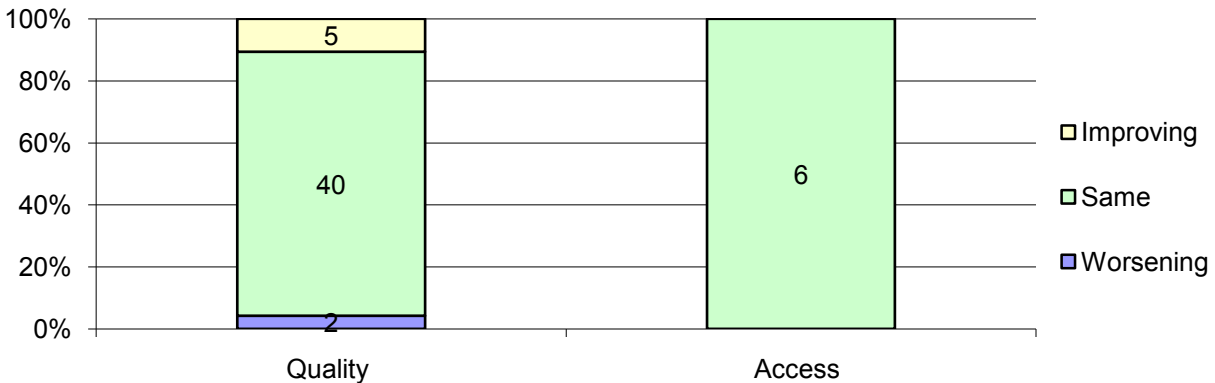## Blacks or African Americans

Previous NHDRs showed that Blacks had poorer quality of care and worse access to care than Whites for many measures tracked in the reports. Findings based on core report measures (Table 1.3) of quality of and access to health care are shown below.

Table 10.1. Measures for which Blacks were worse than Whites in most recent year and their trends over time

Topic	Blacks worse than Whites and getting better
Diabetes	Hospital admissions for short-term complications of diabetes per 100,000 population
HIV and AIDS	New AIDS cases per 100,000 population age 13 and over
Functional status preservation and rehabilitation	Female Medicare beneficiaries age 65 and over who reported ever being screened for osteoporosis with a bone mass or bone density measurement
Topic	**Blacks worse than Whites and staying the same**
Cancer	Breast cancer diagnosed at advanced stage per 100,000 women age 40 and over
	Breast cancer deaths per 100,000 female population per year
	Adults age 50 and over who received colorectal cancer screening
	Colorectal cancer diagnosed at advanced stage per 100,000 population age 50 and over
	Colorectal cancer deaths per 100,000 population per year
Diabetes	Hospital admissions for lower extremity amputations per 1,000 population age 18 and over with diabetes
Maternal and child health	Children ages 2-17 who had a dental visit in the calendar year
	Children ages 19-35 months who received all recommended vaccines
Mental health and substance abuse	Adults with a major depressive episode in the last 12 months who received treatment for depression in the last 12 months
	People age 12 and over treated for substance abuse who completed treatment course
Respiratory diseases	Adults age 65 and over who ever received pneumococcal vaccination
	Hospital patients with pneumonia who received recommended hospital care
Supportive and palliative care	High-risk long-stay nursing home residents with pressure sores
	Short-stay nursing home residents with pressure sores
	Adult home health care patients who were admitted to the hospital
	Hospice patients who received the right amount of medicine for pain
Timeliness	Adults who needed care right away for an illness, injury, or condition in the last 12 months who got care as soon as wanted
	Emergency department visits where patients left without being seen
Access	People with a usual primary care provider
	People with a specific source of ongoing care

Figure 10.1. Change in Black-White disparities over time for all core measures

Improving = Black-White difference becoming smaller at an average annual rate greater than 1%.
Same = Black-White difference not changing.
Worsening = Black-White difference becoming larger at an average annual rate greater than 1%.
Note: The time period for this figure is the most recent and oldest years of data used in the NHDR. Only 53 core report measures could be tracked over time for Blacks.
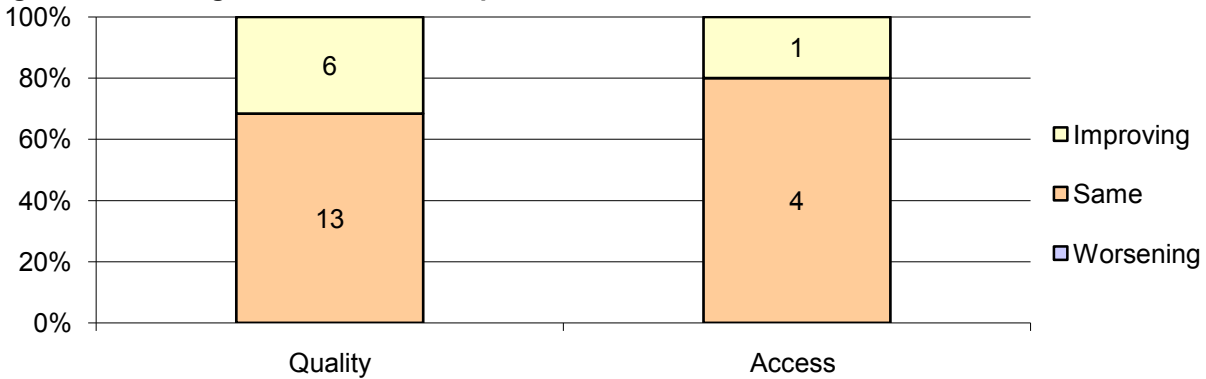
Asians

Previous NHDRs showed that Asians had similar or better quality of care than Whites but worse access to care than Whites for many measures that the report tracks. Findings based on core report measures of quality and access to health care that support estimates for either Asians or Asians and Pacific Islanders in aggregate are shown below.

Table 10.2. Measures for which Asians were worse than Whites for most recent year and their trends over time

Topic	Asians worse than Whites and getting better
Cancer	Adults age 50 and over who ever received colorectal cancer screening
Patient safety	Adult surgery patients who received appropriate timing of antibiotics
Topic	**Asians worse than Whites and staying the same**
Respiratory diseases	Adults age 65 and over who ever received pneumococcal vaccination
	Hospital patients with pneumonia who received recommended hospital care
Access	People with a usual primary care provider

Figure 10.2. Change in Asian-White disparities over time

Improving = Asian-White difference becoming smaller at an average annual rate greater than 1%.
Same = Asian-White difference not changing.
Worsening = Asian-White difference becoming larger at an average annual rate greater than 1%.
Note: The time period for this figure is the most recent and oldest years of data used in the NHDR. Only 24 core report measures could be tracked over time for Asians.

Native Hawaiians and Other Pacific Islanders

The ability to assess disparities among NHOPIs for the NHDR has been a challenge for two main reasons. First, the NHOPI racial category is relatively new to Federal data collection. Before 1997, NHOPIs were classified as part of the Asian and Pacific Islander racial category and could not be identified separately in most Federal data. In 1997, the Office of Management and Budget promulgated new standards for Federal data on race and ethnicity and mandated that information about NHOPIs be collected separately from information about Asians.[8] However, these standards have not yet been incorporated into all databases. Second, when information about this population was collected, databases often included insufficient numbers of NHOPIs to allow reliable estimates to be made.

Due to these challenges, in previous NHDRs estimates for the NHOPI population could be generated for only a handful of measures. A lack of quality data on this population prevents the NHDR from detailing disparities for this group. This year, the NHDR features data from the Behavioral Risk Factor Surveillance System (BRFSS) to supplement the NHDR information for

the NHOPI population. Preventive care and access to care measures were selected to highlight quality of care for people who identified themselves as NHOPI (including people of mixed race who identified primarily as NHOPI). This year, the measures include cholesterol screening, pneumonia admissions, and cost as a barrier to medical care.

BRFSS data do not replace the need for continued efforts to improve data collection and statistical methods to provide more information on health and health care of the NHOPI population. BRFSS may have larger samples of NHOPIs due to State efforts to improve sample sizes, but it is not necessarily a comprehensive survey of health and health care. Other surveys and data collection efforts, such as vital statistics and hospital administrative data, include more topics but do not identify NHOPIs or have large enough sample sizes to provide data for these populations.

For all national data sources, the relatively small population sizes of many Pacific Islander groups can cause these populations to be overlooked when categorized as NHOPIs. In addition, identifying individuals with chronic conditions or other health conditions within such small populations further reduces the sample sizes. However, as data become available, this information will be included in future reports.

Preventive Care: Cholesterol Screening

In the State of Hawaii, where 54% of Native Hawaiians reside, cardiovascular disease is the leading cause of death.[9] Screening for risk factors for cardiovascular disease, such as high blood pressure and high cholesterol, is important in preventing disease. Cholesterol screening is shown below to highlight one aspect of cardiovascular disease prevention for Native Hawaiians.

Figure 10.3. Adults who did NOT receive a cholesterol check in the last 5 years, Hawaii, 2005 , 2007, and 2009
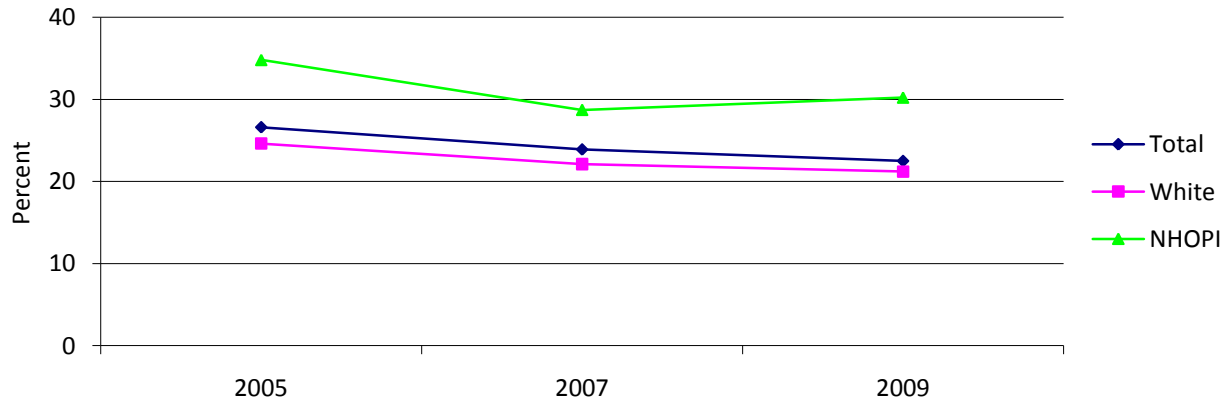
Key: NHOPI = Native Hawaiian or Other Pacific Islander.
Source: Centers for Disease Control and Prevention, Behavioral Risk Factor Surveillance System, 2005, 2007, and 2009.
Denominator: Adults age 18 and over in Hawaii.
**Note:** These data are self-reported from a survey of adults in a household.

- From 2005 to 2009, the percentage of adults who did not receive a cholesterol check in Hawaii improved overall for the general population (from 26.6% to 22.5%) and for NHOPIs (from 34.8% to 30.2%).

- In 2009, the percentage of adults who did not receive a cholesterol check in the last 5 years in Hawaii was significantly higher for NHOPIs than for Whites (30.2% compared with 21.2%; Figure 10.3).

Treatment: Pneumonia

High rates of hospitalizations for pneumonia may indicate poor outpatient care and low vaccination rates. NHOPIs have more hospital admissions for bacterial pneumonia than Whites. The problem appears to be worse for Pacific Islanders other than Native Hawaiians.

Figure 10.4. Bacterial pneumonia admissions per 100,000 population, age 18 and over, Hawaii only, by race, 2005-2007
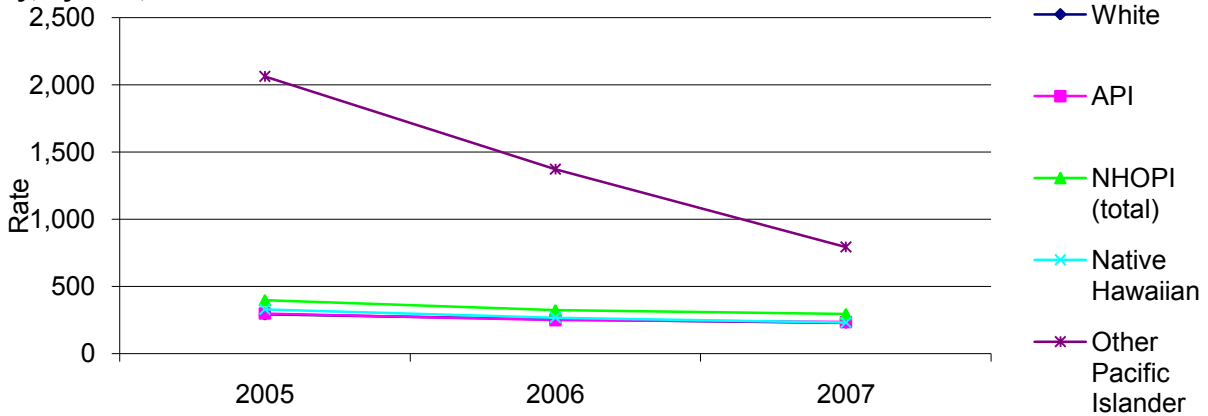
Key: NHOPI = Native Hawaiian or Other Pacific Islander.
Source: Agency for Healthcare Research and Quality, Healthcare Cost and Utilization Project, Hawaii State Inpatient Databases, 2005-2007, and AHRQ Quality Indicators, version 3.1.
Denominator: Adults age 18 and over in Hawaii based on the Hawaii Health Survey.
Note: Excludes sickle cell or hemoglobin-S conditions, transfers from other institutions, and obstetric admissions. Rates are adjusted by age and gender using the total U.S. population for 2000 as the standard population.

- From 2005 to 2007, there was significant improvement among all groups in the rate of hospital admissions with bacterial pneumonia in Hawaii.
- In 2007, NHOPIs overall had a higher rate of hospital admission with bacterial pneumonia than Whites in Hawaii (294.4 per 100,000 population compared with 229.1 per 100,000 population; Figure 10.4).
- Native Hawaiians had a higher rate of hospital admissions with bacterial pneumonia than Whites in Hawaii (231.6 per 100.000 population compared with 229.1 per 100,000 population).
- Other Pacific Islanders had a significantly higher rate of hospital admission with bacterial pneumonia than Whites in Hawaii (793.3 per 100,000 population compared with 229.1 per 100,000 population).

Access to Care: Medical Costs

High premiums and out-of-pocket payments can be significant barriers to accessing needed medical treatment and preventive care. Studies show that racial and ethnic minorities are more likely to face barriers due to cost of care than other groups.[10, 11]

Figure 10.5. Adults who needed to see a doctor in the past year but could not because of cost, Hawaii, 2007-2009
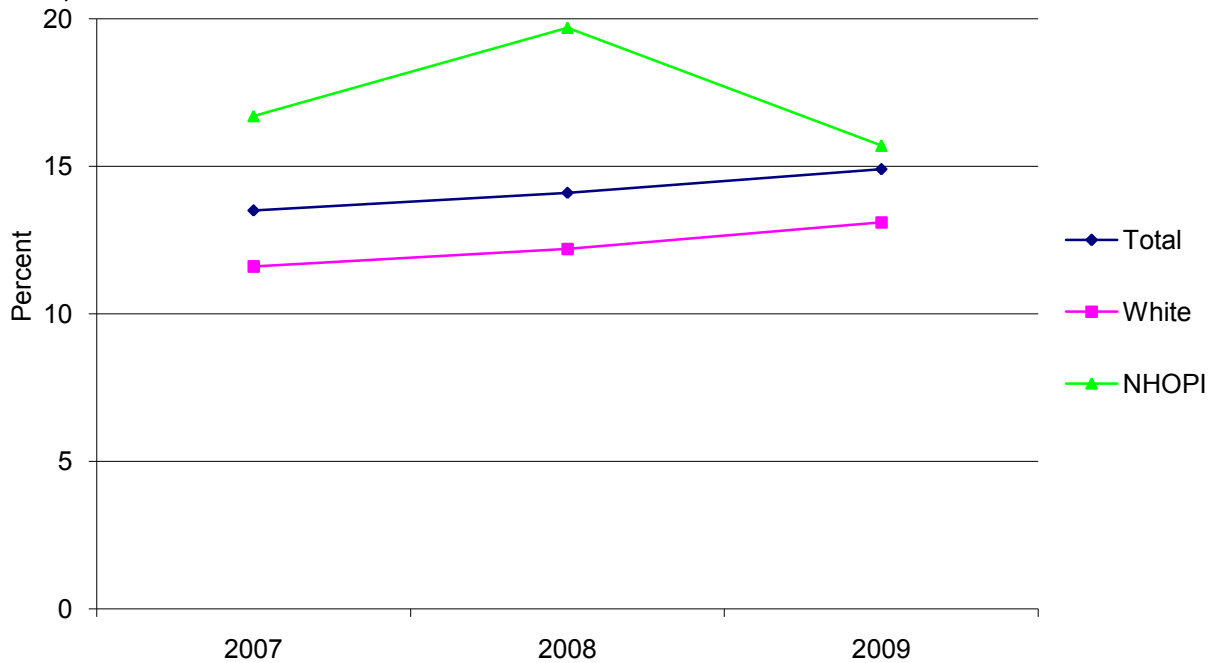
Key: NHOPI = Native Hawaiian or Other Pacific Islander.
Source: Centers for Disease Control and Prevention, Behavioral Risk Factor Surveillance System, 2007-2009.
Denominator: Adults age 18 and over in Hawaii.
Note: These data are self-reported from a survey of adults in a household.

- From 2007 to 2009, the percentage of adults who needed to see a doctor in the past year but could not because of cost in Hawaii worsened overall and for Whites, but improved for NHOPIs (from 16.7% to 15.7%; Figure 10.5).
- In 2007, the percentage of adults who needed to see a doctor in the past year but could not because of cost in Hawaii was higher for NHOPIs than for Whites (15.7% compared with 13.1%).
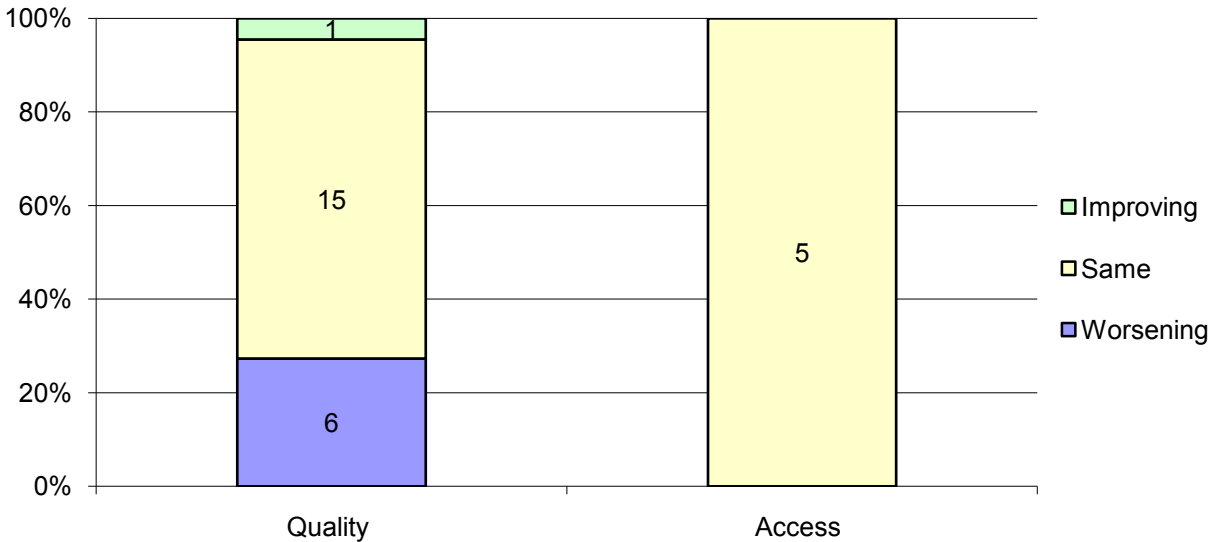
American Indians and Alaska Natives

Previous NHDRs showed that AI/ANs had poorer quality of care and worse access to care than Whites for many measures tracked in the reports. Findings based on core report measures of quality and access that support estimates for AI/ANs are shown below.

Table 10.3. Measures for which American Indians and Alaska Natives were worse than Whites for most recent year and their trends over time

Topic	AI/ANs worse than Whites and staying the same
Heart disease	Hospital patients with heart failure who received recommended hospital care
HIV and AIDS	New AIDS cases per 100,000 population age 13 and over
Respiratory diseases	Hospital patients with pneumonia who received recommended hospital care
Functional status preservation and rehabilitation	Female Medicare beneficiaries age 65 and over who reported ever being screened for osteoporosis with a bone mass or bone density measurement
Supportive and palliative care	Hospice patients who received the right amount of medicine for pain
	High-risk long-stay nursing home residents with pressure sores
	Adult home health care patients who were admitted to the hospital
Access	People under age 65 with health insurance
Topic	**AI/ANs worse than Whites and getting worse**
Cancer	Adults age 50 and over who ever received colorectal cancer screening
Patient safety	Adult surgery patients who received appropriate timing of antibiotics

Figure 10.6. Change in American Indian or Alaska Native-White disparities over time for all core measures

Improving = AI/AN-White difference becoming smaller at an average annual rate greater than 1%.
Same = AI/AN-White difference not changing.
Worsening = AI/AN-White difference becoming larger at an average annual rate at greater than1%.
Key: AI/AN = American Indian or Alaska Native.
Note: The time period for this figure is the most recent and oldest years of data used in the NHDR. Only 27 core report measures could be tracked over time for AI/ANs.

Hispanics or Latinos

Previous NHDRs showed that Hispanics had poorer quality of care and worse access to care than non-Hispanic Whites for many measures that the report tracks. Findings based on core report measures of quality of and access to health care that support estimates for Hispanics are shown below. Figure 10.7 shows changes over time.

Table 10.4. Measures for which Hispanics were worse than non-Hispanic Whites for most recent year and their trends over time

Topic	Hispanics worse than non-Hispanic Whites and getting better
Maternal and child health	Children ages 2-17 who had a dental visit in the calendar year
Lifestyle modification	Adult current smokers with a checkup in the last 12 months who received advice to quit smoking
	Adults with obesity who ever received advice from a health provider about healthy eating
Functional status preservation and rehabilitation	Female Medicare beneficiaries age 65 and over who reported ever being screened for osteoporosis with a bone mass or bone density measurement
Topic	**Hispanics worse than non-Hispanic Whites and staying the same**
Cancer	Women age 40 and over who received a mammogram in the last 2 years
	Adults age 50 and over who ever received colorectal cancer screening
Diabetes	Adults age 40 and over with diagnosed diabetes who received all three recommended services for diabetes in the calendar year
Heart disease	Hospital patients with heart attack and left ventricular systolic dysfunction who were prescribed angiotensin-converting enzyme inhibitor or angiotensin receptor blocker at discharge
	Hospital patients with heart failure who received recommended hospital care
HIV and AIDS	New AIDS cases per 100,000 population age 13 and over
Mental health and substance abuse	Adults with a major depressive episode in the last 12 months who received treatment for depression in the last 12 months
Respiratory disease	Adults age 65 and over who ever received pneumococcal vaccination
	Hospital patients with pneumonia who received recommended hospital care
Lifestyle modification	Adults with obesity who ever received advice from a health provider to exercise more
Supportive and palliative care	Long-stay nursing home residents with physical restraints
	High-risk long-stay nursing home residents with pressure sores
	Short-stay nursing home residents with pressure sores
	Adult home health care patients who were admitted to the hospital
	Hospice patients who received the right amount of medicine for pain
Patient safety	Adult surgery patients who received appropriate timing of antibiotics
Timeliness	Adults who needed care right away for an illness, injury, or condition in the last 12 months who got care as soon as wanted
Patient centeredness	Adults with ambulatory visits who reported poor communication with health providers
	Children with ambulatory visits who reported poor communication with health providers
Access	People under age 65 with health insurance
	People under age 65 who were uninsured all year
	People with a specific source of ongoing care
	People with a usual primary care provider
	People unable to get or delayed in getting needed care due to financial or insurance reasons
Topic	**Hispanics worse than non-Hispanic Whites and getting worse**
Maternal and child health	Children ages 3-6 who ever had their vision checked by a health provider

Figure 10.7. Change in Hispanic–non-Hispanic White disparities over time for all core measures
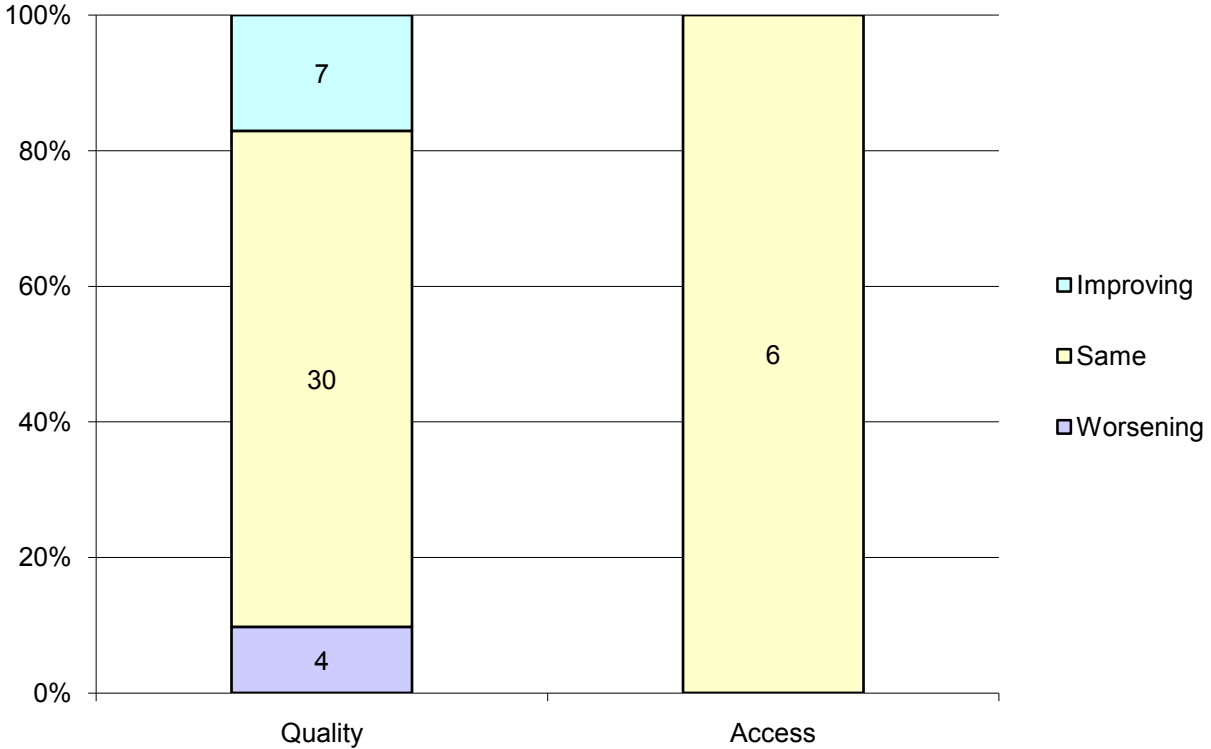
Improving = Hispanic-non-Hispanic White difference becoming smaller at an average annual rate greater than 1%.
Same = Hispanic-non-Hispanic White difference not changing.
Worsening = Hispanic-non-Hispanic White difference becoming larger at an average annual rate greater than 1%.
Note: The time period for this figure is the most recent and oldest years of data used in the NHDR. Only 47 core report measures could be tracked over time for Hispanics and non-Hispanic Whites.

Low-Income Groups

In this report, poor populations are defined as people living in families whose household income falls below specific poverty thresholds. These thresholds vary by family size and composition and are updated annually by the U.S. Bureau of the Census.[12] After falling for a decade (1990-2000), the number of poor people in America rose from 31.6 million in 2000 to 36.5 million in 2006, and the rate of poverty increased from 11.3% to 12.3% during the same period.[13]

Poverty varies by race and ethnicity. In 2006, 24% of Blacks, 21% of Hispanics, 10% of Asians, and 8% of Whites were poor. People with low incomes often experience worse health and are more likely to die prematurely.[14] In general, poor populations have reduced access to high-quality care. While people with low incomes are more likely to be uninsured, income-related differences in quality of care that are independent of health insurance coverage have also been demonstrated.[15]

Previous chapters of this report describe health care differences by income. This section summarizes disparities in quality of and access to health care for poor[viii] individuals compared

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[viii] Household income less than Federal poverty thresholds.

with high-income[ix] individuals. For each core report measure, poor people can have health care that is worse than, about the same as, or better than health care received by high-income people. Only relative differences of at least 10% that are statistically significant at alpha ≤ 0.05 are discussed in this report. Access measures focus on facilitators and barriers to health care and exclude health care utilization measures.In addition, changes in differences related to income are examined over time.

Table 10.5. Measures for which poor people were worse than high-income people for most recent year and their trends over time

Topic	Poor worse than high income and getting better
Maternal and child health	Children ages 2-17 who had a dental visit in the calendar year
Lifestyle modification	Adults with obesity who ever received advice from a health provider about healthy eating
Topic	**Poor worse than high income and staying the same**
Diabetes	Hospital admissions for short-term complications of diabetes per 100,000 population
Heart disease	Deaths per 1,000 adult hospital admissions with acute myocardial infarction
Maternal and child health	Children ages 2-17 for whom a health provider ever gave advice about exercise
	Children ages 2-17 for whom a health provider ever gave advice about healthy eating
	Children ages 19-35 months who received all recommended vaccines
Mental health and substance abuse	Adults with a major depressive episode in the last 12 months who received treatment for depression in the last 12 months
Respiratory	Adults age 65 and over who ever received pneumococcal vaccination
	People with current asthma who are now taking preventive medicine daily or almost daily
Lifesyle modification	Adults with obesity who ever received advice from a health provider to exercise more
Functional status preservation and rehabilitation	Female Medicare beneficiaries age 65 and over who reported ever being screened for osteoporosis with a bone mass or bone density measurement
Timeliness	Adults who needed care right away for an illness, injury, or condition in the last 12 months who got care as soon as wanted
Patient safety	Adults age 65 and over who received potentially inappropriate prescription medications in the calendar year
Patient centeredness	Adults with ambulatory visits who reported poor communication with health providers
	Children with ambulatory visits whose parents reported poor communication with health providers
Access	People under age 65 with health insurance
	People under age 65 who were uninsured all year
	People with a specific source of ongoing care
	People with a usual primary care provider
	People unable to get or delayed in getting needed care due to financial or insurance reasons
	People who were unable to get or delayed in getting needed medical care, dental care, or prescription medicines in the last 12 months
Topic	**Poor worse than high income and getting worse**
Cancer	Women age 40 and over who received a mammogram in the last 2 years
	Adults age 50 and over who ever received colorectal cancer screening
Diabetes	Adults age 40 and over with diagnosed diabetes who received all three recommended services for diabetes in the calendar year

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[ix] Household income 400% of Federal poverty thresholds and higher.

Figure 10.8. Change in poor–high-income disparities over time for all core measures
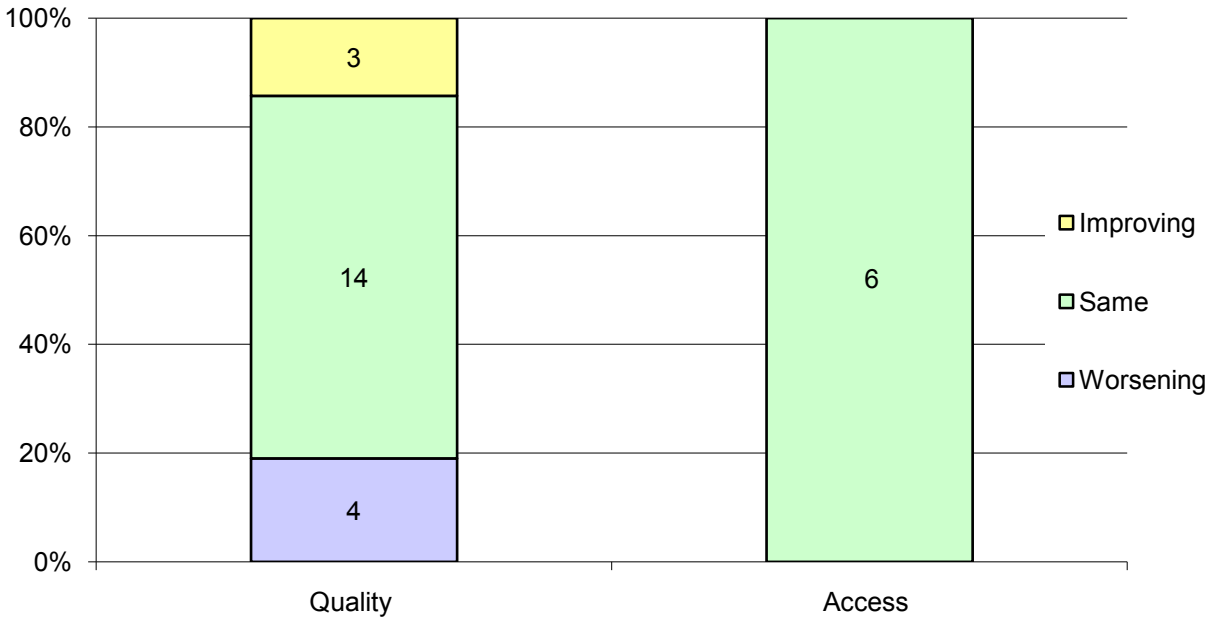
Improving = Poor-high-income difference becoming smaller at an average annual rate greater than 1%.
Same = Poor-high-income difference not changing.
Worsening = Poor-high-income difference becoming larger at an average annual rate greater than 1%.
Note: The time period for this figure is the most recent and oldest years of data used in the NHDR. Only 27 core report measures of quality and access could be tracked over time for poor individuals. No acute care measures reported data for income.

Residents of Rural Areas

About one in five Americans lives in a nonmetropolitan area.[16] Compared with their urban counterparts, rural residents are more likely to be older, be poor,[17] and be in fair or poor health, and have chronic conditions.[16] Rural residents are less likely than their urban counterparts to receive recommended preventive services and on average report fewer visits to health care providers.[18]

Although 20% of Americans live in rural areas,[x] only 9% of physicians in America practice in those settings.[19] Other important providers of health care in those settings include nurse practitioners, nurse midwives, and physician assistants. A variety of programs deliver needed services in rural areas, such as the National Health Service Corps Scholarship Program, Indian Health Service, State offices of rural health, rural health clinics, and community health centers. Cost-based Medicare reimbursement incentives are also available for rural health clinics, critical access hospitals, sole community hospitals, and Medicare-dependent hospitals and physicians in health professional shortage areas.

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[x] Many terms are used to refer to the continuum of geographic areas. For Census 2000, the U.S. Census Bureau's classification of "rural" consists of all territory, population, and housing units located outside of urban areas and urban clusters. The Census Bureau classified as "urban" all territory, population, and housing units located within (1) core census block groups or blocks that have a population density of at least 1,000 people per square mile and (2) surrounding census blocks that have an overall density of at least 500 people per square mile.

Many rural residents depend on small rural hospitals for their care. There are approximately 2,000 rural hospitals throughout the country,[20] 1,500 of which have 50 or fewer beds. Most of these hospitals are critical access hospitals that have 25 or fewer beds. Rural hospitals face unique challenges due to their size and case mix. During the 1980s, many were forced to close due to financial losses.[21] More recently, finances of small rural hospitals have improved and few closures have occurred since 2003.

Transportation needs are pronounced among rural residents, who must travel longer distances to reach health care delivery sites. Of the nearly 1,000 "frontier counties"[xi] in the Nation, most have limited health care services and many do not have any.[22]

Geographic areas are classified in different ways depending on the data source. Chapter 1, Introduction and Methods, provides more information on the classifications used. In this chapter, we compare residents of noncore[xii] (rural) areas with residents of large fringe metropolitan (suburban) areas because residents of suburban areas tend to have higher quality health care and better outcomes.

[xi] "Frontier counties" have a population density of less than 7 people per square mile; thus, residents may have to travel long distances for care.

[xii] Noncore areas are outside of metropolitan or micropolitan statistical areas. Micropolitan and noncore areas are typically regarded as "rural."

Table 10.6. Measures for which residents of noncore areas were worse than residents of large fringe metropolitan areas for most recent year only[xiii]

Topic	Measure
Cancer	Adults age 50 and over who ever received colorectal cancer screening
	Colorectal cancer deaths per 100,000 population per year
	Cancer deaths per 100,000 population per year
	Lung cancer deaths per 100,000 population per year
Diabetes	Hospital admissions for short-term complications of diabetes per 100,000 population
	Adults age 40 and over with diagnosed diabetes who received an influenza vaccination in the last 12 months
	Hospital admissions for uncontrolled diabetes per 100,000 population age 18 and over
Heart disease	Adults who received a blood cholesterol measurement in the last 5 years
	Deaths per 1,000 adult hospital admissions with acute myocardial infarction
	Deaths per 1,000 adult hospital admissions with congestive heart failure
	Deaths per 1,000 hospital admissions with coronary artery bypass surgery, age 40 and over
Maternal and child health	Women who completed a pregnancy in the last 12 months who received prenatal care in the first trimester
	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
	Children ages 2-17 for whom a health provider ever gave advice about healthy eating
	Children who ever had their height and weight measured by a health provider
	Children 41-80 lb for whom a health provider ever gave advice about using booster seats
	Children ages 2-17 for whom a health provider ever gave advice about using a helmet when riding a bicycle or motorcycle
Mental health and substance abuse	Suicide deaths per 100,000 population
Respiratory diseases	Hospital admissions for immunization-preventable influenza per 100,000 population age 65 and over
	Deaths per 1,000 adult hospital admissions with pneumonia
Lifestyle modification	Adults with obesity who ever received advice from a health provider to exercise more
Efficiency	Avoidable admissions for angina per 100,000 population age 18 and over
	Avoidable admissions for chronic obstructive pulmonary disease per 100,000 population age 18 and over
	Avoidable admissions for bacterial pneumonia per 100,000 population age 18 and over
	Perforated appendixes per 1,000 admissions with appendicitis
Access	People under age 65 who were uninsured all year
	People under age 65 whose family's health insurance premium and out-of-pocket medical expenditures were more than 10% of total family income
	People under age 65 with health insurance
	People under age 65 with any private health insurance
	People with a usual source of care who has office hours nights or weekends

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[xiii] Data were insufficient to assess change over time.

Figure 10.9. Distribution of measures for residents of noncore areas compared with residents of large fringe metropolitan areas for most recent year[xiv]
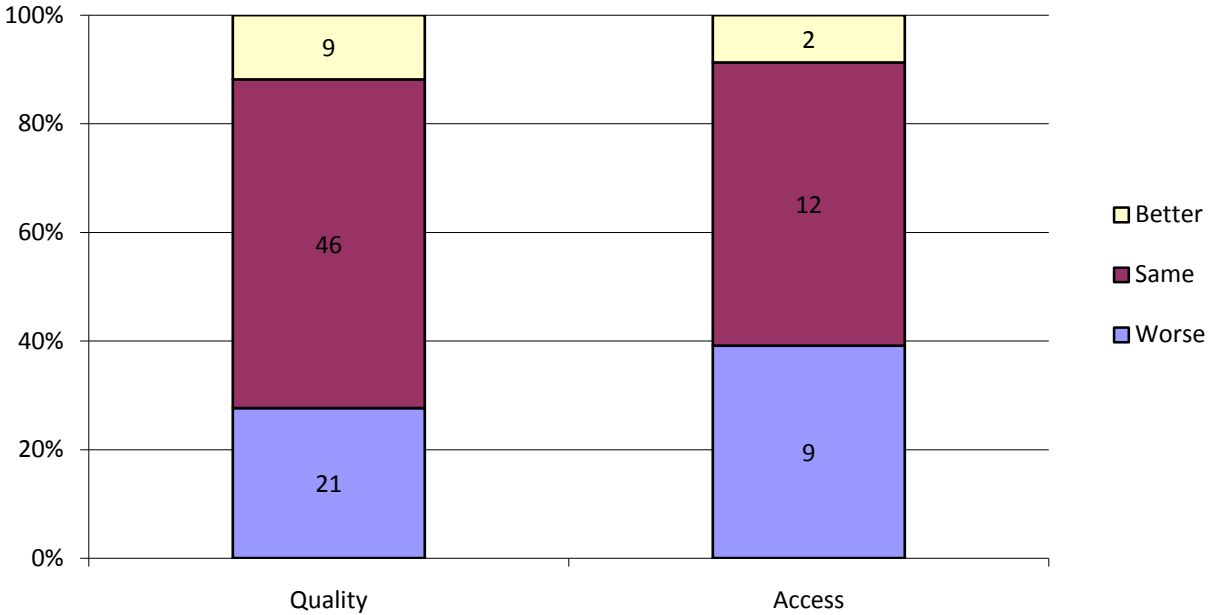
Better = Noncore area is better than large fringe metropolitan area at a relative rate greater than 10%.
Same = No difference between noncore area and large fringe metropolitan area.
Worse = Noncore area is worse than large fringe metropolitan area at a relative rate greater than 10%.
Note: All measures with data for metropolitan areas are included (core and supporting measures).

Individuals With Disabilities or Special Health Care Needs

Individuals with disabilities or special health care needs include individuals with disabilities, individuals who use nursing home and home health care or end-of-life health care, and children with special heath care needs. The NHDR tracks many measures of relevance to individuals with special health care needs.

Again this year, the NHQR and NHDR aim to include more information about individuals with disabilities. To reach this goal, AHRQ convened a disabilities subgroup of the NHQR/NHDR Interagency Work Group. This subgroup received assistance from the Interagency Subcommittee on Disability Statistics of the Interagency Committee on Disability Research. The charge to the disabilities subgroup was to advise AHRQ on measures of disabilities from existing data that could track disparities for disabled individuals in quality of and access to care for the NHDR and that would be comparable across national surveys. For this initial effort, the subgroup focused on measures for adults, a population for which the most survey data are available.

For the 2010 NHDR, AHRQ is again using a broad, inclusive measure of disability for adults. This definition is intended to be consistent with statutory definitions of disability, such as the first criterion of the 1990 Americans With Disabilities Act (ADA) (i.e., having a physical or mental impairment that substantially limits one or more major life activities[23,24]) and Federal program definitions of disability based on the ADA. For the purpose of the NHDR, adults with disabilities are those with physical, sensory, and/or mental health conditions that can be

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[xiv] Data were insufficient to assess change over time.

associated with a decrease in functioning in such day-to-day activities as bathing, walking, doing everyday chores, and engaging in work or social activities.

In displaying the data on disability, paired measures are shown to preserve the qualitative aspects of the data:

- Limitations in *basic* activities represent problems with mobility and other basic functioning at the person level.
- Limitations in *complex* activities represent limitations encountered when the person, in interaction with the environment, attempts to participate in community life.

Limitations in *basic* activities include problems with mobility, self-care (activities of daily living), domestic life (instrumental activities of daily living), and activities that depend on sensory functioning (limited to people who are blind or deaf). Limitations in *complex* activities include limitations experienced in work and in community, social, and civic life. The use of the subgroup's recommendation of these paired measures of basic and complex activity limitations is conceptually similar to the way others have divided disability[25] and is consistent with the International Classification of Functioning, Disability, and Health separation of activities and participation domains.[26] These two categories are not mutually exclusive; people may have limitations in basic activities and complex activities. The residual category *Neither* includes adults with neither basic nor complex activity limitations.

In this year's reports, analyses by activity limitations for adults are presented in the Patient Centeredness chapter of both the NHQR and NHDR. In addition, the appendix tables include activity limitations as a stub variable for all National Health Interview Survey and Medical Expenditure Panel Survey tables.

In summarizing disparities for individuals with disabilities, we present comparisons only between individuals with complex disabilities and individuals with no activity limitations.

Table 10.7. Measures for which individuals with complex activity limitations were worse than individuals with neither basic nor complex activity limitations for most recent year and their trends over time

Topic	Adults with complex activity limitations worse than individuals with neither types of activity limitations and getting worse
Access	People without a usual source of care who indicated a financial or insurance reason for not having a source of care
	Adults with complex activity limitations worse than individuals with neither types of activity limitations and staying the same
Cancer	Women age 18 and over who received a Pap smear in the last 3 years
	Women age 40 and over who received a mammogram in the last 2 years
Lifestyle Modification	Adults with obesity who spend half an hour or more in moderate or vigorous physical activity at least three times a week
Patient Safety	Adults age 65 and over who received potentially inappropriate prescription medications in the calendar year
Patient Centeredness	Adults who had a doctor's office or clinic visit in the last 12 months whose health providers explained things in a way they could understand
	Adults who had a doctor's office or clinic visit in the last 12 months whose health providers listened carefully to them
	Adults who had a doctor's office or clinic visit in the last 12 months whose health providers showed respect for what they had to say
	Adults who had a doctor's office or clinic visit in the last 12 months whose health providers spent enough time with them
	Rating of health care by adults who had a doctor's office or clinic visit in the last 12 months
	People with a usual source of care for whom health care providers explained and provided all treatment options
Access	Adults age 65 and over with any private health insurance
	Adults who did not have problems seeing a specialist they needed to see in the last 12 months
	People under age 65 whose family's health insurance premium and out-of-pocket medical expenditures were more than 10% of total family income
	People under age 65 with any private health insurance
	People under age 65 with private insurance whose family's out-of-pocket medical expenditures were more than 10% of total family income
	People who were unable to get or delayed in getting needed dental care in the last 12 months
	People who were unable to get or delayed in getting needed medical care in the last 12 months
	People who were unable to get or delayed in getting needed prescription medicines in the last 12 months
	People with a usual source of care, excluding hospital emergency rooms, who has office hours nights or weekends
	People with difficulty contacting their usual source of care over the telephone

Table 10.8. Measures for which adults with complex activity limitations were worse than adults with neither basic nor complex activity limitations for most recent year and their trends over time

Topic	Adults with complex activity limitations worse than adults with neither basic nor complex activity limitations and getting worse
Access	People without a usual source of care who indicated a financial or insurance reason for not having a source of care
	Adults with complex activity limitations worse than adults with neither basic nor complex activity limitations and staying the same
Lifestyle Modification	Adults with obesity who spend half an hour or more in moderate or vigorous physical activity at least three times a week
Patient Safety	Adults age 65 and over who received potentially inappropriate prescription medications in the calendar year
Patient Centeredness	Adults who had a doctor's office or clinic visit in the last 12 months whose health providers listened carefully to them
	Adults who had a doctor's office or clinic visit in the last 12 months whose health providers explained things in a way they could understand
	Adults who had a doctor's office or clinic visit in the last 12 months whose health providers showed respect for what they had to say
	Adults who had a doctor's office or clinic visit in the last 12 months whose health providers spent enough time with them
	Rating of health care by adults who had a doctor's office or clinic visit in the last 12 months
	People with a usual source of care for whom health care providers explained and provided all treatment options
Access	People who were unable to get or delayed in getting needed medical care in the last 12 months
	People who were unable to get or delayed in getting needed dental care in the last 12 months
	People who were unable to get or delayed in getting needed prescription medicines in the last 12 months
	People with a usual source of care, excluding hospital emergency rooms, who has office hours nights or weekends
	People with difficulty contacting their usual source of care over the telephone
	Adults who did not have problems seeing a specialist they needed to see in the last 12 months

Figure 10.10. Change in disability-related disparities over time for all measures
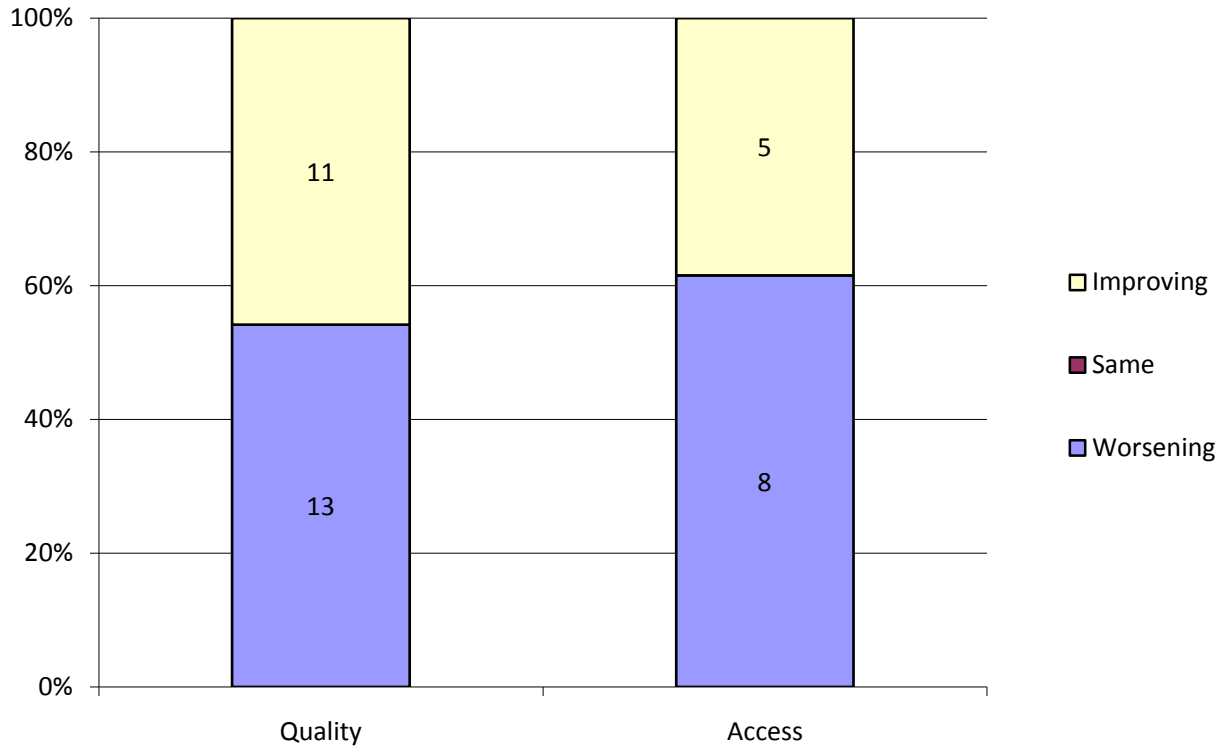
Improving = Difference between complex limitations and no limitations becoming smaller at an average annual rate greater than 1%.
Same = Difference between complex limitations and no limitations not changing.
Worsening = Difference between complex limitations and no limitations becoming larger at an average annual rate greater than 1%.
Note: The time period for this figure is the most recent and oldest years of data used in the NHDR. Measures include supporting measures. Only 37 measures of quality and access could be tracked over time for individuals with activity limitations.

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List of Core Measures

Core Measures, Data Sources, and Availability for Select Groups

Measure	Data source	Black	Hispanic	Asian or API	AI/AN	Poor
Quality						
Women age 40 and over who reported they had a mammogram within the past 2 years	NHIS	X	X	X	X	X
Breast cancer incidence per 100,000 women age 40 and over diagnosed at advanced stage	SEER	X	X	X	X	
Breast cancer deaths per 100,000 female population per year	NVSS-M	X	X	X	X	
Adults age 50 and over who received a colonoscopy, sigmoidoscopy, proctoscopy, or fecal occult blood test	NHIS	X	X	X	X	X
Colorectal cancer diagnosed at advanced stage per 100,000 population age 50 and over	SEER	X	X	X	X	
Colorectal cancer deaths per 100,000 population per year	NVSS-M	X	X	X	X	
Adults age 40 and over with diabetes who received all three exams in the calender year: hemoglobin A1c measurement, dialated eye examination, and foot examination	MEPS	X	X			X
Adult dialysis patients registered on a waiting list for transplantation	USRDS	X	X	X	X	
Hemodialysis patients with adequate dialysis	ESRD CPMP	X	X	X	X	
Hospital care for heart attack patients	QIO	X	X	X	X	
Hospital care for heart failure patients	QIO	X	X	X	X	
Deaths per 1,000 adult hospital admissions with acute myocardial infarction	HCUP	X	X	X		X
New AIDS cases per 100,000 population ages 13 and over	CDC AIDS Surveillance	X	X	X	X	
Children ages 19-35 months who received all recommended vaccines	NIS	X	X	X	X	X

Measure	Data source	Black	Hispanic	Asian or API	AI/AN	Poor
Children ages 2-17 for whom a health provider gave advice about physical activity	MEPS	X	X	X		X
Children ages 3-6 who had their vision checked by a health provider	MEPS	X	X			X
Children ages 2-17 who received advice about healthy eating	MEPS	X	X	X		X
Children ages 2-17 who had a dental visit in the past year	MEPS	X	X	X		X
Suicide deaths per 100,000 population	NVSS-M	X	X		X	
Adults with a major depressive episode who received treatment for depression	NSDUH	X	X			X
People age 12 and over who needed treatment for illicit drug use or alcohol problem and who received such treatment at a specialty facility	NSDUH	X	X		X	X
Adult smokers who received advice to quit smoking	MEPS	X	X			X
Adults with obesity who received advice to exercise more	MEPS	X	X			X
Adults with obesity who received advice about healthy eating	MEPS	X	X			X
Adults age 65 and over who ever received pneumococcal vaccination	NHIS	X	X	X		X
Hospital care for pneumonia patients	QIO	X	X	X	X	
Patients with tuberculosis who completed a curative course of treatment within 1 year of initiation of treatment	CDC TB Surveillance	X	X	X	X	
Older women screened for osteoporosis	MCBS	X	X	X	X	X
Long-stay nursing home residents with physical restraints	CMS MDS	X	X	X	X	
High-risk long-stay nursing home residents with pressure sores	CMS MDS	X	X	X	X	
Short-stay nursing home residents with pressure sores	CMS MDS	X	X	X	X	
Adult home health care patients whose ability to walk or move around improved	OASIS	X	X	X	X	

Measure	Data source	Black	Hispanic	Asian or API	AI/AN	Poor
Adult home health care patients who were admitted to the hospital	OASIS	X	X	X	X	
Adult surgery patients with postoperative pneumonia or venous thromboembolic event	MPSMS	X				
Adult surgery patients who received appropriate timing of antibiotics	QIO	X	X	X	X	
Bloodstream infections or mechanical adverse events associated with central venous catheter placements	MPSMS	X				
Deaths per 1,000 discharges following complications of care	HCUP	X	X	X		X
Adults age 65 and over who received potentially inappropriate prescription medications	MEPS	X	X			X
Adults who sometimes or never got care for illness or injury as soon as wanted	MEPS	X	X	X		X
Emergency department visits in which patients left without being seen	NHAMCS	X		X		
Adults whose health providers sometimes or never listened carefully, explained things clearly, respected what they had to say, and spent enough time with them	MEPS	X	X	X		X
Children whose health providers sometimes or never listened carefully, explained things clearly, respected what they or their parents had to say, and spent enough time with them	MEPS	X	X	X		X
Access						
People under age 65 with health insurance	NHIS	X	X	X	X	X
People under age 65 who were uninsured all year	MEPS	X	X	X	X	X
People with a specific source of ongoing care	NHIS	X	X	X	X	X
People with a usual primary care provider	MEPS	X	X	X	X	X
People without a usual source of care who indicated a financial or insurance reason for not having a source of care	MEPS	X	X	X		X

Measure	Data source	Black	Hispanic	Asian or API	AI/AN	Poor
People who were unable to get or delayed in getting needed care	MEPS	X	X	X	X	X

X Indicates that reliable data on measure are available for this group and included in summary across measures of quality and access for this group

Key: API = Asian or Pacific Islander; AI/AN = American Indian or Alaska Native; Poor = individuals with household incomes <100% of Federal poverty thresholds.