NATIONAL HEALTHCARE DISPARITIES REPORT

2011

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Acknowledgments

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Highlights From the 2011 National Healthcare Quality and Disparities Reports

The U.S. health care system 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, or 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. 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)).

As in 2010, we have integrated findings from the 2011 NHQR and NHDR to produce a single summary chapter. 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?[i]
- Where is the need to improve health care quality and reduce disparities greatest?

Table H.1. National Quality Strategy priorities and location in NHQR and NHDR

National Priority Area	NHQR/NHDR Chapter
Making Care Safer	Patient Safety
Ensuring Person- and Family-Centered Care	Patient Centeredness
Promoting Effective Communication and Care Coordination	Care Coordination
Promoting Effective Prevention and Treatment of Leading Causes of Mortality, Starting With Cardiovascular Disease	Effectiveness (Cardiovascular Disease section)
Working With Communities To Promote Wide Use of Best Practices To Enable Healthy Living	Effectiveness (Lifestyle Modification section)
Making Quality Care More Affordable	Access to Health Care, Efficiency

[i] Data years vary across measures. For most measures, trends include data points from 2001-2002 to 2007-2008.

New this year, the Highlights focus on national priorities identified in the *National Strategy for Quality Improvement in Health Care* (National Quality Strategy or NQS) and HHS *Action Plan To Reduce Racial and Ethnic Health Disparities* (Disparities Action Plan). Published in March 2011, the NQS identified six national priorities for quality improvement. These priorities were matched with measures in the NHQR/NHDR, and assessments of quality and disparities related to each priority are included in the Highlights (Table H.1). The Highlights also discuss health care strategies identified in the Disparities Action Plan that was released in April 2011.

Consistent with past reports, the 2011 reports emphasize one of AHRQ's priority populations as a theme and present expanded analyses of care received by older Americans. Finally, this document presents novel strategies from AHRQ's Health Care Innovations Exchange (HCIE), as well as examples of Federal and State initiatives for improving quality and reducing disparities.

Four themes from the 2011 NHQR and 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 continued improvements in quality and progress on reducing disparities with respect to certain services, geographic areas, and populations, including:
    o Diabetes care and adverse events.
    o Disparities in cancer screening and access to care.
    o States in the South.
- Progress is uneven with respect to national priorities identified in the National Quality Strategy and the Disparities Action Plan:
    o Improving in quality: Ensuring Person- and Family-Centered Care and Promoting Effective Prevention and Treatment of Cardiovascular Disease.
    o Lagging: Making Care Safer, Promoting Healthy Living, and Increasing Data on Racial and Ethnic Minority Populations.
    o Lacking sufficient data to assess: Promoting More Effective Care Coordination and Making Care More Affordable.
    o Disparities related to race, ethnicity, and socioeconomic status present in all priority areas.

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.

On average, people received the preventive services tracked in the reports 60% of the time, appropriate acute care services 80% of the time, and recommended chronic disease management services 70% of the time. Moreover, wide variation was found in receipt of different types of services. For instance, 95% of hospital patients with pneumonia received their initial antibiotic dose within 6 hours of hospital arrival but only 9% of patients who needed treatment for an alcohol problem received treatment at a specialty facility. Access to care is also far from optimal. On average, Americans report barriers to care 20% of the time, ranging from 3% of people saying they were unable to get or had to delay getting prescription medications to 57% 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 face more barriers to care and receive poorer quality of care when they can get it. In previous years, we assessed disparities using a set of core measures. This year, we analyze disparities including all measures in the measure set. We observe few differences in results from the core and full measure sets and present findings from the full measure set here.

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 for the selected and reference groups.

Figure H.1. Number and proportion of all 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 Adults age 65 and over received worse care than adults ages 18-44 for 39% of quality measures.

o Blacks received worse care than Whites for 41% of quality measures.

o Asians and American Indians and Alaska Natives (AI/ANs) received worse care than Whites for about 30% of quality measures.

o Hispanics received worse care than non-Hispanic Whites for 39% of measures.

o Poor people received worse care than high-income people[ii] for 47% of measures.

Figure H.2. Number and proportion of all 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 AI/ANs, Hispanics, and poor people:**

o Adults age 65 and over rarely had worse access to care than adults ages 18-44.

o Blacks had worse access to care than Whites for 32% of access measures.

o Asians had worse access to care than Whites for 17% of access measures.

o AI/ANs had worse access to care than Whites for 62% of access measures.

o Hispanics had worse access to care than non-Hispanic Whites for 63% of measures.

o Poor people had worse access to care than high-income people for 89% of measures.

[ii] Throughout the Highlights, 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.

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 reports, 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 4 years of data. For most measures, trends include data points from 2002-2003 to 2007-2008. New this year, we use weighted least squares regression to assess whether trends are statistically significant. Rates that are going in a favorable direction at a rate exceeding 1% per year and statistically significant are considered to be improving. Rates going in an unfavorable direction at a rate exceeding 1% per year and statistically significant are considered to be worsening. Rates that are changing less than 1% per year or that are not statistically significant are considered to be static. Because of the addition of significance testing, this year's results cannot be compared with results in previous reports.

Figure H.3. Number and proportion of all quality measures that are improving, not changing, or worsening, overall and for select populations

Key: AI/AN = American Indian or Alaska Native; 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.

■ **Quality is improving slowly for all groups:**

    o Across all measures of health care quality tracked in the reports, almost 60% showed improvement. However, median rate of change was only 2.5% per year.

    o Improvement included all groups defined by age, race, ethnicity, and income.

Figure H.4. Number and proportion of all access measures that are improving, not changing, or worsening, overall and for select populations

Key: AI/AN = American Indian or Alaska Native; n = number of measures.
Improving = Access is going in a positive direction at an average annual rate greater than 1% per year.
No Change = Access is not changing or is changing at an average annual rate less than 1% per year.
Worsening = Access is going in a negative direction at an average annual rate greater than 1% per year.

■ **Access is not improving for most groups:**

    o Across the measures of health care access tracked in the reports, about 50% did not show improvement and 40% were headed in the wrong direction. Median rate of change was -0.8% per year, indicating no change over time.

    o Adults age 65 and over improved on about one-quarter of access measures. No group defined by race, ethnicity, or income showed significant improvement.

A similar method for assessing change in disparities using weighted least squares regression results is used. When a selected group's rate of change is at least 1% higher than the reference group's rate of change and this difference in rates of change is statistically significant, 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 and this difference in rates of change is statistically significant, we label the disparity as worsening. When the difference is less than 1% or not statistically significant, we label the disparity as static. As with trends, because of the addition of significance testing, this year's results cannot be compared with results in previous reports.

Figure H.5. Number and proportion of all quality measures for which disparities related to age, race, ethnicity, and income are improving, not changing, or worsening

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:**

o The gap in quality between adults age 65 and over and adults ages 18-44 improved (grew smaller) for about one-quarter of measures.

o Few disparities in quality of care related to race, ethnicity, or income showed significant improvement although the number of disparities that were getting smaller exceeded the number of disparities that were getting larger.

Figure H.6. Number and proportion of all access measures for which disparities related to age, race, ethnicity, and income are improving, not changing, or worsening

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.

■ **Almost no disparities in access to care are getting smaller:**

o The gap in access between Asians and Whites improved (grew smaller) for one-quarter of measures. Few other disparities in access to care showed improvement.

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

The third key function of the reports is to identify areas in greatest need of improvement. Potential problem areas can be defined by types of services and populations at risk. Pace of improvement varies across preventive care, acute treatment, and chronic disease management.

Figure H.7. Number and proportion of measure that are improving, not changing, or worsening, by type of quality measure

Key: n = number of measures.
Improving = Quality is going in a positive direction at an average annual rate greater than 1% per year.
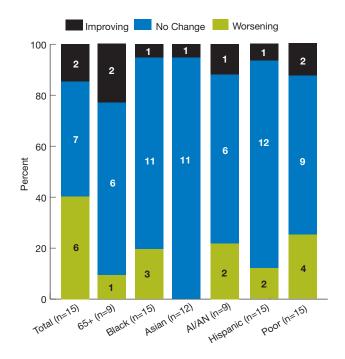**No Change** = Quality is not changing or is changing at an average annual rate less than 1% per year.
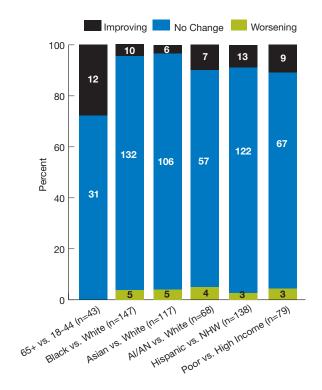**Worsening** = Quality is going in a negative direction at an average annual rate greater than 1% per year.
Note: Preventive care includes screening, counseling, and vaccinations; acute treatment includes hospital care for cancer, heart attack, and pneumonia; chronic disease management includes ambulatory care for diabetes, arthritis, and asthma and nursing home care for pressure sores and pain.

■ **Measures of acute treatment are improving; other measures are lagging:**

o About 60% of process measures and half of outcome measures showed improvement.

o Of the quality measures related to treatment of acute illness or injury, 77% showed improvement. In contrast, only about half of quality measures related to preventive care and chronic disease management showed improvement. Acute treatment includes a high proportion of hospital measures, many of which are tracked by the Centers for Medicare & Medicaid Services (CMS) and publicly reported. Hospitals often have more infrastructure to improve quality and to respond to performance measurement compared with providers in other settings.

Table H.2. Quality measures with the most rapid pace of improvement and deterioration

Quality Improving	Quality Worsening
Adult surgery patients who received prophylactic antibiotics within 1 hour prior to surgical incision	Children ages 19-35 months who received 3 doses of *Haemophilus influenzae* type B vaccine
Adult surgery patients who had prophylactic antibiotics discontinued within 24 hours after surgery end time	Maternal deaths per 100,000 live births
Hospital patients with pneumonia who received pneumococcal screening or vaccination	Postoperative pulmonary embolism or deep vein thrombosis per 1,000 surgical hospital discharges, adults age 18 and over
Hospital patients with heart attack who received percutaneous coronary intervention within 90 minutes of arrival	Adults age 40 and over with diagnosed diabetes who had their feet checked for sores or irritation in the calendar year
Hospital patients with pneumonia who received influenza screening or vaccination	Adults age 40 and over with diagnosed diabetes who received a hemoglobin A1c measurement in the calendar year
Hospital patients with pneumonia who had blood cultures collected before antibiotics were administered	Decubitus ulcers per 1,000 selected stays of 5 or more days, adults age 18 and over
Hospital patients with heart failure discharged home with written instructions or educational material	Long-stay nursing home residents with a urinary tract infection
Hospital patients with heart failure and left ventricular systolic dysfunction who were prescribed ACE inhibitor or ARB at discharge	Hospital admissions for short-term complications of diabetes per 100,000 population (ages 6-17, 18 and over)
Long-stay nursing home residents who were assessed for pneumococcal vaccination	Adults age 50 and over with fecal occult blood test in the past 2 years
Short-stay nursing home residents who were assessed for pneumococcal vaccination	Low-risk long-stay nursing home residents with loss of control of bowels or bladder

Key: ACE = angiotensin-converting enzyme; ARB = angiotensin receptor blocker.
Note: Blue = CMS Hospital Compare measures; green = CMS nursing home vaccination measures; light green = diabetes measures; gray = adverse events.

■ **Quality changes unevenly across measures:**

o Of the 10 quality measures that are improving at the fastest pace, 8 are CMS measures reported on Hospital Compare (blue) and 2 are CMS adult vaccination measures reported on Nursing Home Compare (green).

o Of the 10 quality measures that are worsening at the fastest pace, 3 relate to diabetes care (light green) and 4 relate to adverse events in health care facilities (gray).

The NHDR focuses on disparities related to race, ethnicity, and socioeconomic status. Table H.3 summarizes the disparities for each of these major groups tracked in the reports and for adults age 65 and over. For each group, it shows the measures where disparities are improving at the fastest rate and the measures where disparities favor the comparison group and are worsening.

Table H.3. Disparities that are changing over time

Groups	Disparities Improving	Disparities Worsening
65+ compared with 18-44	Cancer deaths per 100,000 population per year	
	Deaths per 1,000 adult hospital admissions with acute myocardial infarction	
	Prostate cancer deaths per 100,000 male population per year	
Black compared with White	Hospital admissions for congestive heart failure per 100,000 population	Maternal deaths per 100,000 live births
	Incidence of end stage renal disease due to diabetes per 100,000 population	Breast cancer diagnosed at advanced stage per 100,000 women age 40 and over
	Long-stay nursing home residents who were assessed for pneumococcal vaccination	
Asian compared with White	Hospital patients with pneumonia who received pneumococcal screening or vaccination	Children 0-40 lb for whom a health provider gave advice about using car safety seats
	Hospital patients with heart failure discharged home with written instructions	
	Hospital patients with pneumonia who received influenza screening or vaccination	
American Indian/ Alaska Native compared with White	Incidence of end stage renal disease due to diabetes per 100,000 population	Adults age 50 and over who ever received a colonoscopy, sigmoidoscopy, or proctoscopy
	Infant deaths per 1,000 live births, birth weight <1,500 grams	People with difficulty contacting their usual source of care over the telephone
	Patients who received surgical resection of colon cancer that included at least 12 lymph nodes pathologically examined	
Hispanic compared with Non-Hispanic White	Hospital admissions for congestive heart failure per 100,000 population	
	Hospital patients with pneumonia who received pneumococcal screening or vaccination	
	Hospital patients with pneumonia who received influenza screening or vaccination	
Poor compared with High Income	Hospital admissions for asthma per 100,000 population (2-17, 18-64, 65 and over)	Adults age 50 and over who ever received a colonoscopy, sigmoidoscopy, or proctoscopy
	Hospital admissions for long-term complications of diabetes per 100,000 population age 18+	Adults who did not have problems seeing a specialist they needed to see in the last year
	Patients who received surgical resection of colon cancer that included at least 12 lymph nodes pathologically examined	People without a usual source of care who indicated a financial or insurance reason for not having a source of care

Note: Blue = CMS publicly reported measures; light green = cancer measures; light gray = diabetes measures; gray = heart disease measures; green = access to care measures.

■ **Disparities also change unevenly across measures:**

    o Of the disparities that are improving, 6 are CMS publicly reported measures (blue), 4 relate to cancer care (light green), 3 relate to diabetes care (light gray), and 3 relate to heart disease (gray).

    o Of the disparities that favor the comparison group and are worsening, 3 relate to cancer care (light green) and 3 relate to access to care (green). Poor people experience the most disparities that are deteriorating, while no disparities affecting older adults or Hispanics are getting larger.

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 used the State Snapshots tool (statesnapshots.ahrq.gov) to examine variation across States. 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. Here, we use data from the 2010 State Snapshots to examine variation in quality and disparities across the States (Figure H.8 and Table H.4).

Figure H.8. Overall quality of care by State

Source: 2010 State Snapshots.
Note: States are divided into quartiles based on overall health care score.

■ **Overall quality of care differs across geographic regions:**

  o States in the New England (CT, MA, ME, NH, RI, VT) and Middle Atlantic (NJ, NY, PA) census divisions were most often in the top quartile (quartile 4).

  o States in the East South Central (AL, KY, MS, TN) and West South Central (AR, LA, OK, TX) divisions were most often in the bottom quartile (quartile 1).

  o Northeastern States (MA, ME, NH, NY) made up the majority of the best performers in preventive care while Midwestern States (IA, MN, WI) made up the majority of the best performers in chronic disease management.

  o Western States (MT, NM, NV, WY) made up the majority of the worst performers in preventive care while Southern States made up the majority of the worst performers in acute treatment (DC, LA, MS) and chronic disease management (KY, OK, TN, WV).

Table H.4. Top and bottom 5 States by type of care

	Preventive Care	Acute Treatment	Chronic Disease Management
Top 5 States	Delaware Maine Massachusetts New Hampshire New York	Florida Michigan Minnesota Pennsylvania South Carolina	Iowa Minnesota New Hampshire Vermont Wisconsin
Bottom 5 States	Indiana Montana Nevada New Mexico Wyoming	Alaska District of Columbia Louisiana Mississippi New Mexico	Kentucky Ohio Oklahoma Tennessee West Virginia

Source: 2010 State Snapshots.

The 2010 State Snapshots also examined disparities in health care related to race, ethnicity, and area income. Information about disparities at the State level is not available for many measures tracked in the reports and State Snapshots. For 29 AHRQ Quality Indicators, data on income-related disparities are available for 34 States and are shown below.

Figure H.9. Income-related disparities in quality of health care by State

Income-Related Disparity

- 1st Quartile (Biggest Disparity)
- 3rd Quartile
- 2nd Quartile
- 4th Quartile (Smallest Disparity)

Source: 2010 State Snapshots.
Note: States are divided into quartiles based on the quality of care received by residents of low-income neighborhoods relative to care received by residents of high-income neighborhoods. States shown in white have no data.

- Income-related disparities also differ across geographic regions:
  - o In the West South Central census division, two of three States with data (AR, OK) were in the top quartile for income-related disparities (quartile 4, fewest disparities). Two of four States with data (HI, OR) in the Pacific division were in the top quartile.
  - o In the South Atlantic division, four of six States with data (GA, MD, SC, VA) were in the bottom quartile for income-related disparities (quartile 1). Two of three States with data (IL, OH) in the East North Central division were in the bottom quartile.
  - o At the State level, there is little relationship between overall quality of care and income-related disparities.

Progress Is Uneven With Respect to National Priorities

In the 2010 Highlights, findings were summarized across eight priorities for quality improvement identified by the IOM for use until the Federal Government set national priorities for health care. With the passage of the Affordable Care Act of 2010, HHS was charged with identifying national priorities and developing and implementing a National Quality Strategy (NQS) to improve the delivery of health care services, patient health outcomes, and population health. The initial NQS, released in March 2011, is to pursue three broad aims: better care, healthy people/healthy communities, and affordable care and to focus initially on six priorities (HHS, 2011b). Therefore, in this year's Highlights, findings from the NHQR and NHDR are organized across these six new priorities:

- Making care safer.
- Ensuring person- and family-centered care.

- Promoting effective communication and care coordination.
- Promoting effective prevention and treatment of leading causes of mortality, starting with cardiovascular disease.
- Working with communities to promote wide use of best practices to enable healthy living.
- Making quality care more affordable.

The HHS *Action Plan To Reduce Racial and Ethnic Health Disparities* lists goals and strategies to move us toward the vision of "a Nation free of disparities in health and health care" (HHS, 2011a). While the action plan goes beyond the scope of the NHQR and NHDR, many of the strategies relate to health care and the NQS priorities and are discussed in that context. One critical strategy, increasing the availability and quality of data collected and reported on racial and ethnic minority populations, does not fit this framework and is addressed separately at the end of this section.

As in last year's report, we seek to go beyond problem identification to include information that would help users address the quality and disparities concerns we identify. To that end, we continue to 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 about providers who developed better ways to deliver health care. For each priority area, stories of successful innovations that yielded significant improvements in outcomes are displayed.[iii]

In addition, we recognize that accelerating the pace of health care quality improvement or disparities reduction will require the combined efforts of Federal, State, and private organizations. Hence, we have added examples of key Federal and State initiatives aimed at the six national priorities. By demonstrating that improvement is critical and can be achieved, we hope that these examples inspire others to act.

National Priority: Making Care Safer

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 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.

This NQS priority aligns well with the chapters on Patient Safety in the NHQR and NHDR. The NQS identifies eliminating hospital-acquired infections and reducing the number of serious adverse medication events as important opportunities for success in making care safer. The HHS Disparities Action Plan includes this priority under its strategies to reduce disparities in the quality of health care.

[iii] 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 in Patient Safety

Figure H.10. Number and proportion of measures that are improving, not changing, or worsening, hospital patient safety versus other hospital measures

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.

■ **Improvements in safety are lagging behind other hospital measures:**

o The reports track 26 safety measures related to healthcare-associated infections and other adverse events that can occur during hospitalization. Of these measures, 38% showed improvement. By comparison, among 16 hospital quality measures not related to safety, almost all demonstrated improvement over time.

Figure H.11. Number and proportion of hospital patient safety measures for which members of selected groups experienced better, same, or worse quality of care compared with reference group

Key: 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.

■ **Most disparities in patient safety mirror disparities in overall quality of care:**

o Racial and ethnic minorities experienced less safe care for about 40% of measures, similar to disparities in quality of care overall.

o Income-related disparities in patient safety were less common than income-related disparities in overall quality.

o Adults age 65 and over had higher rates of almost all patient safety events than adults ages 18-44 for all measures tracked.

Examples of Initiatives Making Care Safer

Federal: The **Partnership for Patients** is a new national patient safety and quality improvement initiative that has two goals: reducing preventable hospital-acquired conditions by 40%, and reducing 30-day hospital readmissions by 20%. The program is led by the CMS Center for Medicare and Medicaid Innovation (CMMI) and was established in April 2011. Up to $1 billion in CMS funds are expected to be available for the program, which aims to fund regional or State-level initiatives that will support numerous evidence-based patient safety and quality improvement projects (www.healthcare.gov/center/programs/partnership).

State: More than half of States have developed **adverse event reporting systems** to gather information about medical errors and serious complications of care. Most of these systems mandate reporting, require root cause analyses and corrective action plans for serious events, and make findings and aggregate data

available to the public (Rosenthal & Takach, 2007). Other States promote safer care by denying payment to providers for preventable adverse events. Building on CMS **nonpayment policies** under Medicare, 12 States have implemented policies to refuse payment by Medicaid and other public purchasers for specific hospital-acquired conditions or serious reportable events. As more States begin nonpayment policies for adverse events, focus is shifting to alignment of activities across payers (Rosenthal & Hanlon, 2009).

Provider: In the **Michigan Health & Hospital Association's** *Keystone: ICU* project, Johns Hopkins University partnered with 120 participating intensive care units (ICUs) to reduce bloodstream infections and ventilator-associated pneumonia. Each participating ICU assembled an improvement team to lead a comprehensive unit-based safety program to enhance the culture of patient safety. The program prevented many catheter-associated bloodstream infections, leading to more than 1,800 lives saved, more than 140,000 hospital days avoided, and at least $270 million in savings over a 5-year period (HCIE #2668).

National Priority: Ensuring Person- and Family-Centered Care

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.

This NQS priority aligns with chapters on Patient Centeredness in the NHQR and NHDR. The NQS identifies opportunities to ensure person- and family-centered care: integrating patient feedback on preferences, functional outcomes, and experiences of care into all care delivery; increasing use of electronic health records (EHRs) to capture the patient's voice and integrate patient-generated data; and routinely measuring patient engagement and self-management, shared decisionmaking, and patient-reported outcomes. The HHS Disparities Action Plan includes this priority under its strategies to increase the ability of the health care system to address disparities and to increase the diversity of health care and public health workforces.

Progress in Patient Centeredness

- **Patient centeredness is improving:**
    - o The NHQR and NHDR track 13 measures of patient perceptions of care, involvement in decisionmaking, and ability to get language assistance. Eleven of these measures show improvement over time (data not shown).

Figure H.12. Number and proportion of patient centeredness 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.

- **Most disparities in patient centeredness mirror disparities in overall quality of care:**
  - o Most racial and ethnic minorities experienced less patient-centered care for about 40% of measures, similar to disparities in quality of care overall.
  - o Income-related disparities in patient-centeredness were significant for 77% of measures and were more common than income-related disparities in overall quality.
  - o Adults age 65 and over had more patient-centered care than adults ages 18-44.

- **Workforce diversity is limited:**
  - o Beginning in 2006, the reports have tracked workforce diversity among physicians and surgeons, registered nurses, licensed practical and licensed vocational nurses, dentists, dental hygienists, dental assistants, pharmacists, occupational therapists, physical therapists, and speech-language pathologists. For almost all of these occupations, Whites and Asians are overrepresented while Blacks and Hispanics are underrepresented.
  - o Two exceptions were noted. Blacks are overrepresented among licensed practical and licensed vocational nurses while Hispanics are overrepresented among dental assistants. Of the health care occupations tracked, these two required the least amount of education and have the lowest median annual wages.

Examples of Initiatives Fostering Person- and Family-Centered Care

Federal: In the first large-scale initiative to include patient experience in quality reporting, CMS encouraged hospitals to collect and publicly report information using the **Hospital Consumer Assessment of Healthcare Providers and Systems** (HCAHPS) survey. The Affordable Care Act includes HCAHPS performance in calculating value-based incentive payments to hospitals and expands the use of patient experience information to assess physicians and other facilities, such as nursing homes (www.cms.gov/Hospital-Value-Based-Purchasing/). The **Health Profession Opportunities Grants** support education and training of low-income individuals in health care occupations that pay well and are expected to either experience labor shortages or be in high demand over the next 5 years (www.acf.hhs.gov/grants/open/foa/view/HHS-2010-ACF-OFA-FX-0126).

State: As part of the **Strategic Plan To Eliminate Health Disparities in New Jersey**, the State worked to improve language access. In collaboration with the Health Research and Educational Trust of New Jersey, bilingual hospital staff were trained to be medical interpreters. The Office of Minority and Multicultural Health supported training for community leaders to help interpret or act as liaisons for minority clients navigating the health care system. In response to increasing requests for information by Spanish speakers, the Bureau of Vital Statistics hired bilingual staff, added a Spanish customer service phone line, and translated their Web site and forms into Spanish (www.state.nj.us/health/omh/plan).

Provider: The **Howard University Diabetes Treatment Center** offers patients a free online personal health record to help monitor blood sugar and other clinical indicators, communicate with physicians between visits, and share health information. The program enhances levels of patient engagement in self-management and improves blood glucose control (HCIE #3081). The **University of California San Francisco Breast Care Center Decision Services Unit** offers a visit planning, recording, and summarizing service in which trained interns help patients brainstorm and write down a list of questions and concerns for their providers. The program improves patient-provider communication and patient self-efficacy and decisionmaking and reduces decisional conflict (HCIE #95).

National Priority: Promoting Effective Communication and Coordination of Care

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.

This NQS priority aligns well with the chapters on Care Coordination in the NHQR and NHDR. The NQS identifies several important opportunities for success in promoting effective communication and coordination of care: reducing preventable hospital admissions and readmissions, preventing and managing chronic illness and disability, and ensuring secure information exchange to facilitate efficient care delivery. The HHS

Disparities Action Plan includes this priority under its strategies to reduce disparities in access to primary care services and care coordination.

Progress in Care Coordination

Data and measures to assess care coordination are limited. Hence, an effort to summarize across this domain would be incomplete. Instead, we show findings for selected measures.

- **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 within 30 days for a condition related to heart failure. Considerable variation across States and by race is also observed.
- **Preventable emergency department visits:** In patients with asthma, emergency department visits are five 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.
- **Transitions of care:** Among patients hospitalized for heart failure, the quality of patient discharge instructions is improving. However, race-related disparities are observed.
- **Medication information:** Most providers ask patients about medications prescribed by other providers, and rates are improving. However, age- and insurance-related disparities are observed. Moreover, only one-third of hospitals currently support the electronic exchange of medication information with ambulatory care providers outside their own system.

Examples of Initiatives Promoting More Effective Care Coordination

Federal: The **Health Information Technology for Economic and Clinical Health** (HITECH) Act promotes the adoption of health information technology, including EHRs and electronic health information exchange. Eligible providers can receive incentive payments when they adopt and meaningfully use certified EHR technology to make needed clinical information accessible to all providers in a more complete and timely fashion. Altogether, more than $27 billion in incentive payments is available (www.cms.gov/ehrincentiveprograms/). The HHS **Initiative on Multiple Chronic Conditions** seeks to improve the quality of life and health status of individuals with multiple chronic conditions consistent with the Strategic Framework on Multiple Chronic Conditions issued in December 2010. This initiative promotes care coordination across multiple chronic conditions by fostering systems change, empowering individuals, equipping providers with tools and information, and enhancing research (www.hhs.gov/ash/initiatives/mcc/).

State: The **Assuring Better Child Health and Development Learning Collaborative** brings together five States to improve linkages between pediatric primary care providers and community resources for young children. Arkansas, Illinois, Minnesota, Oklahoma, and Oregon are working to maximize use of staff to ensure effective linkages, integrating data across programs, monitoring quality related to referrals, and supporting cross-system planning (Hanlon & Rosenthal, 2011). In **Rhode Island's Pediatric Practice Enhancement Project**, trained parent consultants work in pediatric practices. Providers refer families with children with special health care needs requiring care coordination. Parent consultants then work to match these families with appropriate community resources and ensure that needed services are received (Silow-Carroll, 2009).

Provider: When referring patients to the **Northwestern Memorial Hospital Emergency Department**, community physicians send an electronic handoff note with pertinent clinical information. The note is entered into the EHR system and made available to emergency providers. Both referring and emergency physicians believe the system improves care coordination and quality of care (HCIE #3107). At the **Chelsea and Westminster Hospital's Sexual Health Clinics**, standardized text messages are used to relay test results and instructions. The program led to quicker diagnosis and treatment for those testing positive and reduced staff time spent on followup care, allowing clinics to handle more new cases (HCIE #3019).

National Priority: Promoting Effective Prevention and Treatment of Leading Causes of Mortality, Starting With Cardiovascular Disease

Providing care to patients for whom the expected benefits, based on scientific evidence, exceed the expected risks is at the heart of health care. Focusing national quality improvement efforts on diseases that kill the most Americans is logical and places cardiovascular disease at the top of the list. Moreover, knowledge of how to prevent and treat heart disease and stroke is well documented.

This NQS priority aligns well with the sections on cardiovascular disease in the Effectiveness chapters in the NHQR and NHDR. The NQS identifies several important opportunities for success in promoting effective prevention and treatment of cardiovascular disease: increasing blood pressure control in adults, reducing high cholesterol levels in adults, increasing the use of aspirin to prevent cardiovascular disease, and decreasing smoking among adults. The HHS Disparities Action Plan includes this priority under its strategies to reduce disparities in the quality of health care.

Progress in Care for Cardiovascular Disease

- **Cardiovascular care has improved dramatically:**
    - o Measures are retired from the reports when performance exceeds 95%. Of the dozen report measures that have been retired in the past 3 years, almost all related to the management of cardiovascular risk factors or disease.
    - o Of the seven remaining cardiovascular disease quality of care measures that could be trended, all showed improvement (data not shown).

Figure H.13. Number and proportion of cardiovascular disease measures for which members of selected groups experienced better, same, or worse quality of care compared with reference group

Key: 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.

■ **Racial and ethnic disparities in cardiovascular care are less common:**

   o Racial and ethnic minorities often experienced better cardiovascular care than Whites. For example, Blacks received better quality care than Whites for more than half of cardiovascular measures.

   o Income-related disparities in cardiovascular care were significant for about 60% of measures, which is more than income-related disparities in overall quality.

Examples of Initiatives Promoting Effective Prevention and Treatment of Cardiovascular Disease

Federal: Million Hearts™ is a campaign led by CMS and the Centers for Disease Control and Prevention (CDC) to prevent a million heart attacks and strokes over the next 5 years. The campaign focuses and coordinates cardiovascular disease prevention activities such as improving control of high blood pressure and high cholesterol, using aspirin to prevent cardiovascular events in high-risk populations, reducing sodium and artificial trans fat intake, and quitting smoking (millionhearts.hhs.gov). The HHS Office on Women's Health **Make the Call, Don't Miss a Beat** campaign educates women about the signs and symptoms of a heart attack and encourages them to call 911 first (www.womenshealth.gov/heartattack/). The Know Stroke campaign led by the National Institute of Neurological Disorders and Stroke educates the public about the signs and symptoms of stroke and the importance of seeking emergency care (stroke.nih.gov). The associated **Brain Attack Coalition** promotes best practices to prevent and combat stroke (www.stroke-site.org).

State: The **Ohio Plan To Prevent Heart Disease and Stroke** outlines an approach to reducing the burden of cardiovascular disease through lifestyle improvement, risk factor reduction, acute care, rehabilitation, and surveillance. Objectives include increasing State laws, partners, and schools that promote physical activity, healthy eating, and a smoke-free environment; increasing work site programs to control high blood pressure and cholesterol; improving prehospital and inpatient treatment of cardiovascular events; increasing facilities that provide cardiac and stroke rehabilitation; and increasing reporting of and access to data related to quality and disparities (Edwards, et al., 2009).

Provider: In the **HealthyHeartClub.com** program, pharmacists help patients reduce cardiovascular risk and reach goals related to diet, physical activity, and medication adherence. Support includes group classes, e-mail check-ins, and Web tools to track progress toward goals. Participants have increased physical activity and reduced weight and blood pressure (HCIE #3182). For older patients after a heart attack or bypass surgery, **Massachusetts General Hospital** and **University of California San Francisco** combine followup phone calls from an advanced practice nurse with home visits from a trained elder to encourage compliance with medications and lifestyle changes. The program improves medication adherence and reduces readmissions due to cardiac-related complications (HCIE #1823).

National Priority: Working With Communities To Promote Wide Use of Best Practices To Enable Healthy Living

Population health is influenced by many factors, including genetics, lifestyle, health care, and physical and social environments. The NHQR and NHDR 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. Still, 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.

This NQS priority aligns best with the lifestyle modification sections in the Effectiveness chapters in the NHQR and NHDR. However, screening for cancer and cardiovascular risk factors are found in the Cancer and Cardiovascular Disease sections of the chapter, respectively. Childhood vaccinations are found in the Maternal and Child Health section while adult vaccinations are found in the section on Respiratory Diseases. The NQS identifies several important opportunities for success in promoting healthy living: increasing the provision of clinical preventive services for children and adults and increasing the adoption of evidence-based interventions to improve health. The HHS Disparities Action Plan includes this priority under its strategies to reduce disparities in population health by increasing the availability and effectiveness of community-based programs and policies.

Progress in Healthy Living

Figure H.14. Number and proportion of measures that are improving, not changing, or worsening, immunizations versus screening and counseling

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.
Note: Screening includes screening for cancer and high cholesterol; counseling includes advice from a provider about exercise and diet.

- **Immunization rates are improving while clinical preventive services are lagging:**
  - o Trends could be assessed for 6 childhood and 11 adult vaccination measures. Of these, 59% were improving, similar to health care quality overall (56%).
  - o Trends could be assessed for 6 screening and 12 counseling services related to healthy living. Of these measures, 39% showed improvement, a lower rate than health care quality overall.

Figure H.15. Number and proportion of healthy living 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.

- **Most disparities in healthy living mirror disparities in overall quality of care:**
  - o Most racial and ethnic minorities received less preventive care for about 30% of measures, similar to disparities in quality of care overall.
  - o Income-related disparities in healthy living were significant for 50% of measures, similar to income-related disparities in overall quality.

Examples of Initiatives Promoting Healthy Living

Federal: The **National Prevention Strategy** was released by the Surgeon General in June 2011. This national plan seeks to increase the number of Americans who are healthy at every stage of life by creating healthy and safe community environments, improving clinical and community preventive services, empowering people to make healthy choices, and eliminating health disparities (www.healthcare.gov/prevention/nphpphc/strategy/). The First Lady's **Let's Move! Campaign** is combating the epidemic of childhood obesity by providing schools, families, and communities with tools to help children be more active, eat better, and get healthy. A Presidential Task Force on Childhood Obesity reviewed all Federal policies related to child nutrition and physical activity and developed a national action plan to reduce the prevalence of childhood obesity to 5% by 2030 (www.letsmove.gov).

State: The **Maryland Minority Outreach and Technical Assistance** program uses tobacco settlement funds to support activities to prevent and control tobacco use in minority communities. Grantees worked with local

health departments and faith-based groups to increase awareness and form alliances to prevent smoking. Participants attended tobacco coalition meetings and health fairs and received referrals to the Maryland Quitline and local health department smoking cessation programs (dhmh.maryland.gov/hd/mota).

Provider: The **Healthy Weight Collaborative** is a partnership of the National Initiative for Children's Healthcare Quality and the Health Resources and Services Administration (HRSA). It brings together 10 teams of primary care, public health, and community sector participants to implement evidence-based interventions to achieve communitywide healthy weight and health equity. The collaborative will use the Breakthrough Series methodology to spread successful change rapidly (www.collaborateforhealthyweight.org). Eight primary care practices of the **Practice Partner Research Network** adopted standing orders for preventive care services. During visits, nonphysician staff discuss preventive care needs with patients and then arrange for their provision. The program led to increased receipt of preventive services (HCIE #3140).

National Priority: Making Quality Care More Affordable

Access to care is defined as "the timely use of personal health services to achieve the best health outcomes." Many Americans have poor access to care because they cannot afford to purchase health insurance or pay for services not covered by their insurance. Individuals with limited access to care receive worse quality of care and experience poor health outcomes. 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. The NHQR and NHDR examine disparities in care related to insurance status, usual source of care, and financial barriers to care.

Inefficiencies in the health care system contribute to the high cost of health care. Some therapies are given even when they are unlikely to benefit the patient. Diagnostic tests and procedures are repeated when original results are misplaced. 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 make health care unaffordable.

This NQS priority cuts across the Access and Efficiency chapters in the NHQR and NHDR. The affordability of health care is covered in the Access chapter while the inefficiencies that raise health care costs are covered in the Efficiency chapter. The NQS identifies several important opportunities for success in making quality care more affordable: building cost and resource use measurement into payment reforms, establishing common measures to assess the cost impact of new programs and payment systems, reducing the amount of health care spending that goes to administrative burden, and making costs and quality more transparent to consumers. The HHS Disparities Action Plan includes this priority under its strategies to reduce disparities in health insurance coverage and access to care.

Progress in Affordable Health Care

Data and measures to assess health care affordability are limited. Hence, an effort to summarize across this domain would be incomplete. Instead, we show findings for selected measures.

- Financial burden: Individuals with private nongroup insurance are 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 are five times as likely as high-income individuals

to have high health care expenses. Of individuals who report that they were unable to get or delayed in getting needed medical care, dental care, or prescription medicines, two-thirds indicate a financial or insurance cause of the problem. Hispanics and non-Hispanic Blacks are more likely than non-Hispanic Whites to report a financial or insurance problem.

- Usual source of care: Of individuals without a usual source of care, 18% indicate a financial or insurance reason for not having one. Poor individuals are five times as likely as high-income individuals and Hispanics are twice as likely as non-Hispanic Whites to report financial and insurance reasons for not having a usual source of care.

- Inappropriate medication use: Inappropriate medication use is wasteful of resources. Inappropriate medication use among older adults has been stable over time. In addition, no significant disparities among groups persist over the observed study period.

- Potentially harmful preventive services with no benefit: A preventive service without benefit tracked in the NHQR and NHDR is prostate-specific antigen testing of men age 75 and over to screen for prostate cancer. During the time measured, there has been a slight increase in testing.

- Potentially avoidable hospitalization costs: While not all potentially avoidable hospitalizations can be prevented, rates can be reduced through better primary care. In total, potentially avoidable hospitalizations cost Americans $26 billion in 2008. If rates could be reduced to the achievable benchmark rate (the rate achieved by the best performing State; see Chapter 1 for benchmarking methods), $11 billion could be saved per year.

Examples of Initiatives Making Care More Affordable

Federal: Individuals and small businesses buying health insurance often have few options. The Affordable Care Act creates State-based **Health Insurance Exchanges** that will lower costs and improve health care quality by creating a more transparent and competitive marketplace. Insurers in exchanges will provide information on price and quality, promoting competition. By pooling people together, exchanges will also give individuals and small businesses purchasing power similar to that of large businesses (HHS Press Office, 2011).

State: As States face tightening budgets, some have reformed payment. **Minnesota bundles payments** for seven common "baskets of care" (Rosenthal, et al., 2010). Other States have begun to scrutinize health care costs, including costs associated with disparities. The **Virginia Health Equity Report** includes an examination of excess costs associated with different disparities. Metrics include direct costs of hospital care and indirect costs of morbidity and premature mortality. A key finding is that disparities cost Virginia huge sums of money each year (www.vdh.state.va.us/healthpolicy/2008report.htm).

Provider: Intermountain Healthcare developed a system to alert labor and delivery charge nurses when medical indications do not support early elective induction and to cancel these procedures. Performance reports are also shared with obstetric providers. The program greatly reduced early elective induction as well as neonatal complication rates and saved $1.7 million over 5 years (HCIE #3161). **Via Christi Health** developed a telepharmacy program for 14 hospitals. The program allows offsite pharmacists to review medication orders and patient medical records via computer and authorize hospital pharmacy systems to dispense the medications. Pharmacists cover multiple hospitals simultaneously, expanding hours of pharmacy services. The program reduced order processing times and saves $1 million per year.

National Priority: Increasing the Availability and Quality of Data Collected and Reported on Racial and Ethnic Minority Populations

Identifying problems, targeting resources, and designing interventions all depend on reliable data. Unfortunately, data on underserved populations are often incomplete. Some data sources do not collect information to identify specific groups. Other data sources collect this information, but the numbers of individuals from specific groups included are too small to allow reliable estimates. The HHS Disparities Action Plan includes this priority as part of its goal to advance scientific knowledge and innovation.

Progress in Disparities Data

In the 2006 NHDR, we presented a chart showing the percentage of core quality measures for which an estimate that met our reliability criteria could not be generated for single-race Asians, Native Hawaiians and Other Pacific Islanders, AI/ANs, multiple-race individuals, Hispanics, and poor people. Except for one measure related to language assistance, all measures provided reliable estimates for Blacks, so they were not shown.[iv] Below we include the percentage of all quality measures in the 2011 reports for which a reliable estimate could not be generated for these same groups. Again, except for the one measure of language assistance, reliable estimates could be generated for Blacks for all other measures, so they are not shown.

Figure H.16. Percentage of quality measures in the 2006 and 2011 reports for which a reliable estimate could not be generated

Key: NHOPI = Native Hawaiian or Other Pacific Islander; AI/AN = American Indian or Alaska Native.

[iv]The measure is the percentage of adults with limited English proficiency and a usual source of care who had language assistance.

- Data on disparities are improving but still suboptimal:
  - o The percentage of quality measures that could not be used to assess disparities decreased for all groups.
  - o For Native Hawaiians and Other Pacific Islanders and multiple race individuals, reliable estimates were not available for more than half of the measures, making any assessment of disparities incomplete. Reliable estimates for AI/ANs and poor populations also could not be generated for a large percentage of measures.

Examples of Initiatives Increasing Data on Racial and Ethnic Minority Populations

Federal: The **Affordable Care Act** requires that all federally funded health programs and population surveys collect and report data on race, ethnicity, and primary language and supports use of data to analyze and track health disparities (Andrulis, et al., 2010). To improve the quality of data collected in population surveys, HHS published **Data Standards for Race, Ethnicity, Sex, Primary Language, and Disability** in October 2011 (Office of Minority Health, 2011). New standards for race and ethnicity expand upon but roll up to the 1997 Office of Management and Budget data collection standards (minorityhealth.hhs.gov/templates/content.aspx?ID=9227&lvl=2&lvlID=208). To strengthen data collection in Medicaid and Children's Health Insurance Programs, HHS evaluated these programs and recommended improvements in the report **Approaches for Identifying, Collecting, and Evaluating Data on Health Care Disparities in Medicaid and CHIP**. Recommendations include aligning the Medicaid Statistical Information System, Medicare Current Beneficiary Survey, and Consumer Assessment of Healthcare Providers and Systems with the new data standards (www.healthcare.gov/law/resources/reports/disparities09292011a.pdf).

State: In **Massachusetts**, all acute care hospitals are required to collect information on race and ethnicity from every patient with an inpatient stay or emergency department visit. Hospitals must use a standardized set of race categories as well as 31 ethnicity categories, and the State provides a tool to assist with collection (Weinick, et al., 2007). The **Wisconsin Health Care Information Section** has collaborated with various stakeholders to improve collection of information on race and ethnicity. It worked with AI/AN Tribes and the State's cancer database to cross-reference tribal clinic data. It also worked with a leading Hmong organization to distribute a patient brochure in English and Hmong highlighting the importance of reporting ethnicity to hospitals (Hanlon & Raetzman, 2010).

Provider: **Aetna** began collecting data on race and ethnicity from members in 2002, the first major health plan to do so. Information is collected electronically and on paper forms. More than 60 million Aetna members have provided data on race, ethnicity, and primary language. The **Alliance of Chicago Community Health Services** developed an EHR that merges clinical data with standardized race and ethnicity data stored in the practice management system. This allows assessments of disparities across the four participating community health centers (IOM, 2009).

Summary Across National Priorities and Next Steps

Table H.5. Summary of progress on national priorities

Making Progress	Progress Lagging	Lacking Sufficient Data
Ensuring Person- and Family-Centered Care	Making Care Safer	Promoting Effective Care Coordination
Promoting Effective Prevention and Treatment of Cardiovascular Disease	Promoting Healthy Living	Making Quality Care More Affordable
	Increasing Data on Racial and Ethnic Minority Populations	

- **Making Care Safer:** Most measures improving but more slowly than other hospital measures.
- **Ensuring Person- and Family-Centered Care:** Quality generally high; most measures improving.
- **Promoting Effective Prevention and Treatment of Cardiovascular Disease:** Quality generally high; almost all measures improving.
- **Promoting Healthy Living:** Most measures improving, but screening and counseling about lifestyle modification improving more slowly than other quality measures.
- **Promoting Effective Care Coordination and Making Quality Care More Affordable:** Measures and data are limited; more information is needed to assess performance.
- **Increasing Data on Racial and Ethnic Minority Populations:** Availability of data is improving slowly but data are still insufficient to assess disparities for many groups.
- **Disparities:** Persistent in all national priorities.

Critical steps to advance the NQS and achieve further gains on the priorities include stakeholder engagement, agency-specific quality improvement plans, and harmonization and alignment of metrics for ongoing benchmarking and reporting of progress.

Stakeholder Engagement and Goal Setting

Legislation requires the NQS to be shaped by input from stakeholders wielding collective national influence to ensure a nationally achievable, impact-oriented strategy. A large focus over the past year has been work by the National Quality Forum (NQF) to convene the multistakeholder National Priorities Partnership (NPP), a partnership of 48 public-and private-sector partners. NPP provided collective input on specific goals, measure concepts with illustrative measures, and highest value strategic opportunities to accelerate improvement across all priorities to NQF, which wrote the draft report. Released in September 2011, the final report, *Input to the Secretary of Health and Human Services on Priorities for the National Quality Strategy* (NPP, 2011), provides valuable suggestions for moving forward. Work over the coming year will include alignment of efforts on specific goals, measures, and strategic opportunities.

HHS also convened the Interagency Working Group (IWG), as mandated by the ACA, for its inaugural meeting in March 2011. The IWG, composed of representatives from 24 Federal agencies with quality-related missions, is responsible for coordinating with private-sector stakeholders and aligning Federal and State efforts to eliminate duplication of quality-related initiatives. Primary activities of the IWG will be to

share experiences and discuss ways to leverage activities across private and Federal-level initiatives. In the coming months, the IWG will review the recommendations of the NPP and will identify a set of discrete and actionable short- and long-term goals, with common metrics where possible. These goals will set the stage for corresponding goals, strategies, and timelines created by Federal agencies and States, and thus will require applicability, feasibility, and relevance to a broad audience of diverse stakeholders. The IWG will also build upon its initial observations regarding the need to align efforts on chronic disease care management, health information technology implementation, disparities, and patient safety.

Agency-Specific Plans

HHS will coordinate with Federal agencies to ensure their agency-specific plans, as required by Section 3011 of the ACA, align to the overarching NQS goals. HHS created a template to guide agencies in the development of these plans, with broad, recommended categories to create consistency across the plans and ensure alignment with the NQS. Agencies will be asked to explain how their own principles, priorities, and aims correspond with those of the NQS; elaborate on their existing and future efforts to implement the NQS; and discuss the methodology for evaluating these efforts. The harmonization of these agency-specific plans that will ensure that relevant agencies' activities support rather than conflict with the NQS.

Some agencies have begun incorporating the NQS into their strategic planning and programmatic activities. The Substance Abuse and Mental Health Services Administration (SAMHSA) developed a draft National Behavioral Health Quality Framework (NBHQF), incorporating two rounds of public comments, and is in the process of identifying and finalizing a set of core measures. The NBHQF successfully aligns SAMHSA's mission with the NQS and retains the three aims of NQS as an overarching guideline, while outlining six unique priorities that parallel those in the NQS. In this document, SAMHSA defines its role in fighting national substance abuse, explains how its efforts directly align with the aims of NQS, and illustrates how its own priorities will advance the quality of care in behavioral health. The NBHQF provides a model that HHS will leverage as an example for future agency-specific plans and demonstrates a successful approach for executing the aims of the NQS while achieving measurable improvement across all six priority areas.

Harmonization and Alignment of Metrics

The National Healthcare Quality and Disparities Reports provide an initial set of benchmarks on the six priorities. However, sufficient measures and data are lacking for several priority areas. Over time, new metrics will be developed and current metrics used to track progress on priorities will evolve as HHS aligns, harmonizes, and consolidates measures for evaluating major programmatic initiatives among the various agencies. Minimizing the burden of data collection while supporting an appropriate infrastructure for collecting data and for analyzing and reporting performance will require efforts among all stakeholders.

Conclusion

Improving quality and reducing disparities require measurement and reporting, but these are not the ultimate goals of the NHQR, NHDR, National Quality Strategy, or Disparities Action Plan. 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 ninth NHQR and NHDR, AHRQ stands ready to contribute to efforts that encourage and support the development of national, State, tribal, and local 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. These reports begin to track the success of the National Quality Strategy and the HHS Disparities Action Plan.

We need to improve access to care, reduce disparities, and accelerate the pace of quality improvement, especially in the areas of preventive care and safety. More data are needed to assess progress in care coordination and efficiency. 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, 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.

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Chapter 1. Introduction and Methods

In 1999, Congress directed the Agency for Healthcare Research and Quality (AHRQ) to produce an annual report 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 (HHS) 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 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] Titled the *National Healthcare Disparities Report* (NHDR), this report examines disparities in health care received by designated priority populations. 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 first NHQR and NHDR were significantly shaped by several Institute of Medicine (IOM) reports. *Crossing the Quality Chasm* (IOM, 2001) and *To Err Is Human* (Kohn, et al., 2000) raised awareness about gaps in the quality of health care and patient safety. The extensive literature review included in the IOM report *Unequal Treatment* (IOM, 2003) drew attention to disparities in the care rendered to racial and ethnic populations, low-income populations, and other vulnerable groups.

Before the publication of the first reports, AHRQ tasked the IOM with developing a vision for the two reports. With support from an HHS Interagency Work Group and AHRQ's National Advisory Council, AHRQ has designed and produced the NHQR and NHDR since 2003.

Changes to the Reports

Over the years, AHRQ introduced several refinements to the NHQR and NHDR measure set and methodology. These include the following:

- 2004: Goal of the reports was expanded to include tracking of the Nation's quality improvement progress.
- 2005: Reports introduced a set of core measures and a variety of new composite measures.
- 2006: Data, measures, and methods were improved; databases and measures were added; and methods for quantifying and tracking changes in health care were refined.
- 2007: Chapter on health care efficiency was launched.
- 2008: Chapter on patient safety was expanded.
- 2009: New sections were included on lifestyle modification, healthcare-associated infections, and care coordination.

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With rapid changes in health care, in 2008, AHRQ commissioned the IOM to review past reports and offer recommendations for enhancing future reports and associated products. Among the recommendations offered in *Future Directions for the National Healthcare Quality and Disparities Reports* (IOM, 2010), the IOM proposed that AHRQ report on progress in areas expected to yield the greatest gains in health care quality. These included patient and family engagement, population health, safety, care coordination, palliative care, overuse of services, access to care, and health system infrastructure.

As recommended, the 2010 reports aligned measures according to these priority areas. As also suggested by the IOM, the reports introduced measure-specific benchmarks that reflected the highest level of performance documented for a measure.

Pursuant to the provisions of the Patient Protection and Affordable Care Act of 2010,[iii] in 2011, the Secretary of HHS submitted a report to Congress titled *National Strategy for Quality Improvement in Health Care* (National Quality Strategy). This report set priorities to advance three quality improvement aims: better care, healthy people, and affordable care. Six priority areas were identified as a means to achieve the quality improvement aims:

- Making sure care is safer by reducing harm in the delivery of care.
- Ensuring that each person and his or her family members are engaged as partners in their care.
- Promoting effective communication and coordination of care.
- Promoting the most effective prevention and treatment practices for the leading causes of mortality, starting with cardiovascular disease.
- Working with communities to promote wide use of best practices to enable healthy living.
- Making quality care more affordable for individuals, families, employers, and governments, by developing and spreading new health care delivery models.

The 2011 NHQR and NHDR align measures according to the National Quality Strategy in an effort to inform policymakers, the public, and other stakeholders of the Nation's progress in achieving National Quality Strategy aims. The National Quality Strategy priorities considerably overlap with those proposed by the IOM. While the 2011 reports introduce several measures to address the National Quality Strategy priorities, the organization of the 2011 NHQR and NHDR is similar to that used in 2010. In addition to the change in framework, the 2011 NHQR and NHDR introduce several measures and major enhancements to the methods by which trends are estimated. These enhancements are discussed below in greater detail.

Organization of the NHQR and NHDR

The NHQR and NHDR are designed as chartbooks that contain data on more than 250 health care quality measures from more than 45 databases. Measures in these reports are selected with guidance from the AHRQ Interagency Work Group, an advisory body of representatives from across many HHS agencies. Measures represented in these reports are among the most important and scientifically supported measures. Together, these measures 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.

[iii] Public Law 111-148.

The NHQR and NHDR are complementary reports and, with few exceptions, are similarly organized. 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. Report chapters include:

Highlights, which immediately precede the current chapter, combine broad sets of measures to offer a high-level overview of the progress that has been made in advancing health care quality and reducing disparities in the United States. The Highlights chapter incorporates findings from both the NHQR and NHDR, and the same Highlights chapter is used in both reports.

Chapter 1: Introduction and Methods provides background on the NHQR and NHDR and modifications to the reports that have occurred over time. This chapter includes measures that have been added or retired from the measures list, along with an overview of the methods used to generate estimates, measure trends, and examine disparities.

Chapter 2: Effectiveness examines prevention, treatment, and outcomes for a range of conditions or population groups. The 2011 reports are organized around several clinical areas: cancer, cardiovascular disease, chronic kidney disease, diabetes, HIV and AIDS, maternal and child health, mental health and substance abuse, musculoskeletal disease, and respiratory disease. 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. The section on musculoskeletal disease is new to the reports, as are measures related to adolescent health.

Chapter 3: Patient Safety tracks safety within the hospital setting. Among the areas examined are healthcare-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. Among the measures reported in this chapter are the ability to get care when the patient needs it and emergency department wait times.

Chapter 5: Patient Centeredness examines individual 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 6: Care Coordination presents data to assess the performance of the U.S. health care system in coordinating care across providers or services. Care coordination is measured, in part, using readmission measures as well as measures of success in transitioning across health care settings.

Chapter 7: Efficiency is often assessed by how well the health care system promotes quality, affordable care, and appropriate use of services. The emphasis in this chapter is on overuse of health services, as measures representing misuse or underuse overlap with other sections of the report and are included in various chapters.

Chapter 8: Health System Infrastructure explores the capacity of health care systems to support high-quality care. Most measures of health system infrastructure were assessed on the basis of region or provider characteristics. Infrastructure measures, which are primarily structural measures of quality, include adoption of computerized data systems and the supply of selected health care professionals. The 2011 reports include

a new section that includes structural, process, and outcome measures to examine the quality of the health care safety net. Among the areas addressed in this new section are the magnitude of underserved populations in health professional shortage areas (HPSAs) and the performance of federally qualified health centers.

Chapter 9: Access measures cut across several priority areas and include 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.

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, including racial and ethnic minorities, low-income populations, older adults, residents of rural areas and inner cities, and individuals with disabilities or special health care needs.

Appendixes are available online for both the NHQR and NHDR at www.ahrq.gov/qual/qrdr11.htm. These 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.

Table 1.1 provides a crosswalk between the National Quality Strategy priorities and the report chapters. Chapter 10, Priority Populations, addresses all six priorities.

Table 1.1. Relationship of NHQR and NHDR to the National Quality Strategy

National Quality Strategy Priorities	NHQR and NHDR Chapters Addressing Priority
Making sure care is safer by reducing harm in the delivery of care	Chapter 3: Patient Safety
Ensuring that each person and his or her family members are engaged as partners in their care	Chapter 5: Patient Centeredness
Promoting effective communication and coordination of care	Chapter 6: Care Coordination
Promoting the most effective prevention and treatment practices for the leading causes of mortality, starting with cardiovascular disease	Chapter 2: Effectiveness, Cardiovascular Disease
Working with communities to promote wide use of best practices to enable healthy living	Chapter 2: Effectiveness, Lifestyle Modification
Making quality care more affordable for individuals, families, employers, and governments, by developing and spreading new health care delivery models	Chapter 7: Efficiency Chapter 9: Access

Measure Set for the 2011 NHQR and NHDR

The 2011 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. "Supporting measures" are included in summary statistics and may be presented to complement core measures in key areas. Often, data are unavailable to track these measures on an annual basis. In other cases, supporting measures may not have been as rigorously evaluated as core measures, but they are still useful in characterizing the performance of the health care system.

Core Measures

In 2005, the Interagency Work Group selected core measures from the full measure set. Consistency in core measures enables AHRQ to monitor trends over time to identify areas for which health care is improving or getting worse. 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. Examples of alternating measures include the set of measures focusing on breast cancer and colorectal cancer. While measures are tracked annually, breast cancer measures are presented in odd calendar years; these measures are contained in the 2011 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.

New Measures

With the assistance of the Interagency Work Group, each year AHRQ reviews the NHQR and NHDR measures list to identify areas where additional information on the performance of the health care system is needed. Suitability of a measure for reporting may be based on the adequacy of data used to generate the measure, extent to which the measure has been scientifically tested, and acceptance of the measure by relevant stakeholders. The 2011 reports incorporate several new measures, many of which correspond to priorities identified in the recently released Healthy People 2020 report. These measures, which are listed in Table 1.2, were presented to and approved by the members of the Interagency Work Group for inclusion in the 2011 reports.

Table 1.2. New measures in NHQR/NHDR, 2011

Chapter	Measures
Effectiveness	**Chronic kidney disease** • Nephrology care before kidney failure **Diabetes** • Kidney failure due to diabetes **HIV and AIDS** • People who had an HIV test outside of blood donation **Maternal and child health** • Adolescents who had a wellness checkup in the past 12 months • Adolescents given meningococcal vaccine • Adolescents screened for chlamydia **Mental health and substance abuse** • Emergency treatment for mental illness or substance abuse **Musculoskeletal disease:** • Arthritis education among adults with arthritis • Counseling about physical activity among adults with arthritis • Counseling about weight reduction among overweight adults with arthritis
Patient Safety	• Surgical Care Improvement Project (SCIP) composite[iv] • Central line-associated bloodstream infections in pediatric and neonatal intensive care units
Health System Infrastructure	**Electronic Medical Records in Home Health and Hospice Agencies** • Providers of home health or hospice care with electronic medical records (EMRs) that used selected EMR components: patient demographics, clinical notes, clinical decision support, and computerized physician order entry

Retired Measures

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 to a significant degree, including them in the measure set creates a ceiling effect that may distort quantification of rate of change over time. Each year, measures for which performance has reached 95% are retired. 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%.

[iv] Measures included in this composite are: (1) surgery patients who were given an antibiotic at the right time, (2) surgery patients who were given the right kind of antibiotic to help prevent infection, (3) surgery patients whose preventive antibiotics were stopped at the right time, (4) heart surgery patients whose blood sugar is kept under good control in the days right after surgery, (5) surgery patients needing hair removed from the surgical area before surgery who had hair removed using a safer method, (6) surgery patients whose doctors ordered treatments to prevent bloods clots after certain types of surgeries, (7) patients who got treatment at the right time to help prevent blood clots after certain types of surgery, and (8) surgery patients on beta blocker therapy prior to admission who received a beta blocker during the preoperative period.

Measures may also be retired if a more suitable measure is identified. Suitability is determined on the basis of scientific testing, measure acceptance, and availability of valid and reliable data to construct the measure.

Measures retired in 2011 include:

- Receipt of angiotensin-converting enyzme (ACE) inhibitor for heart attack.
- Adult hemodialysis patients with adequate dialysis (urea reduction ratio 65% or greater).
- Emergency department visits in which patients left without being seen.
- Cholesterol test among people with diabetes.
- Evaluation of left ventricular ejection fraction for heart failure.

Composite Measures

Policymakers and others have voiced 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 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 measures that have been recommended or identified as a "best practice" in the treatment or prevention of complications associated with specific conditions.

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 several 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 does not receive all four recommended services (two hemoglobin A1c (HbA1c) tests, a foot exam, an eye exam to detect diabetic retinopathy, and a flu shot) 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 pneumonia 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., blood culture collected before antibiotic treatment, initial

antibiotic dose received within 6 hours of hospital arrival, influenza or pneumonia screening or vaccination) 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 and/or systems sometimes or never, usually, or always performed well.

Two composite measures pertaining to patient safety are postoperative complications and complications from central venous catheters. For these composites, an additive model is used that sums individual complication rates. Thus, 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 100 patients had a total of 30 complications among them (regardless of their distribution), the composite score would be 30%.

On occasion, changes to the specification of a composite measure are made to better reflect clinical guidelines or to replace one of the measures of the composite that has improved beyond the 95% threshold. For the 2011 reports, the following changes to the specification of selected composite measures were made:

- Heart failure treatment: Assessment of left ventricular ejection fraction replaced with use of ACE inhibitor.
- Diabetes: Annual receipt of flu shot added and receipt of HbA1c changed from once to twice a year.

Each year AHRQ staff, in conjunction with the Interagency Work Group, select a theme that will be explored in greater detail in the Highlights section, as well as in the body of the report. For 2011, the focus of the NHQR and NHDR is on understanding the quality of care rendered to America's older population and the extent to which improvements in quality have occurred over time.

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 group. Unless specified, the reference group is individuals ages 18-44 for age comparisons, individuals with private health insurance for insurance comparisons, and non-Hispanic Whites for racial and ethnic comparisons.

Size of Disparities Across Groups

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

- First, the difference between the two groups must be statistically significant with $p < 0.05$ on a two-tailed test.
- Second, the relative difference between the comparison group and the reference group must have an absolute value of at least 10%.

Adjusted percentages, which quantify the magnitude of disparities after controlling for a number of confounding factors, were generated for several measures in the Priority Populations chapter of the NHDR. In examining the relationship between race and ethnicity, for example, multivariate regression analyses were performed to control for differences in the distributions of income, education, insurance, age, gender, and geographic location.

Trend Analyses

In prior reports, a log-linear regression analysis was conducted to estimate average annual rate of change.[v] Historically, progress on individual measures was reported based solely on the magnitude of the annual rate of change. Progress on a measure was deemed to be improving if the annual rate of change was 1% or greater in the desirable direction. Progress on a measure was deemed to be getting worse when the annual rate of change was 1% or greater in the undesirable direction.

This approach is limited by the fact that, depending on the type of measure and the size of the standard error, a 1% difference may not be particularly meaningful. For instance, measures generated from administrative records (such as discharge data), which tend to have thousands or even millions of records, usually have smaller variances than other types of measures, such as those from surveys. The traditional approach for determining whether progress on a measure has been made does not consider the magnitude of error around an estimate, and no mechanism to ascertain whether such a change could have occurred by chance is used in making determinations about progress. It is therefore possible that, while a measure may meet the 1% threshold, annual rates of change may not be significant.

Data used for trending are aggregate or average estimates for a measure, with data collected for a minimum of four data points (years), covering periods between 2000 and 2010. As such, trend analyses are generally conducted with a small number of observations. The level of precision across these points may be nonconstant, or heteroskedastic. Ideally, values with lower variances, indicative of greater precision, would be weighted more heavily than estimates with higher variances, or lower precision.

With guidance from the Interagency Work Group methods subgroup, we identified and tested options for strengthening trend analyses by addressing heteroskedasticity or the amount of uncertainty around an estimate. A weighted log-linear model, where data points with lower variances are weighted more heavily than those with greater variances, as indicated below, was found to improve model fit.

Model: $\ln(M) = \beta_0 + \beta_1 Y$, where $\ln(M)$ is the natural logarithm of the value of the measure and β_1 is the coefficient corresponding to year Y

Weight: $w = (M^2/v)$, where M^2/v is the square of the measure value and v is the variance

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[v] 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). The average annual rate of change was calculated as $100 \times (\exp(\beta_1) - 1)$.

Progress on individual measures was determined as follows:

- Progress on a measure is deemed to be improving if the average annual rate of change is 1% or greater in the desirable direction, and p <0.10.[vi]
- Progress on a measure is deemed to be getting worse when the average annual rate of change is 1% or greater in the undesirable direction, and p <0.10.
- Progress is determined to have remained the same if the average annual rate of change is ≤1% in either the desirable or undesirable direction or p >0.10.

Trends in Disparities in Population Subgroups

Across subpopulation groups, the absolute annual rate of change was estimated to ascertain the extent to which disparities in quality and access measures were increasing, decreasing, or remaining the same over time. As shown below, calculation of change in subgroup disparities was conducted in a manner similar to that described above, except that a linear regression model was used in the analyses.

Model: $M = \beta_0 + \beta_1 Y$, where M is the value of the measure and β_1 is the coefficient corresponding to year Y

Weight: $w = (1/v)$, where v is the variance

The difference in annual rate of change for the comparison group relative to the reference group was estimated. Determinations of whether subgroup differences have grown, narrowed, or remained the same were based on estimated differences in annual rate of changes as specified below:

- Subgroup differences are deemed to be narrowing if the change in disparities is less than −1 and p <0.10.
- Subgroup differences are deemed to be growing if the change in disparities is greater than 1 and p <0.10.
- Subgroup differences are deemed to have remained the same if the change in disparities is between −1 and 1, or p >0.10.

Only those measures with 4 or more years of data were included in this trending analysis. Due to methodological changes in trending analysis, 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.

Benchmarking Strategy

Measure-specific benchmarks, which were first incorporated into the NHQR and NHDR in 2010, are also included in the 2011 reports. Benchmarks reflect the highest level of performance documented for individual measures, with performance assessed at the State level. Benchmarks enable readers to assess national performance on a measure relative to that of the highest performing States. They also aid in establishing reasonable performance improvement goals.

[vi] A probability of 0.10 was selected as the significance level because the magnitude of the standard errors varied considerably by type of data.

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. Benchmarks were estimated for the subset of measures for which State data were available. Values of benchmarks estimated in 2010 have been carried over to the 2011 reports.

For measures for which State-level data were available, benchmarks were estimated as the average value for the 10% of States that had the best performance on the measure of interest. For benchmarking purposes, the District of Columbia is treated as a State. Benchmarks were estimated only if data were available for a minimum of 30 States. Identical benchmarks were used to characterize performance in both the NHDR and NHQR.

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 estimate from MEPS or NHIS. For example, if the BRFSS benchmark to national estimate ratio 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

Projections of the time expected for population subgroups to achieve the designated benchmark based on past performance are again included in the 2011 reports. 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, we needed to ensure reliability by limiting estimates to those cases in which at least four 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 a benchmark is not presented for measures that met one or more of the following conditions:

- Average annual rate of change is less than 1%.
- Time to benchmark is estimated at 25 or more years.

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- Trends over time show movement away from the benchmark (these occurrences are mentioned in the reports).
- Direction of trend changes over time; operationally, these were identified as cases in which there were at least 4 years of data showing "upward" movement and at least 4 years of data showing "downward" movement.

Methods Used in Highlights

Data presented in the Highlights differ from those in other chapters of the report in that core and supporting measures are characterized or grouped along several dimensions that offer insight into the performance of specific elements of the health care system. One category is type of care, where measures are classified as follows:

- **Prevention** measures focus on educating people about healthy behaviors and lifestyle modification in order to postpone or avoid illness and disease.
- **Acute care** measures pertain to the delivery of care for an acute condition and receipt of optimal treatment to help reduce the effects of illness and promote the best recovery possible.
- **Chronic disease management** measures pertain to diseases, such as diabetes and chronic kidney disease, that are chronic and must be managed across a lifetime. Effective management of chronic disease can mean the difference between healthy living and frequent medical problems.
- **Outcome** measures are indicative of the result or impact of medical care. Many factors other than the care received affect health outcomes, such as lifestyle, social and physical environment, and genetic predisposition to disease. Outcome measures are typically adjusted for risk or patient characteristics.

Other groupings used in the Highlights chapter to summarize results include type of measure (quality, safety, access) and care setting.

Not all measures may be readily classified into the above groupings. For instance, many measures of patient perceptions of care do not fit within "type of care" groupings (e.g., "adults who had a doctor's office or clinic visit in the last 12 months whose health providers listened carefully to them"). Because these measures contain no information to suggest the type of care rendered, they are excluded from analyses that aggregate measures by type of care.

The Highlights also summarize disparities by race and ethnicity. For each racial or ethnic subgroup, the percentages of measures for which that group received worse care, similar care, or better care than the reference group (White or non-Hispanic White) were estimated. Group rates were divided by reference group rate to calculate the relative rate for core measures, with each core measure framed negatively (e.g., for immunization, the likelihood of not receiving the vaccine).

The process involved in compiling data for the Highlights is complicated by the fact that data on all measures are not collected or reported 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 most measures, trends include data points from 2001-2002 to 2007-2008.

To avoid duplication of estimates within 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 HbA1c measurement, eye exam, flu vaccination, 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 four supporting 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, and type of measure (i.e., quality or access) is presented as a way to summarize the status of health care quality and disparities in the United States.

Priority Populations

Whereas the NHQR charts show contrast by age, gender, insurance status, and geographic location, the NHDR shows contrasts by:

- Race: White, Black, Asian, Native Hawaiian or Other Pacific Islander, American Indian or Alaska Native, and more than one race.[vii]
- Ethnicity: Hispanic and non-Hispanic.[viii]
- Income: Poor, low income, middle income, and high income.[ix]
- Education: People with less than a high school education,[x] high school graduates, and people with any college.
- Disabilities: Basic activity limitations (problems with mobility, self-care, domestic life, and activities that depend on sensory functioning) and complex activity limitations (limitations experienced in work and in community, social, and civic life).[xi]

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 rates for each measure, with each measure framed in the negative (e.g., the likelihood of not receiving an immunization).

In addition to the measures related to racial and ethnic groups, low-income groups, rural residents, and people with special health care needs presented in the Priority Populations chapter of the NHDR, measures pertaining to women, children, and older adults are presented in other chapters of the NHDR and include comparisons.

[vii] 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.

[viii] Not all data sources 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.)

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

[x] Less than a high school education refers to people who did not complete high school.

[xi] 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 activities.

Reporting Conventions

In presentation of data and results, the NHQR and NHDR adhere to the following conventions, which are presented below to facilitate understanding of report findings.

- Unless otherwise stated, results discussed in the reports are statistically significant at the 5% level for subgroup differences and at the 10% level for trend analyses.
- For most measures presented in the reports, a higher score indicates better performance. However, in some cases, lower scores are better. Measures for which lower scores represent better performance are identified in the text.
- Trend analyses were performed only for measures for which a minimum of 4 years of data were available.
- Information on the construction of each measure is not always contained in the text, and readers should refer to the Measure Specifications appendix for measure details.
- When racial subgroups used by data sources for routine reporting are inconsistent with NHQR and NHDR standards, the source classification is used in the reports.

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Chapter 2. Effectiveness of Care

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, many Americans do not receive the full benefits of high-quality care.

This chapter is organized around nine clinical areas (cancer, cardiovascular disease, chronic kidney disease, diabetes, HIV disease, maternal and child health, mental health and substance abuse, musculoskeletal disease, 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). Two sections in this chapter focus on national priorities identified in the *National Strategy for Quality Improvement in Health Care*. The Cardiovascular Disease section addresses the priority "promoting the most effective prevention and treatment of the leading causes of mortality, starting with cardiovascular disease." The Lifestyle Modification section addresses the priority "working with communities to promote wide use of best practices to enable healthy living."

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 Medicare (IOM) 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 (ESRD), 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 (2011 est.) ....571,950 (ACS, 2011)

Cause of death rank (2009 prelim.) ....2nd (Kochanek, et al., 2011)

Prevalence

Number of living Americans who have been diagnosed with cancer
(2008) ....11,957,599 (Howlader, et al., 2008)

Incidence

New cases of cancer (2011 est.)...1,596,670 (ACS, 2011)

New cases of breast cancer (2011 est.) ....232,620 (ACS, 2011)

New cases of colorectal cancer (2011 est.)..141,210 (ACS, 2011)

Cost

Total cost[i] (2010) ....$226.8 billion (NHLBI, 2010)

Direct costs[ii] (2010)...$103.8 billion (NHLBI, 2010)

Indirect costs (2010)..$161.0 billion (NHLBI, 2010)

Cost-effectiveness[iii] of breast cancer screening....................$35,000-$165,000/QALY (Maciosek, et al., 2006)

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 *National Healthcare Quality Report* (NHQR) and *National Healthcare Disparities Report* (NHDR). In even years, the reports focus on colorectal cancer, and in odd years, the reports focus on breast cancer. This year, the report measures are:

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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.

- Breast cancer screening.
- Breast cancer first diagnosed at advanced stage.
- Axillary node dissection or sentinel lymph node biopsy at time of surgery for breast cancer.
- Radiation therapy following breast-conserving surgery.
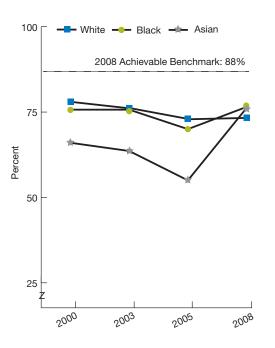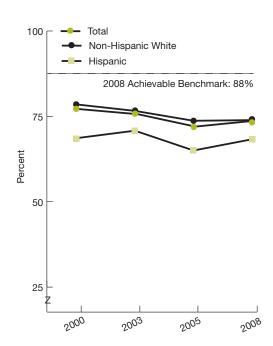- Breast cancer deaths.

Findings

Prevention: Breast Cancer Screening

Early detection of cancer allows more treatment options and often improves outcomes. Mammography, the most effective method for detecting breast cancer at its early stages, can identify malignancies before they can be felt and before symptoms develop. Previous reports tracked receipt of mammography among women age 50 and over. The breast cancer screening measure used in the 2011 NHQR and NHDR reflects a more recent recommendation of the U.S. Preventive Services Task Force for mammograms every 2 years for women ages 50-74.

Figure 2.1. Women ages 50-74 who reported they had a mammogram within the past 2 years, by race and ethnicity, 2000, 2003, 2005, and 2008

Source: Centers for Disease Control and Prevention, National Center for Health Statistics, National Health Interview Survey, 2000, 2003, 2005, and 2008.
Denominator: Civilian noninstitutionalized women ages 50-74.
Note: Rates are age adjusted to the 2000 U.S. standard population.

- From 2000 to 2008, the percentage of non-Hispanic White women ages 50-74 who reported they had a mammogram in the past 2 years fell from 79% to 74%. There were no statistically significant changes in rates among other racial and ethnic groups (Figure 2.1).

- Asian women were less likely to have a mammogram than White women and Hispanic women were less likely to have a mammogram than non-Hispanic White women in all years except 2008.

- The 2008 top 5 State achievable benchmark was 88%.[iv] There is no evidence of progress toward the benchmark by any racial or ethnic group.

Also, in the NHQR:

- In all years, among women ages 50-64, uninsured women were less likely to have a mammogram than those with private insurance. Among women ages 65-74, those with Medicare only were less likely to have a mammogram than those with Medicare and any private supplemental insurance. Medicare does not cover all health care costs. Medicare beneficiaries can purchase private supplemental insurance from insurance companies to help pay for coinsurance, copayments, and deductibles. Beneficiaries with Medicare only typically must pay out of pocket for costs not covered by Medicare.
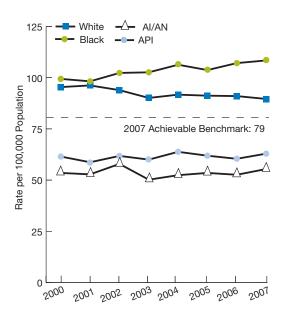
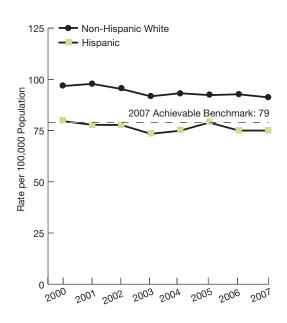## Outcome: Breast Cancer First Diagnosed at Advanced Stage

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 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 screening rates.

In past reports, rates of advanced stage cancer from the National Cancer Institute's Surveillance, Epidemiology, and End Results (SEER) program were reported. Estimates for the Nation were based on 13 SEER areas encompassing about 26% of the U.S. population. Beginning in the 2011 NHQR and NHDR, data from the SEER program and the National Program on Cancer Registries were combined to calculate national statistics on rates of advanced stage cancer. Together, the SEER program and the National Program on Cancer Registries collect cancer data for the entire U.S. population.

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

Figure 2.2. Age-adjusted rate of advanced stage breast cancer per 100,000 women age 40 and over, by race and ethnicity, 2000-2007

Key: AI/AN = American Indian or Alaska Native; API = Asian or Pacific Islander.
Source: Centers for Disease Control and Prevention, National Program of Cancer Registries and National Cancer Institute, Surveillance, Epidemiology, and End Results (SEER) Program, 2000-2007. Registries meeting *United States Cancer Statistics* publication criteria for every year, 2000-2007, are included and cover 89.3% of the total U.S. population. States excluded are DC, Mississippi, Nevada, North Carolina, South Dakota, Tennessee, and Virginia.
Denominator: Women age 40 and over.
Note: For this measure, lower rates are better. Age adjusted to the 2000 U.S. standard population. Advanced stage breast cancer is defined as local stage with tumor size greater than 2 cm diameter, regional stage or distant stage.

- From 2000 to 2007, the rate of advanced stage breast cancer in Black women increased from 99 to 108 per 100,000 women. There were no statistically significant changes in rates among other racial and ethnic groups (Figure 2.2).
- In all years, rates were lower among Asian or Pacific Islander (API) and American Indian or Alaska Native (AI/AN) women compared with White women and among Hispanic women compared with non-Hispanic White women. Since 2003, rates have been higher among Black women compared with White women.
- The 2007 top 5 State achievable benchmark was 79 per 100,000 women.[v] AI/AN, API, and Hispanic women have achieved the benchmark while Black women are moving away from it.
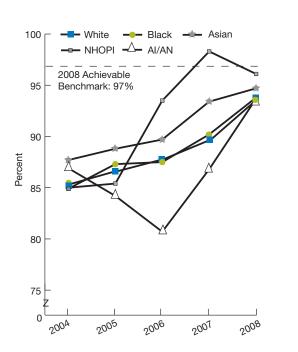
Also, in the NHQR:

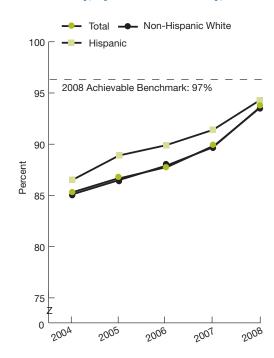- In all years, women ages 50-64 and 65 and over had higher rates than women ages 40-49.

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[v] The top 5 States contributing to the achievable benchmark are Arizona, Florida, New Hampshire, West Virginia, and Wyoming.

Treatment: Recommended Care for Breast 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 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 is performed.

Figure 2.3. Women with clinical Stage I-IIb breast cancer who received axillary node dissection or sentinel lymph node biopsy at the time of lumpectomy or mastectomy, by race and ethnicity, 2004-2008

Key: NHOPI = Native Hawaiian or Other Pacific Islander; AI/AN = American Indian or Alaska Native.
Source: Commission on Cancer, American College of Surgeons and American Cancer Society, National Cancer Data Base, 2004-2008.
Denominator: Women with Stage I-IIb breast cancer undergoing lumpectomy or mastectomy.
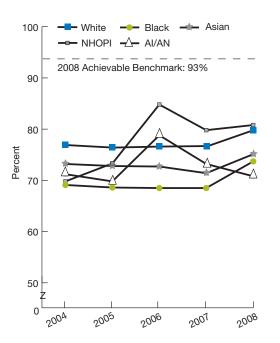
- The percentage of women with clinical Stage I-IIb breast cancer who received axillary node dissection or sentinel lymph node biopsy at the time of lumpectomy or mastectomy increased from 85% in 2004 to 94% in 2008 (Figure 2.3). Significant improvement was observed among all racial and ethnic groups except AI/ANs.
- In all years, Asian women were more likely than White women to receive axillary node dissection or sentinel lymph node biopsy.
- The 2008 top 5 State achievable benchmark was 97%.[vi] At the current rate of increase, most women could achieve the benchmark in 1 year.

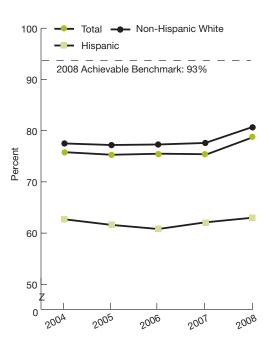[vi] The top 5 States contributing to the achievable benchmark are Minnesota, Mississippi, Nevada, Oklahoma, and South Dakota.

Also, in the NHQR:

- In all years, women ages 70-79 and 80 and over were less likely than women under age 40 to receive axillary node dissection or sentinel lymph node biopsy. Women under age 65 with public health insurance only were less likely than those with private insurance to receive axillary node dissection or sentinel lymph node biopsy.

Figure 2.4. Women under age 70 treated for breast cancer with breast-conserving surgery who received radiation therapy within 1 year of diagnosis, by race and ethnicity, 2004-2008

Key: NHOPI = Native Hawaiian or Other Pacific Islander; AI/AN = American Indian or Alaska Native.
Source: Commission on Cancer, American College of Surgeons and American Cancer Society, National Cancer Data Base, 2004-2008.
Denominator: Women under age 70 undergoing breast-conserving surgery.

- Between 2004 and 2008, the percentage of women under age 70 treated for breast cancer with breast-conserving surgery who received radiation therapy within 1 year of diagnosis did not change significantly overall or for any racial or ethnic group (Figure 2.4).
- In all years, Black and Asian women were less likely than White women and Hispanic women were less likely than non-Hispanic White women to receive radiation therapy.
- The 2008 top 5 State achievable benchmark was 93%.[vii] There is no evidence of progress toward the benchmark by any racial or ethnic group.

[vii] The top 5 States that contributed to the achievable benchmark are New Hampshire, North Dakota, Oregon, South Dakota, and Wisconsin.
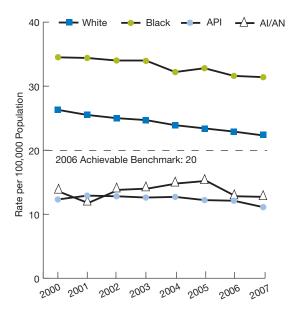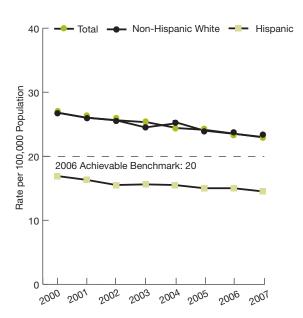
Also, in the NHQR:

- In all years, women ages 40-69 were more likely than women under age 40 to receive radiation therapy. Womens age 65-69 with Medicare only were less likely than those with Medicare and supplemental insurance to receive radiation therapy.

Outcome: Breast Cancer Deaths

The death rate from a disease is a function of many factors, including the causes of the disease; social forces; and the effectiveness of the health care system in providing prevention, treatment, and management of the disease. Breast cancer deaths reflect the impact of cancer screening, diagnosis, and treatment. Mortality is measured as the number of deaths per 100,000 population. Declines in breast cancer deaths can be attributed, in part, to improvements in early detection and treatment.

Figure 2.5. Age-adjusted breast cancer deaths per 100,000 women, by race and ethnicity, 2000-2007

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, 2000-2007.
Denominator: U.S. female population.
Note: For this measure, lower rates are better. Total rate is age adjusted to the 2000 U.S. standard population.

- Between 2000 and 2007, the rate of breast cancer deaths significantly decreased, from 27 to 23 per 100,000 women (Figure 2.5). Improvements were observed among all racial and ethnic groups except AI/ANs.
- In all years, Black women had higher breast cancer death rates than White women. API and AI/AN women had lower rates than White women, while Hispanic women had lower rates than non-Hispanic White women.

- The 2006 top 5 State achievable benchmark was 20 per 100,000 women.[viii] API, AI/AN, and Hispanic women have achieved the benchmark. At current rates of improvement, White women could achieve the benchmark in 5 years while Black women would need 24 years.

Also, in the NHQR:

- Between 2000 and 2007, women ages 45-64 and age 65 and over had higher rates of breast cancer deaths per 100,000 women compared with women ages 18-44.

[viii] The top 5 States that contributed to the achievable benchmark are Hawaii, Montana, Nebraska, Nevada, and South Dakota.

Cardiovascular Disease

Importance

Mortality

Number of deaths from major cardiovascular disease (2009 prelim.).............779,367 (Kochanek, et al., 2011)

Cause of death rank (2009 prelim.)..1st (Kochanek, et al., 2011)

Prevalence

Number of cases of heart failure (2008) ....5.7 million (AHA, 2011)

Number of cases of high blood pressure (2005-2008) ....68.0 million (MMWR, 2011c)

Incidence

Number of heart attacks or fatal coronary heart disease (2008)...................................1.3 million (AHA, 2011)

Cost

Total cost of cardiovascular disease (2011 est.)..$444.2 billion (AHA, 2011)

Total cost of heart failure (2010 est.)..$34.4 billion (AHA, 2011)

Direct costs of cardiovascular disease (2010 est.)...$272.5 billion (AHA, 2011)

Cost-effectiveness of hypertension screening........................$14,000-$35,000/QALY (Maciosek, et al., 2006)

Measures

The NHQR and NHDR track several quality measures for preventing and treating cardiovascular disease. Several changes in measures from last year have been made. First, the measure receipt of angiotensin-converting enzyme (ACE) inhibitor or angiotensin receptor blocker (ARB) for heart attack was retired because it achieved a rate above 95%. Second, the measure evaluation of left ventricular ejection fraction for heart failure was also retired because it achieved a rate above 95%. Because of these retirements, ACE/ARB for heart failure is now presented instead.

Four measures are highlighted here:

- Cholesterol screening.
- Inpatient deaths following heart attack.
- ACE inhibitor or ARB for heart failure.
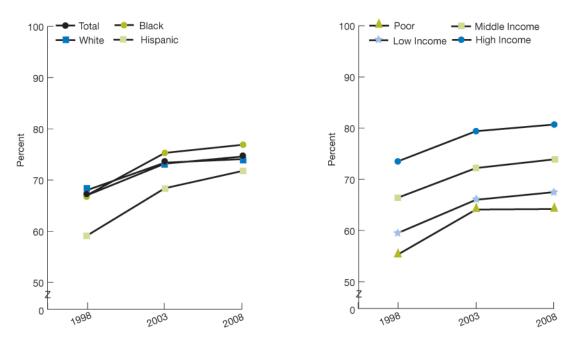- Hospitalization for congestive heart failure.

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. Receipt of complete written discharge instructions by patients with heart failure is tracked in Chapter 6, Care Coordination.

Findings

Prevention: Cholesterol Screening

High blood cholesterol is one of the major risk factors for heart disease. The major culprit is low-density lipoprotein cholesterol, which normally makes up 60% to 70% of total cholesterol. When levels are elevated, cholesterol, a fatlike substance, builds up in the walls of the arteries and causes them to narrow, slowing down or blocking the flow of blood and oxygen to the heart.

Figure 2.6. Adults who reported they had a blood cholesterol measurement in the past 5 years, by race/ethnicity and income, 1998, 2003, and 2008

Source: Centers for Disease Control and Prevention, National Center for Health Statistics, National Health Interview Survey, 1998, 2003, and 2008.
Denominator: Civilian noninstitutionalized people age 18 and over.
Note: Rates are age adjusted to the 2000 standard population. White and Black groups are non-Hispanic; Hispanic includes all races.

- In 2008, 75% of adults reported they had a blood cholesterol measurement in the past 5 years (Figure 2.6).

- In 1998 and 2003, Hispanics were less likely than non-Hispanic Whites to have a blood cholesterol measurement.

- In 2008, non-Hispanic Blacks were more likely than non-Hispanic Whites to have a blood cholesterol measurement.

- In all years, poor, low-income, and middle-income adults were less likely to have a blood cholesterol measurement than high-income adults.

Also, in the NHQR:

- From 1998 to 2008, adults ages 45-64 and age 65 and over were more likely to have a blood cholesterol measurement than adults ages 18-44. Among adults under age 65, those who had public insurance or who were uninsured were less likely to have a blood cholesterol measurement than those with private health insurance.
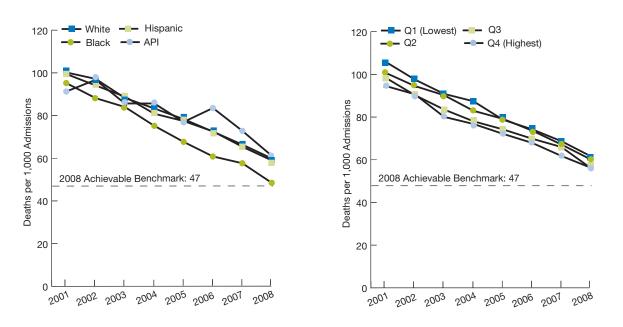
Outcome: Inpatient Deaths Following Heart Attack

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 process measures of quality of care for heart attack have occurred in recent years. All process measures tracked in past reports have attained overall performance levels exceeding 95% and have been retired. Therefore, the 2011 NHQR and NHDR focus on outcome measures. 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 for services. It also may partly reflect receipt of appropriate health services.

Previous reports used AHRQ Quality Indicators version 3.1 to generate death rates for heart attack. The 2011 reports use a modified version 4.1 of the software. While the effects of version change are extremely small, these estimates should not be compared with estimates in previous reports.

Figure 2.7. Inpatient deaths per 1,000 adult hospital admissions with heart attack, by race/ethnicity and area income, 2001-2008

Key: API = Asian or Pacific Islander; Q1 represents the lowest income quartile and Q4 represents the highest income quartile based on the median income of a patient's ZIP Code of residence.
Source: Agency for Healthcare Research and Quality, Healthcare Cost and Utilization Project, Nationwide Inpatient Sample, State Inpatient Databases disparities analysis file, and AHRQ Quality Indicators modified version 4.1, 2001-2008.
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: For this measure, lower rates are better. Rates are adjusted by age and all payer refined-diagnosis related group scoring of risk of mortality. White, Black, and API groups are non-Hispanic; Hispanic includes all races.

- From 2001 to 2008, the overall inpatient mortality rate for hospital admissions with heart attack decreased significantly (data not shown) and for each racial/ethnic and area income group (Figure 2.7).

- In all years, Blacks had lower inpatient mortality rates than Whites.

- In all years, residents of the two lowest income quartiles had higher inpatient mortality rates than residents of the highest income quartile.

- The 2008 top 3 State achievable benchmark for inpatient heart attack mortality was 47 per 1,000 admissions.[ix] At current rates of improvement, all racial/ethnic and area income groups would attain the benchmark within the next 4 years.
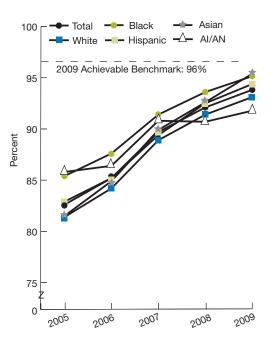
Also, in the NHQR:

- In all years, patients ages 45-64 and 65 and over had higher rates of inpatient heart attack deaths than patients ages 18-44. Residents of small metropolitan, micropolitan, and noncore (rural) areas had higher rates of inpatient heart attack mortality than residents of large fringe metropolitan areas.

[ix] The top 3 States that contributed to the achievable benchmark are Arizona, Michigan, and Ohio.

Treatment: Angiotensin-Converting Enzyme Inhibitor or Angiotensin Receptor Blocker for Heart Failure

Heart failure occurs when the heart muscle is too weak to adequately pump blood for the body's metabolic needs. Such impairment can result in a lack of adequate blood flow to vital organs, including the brain, kidney, and other organs, as well as a backup of fluid into the lungs. Often, heart failure is caused by damage to the heart muscle from a heart attack, which can seriously weaken the left ventricle, the main pumping chamber of the heart. Congestive heart failure is the most frequent discharge diagnosis for Medicare beneficiaries. ACE inhibitors and ARBs have been found to improve survival and slow or prevent further loss of the heart's pumping ability.

Figure 2.8. Hospital patients with heart failure and left ventricular systolic dysfunction prescribed ACE inhibitor or ARB at discharge, by race/ethnicity, 2005-2009

Key: ACE = angiotensin-converting enzyme; ARB = angiotensin receptor blocker; AI/AN = American Indian or Alaska Native.
Source: Centers for Medicare & Medicaid Services, Medicare Quality Improvement Organization Program, 2005-2009.
Denominator: Patients hospitalized with a principal diagnosis of acute heart failure and left ventricular systolic dysfunction.
Note: White, Black, AI/AN, and Asian groups are non-Hispanic; Hispanic includes all races.

- From 2005 to 2009, the overall percentage of patients with heart failure and left ventricular systolic dysfunction prescribed ACE inhibitor or ARB at discharge increased from 83% to 94% (Figure 2.8). Improvements were observed among all racial/ethnic groups.

- In all years, Blacks were more likely than Whites to receive ACE inhibitor or ARB at discharge.

- The 2009 top 5 State achievable benchmark for patients with heart failure and left ventricular systolic dysfunction prescribed ACE inhibitor or ARB at discharge was 96%.[x]

- At current rates of improvement, all racial/ethnic groups could attain the benchmark within 3 years.
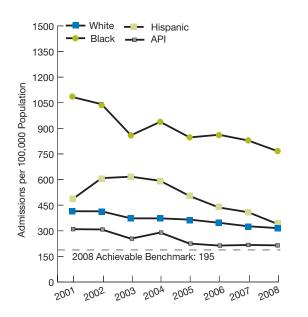
Also, in the NHQR:

- From 2005 to 2009, patients age 65 and over were less likely to receive ACE inhibitors or ARBs for heart failure than patients under age 65.
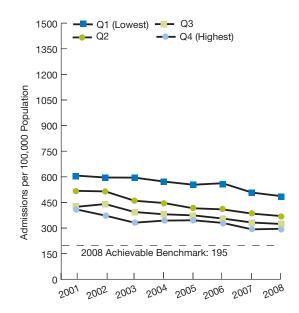
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[x] The top 5 States that contributed to the achievable benchmark are Alaska, Idaho, Maine, New Hampshire, and Nevada.

Outcome: Hospitalization for Congestive Heart Failure

Congestive heart failure is the most frequent discharge diagnosis for Medicare beneficiaries. Some hospitalizations for heart failure are unavoidable, but rates of hospitalization can be influenced by the quality of outpatient care.

Figure 2.9. Admissions for congestive heart failure per 100,000 population, age 18 and over, by race/ethnicity and area income, 2001-2008

Key: API = Asian or Pacific Islander; Q1 represents the lowest income quartile and Q4 represents the highest income quartile based on the median income of a patient's ZIP Code of residence.
Source: Agency for Healthcare Research and Quality, Healthcare Cost and Utilization Project, Nationwide Inpatient Sample, State Inpatient Databases disparities analysis file, and AHRQ Quality Indicators modified version 4.1, 2001-2008.
Denominator: U.S. resident population age 18 and over.
Note: For this measure, lower rates are better. Rates are adjusted by age and gender. White, Black, and API groups are non-Hispanic; Hispanic includes all races.

- From 2004 to 2008, the overall rate of admissions for congestive heart failure decreased significantly overall and for each racial/ethnic and area income group (Figure 2.9).

- In all years, Blacks had higher rates while APIs had lower rates of admission for congestive heart failure compared with Whites.

- In all years, residents of the highest income quartile neighborhood had lower rates than residents of the three lower income quartile neighborhoods.

- The 2008 top 4 State achievable benchmark for congestive heart failure admissions was 195 per 100,000 population.[xi] Overall, this benchmark could be achieved in 10 years.

- At current rates of improvement, Whites could achieve the benchmark in 8 years. Hispanics and APIs could achieve the benchmark sooner than Whites, while Blacks would require 14 years. Residents of the lowest income quartile would require 18 years while residents of other income quartiles could achieve the benchmark in 8 years.

[xi] The top 4 States that contributed to the achievable benchmark are Colorado, Oregon, Utah, and Vermont.
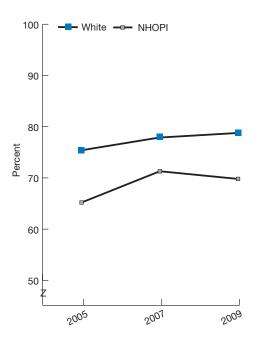
Also, in the NHQR:

- From 2004 to 2008, patients ages 45-64 and 65 and over had higher rates of hospitalization for congestive heart failure than patients ages 18-44, and men had higher rates than women.

Focus on Native Hawaiians and Other Pacific Islanders

The ability to assess disparities among Native Hawaiians and Other Pacific Islanders (NHOPIs) 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 API 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. 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.

Cardiovascular disease is a leading cause of death among Native Hawaiians. To supplement information in the reports on quality of care received by NHOPIs for heart disease, we feature data from additional data sources. Here we present data from the Behavioral Risk Factor Surveillance System on cholesterol screening among NHOPIs, including people of mixed race who identify primarily as NHOPI.

Figure 2.10. Adults who reported receiving a cholesterol check in the last 5 years, 2005, 2007, and 2009
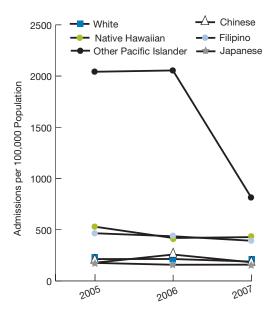

Key: NHOPI = Native Hawaiian or Other Pacific Islander.
Source: Centers for Disease Control and Prevention, Behavioral Risk Factor Surveillance System, 2005, 2007, and 2009.
Denominator: Adults age 18 and over.

- In 2009, the percentage of adults who received a cholesterol check in the last 5 years was lower among NHOPIs compared with Whites (Figure 2.10).

Hawaii, home to more than half of Native Hawaiians in the United States, is a leader in collecting health information on NHOPI and Asian populations. Here we provide information from the Hawaii State Inpatient Databases on admissions for congestive heart failure among NHOPI and Asian subpopulations.

Figure 2.11. Admissions for congestive heart failure per 100,000 population, age 18 and over, State of Hawaii, by race, 2005-2007

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: For this measure, lower rates are better. Rates are adjusted by age and gender using the total U.S. population for 2000 as the standard population.

Chapter 2   Cardiovascular Disease

- In Hawaii, between 2005 and 2007, Native Hawaiians, Other Pacific Islanders, and Filipinos had higher rates of hospital admissions for congestive heart failure than Whites while Japanese people had lower rates than Whites (Figure 2.11).
- NHOPI and Asian subpopulations are quite diverse. Considerable variation in rates was observed among the different subgroups.

Chronic Kidney Disease

Importance

Mortality
Total ESRD deaths (2009) ....87,812 (USRDS, 2009)

Prevalence
Total cases (2007)..514,642 (NCHS, 2011)

Incidence
Number of new cases (2007)...110,996 (USRDS, 2009)

Cost
Total ESRD Medicare program expenditures (2007) ....$23.9 billion (USRDS, 2009)

Measures

The NHQR and NHDR track several measures of management of chronic kidney disease to assess the quality of care provided to renal dialysis patients. A previous core measure, adequacy of dialysis, was retired because it achieved a rate above 95%. Three measures are highlighted here:

- Nephrology care before kidney failure.
- Use of arteriovenous fistula (AVF) at first outpatient dialysis.
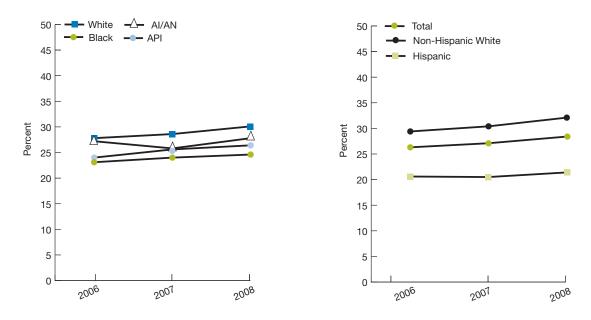- Registration for transplantation.

Findings

Management: Nephrology Care Before Kidney Failure

Early referral to a nephrologist is important for patients with progressive chronic kidney disease approaching kidney failure. Mindful management during the transition to ESRD permits informed selection of renal replacement therapy, placement and maturation of vascular access, and workup for kidney transplantation. Patients who begin nephrology care more than a year before kidney failure are less likely to begin dialysis with a catheter, experience infections related to vascular access, or die during the months after dialysis initiation (USRDS, 2010).

Figure 2.12. Patients beginning nephrology care more than 12 months before start of dialysis, by race and ethnicity, 2006-2008

Key: AI/AN = American Indian or Alaska Native; API = Asian or Pacific Islander.
Source: National Institute of Diabetes and Digestive and Kidney Diseases, U.S. Renal Data System, 2006-2008.
Denominator: New end stage renal disease patients.

■ In 2008, only 28% of new ESRD patients began nephrology care more than 12 months before start of dialysis (Figure 2.12).

■ In all years, Blacks and APIs were less likely than Whites and Hispanics were less likely than non-Hispanic Whites to begin nephrology care more than 12 months before start of dialysis.
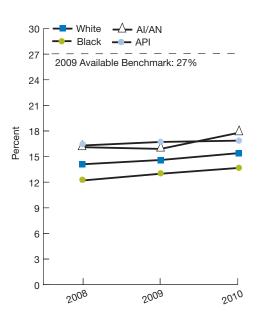
Also, in the NHQR:

■ In all years, patients ages 0-19, 45-64, 65-74, and 75 and over were more likely to receive nephrology care than patients ages 20-44.
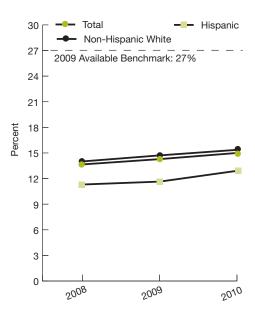
Management: Use of Arteriovenous Fistula at First Outpatient Dialysis

For people with ESRD, dialysis can accommodate for lost kidney function by balancing minerals and water in the blood and removing waste. Vascular access is needed to reach blood vessels so dialysis can be performed. An AVF is the preferred type of access for most hemodialysis patients for three reasons: It provides adequate blood flow for dialysis, it lasts a long time, and it has a low complication rate compared with other methods.

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

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Chronic Kidney Disease

Figure 2.13. Incident hemodialysis patients who used an arteriovenous fistula at first outpatient dialysis, by race and ethnicity, 2008-2010

Key: API = Asian or Pacific Islander; AI/AN = American Indian or Alaska Native.
Source: Medicare eligibility forms (Centers for Medicare & Medicaid Services [CMS] Form 2728) (2008-2010), Fistula First Incident AVF Dataset, CMS.
Denominator: New end stage renal disease hemodialysis patients, all ages.

- In 2010, only 15% of dialysis patients used an AVF at first dialysis (Figure 2.13).
- In all years, Blacks had lower rates of AVF at first dialysis than Whites, and Hispanics had lower rates than non-Hispanic Whites.
- The 2009 top 5 State achievable benchmark was 27%.[xii] No group has attained this benchmark.
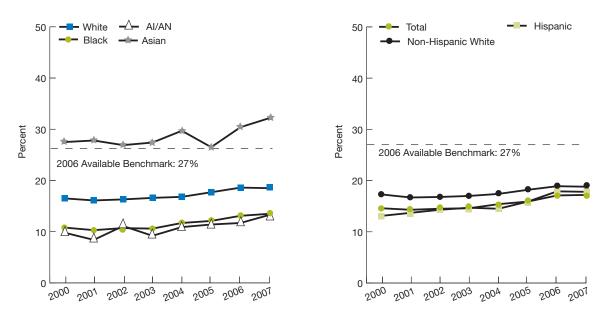
Also, in the NHQR:

- In all years, patients ages 65-74 had higher rates of AVF at first dialysis than those younger than age 65. Female patients had significantly lower rates of AVF at first dialysis than males.

Management: Registration for Transplantation

Kidney transplantation is a procedure that replaces a failing kidney with a healthy kidney. Transplantation is not best for all patients. If a patient is deemed a good candidate for transplant, he or she is placed on the transplant program's waiting list. Patients wait for transplant centers to match them with the most suitable donor. Registration for transplantation is an initial step toward kidney transplantation. Early transplantation that decreases or eliminates the need for dialysis can also lessen the occurrence of acute rejection and patient mortality.

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

Figure 2.14. Dialysis patients who were registered on a waiting list for transplantation, by race and ethnicity, 2000-2007

Key: AI/AN = American Indian or Alaska Native.
Source: National Institute of Diabetes and Digestive and Kidney Diseases, U.S. Renal Data System, 2000-2007.
Denominator: End stage renal disease hemodialysis patients and peritoneal dialysis patients under age 70.

- From 2000 to 2007, the percentage of dialysis patients who were registered on a waiting list for transplantation increased from 15% to 17% (Figure 2.14). Improvements were observed among all racial and ethnic groups.
- In all years, Blacks and AI/ANs were less likely to be registered on a waiting list than Whites. However, Asians were more likely to be registered on a waiting list than Whites.
- From 2000 to 2005, Hispanics were less likely to be registered on a waiting list than non-Hispanic Whites. However, in 2006 and 2007, this difference no longer met our criteria for significance.
- The 2006 top 5 State achievable benchmark was 27%.[xiii] At the current rate of improvement, the benchmark could not be attained overall for almost 23 years.
- Although Asians have already surpassed the 2006 achievable benchmark, Blacks could not attain the benchmark for 30 years and AI/ANs could not attain it for 27 years.

Also, in the NHQR:

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

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

Diabetes

Importance

Mortality

Number of deaths (2007) ....70,905 (Kochanek, et al., 2011)

Cause of death rank (2010)...7th (NHLBI, 2010)

Prevalence

Total number of people with diabetes (2010) ....25.8 million (CDC, 2011d)

Number of people with diagnosed diabetes (2010) ....18.8 million (CDC, 2011d)

Number of people with undiagnosed diabetes (2010) ....7.0 million (CDC, 2011d)

Incidence

New cases (age 20 and over, 2010) ....1.9 million (CDC, 2011d)

Cost

Total cost (2007) ……… ....$174 billion (CDC, 2011d)

Direct medical costs (2007) ....$116 billion (CDC, 2011d)

Indirect costs (2007)...$58 million (CDC, 2011d)

Measures

Routine monitoring of blood glucose levels with hemoglobin A1c (HbA1c[xiv]) tests and foot and dilated eye examinations have been shown to help prevent or mitigate complications of diabetes, such as diabetic neuropathy, retinopathy, and vascular and kidney disease. With more than half a million discharges in 2006, diabetes is one of the leading causes of hospitalization in the United States (CDC, 2009). However, with appropriate and timely ambulatory care, it may be possible to prevent many hospitalizations for diabetes and related complications.

The measures reported in this section examine the extent to which individuals with diabetes receive care needed to prevent complications and the development of kidney failure, a serious complication of diabetes:

- Receipt of four recommended diabetes services.
- Hospitalization for short-term diabetes complications.
- Development of kidney failure due to diabetes.

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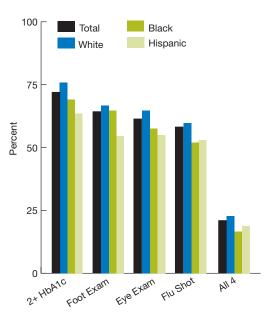
Findings

NEW

Management: Receipt of Four Recommended Diabetes Services

A composite measure is used to track the national rate of receipt of four recommended annual diabetes interventions: at least two HbA1c tests, a foot examination, an eye examination, and a flu shot. These are basic process measures that provide an assessment of the quality of diabetes management. This diabetes composite measure differs from the composite presented last year. To be more consistent with current recommendations, the required frequency of HbA1c testing has been increased to two per year and receipt of a flu shot has been added.

Figure 2.15. Adults age 40 and over with diagnosed diabetes who reported receiving four recommended services for diabetes in the calendar year (2+ HbA1c tests, foot exam, dilated eye exam, and flu shot), by race/ethnicity, 2008

Source: Agency for Healthcare Research and Quality, Medical Expenditure Panel Survey, 2008.
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. White and Black groups are non-Hispanic; Hispanic includes all races.
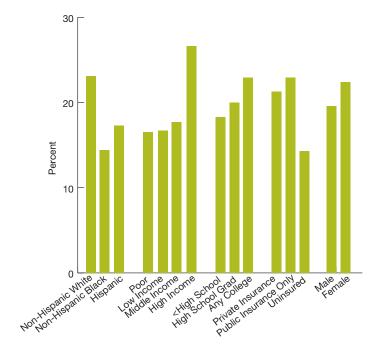
- Among adults age 40 and over with diagnosed diabetes, report of receipt of recommended services ranged from 52% to 76%. However, only 21% of adults with diabetes received all four recommended services in 2008 (Figure 2.15).

- Among adults with diabetes, Hispanics were less likely than non-Hispanic Whites to receive at least two HbA1c tests, a foot examination, and an eye examination while non-Hispanic Blacks were less likely than non-Hispanic Whites to receive a flu shot. There were no statistically significant differences between groups in rates of receipt of all four recommended services.

Also, in the NHQR:

- Adults with diabetes ages 40-59 were less likely than those age 60 and over to receive a foot examination, an eye examination, and a flu shot as well as the composite of four recommended services.

Chapter 2   Diabetes

Multivariate analyses were conducted to identify the independent effects of race/ethnicity 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 2.16. Composite measure: Adjusted percentages of adults ages 40-64 with diagnosed diabetes who received four recommended services for diabetes in the calendar year, by race/ethnicity, family income, education, insurance status, and sex, 2002-2008

Source: Agency for Healthcare Research and Quality, Medical Expenditure Panel Survey, pooled 2002-2008.
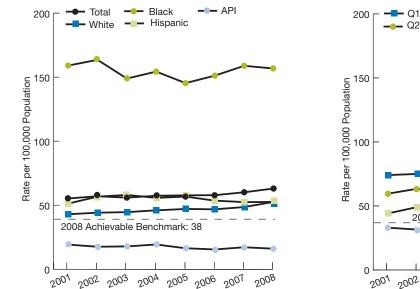**Note:** Adjusted percentages are predicted marginals from a statistical model that includes the covariates race/ethnicity, family income, education, health insurance, sex, and residence location. Chapter 1, Introduction and Methods, provides more information.
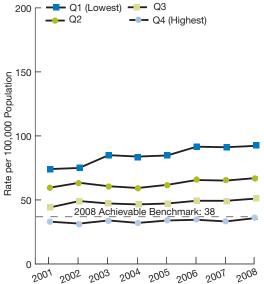
- After adjustment, among adults ages 40-64 with diagnosed diabetes, non-Hispanic Blacks and Hispanics were less likely than non-Hispanic Whites to receive the four recommended services for diabetes (Figure 2.16).
- In addition, poor, low-income, and middle-income adults with diabetes were less likely than high-income adults to receive all four services.
- Adults with less than a high school education were less likely than adults with any college education to receive all four services.
- Uninsured adults were less likely than adults with private insurance to receive all four services.
- Males were less likely than females to receive all four services.

Outcome: Hospitalization 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 typically require hospitalization for treatment and include diabetic ketoacidosis and hyperosmolar nonketotic coma.

Figure 2.17. Hospital admissions for diabetes with short-term complications per 100,000 population, age 18 and over, by race/ethnicity and area income, 2001-2008

Key: API = Asian or Pacific Islander. Q1 represents the lowest income quartile and Q4 represents the highest income quartile based on the median income of a patient's ZIP Code of residence.
Source: Agency for Healthcare Research and Quality, Healthcare Cost and Utilization Project, State Inpatient Databases disparities analysis file and Nationwide Inpatient Sample, 2001-2008, and AHRQ Quality Indicators, version 4.1.
Denominator: U.S. resident population age 18 and over.
Note: For this measure, lower rates are better. Short-term complications include ketoacidosis, hyperosmolarity, or coma and exclude obstetric admissions and transfers from other institutions. White, Black, and API groups are non-Hispanic; Hispanic includes all races. Data are adjusted for age and gender.

- Between 2001 and 2008, the rate of hospital admissions for adults with short-term complications of diabetes increased overall and among Whites and all income groups (Figure 2.17). The rate decreased among APIs.

- In all years, the rate of hospital admissions for short-term complications was significantly higher for Blacks and lower for APIs compared with Whites. Hispanics also had higher rates than Whites between 2001 and 2006, but this difference was not statistically significant in 2007 and 2008.

- 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, second, and third quartiles than for people living in communities with median household incomes in the fourth quartile.

- The 2008 top 4 State achievable benchmark was 38 per 100,000 population.[xv] While APIs and residents of high-income neighborhoods achieved the benchmark, most other groups were far from the benchmark or moving away from it.

Also, in the NHQR:

- In all years, adults ages 45-64 and age 65 and over had lower rates of short-term complications of diabetes than adults ages 18-44. Residents of micropolitan areas had higher rates than residents of suburbs.
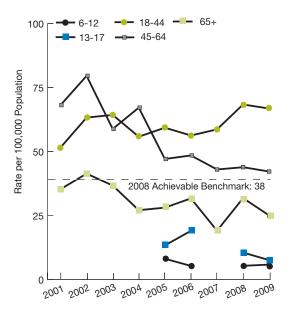
[xv] The top 4 States contributing to the benchmark are Hawaii, Minnesota, Nebraska, and Utah.

Focus on Indian Health Service Facilities

AI/ANs who are members of federally recognized Tribes are eligible for services provided by the Indian Health Service (IHS). About 2 million of the 3.4 million AI/ANs in the United States receive care directly from IHS, through tribally contracted and operated health programs or through services purchased by IHS from other providers (IHS, 2011). 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.

Figure 2.18. Hospital admissions for diabetes with short-term complications per 100,000 population in IHS, Tribal, and contract hospitals, age 6 and over, by age group, 2001-2009

Source: Indian Health Service, Office of Information Technology/National Patient Information Reporting System, National Data Warehouse, Workload and Population Data Mart, 2001-2009. **Note:** For this measure, lower rates are better. Data for ages 6-12 and 13-17 only available for 2005, 2006, 2008, and 2009.
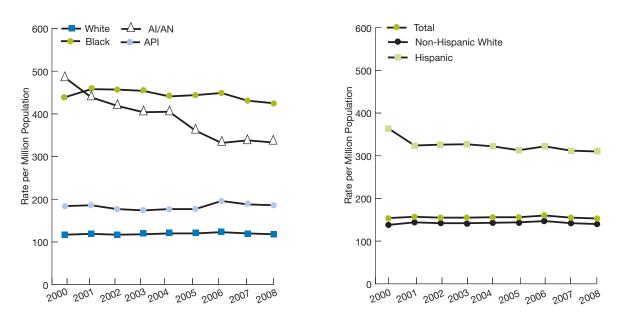
- From 2001 to 2009, the age-adjusted rate of total hospitalizations for short-term complications of diabetes did not change for AI/AN patients in IHS, Tribal, and contract hospitals (data not shown). Rates among patients ages 45-64 and 65 and over decreased while rates among patients ages 18-44 increased (Figure 2.18).
- In all years, patients ages 18-44 and 45-64 had higher rates than patients age 65 and over. In 2005, 2006, 2008, and 2009, patients ages 6-12 and 13-17 had lower rates than patients of older ages.
- The 2008 top 4 State achievable benchmark based on Healthcare Cost and Utilization Project State Inpatient Databases data was 38. Patients ages 6-12, 13-17, and 65 and over are below the achievable benchmark. Patients ages 45-64 are approaching the benchmark while patients ages 18-44 are moving away from the benchmark.

Outcome: Kidney Failure Due to Diabetes

Diabetes is the most common cause of kidney failure. Keeping blood sugar levels under control can prevent or slow the progression of kidney disease due to diabetes. In addition, when kidney disease is detected early, medication can slow the disease's progress. If it is detected late, progression to ESRD requiring dialysis is common. While some cases of kidney failure due to diabetes cannot be avoided, other cases reflect inadequate control of blood sugar or delayed detection and treatment of early kidney disease due to diabetes.

Figure 2.19. End stage renal disease due to diabetes per million population, by race and ethnicity, 2000-2008

Key: AI/AN = American Indian or Alaska Native; API = Asian or Pacific Islander.
Source: National Institute of Diabetes and Digestive and Kidney Diseases, U.S. Renal Data System, 2000-2008.
Denominator: U.S. resident population.
Note: For this measure, lower rates are better. Rates are age adjusted. Hispanic and non-Hispanic include all races.

- Between 2000 and 2008, the overall incidence of ESRD due to diabetes did not change (Figure 2.19). The rate fell among Hispanics and AI/ANs.
- In all years, AI/ANs, APIs, and Blacks had higher rates than Whites and Hispanics had higher rates than non-Hispanic Whites.

Also, in the NHQR:

- In all years, people ages 45-64, 65-74, and 75 and over had higher rates of ESRD due to diabetes than people ages 20-44. Males had higher rates than females.

HIV and AIDS

Importance

Mortality
Number of deaths of people with AIDS (2008)...16,605 (CDC, 2011a)

Prevalence
Number of people living with HIV infection (2008)..682,668 (CDC, 2011a)

Number of people living with AIDS (2008) ....490,696 (CDC, 2011a)

Incidence
Number of new HIV diagnoses (2009) ....42,959 (CDC, 2011a)

Number of new AIDS diagnoses (2009) ....34,993 (CDC, 2011a)

Cost
Federal spending on HIV/AIDS care, cash and housing assistance, prevention
and research (fiscal year 2012 es't.)...$21.4 billion (KFF, 2011)

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 can be spread through unprotected sex with an infected person, sharing of drug needles, or 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 (Shapiro, et al., 1999).

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 (CDC, 2010).

According to the Centers for Disease Control and Prevention (CDC), HIV and AIDS disproportionately affect Blacks in the United States. In 2009, Blacks represented 14% of the U.S. population but accounted for 44% of all diagnoses of new HIV infections (CDC, 2011c). The HIV/AIDS epidemic is also a serious threat to the Hispanic community. An estimated 20% of new HIV infections occurred among Hispanics in 2009, which is three times the rate of Whites (CDC, 2011b). In addition to being seriously affected by HIV, Hispanics continue to face challenges in accessing health care, especially preventive services and HIV treatment.

Undocumented immigrants 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 (Carrillo & DeCarlo, 2003). In 2007, HIV/AIDS was the fourth leading cause of death among Hispanic men and women ages 35-44 (CDC, 2011b). 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 Blacks (Turner, et al., 2000).

Another group that is severely affected by HIV includes gay, bisexual, and other men who have sex with men (MSM). MSM represent 2% of the U.S. population and the only risk group in which new HIV infections have been gradually increasing since the 1990s. MSM have constantly represented the largest percentage of people diagnosed with AIDS and persons with an AIDS diagnosis who have died. In 2009, MSM accounted for more than half (61%) of all new HIV infections in the United States (CDC, 2011d).

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, a measure is presented on HIV testing, and five supporting measures are presented on the prevention of opportunistic infections in HIV patients:

- Adult HIV patients who had at least two outpatient visits during the year.
- Adult HIV patients who received two or more CD4 tests during the year.
- Adult HIV patients who received highly active antiretroviral therapy (HAART).
- Eligible patients receiving prophylaxis for *Pneumocystis* pneumonia (PCP).
- Eligible patients receiving prophylaxis for *Mycobacterium avium* complex (MAC).

In addition, a measure is included on HIV infection deaths.
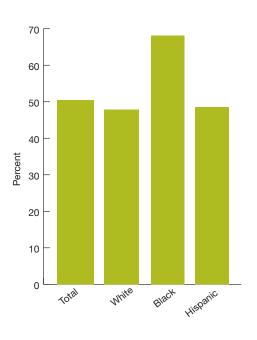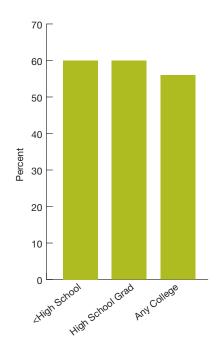
Findings

Prevention: HIV Testing

According to CDC, approximately 20% of the 1.2 million people living with HIV are unaware of their infection (CDC, 2011d). CDC recommends routine voluntary HIV testing as part of normal medical practice in all health care settings (Branson, et al., 2006). HIV infection is a serious health disorder that can be diagnosed before symptoms develop. HIV can be detected by reliable, inexpensive, and noninvasive screening tests. Although blood donations are routinely tested for HIV, it is important to track HIV testing in a health care setting to determine the impact of preventive care for the population. HIV-infected patients have years to gain if treatment is initiated early, before symptoms develop.

Chapter 2

HIV and AIDS

To normalize HIV testing as a routine part of medical care, in September 2006, CDC published revised recommendations that all patients ages 13-64 be tested on a voluntary basis. The revised recommendations also expanded the existing recommendations for screening pregnant women (Branson, et al., 2006).

Figure 2.20. Population ages 15-44 years who ever had an HIV test outside of blood donation, by race/ethnicity and education, 2006-2010

Source: Special tabulations based on National Survey of Family Growth, 2006-2010, conducted by the National Center for Health Statistics, Centers for Disease Control and Prevention.
Notes: White and Black groups are non-Hispanic. Hispanic includes all races.

- Overall, in the period between 2006 and 2010, 50% of people ages 15-44 had ever been tested for HIV outside of blood donation (Figure 2.20).
- In the period between 2006 and 2010, the percentage of people ages 15-44 who had ever been tested for HIV outside of blood donation was higher for non-Hispanic Blacks (68%) than for non-Hispanic Whites (48%).
- In the period between 2006 and 2010, there were no statistically significant differences by educational attainment in the percentage of people ages 15-44 who were tested for HIV outside of blood donation.

Also, in the NHQR:

- In the period between 2006 and 2010, HIV testing outside of blood donation was reported most often among people ages 35-39 (65%) and least often among those ages 15-19 (16%).
- In the period between 2006 and 2010, females (59%) reported more HIV testing outside of blood donation than males (42%).

Figure 2.21. Percentage of women ages 15-44 years with a completed pregnancy within the past 12 months who were tested for HIV as part of prenatal care, by race/ethnicity and education, 2006-2010

Source: Special tabulations based on National Survey of Family Growth, 2006-2010, conducted by the National Center for Health Statistics.

- Overall, between 2006 and 2010, 67% of women with a recently completed pregnancy had an HIV test as part of their prenatal care (Figure 2.21).
- In the period between 2006 and 2010, roughly 75% of recently pregnant Hispanic and non-Hispanic Black women had prenatal HIV testing, compared with 64% of recently pregnant non-Hispanic White women.
- In the period between 2006 and 2010, 75% of recently pregnant women with less than a high school education had prenatal HIV testing, compared with 63% of those with any college.

Also, in the NHQR:

- In the period between 2006 and 2010, there were no statistically significant differences between age groups in the percentage of women with a recently completed pregnancy who had an HIV test as part of prenatal care.

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:
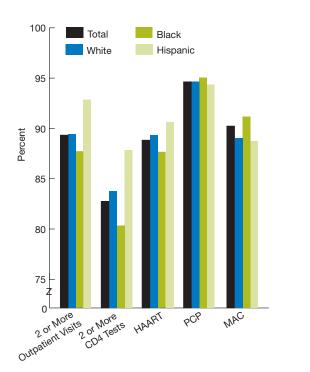
- Two or more CD4 cell counts performed in the measurement year.
- HAART for patients with AIDS.
- Two or more medical visits in an HIV care setting in the measurement year.
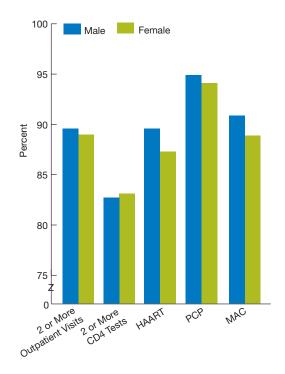- PCP prophylaxis for patients with CD4 cell count below 200.

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 everyone in the United States living with HIV.

HIV Network data represent only patients with HIV who are actually receiving care (about 14,000 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 (Yeargin, et al., 2003).

Figure 2.22. Adults with HIV who received recommended care, by race/ethnicity and gender, 2008

Key: HAART = highly active antiretroviral therapy; PCP = *Pneumocystis* pneumonia; MAC = *Mycobacterium avium* complex.
Source: Agency for Healthcare Research and Quality, HIV Research Network, 2008.
Note: For HAART measure, adult HIV patients had to be enrolled in an HIV Network clinic, 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 2008, nearly 90% of people with HIV had two or more outpatient visits during the year, and 83% of people with HIV had two or more CD4 tests during the year (Figure 2.22). In addition, 89% of people with HIV in care received HAART, 95% of people with HIV and CD4 count less than 200 received PCP prophylaxis, and 90% of people with HIV and CD4 count less than 50 received MAC prophylaxis.

- In 2008, there were no statistically significant differences by race/ethnicity in the percentage of people with HIV receiving recommended services.

- In 2008, the rate for people with HIV who had two or more CD4 tests during the year was lower than the rates for all other recommended services for HIV care, at approximately 83% for both males and females.

- In 2008, there were no statistically significant gender differences in the percentage of people with HIV receiving recommended services.
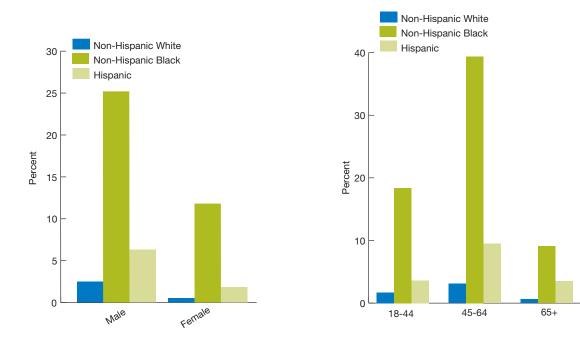
Also, in the NHQR:

- In 2008, there were no statistically significant differences by age in the percentage of people with HIV receiving recommended services.

Outcome: Deaths of People With HIV

Improved management of HIV infection has contributed to declines in the number of new AIDS cases in the United States since the 1990s (CDC, 2005). 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 2.23. HIV infection deaths per 100,000 population, by ethnicity/gender and ethnicity/age, 2007

Source: Centers for Disease Control and Prevention, National Center for Health Statistics, National Vital Statistics System—Mortality, 2007.
Note: For this measure, lower rates are better. Rates are age adjusted to the 2000 standard population.

- Overall, in 2007, the HIV infection death rate for males was more than twice that of females (5 deaths per 100,000 population compared with 2 deaths per 100,000 population) (data not shown).
- In 2007, the rate of HIV infection deaths was higher for non-Hispanic Black males (25 deaths per 100,000 population) and Hispanic males (6 deaths per 100,000 population) compared with non-Hispanic White males (3 deaths per 100,000 population) (Figure 2.23).
- In 2007, non-Hispanic Black females (12 deaths per 100,000 population) and Hispanic females (2 deaths per 100,000 population) had higher HIV infection death rates than non-Hispanic White females (1 death per 100,000 population).
- In 2007, non-Hispanic Blacks had higher HIV death rates than non-Hispanic Whites for all age groups.

Also, in the NHQR:

- From 2004 to 2007, the rate of HIV infection deaths decreased for people ages 18-44 (from 6 to 4 deaths per 100,000 population) and 45-64 (from 9 to 8 deaths per 100,000 population). Males were more likely than females to have higher HIV death rates.

Maternal and Child Health

Importance

Mortality

Number of maternal deaths (2007) ....548 (Xu, et al., 2010)

Number of infant deaths (2009) ....29,138 (Xu, et al., 2010)

Demographics

Number of children[xvi] (2009) ....74,225,447 (U.S. Census Bureau, 2009)

Number of babies born in United States (2009) ....4,130,665 (Martin, et al., 2011)

Cost

Total cost of health care for children (2007) ....$102.4 billion (MEPS, 2007)

Cost-effectiveness of vision screening for children ....$0-$14,000/QALY (Maciosek, et al., 2006)

Cost-effectiveness of childhood immunization series (2001) ....approx. $16 (Zhou, et al., 2005)

Measures

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

- Obstetric trauma.
- Recommended immunizations for young children.
- Emergency department visits for asthma.
- Dental visits.
- Untreated dental caries.

In addition, this year we include a focus on health care for adolescents. Measures for adolescents include:

- Well visit in the last year.
- Receipt of meningococcal vaccine.

[xvi] In this report, children are defined as individuals under age 18.
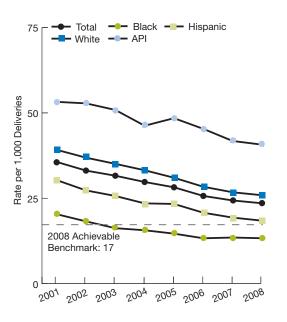
Findings
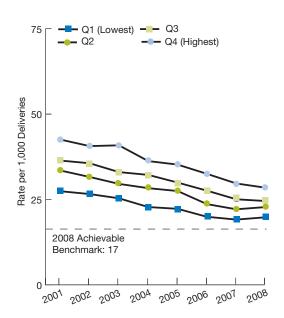
Outcome: Obstetric Trauma

NEW

Childbirth and reproductive care are the most common reasons for women of childbearing age to use health care services. As there are roughly 11,300 births each day in the United States (Martin, et al., 2011), childbirth is the most common reason for hospital admission among women.

Obstetric trauma involving a severe tear to the vagina or surrounding tissues during delivery is a common complication of childbirth. Higher risks of severe (i.e., 3rd or 4th degree) perineal laceration may be related to the degree of fetal-maternal size disproportion. Adolescents, who often have smaller body sizes because they have not finished growing, may be more likely to experience obstetric trauma than older women. In addition, although any delivery can result in trauma, existing evidence shows that severe perineal trauma can be reduced by restricting the use of episiotomies and forceps (Kudish, et al., 2008).

Previous reports used AHRQ Quality Indicators version 3.1 to generate obstetric trauma rates. The 2011 reports use a modified version 4.1 of the software. While the effects of version change are extremely small, these estimates should not be compared with estimates in previous reports.

Figure 2.24. Obstetric trauma with 3rd or 4th degree laceration per 1,000 vaginal deliveries without instrument assistance, by race/ethnicity and area income, 2001-2008

Key: API = Asian or Pacific Islander; Q1 represents the lowest income quartile and Q4 represents the highest income quartile based on the median income of a patient's ZIP Code of residence.
Source: Agency for Healthcare Research and Quality, Healthcare Cost and Utilization Project, Nationwide Inpatient Sample, State Inpatient Databases disparities analysis file, and AHRQ Quality Indicators, version 4.1.
Denominator: All patients hospitalized for vaginal delivery without indication of instrument assistance.
Note: For this measure, lower rates are better. Rates are adjusted by age. White, Black, and API groups are non-Hispanic; Hispanic includes all races.

- From 2004 to 2008, rates of obstetric trauma with 3rd or 4th degree laceration decreased from 36 to 24 per 1,000 vaginal deliveries without instrument assistance (Figure 2.24). Declines were observed in all racial/ethnic and area income groups.

- In all years, Black and Hispanic mothers had lower rates of obstetric trauma than White mothers. In addition, residents of the lower three area income quartiles had lower rates than residents of the highest area income quartile.

- In all years, API mothers had higher rates than White mothers.

- The 2008 top 3 State achievable benchmark was 17 per 1,000 deliveries.[xvii] Black mothers have already attained the benchmark. At the current annual rate of decrease, this benchmark could be attained overall and by most racial/ethnic and area income groups in about 4 years. Residents of the highest area income quartile would need 5 years while APIs would need more than 13 years to attain the benchmark.

Also, in the NHQR:

- In all years, mothers ages 18-24 and 35-54 had lower rates of obstetric trauma than mothers ages 25-34.

- In all years, mothers whose payment source was Medicare, Medicaid, or self pay/uninsured/no charge had lower rates of obstetric trauma than mothers whose payment source was private health insurance.
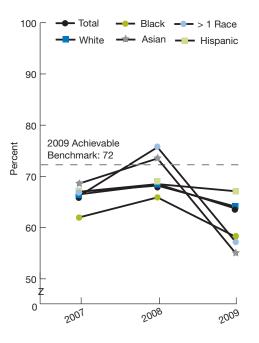
Prevention: Receipt of Recommended Immunizations by Young Children

Immunizations are important in reducing mortality and morbidity. They protect recipients from illness and protect others in the community who are not vaccinated. Beginning in 2007, recommended vaccines for children that should have been completed by ages 19-35 months included diphtheria-tetanus-pertussis vaccine, polio vaccine, measles-mumps-rubella vaccine, *Haemophilus influenzae* type B vaccine, hepatitis B vaccine, varicella vaccine, and pneumococcal conjugate vaccine. These vaccines constitute the 4:3:1:3:3:1:4 vaccine series tracked in Healthy People 2020.

[xvii] The top 3 States contributing to the achievable benchmark are Utah, West Virginia, and Wyoming.

Figure 2.25. Children ages 19-35 months who received the 4:3:1:3:3:1:4 vaccine series, by race/ethnicity, 2007-2009

Source: Centers for Disease Control and Prevention, National Center for Health Statistics and National Center for Immunization and Respiratory Diseases, National Immunization Survey, 2007-2009.
Denominator: U.S. civilian noninstitutionalized population ages 19-35 months.
Note: White, Black, Asian, and more than one race are non-Hispanic groups; Hispanic includes all races.

- In 2009, fewer than two-thirds of children ages 19-35 months received all recommended vaccinations (Figure 2.25).
- In 2007 and 2009, Black children were less likely than White children to receive all recommended vaccinations.
- The 2009 top 5 State achievable benchmark was 72%.[xviii] No group has attained this benchmark.
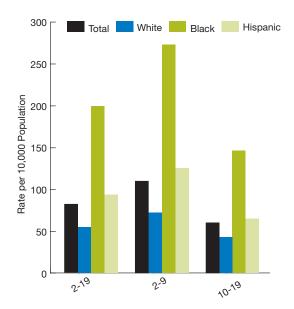
Also, in the NHQR:

- In 2008 and 2009, children with family incomes below the poverty level were less likely to receive all recommended vaccinations compared with children with family incomes at or above the poverty level.

Outcome: Emergency Department Visits for Asthma

Asthma is a chronic respiratory disease that causes wheezing, coughing, chest tightness, and shortness of breath. In 2009, approximately 7.1 million children had a diagnosis of asthma in the United States, and 4 million had had at least one asthma attack in the previous year (Akinbami, et al., 2011). However, asthma attacks can largely be prevented using medications and avoiding the triggers that cause attacks. Visits to the emergency department (ED) for asthma attacks are, therefore, generally considered to be markers of inadequate preventive asthma care.

[xviii] The top 5 States that contributed to the achievable benchmark are Louisiana, Maryland, Massachusetts, New Hampshire, and Ohio.

Figure 2.26. Rate of emergency department visits for asthma per 10,000 population, people ages 2-19 years, by race/ethnicity, 2005-2007 combined

Source: Centers for Disease Control and Prevention, National Center for Health Statistics, National Hospital Ambulatory Care Survey-Emergency Department, 2005-2007.
Note: For this measure, lower rates are better. White and Black groups are non-Hispanic; Hispanic includes all races.

- In 2005-2007, people ages 2-19 had 81 ED visits for asthma per 10,000 population. Children ages 2-9 had higher rates than adolescents ages 10-19 (Figure 2.26).
- Overall and among both age groups, non-Hispanic Black children had higher rates of ED visits for asthma than non-Hispanic White children. Overall and among children ages 2-9, Hispanics had higher rates than non-Hispanic Whites.
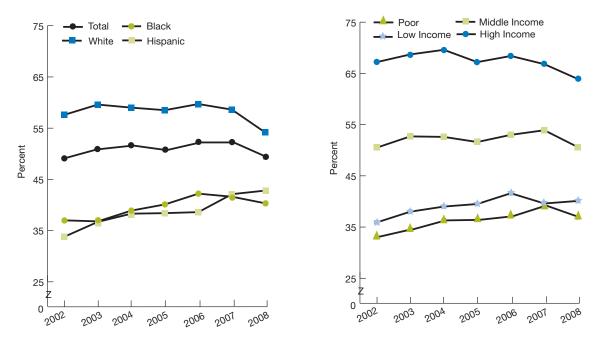
Also, in the NHQR:

- Overall and among both age groups, children with public health insurance had higher rates of ED visits for asthma than children with private health insurance.

Prevention: Children's Dental Care

According to the National Institute of Dental and Craniofacial Research, presence of dental caries is the single most common chronic disease of childhood, occurring five to eight times as frequently as asthma (HHS, 2000), the second most common chronic disease in children. Regular dental visits help to improve overall oral health and prevent dental caries.

Chapter 2

Maternal and Child Health

Figure 2.27. Children ages 2-17 with a dental visit in the calendar year, by race/ethnicity and income, 2002-2008

Source: Agency for Healthcare Research and Quality, Medical Expenditure Panel Survey, 2002-2008.
Denominator: U.S.civilian noninstitutionalized population ages 2-17.
Note: White and Black groups are non-Hispanic; Hispanic includes all races.
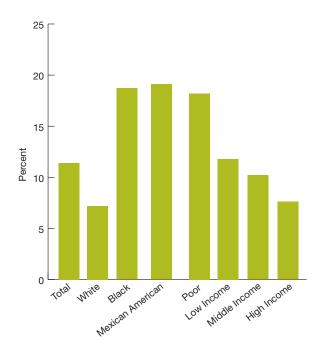
- Between 2002 and 2008, there were no statistically significant changes in the percentage of children ages 2-17 who had a dental visit in the calendar year (Figure 2.27). Increases were observed among Black, Hispanic, poor, and low-income children.
- In all years, non-Hispanic Black and Hispanic children were less likely than non-Hispanic White children and poor, low-income, and middle-income children were less likely than high-income children to have a dental visit.

Also, in the NHQR:

- In all years, children ages 2-5 were less likely than adolescents ages 13-17 and children with public insurance only or no insurance were less likely than children with any private insurance to have a dental visit.

Outcome: Untreated Dental Caries

Figure 2.28. Adolescents ages 13-17 with untreated dental caries, by race/ethnicity and income level, 2005-2008 combined

Source: Centers for Disease Control and Prevention, National Center for Health Statistics, National Health and Nutrition Examination Survey, 2005-2008.
Denominator: U.S. civilian noninstitutionalized population ages 13-17.
Note: For this measure, lower rates are better. White and Black groups are non-Hispanic.

- Overall, 11% of adolescents ages 13-17 had untreated dental caries (Figure 2.28).
- Mexican-American (19%) and non-Hispanic Black (19%) adolescents were more likely than non-Hispanic White adolescents (7%) to have untreated dental caries.
- Adolescents in poor families (18%) were more likely than adolescents in high-income families (8%) to have untreated dental caries.

Also, in the NHQR:

- Uninsured adolescents and those with public insurance were more likely to have untreated caries than privately insured adolescents.
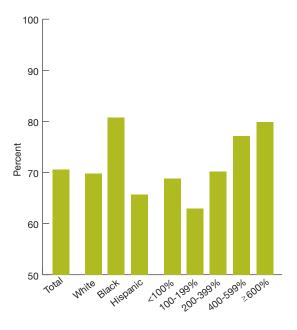
Focus on Adolescents

Individuals 10-14 years old made up 6.7% of the 2010 U.S. population while those 15-19 years old made up 7.1% (U.S. Census Bureau, 2010). Survey data indicate that roughly 21% of children ages 12-17 have special health care needs (Bethell, et al., 2008). Adolescents frequently engage in high-risk behaviors resulting in morbidity and mortality, including injuries, unintended pregnancies, sexually transmitted diseases, and alcohol, tobacco, and substance abuse. Many adult chronic diseases and adverse health behaviors begin in adolescence (Forrest & Riley, 2004).

Prevention: Well Visits in the Last Year

The American Academy of Pediatrics recommends annual preventive health care visits for all individuals between ages 11 and 21 years (AAP, 2008). For the purposes of this measure, adolescents are children ages 10-17.

Figure 2.29. Adolescents ages 10-17 years with a well visit in the last 12 months, by race/ethnicity and income relative to poverty threshold, 2009

Source: Centers for Disease Control and Prevention, National Center for Health Statistics, National Health Interview Survey, 2009.
Denominator: U.S. civilian noninstitutionalized population ages 10-17.
Note: White and Black groups are non-Hispanic; Hispanic includes all races.

- Non-Hispanic Black adolescents had higher rates of well visits than non-Hispanic White or Hispanic adolescents (Figure 2.29).
- Compared with adolescents with family incomes of 600% of the poverty line and over, those with family incomes less than 400% of the poverty line had lower rates of well visits.
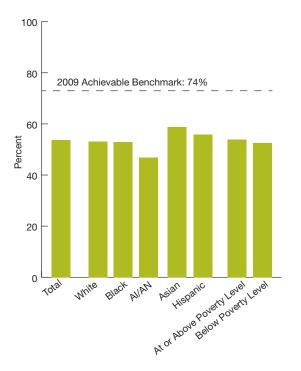
Also, in the NHQR:

- Compared with adolescents with private health insurance, a lower percentage of uninsured adolescents had a well visit in the last 12 months.

Prevention: Receipt of Meningococcal Vaccine

Meningitis is an infection of the membranes that cover the brain and spinal cord. If meningitis is caused by bacteria, it is often life threatening. Meningococcal diseases are infections caused by the bacteria *Neisseria meningitidis*. Although *Neisseria meningitidis* can cause various types of infections, it is most important as a potential cause of meningitis. The meningococcal vaccine can prevent most cases of meningitis caused by *Neisseria meningitidis* and is recommended for all children ages 11-12 years. Effective in January 2011, a second dose has been recommended at age 16.

Figure 2.30. Adolescents ages 13-17 who ever received at least 1 dose of the meningococcal vaccine, by race/ethnicity and income, 2009

Key: AI/AN = American Indian/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, 2009.
Note: White, Black, AI/AN, and Asian groups are non-Hispanic; Hispanic includes all races.

- In 2009, 54% of adolescents ages 13-17 had ever received meningococcal vaccine. There were no statistically significant differences related to race/ethnicity or income (Figure 2.30).
- The 2009 top 5 State achievable benchmark was 74%.[xix] No group has attained this benchmark.

Also, in the NHQR:

- Rates varied considerably by State, ranging from 19% to 78%.

[xix] The top 5 States that contributed to the achievable benchmark are the District of Columbia, Massachusetts, New Jersey, Pennsylvania, and Rhode Island.

Chapter 2   Maternal and Child Health

Mental Health and Substance Abuse

Importance

Mortality

Number of deaths due to suicide (2009)..34,598 (Kochanek, et al., 2011)

Rank among causes of death in the United States—suicide (2009)......................10th (Kochanek, et al., 2011)

Alcohol-impaired driving fatalities (2009) ....10,839 (NHTSA, 2009)

Prevalence

People age 12 and over with alcohol and/or illicit drug dependence or abuse
in the past year (2009)..22.5 million (8.9%) (SAMHSA, 2010)

Youths ages 12-17 with a major depressive episode during the past year
(2009)...2.0 million (8.1%) (SAMHSA, 2010)

Adults age 18 and over with a major depressive episode during the
past year (2009) ....14.8 million (6.5%) (SAMHSA, 2010)

Adults with at least one major depressive episode in their lifetime
(2006)...30.4 million (13.9%) (SAMHSA, 2007)

Cost

National expenditures for treatment of mental health and substance abuse
disorders (2014 est.)..$239 billion (SAMHSA, 2008)

Cost-effectiveness of screening and brief counseling for problem
drinking..$0-$14,000/QALY (Maciosek, et al., 2006)

Measures

The NHQR and NHDR 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 four measures of mental health and substance abuse treatment:

- Receipt of treatment for depression.
- Suicide deaths.
- Receipt of treatment for illicit drug use or alcohol problem.
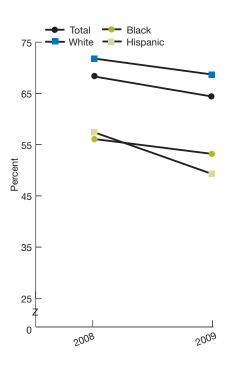- Completion of substance abuse treatment.

Findings

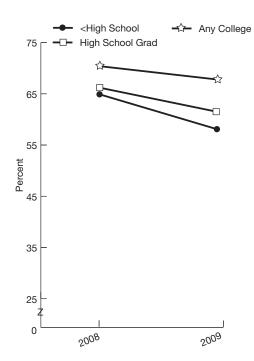### Treatment: Receipt of Treatment for Depression

In 2006, approximately 1.4 million hospitalizations were specifically for mental health conditions and one in five hospital stays included some mention of a mental health condition as either a principal or secondary diagnosis (Saba, et al., 2008). Mood disorders were the most common principal diagnosis for all nonelderly people.

Treatment for depression can be very effective in reducing symptoms and associated illnesses and returning individuals to a productive lifestyle. The Sequenced Treatment Alternatives to Relieve Depression study, funded by the National Institute of 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. This study found that between 28% and 33% of participants achieved a symptom-free state after the first round of medication, and nearly 70% achieved remission after 12 months (Insel & Wang, 2009). Strategies for treating depression in primary care settings, such as the collaborative care model, have also been shown to generate positive net social benefits in cost-benefit analyses compared with usual care (Glied, et al., 2010).

Barriers to high-quality mental health care include cost of care, lack of sufficient insurance for mental health services, social stigma, fragmented organization of services, and mistrust of providers. In rural and remote areas, limited availability of skilled care providers is also a major problem. For racial and ethnic populations, these problems are compounded by the lack of culturally and linguistically competent providers.

Chapter 2   Mental Health and Substance Abuse

Figure 2.31. 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 education, 2008-2009

Source: Substance Abuse and Mental Health Services Administration, National Survey on Drug Use and Health, 2008-2009.
Denominator: U.S. population age 18 and over who had a major depressive episode in the last 12 months.
Note: Major depressive episode is defined as a period of at least 2 weeks when a person experienced a depressed mood or loss of interest or pleasure in daily activities and had a majority of the symptoms of depression described in the fourth edition of the *Diagnostic and Statistical Manual of Mental Disorders*. Treatment for depression is defined as seeing or talking to a medical doctor or other professional or using prescription medication in the past year for depression. White and Black groups are non-Hispanic; Hispanic includes all races.

- In 2009, less than two-thirds of adults with a major depressive episode received treatment for depression (Figure 2.31).
- In both years, Blacks and Hispanics were less likely to receive treatment for depression than Whites.
- In 2009, people with less than a high school education and high school graduates were less likely to receive treatment for depression than people with any college education.
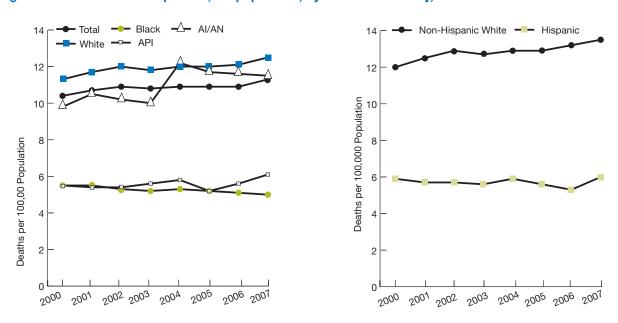
Also, in the NHQR:

- In 2008 and 2009, adults ages 18-44 were less likely than those ages 45-64 and men were less likely than women to receive treatment for depression.

Outcome: Suicide Deaths

Most individuals who die by suicide have mental illnesses, such as depression or schizophrenia, or have substance abuse problems (Moscicki, 2001). 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 and may reduce suicide attempts (Tarrier, et al., 2008).

Figure 2.32. Suicide deaths per 100,000 population, by race and ethnicity, 2000-2007

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, 2000-2007.
Denominator: U.S. population.
Note: For this measure, lower rates are better. Estimates are age adjusted to the 2000 standard population.

■ Overall, from 2000 to 2007, the rate of suicide deaths did not change significantly (Figure 2.32). Increases were observed among Whites and AI/ANs; decreases were observed among Blacks.

■ In all years, Blacks and APIs had lower suicide death rates than Whites. Hispanics had lower suicide death rates than non-Hispanic Whites.

Also, in the NHQR:

■ In all years, people ages 0-17 had lower suicide death rates than people ages 18-44. Since 2002, people ages 45-64 have had higher suicide death rates than people ages 18-44. Females had lower rates than males.
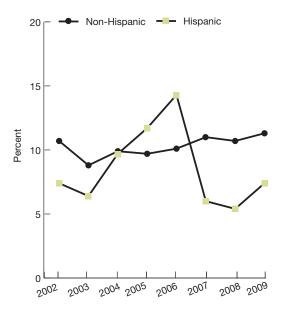
Treatment: Receipt of Treatment for Illicit Drug Use or Alcohol Problem

Illicit drug[xx] use is a medical problem that can have a direct toxic effect on a number of bodily organs and 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. In addition, alcohol can cause birth defects, including fetal alcohol syndrome. Alcoholism and illicit drug use increase the risk of death from car crashes and other injuries (Ringold, et al., 2006) Illicit drug use and alcohol problems can be effectively treated at specialty facilities.

[xx] 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).

Figure 2.33. 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, 2002-2009

Key: AI/AN = American Indian or Alaska Native.
Source: Substance Abuse and Mental Health Services Administration, National Survey on Drug Use and Health, 2002-2009.
Denominator: Civilian noninstitutionalized population age 12 and over who needed treatment for illicit drug use or an alcohol problem in the last 12 months.
Note: Treatment refers to treatment at a specialty facility, such as a drug and alcohol inpatient and/or outpatient rehabilitation facility, inpatient hospital setting, or a mental health center. Data are not statistically reliable for AI/ANs for 2004 and 2007. Hispanics and non-Hispanics include all races.

■ From 2002 to 2009, there was no statistically significant change 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 2.33).

■ From 2002 to 2009, Blacks were more likely to receive needed treatment for illicit drug use or an alcohol problem than Whites in 6 of the 8 years.

■ During the same period, Hispanics were significantly less likely to receive treatment than non-Hispanics in 4 of the 8 years.
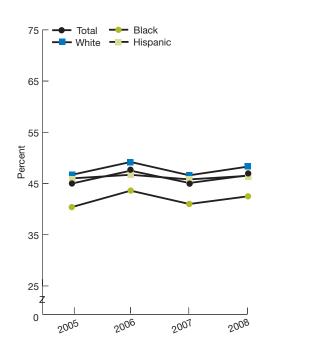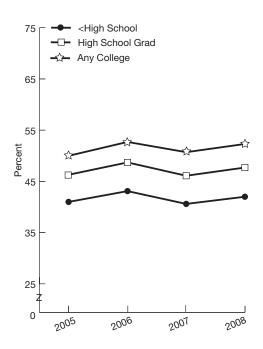
Also, in the NHQR:

■ In 2008 and 2009, people with any college were less likely to receive needed treatment for illicit drug use or an alcohol problem than people with less than a high school education.

■ In 2009, people ages 12-17 were less likely to receive treatment than people ages 45-64.

Treatment: Completion of Substance Abuse Treatment

Completion of substance abuse treatment is strongly associated with improved outcomes, such as long-term abstinence from substance use. Dropout from treatment often leads to relapse and return to substance use.

Figure 2.34. People age 12 and over treated for substance abuse who completed treatment course, by race/ethnicity and education, 2005-2008

Source: Substance Abuse and Mental Health Services Administration, Treatment Episode Data Set, Discharge Data Set, 2005-2008.
Denominator: Discharges age 12 and over from publicly funded substance abuse treatment facilities.
Note: White and Black groups are non-Hispanic; Hispanic includes all races.

- From 2005 to 2008, there were no statistically significant changes in the percentage of people age 12 and over treated for substance abuse who completed the treatment course (Figure 2.34).
- In all years, non-Hispanic Blacks who were treated for substance abuse were significantly less likely than non-Hispanic Whites to complete treatment.
- In all years, people with less than a high school education who were treated for substance abuse were significantly less likely than people with any college to complete treatment.

Also, in the NHQR:

- In all years, people ages 12-19 and 20-39 were less likely than those age 40 and over to complete substance abuse treatment. Females were less likely than males to complete treatment.

NEW Musculoskeletal Diseases

Importance

Prevalence

People diagnosed with arthritis, rheumatoid arthritis,
lupus, or fibromyalgia (2007-2009) ....50 million (22%) (MMWR, 2010a)

Number of people with low bone density...34 million (NOF, 2011)

Morbidity

Activity limitations attributable to diagnosed arthritis among U.S.
population (2007)..21 million (42%) (MMWR, 2010a)

Lifetime osteoporosis-related fractures among women over age 50 ....approx. 50% (NOF, 2011)

Lifetime osteoporosis-related fractures among men over age 50...............................approx. 25% (NOF, 2011)

Cost

Total cost of arthritis and other rheumatic conditions (2003) ....$128 billion (MMWR, 2007)

Direct medical cost of arthritis and other rheumatic conditions (2003) ....$81 billion (MMWR, 2007)

Indirect costs of arthritis and other rheumatic conditions (2003) ....$47 billion (MMWR, 2007)

Total cost of osteoporosis-related fractures (2005) ....$19 billion (NOF, 2011)

Measures

This section on musculoskeletal diseases is new in the 2011 NHQR and NHDR. It tracks several quality measures for prevention and management of this broad category of illnesses that includes osteoporosis and arthritis. One measure was moved from the section on functional status and highlighted here:

- Osteoporosis screening among older women.

In addition, three new measures related to the management of arthritis are shown. These measures are part of the Arthritis Foundation's Quality Indicator Set for Osteoarthritis. A multidisciplinary panel of experts on arthritis and pain reviewed scientific evidence to help develop the Quality Indicator Set (Pencharz & MacLean, 2004). The measures were tracked as part of Healthy People 2010 and continue to be tracked in Healthy People 2020:

- Arthritis education among adults with arthritis.
- Counseling about physical activity among adults with arthritis.
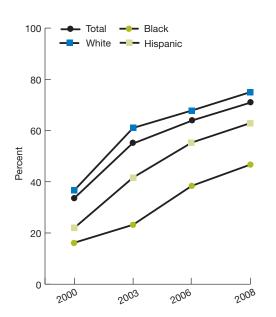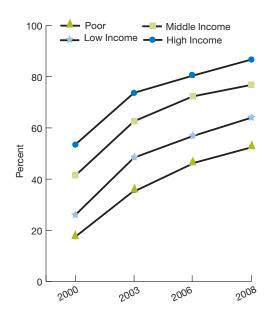- Counseling about weight reduction among overweight adults with arthritis.

Findings

Prevention: Osteoporosis Screening Among Older Women

Osteoporosis is a disease characterized by loss of bone tissue. Osteoporosis increases the risk of fractures of the hip, spine, and wrist. About half of all postmenopausal women will experience an osteoporotic fracture. Osteoporotic fractures 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. The remaining 13 percent have other outcomes (Lane, 2006).

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 and engaging in weight-bearing exercise (USPSTF, 2002).

Figure 2.35. 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 and income, 2000-2008

Source: Medicare Current Beneficiary Survey, 2000-2008.
Denominator: Female Medicare beneficiaries age 65 and over living in the community.
Note: White and Black groups are non-Hispanic; Hispanic includes all races.

- From 2000 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 from 34% to 71% (Figure 2.35). Improvements were observed among all racial/ethnic and income groups.
- In all years, Hispanic and non-Hispanic Black women were less likely to be screened for osteoporosis than non-Hispanic White women.

■ In all years, poor, low-income, and middle-income women were less likely to be screened for osteoporosis than high-income women.
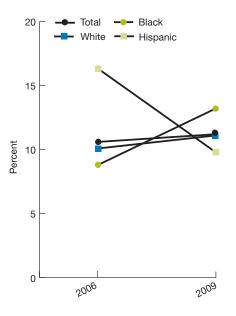
Also, in the NHQR:

■ In all years, women age 85 and over were less likely to be screened for osteoporosis than women ages 65-74. Women with Medicare managed care, Medicare and Medicaid, or Medicare fee for service only were less likely to be screened for osteoporosis than women with Medicare and private supplemental insurance.
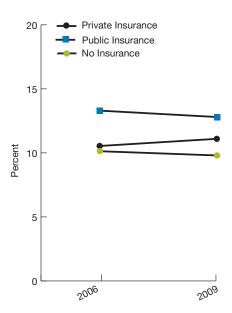
NEW Management: Arthritis Education Among Adults With Arthritis

Osteoarthritis is the most common form of arthritis, affecting about 12% of the general population. Patients with symptomatic osteoarthritis who receive education about the natural history, treatment, and self-management of the disease have better knowledge and self-efficacy and experience less pain and functional impairment (Pencharz & MacLean, 2004).

Figure 2.36. Adults with doctor-diagnosed arthritis who reported they had effective, evidence-based arthritis education as an integral part of the management of their condition, by race/ethnicity and health insurance, 2006 and 2009

Source: Centers for Disease Control and Prevention, National Center for Health Statistics, National Health Interview Survey, 2006 and 2009.
Denominator: Adults with doctor-diagnosed arthritis.
Note: Estimates are age adjusted to the 2000 standard population. Health insurance refers to adults under age 65. White and Black groups are non-Hispanic; Hispanic includes all races.

■ In 2009, 11% of adults with doctor-diagnosed arthritis received effective, evidence-based arthritis education (Figure 2.36).

■ In 2006, Hispanics were more likely than non-Hispanic Whites to receive arthritis education.
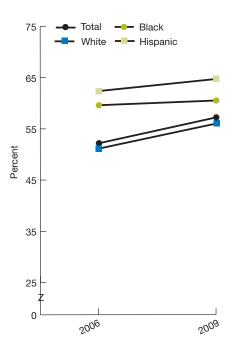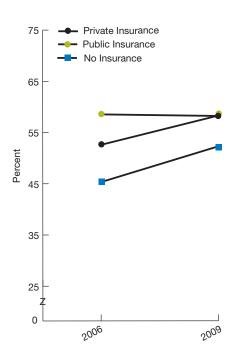
Also, in the NHQR:

■ In both years, adults age 65 and over were less likely to receive arthritis education than adults ages 45-64.

NEW Management: Counseling About Physical Activity Among Adults With Arthritis

Patients with symptomatic osteoarthritis should also receive counseling about muscle strengthening and aerobic exercise programs. Such programs can reduce pain and improve functional ability (Pencharz & MacLean, 2004).

Figure 2.37. Adults with doctor-diagnosed arthritis who reported they received health care provider counseling about physical activity or exercise, by race/ethnicity and health insurance, 2006 and 2009

Source: Centers for Disease Control and Prevention, National Center for Health Statistics, National Health Interview Survey, 2006 and 2009.
Denominator: Adults with doctor-diagnosed arthritis.
Note: Estimates are age adjusted to the 2000 standard population. Health insurance refers to adults under age 65. White and Black groups are non-Hispanic; Hispanic includes all races.

■ In 2009, 57% of adults with doctor-diagnosed arthritis received health care provider counseling about physical activity or exercise (Figure 2.37).

■ In both years, Hispanics were more likely than non-Hispanic Whites to receive exercise counseling.

■ In 2006, non-Hispanic Blacks were also more likely than non-Hispanic Whites to receive exercise counseling but this changed in 2009.
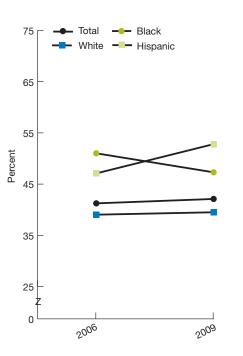
Also, in the NHQR:

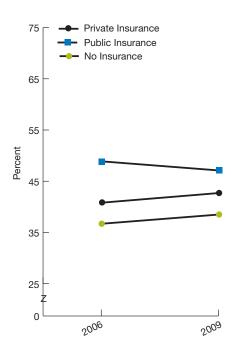■ In both years, men were less likely than women to receive exercise counseling.

NEW Management: Counseling About Weight Reduction Among Overweight Adults With Arthritis

Weight is a risk factor for osteoarthritis and weight loss can prevent the development of osteoarthritis among overweight people. Moreover, overweight people with osteoarthritis who lose weight experience less joint pain and improved function (Pencharz & MacLean, 2004).

Figure 2.38. Overweight adults with doctor-diagnosed arthritis who reported they received health care provider counseling about weight reduction, by race/ethnicity and health insurance, 2006 and 2009

Source: Centers for Disease Control and Prevention, National Center for Health Statistics, National Health Interview Survey, 2006 and 2009.
Denominator: Adults with doctor-diagnosed arthritis.
Note: Estimates are age adjusted to the 2000 standard population. Health insurance refers to adults under age 65. White and Black groups are non-Hispanic; Hispanic includes all races.

- In 2009, 42% of overweight adults with doctor-diagnosed arthritis received health care provider counseling about weight reduction (Figure 2.38).
- In both years, overweight non-Hispanic Blacks were more likely than non-Hispanic Whites to receive weight reduction counseling. In 2009, overweight Hispanics were also more likely than non-Hispanic Whites to receive weight reduction counseling.

Also, in the NHQR:

- In both years, overweight adults age 65 and over were less likely to receive weight reduction counseling than adults ages 45-64.
- Men were less likely than women to receive weight reduction counseling.

Respiratory Diseases

Importance

Mortality

Number of deaths due to chronic lower respiratory diseases (2009)..............137,082 (Kochanek, et al., 2011)

Number of deaths, influenza and pneumonia combined (2009).......................53,582 (Kochanek, et al., 2011)

Cause of death rank for chronic lower respiratory diseases (2009)........................3rd (Kochanek, et al., 2011)

Cause of death rank for influenza and pneumonia combined (2009).....................8th (Kochanek, et al., 2011)

Prevalence

Adults age 18 and over with current asthma (2009)................................17.5 million (Akinbami, et al., 2011)

Children under age 18 with current asthma (2009) ....7.1 million (Akinbami, et al., 2011)

Incidence

Number of discharges attributable to pneumonia (2007)...........................1.2 million et al., (Hall, et al., 2010)

New cases of tuberculosis (2010)..11,181 (MMWR, 2011a)

Cost

Total cost of lung diseases (2010)..$173.4 billion (NHLBI, 2009)

Total cost of upper respiratory infections (annual est.)................................$40 billion (Fendrick, et al., 2003)

Total cost of asthma (2010) ....$20.7 billion (NHLBI, 2009)

Cost-effectiveness of influenza immunization (2006)....................$0-$14,000/QALY (Maciosek, et al., 2006)

Measures

The NHQR and NHDR track several quality measures for prevention and treatment of this broad category of illnesses that includes pneumonia, tuberculosis, and asthma. The four measures highlighted in this section are:
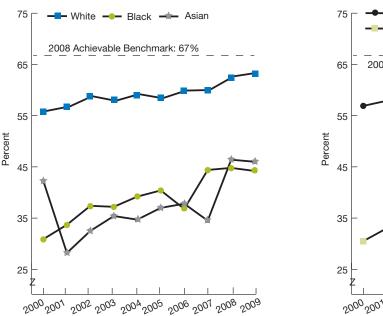
- Pneumococcal vaccination.
- Receipt of recommended care for pneumonia.
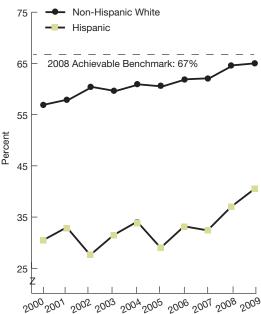- Completion of tuberculosis therapy.
- Daily asthma medication.

Findings

Prevention: Pneumococcal Vaccination

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

Figure 2.39. Adults age 65 and over who reported ever receiving pneumococcal vaccination, by race and ethnicity, 2000-2009

Source: Centers for Disease Control and Prevention, National Center for Health Statistics, National Health Interview Survey, 2000-2009.
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; see Chapter 1, Introduction and Methods, for details.

- Overall, the percentage of adults age 65 and over who reported ever having pneumococcal vaccination increased from 53% in 2000 to 61% in 2009 (data not shown). Increases were observed among all racial and ethnic groups between 2000 and 2009 (Figure 2.39).

- In all years, Blacks and Asians were less likely than Whites, and Hispanics were less likely than non-Hispanic Whites to have pneumococcal vaccination.

- The 2008 top 5 State achievable benchmark was 67%.[xxi] At the current annual rate of increase, this benchmark could be attained overall in about 8 years. Whites could attain the achievable benchmark in about 6 years, while Blacks, Asians, and Hispanics would not attain the benchmark for 16, 19, and 30 years, respectively.

[xxi] The top 5 States contributing to the achievable benchmark are Colorado, Delaware, Maine, New Hampshire, and Oklahoma.
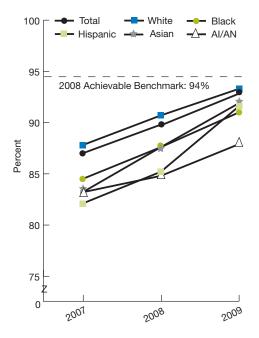
Also, in the NHQR:

■ In all years, adults with Medicare only were less likely than adults with Medicare and private supplemental health insurance to have pneumococcal vaccination. Poor adults were less likely than high-income adults to have pneumococcal vaccination.

Treatment: Receipt of Recommended Care for Pneumonia

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 or provision, and (5) pneumococcal vaccination status assessment or provision. An opportunities model composite of these five measures is presented here.

Figure 2.40. Hospital patients with pneumonia who received recommended hospital care, by race/ethnicity, 2007-2009.

Key: AI/AN = American Indian or Alaska Native.
Source: Centers for Medicare & Medicaid Services, Medicare Quality Improvement Organization Program, 2007-2009.
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: White, Black, AI/AN, and Asian groups are non-Hispanic; Hispanic includes all races. Recommended care includes initial antibiotics within 6 hours of hospital arrival, antibiotics consistent with current recommendations, blood culture before antibiotics are administered, influenza vaccination status assessment or provision, and pneumococcal vaccination status assessment or provision.

■ In 2009, 93% of hospital patients with pneumonia received recommended hospital care (Figure 2.40).

■ In all years, the percentage of patients with pneumonia who received recommended hospital care was significantly lower for Blacks, Asians, AI/ANs, and Hispanics compared with Whites.

■ In 2008, the top 5 State achievable benchmark was 94%.[xxii] By 2009, all racial/ethnic groups were close to the benchmark except AI/ANs.

[xxii] The top 5 States contributing to the achievable benchmark are Iowa, Maine, New Hampshire, New Jersey, and Vermont.
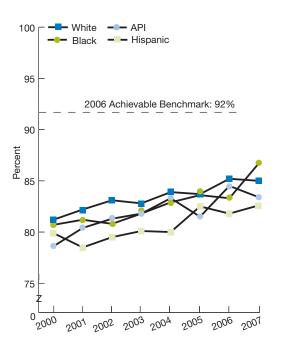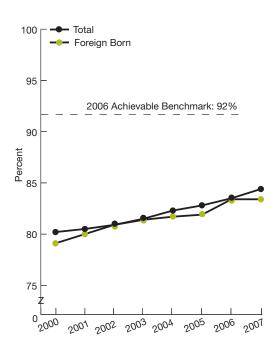
Also, in the NHQR:

■ In 2009, patients ages 75-84 and 85 and over were more likely to receive recommended hospital care for pneumonia compared with patients under age 65.

Outcome: Completion of Tuberculosis Therapy

Failure to complete tuberculosis therapy puts patients at increased risk for treatment failure and for spreading the infection to others. Even worse, it may result in the development of drug-resistant strains of tuberculosis.

Figure 2.41. Patients with tuberculosis who completed a curative course of treatment within 1 year of initiation of treatment, by race/ethnicity and place of birth, 2000-2007

Key: API = Asian or Pacific Islander.
Source: Centers for Disease Control and Prevention, National Tuberculosis Surveillance System, 2000-2007.
Denominator: U.S. civilian noninstitutionalized population treated for tuberculosis.
Note: White, Black, and API are non-Hispanic groups. Hispanic includes all races.

■ The percentage of patients who completed tuberculosis therapy within 1 year increased from 80% in 2000 to 84% in 2007 (Figure 2.41). Improvements were observed among foreign-born patients and among all racial/ethnic groups.

■ In 6 of 8 years, Hispanics were less likely to complete tuberculosis treatment than non-Hispanic Whites.

■ The 2006 top 5 State achievable benchmark was 92%.[xxiii] At the current 0.6% annual rate of increase for the general population and for the foreign-born population, this benchmark would not be attained overall for about 12 years and 14 years, respectively. Blacks could achieve the benchmark in about 7 years while Hispanics would need about 17 years.

[xxiii] The top 5 States contributing to the achievable benchmark are Alaska, Indiana, Kansas, Maryland, and Oregon.
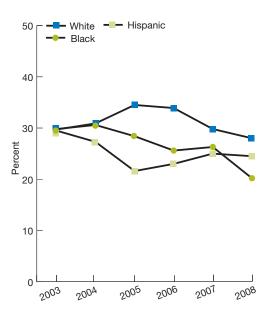
Also, in the NHQR:

- In all years, children ages 0-17 with tuberculosis were more likely than adults ages 18-44 to complete a curative course of treatment within 1 year of initiation of treatment.
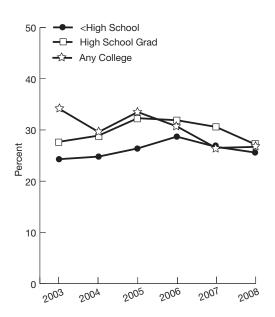- In 6 of 8 years, males were less likely to complete tuberculosis treatment than females.

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 asthma diagnosis and management (NHLBI, 2007). 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.

While not all patients with asthma need medications, patients with persistent asthma need daily long-term controller medication to prevent exacerbations and chronic symptoms. Appropriate preventive medications for people with persistent asthma include inhaled corticosteroids, inhaled long-acting beta-2-agonists, cromolyn, theophylline, and leukotriene modifiers.

Figure 2.42. People with current asthma who report taking preventive asthma medicine daily or almost daily, by race/ethnicity and education, 2003-2008

Source: Agency for Healthcare Research and Quality, Medical Expenditure Panel Survey, 2003-2008.
Denominator: Noninstitutionalized population with asthma.
Note: Age adjusted to the 2000 U.S. standard population. People with current asthma reported that they still had asthma or had an asthma attack in the last 12 months. White and Black are non-Hispanic groups. Hispanic includes all races.

Chapter 2

Respiratory Diseases

■ From 2003 to 2008, the percentage of people with current asthma who reported taking preventive asthma medicine daily or almost daily did not change significantly (data not shown). A significant decline was observed among Blacks and people with any college education. No change was observed among other racial/ethnic or education groups (Figure 2.42).

■ In 3 of 6 years, non-Hispanics Blacks were less likely to take daily preventive asthma medicine than non-Hispanic Whites.
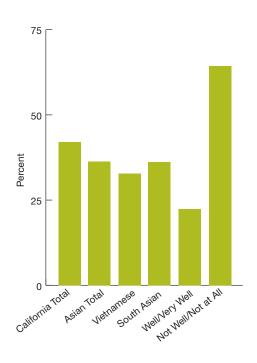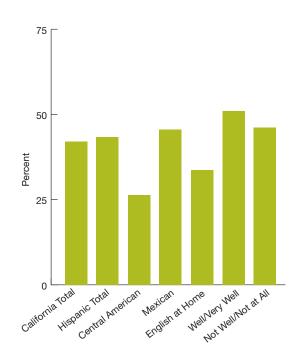
Also, in the NHQR:

■ From 2003 to 2008, people ages 18-44 were less likely than other age groups to take daily preventive asthma medicine.

■ Uninsured people under age 65 were less likely than people under age 65 with any private health insurance to take daily preventive asthma medicine.

Focus on Asian and Hispanic Subgroups

National data on Asian and Hispanic subgroups are limited. In this section, we show rates of daily asthma medicine use among Asian and Hispanic subgroups in California. Data come from the 2009 California Health Interview Survey, which asks about daily medication to control asthma, similar to the Medical Expenditure Panel Survey question presented above.

Figure 2.43. People with current asthma who report taking prescription medication to control asthma, by Asian and Hispanic subgroups and English proficiency, California, 2009

Source: UCLA, Center for Health Policy Research, California Health Interview Survey, 2009.
Denominator: Civilian noninstitutionalized population in California.
Note: Estimates for Asians who speak English at home were not statistically reliable.

- In 2009, among Asian Californians, there was large variation among subgroups in the percentage of people with current asthma who took prescription medication to control asthma (Figure 2.43). Asians who did not speak English at home but reported speaking English very well or well were less likely to take medication to control asthma compared with Asians who reported speaking English not well or not at all. Other differences were not statistically significant due in part to large standard errors for many subpopulations.
- In 2009, among Hispanic Californians, there also was large variation among subgroups in the percentage of people with current asthma who took prescription medication to control asthma. Central Americans were less likely to take medication to control asthma compared with Californians as a whole. Hispanics who did not speak English at home but reported speaking English very well or well were more likely to take asthma medication compared with Hispanics who did speak English at home. Again, other differences were not statistically significant due in part to large standard errors for many subpopulations.

Chapter 2

Respiratory Diseases

Lifestyle Modification

Importance

Mortality
Number of deaths per year attributable to smoking (2000-2004)................................443,000 (MMWR, 2008)

Prevalence
Number of adult current cigarette smokers (2010)..45.3 million (MMWR, 2011b)

Number of obese adults (2007-2008)..72.5 million (MMWR, 2010b)

Percentage of adults with no leisure-time physical activity (2009).....................................40% (Barnes, 2010)

Percentage of children who are overweight ....16.9% (Ogden & Carroll, 2010)

Cost
Total cost of smoking (2000-2004 est.)..$193 billion (MMWR, 2008)

Total health care cost related to obesity (2008 est.)..$147 billion (MMWR, 2008)

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 (Satcher & Higginbotham, 2008). A recent study examined the effects on incidence of coronary heart disease (CHD), 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%. Unfortunately, healthy lifestyle practices have declined over the past two decades (Ford, et al., 2009).

Helping patients choose and maintain healthy lifestyles is a critical role of health care professionals. This year, the Lifestyle Modification section includes measures for both adults and children. Whenever children are mentioned in the section, the report is actually referencing the parents or guardians who were interviewed on behalf of the children. The NHDR tracks several quality measures for modifying unhealthy lifestyles, including the following six core report measures:

- Counseling smokers to quit smoking.
- Counseling obese adults about exercise.
- Obese adults who do not exercise.
- Counseling children about exercise.
- Counseling obese adults about healthy eating.
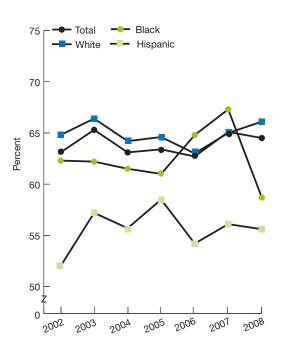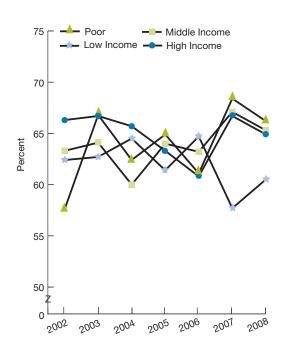- Counseling children about healthy eating.

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 (MMWR, 2008). Heart disease is the leading cause of death in the United States for both men and women (Hoyert, et al., 2005), with approximately 135,000 deaths due to smoking. Cigarette smoking increases the risk of dying from CHD two- to threefold (MMWR, 2008).

Quitting smoking has immediate and long-term health benefits. The risk of a heart attack and death from CHD is reduced by 50% in the first year after smoking cessation. The risk of mortality declines most rapidly in the first 3 years after smoking cessation, taking about 3 to 5 years of abstaining from smoking for cardiovascular risk to disappear (HHS, 2010). Smoking is a modifiable risk factor, and health care providers can help encourage patients to change their behavior and quit smoking.

Figure 2.44. Adult current smokers with a checkup in the last 12 months who received advice from a doctor to quit smoking, by race/ethnicity and income, 2002-2008

Source: Agency for Healthcare Research and Quality, Medical Expenditure Panel Survey, 2002-2008.
Denominator: Civilian noninstitutionalized adult current smokers who had a checkup in the last 12 months.
Note: Estimates are age adjusted to the 2000 standard population using three age groups: 18-44, 45-64, and 65 and over. White and Black are non-Hispanic groups. Hispanic includes all races.

- From 2002 to 2008, there were no statistically significant changes in the percentage of current adult smokers who were advised to quit smoking overall or by race/ethnicity or income (Figure 2.44).

■ In 5 out of the 7 years, current non-Hispanic White adult smokers were more likely to receive advice to quit smoking than current Hispanic adult smokers.

Also, in the NHQR:

■ From 2002 to 2008, adult current smokers ages 18-44 were less likely to receive advice to quit smoking compared with other age groups.

Prevention: Counseling Obese Adults About Exercise

Approximately one-third of adults are obese and about 17% of children and adolescents ages 2-19 are obese (CDC, 2011e). A large proportion of individuals who are overweight or obese are from lower socioeconomic groups, Black, or Mexican American, and women tend to have higher obesity rates than men (Truong & Sturm, 2005). Obesity increases the risk for many chronic, often deadly conditions, such as hypertension, cancer, diabetes, and CHD.

Although physician guidelines recommend that health care providers screen all adult patients for obesity (USPSTF, 2003), obesity remains underdiagnosed among U.S. adults (Diaz, et al., 2004). Physicians have direct access to many high-risk individuals, increasing the opportunity to educate patients about their personal risks, as well as suggesting realistic and sustainable lifestyle changes that can lead to a healthier weight and more active life (Manson, et al., 2004).

Physician-based exercise and diet counseling is an important component of effective weight loss interventions (USPSTF, 2003). Such interventions have been shown to increase levels of physical activity among sedentary patients, resulting in a sustained favorable body weight and body composition (Lin, et al., 2010). Although every obese person may not need counseling about exercise and diet, many would likely benefit from improvements in these activities.
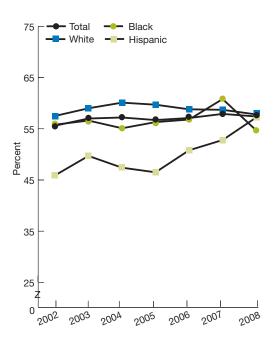
Regular exercise and a healthy diet aid in maintaining normal blood cholesterol levels, weight, and blood pressure, reducing the risk of heart disease, stroke, diabetes, and other comorbidities of obesity. Populations at risk for overweight and obesity may not receive adequate advice about lifestyle changes for many reasons. For instance, access to information, including physician knowledge of the latest recommendations, may be limited. The 2008 Physical Activity Guidelines for Americans recommend that adults engage in 2 hours and 30 minutes a week of moderate-intensity physical activity or 1 hour and 15 minutes a week of vigorous-intensity aerobic physical activity.[xxiv]
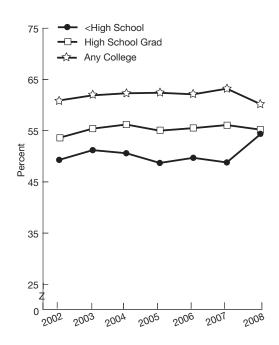
In addition to physician-based exercise and diet counseling, many national endeavors encourage lifestyle modification. For example, the President's Challenge is a program of the President's Council on Fitness, Sports and Nutrition that promotes an active and fit lifestyle through a suite of recognition programs available to anyone age 6 and over. Several initiatives have used the President's Challenge Presidential Active Lifestyle Award (PALA) to promote healthy lifestyles, including Box Tops for Education's Family Fitness Night and *Let's Move!*[xxv]

[xxiv] More information about the 2008 Physical Activity Guidelines for Americans is available at www.health.gov/paguidelines/guidelines/default.aspx.
[xxv] For more information about the President's Challenge, go to www.presidentschallenge.org/.

Figure 2.45. Adults with obesity who ever received advice from a health provider to exercise more, by race/ethnicity and education, 2002-2008

Source: Agency for Healthcare Research and Quality, Medical Expenditure Panel Survey, 2002-2008.
Denominator: Civilian noninstitutionalized population age 18 and over.
Note: Obesity is defined as a body mass index of 30 or higher. White and Black are non-Hispanic groups. Hispanic includes all races.

- Overall, in 2008, 57% of adults with obesity had ever received advice from a health provider to exercise (Figure 2.45).
- From 2002 to 2008, there were no statistically significant changes by race/ethnicity in the percentage of obese adults who received advice to exercise, except for obese Hispanic adults (from 46% to 57%).
- In 6 out of the 7 years, obese non-Hispanic White adults were more likely than obese Hispanic adults to ever receive advice to exercise.
- From 2002 to 2008, there were no statistically significant changes by education in the percentage of obese adults advised to exercise.
- In 6 out of the 7 years, the percentage of obese adults who had ever received advice to exercise was lower for people with less than a high school education and people with a high school education compared with those with any college.
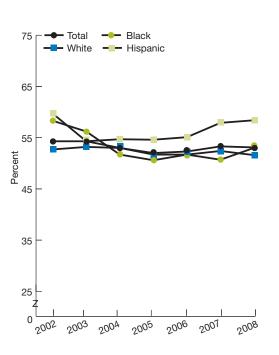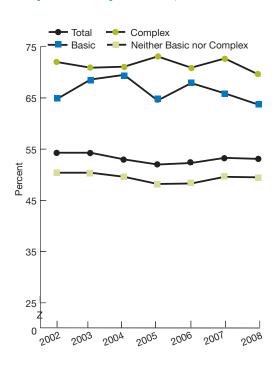
Also, in the NHQR:

- From 2002 to 2008, there were no statistically significant changes in any age group in the percentage of adults with obesity who were advised to exercise.
- In all years, female adults with obesity were more likely than males to receive advice to exercise.

NEW ⬥ Outcome: Obese Adults Who Do Not Exercise

Figure 2.46. Adults with obesity who did not spend half an hour or more in moderate or vigorous physical activity at least three times a week, by race/ethnicity and activity limitation, 2002-2008

Source: Agency for Healthcare Research and Quality, Medical Expenditure Panel Survey, 2002-2008.
Denominator: Civilian noninstitutionalized population age 18 and over.
Note: For this measure, lower rates are better. Obesity is defined as a body mass index of 30 or higher. Basic activity limitations refer to problems with mobility, self-care, domestic life, and activities that depend on sensory functioning, and complex activity limitations refer to limitations experienced in work and in community, social, and civic life. Neither indicates people with neither basic nor complex activity limitations. White and Black are non-Hispanic groups. Hispanic includes all races.

- Overall, in 2008, 53% of adults with obesity did not spend half an hour or more engaged in moderate or vigorous physical activity at least three times a week (Figure 2.46).
- From 2002 to 2008, there were no statistically significant changes by race/ethnicity in the percentage of adults with obesity who did not spend half an hour or more engaged in moderate or vigorous physical activity.
- In 3 out of the 7 years, the percentage of adults with obesity who did not spend half an hour or more engaged in moderate or vigorous physical activity was higher for Hispanics than for non-Hispanic Whites.
- From 2002 to 2008, there were no statistically significant changes by activity limitation in the percentage of adults with obesity who did not spend half an hour or more engaged in moderate or vigorous physical activity.
- In all years, the percentage of adults with obesity who did not spend half an hour or more engaged in moderate or vigorous physical activity was higher for people with basic and complex activity limitations than for people with no activity limitations.
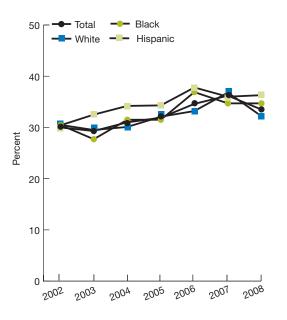
Also, in the NHQR:

- In 6 out of 7 years between 2002 and 2008, adults with obesity age 65 and over were more likely than other age groups not to engage in half an hour or more of moderate or vigorous physical activity at least three times a week.
- In all years, female adults with obesity were more likely than males not to engage in half an hour or more of moderate or vigorous physical activity at least three times a week.
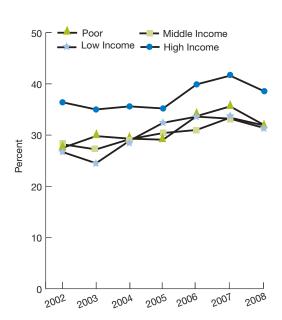
Prevention: Counseling Children About Exercise

Childhood is often a time when people establish healthy lifelong habits. Physicians can play an important role in encouraging healthy behaviors from a young age. For example, they can educate children and parents about the importance of regular exercise and healthy eating.

Overweight and obese children often become overweight and obese adults, with numerous and costly consequences. Unfortunately, as children have become more sedentary, the incidence of overweight and obesity has risen dramatically in the past two decades (Krebs & Jacobson, 2003), necessitating weight management through increased physical activity. The 2008 Physical Activity Guidelines for Americans recommend that children and adolescents engage in 1 hour or more of physical activity everyday.[xxvi]

Figure 2.47. Children ages 2-17 for whom a health provider gave advice within the past 2 years about exercise, by race/ethnicity and income, 2002-2008

Source: Agency for Healthcare Research and Quality, Medical Expenditure Panel Survey, 2002-2008.
Denominator: U.S. civilian noninstitutionalized population ages 2-17.
Note: Exercise advice includes the amount and kind of sports or physically active hobbies children should engage in. White and Black are non Hispanic groups. Hispanic includes all races.

[xxvi] For more information about the 2008 Physical Activity Guidelines for Americans, go to www.health.gov/paguidelines/guidelines/default.aspx.
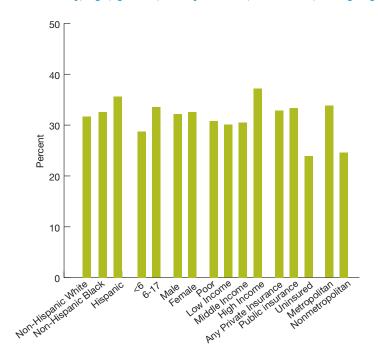
- Overall, in 2008, 34% of parents or guardians reported receiving advice within the past 2 years about the amount and kind of sports or physically active hobbies their children should engage in (Figure 2.47).
- From 2002 to 2008, the percentage of children who were given advice about exercise improved for all racial/ethnic groups.
- In all years, there were no statistically significant differences between non-Hispanic Black and Hispanic children compared with non-Hispanic White children who were given advice about exercise.
- From 2002 to 2008, the percentage of children who were given advice about exercise increased for all income groups.
- In all years, children from poor, low-income, and middle-income households were less likely to receive advice about exercise compared with children from high-income households.

Also, in the NHQR:

- From 2002 to 2008, the percentage of children given advice about exercise improved for children ages 2-5 (from 25% to 30%) and those ages 6-17 (from 30% to 35%).
- From 2002 to 2008, the percentage of children given advice about exercise improved for children with special health care needs (from 40% to 43%) and those without such needs (from 28% to 31%).

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: Children ages 2-17 for whom a health provider ever gave advice within the past 2 years about the amount and kind of exercise, sports, or physically active hobbies they should have. Adjusted percentages show the expected percentage for a given subpopulation after controlling for a number of factors, which include race/ethnicity, age, gender, family income, health insurance, and geographic location.

Figure. 2.48 Children ages 2-17 for whom a health provider ever gave advice within the past 2 years about the amount and kind of exercise, sports, or physically active hobbies they should have, by race/ethnicity, age, gender, family income, insurance, and geographic location, 2002-2008

Source: Agency for Healthcare Research and Quality, Medical Expenditure Panel Survey, 2002-2008.
Denominator: U.S. civilian noninstitutionalized population ages 2-17.
Note: Adjusted percentages are predicted marginals from a statistical model that includes the covariates race/ethnicity, age, gender, family income, health insurance, and residence location.

- In the multivariate model used, Hispanic children (36%) were more likely to receive advice to exercise compared with non-Hispanic White children (32%) (Figure 2.48).
- After adjustment, children under age 6 years (29%) were less likely to receive advice to exercise compared with children ages 6-17 (34%).
- After adjustment, children from poor (31%), low-income (30%), and middle-income (31%) families were less likely to receive advice to exercise compared with children from high-income families (37%).
- After adjustment, children from families with no insurance (24%) were less likely to receive advice to exercise compared with children from families that have any private insurance (33%).
- After adjustment, children living in nonmetropolitan areas (25%) were less likely to receive advice to exercise compared with those living in metropolitan areas (34%).

Prevention: Counseling Obese Adults About Healthy Eating

In addition to increased physical activity, an important factor in maintaining a healthy body weight is modifying eating habits to include a diet that incorporates nutritional food and beverages. It is essential for physicians to emphasize to patients the importance of consuming foods from all food groups, including whole grains and fibers, lean proteins, complex carbohydrates, fruits, and vegetables, as well as providing education about balancing energy intake and energy expenditure. The U.S. Department of Agriculture created the *Dietary Guidelines for Americans 2010* to aid people in understanding the complexity of healthy eating for both children and adults.[xxvii]

[xxvii] For more information about the Dietary Guidelines for Americans, go to www.dietaryguidelines.gov.

Figure 2.49. Adults with obesity who ever received advice from a health provider about eating fewer high-fat or high-cholesterol foods, by race/ethnicity and income, 2002-2008

Source: Agency for Healthcare Research and Quality, Medical Expenditure Panel Survey, 2002-2008.
Denominator: Civilian noninstitutionalized population age 18 and over.
Note: Obesity is defined as a body mass index of 30 or higher.

- Overall, in 2008, 49% of adults with obesity received advice from a health provider about healthy eating (Figure 2.49).
- From 2002 to 2008, obese Hispanic adults who received advice about healthy eating increased from 39% to 53%, but there were no statistically significant changes for other racial/ethnic groups.
- In 4 out of the 7 years, non-Hispanic White adults with obesity were more likely to receive advice about healthy eating than Hispanic adults with obesity.
- From 2002 to 2008, there were no statistically significant changes by income in the percentage of obese adults advised about healthy eating.
- In all years, obese adults from high-income households were more likely to receive advice about healthy eating than poor, low-income, and middle-income adults.
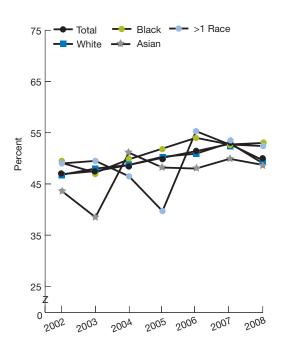
Also, in the NHQR:

- From 2002 to 2008, adults with obesity ages 18-44 were less likely to receive advice about healthy eating compared with other age groups.
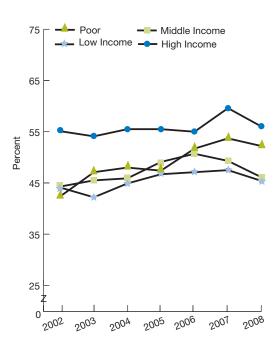
Prevention: Counseling for Children About Healthy Eating

An increasing number of children consume diets with too many calories and little nutritional value. Growing evidence has shown the integral role nutrition plays throughout one's lifetime. Eating patterns that are

established early in childhood are often adopted later in life, making early interventions important. The Dietary Guidelines for Americans encourage children and adolescents to maintain a calorie-balanced diet to support normal growth and development without gaining excess weight. The American Academy of Pediatrics recommends that pediatricians discuss and promote healthy diets with all children and their parents or guardians, for those who are overweight and those who are not (Krebs & Jacobson, 2003).

Figure 2.50. Children ages 2-17 for whom a health provider ever gave advice about healthy eating, by race and household income, 2002-2008

Source: Agency for Healthcare Research and Quality, Medical Expenditure Panel Survey, 2002-2008.
Denominator: U.S. civilian noninstitutionalized population ages 2-17.

- Overall, in 2008, 50% of parents or guardians reported receiving advice within the past 2 years about their children eating a healthy diet (Figure 2.50).
- From 2002 to 2008, percentages increased for White children (from 47% to 49%) and Black children (from 50% to 53%) who were given advice about healthy eating.
- From 2002 to 2008, improvements were observed for children from poor (from 42% to 52%) households who were given advice about healthy eating.
- In 5 out of 7 years, children from high-income families were more likely to receive advice about healthy eating compared with children from poor, low-income, and middle-income families.

Also, in the NHQR:

- From 2002 to 2008, the percentage of children ages 6-17 who received advice about healthy eating improved (from 44% to 47%).
- From 2002 to 2008, the percentage of children with any private or public health insurance who received advice about healthy eating improved.

Functional Status Preservation and Rehabilitation

Importance

Demographics

Noninstitutionalized adults needing help of another person with activities of daily living (ADLs)[xxviii] (2009) ....4.4 million (Adams, et al., 2010)

Noninstitutionalized adults needing help with instrumental activities of daily living (IADLs)[xxix] (2009) ....9.2 million (Adams, et al., 2010)

Nursing home residents needing help with ADLs (2004) ....1.5 million (NCHS, 2004)

Number of Medicare beneficiaries receiving inpatient rehabilitation facility care (2009) ………………………………………………………………….....361,000 (MedPAC, 2011)

Costs

Medicare payments for outpatient physical therapy (2006 est.)...$3.1 billion
(Ciolek & Hwang, 2008)

Medicare payments for outpatient occupational therapy (2006 est.)..$747 million
(Ciolek & Hwang, 2008)

Medicare payments for outpatient speech-language pathology services (2006 est.)......................$270 million
(Ciolek & Hwang, 2008)

Medicare payments for outpatient rehabilitation (2010) ....$3.8 billion (CMS, 2010a)

Medicare payments for inpatient rehabilitation facility care (2010).....................$6.4 billion (MedPAC, 2011)

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 activity, 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 NHQR and NHDR track several measures related to functional status preservation and rehabilitation. Two measures are highlighted in this section:

- Improvement in mobility among home health care patients.
- Nursing home residents needing more help with daily activities.

[xxviii] ADLs consist of basic self-care tasks, such as bathing, dressing, eating, transferring, using the toilet, and walking.
[xxix] 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.

In addition, this year we have a special focus section on functional improvement of inpatient rehabilitation facility (IRF) patients recovering from stroke.
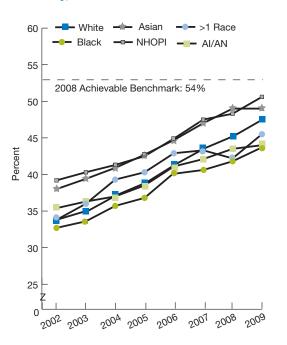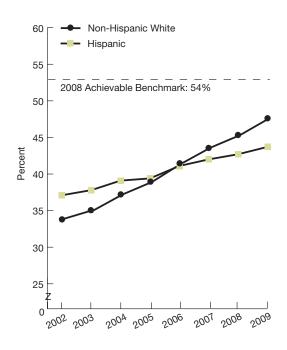
Findings

Outcome: Improvement in Mobility Among 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, physical therapy can facilitate improvements in walking and moving with a wheelchair. 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 2.51. Adult home health care patients whose ability to walk or move around improved, by race and ethnicity, 2002-2009

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), 2002-2009.
Denominator: Adult nonmaternity patients completing an episode of skilled home health care and not already performing at the highest level at the start of the episode, according to the OASIS question on ambulation.

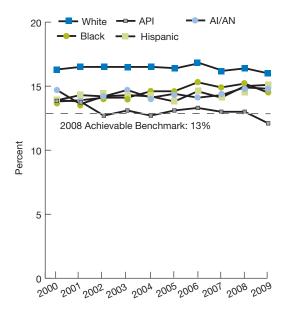- From 2002 to 2009, the percentage of home health care patients who got better at walking or moving around improved for each racial and ethnic group (Figure 2.51).

- The 2008 top 5 State achievable benchmark was 54%.[xxx] At the current 5% annual rate of increase, this benchmark could be attained overall in about 4 years.

- Rates of improvement varied across racial and ethnic groups. Whites could attain the achievable benchmark in about 3 years. Asians and NHOPIs could attain the benchmark sooner than Whites, while Blacks, AI/ANs, multiple-race individuals, and Hispanics would not attain the benchmark for between 5 and 11 years.

Also, in the NHQR:

- From 2002 to 2009, the percentage of home health care patients who got better at walking or moving around improved for the total population.

Outcome: Nursing Home Residents Needing More Help With Daily Activities

Long-stay residents typically enter a nursing facility 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 ADLs, nursing home staff help residents stay as independent as possible.[xxxi] Most residents want to care for themselves, and the ability to perform daily activities is important to their quality of life. Some functional decline among residents cannot be avoided, but optimal nursing home care seeks to minimize the rate of decline. This measure uses assessments of need for help with daily activities, conducted regularly by nursing homes, to identify those residents whose need for help increased from one assessment to the next.

[xxx] The top 5 States contributing to the 2008 achievable benchmark are District of Columbia, Hawaii, Kansas, South Carolina, and Utah.

[xxxi] In *Olmstead v. L.C.*, 527 U.S. 581 (1999), the U.S. Supreme Court concluded that the unjustified institutionalization of people with disabilities is a form of unlawful discrimination under the Americans With Disabilities Act of 1990, 42 U.S.C. 12101 *et seq*. The Court held that States are required to provide community-based services for people with disabilities who would otherwise be entitled to institutional services when: (1) such placement is appropriate; (2) the affected person does not oppose such treatment; and (3) the placement can be reasonably accommodated, taking into account the resources available to the State and the needs of other individuals with disabilities. More information about the HHS Office for Civil Rights' Olmstead enforcement efforts is available at www.hhs.gov/ocr/civilrights/understanding/disability/serviceolmstead/index.html.

Figure 2.52. Long-stay nursing home residents whose need for help with daily activities increased, by race/ethnicity, 2000-2009

Key: API = Asian or Pacific Islander; AI/AN = American Indian or Alaska Native.
Source: Centers for Medicare & Medicaid Services, Minimum Data Set, 2000-2009. Data are from the third quarter of each calendar year.
Denominator: All long-stay residents in Medicare- or Medicaid-certified nursing home facilities.
Note: For this measure, lower rates are better. White, Black, API, and AI/AN are non-Hispanic groups. Hispanic includes all races.

- In 2009, 16% of long-stay nursing home residents experienced a decline in their ability to perform daily activities and required increasing assistance (data not shown). Between 2000 and 2009, the rate increased among Blacks (Figure 2.52).

- 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 13%.[xxxii] In 2009, API residents had surpassed the benchmark. However, other racial/ethnic groups did not demonstrate progress toward the benchmark.

Also, in the NHQR:

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

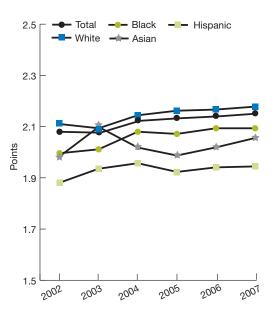## Focus on Inpatient Rehabilitation Patients

Patients receive rehabilitation therapies for a range of impairments from different types of providers, and a major distinction is whether these services are received on an inpatient or outpatient basis. The method for assessing how a patient improves with receipt of rehabilitation services varies by provider type. Each Medicare-certified IRF collects measures of functional status, called the Functional Independence Measure (FIM),

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[xxxii] The top 5 States that contributed to the 2008 achievable benchmark are Alabama, Alaska, New Jersey, Oklahoma, and Oregon.

at admission and discharge for each Medicare patient as part of the IRF Patient Assessment Instrument. In addition to providing information on total functional gain between admission and discharge, the FIM has several subscores (e.g., self-care [ADLs], motor function, and social cognition).

Approximately 780,000 people experience a new or recurrent stroke every year, and stroke is the most common reason for inpatient rehabilitation. Nearly a third of stroke patients never regain their ability to walk independently again (American Heart Association, 2008). For stroke patients, we examined FIM motor score gain. We also examined FIM communication score gain, differentiating strokes that affect the left and right sides of the body since they have different effects on communication. We restricted analyses to patients who had initial rehabilitation and were discharged home as a way of controlling for patient case mix.

Figure 2.53. Mean locomotion score gain among patients in an inpatient rehabilitation facility for stroke, by race/ethnicity, 2002-2007
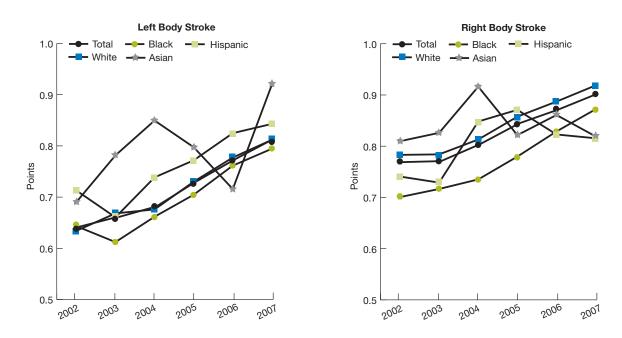

Source: Centers for Medicare & Medicaid Services, Inpatient Rehabilitation Facility Patient Assessment Instrument, 2002-2007.
Denominator: Medicare patients in an inpatient rehabilitation facility for stroke for initial rehabilitation and discharged home.
Note: White, Black, and Asian are non-Hispanic groups. Hispanic includes all races.

- From 2002 to 2007, there were no statistically significant changes in mean locomotion score gain (Figure 2.53).
- In most years, Hispanics experienced smaller locomotion score gains than Whites.

Also, in the NHQR:

- From 2002 to 2007, patients age 85 and over experienced smaller locomotion score gains than patients ages 65-74.

Figure 2.54. Mean communication score gain among patients in an inpatient rehabilitation facility for stroke, by side of body affected and race/ethnicity, 2002-2007

Source: Centers for Medicare & Medicaid Services, Inpatient Rehabilitation Facility Patient Assessment Instrument, 2002-2007.
Denominator: Medicare patients in an inpatient rehabilitation facility for stroke for initial rehabilitation and discharged home.
Note: White, Black, and Asian are non-Hispanic groups. Hispanic includes all races.

- Overall, patients with right body strokes experienced larger communication score gains than patients with left body strokes (Figure 2.54).
- Differences related to race and ethnicity did not meet criteria for significance.

Also, in the NHQR:

- In 2004 and 2006, patients age 85 and over with right body strokes experienced smaller communication score gains than patients ages 65-74. Age differences among patients with left body strokes did not meet criteria for significance.

Supportive and Palliative Care

Importance

Demographics

Number of Medicare nursing home residents ever admitted during the
calendar year (2009) ....…….2.5 million (CMS, 2010b)

Number of Medicare fee-for-service (FFS) home health patients [xxxiii](2009).............3.3 million (CMS, 2010c)

Number of Medicare FFS beneficiaries using Medicare hospice services (2009)....1.1 million (CMS, 2010d)

Cost

Total costs of nursing home care[xxxiv] (2009)...$137 billion (CMS, 2010b)

Total costs of home health care[xxxiv] (2009) ....$68.3 billion (CMS, 2010c)

Medicare FFS payments for hospice services (2009 est.)......................................$12.1 billion (CMS, 2010d)

Measures

Disease cannot always be cured, and functional impairment 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. Palliative and end-of-life care need to be "capable of promising dignity, comfort, companionship, and spiritual support to patients and families facing advanced illness or dying" (National Priorities Partnership, 2008).

The NHQR and NHDR track several measures of supportive and palliative care delivered by home health agencies, nursing homes, and hospices. Five measures are presented in this section:

- Relief of suffering:
  o Shortness of breath among home health care patients.
  o Pressure sores in nursing home residents.
- Help with emotional and spiritual needs:
  o Right amount of emotional support among hospice patients.
- Effective communication:
  o Enough information about what to expect among hospice family caregivers.

[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.

■ High-quality palliative care:

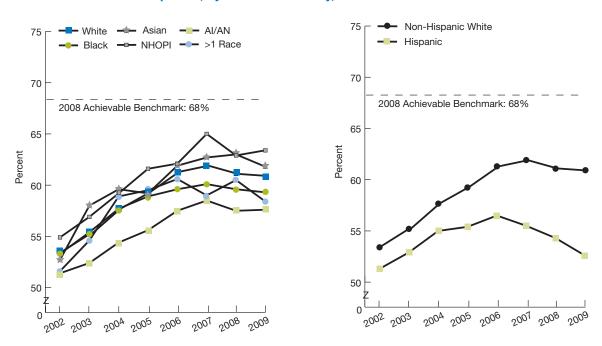   o   Care consistent with patient's wishes among hospice patients.

Findings

Relief of Suffering

Outcome: Shortness of Breath Among Home Health Care Patients

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

Figure 2.55. 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, 2002-2009

Key: NHOPI = Native Hawaiian or Other Pacific Islander; AI/AN = American Indian or Alaska Native.
Source: Centers for Medicare & Medicaid Services, Outcome and Assessment Information Set, 2002-2009.
Denominator: Adult nonmaternity patients completing an episode of skilled home health care.

■ Between 2002 and 2009, the percentage of adult home health care patients who showed improvement in shortness of breath over the course of a home heal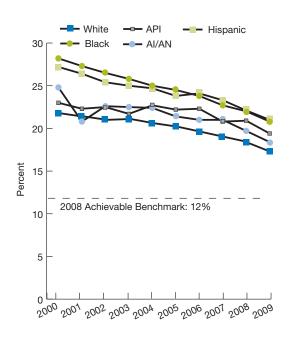th episode increased for the total population from 53% to 60% (data not shown), as well as for each racial and ethnic group except Hispanics (Figure 2.55).

■ From 2005 to 2009, Hispanics were significantly less likely than non-Hispanic Whites to show improvement in shortness of breath.

- The 2008 top 5 State achievable benchmark was 68%.[xxxv] At the current 2% annual rate of increase, this benchmark could be attained overall in about 7 years. Whites, Asians, and NHOPIs could attain the benchmark in under 7 years, while Blacks, AI/ANs, and multiple-race individuals would not attain the benchmark for 10 years. Hispanics show no movement toward the benchmark.

Also, in the NHQR:

- Between 2002 and 2009, the percentage of adult home health care patients who showed improvement in shortness of breath increased for every age group.

Outcome: Pressure Sores in Nursing Home Residents

A pressure ulcer, or pressure sore, is an area of broken-down skin caused by sitting or lying in one position for an extended time and can be very painful. Residents should be assessed by nursing home staff for presence or risk of developing pressure sores.

Nursing homes can help to prevent or heal pressure sores by keeping residents clean and dry and by changing their position frequently or helping them move around. Other interventions include making sure residents get proper nutrition and using soft padding to reduce pressure on the skin. However, some residents may get pressure sores even when a nursing home provides good preventive care.

[xxxv] The top 5 States contributing to the 2008 achievable benchmark are Georgia, Hawaii, New Jersey, Rhode Island, and South Carolina.

Figure 2.56. Short-stay (left) and high-risk long-stay (right) nursing home residents with pressure sores, by race/ethnicity, 2000-2009

Key: AI/AN = American Indian or Alaska Native; API = Asian or Pacific Islander.
Source: Centers for Medicare & Medicaid Services, Minimum Data Set, 2000-2009. 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: For this measure, lower rates are better. White, Black, API, and AI/AN are non-Hispanic groups; Hispanic includes all races.

- From 2000 to 2009, the rate of short-stay residents with pressure sores fell (data not shown).[xxxvi] For high-risk long-stay residents, the rate also fell (data not shown).[xxxvii] Decreases included all racial/ethnic groups (Figure 2.56).

- In all years and for both short-stay and high-risk long-stay residents, Blacks and Hispanics were more likely than Whites to have pressure sores.

- The 2008 top 5 State achievable benchmark for short-stay residents was 12%.[xxxviii] At the current 2% annual rate of decrease, this benchmark could be attained overall in about 12 years. Whites and Blacks could attain the benchmark in about 11 years. APIs, AI/ANs, and Hispanics would take between 13 and 25 years to attain this benchmark.

[xxxvi] Short-stay residents stay fewer than 30 days in a nursing home, typically following an acute care hospitalization.
[xxxvii] 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.
[xxxviii] The top 5 States that contributed to the achievable benchmark are Colorado, Iowa, Minnesota, Nebraska, and Utah.

- The 2008 top 5 State achievable benchmark for high-risk long-stay residents was 7%.[xxxix] At the current 2% annual rate of decrease, this benchmark could be attained overall in about 12 years. Whites could achieve the benchmark in about 9 years. Blacks, APIs, AI/ANs, and Hispanics would take between 15 and 19 years to attain this benchmark.

Also, in the NHQR:

- From 2000 to 2009, the rate of short-stay residents with pressure sores fell. The rate also fell for high-risk long-stay residents. Improvements included lower rates for both males and females.
- Short-stay residents have higher rates of pressure sores than high-risk long-stay residents. Some of these patients may be admitted to nursing homes because of or with sores acquired during an acute care hospitalization.
- In all years, males were more likely than females to have pressure sores.

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 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" (Field & Cassell, 1997).

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.[xl]
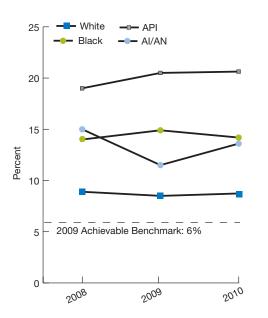
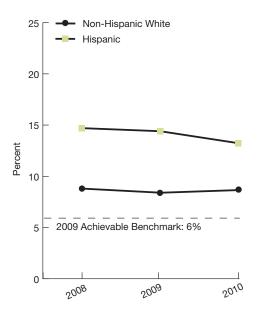### Management: Right Amount of Emotional Support Among Hospice Patients

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.

[xxxix] The top 5 States that contributed to the achievable benchmark are Hawaii, Minnesota, Nebraska, New Hampshire, and North Dakota.
[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 2.57. Hospice patients age 18 and over who did NOT receive the right amount of help for feelings of anxiety or sadness, by race and ethnicity, 2008-2010

Key: AI/AN = American Indian or Alaska Native; API = Asian or Pacific Islander.
Source: National Hospice and Palliative Care Organization, Family Evaluation of Hospice Care, 2008-2010.
Denominator: Adult hospice patients.
Note: For this measure, lower rates are better.

- 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 (Figure 2.57).
- The 2009 top 5 State achievable benchmark was 6%.[xli] Data are insufficient to assess progress toward this goal.

Also, in the NHQR:

- The percentage of hospice patients whose families reported that they did not receive the right amount of help for feelings of anxiety or sadness was 10% in 2010.
- Between 2008 and 2010, hospice patients ages 18-44 and 45-64 were less likely than patients age 65 and over to receive the right amount of emotional support.
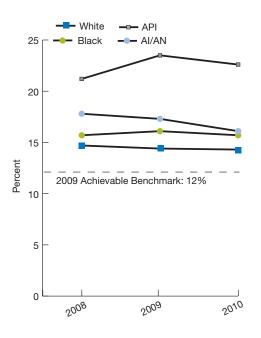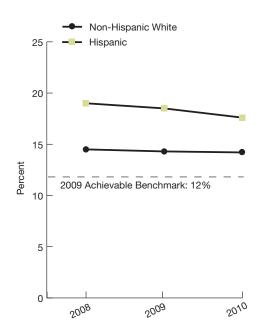
Effective Communication

Management: Enough Information About What To Expect Among Hospice Family Caregivers

Patients at the end of life and their families need clear information about treatment options, prognosis, and 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.

[xli] The top 5 States contributing to the achievable benchmark are Alabama, Alaska, Arkansas, Kansas, and South Carolina.

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Figure 2.58. Hospice patients age 18 and over whose family caregivers wanted more information about what to expect while the patient was dying, by race and ethnicity, 2008-2010

Key: AI/AN = American Indian or Alaska Native; API = Asian or Pacific Islander.
Source: National Hospice and Palliative Care Organization, Family Evaluation of Hospice Care, 2008-2010.
Denominator: Adult hospice patients.
Note: For this measure, lower rates are better.

- In all years, family caregivers of API and AI/AN hospice patients were more likely than family caregivers of White patients to want more information about what to expect while the patient was dying (Figure 2.58). Family caregivers of Hispanic hospice patients were more likely than family caregivers of non-Hispanic White patients to want more information.

- The 2009 top 5 State achievable benchmark was 12%.[xlii] Data are insufficient to assess progress toward this goal.

Also, in the NHQR:

- The percentage of hospice patient family caregivers who reported that they wanted more information about what to expect while the patient was dying was 15% in 2010.

- Between 2008 and 2010, family caregivers of hospice patients ages 18-44 and 45-64 were more likely than family caregivers of patients age 65 and over to want more information about dying.
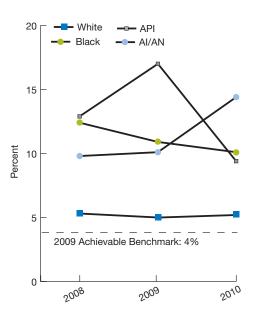

[xlii] The top 5 States contributing to the achievable benchmark are Iowa, Kansas, Kentucky, Nebraska, and West Virginia.
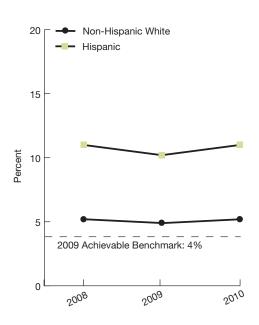
High-Quality Palliative Care

Management: Care Consistent With Patient's Wishes Among Hospice Patients

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 2.59. Hospice patients age 18 and over who did NOT receive care consistent with their stated end-of-life wishes, by race and ethnicity, 2008-2010

Key: AI/AN = American Indian or Alaska Native; API = Asian or Pacific Islander.
Source: National Hospice and Palliative Care Organization, Family Evaluation of Hospice Care, 2008-2010.
Denominator: Adult hospice patients.
Note: For this measure, lower rates are better.

- In all years, Blacks, APIs, and AI/ANs were less likely than Whites and Hispanics were less likely than non-Hispanic Whites to receive end-of-life care consistent with their wishes.
- The 2009 top 5 State achievable benchmark was 4%.[xliii] Data are insufficient to assess progress toward this goal.

Also, in the NHQR:

- The percentage of hospice patients whose families reported that they did not receive end-of-life care consistent with their stated wishes was 6% in 2010.

[xliii] The top 5 States contributing to the achievable benchmark are Arkansas, Illinois, Minnesota, Montana, and Virginia.

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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
(Kohn, et al., 2000)

Prevalence

Rate of adverse events for hospitalized patients (annual est.)............................2.9%-3.7% (Kohn, et al., 2000)

Adverse drug reactions during hospital admissions (annual est.)...1.9 million
(Lucado, et al., 2011)

Rate of adverse drug events among Medicare
beneficiaries in ambulatory settings......................................50 per 1,000 person-years (Gurwitz, et al., 2003)

Cost

Cost attributable to medical errors (2008)..$19.5 billion (Shreve, et al., 2010)

Total cost per error (2008) ....$13,000 (Shreve, et al., 2010)

Annual cost attributable to surgical errors (2008)............................$1.5 billion (Encinosa & Hellinger, 2008)

Measures

The Institute of Medicine (IOM) defines patient safety as "freedom from accidental injury due to medical care or medical errors" (Kohn, et al., 2000). 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 (Kohn, et al., 2000). 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.

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

To Err Is Human does not mention race or ethnicity when discussing the problem of patient safety, and data are limited. Any differences that suggest patient race or ethnicity might influence the risk of experiencing a patient safety event must be investigated to better understand the underlying reasons for any differences before the differences can be eliminated.

Despite these limitations, a more complete picture of patient safety is emerging. In recent years, progress has been made 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 (Aspden, et al., 2004).

To increase access to high-quality, affordable health care for all Americans, one of the broad aims of the National Quality Strategy (NQS) is providing better care. One way to advance this aim is by focusing on the priority of making care safer by reducing harm caused during the delivery of care. This priority has great potential for rapidly improving health outcomes and increasing the effectiveness of care for all populations. The NQS states that health care providers should aim to reduce the rates of care-related injury to zero whenever possible and should strive to create a system that reliably provides high-quality health care for everyone.

The Partnership for Patients was created to improve the quality, safety, and affordability of health care for all Americans. One of the goals of this partnership is to:

- Keep patients from getting injured or sicker.
  - o By the end of 2013, preventable hospital-acquired conditions would decrease by 40% compared with 2010. Achieving this goal would mean approximately 1.8 million fewer injuries to patients with more than 60,000 lives saved over 3 years.

Achieving the goals of the partnership will save lives and prevent injuries to millions of Americans. In addition, up to $35 billion dollars could be saved across the health care system, including up to $10 billion in Medicare savings over the next 3 years. Over the next 10 years, it could reduce cost to Medicare by about $50 billion and result in billions more in Medicaid savings. This will help put our Nation on the path toward a more sustainable health care system.

The National Healthcare Disparities Report (NHDR) has tracked a growing number of patient safety measures. Organized around the Partnership for Patients' priority of safety, the 2011 NHDR presents the following measures that relate to the goal to keep patients from getting injured or sicker:

- Healthcare-associated infections (HAIs):
  - o Appropriate care among surgical patients.
  - o Appropriate timing of antibiotics among surgical patients.
  - o Postoperative sepsis.
- Adverse events:
  - o Ambulatory care visits due to adverse effects of medical care.
  - o Mechanical adverse events associated with central venous catheters.
  - o Postoperative respiratory failure.

- ■ Preventable and premature mortality rates:
  - o Deaths following complications of care.
  - o Inpatient pneumonia deaths.

Findings

Healthcare-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 (Thomas, et al., 2000). 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 (Klevens, et al., 2007).

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.

Prevention: Appropriate Care Among Surgical Patients

To reduce postoperative complications and improve surgical care, several preventive practices need to be followed. Administering and discontinuing recommended antibiotics at the right time, ensuring good glycemic control, using appropriate hair removal methods, continuing beta blocker therapy when appropriate, and administering appropriate thromboembolism prophylaxis can reduce morbidity and mortality. The 2011 National Healthcare Quality Report (NHQR) and 2011 NHDR track a Surgical Care Improvement Project (SCIP) composite that includes eight components of the Reporting Hospital Quality Data for Annual Payment Update.

The SCIP composite includes prophylactic antibiotic received within 1 hour prior to surgical incision (SCIP Inf-1), recommended prophylactic antibiotic for surgical patients (SCIP Inf-2), prophylactic antibiotics discontinued within 24 hours after surgery end time (SCIP Inf-3), cardiac surgery patients with controlled postoperative blood glucose (SCIP Inf-4), surgery patients with appropriate hair removal (SCIP Inf-6), surgery patients on beta blocker therapy prior to arrival who received a beta blocker during the perioperative period (SCIP Card-2), surgery patients with recommended venous thromboembolism prophylaxis ordered (SCIP VTE-1), and surgery patients who received appropriate venous thromboembolism prophylaxis within 24 hours prior to surgery to 24 hours after surgery (SCIP VTE-2).

Figure 3.1. Adult surgery patients who received appropriate care, by gender and race/ethnicity, 2009

Key: AI/AN = American Indian/Alaska Native.
Source: Centers for Medicare & Medicaid Services, Medicare Quality Improvement Organization Program, 2009.
Denominator: Hospitalized patients having surgery.

- In 2009, 87% of female surgery patients and 85% of male surgery patients received appropriate care (Figure 3.1).
- More than 86% of White patients received appropriate surgical care. Nearly 86% of Black patients received appropriate surgical care, and 85% of Hispanic patients, 84% of Asian patients, and 82% of American Indian or Alaska Native (AI/AN) patients received appropriate surgical care.
- The 2009 top 5 State achievable benchmark was 91%.[ii]

Also, in the NHQR:

- Eighty-seven percent of patients under age 65, 86% of patients ages 65-74, 85% of patients ages 75-84, and 84% of patients age 85 and over received appropriate surgical care.

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 ensuring that 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 receive antibiotics within 1 hour before surgery.

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

Getting an antibiotic earlier than 1 hour before surgery or after surgery begins is not as effective. However, taking antibiotics for more than 24 hours after routine surgery is usually unnecessary 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 3.2. Adult surgery patients who received appropriate timing of antibiotics: Overall composite, by race/ethnicity and gender, 2005-2009

Key: AI/AN = American Indian or Alaska Native.
Source: Centers for Medicare & Medicaid Services, Medicare Quality Improvement Organization Program, 2005-2009.
Denominator: Hospitalized patients having surgery.
Note: Populations not specifically noted as Hispanic are non-Hispanic.

- The overall percentage of adult surgery patients who received appropriate timing of antibiotics improved from 2005 to 2009 (75% to 95%; Figure 3.2). Significant improvement was also seen among all racial, ethnic, and gender groups during this period.
- From 2005 to 2009, Whites improved from 75% to 95%, Blacks improved from 75% to 94%, and Asians improved from 71% to 94%. The percentage of patients receiving appropriate timing of antibiotics increased from 70% to 94% for Hispanics and from 77% to 93% for AI/ANs.
- The 2008 top 5 State achievable benchmark was 95%.[iii] At the current 5% annual rate of increase, this benchmark could be attained overall in less than 1 year. All ethnic, racial, and gender groups could also attain the achievable benchmark in less than 1 year.

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

Also, in the NHQR:

- The percentage of adult surgery patients who received appropriate timing of antibiotics improved for all age groups from 2005 to 2009.

Outcome: Postoperative Sepsis

Sepsis, a severe bloodstream infection, can occur after surgery. In a recent study, postoperative sepsis occurred in 5% of emergency surgery patients and 2% of elective surgery patients (Moore, et al., 2010). A recent study revealed that higher rates of infection and higher risk of acute organ dysfunction both contribute to higher sepsis rates among Blacks compared with Whites (Mayr, et al., 2010). Rates can be reduced by giving patients appropriate prophylactic antibiotics 1 hour prior to surgical incision.

Figure 3.3. Postoperative sepsis per 1,000 elective-surgery discharges with an operating room procedure, by race/ethnicity and insurance status, 2008

Source: Agency for Healthcare Research and Quality (AHRQ), Center for Delivery, Organization, and Markets, Healthcare Cost and Utilization Project, State Inpatient Databases disparities analysis file, 2007, and AHRQ Quality Indicators, modified version 4.1.
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: For this measure, lower rates are better. White, Black, and Asian are non-Hispanic. Rates are adjusted by age, gender, age-gender interactions, comorbidities, and diagnosis-related group clusters.

- In 2008, Whites had a significantly lower rate of postoperative sepsis than Blacks and Hispanics (Figure 3.3). People with private insurance had a significantly lower rate of postoperative sepsis than people with Medicare and Medicaid, but people who were uninsured or self-pay had a significantly lower rate than all other groups.

Also, in the NHQR:

- In 2008, surgery patients ages 18-44 and 45-64 had significantly lower rates of postoperative sepsis than those age 65 and over (11 and 12 per 1,000 hospital discharges, respectively, compared with 18 per 1,000 hospital discharges).
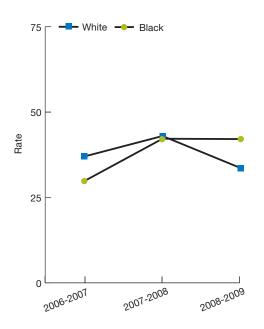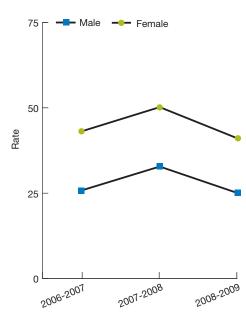
Adverse Events

Adverse effects of medical care can arise from medical and surgical procedures as well as from 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 be located in physician offices, 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 3.4. Ambulatory medical care visits due to adverse effects of medical care per 1,000 people, by race and gender, 2006-2009

Source: Centers for Disease Control and Prevention, National Center for Health Statistics, National Ambulatory Medical Care Survey and National Hospital Ambulatory Medical Care Survey, 2006-2009.
Denominator: U.S. Census Bureau estimated civilian noninstitutionalized population on July 1, 2007, and July 1, 2008.
Note: For this measure, lower rates are better. Ambulatory care includes visits to office-based physicians, hospital outpatient departments, and hospital emergency departments.

- From 2006-2007 to 2008-2009, the rate of ambulatory care visits due to adverse effects of medical care was significantly higher for females compared with males (Figure 3.4).
- During this same period, there were no statistically significant differences between Whites and Blacks in the rate of ambulatory care visits due to adverse effects of medical care.
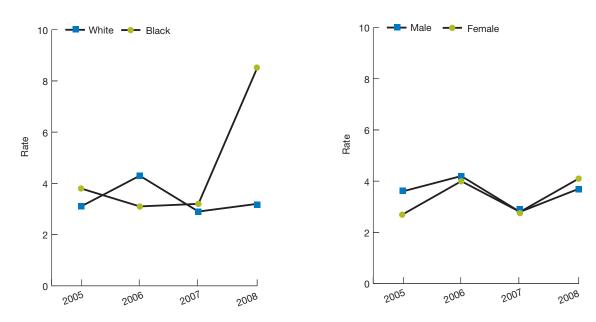
Also, in the NHQR:

- From 2006-2007 to 2008-2009, the rate of ambulatory care visits due to adverse effects was significantly higher for patients ages 18-44 than for patients ages 0-17. Rates, however, were significantly lower for patients ages 18-44 than for patients ages 45-64 and 65 and over.

Outcome: Mechanical Adverse Events Associated With Central Venous Catheters

Some patients need a central venous catheter inserted into a major vein in the neck, chest, or groin so that providers can 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 3.5. Composite: Mechanical adverse events associated with central venous catheter placement, by race and gender, 2005-2009

Source: Centers for Medicare & Medicaid Services, Medicare Patient Safety Monitoring System (MPSMS), 2005-2009.
Denominator: Adult hospitalized Medicare fee-for-service discharges from the MPSMS sample with central venous catheter placement.
Note: For this measure, lower rates are better. 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. Data not available for 2008.

■ From 2005 to 2009, there was no statistically significant change in the overall rate of medical adverse events associated with central venous catheter placement (data not shown). Whites and both genders also had no statistically significant change. Blacks, however, had a significant increase in the rate of medical adverse events associated with central venous catheter placement (Figure 3.5).
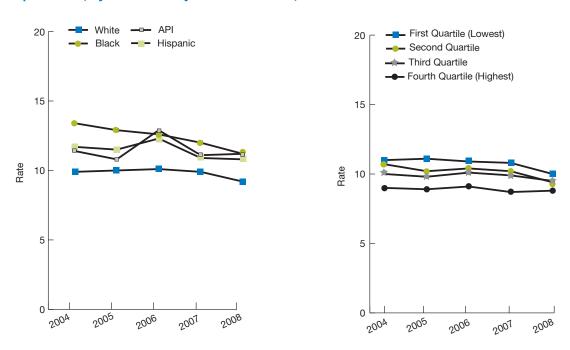
Also, in the NHQR:

■ From 2005 to 2009, there were no statistically significant differences in adverse events associated with central venous catheter placement between patients under age 65 and patients of any other age group in any year.

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 3.6. Postoperative respiratory failure per 1,000 elective-surgery discharges after an operating room procedure, by race/ethnicity and income area, 2004-2008

Key: API = Asian or Pacific Islander.
Source: Agency for Healthcare Research and Quality (AHRQ), Center for Delivery, Organization, and Markets, Healthcare Cost and Utilization Project, State Inpatient Databases disparities analysis file, 2007, and AHRQ Quality Indicators, modified version 4.1.
Denominator: All elective hospital surgical discharges age 18 and over, excluding patients with respiratory disease, circulatory disease, neuromuscular disorders, obstetric conditions, selected surgeries for craniofacial anomalies, and secondary procedure of tracheostomy before or after surgery or as the only procedure.
Note: For this measure, lower rates are better. White, Blacks, and APIs are non-Hispanic. Rates are adjusted by gender, age-gender interactions, comorbidities, and diagnosis-related group clusters.

- From 2004 to 2008, the rate of postoperative respiratory failure was significantly lower for Whites than for Blacks and Hispanics (Figure 3.6).

- During this same period, the rate of postoperative respiratory failure decreased for Blacks and Hispanics.
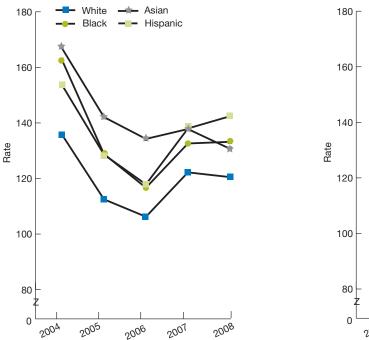
Also, in the NHQR:

- From 2004 to 2008, the rate of postoperative respiratory failure for patients ages 18-44 remained significantly lower than for all other age groups.
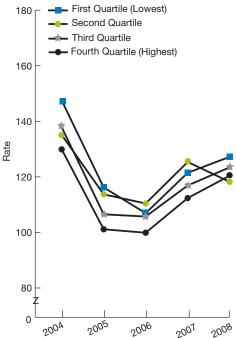
Preventable and Premature Mortality Rates

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 (AHRQ, 2003).

Figure 3.7. Deaths per 1,000 discharges with complications potentially resulting from care (failure to rescue), ages 18-89, by race/ethnicity and area income, 2004-2008

Source: Agency for Healthcare Research and Quality (AHRQ), Center for Delivery, Organization, and Markets, Healthcare Cost and Utilization Project, State Inpatient Databases disparities analysis file, 2007, and AHRQ Quality Indicators, modified version 4.1.
Denominator: Patients ages 18-89 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: For this measure, lower rates are better. Whites, Blacks, and Asians are non-Hispanic. Rates are adjusted by age, gender, comorbidities, and diagnosis-related group clusters.

■ From 2004 to 2008, the rate of deaths following complications of care declined from 138 to 122 per 1,000 admissions of adults ages 18-89 (data not shown). A significant decrease was also seen among all income groups during the same period (Figure 3.7).

■ During this period, there were no statistically significant changes in the gap between the failure to rescue rate of high-income patients and patients of other income groups.
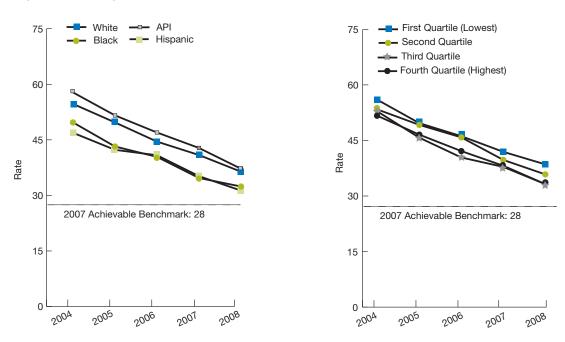
Also, in the NHQR:

■ From 2004 to 2008, the rate of death following complications of care was significantly lower for patients ages 18-44 than for patients ages 45-64 and 65-89. During this same period, females had a significantly lower rate than males of death following complications.

Outcome: Inpatient Pneumonia Deaths

Measuring quality of care is a key component in improving care. One measure of quality is the 30-day hospital mortality rate for conditions such as pneumonia. National 30-day mortality rates due to pneumonia are not currently available for reporting, so 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 in the hospital, and the correlation between hospital-level inpatient and 30-day mortality is high (Rosenthal, et al., 2000).

Figure 3.8. Deaths per 1,000 hospital admissions with pneumonia as principal diagnosis, age 18 and over, by race/ethnicity and area income, 2004-2008

Key: API = Asian or Pacific Islander.
Source: Agency for Healthcare Research and Quality (AHRQ), Center for Delivery, Organization, and Markets, Healthcare Cost and Utilization Project, State Inpatient Databases disparities analysis file, 2007, and AHRQ Quality Indicators, modified version 4.1.
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: For this measure, lower rates are better. Whites, Blacks, and APIs are non-Hispanic. Rates are adjusted by age, gender, age-gender interactions, comorbidities, major diagnostic category (MDC), diagnosis-related group (DRG), and transfers into the hospital. When reporting is by age, the adjustment is by gender, comorbidities, MDC, DRG, and transfers into the hospital.

- From 2004 to 2008, the overall inpatient pneumonia mortality rate decreased from 54 per 1,000 admissions to 36 per 1,000 admissions (data not shown). A significant decrease was also seen among all racial/ethnic and income groups during the same period (Figure 3.8).

- During the same period, Blacks and Hispanics had a significantly lower inpatient pneumonia mortality rate than Whites.

- The 2007 top 4 State achievable benchmark was 28 per 1,000 hospital admissions.[iv] At the current rate of improvement, this benchmark could be attained in less than 2 years.

- Rates of improvement varied by race and ethnicity. Blacks and Hispanics could attain the benchmark in just under 1 year, while Whites and Asians could attain the benchmark in about 2 years.

Also, in the NHQR:

- From 2004 to 2008, the inpatient pneumonia mortality rate of patients ages 18-44 was significantly lower than for patients ages 45-64 and 65 and over. During this same period, females had a significantly lower inpatient pneumonia mortality rate than males.

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

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Chapter 3

Chapter 4. Timeliness

Timeliness in health care is the 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 (Institute of Medicine, 2001). 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 (Boudreau, et al., 2004).
- Stroke patients' mortality and long-term disability are largely influenced by the timeliness of therapy (Kwan, et al., 2004).
- Timely delivery of appropriate care also can help reduce mortality and morbidity for chronic conditions such as kidney disease (Kinchen, et al., 2002).
- 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 (Luman, et al., 2005).
- Timely antibiotic treatments are associated with improved clinical outcomes (Houck & Bratzler, 2005).

Cost

- Early care for comorbid conditions has been shown to reduce hospitalization rates and costs for Medicare beneficiaries (Himelhoch, et al., 2004).
- Some research suggests that, over the course of 30 years, the costs of treating diabetic complications can approach $50,000 per patient (Caro, et al., 2002). Early care for complications in patients with diabetes can reduce overall costs of the disease (Ramsey, et al., 1999).
- Timely outpatient care also can reduce admissions for pediatric asthma, which account for $1.25 billion in total hospitalization charges annually (Agency for Healthcare Research and Quality, 2009).
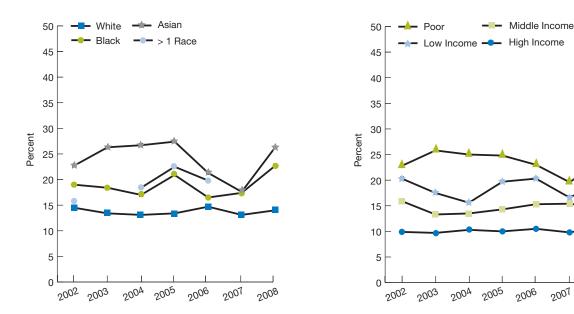
Measures

This report includes three measures related to timeliness of primary, emergency, and hospital care: getting care for illness or injury as soon as wanted, ED wait 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 and income, 2002-2008

Source: Agency for Healthcare Research and Quality, Medical Expenditure Panel Survey, 2002-2008.
Denominator: Civilian noninstitutionalized population age 18 and over.
Note: For this measure, lower rates are better. Data were insufficient for this analysis for Native Hawaiians and Other Pacific Islanders, for American Indians and Alaska Natives, and for multiple race for 2003, 2007, and 2008.

- From 2002 to 2008, the percentage of Whites 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 was significantly lower than the percentage of Blacks in 6 of 7 years. The percentage for Whites was lower than for Asians in 5 of 7 years (Figure 4.1).
- During the same period, the percentage who reported not getting care as soon as wanted was significantly lower for high-income people than for poor, low-income, and middle-income people in all years. Also, the percentage who reported not getting care as soon as wanted was significantly lower for people with any college education than for high school graduates in all years and people with less than a high school education in 5 of 7 years (data not shown).

Also, in the NHQR:

- From 2002 to 2008, the 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 was significantly lower for adults age 65 and over than for adults ages 18-64.

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 ethnicity and income, 2002-2008

- From 2002 to 2008, the percentage of children from high-income families who did not receive care as soon as wanted was significantly lower than the percentage of children from poor families in 5 of 6 years (Figure 6.2). The percentage for high-income children was lower than for low-income children in 4 of 6 years.

- During this period, there was no statistically significant change in the gap between non-Hispanic White children and Hispanic children who did not receive care as soon as wanted. The gap between non-Hispanic White children and non-Hispanic Black children also did not change.

Also, in the NHQR:

- From 2002 to 2008, there was no statistically significant change in the gap between children living in large central metropolitan areas who did not receive care as soon as wanted and children in all other geographic areas.
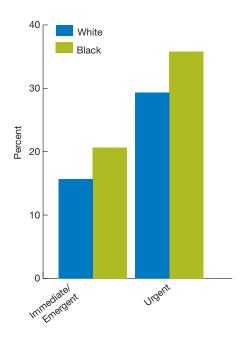
Emergency Department Visit Waiting Times

- In 2008, an estimated 123.8 million visits were made to hospital EDs compared with 116.8 million visits in 2007 (NHAMCS: 2008 Emergency Department Tables; Niska, et al., 2010).

- The median waiting time for patients to be seen by a physician during an ED visit in the United States was 35 minutes (NHAMCS: 2008 Emergency Department Tables).
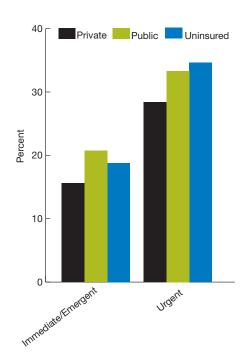
Chapter 4

■ Not all patients seeking care in an ED need urgent care, and use of EDs for nonurgent care could lead to longer wait 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.

■ 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, 2008-2009

Source: Centers for Disease Control and Prevention, National Center for Health Statistics, National Hospital Ambulatory Medical Care Survey (NHAMCS), 2008-2009.
Denominator (Immediate or Emergent): Visits to U.S. emergency departments with triage assessments of immediate or emergent.
Denominator (Urgent): Visits to U.S. emergency departments with triage assessments of urgent.
Note: For this measure, lower rates are better. Race data were missing for 13.3% of total visits included in this chart. 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 2008-2009, among ED visits for immediate/emergent conditions, there was no statistically significant difference between Whites and Blacks in the percentage who had to wait an hour or more. There were also no statistically significant differences between uninsured patients and patients with private insurance (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 2008-2009, among ED visits for immediate/emergent conditions, there was no statistically significant difference between patients living in metropolitan and nonmetropolitan areas in the percentage who had to wait an hour or more. Among visits for urgent conditions, the percentage who had to wait an hour or more was lower among nonmetropolitan patients compared with metropolitan patients.

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 (Kloner & Rezkalla, 2004). 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, 2005-2009

Key: AI/AN = American Indian or Alaska Native.
Source: Centers for Medicare & Medicaid Services, Medicare Quality Improvement Organization Program, 2005-2009.
Denominator: Patients hospitalized with a principal diagnosis of acute myocardial infarction who were appropriate candidates for percutaneous coronary intervention.
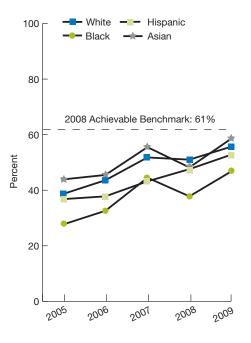Note: Data were insufficient for this analysis for Native Hawaiians and Other Pacific Islanders.

- Among heart attack patients, the percentage of patients receiving timely PCI improved for all racial/ethnic groups from 2005 to 2009 (Figure 4.4). In all years, Blacks and Hispanics were less likely than Whites to receive timely PCI.
- The 2008 top 5 State achievable benchmark was 91%.[i] At the current rate of improvement, the achievable benchmark could be attained overall in less than 1 year.
- All racial/ethnic groups should reach the achievable benchmark in less than a year.

Also, in the NHQR:

- From 2005 to 2009, among heart attack patients, a significantly higher percentage of patients under age 65 received PCI within 90 minutes than patients of all other age groups.

Figure 4.5. Hospital patients with heart attack who received fibrinolytic medication within 30 minutes, by race/ethnicity, 2005-2009

Source: Centers for Medicare & Medicaid Services, Medicare Quality Improvement Organization Program, 2005-2009.
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 2009 (Figure 4.5). In all years, Blacks were less likely to receive timely fibrinolytic medication compared with Whites.
- In 2008, the top 5 State achievable benchmark was 61%.[ii] At the current rate of improvement, the achievable benchmark could be attained in about 1.5 years.
- At their current rates of improvement, Whites should reach the achievable benchmark in a little over 1 year; Hispanics should reach the benchmark in about 2 years, and Blacks should reach the benchmark in about 3 years.

[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.

Also, in the NHQR:

- From 2005 to 2009, in 4 of 5 years, a significantly higher percentage of heart attack patients under age 65 received fibrinolytic medication within 30 minutes than patients age 75 and over.

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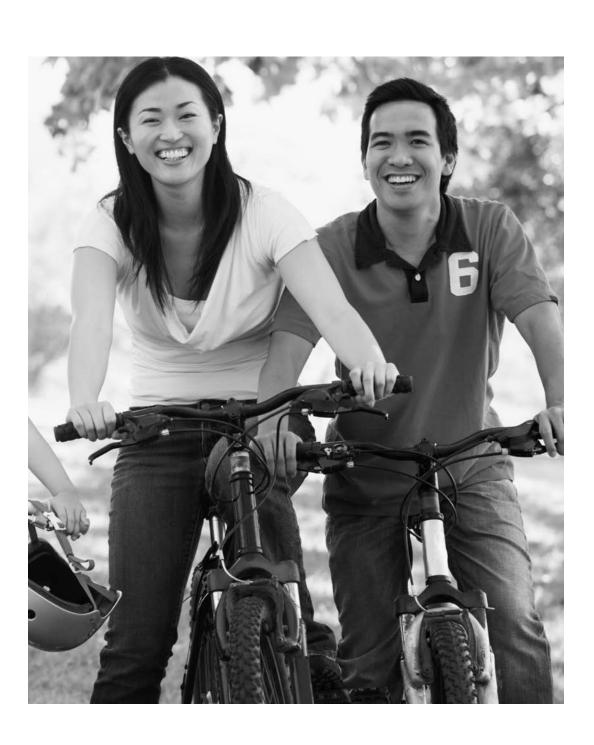
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Chapter 4

Chapter 5. Patient Centeredness

The Institute of Medicine identifies patient centeredness as a core component of quality health care (Institute of Medicine, 2001a). 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 (Institute of Medicine, 2001b).

Patient centeredness "encompasses qualities of compassion, empathy, and responsiveness to the needs, values, and expressed preferences of the individual patient" (Institute of Medicine, 2001a). 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 (Institute of Medicine, 2001b). This approach to care has been shown to improve patients' health and health care (DiMatteo, 1998; Stewart, et al., 2000; Little, et al., 2001; Anderson, 2002; Beck, et al., 2002). 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 (Rhoades, et al., 2001). 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 (HHS, 2011).[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 Communication*, a Web-based course for providers that integrates concepts related to health literacy with cultural competency and LEP.[iii]

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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 www.thinkculturalhealth.org) is accredited for Continuing Medical Education credits for physicians and Continuing Education Units for nurses and pharmacists.

[iii] This online program (available at 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.

Similarly, the HHS Office for Civil Rights, in partnership with 18 medical schools in the National Consortium for Multicultural Education, funded by the National Institutes of Health, provides a course on cultural competency in medicine that focuses on Title VI compliance, "Stopping Discrimination Before It Starts: The Impact of Civil Rights Laws on Health Care Disparities."[iv] This course discusses, in part, the HHS Office for Civil Rights' 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 *et seq*., against national origin discrimination (HHS, 2008).

In addition, the HHS Office for Civil Rights is responsible for the enforcement of Section 1557 of the Affordable Care Act, 42 U.S.C. 18116, which provides that an individual shall not be excluded from participation in, be denied the benefits of, or be subjected to discrimination on the grounds prohibited under Title VI of the Civil Rights Act of 1964, 42 U.S.C. 2000d *et seq*. (race, color, national origin), Title IX of the Education Amendments of 1972, 20 U.S.C. 1681 *et seq*. (sex), the Age Discrimination Act of 1975, 42 U.S.C. 6101 *et seq*. (age), or Section 504 of the Rehabilitation Act of 1973, 29 U.S.C. 794 (disability), under any health program or activity, any part of which is receiving Federal financial assistance, or under any program or activity that is administered by an executive agency or any entity established under Title I of the Affordable Care Act or its amendments.

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 (Stewart, et al., 2000; Anderson, 2002).
- A patient-centered approach has been shown to lessen patients' symptom burden (Little, et al., 2001).
- Patient-centered care encourages patients to comply with treatment regimens (Beck, et al., 2002).
- Patient-centered care can reduce the chance of misdiagnosis due to poor communication (DiMatteo, 1998).

Cost

- Patient centeredness has been shown to reduce underuse and overuse of medical care (Berry, et al., 2003).
- Patient centeredness can reduce the strain on system resources and save money by reducing the number of diagnostic tests and referrals (Little, et al. 2001).
- 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 (Bechel, et al., 2000).

[iv] This course (available in the Association of American Medical Colleges' MedEdPORTAL, https://www.mededportal.org/publication/7740) has been presented at five national medical schools. For the 2011-2012 academic year, "Stopping Discrimination Before It Starts" has been incorporated into the fourth year curriculum at Emory University School of Medicine and the University of Colorado School of Medicine.

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 address the priority of ensuring that each person and family are engaged as partners in their care, found in the *National Strategy for Quality Improvement in Health Care*.[v] The rationale is that "[h]ealth care should give each individual patient and family an active role in their care. Care should adapt readily to individual and family circumstances, as well as to differing cultures, languages, disabilities, health literacy levels, and social backgrounds." Examples of person-centered care could be ensuring that patients' feedback on their preferences, desired outcomes, and experiences of care is integrated into care delivery and enabling patients to effectively manage their care.

The NHDR has tracked a growing number of patient centeredness measures. Organized around the *National Strategy for Quality Improvement in Health Care* (National Quality Strategy), the 2011 NHDR presents the following measures that relate to the goal to provide patient-centered care:

- Adults and children who reported poor communication at the doctor's office (composite).
- Adults who reported poor communication with nurses and doctors at the hospital.
- Provider's involvement of the patient in making treatment decisions.

This year, the NHDR includes an expanded section that deals with language and includes some contextual data on primary language spoken at hospitals in California and New Jersey. In addition, this chapter includes two supporting measures: whether language assistance was provided by the usual source of care and need for a translator.

The last supporting measure deals with whether a provider sometimes or never asked for the patient's help in making treatment decisions. This measure relates to the National Quality Strategy goal of patient engagement.
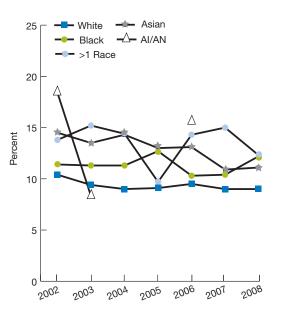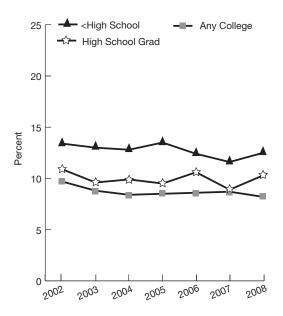
Findings

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 need to understand patients' diverse health care needs and preferences and communicate clearly with patients about their care.

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[v] Available at www.healthcare.gov/center/reports/nationalqualitystrategy032011.pdf.

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 and education, 2002-2008

Key: AI/AN = American Indian or Alaska Native.
Source: Agency for Healthcare Research and Quality, Medical Expenditure Panel Survey, 2002-2008.
Denominator: Civilian noninstitutionalized population age 18 and over who had a doctor's office or clinic visit in the last 12 months.
Note: For this measure, lower rates are better. 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. Data for AI/ANs were insufficient for analysis for 2004, 2005, 2007, and 2008.
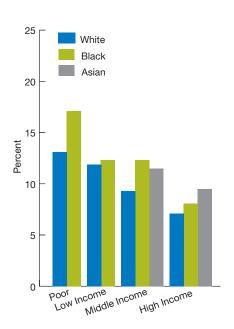
- Between 2002 and 2008, the percentage of White and Asian adults who reported poor communication with their health providers significantly decreased (Figure 5.1). During the same period, the percentage of Hispanics reporting poor communication also decreased significantly (data not shown). In addition, the percentage of adults with less than a high school education and those with any college who reported poor communication decreased during the period.
- In all measured years, Hispanics were significantly more likely than non-Hispanic Whites to report poor communication. In 2008, the percentage who reported poor communication was significantly higher for Black and Hispanic adults than for White adults.
- In 2008, adults with less than a high school education and those with a high school education were more likely than those with any college education to report poor communication with health providers.
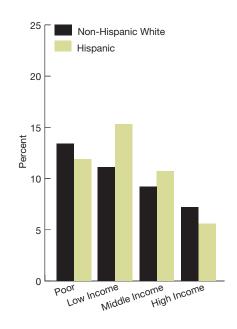
Also, in the NHQR:

- In 2008, a significantly lower percentage of adults ages 45-64 and age 65 and over reported poor communication with their health providers compared with adults ages 18-44.
- From 2002 through 2008, the percentage of people reporting poor communication with their health providers was significantly higher for those with basic and complex activity limitations than for those with no activity limitations.

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

Figure 5.2. Adult ambulatory patients who reported poor communication with health providers, by race and ethnicity, stratified by income, 2008

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Source: Agency for Healthcare Research and Quality, Medical Expenditure Panel Survey, 2008.
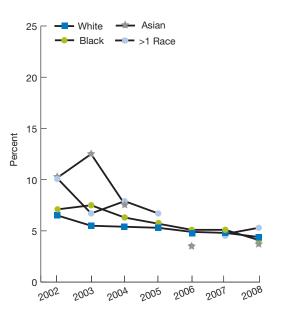**Denominator:** Civilian noninstitutionalized population age 18 and over.
Note: For this measure, lower rates are better. Sample sizes were too small to provide estimates for poor and low-income Asians. Patients who report that their health providers sometimes or never listened carefully, explained things clearly, showed respect for what they had to say, or spent enough time with them are considered to have poor communication.
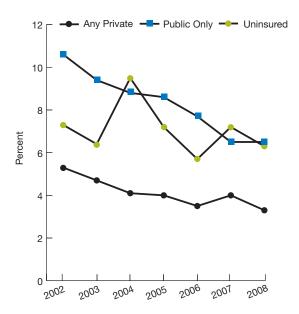
- Income explains some of the racial and ethnic differences in provider-patient communication for patients age 18 and over. A significantly higher percentage of poor and middle-income Blacks reported poor communication with their health provider compared with poor and middle-income Whites (Figure 5.2).
- A higher percentage of low-income Hispanics reported poor communication compared with low-income non-Hispanic Whites (15% compared with 11%).

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 and insurance status, 2002-2008

Source: Agency for Healthcare Research and Quality, Medical Expenditure Panel Survey, 2002-2008.
Denominator: Civilian noninstitutionalized population under age 18.
Note: For this measure, lower rates are better. Data for Asians in 2005 and 2007 and multiple-race children in 2006 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.
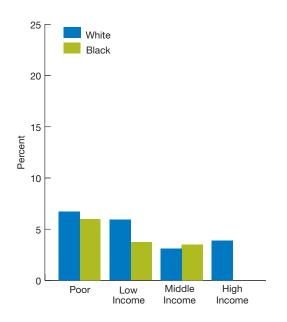
- From 2002 to 2008, significant decreases in the percentage of children whose parents or guardians reported poor communication were seen in children who were White, Black, Asian, multiple race, non-Hispanic White, and Hispanic. Significant decreases were also seen in children who had any private insurance or had public insurance only (Figure 5.3).

- The only group to not improve from 2002 to 2008 was children who were uninsured.

- In 2002, the percentage of Asian and multiple-race children whose parents or guardians reported poor communication with their health providers was significantly higher than for Whites; however, by 2008 there was no gap for either group compared with White children.

- In all years, a higher percentage of poor communication was reported for uninsured children compared with those with any private insurance (in 2008, 6% compared with 3%). In 2004, 2005, 2007, and 2008, a higher percentage of children with public insurance only reported poor communication compared with those with private insurance.
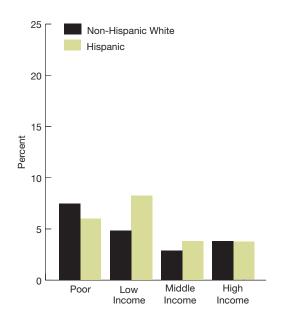
Also, in the NHQR:

- From 2002 to 2008, there was a statistically significant decrease for children ages 0-5 and ages 6-17 whose parents reported poor communication. During the same period, there was a statistically significant decrease for both gender groups as well.

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 race and ethnicity, stratified by income, 2008

Source: Agency for Healthcare Research and Quality, Medical Expenditure Panel Survey, 2008.
Denominator: Civilian noninstitutionalized population under age 18.
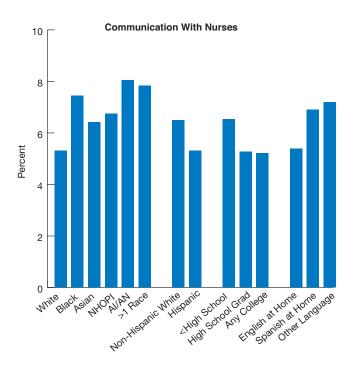**Note:** For this measure, lower rates are better. Data were not available for high-income Blacks. Parents who report that their child's health providers sometimes or never listened carefully, explained things clearly, showed respect for what they had to say, or spent enough time with them are considered to have poor communication.
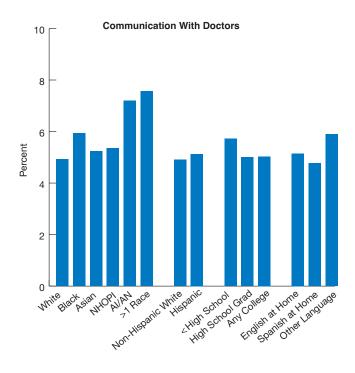
- There were no statistically significant differences between Whites and Blacks who reported poor communication with their health providers when stratified by income.
- There were no statistically significant differences between non-Hispanic Whites and Hispanics who reported poor communication with their health providers when stratified by income.

Patients' Experience of Care—Hospital

Using methods developed for the CAHPS® survey (Hargraves, et al., 2003), the NHQR and NHDR use a composite measure that combines three measures of provider-patient communication into a single core measure. The composite measure presented includes data on providers who sometimes or never listened carefully, explained things clearly, and respected what patients had to say. These data are presented separately for communication with nurses and communication with doctors.

Figure 5.5. Adult hospital patients who reported poor communication with nurses and with doctors, by race, ethnicity, education, and language, 2008

Communication With Nurses

Communication With Doctors

Key: NHOPI = Native Hawaiian or Other Pacific Islander; AI/AN = American Indian or Alaska Native.
Source: Agency for Healthcare Research and Quality, Hospital CAHPS® (Consumer Assessment of Healthcare Providers and Systems) Survey, 2008.
Note: For this measure, lower rates are better. 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?"

- In 2008, overall, 6% of adult hospital patients reported poor communication with nurses during their hospital stay, and 5% 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 and Alaska Natives, and patients of more than one race were more likely to report poor communication with doctors.
- Also in 2008, Hispanics were less likely to report poor communication with nurses but not with doctors compared with non-Hispanic Whites (5% compared with 7% with nurses).
- Patients with less than a high school education were more likely to report poor communication with both nurses and doctors compared with patients with any college education (7% compared with 5% with nurses, 6% compared with 5% with doctors, respectively).
- Patients who speak Spanish at home were more likely to report poor communication with nurses compared with patients who speak English at home (7% and 5%, respectively), while patients who speak some other language at home were more likely to report poor communication with both nurses and doctors (7% for nurses and 6% for doctors).

Also, in the NHQR:

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

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 give patients access to culturally and linguistically appropriate tools to support patient engagement. Culturally and linguistically appropriate services (CLAS) are important components 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. This year, we provide data on language diversity.

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 type of 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.

Patient Language Diversity at Hospitals

The overall percentage of Americans that belong to minority groups is increasing, and the total number of minorities in the United States surpassed 100 million in 2007 (U.S. Bureau of the Census, 2007). A large number of these groups are made up of recent immigrants and groups that may not speak English as their primary language (Shin & Kominski, 2010). When members of these groups seek health care, language barriers may present significant challenges to communication with their providers and caregivers.
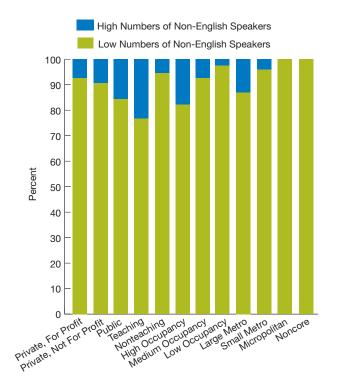
The ability to capture the variety and numbers of patients who speak languages other than English is a recent new development, and two States (California and New Jersey) seem to have data that are robust enough to be reported at present. The following figures present some of these new State-level data that allow more insight into this topic.

Table 5.1. Top 10 most widely spoken languages in California and New Jersey

California's Top 10 Leading Languages			
Rank	**Language**	**Frequency**	**Percent**
1	English	3,308,171	83.01%
2	Spanish	477,288	11.98%
3	Chinese	24,230	0.61%
4	Vietnamese	15,958	0.40%
5	Tagalog	12,168	0.31%
6	Korean	11,956	0.30%
7	Armenian	9,586	0.24%
8	Russian	6,939	0.17%
9	Arabic	4,280	0.11%
10	Japanese	2,624	0.07%
New Jersey's Top 10 Leading Languages			
Rank	**Language**	**Frequency**	**Percent**
1	English	1,002,701	89.35%
2	Spanish	59,797	5.33%
3	"Other"	35,134	3.13%
4	Portuguese	2,203	0.20%
5	Arabic	1,784	0.16%
6	Italian	1,378	0.12%
7	Hindi	1,378	0.12%
8	Korean	1,364	0.12%
9	Polish	1,296	0.12%
10	Chinese	1,104	0.10%

Source: Agency for Healthcare Research and Quality, Healthcare Cost and Utilization Project, State Inpatient Databases.
Note: California and New Jersey only.

Figure 5.6. California and New Jersey hospitals with a high number of patients for whom English was not their primary language, by ownership, teaching status, occupancy load, and geographic location, 2009

Source: Agency for Healthcare Research and Quality, Healthcare Cost and Utilization Project, State Inpatient Databases.
Note: Data are from 42 hospitals and 229,394 discharges. High-percentage Spanish hospitals represent the top 10% of facilities with the highest percentages of patients for whom English is not their primary language. California and New Jersey only.

- Only 7% of privately owned, for-profit hospitals were in the group with a high percentage of non-English-speaking patients (top 10%), whereas 9% of private, not-for-profit hospitals had a high percentage of non-English-speaking patients (Figure 5.6). About 16% of public hospitals had a high percentage of non-English-speaking patients.

- Almost a quarter (23%) of teaching hospitals had a high percentage of non-English-speaking patients, but only 6% of non-teaching hospitals had a high percentage of non-English-speaking patients.

- Based on occupancy rates, 18% of high-occupancy hospitals had a high percentage of non-English-speaking patients. Only 8% of medium-occupancy hospitals had a high percentage of non-English-speaking patients, and just 3% of low-occupancy hospitals had a high percentage of non-English-speaking patients.

- Geographic location also seems to be associated with the percentage of hospitals that have a large percentage of patients whose primary language is not English. Thirteen percent of large metropolitan hospitals had a high percentage of non-English-speaking patients, and only 4% of small metropolitan hospitals had a high percentage of non-English-speaking patients. No micropolitan or noncore hospitals had a high percentage of non-English-speaking patients.
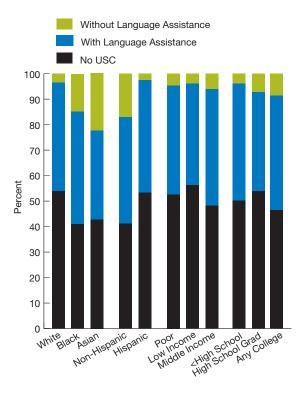
Information about hospitals that served a high percentage of Spanish speakers and their patients was also gathered:

■ The top 10% of hospitals serving Spanish speakers were predominantly in large metropolitan areas (84%), moderately sized (had 100-299 beds, 56%), private, not for profit (51%), teaching (53%), and high occupancy (51%).

■ Approximately 60% of patients at hospitals with a high percentage of Hispanic patients were insured by Medicaid, while 7% were uninsured. About 43% of these patients were from very low-income communities, while 24% were from low-income communities.

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 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 5.7. 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, 2008

Key: USC = usual source of care.
Source: Agency for Healthcare Research and Quality, Medical Expenditure Panel Survey, 2008.
Note: For this measure, lower rates are better. Hispanic and non-Hispanic include all races. Data were not available for those in the high-income group.

■ In 2008, Hispanic adults were significantly more likely than non-Hispanic adults to have a usual source of care with language assistance (Figure 5.7).
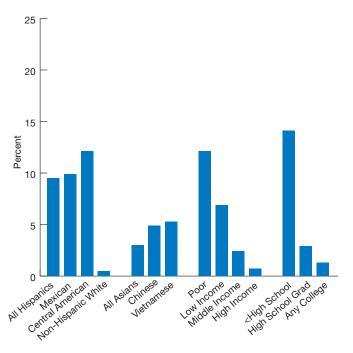
■ In 2008, White adults with limited English proficiency were significantly more likely than Asians to have a usual source of care with language assistance.

Need for a 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 decisionmaking. It also can exacerbate cultural differences that impair the delivery of quality health care.

Figure 5.8. Adults age 18 and over who needed a translator during last doctor visit, California, by race/ethnicity, income, and education, 2008

Source: University of California, Los Angeles, Center for Health Policy Research, California Health Interview Survey, 2008.
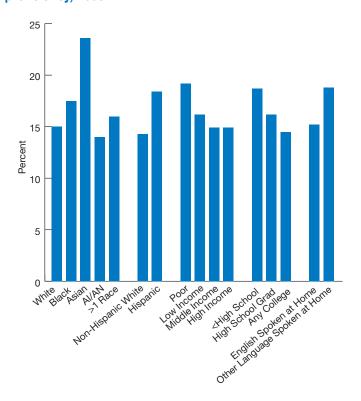
■ In 2008, non-Hispanic White patients in California were significantly less likely than Hispanic patients to need a translator during their last doctor visit (0.5% compared with 10%; Figure 5.8). Non-Hispanic Whites also were less likely than Mexicans and Central Americans to need a translator. Asians were significantly more likely than non-Hispanic Whites to need a translator during their last doctor visit (3% compared with 0.5%). There were, however, no statistically significant differences between the overall Asian population and Chinese or Vietnamese patients. There also were no statistically significant differences between Chinese and Vietnamese patients.

■ Also in 2008, poor (12%), low-income (7%), and middle-income (2%) patients were significantly more likely than high-income (0.7%) 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 any college education (14% and 3%, respectively, compared with 1%).

Providers Asking Patients To Assist in Making Treatment Decisions

The increasing prevalence of chronic diseases has placed more responsibility on patients, since conditions such as diabetes and hypertension require self-management. Patients need to be provided with information that allows them to make educated decisions and feel engaged in their treatment. Treatment plans also need to incorporate their values and preferences.

Figure 5.9. Adults with a usual source of care whose health providers sometimes or never asked for the patient's help to make treatment decisions, by race, ethnicity, income, education, and English proficiency, 2008

Key: AI/AN = American Indian or Alaska Native.
Source: Agency for Healthcare Research and Quality, Medical Expenditure Panel Survey, 2008.
Note: For this measure, lower rates are better.

- In 2008, Whites were significantly less likely than Blacks, Asians, and people of more than one race to have a usual source of care who sometimes or never asked for the patient's help to make treatment decisions (15% compared with 18%, 24%, and 16%, respectively; Figure 5.9).

- In 2008, non-Hispanic White patients were significantly less likely than Hispanics to have a usual source of care who sometimes or never asked for the patient's help to make treatment decisions (14% compared with 18%).

- In 2008, patients with any college education were significantly less likely than patients with less than a high school education to have a usual source of care who sometimes or never asked for the patient's help to make treatment decisions (15% compared with 19%).

- In 2008, 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 who sometimes or never asked for the patient's help to make treatment decisions (15% compared with 19%).

Also, in the NHQR:

- In 2008, patients age 65 and over with Medicare and public insurance were significantly more likely than patients with Medicare and private insurance to have a usual source of care not ask for their help in making treatment decisions.

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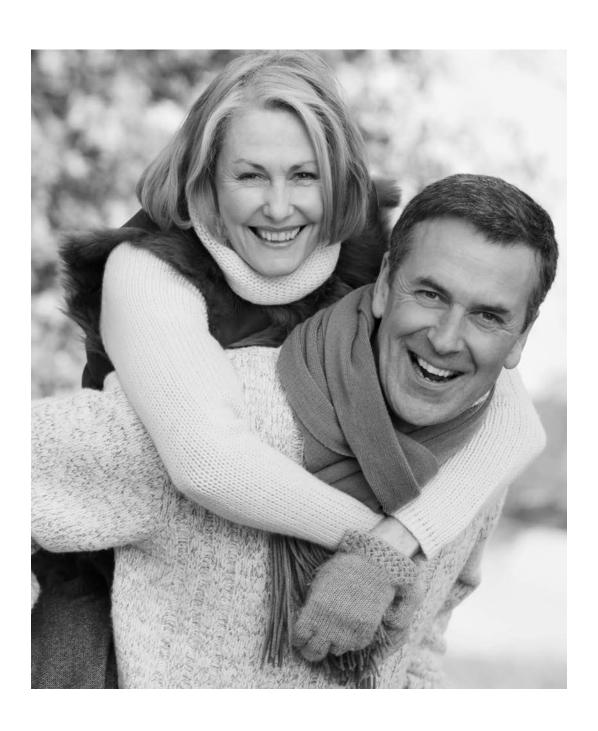
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Chapter 6. Care Coordination

Health care in the United States is often fragmented. Clinical services are frequently organized around small groups of providers who function autonomously and specialize 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 (Bodenheimer, 2008). 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 (Shojania, et al., 2007). Care coordination is multidimensional and essential to preventing adverse events, ensuring efficiency, and making care patient centered (Powell-Davies, et al., 2008).

Patients in greatest need of care coordination include those with multiple chronic medical conditions, concurrent care from several health professionals, many medications, and extensive diagnostic workups, or transitions from one care setting to another. Effective care coordination requires well-defined multidisciplinary teamwork based on the principle that all who interact with a patient must work together to ensure the delivery of safe, high-quality care.

In early 2011, the Partnership for Patients was created to improve the quality, safety, and affordability of health care for all Americans. One of the two major goals of this public-private partnership is to heal patients without complications arising. This goal specifically ties to care coordination by seeking to decrease preventable complications during transition from one care setting to another. The objective is to decrease all hospital readmissions by 20% overall by the end of 2013 (compared with 2010).

One example of the Federal Government's efforts to support care coordination is the Health Resources and Services Administration's (HRSA) initiative "Enhancement & Evaluation of Existing Health Information Electronic Network Systems for PLWHA (People Living with HIV/AIDS) in Underserved Communities." Begun in 2007, the initiative funded six demonstration sites throughout the Nation for up to 4 years.[i]

Another more recent funding opportunity also offered by HRSA is "Systems Linkages and Care Initiative to High Risk Populations Evaluation and Technical Assistance Center." This initiative promotes the development of innovative strategies to successfully integrate different components of the public health system into quality HIV care of hard-to-reach populations who have never been in care. AHRQ intends this chapter to be the leading step in the evolving national discussion on measuring care coordination. Furthermore, AHRQ hopes that this chapter will stimulate productive discussions in the area of care coordination, including development and use of valid, reliable, and feasible quality measures.

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[i] For more information, see: http://hab.hrsa.gov/abouthab/special/underservedcommunities.html.

Chapter 6

Importance

Morbidity and Mortality

- Care coordination interventions have been shown to:
  o Reduce mortality among patients with heart failure.
  o Reduce mortality and dependency among patients with stroke.
  o Reduce symptoms among patients with depression and at the end of life.
  o Improve glycemic control among patients with diabetes (Shojania, et al., 2007).

Cost

- Care coordination interventions have been shown to:
  o Reduce hospitalizations among patients with heart failure.
  o Reduce readmissions among patients with mental health conditions.
  o Be cost-effective when applied to treatment of depression (Shojania, et al., 2007).

Measures

The *National Strategy for Quality Improvement in Health Care*[ii] identified care coordination as one of six national priorities for health care. The vision is health care providers working together to "ensure that the patient gets the care and support he needs and wants, when and how he needs and wants it." 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 goals:

- Transitions of care:
  o Adequate hospital discharge information.
  o Patients who reported that they always received test results (Massachusetts only; measure reported separately for adults and children).
- Hospital readmissions:
  o Readmissions for congestive heart failure.
- Medication information:
  o Provider asking about medications from other doctors.
  o Hospital electronic exchange of medication information.
- Preventable emergency department visits:
  o Emergency department visits for asthma.

[ii] Available at www.healthcare.gov/center/reports/quality03212011a.html.
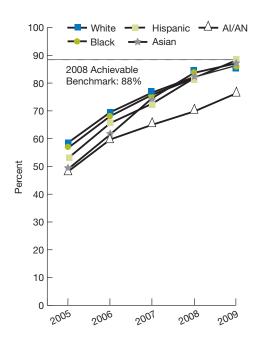
Findings

Transitions of Care

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.

Management: Complete Written Discharge Instructions

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 (Coleman, et al., 2006).

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, 2005-2009

Key: AI/AN = American Indian or Alaska Native.
Source: Centers for Medicare & Medicaid Services, Quality Improvement Organization Program, 2005-2009.
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 2009, the overall percentage of hospitalized adult patients with heart failure who were given complete written discharge instructions improved from 58% to 86% (data not shown).
- Improvements were observed among all racial and ethnic groups (Figure 6.1).

■ In 2009, American Indians and Alaska Natives (AI/ANs) were less likely to receive complete written discharge instructions compared with Whites.

■ The 2008 top 5 State achievable benchmark was 88%.[iii] By 2009, Hispanics had attained the 2008 benchmark, with 88% having received written discharge instructions. This benchmark could be attained by most of the racial groups in less than a year. The one exception is AI/ANs, who would require almost 2 years to reach the benchmark.

Also, in the NHQR:

■ Statistically significant differences in receipt of written instructions by age and gender group were not observed.

Integration of Information

Patients often seek care from many providers. Medical information generated in different settings may not be sent to a patient's primary care provider. Actively gathering and managing all of a patient's medical information is an important part of care coordination. Tasks include ensuring that patients are informed of important findings such as test results, primary care doctors are informed of care from specialists, and providers within a practice have access to needed information.
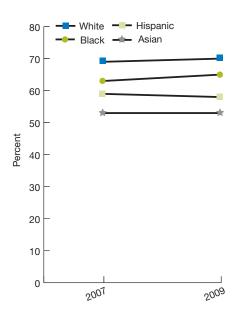
No national survey currently gathers information from patients about these aspects of care coordination. To help fill this gap, we examined subnational data-gathering activities and identified the Massachusetts Health Quality Partners (MHQP) Patient Experience Survey as a unique source of this information. MHQP is an independent organization established in 1995. It is a broad-based coalition of physicians, hospitals, health plans, purchasers, consumers, academics, and government agencies working together to improve the quality of health care services in Massachusetts. MHQP has conducted the Patient Experience Survey since 2005.
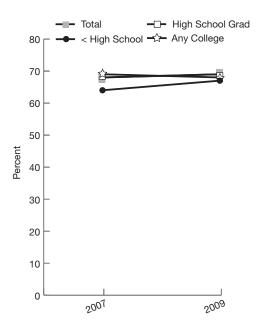
In 2007 and 2009, MHQP conducted a mail and Internet survey of commercially insured adult and pediatric patients' experiences of care. The survey included patients being served in primary care practices with at least three doctors.[iv] Several questions related directly to coordination of information across providers and patients. In 2007, the survey was completed by 51,000 adult patients and 20,000 parents of pediatric patients receiving care in more than 400 medical practices in Massachusetts. The response rate was 42%. In 2009, the survey was completed by 56,000 adult patients and 22,000 parents of pediatric patients.

[iii] The top 5 States that contributed to the achievable benchmark are Colorado, Delaware, New Hampshire, New Jersey, and Utah.
[iv] The survey and results are available at www.mhqp.org/quality/pes/pesMASumm.asp?nav=031600.

Figure 6.2. Patients who reported that they always received test results, commercially insured adults age 18 and over in primary care practices, by race/ethnicity and education, Massachusetts, 2007 and 2009
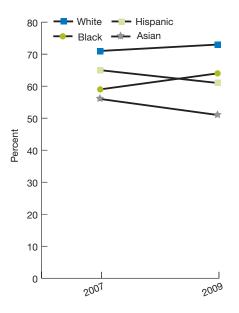

Source: Massachusetts Health Quality Partners, Patient Experience Survey, 2007 and 2009.
Note: Respondents limited to patients who received a test in the past year.

- In 2009, of adult patients who were sent for a blood test, x ray, or other test by their personal primary care doctor, 69% reported that someone from the doctor's office followed up to give them the test results (data not shown).
- In both 2007 and 2009, Black, Hispanic, and Asian patients were less likely to receive a followup on test results than White patients (Figure 6.2).
- In 2009, there were no statistically significant differences between education groups in reporting whether someone from the doctor's office followed up to give them test results.

Figure 6.3. Parents of patients who reported that they always received test results for their child, commercially insured children under age 18 in primary care practices, by race/ethnicity and parent's education, Massachusetts, 2007 and 2009

Source: Massachusetts Health Quality Partners, Patient Experience Survey, 2007 and 2009.
Note: White, Black, and Asian populations are non-Hispanic. Respondents limited to patients who received a test in the past year. Education refers to the parents. Data were insufficient for this analysis for American Indians and Alaska Natives and Native Hawaiians and Other Pacific Islanders.

- In 2009, of children who were sent for a test, 70% of parents reported that someone from the doctor's office followed up to give the test results (Figure 6.3).
- In both 2007 and 2009, Black, Hispanic, and Asian children were less likely to receive followup on test results than White children.
- In both 2007 and 2009, children whose parents had less than a high school education were less likely to receive followup than children whose parents had any college education.

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.

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
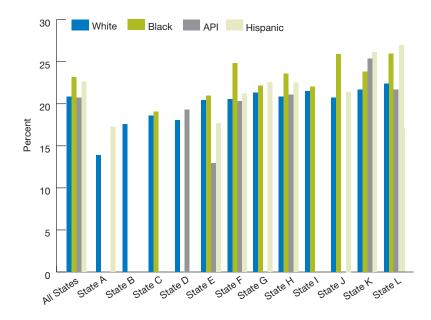
symptoms that their CHF is not under good control. When patients do not receive written discharge instructions that they understand, they may be less able to follow them. In addition, postdischarge care should be coordinated with the patient's primary care physician. Patients will need to arrange followup visits with their primary care physician, who can adjust medications early to help prevent rehospitalization.

The estimates below are derived from data for 12 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, 2008. 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.

Prior to the 2010 reports, we reported on readmissions with only a principal diagnosis of CHF only, so comparisons with those 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 just over $13,000, and the total cost was nearly $900 million.

Figure 6.4. Rehospitalization for congestive heart failure, by race/ethnicity and State, 12 States, 2008

Key: API = Asian or Pacific Islander.
Source: Agency for Healthcare Research and Quality, Healthcare Cost and Utilization Project, State Inpatient Databases, 2008.
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% (data not shown).
- Aggregating over all States, Blacks and Hispanics had higher rehospitalization rates than Whites (States F, H, J, K, and L, and States H, K, and L, respectively; Figure 6.4).
- Aggregating over all States, no statistically significant differences were observed between APIs and Whites, although APIs had a higher rate in States D and K.

Also, in the NHQR:

■ Overall, rehospitalization rates did not vary by age. In some individual States, however, rates were higher among patients age 65 and over compared with patients ages 18-64.
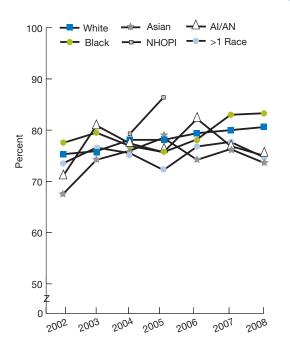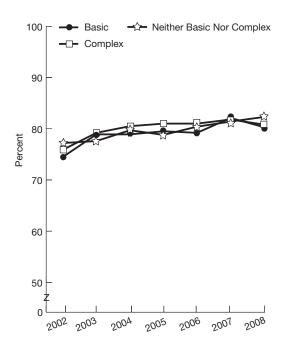
Medication Information

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 some providers do not know about all of a patient's medications, patients are at greater risk for adverse events related to drug interactions, 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 (Whittington & Cohen, 2004).

Management: Provider Asking 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 6.5. People with a usual source of care whose health provider usually asks about prescription medications and treatments from other doctors, by race and activity limitations, United States, 2002-2008

Key: AI/AN = American Indian or Alaska Native, NHOPI = Native Hawaiian or Other Pacific Islander.
Source: Agency for Healthcare Research and Quality, Center for Financing, Access, and Cost Trends, Medical Expenditure Panel Survey, 2002-2008.
Denominator: Civilian noninstitutionalized population who report a usual source of care.
Note: Data for NHOPIs were insufficient for analysis except in 2004 and 2005.

- From 2002 to 2008, 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 81% (data not shown).
- Improvements were observed among all racial and disability groups (Figure 6.5).
- In 2008, the percentage of patients with a usual source of care whose health provider usually asked about prescription medications and treatments from other doctors was significantly lower for Asians than for Whites (74% compared with 81%).
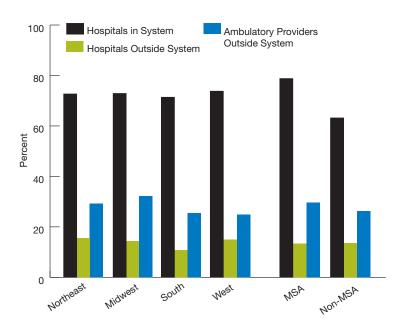
Also, in the NHQR:

- From 2002 to 2008, children's health providers were less likely to ask about medications from other doctors. In all years except 2003, the health providers of older adults were also 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 2,112 hospitals responded.

Data are shown by region and geographic location of the hospitals (urban or rural). Urban hospitals and public hospitals provide a disproportionate share of care to low-income and minority patients.

Figure 6.6. Hospitals with electronic exchange of patient information on medication history, by region and geographic location, 2009

Key: MSA = metropolitan statistical area.
Source: American Hospital Association Annual Survey Information Technology Supplement, 2009.

Chapter 6

■ Overall, in 2009, 73% of hospitals electronically exchanged patient information on medication history with other hospitals in their system, 13% exchanged information with hospitals outside their system, and 28% exchanged information with ambulatory providers outside their system (data not shown).

■ Hospitals in the West were the most likely to exchange information with hospitals in their system, followed by hospitals in the Midwest, Northeast, and South (74%, 73%, 73%, and 71%, respectively; Figure 6.6).

■ Urban (metropolitan statistical area, or MSA) hospitals were more likely to exchange information with hospitals in their system and with ambulatory providers outside their system than rural (non-MSA) hospitals.

Also, in the NHQR:

■ Federal hospitals were most likely to have electronic exchange with hospitals in their system, followed by nonprofit, for-profit (investor-owned), and non-Federal hospitals, respectively.

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 (AHRQ, 2008). 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.
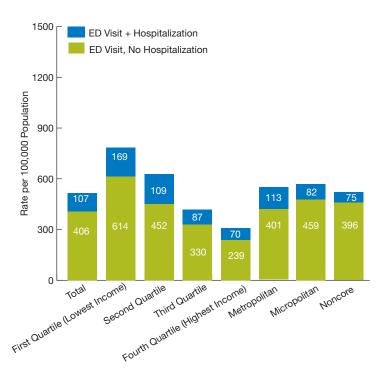
Some hospitalizations and ED encounters cannot be avoided, but appropriate ambulatory care can help keep some patients from having to visit an ED or from being hospitalized. Reducing potentially avoidable ED encounters, in particular, holds promise for reducing cost, improving quality, and enhancing efficiency.
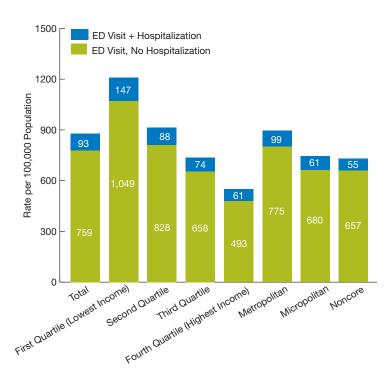
Outcome: Emergency Department Visits for Asthma

Asthma is an ambulatory care-sensitive condition, but is one that typically requires those with asthma to avoid environmental conditions that exacerbate their disease, 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. Population-based rates of visits to the ED with and without hospitalization could be lowered with better patient education and outpatient management. For the purposes of added insight, the following analysis distinguishes between visits that resulted in hospitalization and those that did not.

For this analysis, the adult and pediatric asthma measures from the AHRQ Pediatric Quality Indicators 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 does not support analyses of race/ethnicity at this time.

Figure 6.7. Potentially avoidable emergency department encounters for asthma, among adults, by income and geographic location, and among children, by income and geographic location, 2008

Key: ED = emergency department.
Source: Agency for Healthcare Research and Quality, Healthcare Cost and Utilization Project, Nationwide Emergency Department Sample, 2008.
Denominator: U.S. population.
Note: Annual rates are adjusted for age and gender.

- Overall, the rate of ED visits for asthma was 513 per 100,000 among adults and 852 per 100,000 for children (Figure 6.7). About 21% of ED visits for asthma among adults led to hospitalization (107 per 100,000), and 79% had other dispositions (406 per 100,000). About 11% of ED visits for asthma among children led to hospitalization (93 per 100,000) and 89% had other dispositions (759 per 100,000).

- Compared with 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 (this was true for adults as well as children).

- Compared with residents of other geographic locations, noncore residents had the lowest rates of both ED visits for asthma that led to hospitalization and ED visits that did not end in hospitalization (this was true for adults as well as children).

Also, in the NHQR:

- Compared with adults ages 18-44, all older age groups had lower rates of ED visits for asthma, but an increasing percentage that led to hospitalization.

- Children ages 0-4 had the highest overall rates of ED visits for asthma compared with any group presented.

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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 approach 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 (Fisher, et al., 2003). Improving efficiency in the Nation's health care system is an important component of 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; although consensus has not yet emerged on what constitutes appropriate measurement of efficiency, AHRQ has supported development in this area. This chapter has been largely shaped by a number of documents that have developed the field of health care efficiency measurement. One major contributor is an AHRQ-commissioned report by RAND Corporation, which systematically reviewed efficiency measures, assessed their tracking potential, and provided a typology that emphasizes the multiple perspectives on health care efficiency (McGlynn, 2008).

This chapter of the *National Healthcare Disparities Report* (NHDR) is organized around the concepts of overuse and misuse. As noted in the *National Strategy for Quality in Health Care*,[i] "Achieving optimal results every time requires an unyielding focus on eliminating patient harms from health care, reducing waste, and applying creativity and innovation to how care is delivered."

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 hospitalizations:
  - Potentially avoidable hospitalization rates for adults.
  - Excess avoidable hospitalizations.
  - Potentially avoidable hospitalizations among Medicare home health patients.
  - Perforated appendixes.
- 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.
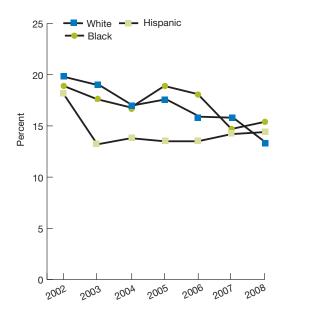

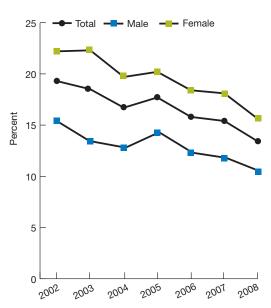[i] Available at www.healthcare.gov/center/reports/quality03212011a.html.

Findings

Inappropriate Medication Use

Some drugs are potentially harmful for older patients but nevertheless are prescribed to them (Zhan, et al., 2001).[ii] Using inappropriate medications can be life threatening and may result in hospitalization (Lau, et al., 2005). To measure inappropriate medication use, we have followed the Beers criteria, which have been generally accepted by the medical community and by expert opinion, although there is still some disagreement. This disagreement relates to the many factors that must be considered when identifying what constitutes inappropriate use by certain populations (Zhan, et al., 2001).

Figure 7.1. Adults age 65 and over who received potentially inappropriate prescription medications in the calendar year, by race/ethnicity and gender, 2002-2008

Source: Agency for Healthcare Research and Quality, Medical Expenditure Panel Survey, 2002-2008.
Denominator: Civilian noninstitutionalized population age 65 and over.
Note: For this measure, lower rates are better. Prescription medications received include all prescribed medications initially purchased or otherwise obtained, as well as any refills. Whites and Blacks are non-Hispanic. Hispanic includes all races.

[ii] 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.

- From 2003 to 2005, the percentage of older patients who received at least 1 of 33 potentially inappropriate drugs was significantly lower for Hispanics than for Whites. For the rest of the period, there were no statistically significant differences (Figure 7.1).
- From 2002 to 2008, the percentage of adults age 65 and over that received potentially inappropriate medications decreased from 19% in 2002 to 13% in 2008 (data not shown).
- There was a consistent gap between males and females, with females having higher rates of inappropriate medications. In 2008, the rate for females was 16% and 11% for males.

Also, in the National Healthcare Quality Report (NHQR):

- From 2002 to 2008, there were no consistent gaps between patients with Medicare and private insurance and those with Medicare only or with Medicare and other public insurance.
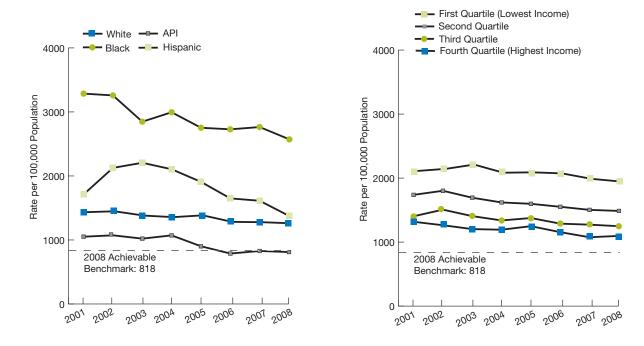
Preventable Hospitalizations

NEW Potentially Avoidable Hospitalization Rates for Adults

Hospitalization is expensive. Preventing avoidable hospitalizations could improve the efficiency of health care delivery. 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. Hospitalizations for acute conditions, such as dehydration or pneumonia, are distinguished from hospitalizations for chronic conditions, such as diabetes or congestive heart failure. Results presented this year apply a modified version 4.1 of the AHRQ Quality Indicators and are not comparable to results from previous years.

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 area income, 2001-2008

Key: API = Asian or Pacific Islander.
Source: Agency for Healthcare Research and Quality (AHRQ), Center for Delivery, Organization, and Markets, Healthcare Cost and Utilization Project, State Inpatient Databases disparities analysis file, Nationwide Inpatient Sample, and AHRQ Quality Indicators, modified version 4.1, 2001-2008.
Denominator: Civilian noninstitutionalized adults age 18 and over.
Note: For this measure, lower rates are better. 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.

- From 2001 to 2008, the overall rate of avoidable hospitalizations fell from 1,657 to 1,433 per 100,000 population (data not shown). Declines in avoidable hospitalizations were observed among all raceial/ethnic and income groups (Figure 7.2).

- In all years, rates of potentially avoidable hospitalizations were higher among Blacks compared with Whites and lower among Asians and Pacific Islanders (APIs) compared with Whites. Except in 2001 and 2008, rates were also higher among Hispanics compared with Whites.

- In all years, rates of potentially avoidable hospitalizations were higher among residents of areas in the lowest and second income quartiles compared with residents of the highest income quartile.

- In 2008, the top 3 State achievable benchmark for all potentially avoidable hospitalizations was 818 hospitalizations per 100,000.[iii] The overall achievable benchmark could not be attained for 20 years.

- The only racial/ethnic group to attain the achievable benchmark as of 2008 was APIs, whereas Whites could not attain the benchmark for about 16 years. Blacks would not attain the benchmark for about 18 years, but Hispanics could attain the benchmark in 7 years.

- High-income groups would attain the benchmark sooner than lower income groups (lowest quartile, about 41 years; second quartile, 15 years; third quartile, 14 years; and highest quartile, 9 years).

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iii The top 3 States that contributed to the achievable benchmark are Hawaii, Utah, and Washington.

Also, in the NHQR:

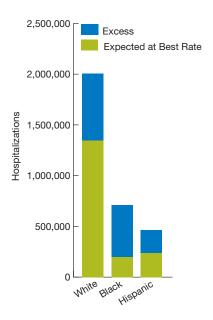- Declines in avoidable hospitalizations were observed for both acute and chronic conditions.

Excess Avoidable Hospitalizations

The following analysis estimates numbers of excess preventable hospitalizations for 2008 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 people in the group (for example, for Hispanics, the difference between the Hispanic rate and the benchmark rate was multiplied by the number of Hispanics).

Figure 7.3. Excess number of potentially preventable hospitalizations, by race/ethnicity, 2008

Source: Agency for Healthcare Research and Quality (AHRQ), Center for Delivery, Organization, and Markets, Healthcare Cost and Utilization Project, Nationwide Inpatient Sample, and AHRQ Quality Indicators, modified version 4.1, 2008.

- In 2008, if Whites had the benchmark rate of preventable hospitalizations, they would have had almost 710,000 fewer hospitalizations (Figure 7.3). Instead of costing $15.2 billion, preventable hospitalization among Whites would have cost only $9.9 billion, saving $5.3 billion.
- If Blacks had the benchmark rate of preventable hospitalizations, they would have had more than 470,000 fewer hospitalizations. Instead of costing $5.4 billion, preventable hospitalizations among Blacks would have cost only $1.7 billion, saving $3.7 billion.
- If Hispanics had the benchmark rate of preventable hospitalizations, they would have had almost 170,000 fewer hospitalizations. Instead of costing $3.7 billion, preventable hospitalizations among Hispanics would have cost only $2.2 billion, saving $1.5 billion.
- Because the overall rate among APIs was below the benchmark rate, there are no estimated excess preventable hospitalizations for this group.

Comparisons with the 3 State achievable benchmark for the composite rate of preventable hospitalizations in 2008 are also 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.

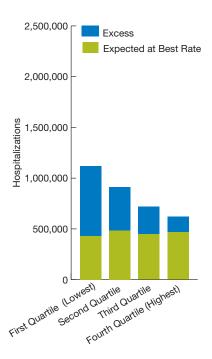**Figure 7.4. Excess number of potentially preventable hospitalizations, by income, 2008**

Source: Agency for Healthcare Research and Quality (AHRQ), Center for Delivery, Organization, and Markets, Healthcare Cost and Utilization Project, Nationwide Inpatient Sample, and AHRQ Quality Indicators, modified version 4.1, 2008.

- In 2008, if residents of the neighborhoods in the lowest income quartile had the benchmark rate of preventable hospitalizations, they would have had more than 630,000 fewer hospitalizations (Figure 7.4). Instead of costing $7.8 billion, preventable hospitalizations among income quartile 1 residents would have cost only $3.3 billion, saving $4.5 billion.

- If residents of income quartile 2 neighborhoods had the benchmark rate of preventable hospitalizations, they would have had almost 410,000 fewer hospitalizations. Instead of costing $6.7 billion, preventable hospitalizations would cost only $3.7 billion, saving $3.0 billion.

- If residents of income quartile 3 neighborhoods had the benchmark rate of preventable hospitalizations, they would have had about 240,000 fewer hospitalizations. Instead of costing $5.4 billion, preventable hospitalizations would cost only $3.6 billion, saving $1.8 billion.

- If residents of the highest income quartile neighborhoods had the benchmark rate of preventable hospitalizations, they would have had about 160,000 fewer hospitalizations. Instead of costing $5.5 billion, preventable hospitalizations would cost only $4.1 billion, saving $1.4 billion.

Potentially Avoidable Hospitalizations Among Medicare Home Health Patients

Many patients are hospitalized while receiving care from home health agencies, 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.
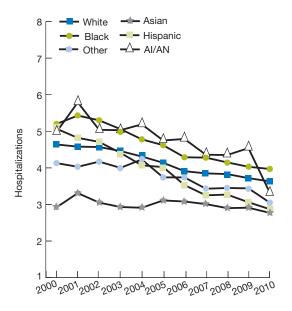
Using the AHRQ PQIs, we track potentially avoidable hospitalizations among Medicare patients occurring within 30 days of the start of home health care. These patients may differ from patients who are predominantly admitted for avoidable conditions from home but are not receiving home health services. Some of these patients are receiving appropriate primary care and others have not visited a health care provider for years.

In contrast, Medicare home health 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 settings, the potentially avoidable stays are identified within a defined time period, 30 days, from the home health 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. These data are linked with Medicare Part A acute care hospital claims to determine hospitalizations for potentially avoidable conditions.

Figure 7.5. Medicare home health patients with potentially avoidable hospitalizations within 30 days of start of care, by race/ethnicity, 2000-2010

Key: AI/AN=American Indian or Alaska Native.
Source: Centers for Medicare & Medicaid Services, Outcome and Assessment Information Set linked with Medicare Part A claims (100%), 2000-2010.
Denominator: Adult nonmaternity patients starting an episode of skilled home health care.
Note: For this measure, lower rates are better. Rates standardized to the 2006 patient population according to Medicare enrollment category. Hispanics could include other races. All race categories could include Hispanics.

■ Between 2000 and 2010, hospitalizations for potentially avoidable conditions within 30 days of home health episode start declined from 5.0% to 3.6% (data not shown).

■ From 2000 to 2010, 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 7.5).

Perforated Appendixes

Perforation is a severe complication of appendicitis that allows intestinal contents to spill into the abdominal cavity. Patients with a perforated appendix have a worse prognosis and require longer recovery times after surgery than patients whose appendix does not rupture. More timely detection and treatment of appendicitis can reduce the percentage of appendicitis admissions in which rupture has occurred.

Figure 7.6. Perforated appendixes per 1,000 admissions for appendicitis, age 18 and over, by race/ethnicity and area income, 2004-2008

Key: API = Asian or Pacific Islander.
Source: Agency for Healthcare Research and Quality, Healthcare Cost and Utilization Project, State Inpatient Databases disparities analysis file, 2004, 2005, 2007, and 2008.
Note: For this measure, lower rates are better. Data for 2006 were not available this year, because a new version of the PQI software was used to calculate rates and 2006 was not included in the calculation

- From 2004 to 2008, there were no statistically significant differences between racial/ethnic groups (Figure 7.6).
- In 2008, the rates of perforated appendixes were higher for the lowest and second income quartiles than for the highest income quartile (301 and 288 per 1,000 appendicitis admissions, respectively, compared with 254).

Nationwide, many American Indians and Alaska Natives (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. 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 by IHS, Tribal, and contract hospitals.

Figure 7.7. Perforated appendixes per 1,000 admissions for appendicitis, age 18 and over, in IHS, Tribal, and contract hospitals, by age and gender, 2004-2008

Source: Indian Health Service, National Patient Information Reporting System, National Data Warehouse, Workload and Population Data Mart, 2004-2008.
Note: For this measure, lower rates are better. The total for each year is age adjusted.
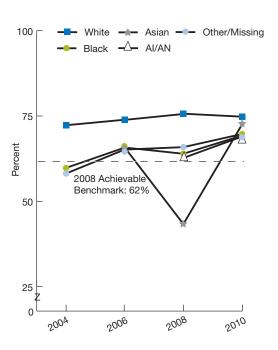
- Between 2004 and 2008, there was no statistically significant change in the overall rate of perforated appendixes at Indian Health Service facilities (Figure 7.7).
- In 2008, for IHS facilities, the rates of perforated appendixes for those ages 45-64 and age 65 and over were higher than for those ages 18-44 (388 and 656 per 1,000 appendicitis admissions, respectively, compared with 220).

Potentially Harmful Preventive Services With No Benefit

This section highlights waste and opportunities to reduce unnecessary costs. Waste includes overuse, underuse, and misuse of health care services. This section focuses on overuse, while underuse and misuse are addressed in various other 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 (AHRQ, 2008) 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.

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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 and income, 2004-2010

Key: AI/AN = American Indian/Alaska Native.
Source: Centers for Disease Control and Prevention, Behavioral Risk Factor Surveillance System, 2004-2010.
Denominator: Adult males age 75 and over with no history of prostate cancer.
Note: For this measure, lower rates are better. 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 were unavailable and all reported PSA tests and DREs are reflected in the data shown. Data for AI/ANs were statistically unreliable for 2004 and 2006, as were data for Asians for 2004.

- Between 2004 and 2010, the overall percentage of males age 75 and over who had a PSA test or a DRE within the last 12 months increased from 71% to 74% (data not shown).

- In all years presented, the percentage of males age 75 and over who had a PSA test or a DRE within the last 12 months was lower for Blacks than for Whites (Figure 7.8).

- In all years presented, the percentage of males age 75 and over who had a PSA test or a DRE within the last 12 months was lower for the lowest two income groups 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%.[iv] There was no evidence of overall movement toward the benchmark, and only poor males had attained the benchmark.

[iv] The top 5 States that contributed to the achievable benchmark are California, Hawaii, Louisiana, New Jersey, and Tennessee.

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Chapter 8. Health System Infrastructure

In its 2010 report *Future Directions for the National Healthcare Quality and Disparities Report*, the Institute of Medicine (IOM, 2010) recommended that future editions of the *National Healthcare Quality Report* (NHQR) and *National Healthcare Disparities Report* (NHDR) include data on the health care system's infrastructure capabilities. According to the IOM:

> [T]hese components are not necessarily health care aims/attributes in themselves, but are a means to those aims since they are elements of the health care system that better enable the provision of quality care… health systems infrastructure are of interest to the extent that they improve effectiveness, safety, timeliness, patient-centeredness, access, or efficiency.

Acknowledging that the measures and data to assess the strength and capabilities of the health care infrastructure have not been well developed, the IOM identified structural elements that may affect quality improvement. Key elements include:

- Information systems for data collection, quality improvement analysis, and clinical communication support;
- An adequate and well-distributed workforce; and
- Organizational capacity to support emerging models of care, cultural competence services, and ongoing improvement efforts.

Of significance, inadequacies in health system infrastructure may limit access and contribute to poor quality of care and outcomes, particularly among vulnerable population groups that include racial and ethnic minority groups and people residing in areas with health professional shortages.

This chapter presents data to understand the strength of the U.S. health system infrastructure and how this infrastructure may influence quality of care. This chapter is divided into three sections, health information technology, workforce distribution, and care management processes, each addressing a unique aspect of the health care system. The chapter begins with data to describe the adoption and use of health information technology (IT). Use of health IT can be an effective way to manage health care costs and improve the quality of care.

Since the publication of the 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 (Shih, et al., 2008).

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

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 protocols (IOM, 2010).

Following presentation of measures of the use of health IT, data on health care workforce diversity are presented. An adequate supply of health care providers is an important indicator of health care quality. Aside from a provider-to-population ratio that effectively meets demand for care, it is important that the workforce be appropriately distributed.

In previous quality and disparities reports, data have been presented on diversity in the physician, nursing, dental, and pharmacy workforce. This year, the NHQR and NHDR present data on the geographic and racial/ethnic distribution of allied health professionals that include occupational and physical therapists, as well as speech-language pathologists.

The distribution and availability of a culturally competent health care workforce has significant repercussions for access to care, particularly among the Nation's most vulnerable populations—racial or ethnic minorities, low-income populations, and uninsured or underinsured people. People who cannot access health care services, either because of financial considerations or inadequacy in the local health care infrastructure, often rely on safety net providers for essential health care services. The final section presents measures related to the performance of safety net providers, including people served, characteristics of selected safety net providers, and patient outcomes.

Measures

The IOM acknowledges that health system infrastructure measures such as 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 adoption and use of health IT, workforce distribution and its relevance to minority and other underserved populations, and care management processes.

Findings

Health Information Technology: Focus on Electronic Health Records

According to the Office of the National Coordinator for Health IT, an electronic health record (EHR) is a real-time patient health record with access to evidence-based decision support tools that can be used to aid clinicians in decisionmaking. The EHR can automate and streamline a clinician's workflow, ensuring that all clinical information is communicated. The EHR can also support the collection of data for uses other than clinical care, such as billing, quality management, outcome reporting, and public health disease surveillance and reporting.

The IOM report *Future Directions for the National Healthcare Quality and Disparities Reports* (IOM, 2010) highlights the adoption and use of health IT as a tool to manage cost and improve the quality of care delivered (IOM, 2010). Meaningful use of an EHR, for instance, is increasingly viewed as essential to improving both the efficiency of service delivery and health care quality (Resnick & Alwan, 2010). The potential benefits of EHRs are not limited to hospitals and ambulatory care settings but are also valuable tools in hospice and home health agencies.

As the proportion of the population represented by older adults continues to increase, so does the need for home health and hospice care. These organizations can improve their service delivery by implementing EHRs. One area in which these benefits are evident is in the home setting, where EHRs can improve accuracy and timeliness of care documentation and facilitate preventive interventions (Resnick & Alwan, 2010).

Health providers using EHRs have reported improvement in clinical decisionmaking and communication with other providers and patients, as well as faster and more accurate access to medical records and avoidance of medical errors (Romano & Stafford, 2011). Components of EHRs, such as computerized provider order entry (CPOE) and clinical decision support (CDS), have been found to be associated with significant reductions in medication errors (Devine, et al., 2010).

CPOE systems are computer applications that allow direct electronic entry of orders for medications, laboratory, radiology, referral, and procedures. CDS encompasses a wide range of computerized tools directed at improving patient care, including computerized reminders and advice regarding drug selection, dosage, interactions, allergies, and need for subsequent orders (Kaushal, et al., 2003).

NEW Electronic Health Records in Hospitals

EHRs can improve the quality and safety of care in all types of hospitals and in departments within hospitals. In emergency departments, for instance, electronic clinical documentation and decision support can help mitigate problems of treating new patients with complicated medical histories and gaps in their medical records. EHRs can also provide effective decision support and clinical reminders to facilitate a seamless transition of care by reducing communication breakdown between different providers.

The 2010 NHDR reported on medication management in hospitals, but this report tracks overall EHR use in hospitals. Overall EHR use is presented by hospital ownership because many not-for-profit hospitals serve large populations who experience health care disparities, including racial and ethnic minorities and Medicaid recipients. The Government Accountability Office found that government and not-for-profit hospitals accounted for a larger percentage of total uncompensated cost compared with for-profit hospital groups.

Figure 8.1. Electronic medical record use in hospitals, by hospital control and hospital type, 2009

Key: CPOE=computerized provider order entry.
Source: American Hospital Association, 2009 Information Technology Supplement.

Electronic Clinical Documentation

- Hospitals run by the Federal Government had a much higher percentage (78%) of electronic systems that support clinical documentation than non-Federal (10%), not-for-profit (11%), and investor-owned hospitals (7%) (Figure 8.1).

- More than 28% of children's general hospitals, 12% of psychiatric, and 12% of general medical and surgical hospitals had an electronic system that supports clinical documentation.

- Between 6% and 9% of rehabilitation and acute long-term care hospitals had an electronic system that supports clinical documentation.

Decision Support

- A higher percentage of hospitals run by the Federal Government (70%) had fully implemented electronic decision support systems compared with non-Federal (11%), not-for-profit (18%), and investor-owned hospitals (12%).

- More than 24% of children's general hospitals and 18% of general medical and surgical hospitals had a fully implemented electronic decision support system.

- Between 5% and 9% of psychiatric, rehabilitation, and acute long-term care hospitals had a fully implemented electronic decision support system.

Computerized Provider Order Entry

- Hospitals run by the Federal Government had a much higher percentage (83%) of full implementation of CPOE systems compared with non-Federal (11%), not-for-profit (18%), and investor-owned hospitals (8%).
- More than 53% of children's general hospitals, 16% of general medical and surgical hospitals, and 14% of rehabilitation hospitals had a fully implemented CPOE system. More than 13% of psychiatric hospitals and 11% of acute long-term care hospitals had full implementation of CPOE systems.

Results Viewing

- Hospitals run by the Federal Government had a much higher percentage (81%) of full implementation of results viewing systems compared with non-Federal (23%), not-for-profit (43%), and investor-owned hospitals (22%).
- Nearly 40% of general medical and surgical (39%), 41% of children's general, 17% of acute long-term care, 14% of rehabilitation, and 7% of psychiatric hospitals had a fully implemented results viewing system.

Also, in the NHQR:

- Hospitals with 400 beds or more had a higher percentage of electronic systems that support clinical documentation (18%) compared with hospitals with 100-399 beds (14%) and hospitals with fewer than 100 beds (9%).
- The largest difference in implementation of decision support was observed between large and small hospitals. About 30% of hospitals with 400 beds or more had a fully implemented electronic system for decision support, but only 10% of hospitals with fewer than 100 beds had a fully implemented system. Approximately 21% of hospitals with 100-399 beds had a fully implemented electronic system for decision support.
- The Northeast had the highest percentage of hospitals with a fully implemented CPOE system (25%). The West had 17%, the Midwest had 16%, and the South had 14%.

Electronic Medical Records in Home Health and Hospice Agencies

One of the challenges of providing home health and hospice care is that patients are often located in a wide geographic area and require services that have to be coordinated among several different providers. EHRs can be beneficial to home health and hospice agencies by improving the agency's ability to effectively coordinate care between multiple providers from different health disciplines.

EHRs can provide home health and hospice staff with consistent and thorough documentation, leading to improved outcomes for patients due to awareness of potential risks noted in the documentation. EHR adoption holds tremendous promise for improving health care quality and increasing patient safety, as well as reducing the costs of providing home health and hospice care. This is the first time EHR data for home health and hospice agencies are included in the reports.

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Figure 8.2. Electronic medical record use in home health and hospice agencies, by geographic location and ownership, 2009

Key: CPOE = computerized provider order entry.
Source: Centers for Disease Control and Prevention, National Center for Health Statistics, National Home Health and Hospice Care Survey, 2009.
Note: Government agencies include city, county, State, Department of Veterans Affairs, and other Federal agencies. Data were statistically unreliable for clinical decision support systems that were located in the West and agencies that were government owned as well as for CPOE used by for-profit agencies, government-owned agencies, and agencies located in the Northeast and the West.

Overall Computerized System Adoption

- In 2007, agencies in the Midwest had a significantly higher overall percentage of providers of home health or hospice care with EHRs than agencies in the South and the West (Figure 8.2).

- In 2007, for-profit providers of home health or hospice care had a significantly lower overall percentage of EHRs than private, not-for-profit and government providers.

Patient Demographics

- In 2007, of those organizations with an EHR system, nearly all providers of home health or hospice care in each region had EHRs that used a component for patient demographics.

- All government providers of home health or hospice care had an EHR system with a patient demographics component. Nearly all agencies that were private, not for profit and agencies that were for profit had EHRs with a component for patient demographics.

Clinical Notes

- In 2007, of those agencies that had an EHR system, 97% of agencies in the Midwest, 82% of agencies in the West, 80% of agencies in the South, and 64% of agencies in the Northeast had an EHR system with a component for clinical notes.
- More than 95% of agencies that are private, not for profit, 80% of agencies that are government owned, and 70% of agencies that are for profit had EHRs with a component for clinical notes.

Clinical Decision Support System

- In 2007, of those agencies that had an EHR system, 60% of agencies in the Midwest, 59% of agencies in the South, and 49% of agencies in the Northeast had EHRs with a component for clinical decision support.
- More than 71% of private, not-for-profit providers and 40% of for-profit providers had EHRs with a component for clinical decision support.

Computerized Provider Order Entry

- In 2007, of those agencies that had an EHR system, 51% in the Midwest and 42% in the South had EHRs with a CPOE component.
- Nearly 46% of providers of home health or hospice care that are private, not for profit had EHRs with a CPOE component.

Also, in the NHQR:

- In 2007, among agencies with an EHR, those with101-150 current patients had the lowest percentage of providers of home health or hospice care whose EHRs included patient demographics (96%). Of the agencies that had an EHR system, 99% of agencies with 151 or more current patients, 99.2% of agencies with 50 or fewer current patients, and 99.7% of agencies with 51-100 current patients had providers with EHR systems that had a component for patient demographics.
- Three-quarters of agencies with 151 or more current patients, 67% of agencies with 51-100 current patients, and 31% of agencies with 50 or fewer current patients had EHRs with a CDS component.
- Nearly 63% of organizations that had an EHR system and 51-100 current patients, 53% of organizations with 151 or more current patients, and 38% of organizations with 50 or fewer current patients had EHRs with a component for CPOE.

Workforce Diversity

According to the U.S. Census Bureau (2011), adults age 65 and over accounted for 13% (40.3 million) of the U.S. population in 2010 (Howden & Meyer, 2011). By 2050, that number will more than double to 88.5 million (20%). In 2010, the number of people age 100 and over reached 71,991, and this population is projected to grow to 601,000 by 2050 (U.S. Census Bureau, 2011).

Older adults are at increased risk of accidental falls, which are associated with reduced levels of independence, poorer quality of life, and high levels of anxiety (Hanley, et al., 2011). In 2009, 2.2 million nonfatal falls among older adults were treated in emergency departments and more than 520,000 of these patients were hospitalized (Centers for Disease Control and Prevention [CDC], 2011). Occupational and physical therapy can help patients recover from injury and can prevent falls.

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Occupational therapists provide treatment to help individuals recover from injuries and regain physical function that might be lost due to injury. They also explore factors that contributed to the injury and create prevention plans tailored to each patient. Physical therapists' expertise includes screening high-risk populations such as older adults, assessing physical functions such as balance, gait, and strength, and implementing risk reduction strategies. These strategies can include development of exercise programs, selection and training in the use of assistive devices, patient education, and identification of potential risks and barriers in the patient's home.

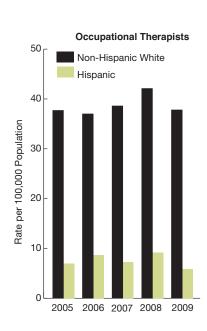According to CDC, three-quarters of strokes occur in people age 65 and over. Between 15% and 30% of stroke survivors are permanently disabled and suffer from paralysis and movement difficulties, sensory disturbances, language problems, thinking and memory problems, and emotional disturbances. The primary objective of speech and language pathologists is to improve quality of life by optimizing individuals' ability to communicate and swallow. Speech and language pathologists address typical and atypical areas of communication and swallowing, such as speech sound production, cognition, feeding and swallowing, and oral-motor functions. The work of speech-language pathologists is essential in helping temporarily disabled and older patients have a better quality of life.

This year, the NHDR presents the racial/ethnic distribution of occupational therapists, physical therapists, and speech-language pathologists to examine access to these vital health care services. In previous years, the percentage of each racial group represented in each workforce area was calculated and compared with the percentage of the population each racial group represented. In this year's report, the rate per 100,000 population of each racial group in each workforce area is calculated.

Figure 8.3. U.S. occupational therapy, physical therapy, and speech-language pathology professionals, by race and ethnicity, 2005-2009

Physical Therapists

Legend: White, Asian, NHOPI, >1 Race, Black, AI/AN, Other

Physical Therapists

Legend: Non-Hispanic White, Hispanic

Speech-Language Pathologists

Legend: White, Asian, Other, Black, AI/AN, >1 Race

Speech-Language Pathologists

Legend: Non-Hispanic White, Hispanic

Key: AI/AN: American Indian or Alaska Native; NHOPI: Native Hawaiian or Other Pacific Islander.
Source: U.S. Census, American Community Survey.

- From 2005 to 2009, non-Hispanic Whites had significantly higher rates of occupational therapists than Hispanics (Figure 8.3). Whites had significantly higher rates than all other racial groups except Asians.
- During this period, Whites had significantly higher rates of physical therapists than Blacks, AI/ANs, and people of other and multiple races. Asians, however, had a higher rate of physical therapists than Whites in all years. Non-Hispanic Whites had significantly higher rates than Hispanics in all years.
- Also from 2005 to 2009, Whites had significantly higher rates of speech-language pathologists than all other racial groups.

Also, in the NHQR:

- From 2005 to 2009, the Northeast had a higher rate of occupational therapists than the South and the West in all years.
- The Northeast also had a significantly higher rate of physical therapists than all other regions in all years.

Care Management Processes: Focus on the Health Care Safety Net

Concern about growing physician and health workforce shortages has increased over the past decade. According to the Health Resources and S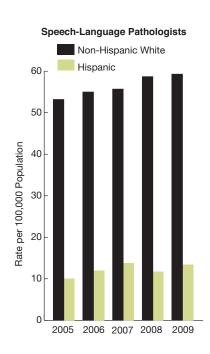ervices Administration, by 2020, the United States will experience a shortage of about 100,000 physicians and 1 million nurses.[ii] In his seminal work on health care quality, Donabedian (1980) describes a robust health care "structure"—the setting or infrastructure supporting the delivery of care (e.g., hospitals, providers)—as necessary to ensure that processes of care contribute to good outcomes. Structural deficiencies in the United States health care delivery system resulting from shortages of providers, growing demand, and a high rate of uninsurance and underinsurance have contributed to unmet need and could result in increased morbidity and health care costs.

Safety net providers play an integral role in relieving unmet need. As defined in a report sponsored by HRSA, the U.S. health care safety net is composed of "[t]hose providers that organize and deliver a significant level of health care and other health-related services to the uninsured, Medicaid, and other vulnerable populations" (IOM, 2010). Safety net providers act as a default system, or providers "of last resort," by ensuring access to care for millions of Americans lacking medical coverage or provider access, regardless of education, social status, language competency, or ability to pay.

The safety net includes many different types of providers, including public health departments, hospitals, and federally funded health centers (FFHCs). For the 50 million uninsured people and individuals with low income, safety net providers serve an essential function, eliminating financial barriers to care and enhancing access to services.

This section includes measures that show how well the health care safety net is meeting the needs of the Nation's vulnerable populations, particularly low-income populations and racial/ethnic subgroups. This section focuses on two types of safety net providers: FFHCs and hospitals.

[ii] National Center for Health Workforce Analysis, http://bhpr.hrsa.gov/healthworkforce/index.html. Accessed August 15, 2011.
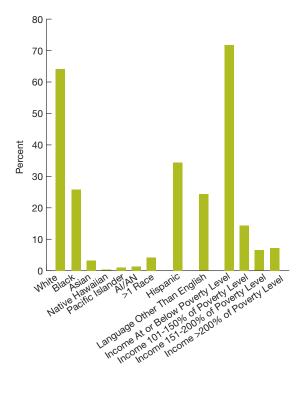
Patients Using Federally Funded Health Centers

NEW

FFHCs include health care organizations that receive a grant under Section 330 of the Public Health Service Act, including community health centers, migrant health centers, Health Care for the Homeless programs, and Public Housing Primary Care programs. These organizations typically render services to low-income populations, uninsured people, people with limited English proficiency, migrant and seasonal farmworkers, individuals and families experiencing homelessness, and public housing residents.

To obtain Federal grant funding, these public and nonprofit organizations agree to provide a minimum set of services, including primary and preventive care, mental health, and dental services. Access to care is available to all persons, regardless of ability to pay. Charges for services rendered are based on a sliding scale, which is linked to patients' family income. More than 19 million people visited an FFHC in 2010.

Figure 8.4. Race, ethnicity, and income of patients receiving care in an FFHC, United States, 2010

Source: Health Resources and Services Administration, Bureau of Primary Health Care, Uniform Data System, 2010.
Note: Racial groups shown are non-Hispanic. Data were obtained from 1,124 Section 330g grantee recipients. Patients with hypertension include those ages 18-85. Hypertension is determined to be controlled if the patient's last blood pressure reading was less than 140/90. Patients with diabetes include those ages 18-75. Diabetes is determined to be controlled if the patient's most recent HbA1c was 7% or less.

- In 2010, approximately 64 percent of patients seen at an FFHC were White (Hispanics and non-Hispanics), and one-quarter were Black (Figure 8.4).
- In 2010, more than one-third of FFHC patients were Hispanic and about one-quarter of patients were determined by the FFHC to be best served in a language other than English.
- Almost three-quarters of patients seen in an FFHC in 2010 had income at or below the Federal poverty level.
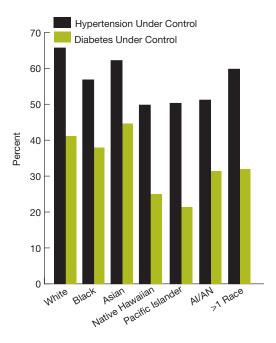
Also, in the NHQR:

- Nearly 40% of patients seen at an FFHC were uninsured and another 40% had Medicaid.

NEW

Control of Hypertension and Diabetes in FFHC Patients

Nearly 2.4 million adults treated at an FFHC in 2010 had a hypertension diagnosis and almost 1.3 million had either Type I or Type II diabetes. The population with hypertension and diabetes may overlap, so the two numbers should not be added together. Control of hypertension and diabetes can help indicate quality of care at FFHCs since people with these conditions require frequent monitoring.

Figure 8.5. FFHC patients with hypertension or diabetes whose symptoms are controlled, by race, 2010

Source: Health Resources and Services Administration, Bureau of Primary Health Care, Uniform Data System, 2010.
Note: Racial groups shown are non-Hispanic. Data were obtained from 1,124 Section 330g grantee recipients. Patients with hypertension include those ages 18-85. Hypertension is determined to be controlled if the patient's last blood pressure reading was less than 140/90 mm Hg. Patients with diabetes include those ages 18-75. Diabetes is determined to be controlled if the patient's most recent hemoglobin A1c level was 7% or less.

- More than two-thirds of White patients had their hypertension under control. Groups of patients with the lowest percentage of controlled hypertension were Native Hawaiians, Pacific Islanders, and AI/ANs; only about one-half of patients in these racial groups had their blood pressure under control (Figure 8.5).

- Control of diabetes was found to be worse among Pacific Islanders (21%) and Native Hawaiians (25%) and best among Asians (45%).

- Among Hispanic FFHC patients with hypertension, two-thirds had controlled blood pressure; one-third of Hispanics with diabetes had their hemoglobin A1c under control (data not shown).

Also, in the NHQR:

- In 2010, about 63% of all FFHC patients with hypertension had controlled blood pressure at the time of their last reading.

- Almost 40% had their diabetes under control.

Hospital Admissions of Vulnerable Populations

NEW

Hospitals continue to play a major role in the health care safety net and, increasingly, safety net hospitals are defined by their low-income population as opposed to control or governance (e.g., public hospitals).[iii] This section includes one measure suggestive of hospitals' willingness or ability to provide care to low-income populations: hospital inpatient discharges and aggregate cost accounted for by Medicaid and uninsured patients. This measure offers insight into hospitals' contribution to the health care safety net, by selected hospital characteristics. These measures were estimated as follows:

(Number of Medicaid and uninsured discharges ÷ total number of discharges) × 100

(Total Medicaid and uninsured costs ÷ total costs across all payers) × 100

On average, Medicaid recipients and medically uninsured people accounted for about one in four discharges from acute care hospitals in 2009 (data not shown). As indicated in Table 8.1, the proportion of inpatient days and discharges provided to these vulnerable groups varied by hospital characteristics.

[iii] Concerned with the impact of hospital closures on the health care safety net, the HHS Office for Civil Rights (OCR) has expanded its enforcement efforts to prevent ethnic and racial minority communities from suffering race or national origin discrimination when local hospital facilities close or are relocated. Recently, OCR entered into a voluntary compliance agreement with the University of Pittsburgh Medical Center (UPMC), which agreed to provide additional support for primary and urgent care services in the borough of Braddock, Pennsylvania. UPMC entered into the voluntary agreement with OCR to resolve a complaint alleging that it had violated provisions of Title VI of the Civil Rights Act of 1964, 42 U.S.C. 2000d *et seq*., when UPMC decided to close Braddock Hospital. Public response to the closure of Braddock Hospital focused on the closure's impact on access to health care for African Americans due to residents' widespread dependence on public transportation. Accordingly, the agreement required UPMC to provide door-to-door transportation services from Braddock to new outpatient facilities and the more distant UPMC McKeesport Hospital, as well as health screening, wellness, and community outreach programs.

Table 8.1. Medicaid and uninsured discharges and aggregate hospital costs, by facility characteristics, U.S. short-term acute hospitals, 2009

	Discharges % (Standard Error)	Aggregate Costs % (Standard Error)
All Hospitals		
	26.4 (0.8)	20.3 (0.8)
Bed Size[a]		
Small	22.5 (1.6)	16.8 (1.5)
Medium	27.7 (1.4)	22.0 (1.7)
Large	26.6 (1.1)	20.3 (1.0)
Control		
Government	39.6 (3.3)	32.6 (3.7)
Private nonprofit	23.3 (0.7)	17.9 (0.7)
Private, investor owned	29.3 (1.6)	20.7 (1.4)
Teaching Facility		
Yes	29.7 (1.6)	23.7 (1.5)
No	23.5 (0.6)	16.3 (0.5)
Region		
Northeast	26.2 (2.5)	20.8 (2.2)
Midwest	21.0 (1.0)	15.7 (1.0)
South	27.7 (1.2)	20.7 (1.4)
West	30.5 (2.0)	23.7 (1.7)
Location		
Metropolitan	26.5 (0.9)	20.5 (0.9)
Nonmetropolitan	25.8 (0.6)	17.4 (0.4)

[a] Bed size categories used in HCUPnet are based on hospital beds and are specific to the hospital's location and teaching status. The definitions of small, medium, and large vary by region:

Region	Location and Teaching Status	Hospital Bed Size		
		Small	**Medium**	**Large**
Northeast	Rural	1-49	50-99	100+
	Urban, nonteaching	1-124	125-199	200+
	Urban, teaching	1-249	250-424	425+
Midwest	Rural	1-29	30-49	50+
	Urban, nonteaching	1-74	75-174	175+
	Urban, teaching	1-249	250-374	375+
South	Rural	1-39	40-74	75+
	Urban, nonteaching	1-99	100-199	200+
	Urban, teaching	1-249	250-449	450+
West	Rural	1-24	25-44	45+
	Urban, nonteaching	1-99	100-174	175+
	Urban, teaching	1-199	200-324	325+

Source: Agency for Healthcare Research and Quality, Healthcare Cost and Utilization Project, HCUPnet, 2009. Available at http://hcupnet.ahrq.gov/.

- Discharge percentage:
  - o The percentage of Medicaid and uninsured patients discharged from government hospitals was significantly higher than from private hospitals. Compared with private nonprofit hospitals, a greater percentage of patients discharged from investor-owned hospitals was covered by Medicaid or uninsured.
  - o Nearly 30 percent of patients discharged from teaching hospitals were uninsured or covered by Medicaid, compared with about 24 percent of patients in nonteaching facilities.
  - o Although the difference in percentage of Medicaid and uninsured discharges was statistically significant between metropolitan and nonmetropolitan hospitals, regional differences were noted. Hospitals in western States discharged a greater proportion of Medicaid and uninsured patients (31%), while hospitals in the Midwest discharged the lowest percentage of patients (21%).
- Aggregate costs:
  - o Nearly one-third of government hospitals' patient care costs were associated with the Medicaid and uninsured population; about one-fifth of costs for private nonprofit hospitals was associated with this population.
  - o Among hospitals in the West, Medicaid and uninsured patients accounted for about 24 percent of inpatient costs compared with 16 percent among hospitals in the Midwest.

Chapter 8

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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" (IOM, 1993) 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.

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 can 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), low income = 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.
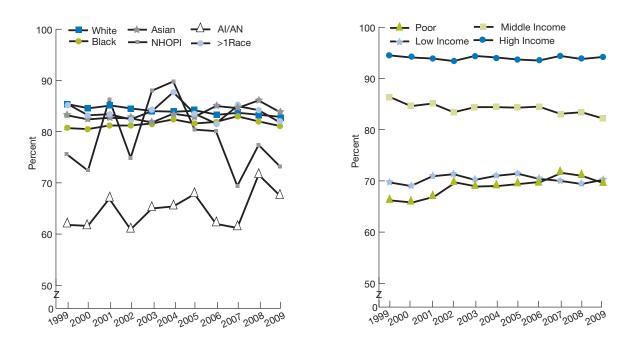
Access to Health Care

Findings

Health Insurance

Health insurance facilitates entry into the health care system. Uninsured people are less likely to receive medical care and more likely to have poor health status. The cost of poor health among uninsured people was almost $125 billion in 2004 (Hadley & Holahan, 2004).

The financial burden of uninsurance is also high for uninsured individuals; almost 50% of personal bankruptcy filings are due to medical expenses (Jacoby, et al., 2000). Uninsured individuals report more problems getting care, are diagnosed at later disease stages, and get less therapeutic care. They are sicker when hospitalized and more likely to die during their stay (Hadley & Holahan, 2004).

Figure 9.1. People under age 65 with health insurance, by race and income, 1999-2009

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), 1999-2009.
Denominator: Civilian noninstitutionalized population under age 65.
Note: NHIS respondents are asked about health insurance coverage at the time of interview. Respondents are considered insured if they have 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. If their only coverage is through the Indian Health Service, they are not considered insured. Estimates are not adjusted.

- Overall, there was no statistically significant change from 1999 to 2009 in the percentage of people with health insurance. In 2009, about 83% of people under age 65 had health insurance (data not shown).

- In 2009, Blacks under age 65 were less likely than Whites to have health insurance (81% compared with 83%), and American Indians and Alaska Natives (AI/ANs) under age 65 were less likely than Whites to have health insurance (68% compared with 83%). There were no statistically significant differences for other racial groups.

- In 2009, Hispanics under age 65 were less likely than non-Hispanic Whites to have health insurance (data not shown; 67% compared with 87%).

- From 1999 to 2009, while the percentage of people with health insurance increased for poor people (from 66% to 70%), the percentage decreased for middle-income people (from 86% to 82%). In 2009, the percentage of people with health insurance was significantly lower for poor, low-income, and middle-income people than for high-income people (70%, 70%, and 82%, respectively, compared with 94%).

- In 2009, the percentage of people ages 25-64 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 in the same group (data not shown, 56% compared with 88%).

Also, in the NHQR:

- From 1999 to 2009, the percentage of children ages 0-17 who had health insurance improved. However, for adults ages 18-44 and 45-64, the percentage decreased.

- In 2009, adults ages 18-44 and 45-64 were less likely than children ages 0-17 to have health insurance.

- Females were more likely to have health insurance than males throughout this period.
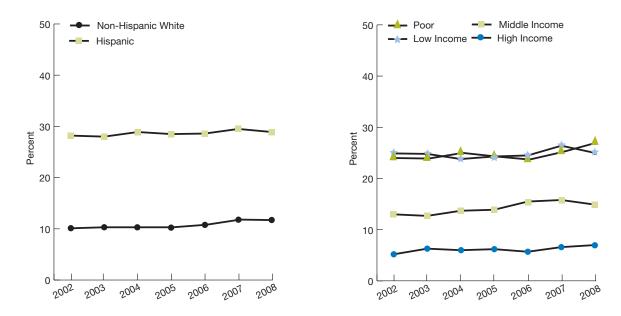
Asian Subgroups

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

In 2010, an estimated 5.6 million Asian people, or about 32% of the Asian population in the United States, lived in California (U.S. Census Bureau, 2011). The proportion of many Asian subpopulations in California is also greater than the proportion in the overall U.S. population. For example, in 2010, the Vietnamese population was 1.6% of California's population compared with only 0.4% of the U.S. population, and the Filipino population was 3.2% of California's population compared with only 0.7% of the U.S. population (U.S. Census Bureau, 2010). 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.

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 9.2. People under age 65 who were uninsured all year, by ethnicity and income, 2002-2008

Source: Agency for Healthcare Research and Quality, Medical Expenditure Panel Survey, 2002-2008.
Denominator: Civilian noninstitutionalized population under age 65.
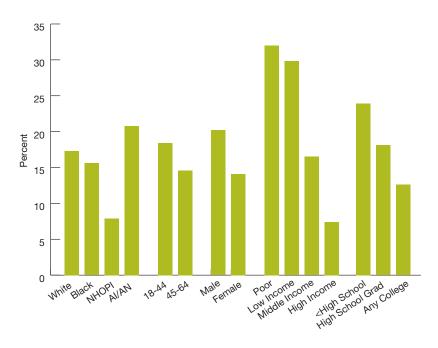**Note:** For this measure, lower rates are better.

- Overall, from 2002 to 2008, the percentage of people under age 65 who were uninsured all year increased (from 13% to 15%; data not shown).
- In 2008, there was no statistically significant difference between Blacks and Whites or between Asians and Whites. AI/ANs were more likely than Whites to be uninsured all year (28% compared with 15%; data not shown).
- In 2008, Hispanics were much more likely than non-Hispanic Whites to be uninsured all year (29% compared with 12%; Figure 9.2).
- The percentage of poor people and low-income people who were uninsured all year was about four times as high as that for high-income people (27% and 25%, respectively, compared with 7%). The percentage of middle-income people uninsured all year was more than twice as high as that for high-income people (15% compared with 7%).
- 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 (36% and 22%, respectively, compared with 11%; data not shown).
- From 2002 to 2008, the percentage of people who were uninsured all year was nearly three times as high for people who spoke another language at home as that for people who spoke English at home (in 2008, 34% compared with 12%; data not shown).

Also, in the NHQR:

- From 2002 to 2008, children ages 0-17 were least likely to be uninsured all year, while adults ages 18-44 were most likely to be uninsured all year.
- Females were less likely to be uninsured all year than males.

Figure 9.3. Predicted percentages of adults ages 18-64 who were uninsured all year, by race, age, gender, family income, and education, 2002-2008

- In the multivariate model used, after adjustment, about 16% of Blacks and 8% of NHOPIs would have been uninsured all year compared with 17% of Whites (Figure 9.3). AI/ANs would have been more likely than Whites to be uninsured all year (about 21% compared with 17%).

- After adjustment, people ages 18-44 would have been more likely than people ages 45-64 to be uninsured all year (18% compared with 15%).

- After adjustment, about 32% of poor, 30% of low-income, and 17% of middle-income individuals would have been uninsured all year compared with 7% of those with high income.

- After adjustment, 24% 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 any college education.

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Figure 9.4. People under age 65 who were uninsured all year, Hispanic only, California, 2009

Source: University of California, Los Angeles, Center for Health Policy Research, California Health Interview Survey, 2009.
Denominator: Hispanic civilian noninstitutionalized population ages 0-64 in California.
Note: For this measure, lower rates are better. Data for Puerto Ricans and South Americans did not meet criteria for statistical reliability. The English proficiency of respondents is characterized by the following categories: English Only, English Well/Very Well, and English Not Well/Not at All. The preferred language of respondents is characterized as either English Preferred or Spanish Preferred for Hispanic respondents shown here.

- In 2009, Mexicans (18%) and Central Americans (27%) were more likely than non-Hispanic Whites (8%) to be uninsured all year in the past year in California (Figure 9.4).

- Among Hispanics in California, poor people (23%) and low-income people (22%) were more likely than high-income people (10%) to be uninsured all year in the past year.

- Among Hispanics in California, those who spoke English well or very well were more than twice as likely as those who were English-only speakers to be uninsured all year in the past year (24% compared with 11%). Hispanics who did not speak English well or did not speak English at all were more than three times as likely as those who were English-only speakers to be uninsured all year in the past year (38% compared with 11%).

- Among Hispanics in California, those who preferred Spanish were more than twice as likely as those who preferred English to be uninsured all year in the past year (36% compared with 17%).

- Among Hispanics in California, those who were not born in the United States were three times as likely as those born in the United States to be uninsured all year in the past year (30% compared with 10%).

Figure 9.5. People under age 65 who were uninsured all year, Asian only, California, 2009

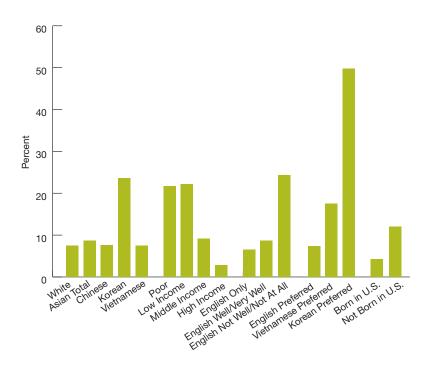
Source: University of California, Los Angeles, Center for Health Policy Research, California Health Interview Survey, 2009.
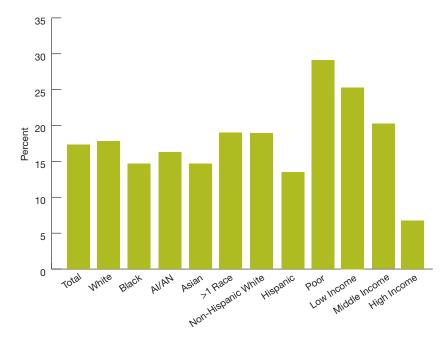**Denominator:** Asian civilian noninstitutionalized population ages 0-64 in California.
Note: For this measure, lower rates are better. Data for Filipinos, Japanese people, and South Asians did not meet criteria for statistical reliability. The English proficiency of respondents is characterized by the following categories: English Only, English Well/Very Well, and English Not Well/Not at All. The preferred language of respondents is characterized as English Preferred, Vietnamese Preferred, or Korean Preferred for Asian respondents shown here.

- In California, in 2009, there was no statistically significant difference between Asians and Whites in the percentage of people who were uninsured all year in the past year (9% compared with 7.5%; Figure 9.5).

- Among Asians in California, Koreans were more than three times as likely as Whites to be uninsured all year in the past year (24% compared with 7.5%).

- Among Asians in California, poor people (22%) and low-income people (22%) were nearly eight times as likely and middle-income people (9%) were three times as likely as high-income people (3%) to be uninsured all year in the past year.

- Among Asians in California, people who did not speak English well or did not speak English at all were almost four times as likely as English-only speakers to be uninsured all year in the past year (24% compared with 6.5%).

- Among Asians in California, people who preferred to speak Korean were about seven times as likely as those who preferred to speak English to be uninsured all year in the past year (50% compared with 7%). Those who preferred to speak Vietnamese were more than twice as likely as those who preferred to speak English (17.5% compared with 7%) to be uninsured all year in the past year.

- Among Asians in California, those who were not born in the United States were three times as likely as those who were born in the United States to be uninsured all year in the past year (12% compared with 4%).

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 (Banthin & Bernard, 2006). High premiums and out-of-pocket payments can be a significant barrier to accessing needed medical treatment and preventive care (Alexander, et al., 2003). According to one study, uninsured families can afford to pay for only 12% of hospitalizations that they experience (HHS, 2011). 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 9.6. 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, 2008

Key: AI/AN = American Indian or Alaska Native.
Source: Agency for Healthcare Research and Quality, Medical Expenditure Panel Survey, 2008.
Denominator: Civilian noninstitutionalized population under 65.
Note: Total financial burden includes premiums and out-of-pocket costs for health care services. Data do not meet the criteria for statistical reliability, data quality, or confidentiality for Native Hawaiians and Other Pacific Islanders.

- Overall, in 2008, 17% 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 9.6).

- In 2008, 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 Blacks than for Whites (15% compared with 18%). The percentage was also lower for Hispanics than for non-Hispanic Whites (14% compared with 19%).

- 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 more than four times as high for poor individuals (29%), more than three times as high for low-income individuals (25%), and more than twice as high for middle-income individuals (20%) compared with high-income individuals (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 three times as high for

individuals with private nongroup insurance as for individuals with private employer-sponsored insurance.

- Adults ages 45-64 were more likely to have family's health insurance premium and out-of-pocket medical expenses that were more than 10% of total family income.
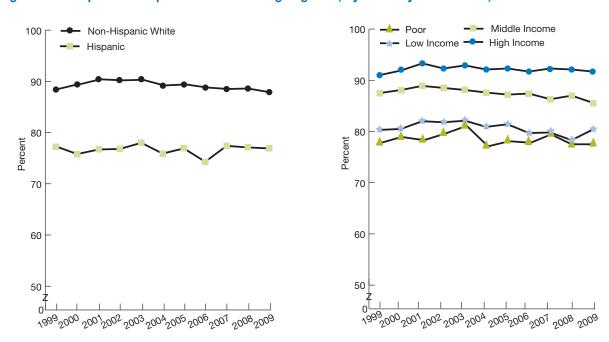
Usual Source of Care

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) (Starfield & Shi, 2004) and costs (De Maeseneer, et al., 2003). Evidence suggests that the effect on quality of the combination of health insurance and a usual source of care is additive (Phillips, et al., 2004). In addition, people with a usual source of care are more likely to receive preventive health services (Ettner, 1996).

Specific Source of Ongoing Care

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. A specific source of ongoing care can include an urgent care/walk-in clinic, doctor's office, clinic, health center facility, hospital outpatient clinic, health maintenance organization/preferred provider organization, military or other Veterans Affairs health care facility, or some other similar source of care (however, hospital emergency rooms are excluded).

Figure 9.7. People with a specific source of ongoing care, by ethnicity and income, 1999-2009

Key: AI/AN = American Indian or Alaska Native.
Source: Centers for Disease Control and Prevention, National Center for Health Statistics, National Health Interview Survey, 1999-2009.
Denominator: Civilian noninstitutionalized population of all ages.
Note: Measure is age adjusted. A hospital emergency room is not included as a specific source of primary care.

- Overall, 86% percent of people had a specific source of ongoing care in 2009 (data not shown).

- In 2009, the percentage of people with a specific source of ongoing care was lower for Blacks and AI/ANs than for Whites (85% compared with 86%; and 79% compared with 86%; data not shown).

- In 2009, the percentage of people with a specific source of ongoing care was significantly lower for Hispanics than for non-Hispanic Whites (77% compared with 88%; Figure 9.7).

- In 2009, the percentage of people with a specific source of ongoing care was significantly lower for poor and low-income people than for high-income people (78% and 80%, respectively, compared with 92%).

- In 2009, the percentage of people with a specific source of ongoing care was lower for people with less than a high school education and people with a high school education than for people with any college education (75% and 83% respectively, compared with 88%; data not shown).

Also, in the NHQR:

- In 2009, people age 65 and over were most likely to have a specific source of ongoing care, while people ages 18-44 were least likely to have a specific source of ongoing care.

- Females were more likely to have a specific source of ongoing care than males from 1999 to 2009.

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 and with good provider-patient communication. These factors increase the likelihood that patients will receive appropriate care. 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. Having a usual primary care provider correlates with receipt of higher quality care (Parchman & Burge, 2002; Inkelas, et al., 2004).

A person is determined to have had a primary care provider if his or her usual source of care setting was either a physician's office or a hospital (setting other than an emergency room), and he or she reported going to this usual source of care for new health problems, preventive health services, and physician referrals.

Figure 9.8. People with a usual primary care provider, by race and family income, 2002-2008

Key: AI/AN = American Indian or Alaska Native.
Source: Agency for Healthcare Research and Quality, Medical Expenditure Panel Survey, 2002-2008.
Denominator: Civilian noninstitutionalized population of all ages.
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 2008, Blacks and Asians were less likely than Whites to have a usual primary care provider (72% and 72%, respectively, compared with 76%; Figure 9.8).
- In 2008, the percentage of people with a usual primary care provider was significantly lower for Hispanics than for non-Hispanic Whites (65% compared with 79%; data not shown).
- In 2008, the percentage of people with a usual primary care provider was significantly lower for poor people, low-income people, and middle-income people than for high-income people (68%, 71%, and 76% respectively, compared with 80%).

Also, in the NHQR:

- From 2002 to 2008, people ages 18-44 were least likely to have a usual primary care provider.
- Uninsured people ages 0-64 were much less likely to have a usual primary care provider than people with private or public insurance.

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 9.9. 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 and income, 2002-2008

Key: AI/AN = American Indian or Alaska Native.
Source: Agency for Healthcare Research and Quality, Medical Expenditure Panel Survey, 2002-2008.
Denominator: Civilian noninstitutionalized population of all ages.
Note: For this measure, lower rates are better.

- Overall in 2008, 10% of people were unable to receive or delayed in receiving needed medical care, dental care, or prescription medicines (data not shown).
- In 2008, Asians (6%) were less likely than Whites (11%) to report that they were unable to receive or delayed in receiving medical care, dental care, or prescription medicines (Figure 9.9). Hispanics (8%) were less likely than non-Hispanic Whites (11%) to report that they were unable to receive or delayed in receiving medical care, dental care, or prescription medicines (data not shown).
- In 2008, the percentage of people who were unable to get or delayed in getting needed medical care, dental care, or prescription medicines was significantly higher for poor (15%), low-income (13%), and middle-income (9%) people than for high-income people (8%).
- People with less than a high school education and people with a high school education were more likely than those with any college education to report they were unable to get or delayed in getting needed care (15% and 12%, respectively, compared with 11%; data not shown).

Also, in the NHQR:

- In 2008, a higher percentage of people ages 18-44, 45-64, and 65 and over reported being unable to get or delaying needed medical care compared with those ages 0-17.
- In 2008, the percentage was more than twice as high for people with no health insurance as for people with private insurance and was also higher for people with public insurance than for 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" (IOM, 2010). 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.

Integrated throughout the Highlights in both the *National Healthcare Disparities Report* (NHDR) and the *National Healthcare Quality Report* (NHQR) and Chapters 2 through 9 of this report are 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 integrated in these chapters where data are available.

Chapter 10 of the NHDR addresses the congressional directive on priority populations in addition to what is presented throughout the NHDR and in the NHQR this year.[i] This chapter summarizes differences for racial, ethnic, and low-income populations, as well as for residents of rural areas and people with disabilities (activity limitations).

New to the NHDR is the focus on health care for transgender individuals. Transgender individuals have been identified as the most vulnerable of the lesbian, gay, bisexual, and transgender (LGBT) populations. This year, new data are featured from the *National Transgender Discrimination Survey Report on Health and Health Care*. The survey was conducted by the National Center for Transgender Equality and the National Gay and Lesbian Task Force. This section is intended to be an evolving part of the reports as the Department of Health and Human Services (HHS) and other organizations develop health care measures and data relevant to LGBT populations.

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] Populations of inner-city areas are also identified as one of AHRQ's priority populations pursuant to 42 U.S.C. 299(c)(1)(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.[ii]
- Low-income groups.[iii]
- Women.
- Children (under age 18).
- Older adults (age 65 and over).
- Residents of rural areas.[iv]
- Individuals with special health care needs,[v] including individuals with disabilities and individuals who need chronic care or end-of-life care.

Other populations, such as LGBT, are also included.

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.
- LGBT individuals.

Measures related to women, children, and older adults are integrated into other chapters of this report and the Data Tables appendix 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.

[ii] 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.

[iii] Thresholds for income categories—poor, low income, 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 2011, the Federal poverty threshold for a family of two adults and two children was $22,350.

[iv] 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.

[v] 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.

Racial and Ethnic Minorities

In 2010, more than one-third of the U.S. population identified themselves as members of racial or ethnic minority groups (U.S. Census Bureau, 2011a). By 2050, it is projected that these groups will account for almost half of the U.S. population. The U.S. Census Bureau estimated that the United States had about 39 million Blacks or African Americans in 2010 (12.6% of the U.S. population) (U.S. Census Bureau, 2011a); more than 47.8 million Hispanics or Latinos (15.5%) (U.S. Census Bureau, 2008); almost 14.8 million Asians (4.8%); about 6.2 million NHOPIs (0.2%); and nearly 3 million AI/ANs (0.9%) (U.S. Census Bureau, 2011a), of whom 57% reside on Federal trust lands (Smedley, et al., 2003).

Racial and ethnic minorities are more likely than non-Hispanic Whites to be poor or near poor (Lillie-Blanton, et al, 2003). In addition, Hispanics, Blacks, and some Asian subgroups are less likely than non-Hispanic Whites to have a high school education (Collins, et al., 2002).

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 (Executive Office of the President, 1997). 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.

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 measure, racial, ethnic, and socioeconomic groups are compared with a designated comparison group. The time periods range from 2000-2002 to 2008-2010, depending on the data source. Consistent with Healthy People 2020, disparities are measured in relative terms as the percentage difference between each group and a comparison group. New this year is the use of a linear regression model to estimate the difference in the annual rate of change for the comparison group relative to the reference group.

The difference in annual rate of change for the comparison group relative to the reference group was estimated. Determinations of whether subgroup differences have grown, narrowed, or remained the same were based on estimated differences in annual rate of change as specified below:

- Subgroup differences are deemed to be narrowing if the change in disparities is less than −1 and p <0.10.
- Subgroup differences are deemed to be growing if the change in disparities is greater than 1 and p <0.10.
- Subgroup differences are deemed to have remained the same if the change in disparities is between −1 and 1, or p >0.10.

Only those measures with 4 or more years of data were included in the trending analysis. Due to methodological changes in trending analysis, 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. More information regarding the methodology can be found in Chapter 1, Introduction and Methods.

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. Of all measures of health care quality and access that are tracked in the reports and support trends over time, Blacks had worse care than Whites in the most recent year for 67 measures. Most of these measures showed no significant change in disparities over time.

For 9 measures, the gap between Blacks and Whites grew smaller, indicating improvement:

- Prostate cancer deaths per 100,000 male population per year.
- Cancer deaths per 100,000 population per year.
- Hospital admissions for uncontrolled diabetes per 100,000 population age 18 and over.
- Incidence of end stage renal disease (ESRD) due to diabetes per 100,000 population.
- Hospital admissions for congestive heart failure per 1,000 population.
- New AIDS cases per 100,000 population age 13 and over.
- Hospital patients with pneumonia who received influenza screening or vaccination.
- Long-stay nursing home residents who were assessed for pneumococcal vaccination.
- Short-stay nursing home residents who were assessed for pneumococcal vaccination.

For 2 measures, the gap grew larger, indicating worsening disparities:

- Breast cancer diagnosed at advanced stage (regional, distant stage, or local stage with tumor greater than 2 cm) per 100,000 women age 40 and over.
- Maternal deaths per 100,000 live births.

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. Of all measures of health care quality and access that are tracked in the reports and support trends over time, Asians or Asians and Pacific Islanders in aggregate had worse care than Whites in the most recent year for 30 measures. Most of these measures showed no significant change in disparities over time.

For 2 measures, the gap between Asians and Whites grew smaller, indicating improvement:

- Hospital patients with pneumonia who received influenza screening or vaccination.
- Hospital patients with pneumonia who received pneumococcal screening or vaccination.

For one measure, the gap grew larger, indicating worsening disparities:

- Children 0-40 lb for whom a health provider gave advice within the past 2 years about using child safety seats when riding in a car.

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 (Executive Office of the President, 1997). 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. HHS is working to implement new data standards for analyzing data for minority populations, including NHOPIs.

The Affordable Care Act invests in the improvement of health data collection and analysis. Section 4302 of the Affordable Care Act contains provisions to strengthen Federal data collection efforts by requiring that all national Federal data collection efforts include information on race, ethnicity, sex, primary language, and disability status.

Currently in the NHDR, some data on NHOPIs are available for some measures throughout the report, such as in cancer treatment, heart disease, home health care, access to care, workforce diversity, patient centeredness, and timeliness. Data sources such as the Medical Expenditure Panel Survey, National Health Interview Survey, and Behavioral Risk Factor Surveillance Survey may have larger samples of NHOPIs due to efforts to improve sample sizes. However, these data are 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.

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. Of all measures of health care quality and access that are tracked in the reports and support trends over time, AI/ANs had worse care than Whites in the most recent year for 28 measures. Most of these measures showed no significant change in disparities over time.

For one measure, the gap between AI/ANs and Whites grew smaller, indicating improvement:

- Incidence of ESRD due to diabetes per 100,000 population.

For 2 measures, the gap grew larger, indicating worsening disparities:

- Adults age 50 and over who ever received a colonoscopy, sigmoidoscopy, or proctoscopy.
- People with difficulty contacting their usual source of care over the telephone.

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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 reports track. Of all measures of health care quality and access that are tracked in the reports and support trends over time, Hispanics had worse care than non-Hispanic Whites in the most recent year for 63 measures. Most of these measures showed no significant change in disparities over time. No measure showed worsening disparities.

For 6 measures, the gap between Hispanics and non-Hispanic Whites grew smaller, indicating improvement:

- Hospital admissions for uncontrolled diabetes per 100,000 population age 18 and over.
- Children ages 2-17 who had a dental visit in the calendar year.
- Hospital patients with pneumonia who had blood cultures collected before antibiotics were administered.
- Hospital patients with pneumonia who received influenza screening or vaccination.
- Hospital patients with pneumonia who received pneumococcal screening or vaccination.
- Adult surgery patients who received prophylactic antibiotics within 1 hour prior to surgical incision.

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 (U.S. Census Bureau, 2011b). After falling for a decade (1990-2000), the number of poor people in America rose from 31.6 million in 2000 to 42.9 million in 2009. In 2009, 14.3% of the U.S. population had incomes below their respective poverty thresholds (Bishaw & Macartney, 2010).

Poverty varies by race and ethnicity. In 2010, 14% of Whites, 36% of Blacks, 35% of Hispanics, and 23% of other races had incomes below the poverty level (Urban Institute and Kaiser, 2010). People with low incomes often experience worse health and are more likely to die prematurely (Adler & Newman, 2002). 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 (Brown, et al., 2003).

Previous chapters of this report describe health care differences by income. Of all measures of health care quality and access that are tracked in the reports and support trends over time, poor[vi] individuals had worse care than high-income[vii] individuals in the most recent year for 52 measures. Most of these measures showed no significant change in disparities over time.

[vi] Household income less than Federal poverty thresholds.
[vii] Household income 400% of Federal poverty thresholds and higher.

For 5 measures, the gap between poor and high-income individuals grew smaller, indicating improvement:

- Hospital admissions for uncontrolled diabetes per 100,000 population age 18 and over.
- Hospital admissions for long-term complications of diabetes per 100,000 population age 18 and over.
- Hospital admissions for congestive heart failure per 100,000 population.
- Children ages 2-17 who had a dental visit in the calendar year.
- Hospital admissions for asthma per 100,000 population.

For 4 measures, the gap grew larger, indicating worsening disparities:

- Adults age 50 and over who ever received a colonoscopy, sigmoidoscopy, or proctoscopy.
- Deaths per 1,000 adult hospital admissions with pneumonia.
- People without a usual source of care who indicated a financial or insurance reason for not having a source of care.
- Adults who did not have problems seeing a specialist they needed to see in the last 12 months.

Residents of Rural Areas

About one in five Americans lives in a nonmetropolitan area (IOM, 2005). Compared with their urban counterparts, rural residents are more likely to be older, be poor (Ziller, et al., 2003), be in fair or poor health, and have chronic conditions (IOM, 2005). Rural residents are less likely than their urban counterparts to receive recommended preventive services and on average report fewer visits to health care providers (Larson & Fleishman, 2003).

Although about 19% of Americans live in rural areas, only 11% of physicians in America practice in those settings (Rosenblatt, et al., 2010). 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.

Many rural residents depend on small rural hospitals for their care. There are approximately 2,000 rural hospitals throughout the country (AHA, 2011). 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 (AHRQ, 1996). 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"[viii] in the Nation, most have limited health care services and many do not have any (Frontier Education Center, 2000).

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

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[ix] (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. Of all measures of health care quality and access that are tracked in the reports and support trends over time, residents of noncore areas had worse care than residents of large fringe metropolitan areas in the most recent year for 30 measures. Most of these measures showed no significant change in disparities over time.

For one measure, the gap between residents of noncore and large fringe metropolitan areas grew smaller, indicating improvement:

■ Hospital admissions for uncontrolled diabetes per 100,000 population age 18 and over.

For 3 measures, the gap grew larger, indicating worsening disparities:

■ Cancer deaths per 100,000 population per year.
■ Deaths per 1,000 adult hospital admissions with pneumonia.
■ Adults with obesity who ever received advice from a health provider about eating fewer high-fat or high-cholesterol foods.

Individuals With Disabilities or Special Health Care Needs

The NHDR tracks many measures of relevance to individuals with disabilities or special health care needs. Data are often limited, and AHRQ has worked with Federal partners to improve reporting on health care quality for individuals with disabilities.

In 2007, 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 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 2011 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 [HHS, 2005; LaPlante, 1991]) 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 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.

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

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 and is consistent with the International Classification of Functioning, Disability, and Health separation of activities and participation domains (WHO, 2001).

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 for selected measures in the Effectiveness, Lifestyle Modification section and in the Care Coordination chapter of the NHDR and in the Patient Centeredness and Access chapters of the NHQR. In addition, the Data Tables appendix includes activity limitations as a stub variable for all National Health Interview Survey and Medical Expenditure Panel Survey tables.

Of all measures of health care quality and access that are tracked in the reports and support trends over time, individuals with basic activity limitations had worse care than individuals with neither basic nor complex activity limitations in the most recent year for 15 measures. Individuals with complex activity limitations had worse care than individuals with neither basic nor complex activity limitations in the most recent year for 16 measures. None of these measures showed any significant change in disparities over time.

Lesbian, Gay, Bisexual, and Transgender Populations

Note: *This section is excerpted with permission from the* National Transgender Discrimination Survey Report on Health and Health Care *(Grant, et al., 2011). Minor edits have been made to conform to Government style conventions and make the text consistent with the rest of the report.*

Every day, transgender and gender-nonconforming people bear the brunt of social and economic marginalization due to their gender identity. Advocates who work with transgender and gender-nonconforming people have known this for decades as they have worked with clients to find housing, obtain health and partnership benefits, or save jobs for clients who are terminated due to bias. Too often, policymakers, service providers, the media, and society at large have dismissed or discounted the needs of transgender and gender-nonconforming people in their communities, and a paucity of hard data on the scope of antitransgender discrimination has hampered the struggle for basic fairness.

In 2008, the National Center for Transgender Equality and the National Gay and Lesbian Task Force formed a groundbreaking research partnership to address this problem, launching the first comprehensive national transgender discrimination study. Transgender individuals are the most vulnerable among the LGBT populations. Therefore, this partnership sought to address the gap in information for these individuals as a first step.

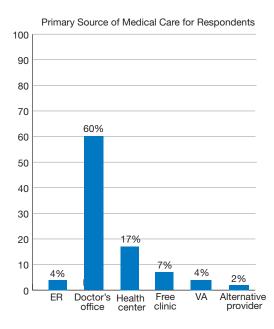Over 8 months, a team of community-based advocates, transgender leaders, researchers, lawyers, and LGBT policy experts came together to create an original survey instrument. More than 7,000 people responded to the 70-question survey, providing data on virtually every significant aspect of transgender discrimination, including housing, employment, health and health care, education, public accommodation, family life,

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criminal justice, and identity documents. The health findings are presented here. More extensive demographic and methodological information can be accessed in the original report, *Injustice at Every Turn: A Report of the National Transgender Discrimination Survey*.

Access to Health Care

A majority of study participants sought care through a doctor's office (60%); however, a significant minority used health centers and clinics (28%).

Figure 10.1. Primary source of medical care, LGBT population, 2008

Primary Source of Medical Care for Respondents

Source	Percentage
ER	4%
Doctor's office	60%
Health center	17%
Free clinic	7%
VA	4%
Alternative provider	2%

Source: Reprinted from the *National Transgender Discrimination Survey Report on Health and Health Care*, 2011.

Four percent of respondents primarily used emergency rooms (ERs) for care. Several studies have shown that individuals who use ERs for primary care experience more adverse health outcomes than those who regularly see a primary physician.[x] Factors that correlated with increased use of ERs were:

- Race—17% of African Americans used ERs as did 8% of Latino/a respondents.
- Income—8% of respondents earning under $10,000 per year used ERs.
- Employment status—10% of unemployed respondents and 7% of those who had lost their jobs due to bias used ERs.
- Education—13% of those with less than a high school diploma used ERs.

Visual conformers[xi] and those who had identity documents that matched their presentation had the highest rates of using doctor's offices for their care.

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[x] For example, Foraselli P, DeAngelis C, Kaszuba A. Compliance with followup appointments generated in a pediatric emergency room. Am J Prev Med 1985;1(3); Chande VT, Krug SE, Warm EF. Pediatric emergency department utilization habits: a consumer survey. Pediatr Emerg Care 1996;12(1).
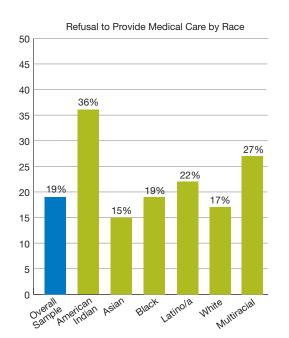
[xi] Visual conformers are defined as respondents who believed their presentation matched their gender identity. This study notes the significance of visual nonconformity as a risk factor in eliciting antitransgender bias and its attendant social and economic burdens.
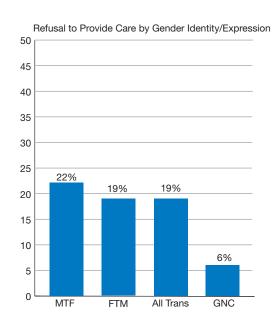
Discrimination by Medical Providers

Denial of health care and multiple barriers to care are commonplace in the lives of transgender and gender-nonconforming people. Subjects in our study seeking health care were denied equal treatment in doctor's offices and hospitals (24%), in ERs (13%), in mental health clinics (11%), by EMTs (5%), and in drug treatment programs (3%).[xii]

Female-to-male (FTM) respondents reported higher rates of unequal treatment than male-to-female (MTF) respondents. Latino/a respondents reported the highest rate of unequal treatment of any racial category (32% by a doctor or hospital and 19% in both ERs and mental health clinics).

Figure 10.2. People who were refused medical care, by race and gender identity

Refusal to Provide Medical Care by Race

Category	Percent
Overall Sample	19%
American Indian	36%
Asian	15%
Black	19%
Latino/a	22%
White	17%
Multiracial	27%

Refusal to Provide Care by Gender Identity/Expression

Category	Percent
MTF	22%
FTM	19%
All Trans	19%
GNC	6%

Source: Reprinted from the *National Transgender Discrimination Survey Report on Health and Health Care*, 2011.

Respondents were also asked whether they had been denied service altogether by doctors and other providers. Nineteen percent had been refused treatment by a doctor or other provider because of their transgender or gender-nonconforming status.
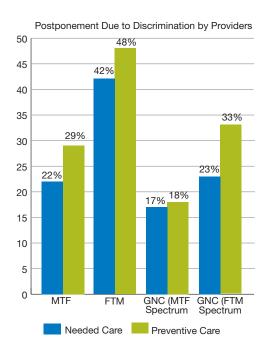
Twenty-two percent of MTF respondents reported having been refused treatment altogether, and 19% of FTM respondents did. Respondents who had lost jobs due to bias (36%); those who engaged in sex work, drug sales, or other underground economies for income (30%); those on public insurance (28%); and those living full time as their gender identity (25%) experienced high occurrence of refusal to treat.

[xii] These results were based on a question prefaced by: "Based on being transgender/gender non-conforming, please check whether you have experienced any of the following in this public space," and asked respondents to indicate whether they had been "denied equal treatment of service" for each of the various locations.

Postponement

Respondents were asked whether they postponed or did not try to get two types of health care: preventive care "like checkups" and necessary care "when sick or injured." Many postponed care because they could not afford it, and many postponed care because of discrimination and disrespect from providers.

Figure 10.3. Postponement of care due to discrimination

Postponement Due to Discrimination by Providers

Source: Reprinted from the *National Transgender Discrimination Survey Report on Health and Health Care*, 2011.

A significant number of study participants postponed needed medical care due to inability to afford it, whether seeking care when sick or injured (48%) or pursuing preventive care (50%). FTM transgender respondents report postponing care due to inability to afford it at higher rates (55%) than MTF transgender respondents (45%).

Insurance played a significant factor: those who have private insurance were much less likely to postpone care because of inability to afford it when sick or injured (37%) than those with public (46%) or no insurance (86%).
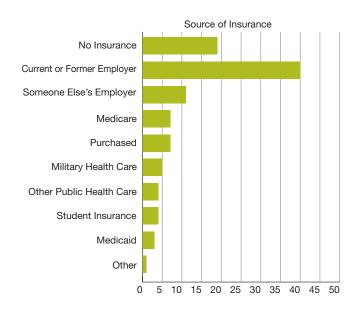
In terms of preventive care, those without insurance reported delaying care due to inability to afford it much more frequently (88%) than those with private insurance (39%) or public insurance (44%). Failing to obtain preventive care is known to lead to poor long-term health outcomes.

Due to discrimination and disrespect, 28% postponed or avoided medical treatment when they were sick or injured, and 33% delayed or did not try to get preventive health care. FTM transgender respondents reported postponing care due to discrimination and disrespect at a much higher frequency (42%, sick/injured; 48%, preventive) than MTF transgender respondents (22%, sick/injured; 25%, preventive).

Those with the highest rates of postponement included those who have lost a job due to bias (45%) and those who have done sex work, sold drugs, or engaged in other underground economies for income (45%). Twenty-nine percent of respondents who were "out" or "mostly out" to medical providers reported they had delayed care when ill, and 33% postponed or avoided preventive care because of discrimination by providers.

Access to Insurance

Figure 10.4. Source of insurance

Source of Insurance

Source: Reprinted from the *National Transgender Discrimination Survey Report on Health and Health Care*, 2011.

Study participants were less likely than the general population to have health insurance, more likely to be covered by State programs such as Medicaid, and less likely to be insured by an employer. Nineteen percent of the sample lacked any health insurance compared with 15% of the general population (DeNavas-Walt, et al., 2009).

African-American respondents had the worst health insurance coverage of any racial category: 39% reported private coverage and 30% public. Thirty-one percent of Black respondents reported being uninsured; by contrast, 66% of White respondents reported private insurance, 17% public insurance, and 17% no insurance.

Undocumented noncitizens had very low rates of coverage: 26% reported private insurance, 38% public insurance, and 36% no insurance. The South was the lowest region for coverage, where 59% of respondents reported private insurance, 17% public insurance, and 25% no insurance. In terms of gender, MTFs reported private insurance at 56%, public insurance at 23%, and no insurance at 20%. Gender-nonconforming respondents were insured at higher rates than their transgender counterparts, with 73% private insurance, 11% public insurance, and 17% uninsured.

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Chapter 10

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