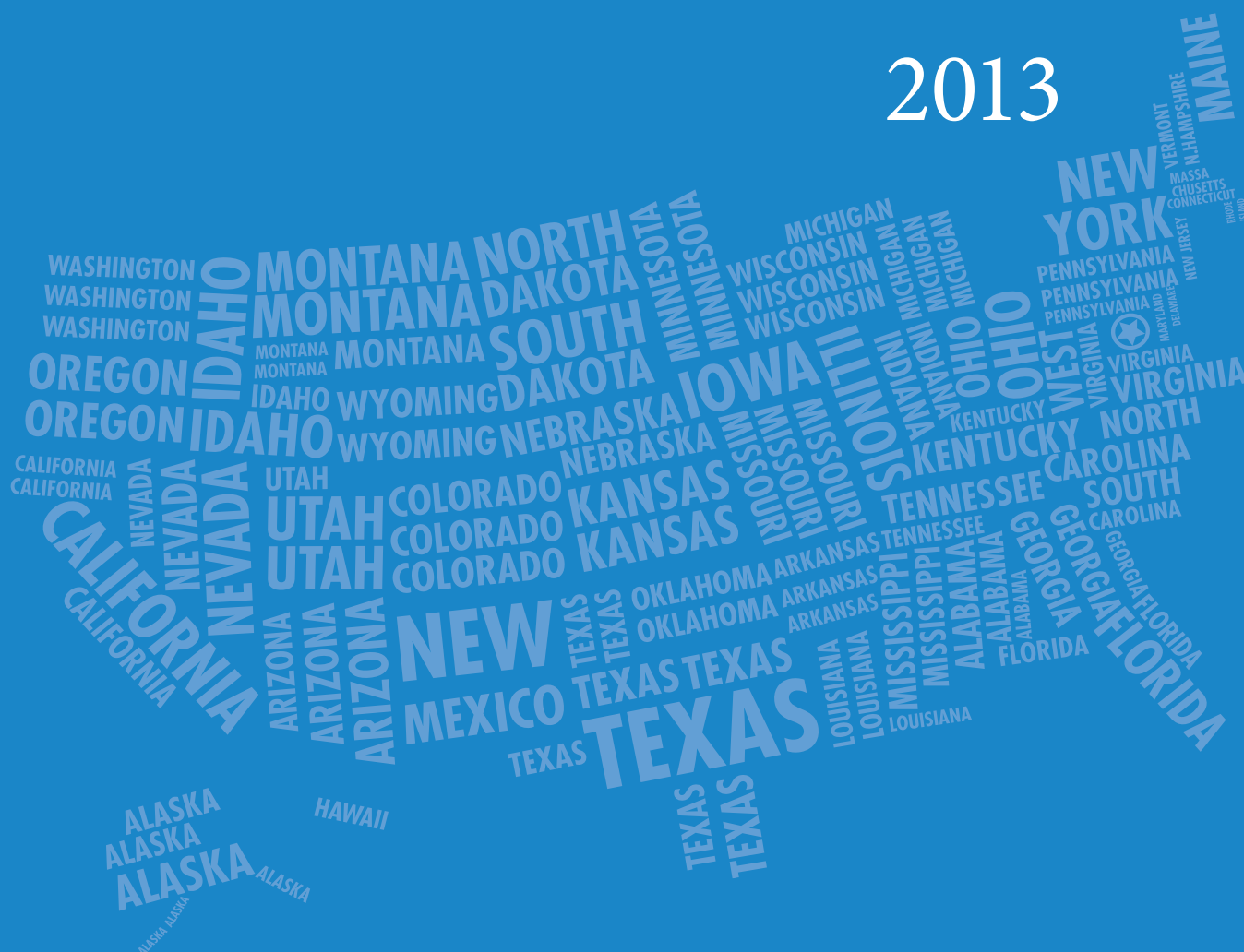


2013



## National Healthcare Disparities Report



Agency for Healthcare Research and Quality

Advancing Excellence in Health Care • [www.ahrq.gov](http://www.ahrq.gov)



# 2013 National Healthcare Disparities Report

## **U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES**

Agency for Healthcare Research and Quality  
540 Gaither Road  
Rockville, MD 20850

AHRQ Publication No. 14-0006  
May 2014  
[www.ahrq.gov/research/findings/nhqrd/index.html](http://www.ahrq.gov/research/findings/nhqrd/index.html)

## ACKNOWLEDGMENTS

The NHQR and NHDR are the products of collaboration among agencies across the Department of Health and Human Services (HHS). Many individuals guided and contributed to these reports. Without their magnanimous support, the reports would not have been possible.

Specifically, we thank:

**Primary AHRQ Staff:** Richard Kronick, Carolyn Clancy, William Munier, Jeffrey Brady, Ernest Moy, Karen Chaves, Veronica Soileau, Elizabeth Bishop, Darryl Gray, and Doreen Bonnett.

**HHS Interagency Workgroup for the NHQR/NHDR:** Girma Alemu (HRSA), Chisara N. Asomugha (CMS), Kirsten Beronio (ASPE), Douglas Boenning (ASPE), Nancy Breen (NCI), Miya Cain (ACF), Steven Clauser (NCI), Wayne Duffus (CDC), Olinda Gonzalez (SAMHSA), Kirk Greenway (IHS), Chris Haffer (CMS-OMH), Linda Harlan (NCI), Rebecca Hines (CDC-NCHS), Edwin Huff (CMS), Deloris Hunter (NIH), Sonja Hutchins (CDC), Ruth Katz (ASPE), Harriet Komisar (ASPE), Shari Ling (CMS), Darlene Marcoe (ACF), Tracy Matthews (HRSA), Karen McDonnell (CMS), Karen Nakano (CMS), Iran Naqvi (HRSA), Lisa Patton (ASPE), Diane Pilkey (ASPE), Kimberly Proctor (CMS-OMH), William Rodriguez (FDA), Melissa Rosen (ASPE), Asel Ryskulova (CDC-NCHS), Adelle Simmons (ASPE), Alan Simon (CDC-NCHS), Marsha Smith (CMS), Caroline Taplin (ASPE), Emmanuel Taylor (NCI), Sayeedha Uddin (CDC-NCHS), Nadarajen A. Vydelingum (NIH), Barbara Wells (NHLBI), and Valerie Welsh (OASHS-OMH).

**AHRQ NHQR/NHDR Team:** Roxanne Andrews (CDOM), Barbara Barton (SSS), Doreen Bonnett (OCKT), Cecilia Casale (OEREP), Karen Chaves (CQulPS), Xihua Chen (SSS), Frances Chevarley (CFAC), Beth Collins-Sharp (OEREP), Denise Dougherty (OEREP), Noel Eldridge (CQulPS), Zhengyi Fang (SSS), Erin Grace (CP3), Darryl Gray (CQulPS), Leif Karell (SSS), Ram Khadka (SSS), Anil Koninty (SSS), Atlang Mompe (SSS), Ernest Moy (CQulPS), William Munier (CQulPS), Janet Pagán-Sutton (SSS), Judy Sangl (CQulPS), Yi Wang (SSS), Nancy Wilson (IOD), and Sean Yin (SSS).

**HHS Data Experts:** Clarice Brown (CDC-NCHS), Anjani Chandra (CDC-NCHS), Laura Cheever (HRSA), Frances Chevarley (CFAC-MEPS), Robin Cohen (CDC-NCHS), Steven Cohen (AHRQ), James Colliver (SAMHSA), Rupali Doshi (HRSA), Paul Eggers (NIH), Elizabeth Goldstein (CMS), Beth Han (SAMHSA), Deborah Isenberg (HRSA), David Keer (ED-OSERS), Kimberly Lochner (CMS), Faye Malitz (HRSA), Marlene Matosky (HRSA), John Milberg (HRSA), William Mosher (CDC-NCHS), Evonne Amaka Nwankwo-Igomu (HRSA), Cynthia Ogden (CDC-NCHS), Robert Pratt (CDC), Asel Ryskulova (CDC-NCHS), Alan Simon (CDC-NCHS), Nancy Sonnenfeld (CMS), and Deborah Trunzo (SAMHSA).

**Other Data Experts:** Dana Auden (Oklahoma Foundation for Medical Quality), Beth Forrest (USRDS), David Grant (UCLA), Michael Halpern (American Cancer Society), Mele Look (John A Burns School of Medicine, University of Hawaii), Allen Ma (OFMQ), Robin Padilla (University of Michigan), Bryan Palis (NCBD, American College of Surgeons), Royce Park (UCLA), Allison Petrilla (NHCPO), William Ross (OASIS), Florentina R. Salvail (Hawaii Department of Health), Alek Sripipatana (HRSA), Scott Stewart (OFMQ), and Claudia Wright (OFMQ).

**Other AHRQ Contributors:** Cindy Brach, Monique D. Cohen, Janet Howard, James Kirby, Biff LeVee, Iris Mabry-Hernandez, Edwin Lomotan, Gerri Michael-Dyer, Karen Migdail, Shyam Misra, Laura Nawrocki, Pamela Owens, Mamatha Pancholi, Larry Patton, Wendy Perry, Richard Ricciardi, Mary Rolston, Randie Siegel, and Phyllis Zucker.

**Other:** Data for Native Hawaiian and Other Pacific Islanders provided by funding from National Institute on Minority Health and Health Disparities (NIMHD) of the National Institutes of Health, Health Resources and Services Administration (HRSA), and Kui ka Pono Funds from Queens Health Systems (QHS).

**Data Support Contractors:** CHD-Fu, Social and Scientific Systems, Truven Health Analytics, and Westat.



<i>Chapter</i> .....	<i>Page</i> .....
<b>Highlights</b> .....	1
<b>1. Introduction and Methods</b> .....	21
<b>2. Effectiveness of Care for Common Clinical Conditions</b> .....	37
Cancer .....	38
Cardiovascular Disease .....	48
Chronic Kidney Disease .....	58
Diabetes .....	62
HIV and AIDS .....	71
Mental Health and Substance Abuse .....	81
Musculoskeletal Diseases .....	88
Respiratory Diseases .....	92
<b>3. Effectiveness of Care Across the lifespan</b> .....	107
Maternal and Child Health .....	108
Lifestyle Modification .....	118
Functional Status Preservation and Rehabilitation .....	129
Supportive and Palliative Care .....	134
<b>4. Patient Safety</b> .....	147
<b>5. Timeliness</b> .....	173
<b>6. Patient Centeredness</b> .....	181
<b>7. Care Coordination</b> .....	195
<b>8. Efficiency</b> .....	205
<b>9. Health System Infrastructure</b> .....	213
<b>10. Access to Health Care</b> .....	233
<b>11. Priority Populations</b> .....	247
<b>Appendixes:</b>	
Data Sources .....	<a href="http://www.ahrq.gov/research/findings/nhqdr/nhqdr13/datasources/index.html">www.ahrq.gov/research/findings/nhqdr/nhqdr13/datasources/index.html</a>
Detailed Methods .....	<a href="http://www.ahrq.gov/research/findings/nhqdr/nhqdr13/methods/index.html">www.ahrq.gov/research/findings/nhqdr/nhqdr13/methods/index.html</a>
Measure Specifications .....	<a href="http://www.ahrq.gov/research/findings/nhqdr/nhqdr13/measurespec/index.html">www.ahrq.gov/research/findings/nhqdr/nhqdr13/measurespec/index.html</a>



## Highlights From the 2013 National Healthcare Quality and Disparities Reports

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)). 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 previous years, the 2013 NHQR and NHDR track more than 200 health care process, outcome, and access measures, covering a wide variety of conditions and settings. Data years vary across measures; most trend analyses include data points from 2000-2002 to 2010-2011. It is important to note that the reports provide a snapshot of health care prior to implementation of most of the health insurance expansions and consumer protections included in the Affordable Care Act and serve as a baseline against which to track progress in upcoming years. Each year, the reports emphasize one priority population; this year’s reports provide expanded analyses of people with disabilities, including children with special health care needs and adults with multiple chronic conditions.

These Highlights summarize data gathered for the reports to address three key questions:

- ◆ What is the status of health care quality, access, and disparities in the United States?
- ◆ How have health care quality, access, and disparities changed over time?
- ◆ Where are health care quality, access, and disparities improving? And where are they getting worse?

Key findings are summarized below.

	Status	Change over time	Areas improving	Areas lagging
<b>Quality</b>	Fair <ul style="list-style-type: none"> <li>70% of recommended care actually received</li> <li>Large variation across States</li> </ul>	Getting better	Improving more quickly <ul style="list-style-type: none"> <li>Hospital care</li> <li>CMS publicly reported measures</li> <li>Adolescent vaccines</li> </ul> Performing well <ul style="list-style-type: none"> <li>New England and West North Central States</li> </ul>	Improving more slowly <ul style="list-style-type: none"> <li>Ambulatory care</li> <li>Diabetes care</li> <li>Maternal and child health</li> </ul> Performing more poorly <ul style="list-style-type: none"> <li>West South Central and East South Central States</li> </ul>
<b>Access</b>	Fair <ul style="list-style-type: none"> <li>26% with difficulties getting care*</li> </ul>	Getting worse*	Improving <ul style="list-style-type: none"> <li>Availability of providers by telephone</li> </ul>	Not improving <ul style="list-style-type: none"> <li>Private health insurance coverage*</li> </ul>
<b>Disparities</b>	Poor <ul style="list-style-type: none"> <li>Minorities and people in poverty with worse quality and access for large proportion of measures</li> </ul>	No change	Disparities getting smaller <ul style="list-style-type: none"> <li>HIV disease</li> <li>Patient perceptions of care</li> </ul> Few gaps in disparities data on Blacks, Hispanics, and Asians	Disparities getting bigger <ul style="list-style-type: none"> <li>Cancer screening</li> <li>Maternal and child health</li> </ul> Many gaps in disparities data on Native Hawaiians and Other Pacific Islanders

\* Findings reflect access prior to implementation of most of the health insurance expansions included in the Affordable Care Act. After a decade of deterioration, access was better in 2011 than in 2010 (see Figure H.6).

**Key:** CMS = Centers for Medicare & Medicaid Services.

**Note:** For the vast majority of measures in the reports, trend data are available from 2000-2002 to 2010-2011.

## HIGHLIGHTS

### Quality of Health Care

A key function of the reports is to review the state of health care quality 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 priority populations each year. Rather, data come from more than three dozen databases that provide estimates for different population subgroups and data years. Surveys of patients, patients' families, and providers; administrative data from health care facilities; abstracts of clinical charts; registry data; and vital statistics are used to assess health care quality in the reports and are summarized in the Highlights. While most data are gathered annually, some data are not collected regularly.

### What Is the Status of Health Care Quality?

The full set of quality measures tracked in the reports includes receipt of specific services needed to treat or prevent a medical condition, as well as outcomes of treatment, such as death and functional limitation. Domains of health care covered are effectiveness, safety, timeliness, patient centeredness, care coordination, efficiency, and adequacy of health system infrastructure. Within effectiveness, eight clinical conditions (cancer, cardiovascular disease, chronic kidney disease, diabetes, HIV and AIDS, mental health and substance abuse, musculoskeletal diseases, and respiratory diseases) and four cross-cutting services (maternal and child health, lifestyle modification, functional status preservation and rehabilitation, and supportive and palliative care) are discussed. Care delivered in doctor's offices, health centers, emergency rooms, hospitals, nursing homes, and home health and hospice settings is examined.

Summarizing health care quality across these different types of measures is potentially problematic. Measures of structure, process, and outcomes often have different denominators and units of analysis that prevent aggregation. In this assessment of the status of health care quality, we focus on a panel of 48 measures, including immunization; counseling about smoking, weight loss, and exercise; treatment of cancer, diabetes, and pneumonia; and care by nursing homes and home health agencies.

Based on this composite, quality of health care in America is only fair. On average, in 2010, Americans received 70% of indicated health care services and failed to receive 30% of the care they needed to treat or prevent particular medical conditions. The gap between best possible care and what is routinely delivered remains substantial across the Nation.

The measures used in these reports span a wide range of structure, process, and outcome measures that can be measured with existing national data sources. The measures were selected for tracking based on their importance, scientific soundness, and feasibility by a Department of Health and Human Services Interagency Work Group that supports the reports. However, many important dimensions of quality are not currently captured. A few examples of important dimensions of quality that are not currently measured include:

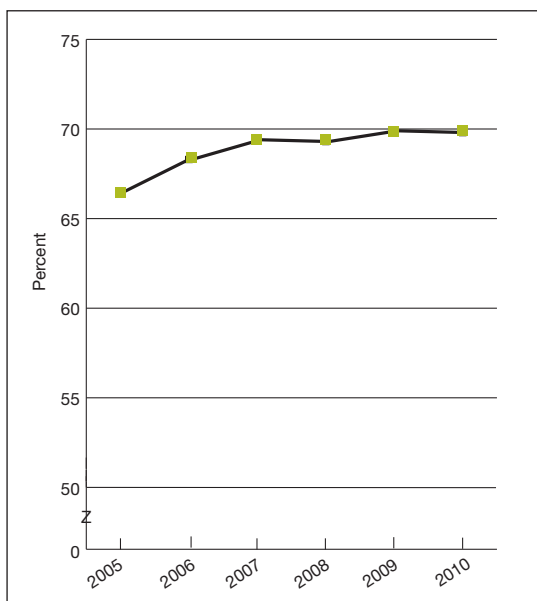
- ◆ Measures of the extent to which diagnostic errors are made in ambulatory care;
- ◆ Measures of the extent to which pain is reduced or function improves for patients undergoing back surgery, total joint replacement, or other orthopedic procedures;
- ◆ Measures of the rate of decline in function for patients with multiple sclerosis; and
- ◆ Measures of the appropriateness of therapeutic choices for patients presenting with angina.

We have made great strides in developing and implementing measures of many aspects of health care quality but should note that many vitally important dimensions of health care are not currently measured. Readers of this report should be aware both of the broad scope of the measures that are included, as well as the even broader areas of health care that are not currently measured.

## How Has Health Care Quality Changed Over Time?

The second key function of these reports is to examine change over time. Care that is suboptimal but showing clear evidence of vigorous improvement may be of less concern than care of a similar level that is failing to improve. Below, we assess change in average performance across a fixed panel of quality of care process measures. For these measures, estimates are available each year from 2005 to 2010. The measures are framed positively, indicating the proportion of people who needed a particular service and received it. The simple average across the panel of measures is shown.

**Figure H.1. Average proportion of recommended care received across a panel of quality of care measures, 2005-2010**



◆ Quality of care is improving but not very fast:

- On average, in 2005, Americans received about 66% of health care services they should have received; by 2010, this had risen to 70% of services (Figure H.1).

Another way to track the progress of health care quality presented in these reports is to calculate annual rates of change, which represent how quickly the quality of services delivered by the health care system is improving or declining. As in past reports, regression analysis is used to estimate annual rate of change for each measure relative to the baseline year.

Annual rate of change is calculated only for measures with at least 4 years of data. For most measures, trends include data points from 2000-2002 to 2010-2011. Note that process measures that are retired or removed because they have achieved a performance level of 95% or better are not included in these trend analyses. (Chapter 1, Introduction and Methods, discusses how measures are retired or removed.)

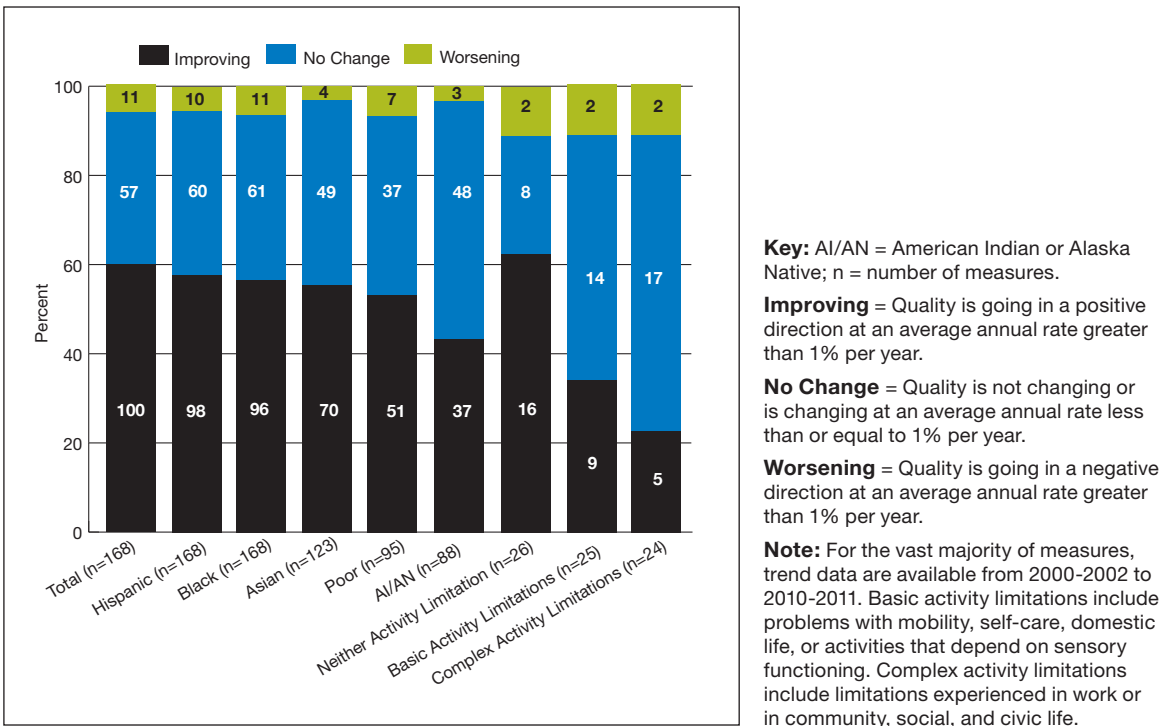
## HIGHLIGHTS

Weighted log-linear regression is used to assess whether trends are statistically significant:

- ◆ Measures that are moving in a favorable direction at a rate that exceeds 1% per year and is statistically significant are considered to be improving.
- ◆ Measures moving in an unfavorable direction at a rate that exceeds 1% per year and is statistically significant are considered to be worsening.
- ◆ Measures that are changing at a rate that is less than or equal to 1% per year or that is not statistically significant are considered to be static.

Changes over time are presented for the overall population and for select racial, ethnic, and income groups that are tracked most often in the disparities report. Because the theme of this year's reports is people with disabilities, we also show information on people with basic or complex activity limitations and people with neither type of activity limitation.

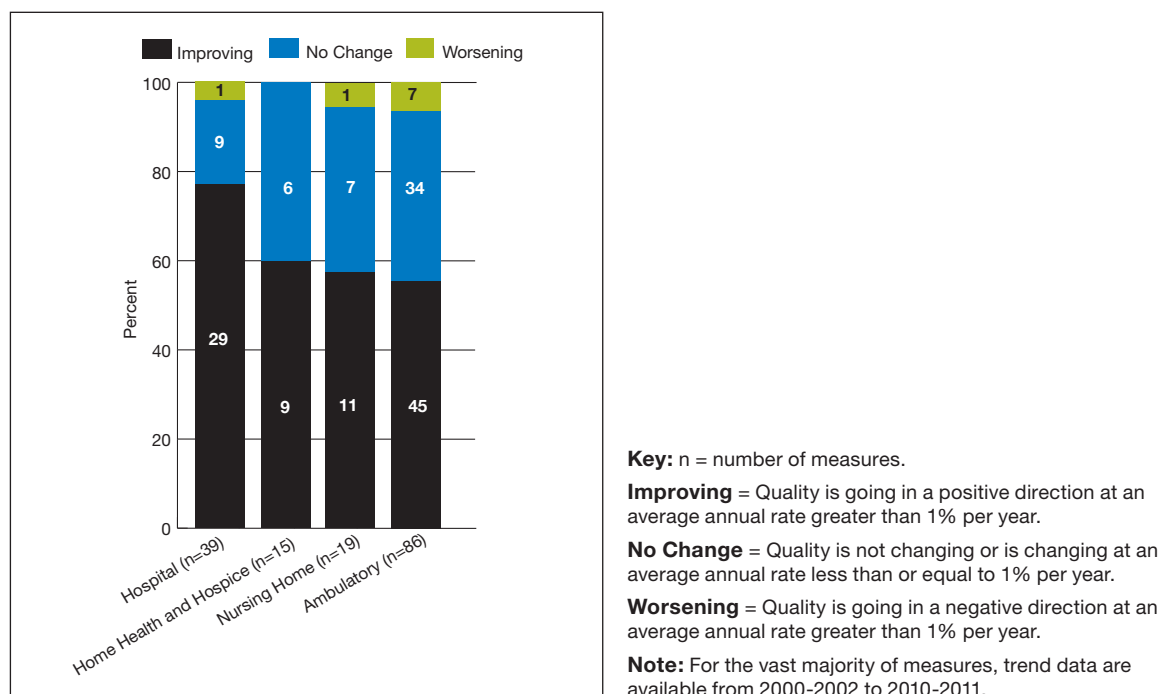
**Figure H.2. Number and proportion of all quality measures that are improving, not changing, or worsening, overall and for select populations**



- ◆ Quality is improving on some measures for all groups:
  - Across all measures of health care quality tracked in the reports, 60% showed improvement (Figure H.2).
  - Improvement occurred among all racial, ethnic, and income groups, although a smaller proportion of measures showed improvement among American Indians and Alaska Natives (AI/ANs).

- Few measures could be trended for people with activity limitations. However, among the measures that could be trended, fewer showed improvement among people with activity limitations compared with people with neither basic nor complex limitations. This is partly due to the larger standard errors of estimates for people with activity limitations.

**Figure H.3. Number and proportion of measures that are improving, not changing, or worsening, by setting of care**



- ◆ Quality of hospital care is improving rapidly; quality of ambulatory care is not improving as quickly:
  - Only about half of the ambulatory care quality measures showed improvement compared with three-quarters of the hospital care quality measures (Figure H.3).
  - About 60% of the quality measures in home health and hospices and in nursing homes improved. Hospitals, nursing homes, and home health and hospice agencies may have more infrastructure to improve quality and to respond to performance measurement compared with providers in ambulatory settings.

### Where Is Health Care Quality Improving and Where Is It Getting Worse?

The third key function of these reports is to identify opportunities for improvement. The NHQR tracks the pace of change over time for measures with at least 4 years of data. Table H.1 lists the quality measures with the highest rates of improvement and deterioration, as well as those that have been retired or removed because they achieved a 95% overall performance level.

## HIGHLIGHTS

**Table H.1. Quality measures that have been retired or removed or have the most rapid pace of change**

Retired or Removed	Quality Improving	Quality Worsening
<b>Hospital patients with heart attack who:</b> <ul style="list-style-type: none"> <li>Received aspirin within 24 hours of admission</li> <li>Received beta blocker within 24 hours of admission</li> <li>Were prescribed aspirin at discharge</li> <li>Were prescribed a beta blocker at discharge</li> <li>Were prescribed ACE inhibitor or ARB at discharge</li> <li>Received smoking cessation counseling while hospitalized</li> </ul>	Patients with colon cancer who received recommended treatment: surgical resection of colon specimen that had 12+ regional lymph nodes pathologically examined	Women ages 21-65 who received a Pap smear in the last 3 years
	Adult patients with HIV and CD4 <350 who received highly active antiretroviral therapy during the year	Adults age 40+ with diagnosed diabetes who had their feet checked for sores or irritation in the calendar year
	Adolescents ages 13-15 who received 1+ doses of meningococcal conjugate vaccine	Admissions with diabetes with short-term complications per 100,000 population, age 18+
<b>Hospital patients with heart failure who:</b> <ul style="list-style-type: none"> <li>Received an evaluation of left ventricular ejection fraction</li> <li>Were prescribed ACE inhibitor or ARB at discharge</li> </ul>	Adolescents ages 16-17 who received 1+ doses of meningococcal conjugate vaccine	Maternal deaths per 100,000 live births
	Adolescents ages 13-15 who received 1+ doses of tetanus-diphtheria-acellular pertussis booster	Children ages 19-35 months who received 3 or more doses of Haemophilus influenzae type B vaccine
Adult hemodialysis patients with adequate dialysis	Adolescents ages 16-17 who received 1+ doses of tetanus-diphtheria-acellular pertussis booster	Suicide deaths per 100,000 population
Adults with diabetes who had their blood cholesterol checked	Hospital patients age 50+ with pneumonia who received an influenza screening or vaccination	People with current asthma who report taking preventive medicine daily or almost daily (either oral or inhaler)
<b>Hospital patients with pneumonia who:</b> <ul style="list-style-type: none"> <li>Had blood cultures collected before antibiotics were administered</li> <li>Received antibiotics within 6 hours of hospital arrival</li> <li>Received a pneumococcal screening or vaccination</li> </ul>	Hospital patients with pneumonia who received the initial antibiotic dose consistent with current recommendations	Postoperative physiologic and metabolic derangements per 1,000 elective-surgery admissions, age 18+
	Hospital patients with heart attack who received percutaneous coronary intervention within 90 minutes of arrival	
<b>Adult surgery patients who:</b> <ul style="list-style-type: none"> <li>Received prophylactic antibiotics within 1 hour prior to surgical incision</li> <li>Had prophylactic antibiotics discontinued within 24 hours after surgery end time</li> </ul>	Hospital patients with heart failure who were given complete written discharge instructions	
Emergency department visits in which patient left without being seen		

**Key:** ACE = angiotensin-converting enzyme; ARB = angiotensin receptor blocker.

**Note:** Dark blue = CMS publicly reported measures; light green = diabetes measures; green = cancer measures; gray = adolescent vaccinations; light blue = maternal and child health measures. For the vast majority of measures, trend data are available from 2000-2002 to 2010-2011.



◆ **Quality changes unevenly across measures:**

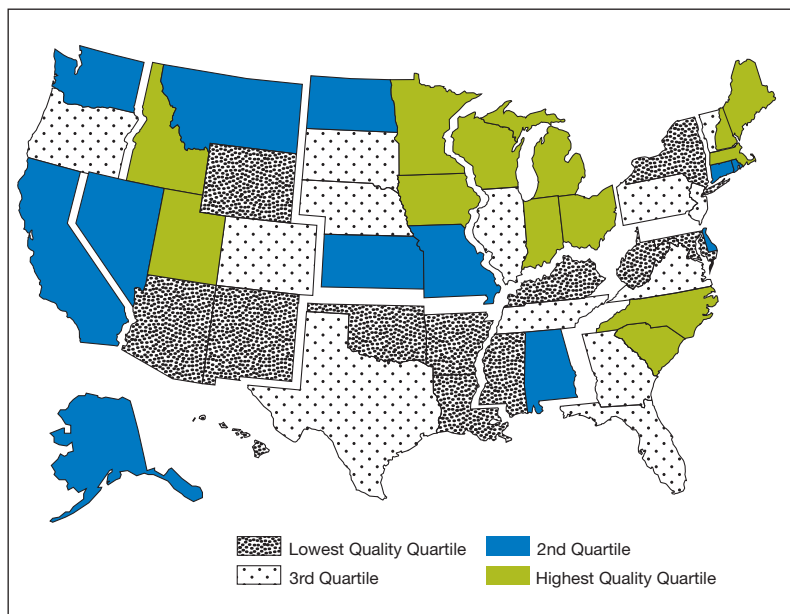
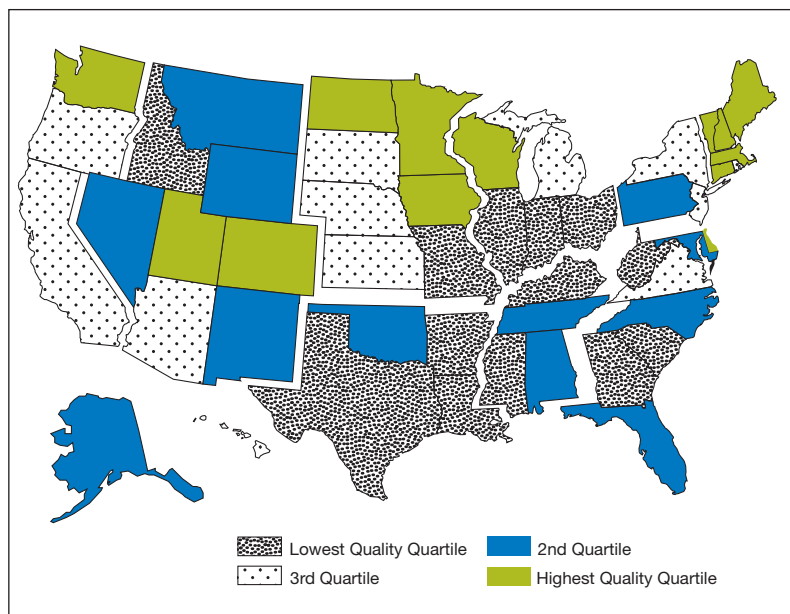
- Of the 16 quality measures that have been retired or removed due to achievement of 95% overall performance, 14 are measures that have been reported publicly by the Centers for Medicare & Medicaid Services (CMS) (dark blue) (Table H.1). Another four CMS measures are on the list of measures improving at the fastest pace. Of CMS publicly reported measures that have yet to be retired or removed, 70% show improvement over time.
- Four adolescent vaccination measures (gray) are on the list of measures improving at the fastest pace.
- Of the eight quality measures that are getting worse at the fastest pace, two relate to diabetes (light green) and two relate to maternal and child health (light blue).

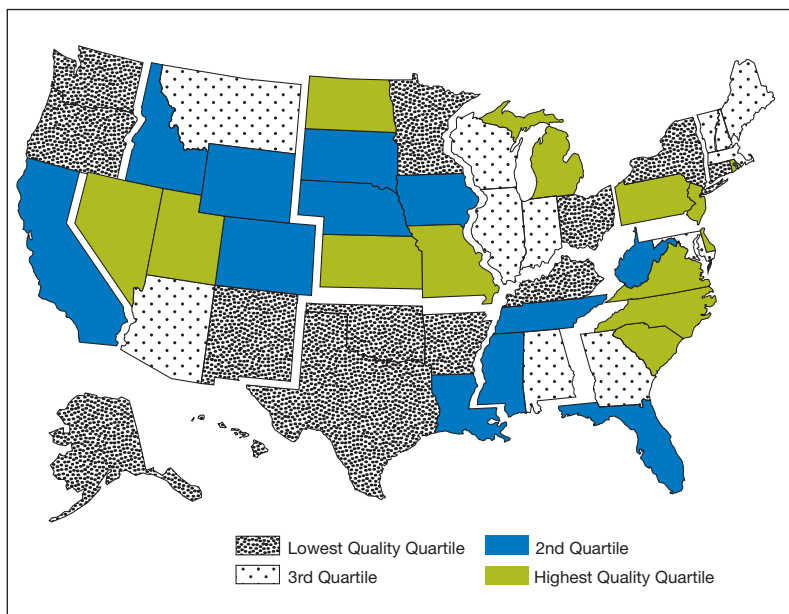
Quality of care varies not only across types of care but also across parts of the country. Knowing where to focus efforts improves the efficiency of interventions. Delivering data that can be used for local benchmarking and improvement is a key step in raising awareness and driving quality improvement.

Since 2005, AHRQ has used the State Snapshots tool (<http://nhqrnet.ahrq.gov/inhqrdr/state/select>) 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.

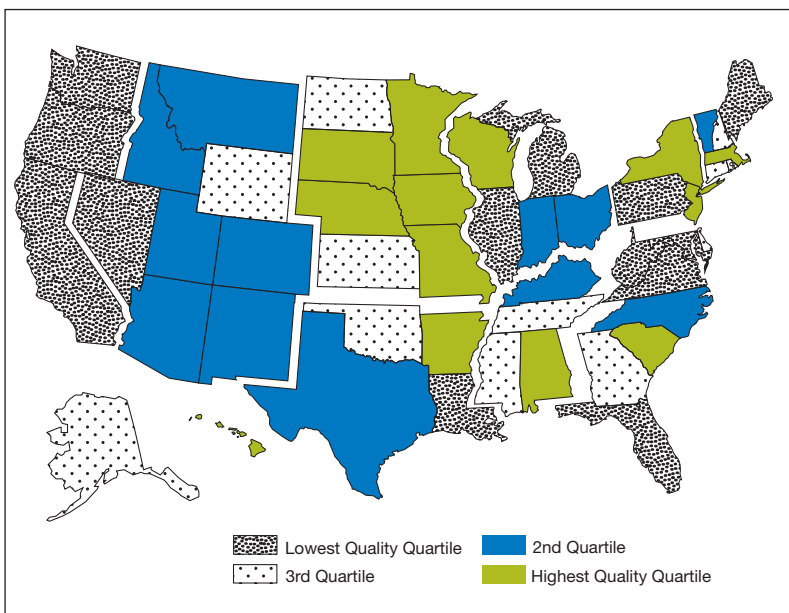
The State Snapshots are based on more than 100 NHQR measures, each of which evaluates a different aspect of health care performance and shows each state's strengths and weaknesses. Here, we use data from the 2012 State Snapshots to examine variation in quality across states by setting of care.

Figure H.4. Quality of care, by setting and state





**Quality of Home Health and Hospice Care**



**Quality of Nursing Home Care**

**Source:** Agency for Healthcare Research and Quality, 2012 State Snapshots.

**Note:** States are divided into quartiles based on health care score for each setting of care.

## HIGHLIGHTS

### ◆ **Quality of care differs across geographic regions:**

- No state performed in the highest quality quartile in all four settings of care; every state could improve performance in at least one setting of care (Figure H.4).
- For quality of ambulatory care, states in the New England (CT, MA, ME, NH, RI, VT), West North Central (IA, KS, MN, MO, NE, ND, SD), and Pacific (AK, CA, HI, OR, WA) census divisions were most often in the top quartiles. States in the South Atlantic (DC [not shown], DE, FL, GA, MD, NC, SC, VA, WV), East South Central (AL, KY, MS, TN), West South Central (AR, LA, OK, TX), and Mountain (AZ, CO, ID, MT, NM, NV, UT, WY) census divisions were most often in the bottom quartiles.
- For quality of hospital care, states in the New England and East North Central (IL, IN, MI, OH, WI) census divisions were most often in the top quartiles. States in the East South Central, West South Central, Mountain, and Pacific census divisions were most often in the bottom quartiles.
- For quality of home health and hospice care, states in the New England, East North Central, and South Atlantic census divisions were most often in the top quartiles. States in the East South Central, West South Central, and Pacific census divisions were most often in the bottom quartiles.
- For quality of nursing home care, states in the New England, West North Central, and East South Central census divisions were most often in the top quartiles. States in the East North Central and Mountain census divisions were most often in the bottom quartiles.

## **Access to Health Care**

Discussions of health care quality are moot for Americans who cannot get into the health care system. Measures of access to care tracked in the reports include facilitators of care, such as having health insurance and a regular provider, and perceptions of difficulties and delays when trying to obtain care.

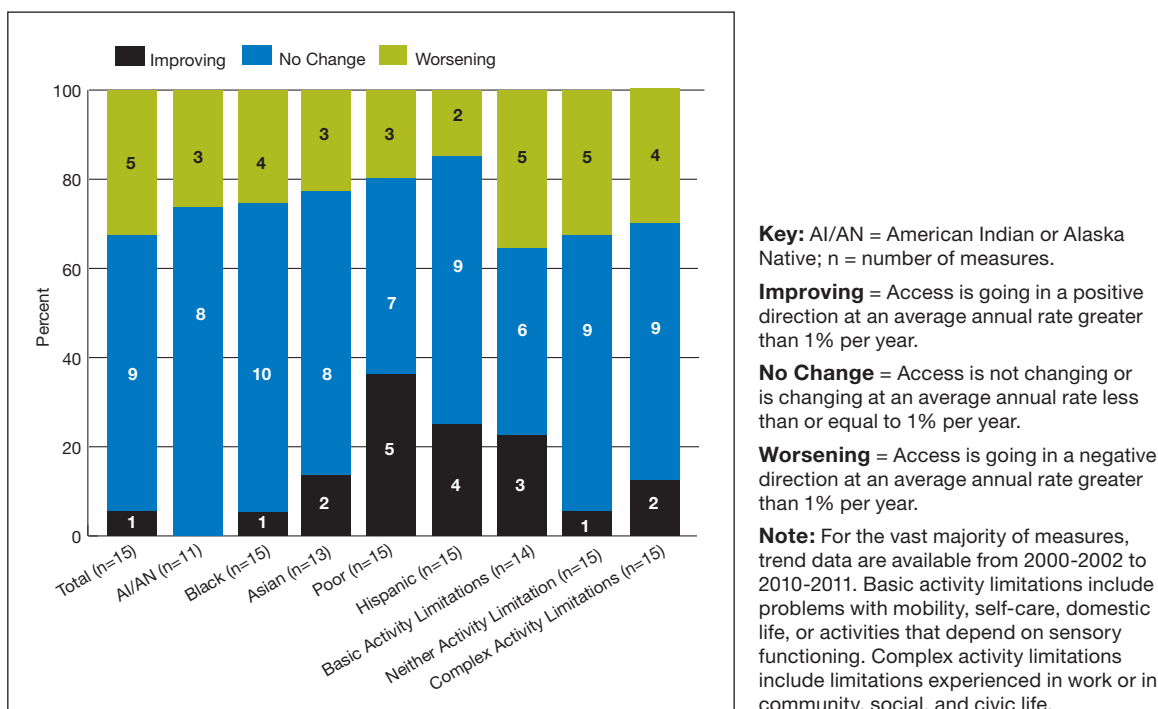
### **What Is the Status of Health Care Access?**

Like quality of care, access to health care in America is only fair. On average, in 2011, 26% of Americans reported barriers that restricted their access to care while 74% did not report problems accessing care.

### **How Has Health Care Access Changed Over Time?**

Annual rates of change can also be used to track how quickly access to services delivered by the health care system is improving or declining. As for quality measures, regression analysis is used to estimate annual rate of change for each access measure relative to the baseline year. For most access measures, trends include data points from 2000-2002 to 2010-2011.

**Figure H.5. Number and proportion of all access measures that are improving, not changing, or worsening, overall and for select populations**



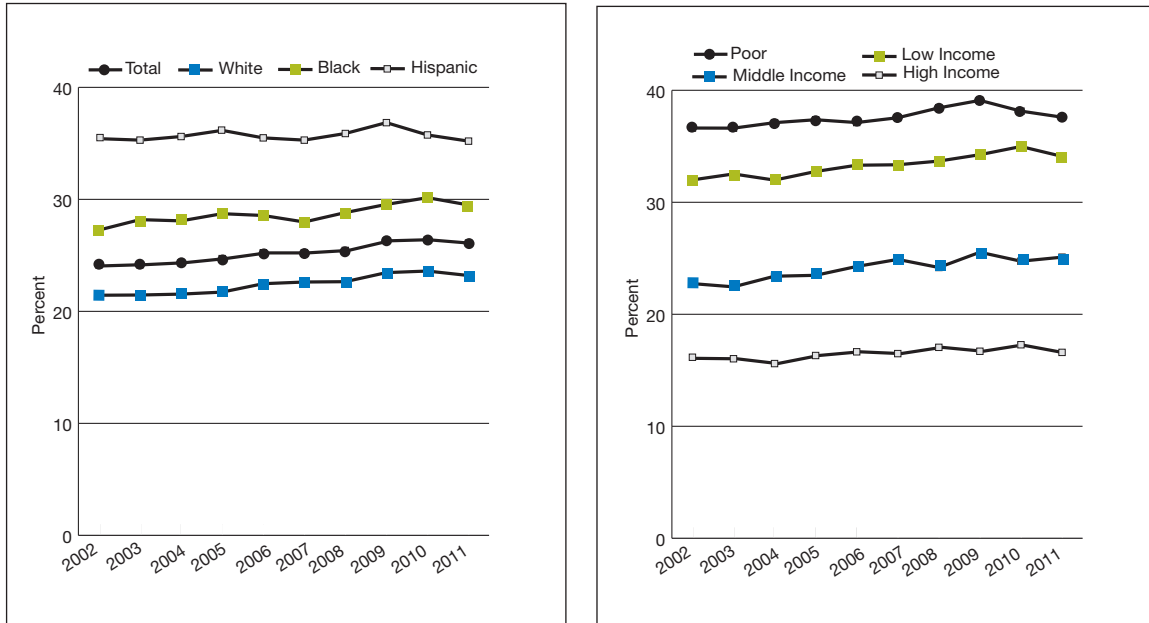
◆ **Access got worse for many groups from 2000-2002 to 2010-2011, but some improvement was observed:**

- Across the measures of health care access tracked in the reports, one-third were getting worse for the overall U.S. population (Figure H.5).
- For Hispanics and poor people, the number of access measures that were improving exceeded the number that were getting worse.

Below, we assess changes in average performance across a fixed panel of measures of access to health care related to health insurance, lack of a regular provider, and barriers encountered when trying to obtain care. For these measures, estimates are available each year from 2002 to 2011. The measures are framed negatively, indicating the proportion of people who experienced a problem when trying to access care. The simple average across the panel of measures is shown.

## HIGHLIGHTS

**Figure H.6. Average proportion of people across a panel of access to care measures reporting barriers to care, by race/ethnicity and family income, 2002-2011**



**Note:** White and Black are non-Hispanic; Hispanic includes all races.

◆ **Barriers to care grew worse from 2002 to 2010, but leveled off between 2010 and 2011:**

- On average, in 2002, 24.0% of Americans reported difficulties accessing health care; by 2010, this had increased to 26.4% (Figure H.6).
- In 2011, for the first time in a decade, Americans reported fewer barriers to health care. Americans encountering difficulties fell to 26.1%, and most groups experienced this improved access.
- Groups with the worst access began experiencing improvements earlier, in 2009.
  - » On average, 35.4% of Hispanics reported barriers that restricted their access to care in 2002. This gradually increased to 36.9% in 2009 and then fell to 35.2% in 2011, the lowest level of barriers over the decade.
  - » On average, 36.6% of poor Americans reported barriers that restricted their access to care in 2002. This gradually increased to 39.1% in 2009 and then fell to 37.6% in 2011.

## Where Is Health Care Access Doing Well and Where Is It Doing Poorly?

◆ **The access measure getting better from 2000-2002 to 2010-2011 was:**

- People with difficulty contacting their usual source of care by telephone during regular business hours about a health problem.

◆ **Access measures getting worse from 2000-2002 to 2010-2011 were:**

- People under age 65 with any private health insurance.
- Adults age 65 and over with any private health insurance.
- People under age 65 who were uninsured all year.
- People without a usual source of care who indicate a financial or insurance reason for not having a source of care.
- People unable to get or delayed in getting needed medical care, dental care, or prescription medicines due to financial or insurance reasons.

## Disparities in Health Care

Some Americans routinely face more barriers to care and receive poorer quality of care when they can get it. In these Highlights, we focus on racial/ethnic contrasts between Blacks, Hispanics, Asians, and AI/ANs and Whites and socioeconomic contrasts between poor<sup>i</sup> and high-income people. Keeping with the theme of this year's reports, we also compare people with basic or complex activity limitations with people with neither type of activity limitation.

### What Is the Status of Health Care Disparities in the United States?

To quantify disparities, we examine the relative difference between a selected group and its reference group:

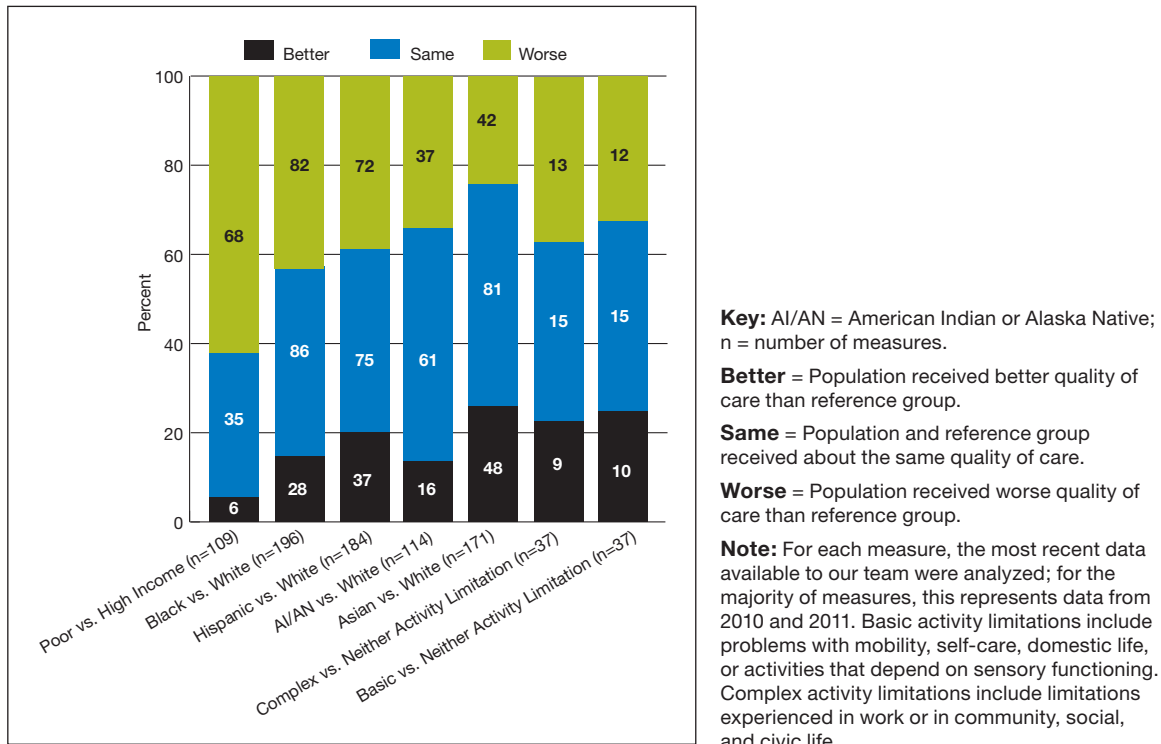
- ◆ Differences that are statistically significant, are equal to or larger than 10%, and favor the reference group are labeled as indicating worse quality or access for the selected group.
- ◆ Differences that are statistically significant, are equal to or larger than 10%, and favor the selected group 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.

Process measures are retired or removed when they have achieved an overall performance level of 95% or better and are not included in these analyses. Because disparities are typically eliminated when overall performance reaches 95%, our analyses may overstate the proportion of quality measures exhibiting disparities.

<sup>ii</sup> Throughout the Highlights, poor, low income, middle income, and high income indicate individuals whose household income is <100%, 100-199%, 200-399%, and 400% or more of the Federal poverty level, respectively.

## HIGHLIGHTS

**Figure H.7. 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**

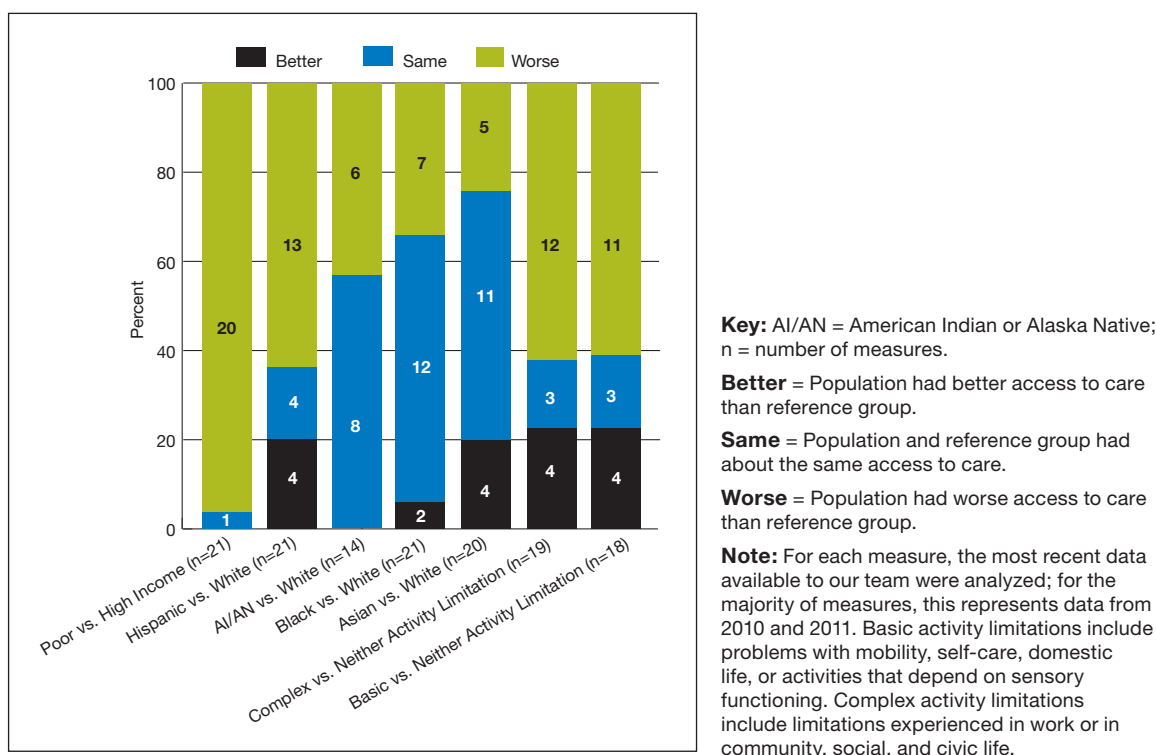


### ◆ Disparities in quality of care are common:

- Blacks and Hispanics received worse care than Whites for about 40% of quality measures (Figure H.7).
- AI/ANs received worse care than Whites for one-third of quality measures.
- Asians received worse care than Whites for about one-quarter of quality measures but better care than Whites for about 30% of quality measures.
- Poor people received worse care than high-income people for about 60% of quality measures.
- People with basic or complex activity limitations received worse care than people with neither type of activity limitation for about one-third of quality measures and better care for about one-quarter of quality measures.



**Figure H.8. 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**



◆ **Disparities in access are also common, especially among AI/ANs, Hispanics, poor people, and people with activity limitations:**

- Blacks had worse access to care than Whites for one-third of measures, and AI/ANs had worse access to care than Whites for about 40% of access measures (Figure H.8).
- Asians had worse access to care than Whites for 25% of access measures but better access to care than Whites for a similar proportion of access measures.
- Hispanics had worse access to care than Whites for about 60% of measures.
- Poor people had worse access to care than high-income people for all measures but one.
- People with basic or complex activity limitations had worse access to care than people with neither basic nor complex activity limitations for about 60% of measures.

## How Have Health Care Disparities Changed Over Time?

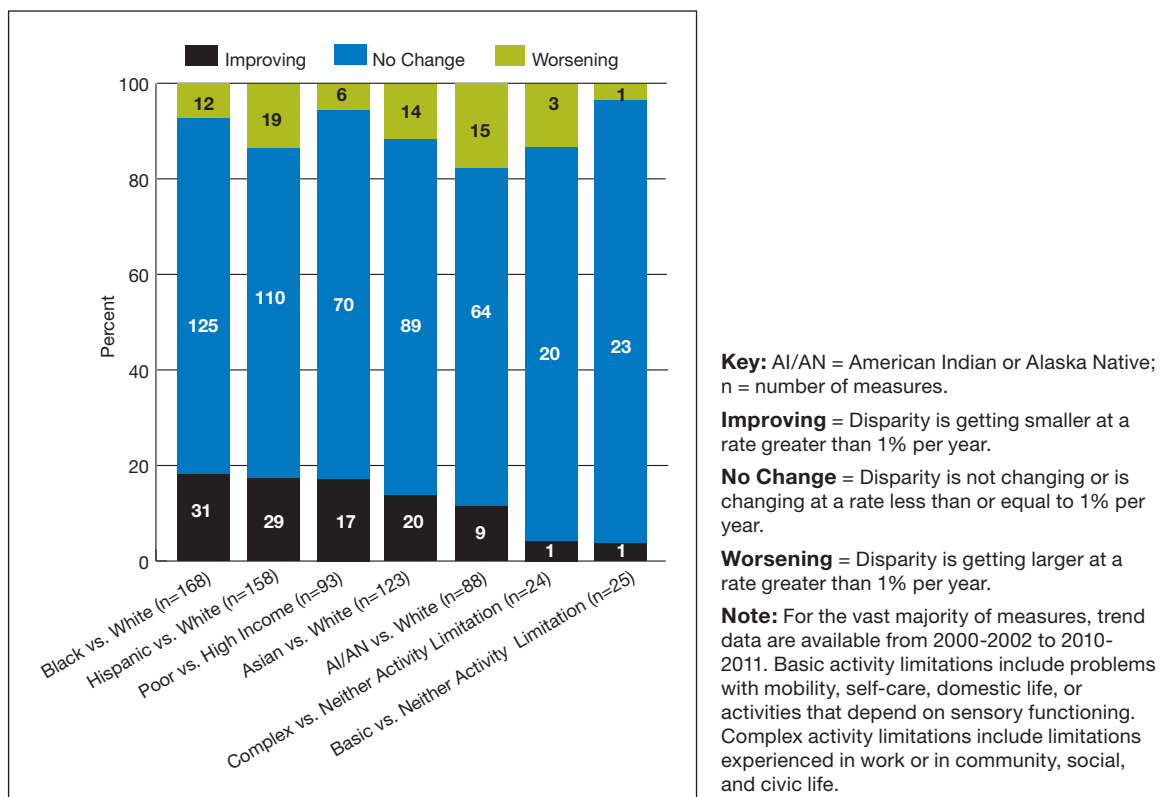
A new approach to assess change in disparities is introduced this year. First, a selected group's rate of change and its reference group's rate of change are calculated using weighted least squares regression. Next, this difference in rates of change is assessed for statistical significance. Then, the difference in rates of change relative to the reference group's baseline estimate is calculated.

## HIGHLIGHTS

- ◆ When the difference in rates of change is significant and when the difference relative to the reference group's baseline is greater than 1% per year, we label the disparity as improving if the selected group's rate is higher than the reference group's rate and worsening if the reverse.
- ◆ When the difference relative to the reference group's baseline is less than or equal to 1% or the difference is not statistically significant, we label the disparity as static.

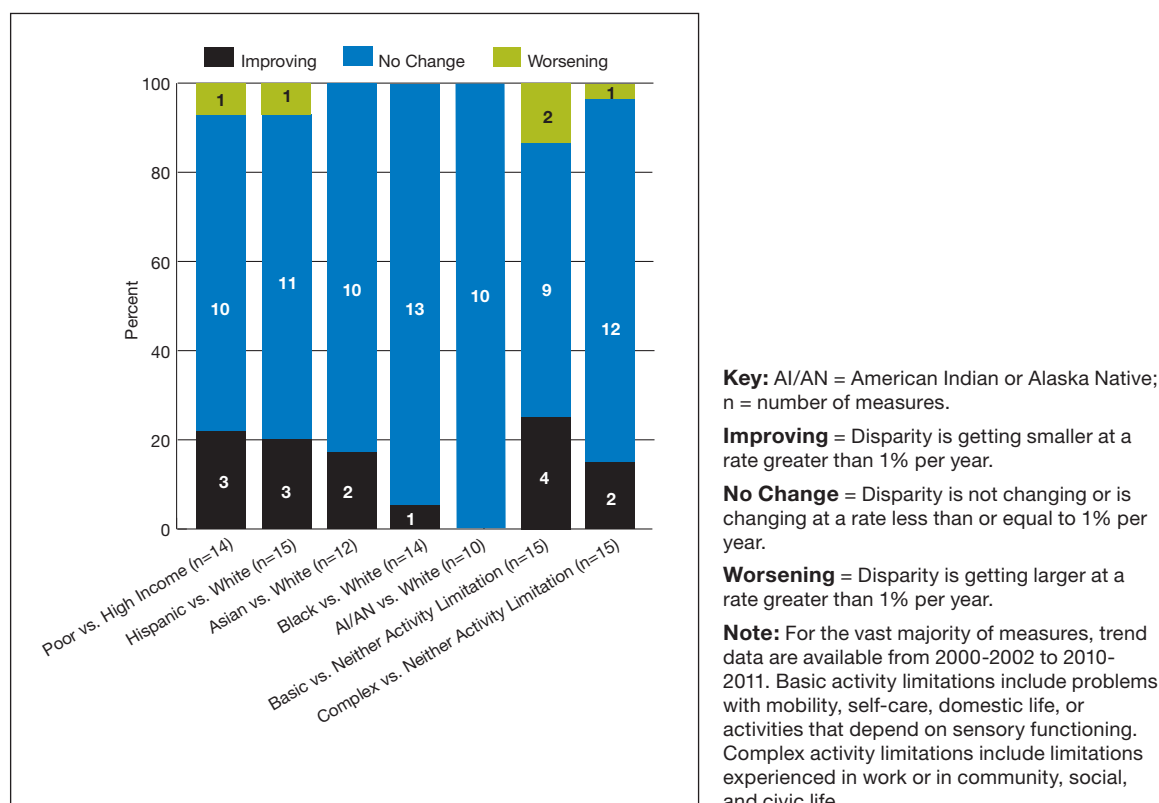
Process measures that are retired or removed because they have achieved a performance level of 95% or better are not included in these analyses; if included, many would be labeled as disparities improving over time.

**Figure H.9. Number and proportion of all quality measures for which disparities related to race, ethnicity, income, and activity limitations are improving, not changing, or worsening**



- ◆ **While most disparities in quality are not changing, some improvement is observed:**
  - Most disparities in quality of care related to race, ethnicity, or income showed no significant change, neither getting smaller nor larger (Figure H.9).
  - The number of disparities that were getting smaller exceeded the number of disparities that were getting larger for Blacks, Hispanics, Asians, and poor people.
  - Of the few disparities related to activity limitations that could be assessed, most were not changing.

**Figure H.10. Number and proportion of all access measures for which disparities related to race, ethnicity, income, and activity limitations are improving, not changing, or worsening**



- ◆ While most disparities in access are not changing, some improvement is observed:
  - Most disparities in access to care related to race, ethnicity, or income showed no significant change, neither getting smaller nor larger (Figure H.10).
  - In most cases, the number of disparities that were getting smaller exceeded the number of disparities that were getting larger.

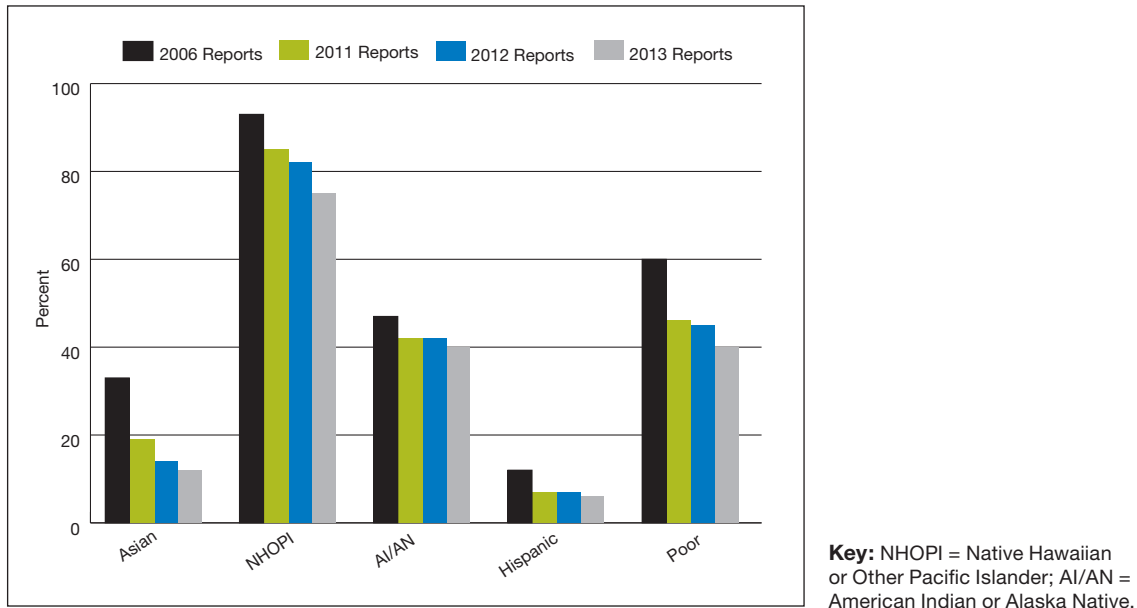
## Where Are Health Care Disparities Decreasing and Where Are They Increasing?

Analyzing disparities requires data that can provide reliable estimates stratified by race, ethnicity, and socioeconomic status. Figure H.11 shows the percentage of quality measures in the 2006, 2011, 2012, and 2013 reports for which an estimate that met our reliability criteria could not be generated for single-race Asians, Native Hawaiians and Other Pacific Islanders (NHOPIs), AI/ANs, Hispanics, and poor people. Except for one measure related to language assistance,<sup>ii</sup> reliable estimates for all measures could be generated for Blacks, so they are not shown.

<sup>ii</sup> The measure is the percentage of adults with limited English proficiency and a usual source of care who had language assistance.

## HIGHLIGHTS

**Figure H.11. Percentage of quality measures in the 2006, 2011, 2012, and 2013 reports for which a reliable estimate could not be generated**



- ◆ Data on disparities continue to improve but still miss some populations:
  - Since 2006, the percentage of quality measures that could not be used to assess disparities has decreased for all groups (Figure H.11).
  - Reliable estimates for Blacks, Asians, and Hispanics are available for more than 85% of measures.
  - For NHOPIs, reliable estimates were not available for three-quarters of the measures, making any assessment of disparities incomplete. Reliable estimates for AI/AN and poor populations also could not be generated for a large percentage of measures.

Despite data limitations, analyses of patterns of disparities can help identify where improvement is and is not occurring. Table H.2 summarizes disparities in health care quality for each major group tracked in the reports. For each group, it shows the measures of health care quality where disparities favor the reference group and are improving at the fastest rate (disparity present at start of tracking and has become smaller in magnitude over time or has been eliminated entirely) and the measures where disparities favor the reference group and are worsening at the fastest rate (disparity present at start of tracking and has become larger in magnitude over time or new disparity that has developed).

**Table H.2. Disparities in health care quality that are changing most quickly over time**

Groups	Disparities Improving	Disparities Worsening
Black compared with White	HIV infection deaths per 100,000 population	Maternal deaths per 100,000 live births
	New AIDS cases per 100,000 population age 13 and over	Postoperative pulmonary embolism or deep vein thrombosis per 1,000 surgical admissions, age 18 and over
	Admissions for uncontrolled diabetes without complications per 100,000 population, age 18 and over	People with current asthma who report taking preventive medicine daily or almost daily (either oral or inhaler)
Asian compared with White	Patients under age 70 with treated chronic kidney failure who received a transplant within 3 years of date of renal failure	Adults ages 18-64 at high risk who ever received pneumococcal vaccination
	Hospital patients age 65 and over with pneumonia who received a pneumococcal screening or vaccination	Children 0-40 lb for whom a health provider gave advice within the past 2 years about using a child safety seat while riding in a car
	Adult hospital patients who sometimes or never had good communication with nurses in the hospital	Live-born infants with low birth weight (less than 2,500 grams)
AI/AN compared with White	Adjusted incident rates of end stage renal disease due to diabetes per million population	Adults age 50+ who ever received a colonoscopy, sigmoidoscopy, or proctoscopy
	Patients under age 70 with treated chronic kidney failure who received a transplant within 3 years of date of renal failure	
	Surgical resection of colon cancer that includes at least 12 lymph nodes	
Hispanic compared with Non-Hispanic White	New AIDS cases per 100,000 population age 13 and over	Home health care patients who have less shortness of breath
	HIV infection deaths per 100,000 population	Adults age 50 and over who ever received a colonoscopy, sigmoidoscopy, or proctoscopy
	Admissions for uncontrolled diabetes without complications per 100,000 population, age 18 and over	People with a usual source of care who usually asks about prescription medications and treatments from other doctors
Poor compared with High Income	Adolescent females ages 13-15 years who received 3 or more doses of human papillomavirus (HPV) vaccine	Adults age 50+ who ever received a colonoscopy, sigmoidoscopy, or proctoscopy
	Rating of health care 0-6 on a scale from 0 to 10 (best grade) for children who had a doctor's office or clinic visit in the last year	Admissions with diabetes with short-term complications per 100,000 population, age 18 and over
	Children who needed care right away for an illness, injury, or condition in the last year who sometimes or never got care as soon as wanted	

**Note:** Green = HIV disease measures; dark blue = diabetes measures; light blue = patient perceptions of care; light gray = cancer screening measures; dark gray = respiratory disease measures; light green = maternal and child health measures. For the vast majority of measures, trend data are available from 2000-2002 to 2010-2011.

## HIGHLIGHTS

◆ Disparities change unevenly across measures:

- Of the disparities that favor the comparison group and are improving, four relate to HIV infection (green) and three relate to patient perceptions of care (light blue) (Table H.2).
- Of the disparities that favor the comparison group and are getting worse, three relate to cancer screening (light gray) and three relate to maternal and child health (light green).
- Measures related to diabetes (dark blue) and respiratory disease (dark gray) showed mixed patterns, with some disparities improving and others worsening.

## Conclusion

The NHQR and NHDR track 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. Improving quality and reducing disparities require measurement and reporting, as provided in the NHQR and NHDR. These statistics, however, are only useful to the extent that they inform policies and initiatives and help us track progress toward the ultimate goal of Department of Health and Human Services initiatives, which is to improve the lives of patients and families.

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

With the publication of this 11th NHQR and NHDR, AHRQ continues 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. Only possible because of the national investment in high-quality health care data and metrics, these documents identify areas where quality improvement and disparities reduction strategies have made a difference in improving patients' lives, as well as many areas where much more should be done. Over the next decade, we look forward to tracking the success of the Affordable Care Act as it expands health insurance coverage, improves consumer protections, gradually increases access to health care, and ultimately raises quality of health care.

To remain competitive, our nation needs to improve access to care, reduce disparities, and accelerate the pace of quality improvement, especially in the areas of preventive care and chronic disease management. Data on often overlooked small population subgroups need to be gathered, and the burden of measurement needs to be minimized. Information needs to be disseminated more quickly to partners who have the skills and commitment to change health care. Building on 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.

## 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.”<sup>i</sup> 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 U.S. population and is designed to summarize data across a wide range of patient needs—staying healthy, getting better, living with chronic illness and disability, and coping with the end of life.

AHRQ was further tasked with producing an annual report that tracks “prevailing disparities in health care delivery as it relates to racial factors and socioeconomic factors in priority populations.”<sup>ii</sup> Titled the *National Healthcare Disparities Report* (NHDR), this report examines disparities in health care received by designated priority populations. These 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. Two of these 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 a third 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. Since 2003, AHRQ has designed and produced the NHQR and NHDR with support from an HHS Interagency Work Group and AHRQ’s National Advisory Council. This is the 11th in the series of reports.

### Evolution of the Reports

Over the past decade AHRQ has enhanced and refined the NHQR and NHDR measure set and methodology:

- ◆ 2003: Reports were introduced.
- ◆ 2004: Reports were expanded to include tracking of the Nation’s progress in quality improvement and disparities reduction.
- ◆ 2005: Reports introduced a set of core measures and several new composite measures.
- ◆ 2006: Methods for quantifying and tracking changes in health care were refined.
- ◆ 2007: Chapter on health care efficiency was introduced.
- ◆ 2008: Chapter on patient safety was expanded. AHRQ commissioned IOM to review past reports and offer recommendations for enhancing future reports and associated products.
- ◆ 2009: Theme focused on effects of lack of health insurance on quality and disparities. New sections were included on lifestyle modification, healthcare-associated infections, patient safety culture, and care coordination.

---

<sup>i</sup> 42 U.S.C. 299b-2(b)(2).

<sup>ii</sup> 42 U.S.C. 299a-1(a)(6).

- ◆ 2010: As recommended by IOM, a single Highlights chapter was produced integrating findings from both reports and concentrating on national priorities that IOM identified. Theme focused on care across the urban-rural continuum. New chapters on care coordination and health system infrastructure were added. Measure-specific benchmarks were introduced that reflect the high level achieved in the best performing States.
- ◆ 2011: As mandated by the Patient Protection and Affordable Care Act of 2010,<sup>iii</sup> HHS produced a report to Congress on a *National Strategy for Quality Improvement in Health Care* (National Quality Strategy; HHS, 2011).<sup>iv</sup> This report set priorities for the Nation to advance three quality improvement aims: better care, healthy people, and affordable care. The Highlights of the NQHR and NHDR began concentrating on these priorities as well as those of the *Action Plan to Reduce Racial and Ethnic Health Disparities*. Theme focused on care received by older Americans. Lesbian, gay, bisexual, and transgender people were added as a new priority population experiencing health care disparities.
- ◆ 2012: Reports began incorporating national tracking measures identified in the National Quality Strategy *2013 Annual Progress Report to Congress*. Theme focused on health care disparities for granular ethnicity categories as defined by the 2011 HHS data collection standards for race and ethnicity.

The 2013 NHQR and NHDR continue to align measures with 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 theme of the 2013 reports highlights one of AHRQ's priority populations, individuals with disabilities, including children with special health care needs.

Expanded analyses of quality of care and access to care are presented for people with disabilities, who currently represent 20% of the adult population. Disability prevalence is expected to increase due to aging of the "Baby Boom" generation and increased life expectancy for those born with disability or who acquire disability (Froehlich, et al., 2013). This report also adds adults with multiple chronic conditions as a new priority population experiencing health care disparities.

---

<sup>iii</sup> Public Law 111-148.

<sup>iv</sup> The National Quality Strategy identified six priority areas as a means to achieve the quality improvement aims. These include: (1) making sure care is safer by reducing harm in the delivery of care; (2) ensuring that each person and family is engaged as partners in their care; (3) promoting effective communication and coordination of care; (4) promoting the most effective prevention and treatment practices for the leading causes of mortality, starting with cardiovascular disease; (5) working with communities to promote wide use of best practices to enable healthy living; and (6) making quality care more affordable for individuals, families, employers, and governments, by developing and spreading new health care delivery models.



## 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.

New this year, measures of the effectiveness of health care have been divided into two chapters. A chapter on effectiveness of care for common clinical conditions is followed by a chapter on effectiveness of care across the lifespan.

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 the following:

**Highlights**, which immediately precede the current chapter, combines 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 measure list, along with an overview of the methods used to generate estimates, measure trends, and examine disparities.

**Chapter 2: Effectiveness of Care for Common Clinical Conditions** is organized around several clinical areas: cancer, cardiovascular disease, chronic kidney disease, diabetes, HIV and AIDS, mental health and substance abuse, musculoskeletal diseases, and respiratory diseases. New to the 2013 report are data from the Ryan White HIV/AIDS program that examine primary care and support services for people living with and affected by HIV disease.

**Chapter 3: Effectiveness of Care Across the Lifespan** examines four types of health care services that typically cut across clinical conditions: maternal and child health, lifestyle modification, functional status preservation and rehabilitation, and supportive and palliative care. New to the 2013 reports are measures of adolescent receipt of counseling about birth control and of patient perceptions of home health care.

**Chapter 4: Patient Safety** tracks safety within a variety of health care settings. In prior years, this chapter focused on hospitals, with an examination of healthcare-associated infections, postoperative and other hospital complications, and preventable hospital deaths. In the 2013 reports, this chapter has been expanded to include measures of patient safety in nursing homes, home health settings, and ambulatory care settings. Many new measures have been added from an assortment of new data sources.

**Chapter 5: 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 6: Patient Centeredness** examines individual experiences with care in an office or clinic setting, as well as during a hospital stay. The 2013 reports include a new discussion of provider-patient communication for adults receiving home health care. Measures reported in this chapter focus on perceptions of communication with providers and satisfaction with the provider-patient relationship.

**Chapter 7: 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. The 2013 reports contain a new section on information gathering by home health care providers.

**Chapter 8: Efficiency** discusses 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 9: Health System Infrastructure** explores the capacity of the U.S. health care system to support high-quality care. Infrastructure measures, which are primarily structural measures of quality, include adoption of computerized data systems and the supply of selected health care professionals. The 2013 reports contain a new discussion of nurse practitioners and physician assistants and a new discussion on e-prescribing.

**Chapter 10: Access** presents measures that cut across several priority areas and includes measures that focus on barriers to care, such as lack of insurance, financial barriers to care experienced by the population with health insurance, and usual source of care.

**Chapter 11: Priority Populations** continues to be unique to the NHDR. This chapter summarizes quality and disparities in care for populations at elevated risk for receiving poor health care, including racial and ethnic minorities, low-income populations, older adults, residents of rural areas, and individuals with disabilities or special health care needs. New to the 2013 report is a display of the prevalence of multiple chronic conditions among Medicare beneficiaries and additional data from California on lesbian, gay, bisexual, and transgender populations.

**Appendixes** are available online for both the NHQR and NHDR at <http://nhqrnet.ahrq.gov/inhqrdr/reports/nhqr>. These consist of:

- ◆ **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.

Alignment with National Quality Strategy priorities and tracking measures continues. Table 1.1 provides a crosswalk between the National Quality Strategy priorities and the report chapters. Chapter 11, Priority Populations, addresses all six priorities.

**Table 1.1. Alignment of NHQR and NHDR chapters with National Quality Strategy priorities**

Priority	NHQR and NHDR Chapters Addressing Priority
Making sure care is safer by reducing harm in the delivery of care	Chapter 4: Patient Safety
Ensuring that each person and family is engaged as partners in their care	Chapter 6: Patient Centeredness
Promoting effective communication and coordination of care	Chapter 7: 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 Chapter 3: Effectiveness, Lifestyle Modification
Working with communities to promote wide use of best practices to enable healthy living	Chapter 2: Effectiveness, Mental Health and Substance Abuse Chapter 3: Effectiveness, Lifestyle Modification
Making quality care more affordable for individuals, families, employers, and governments, by developing and spreading new health care delivery models	Chapter 8: Efficiency Chapter 10: Access

## Measure Set for the 2013 NHQR and NHDR

The 2013 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 do not meet methodological or other criteria for inclusion 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. Core measures are presented each year in which new data are available to report. 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 2013 reports. Colorectal cancer measures are also tracked annually, but results are presented in even calendar years, such as in the 2012 Quality and Disparities reports.

### New Measures

With the assistance of the Interagency Work Group, each year AHRQ reviews the NHQR and NHDR measure 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. New 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 2013 reports.

**Table 1.2. New measures in NHQR and NHDR, 2013**

Chapter	Measure	Data Source
Effectiveness: Cardiovascular Disease	Costs of disparities in hospitalizations for congestive heart failure	Agency for Healthcare Research and Quality
Effectiveness: Maternal and Child Health	Teens ages 15-19 years who received counseling or information about birth control from a health care provider during the last 12 months	National Center for Health Statistics
Patient Safety	Home health patients with improvement in their surgical site wounds	Outcome and Assessment Information Set
Patient Centeredness	Provider-patient communication among adults receiving home health care	Home Health Care CAHPS
Care Coordination	Information gathering by home health care providers among adults receiving home health care	Home Health Care CAHPS

## 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 dampen quantification of rates 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%. Note that this process differs from the removal of measures tracked by the Centers for Medicare & Medicaid Services (CMS). CMS uses different criteria to remove measures and ceases data collection of removed measures. The following measures were retired in 2013 because performance had reached the 95% threshold:

- ◆ Hospital patients with heart failure and left ventricular systolic dysfunction prescribed angiotensin-converting enzyme inhibitor or angiotensin receptor blocker at discharge.
- ◆ Hospital patients with pneumonia who had blood cultures collected before antibiotics were administered.
- ◆ Hospital patients with pneumonia who received the initial antibiotic dose within 6 hours of hospital arrival.
- ◆ Hospital patients age 65 and over with pneumonia who received a pneumococcal status assessment with vaccination if needed.

## Priority Populations

In the NHQR and NHDR, measures are tracked for the overall population and for specific priority populations. Comparisons are made across groups defined by age, sex, race, ethnicity, income, education, health insurance, activity limitations, and geographic location. In general, the largest subgroup is used as the reference group. When supported by data, charts in the reports are standardized to show contrasts by:

- ◆ Age: 0-17, 18-44, 45-64, and 65 and over.
- ◆ Sex: Male and female.
- ◆ Race: White, Black, Asian, Native Hawaiian or Other Pacific Islander, American Indian or Alaska Native, and more than one race.<sup>v</sup>
- ◆ Ethnicity: Hispanic and non-Hispanic.<sup>vi</sup>
- ◆ Income: Poor, low income, middle income, and high income.<sup>vii</sup>
- ◆ Education: People with less than a high school education,<sup>viii</sup> high school graduates, and people with any college.
- ◆ Health insurance, ages 0-65: Any private insurance, public insurance<sup>ix</sup> only, and no insurance.
- ◆ Health insurance, age 65 and over: Medicare and any private insurance, Medicare and other public insurance, and Medicare only.
- ◆ Disabilities: Basic activity limitations 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); complex activity limitations include limitations experienced in work and in community, social, and civic life. 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. The paired measure 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 other Federal program definitions of disability.

<sup>v</sup> 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.

<sup>vi</sup> 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.)

<sup>vii</sup> Unless otherwise indicated, throughout this report, poor is defined as having family income less than 100% of the Federal poverty level (FPL); low income refers to income of 100% to 199% of the FPL; middle income refers to income of 200% to 399% of the FPL; and high income refers to income of 400% of the FPL and above. These are based on U.S. census poverty thresholds for each data year, which are used for statistical purposes.

<sup>viii</sup> Less than a high school education refers to people who did not complete high school.

<sup>ix</sup> Public insurance includes Medicaid, Children's Health Insurance Program (CHIP), State-sponsored or other government-sponsored health plans, Medicare, and military plans.

- ◆ Children with special health care needs (CSHCN): Children ages 0-17 with activity limitations or with the need or use of more health care or other services than is usual for most children of the same age. Question sequences<sup>x</sup> are asked about the following five health consequences: the need or use of medicines prescribed by a doctor; the need or use of more medical care, mental health care, or education services than is usual for most children; limitations in or inability to do things most children can do; the need or use of special therapy such as physical, occupational, or speech therapy; and the need or use of treatment or counseling for emotional, developmental, or behavioral problems. Children with responses to at least one of the five health consequences along with all of the followup questions were identified as having a special health care need.
- ◆ Geographic location: Large central metropolitan, large fringe metropolitan, medium metropolitan, small metropolitan, micropolitan, and noncore areas based on the National Center for Health Statistics Urban-Rural Classification Scheme (Ingram & Franco, 2006).

Other important groups have been more difficult to identify in health care data. Beginning in the 2011 reports, information on lesbian, gay, bisexual, and transgender people has been included, but few databases support these analyses. Beginning in the 2012 reports, contrasts by granular racial subgroups have been included. Information on populations identified as Mexican, Puerto Rican, Cuban, other Hispanic/Latino/Spanish origin, Asian Indian, Chinese, Filipino, Japanese, Korean, Vietnamese, other Asian, Native Hawaiian, Guamanian or Chamorro, Samoan, and other Pacific Islander have been sought but no health care database that identifies all of these subgroups has been found. Beginning in these 2013 reports, analyses by number of multiple chronic conditions have been included, but databases differ in the chronic conditions that can be identified. Improving measurement and data for these groups is critical to understand the reasons they cannot access high-quality health care and to develop effective interventions to help them overcome these barriers.

While the reports do not address social determinants directly, analyses of disparities in health care related to family income and education are at the core of the Disparities Report and demonstrate the importance of socioeconomic status on quality of and access to health care. The CDC Health Disparities and Inequalities Report (CDC, 2013) includes further discussion on social determinants of health.

## Analyses

### 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%.

<sup>x</sup> A CSHCN Screener instrument was developed through a national collaborative process as part of the Child and Adolescent Health Measurement Initiative coordinated by the Foundation for Accountability. For more information, see: Bethel CD, Read D, Stein REK, et al. Identifying children with special health care needs: development and evaluation of a short screening instrument. *Ambul Pediatr* 2002 Feb;2(1):38-48.

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

## Trend Analyses

Prior to the 2011 report a log-linear regression analysis was conducted to estimate average annual rate of change.<sup>xi</sup> 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 greater than 1% in the desirable direction. Progress on a measure was deemed to be getting worse when the annual rate of change was greater than 1% 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 is used to ascertain whether such a change could have occurred by chance 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 statistically meaningful.

Data used for trending are aggregate or average estimates for a measure, with data collected for a minimum of 4 data points (years) covering periods from 2000 to 2012. 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.

Beginning with the 2011 report, 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.

<sup>xi</sup> Regression models were specified as follows:  $\ln(M) = \beta_0 + \beta_1(Y)$ , where  $\ln(M)$  = natural logarithm of the measure value (M);  $\beta_0$  = intercept or constant;  $\beta_1(Y)$  = coefficient corresponding to year (Y). The average annual rate of change was calculated as  $100 \times (\exp(\beta_1) - 1)$ .

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

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

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 greater than 1% in the desirable direction, and  $p < 0.10$ .<sup>xii</sup>
- ◆ Progress on a measure is deemed to be getting worse when the average annual rate of change is greater than 1% in the undesirable direction, and  $p < 0.10$ .
- ◆ Progress is determined to have remained the same if the average annual rate of change is less than or equal to 1% in either the desirable or undesirable direction or  $p \geq 0.10$ .

## Trends in Disparities in Population Subgroups

Across subpopulation groups, absolute annual changes were 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,  $\beta_0$  is the intercept or constant, and  $\beta_1$  is the coefficient corresponding to year  $Y$

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

New this year, the difference in annual change between a group and its reference group relative to the reference group baseline estimate was calculated. Determinations of whether subgroup differences have grown, narrowed, or remained the same were based on estimated differences in annual change as specified below:

- ◆ Subgroup differences are deemed to be narrowing if the change in disparities is less than –1% per year and  $p < 0.10$ .
- ◆ Subgroup differences are deemed to be growing if the change in disparities is greater than 1% per year and  $p < 0.10$ .
- ◆ Subgroup differences are deemed to have remained the same if the change in disparities is –1% to 1% per year or  $p \geq 0.10$ .

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 changes for measure subgroups estimated with this method to those estimated prior to the 2011 report.

<sup>xii</sup> A probability of 0.10 was selected as the significance level because the magnitude of the standard errors varied considerably by type of data.



## Benchmarking Strategy

Measure-specific benchmarks were first incorporated into the NHQR and NHDR in 2010. 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.

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.

With few exceptions, values of benchmarks estimated in 2010 (which were based on 2008 data) have been carried over to the 2013 reports. These exceptions include measures for which the benchmark has been reached. For this small number of measures, which are identified in the relevant chapters of the reports, newer data are used to construct new benchmarks.

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. The benchmarks are based on 50 States and the District of Columbia. Benchmarks were estimated only if data were available for a minimum of 30 States. The States that contributed to the benchmark for the measure of interest are noted in alphabetical order in the footnotes.

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 benchmark based on 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

The reports again include projections of the time expected for population subgroups to achieve the designated benchmark based on past performance. Using standard linear regression of the actual values over time and extrapolating to future years, we calculated the time required for the population, or population subgroup, to perform at the level of the best 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 4 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. Advances 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 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 of all groups is estimated at 25 or more years.
- ◆ 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 measures are grouped along several dimensions that offer insight into the performance of specific elements of the health care system. Groupings include:

- ◆ Type of quality measure: Processes and outcomes of care.
- ◆ Type of care: Prevention, acute care, and chronic disease management.
- ◆ Settings of care: Hospital, nursing home, home health and hospice, and ambulatory settings.
- ◆ Geographic regions: New England, Middle Atlantic, East North Central, West North Central, South Atlantic, East South Central, West South Central, Mountain, and Pacific census divisions.

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 2000-2002 to 2010-2011.

In addition, we examine trends for subsets of the measure set for which estimates are available each year. Table 1.3 lists the quality measures for which estimates are available every year from 2005 to 2010 and constitute the panel of quality of care process measures shown in the Highlights, as well as the access measures for which estimates are available every year from 2002 to 2011 and constitute the panel of access measures shown in the Highlights.

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 hemoglobin A1c 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.

**Table 1.3. Panels of measures used in the Highlights**

Quality of care measures
<ul style="list-style-type: none"> <li>• Women with clinical Stage I-IIb breast cancer who received axillary node dissection or sentinel lymph node biopsy at the time of surgery (lumpectomy or mastectomy)</li> <li>• Women under age 70 treated for breast cancer with breast-conserving surgery who received radiation therapy to the breast within 1 year of diagnosis</li> <li>• Patients with colon cancer who received recommended treatment: resected colon specimen had at least 12 regional lymph nodes pathologically examined</li> <li>• Hospital patients with heart failure and left ventricular systolic dysfunction who were prescribed angiotensin-converting enzyme inhibitor or angiotensin receptor blocker at discharge</li> <li>• Adults age 40 and over with diagnosed diabetes who received 2 or more hemoglobin A1c measurements in the calendar year</li> <li>• Adults age 40 and over with diagnosed diabetes who received a dilated eye examination in the calendar year</li> <li>• Adults age 40 and over with diagnosed diabetes who had their feet checked for sores or irritation in the calendar year</li> <li>• Adult patients with HIV and at least two CD4 cell counts of 200 or less who received <i>Pneumocystis pneumonia</i> prophylaxis during the past year</li> <li>• Adult patients with HIV and at least two CD4 cell counts of 50 or less who received <i>Mycobacterium avium</i> complex prophylaxis during the past year</li> <li>• Children ages 19-35 months who received 4 or more doses of diphtheria-tetanus-pertussis vaccine</li> <li>• Children ages 19-35 months who received 3 or more doses of polio vaccine</li> <li>• Children ages 19-35 months who received 1 or more doses of measles-mumps-rubella vaccine</li> <li>• Children ages 19-35 months who received 3 or more doses of <i>Haemophilus influenzae</i> type B vaccine</li> <li>• Children ages 19-35 months who received 3 or more doses of hepatitis B vaccine</li> <li>• Children ages 19-35 months who received 1 or more doses of varicella vaccine</li> <li>• Children who had their height and weight measured by a health provider within the past 2 years</li> <li>• Children ages 2-17 who had a dental visit in the calendar year</li> <li>• Children ages 3-6 who ever had their vision checked by a health provider</li> <li>• Children for whom a health provider gave advice within the past 2 years about how smoking in the house can be bad for a child</li> </ul>

## Quality of care measures (cont'd.)

- Children 0-40 lb for whom a health provider gave advice within the past 2 years about using a child safety seat while riding in a car
- Children 41-80 lb for whom a health provider gave advice within the past 2 years about using a booster seat when riding in a car
- Children over 80 lb for whom a health provider gave advice within the past 2 years about using lap or shoulder belts when driving or riding in a car
- Children ages 2-17 for whom a health provider gave advice within the past 2 years about using a helmet when riding a bicycle or motorcycle
- People age 12 and over who needed treatment for illicit drug use and who received such treatment at a specialty facility in the last 12 months
- People age 12 and over who needed treatment for an alcohol problem and who received such treatment at a specialty facility in the last 12 months
- Adults ages 18-64 at high risk (e.g., COPD) who received an influenza vaccination in the last 12 months
- Adults age 65 and over who received an influenza vaccination in the last 12 months
- Adults ages 18-64 at high risk (e.g., COPD) who ever received pneumococcal vaccination
- Adults age 65 and over who ever received pneumococcal vaccination
- Hospital patients with pneumonia who had blood cultures collected before antibiotics were administered
- Hospital patients with pneumonia who received the initial antibiotic dose consistent with current recommendations
- Hospital patients age 50 and over with pneumonia discharged during October-February who received an influenza screening or vaccination
- Hospital patients age 65 and over with pneumonia who received a pneumococcal screening or vaccination
- People with current asthma who are now taking preventive medicine daily or almost daily (either oral or inhaler)
- Adult current smokers with a checkup in the past year who received advice in the last 12 months to quit smoking
- Adults with obesity who ever received advice from a health professional to exercise more
- Children ages 2-17 for whom a health provider gave advice within the past 2 years about the amount and kind of exercise, sports, or physically active hobbies they should have
- Adults with obesity who ever received advice from a health professional about eating fewer high-fat or high-cholesterol foods
- Children ages 2-17 for whom a health provider gave advice within the past 2 years about healthy eating
- Long-stay nursing home residents who spend most of their time in bed or in a chair
- Long-stay nursing home residents who have moderate to severe pain
- Low-risk long-stay nursing home residents with a catheter inserted and left in their bladder
- Home health care patients who have less shortness of breath
- Home health care patients who have less urinary incontinence
- Home health care patients who needed urgent, unplanned medical care
- Short-stay nursing home residents who had moderate to severe pain
- Short-stay nursing home residents with pressure sores
- Short-stay nursing home residents with delirium

## Access to care measures

- People under age 65 with health insurance
- People under age 65 with any private health insurance
- Adults age 65 and over with any private health insurance
- People under age 65 who were uninsured all year
- People under age 65 with any period of uninsurance during the year
- People without a usual source of care who indicate a financial or insurance reason for not having a source of care
- People with a usual primary care provider
- People unable to get or delayed in getting needed medical care, dental care, or prescription medicines due to financial or insurance reasons
- People unable to get or delayed in getting needed medical care
- People unable to get or delayed in getting needed dental care
- People unable to get or delayed in getting needed prescription medicines
- People with a usual source of care, excluding hospital emergency rooms, who has office hours nights or weekends
- People with difficulty contacting their usual source of care during regular business hours over the telephone about a health problem

**Key:** COPD = chronic obstructive pulmonary disease..

## Reporting Conventions

In presenting 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  $p < 5\%$  level for subgroup differences and at the  $p < 10\%$  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 chart notes.
- ◆ 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.
- ◆ Some measures may omit certain racial or ethnic groups because data for these groups were unavailable or did not meet criteria for statistical reliability, quality, or confidentiality.

## References

- Centers for Disease Control and Prevention. CDC Health Disparities and Inequalities Report – United States, 2013. MMWR 2013;62(Suppl 3). Available at: [www.cdc.gov/mmwr/pdf/other/su6203.pdf](http://www.cdc.gov/mmwr/pdf/other/su6203.pdf). Accessed January 16, 2014.
- Froehlich-Grobe K, Lee J, Washburn RA. Disparities in obesity and related conditions among Americans with disabilities. *Am J Prev Med* 2013;45(1): 83-90.
- Ingram D, Franco S. 2006 Rural-Urban Classification Scheme for Counties. Atlanta, GA: Centers for Disease Control and Prevention, National Center for Health Statistics; 2006. Available at: [http://www.cdc.gov/nchs/data\\_access/urban\\_rural.htm](http://www.cdc.gov/nchs/data_access/urban_rural.htm). Accessed November 3, 2013.
- Institute of Medicine. Crossing the quality chasm: a new health system for the 21st century. Washington, DC: National Academy Press; 2001.
- Institute of Medicine, Committee on Future Directions for the National Healthcare Quality and Disparities Reports. Future directions for the National Healthcare Quality and Disparities Reports. Washington, DC: National Academies Press; 2010.
- Institute of Medicine, Committee on Understanding and Eliminating Racial and Ethnic Disparities in Health Care. Unequal treatment: confronting racial and ethnic disparities in health care. Washington, DC: National Academy Press; 2003.
- Kohn L, Corrigan J, Donaldson M, eds. To err is human: building a safer health system. Washington, DC: Institute of Medicine, Committee on Quality of Health Care in America; 2000.
- LaPlante MP. The demographics of disability. *Milbank Q* 1991;69 (Suppl 1-2):55-77.
- Report to Congress: national strategy for quality improvement in health care. Washington, DC: U.S. Department of Health and Human Services; March 2011.
- The Surgeon General's call to action to improve the health and wellness of people with disabilities. Washington, DC: U.S. Department of Health and Human Services, Office of the Surgeon General; 2005.

## Chapter 2. Effectiveness of Care for Common Clinical Conditions

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 eight common clinical areas: cancer, cardiovascular disease, chronic kidney disease, diabetes, HIV disease, mental health and substance abuse, musculoskeletal diseases, and respiratory diseases. One section in this chapter relates most closely to national priorities identified in the *National Strategy for Quality Improvement in Health Care*.<sup>i</sup> The Cardiovascular Disease section addresses the priority “promoting the most effective prevention and treatment of the leading causes of mortality, starting with cardiovascular disease.”

In this chapter, process measures are organized into several categories related to the patient’s need for preventive care, treatment of acute illness, and chronic disease management. These are derived from the original Institute of Medicine (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 those problems, 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.

---

<sup>i</sup> Available at <http://www.ahrq.gov/workingforquality/reports.htm>.

## Cancer

### Importance

#### Mortality

Number of deaths (2010)..... 574,738 (USCS, 2014)

Cause of death rank (2011 prelim.) ..... 2nd (Hoyert & Xu, 2012)

#### Prevalence

Americans diagnosed and living with cancer (2009) ..... 13,027,914 (Howlander, et al., 2012)

#### Incidence

New cases of cancer (2010) ..... 1,456,496 (USCS, 2014)

New cases of breast cancer (2010) ..... 206,966 (USCS, 2014)

New cases of colorectal cancer (2010) ..... 131,607 (USCS, 2014)

#### Cost

Total cost<sup>ii</sup> (2009)..... \$216.6 billion (NHLBI, 2012)

Direct costs<sup>iii</sup> (2009) ..... \$86.6 billion (NHLBI, 2012)

Indirect costs (2009) ..... \$130.0 billion (NHLBI, 2012)

Cost-effectiveness<sup>iv</sup> 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:

- ◆ 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.

<sup>ii</sup> Throughout this report, total cost equals cost of medical care (direct cost) and economic costs of morbidity and mortality (indirect cost).

<sup>iii</sup> Direct costs are defined as "personal health care expenditures for hospital and nursing home care, drugs, home care, and physician and other professional services."

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

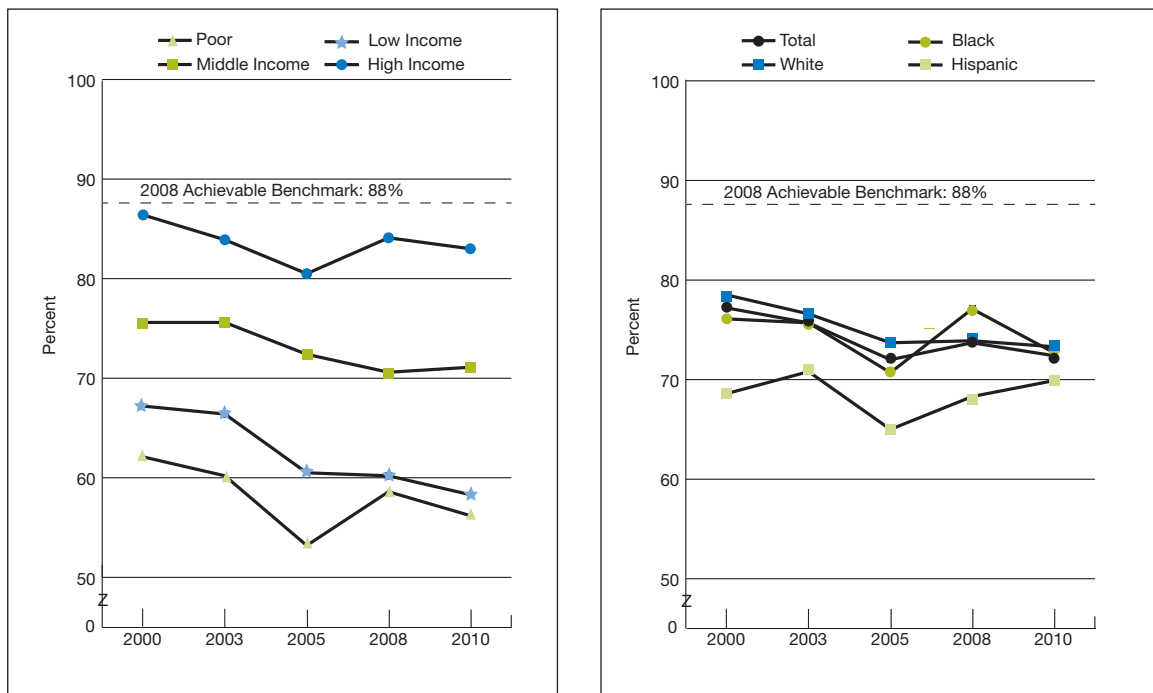


## Findings

### Prevention: 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 2013 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 income and ethnicity, 2000, 2003, 2005, 2008, and 2010**



**Source:** Centers for Disease Control and Prevention, National Center for Health Statistics, National Health Interview Survey, 2000, 2003, 2005, 2008, and 2010.

**Denominator:** Civilian noninstitutionalized women ages 50-74.

**Note:** White and Black are non-Hispanic. Hispanic includes all races. Rates are age adjusted to the 2000 U.S. standard population.

- ◆ Overall, in 2010, 72.4% of women ages 50-74 had received a mammogram in the past 2 years (Figure 2.1).
- ◆ From 2000 to 2010, the percentage of women who received a mammogram declined for women from poor and low-income households and for non-Hispanic Whites.
- ◆ In 2000, 2003, and 2005, Hispanic women were less likely to receive a mammogram compared with non-Hispanic White women. These differences were not statistically significant in other data years.
- ◆ From 2000 to 2010, women from poor, low-income, and middle-income households were less likely to receive a mammogram compared with women from high-income households.

## EFFECTIVENESS OF CARE FOR COMMON CLINICAL CONDITIONS

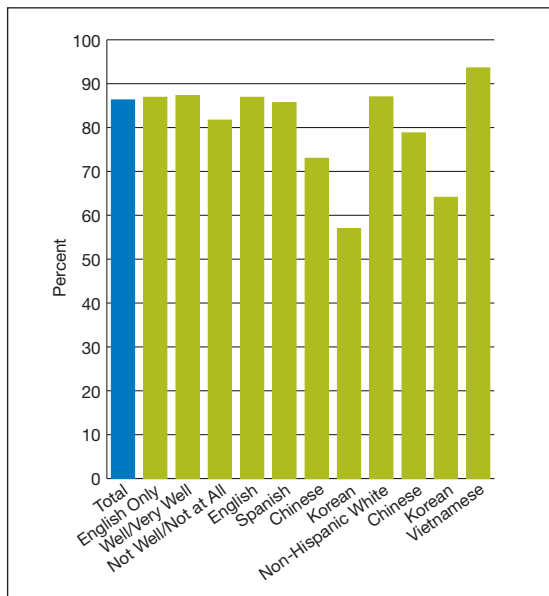
- ◆ The 2008 top 5 State achievable benchmark was 88%.<sup>v</sup> There is no evidence of progress toward the benchmark by any income or racial group.

Also, in the NHQR:

- ◆ In all years, among women ages 50-64, uninsured women were less likely to receive a mammogram compared with those with private insurance. Except in 2008, women with public insurance were less likely to receive a mammogram in all years compared with those with private insurance.
- ◆ In 2008 and 2010, women with basic or complex activity limitations were less likely to receive a mammogram compared with those with neither basic nor complex activity limitations.

National data on cancer care for some underserved populations are not available from the national data sources in the NHDR. These populations include people with limited English proficiency; individuals who speak a language other than English at home; lesbian, gay, bisexual, and transgender individuals; and Asian and Hispanic subpopulations. To address some of these data gaps, additional data from the California Health Interview Survey (CHIS) are shown below. The sampling methods used in CHIS are an example of how important disparities can be examined when data are collected this way.

**Figure 2.2. Women ages 50-74 who reported they had a mammogram within the past 2 years, by English proficiency, preferred language, and ethnicity, California, 2009**



**Source:** University of California, Los Angeles, Center for Health Policy Research, California Health Interview Survey, 2009.

**Denominator:** Civilian noninstitutionalized women ages 50-74 in California.

- ◆ In 2009, 86.3% of women ages 50-74 living in California had received a mammogram in the past 2 years (Figure 2.2).
- ◆ In 2009, there were no statistically significant differences by English proficiency in the percentage of women who had received a mammogram.

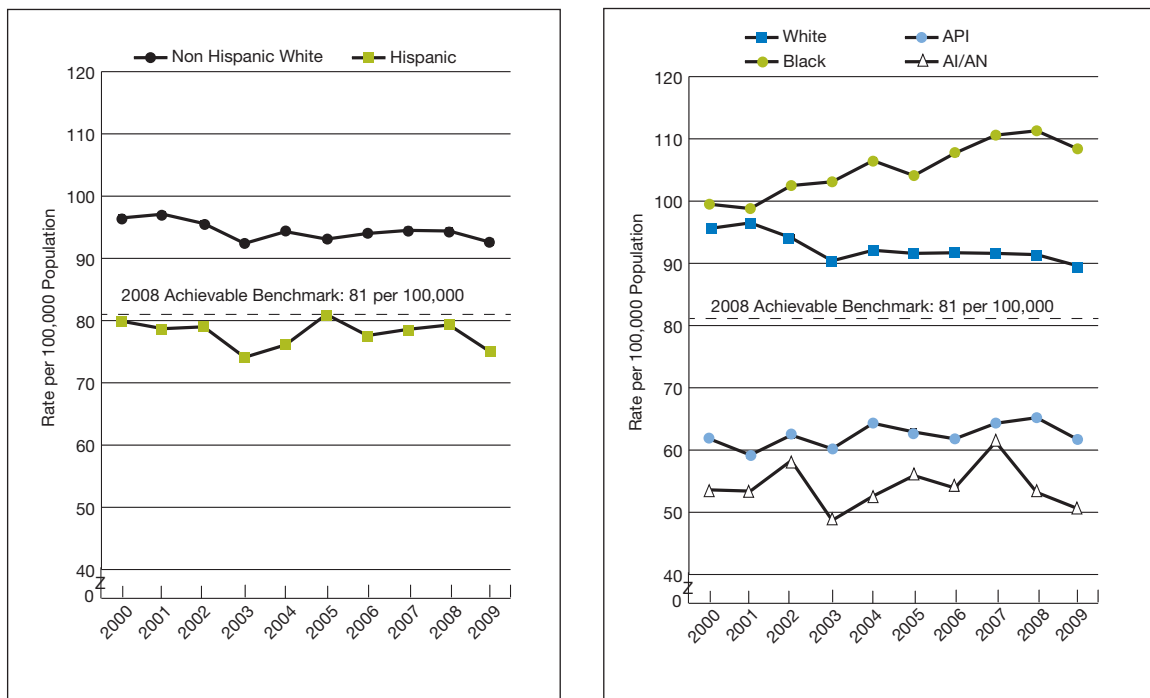
<sup>v</sup> The top 5 States that contributed to the achievable benchmark are Connecticut, Delaware, Massachusetts, New Hampshire, and Rhode Island.

- ◆ In 2009, women who preferred to speak Korean (57%) were less likely to receive a mammogram than those who preferred to speak English (86.9%).
- ◆ In 2009, Korean women (64.1%) were less likely to receive a mammogram compared with non-Hispanic Whites (87%). Vietnamese women (93.6%) were more likely to receive a mammogram compared with non-Hispanic Whites.

### 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.

**Figure 2.3. Age-adjusted rate of advanced stage breast cancer per 100,000 women age 40 and over, by ethnicity and race, 2000-2009**



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

**Source:** Centers for Disease Control and Prevention and National Cancer Institute, National Program of Cancer Registries (NPCR), *United States Cancer Statistics*. Includes NPCR and National Cancer Institute's Surveillance, Epidemiology, and End Results registries meeting *United States Cancer Statistics* publication criteria for every year. Covers 90.1% of the total U.S. population. States excluded are: Arkansas, District of Columbia, Mississippi, 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.

- ◆ In all years from 2000 to 2009, the rate of advanced stage breast cancer in Hispanic women was lower than in non-Hispanic White women (Figure 2.3).
- ◆ In all years, advanced stage breast cancer rates were lower among Asian or Pacific Islander (API) and American Indian or Alaska Native (AI/AN) women compared with White women.<sup>vi</sup>
- ◆ From 2002 to 2009, the rates of advanced stage breast cancer were higher for Black women compared with White women.
- ◆ The 2008 top 5 State achievable benchmark was 81 per 100,000 women.<sup>vii</sup> AI/AN, API, and Hispanic women have achieved the benchmark, while Black women are moving away from the benchmark.

Also, in the NHQR:

- ◆ In all years, women ages 50-64 and 65 and over had higher rates of advanced stage breast cancer than women ages 40-49.

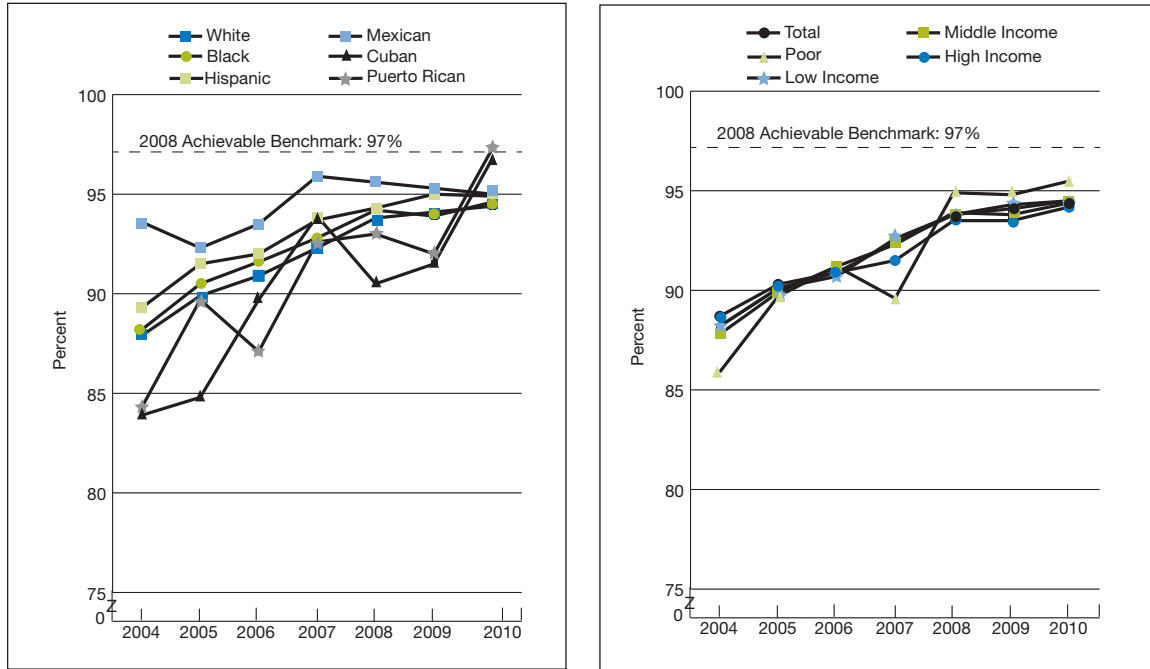
### Treatment: Recommended Care for Breast Cancer

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.

<sup>vi</sup> According to Wingo, et al. (2008), breast cancer incidence rates among AI/AN women varied nearly threefold across Indian Health Service regions. The highest rates were in Alaska (134.8/100,000), the northern Plains (115.9/100,000), and the southern Plains (115.7/100,000). The Southwest had the lowest rate (50.8/100,000). In Alaska, the AI/AN and non-Hispanic White rates were similar. Overall, AI/AN women had lower rates of breast cancer than non-Hispanic White women but were more likely to be diagnosed with late stage disease.

<sup>vii</sup> The top 5 States that contributed to the achievable benchmark are Maine, Nevada, North Dakota, Vermont, and West Virginia.

**Figure 2.4. 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/ethnicity and income, 2004-2010**



**Source:** Commission on Cancer, American College of Surgeons and American Cancer Society, National Cancer Data Base, 2004-2010.

**Denominator:** Women with Stage I-IIb breast cancer undergoing lumpectomy or mastectomy.

**Note:** White and Black are non-Hispanic. Hispanic includes all races.

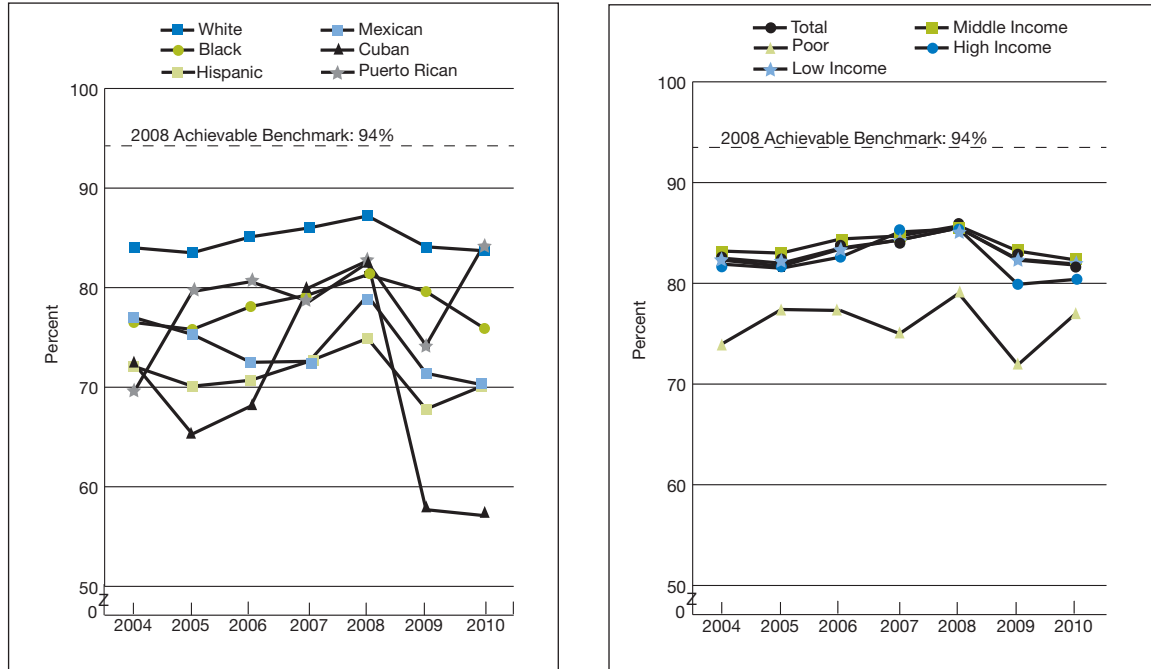
- ◆ Overall, in 2010, 94.5% of women with clinical Stage I-IIb breast cancer had received axillary node dissection or sentinel lymph node biopsy at the time of lumpectomy or mastectomy (Figure 2.4).
- ◆ From 2004 to 2010, the percentage of women who received axillary node dissection or sentinel lymph node biopsy improved for Cuban, Hispanic, Black, White, and Puerto Rican women and women from all income groups.
- ◆ In all years, there were no statistically significant differences by race/ethnicity or income in the percentage of women with clinical Stage I-IIb breast cancer who received axillary node dissection or sentinel lymph node biopsy.
- ◆ The 2008 top 5 State achievable benchmark was 97%.<sup>viii</sup> Puerto Ricans have achieved the benchmark. At the current rate of increase, most racial/ethnic and income groups could achieve this benchmark in 4 years.

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.
- ◆ In all years, among women under age 65, those with public health insurance were less likely than those with private insurance to receive axillary node dissection or sentinel lymph node biopsy.

<sup>viii</sup> The top 5 States that contributed to the achievable benchmark are Alaska, Arkansas, Mississippi, Montana, and Oklahoma.

**Figure 2.5. Women under age 70 treated for breast cancer with breast-conserving surgery who received radiation therapy within 1 year of diagnosis, by race/ethnicity and income, 2004-2010**



**Source:** Commission on Cancer, American College of Surgeons and American Cancer Society, National Cancer Data Base, 2004-2010.

**Denominator:** Women under age 70 undergoing breast-conserving surgery.

**Note:** White and Black are non-Hispanic. Hispanic includes all races. Data for 2008 and 2009 may be lower due to the timing of data collected. Radiation can be administered 1 year from diagnosis, so registries may not complete radiation information at the time of case abstraction.

- ◆ Overall, in 2010, 81.9% of women under age 70 treated for breast cancer with breast-conserving surgery had received radiation therapy within 1 year of diagnosis (Figure 2.5).
- ◆ In all years, Black, Hispanic, and Mexican women were less likely to receive radiation therapy compared with White women. In 5 of 7 years, Cuban women were less likely to receive radiation therapy than non-Hispanic White women.
- ◆ In 4 of 7 years, women from poor households were less likely to receive radiation therapy compared with those from high-income households.
- ◆ The 2008 top 5 State achievable benchmark was 94%.<sup>ix</sup> There is no evidence of progress toward the benchmark by any racial/ethnic or income group.

Also, in the NHQR:

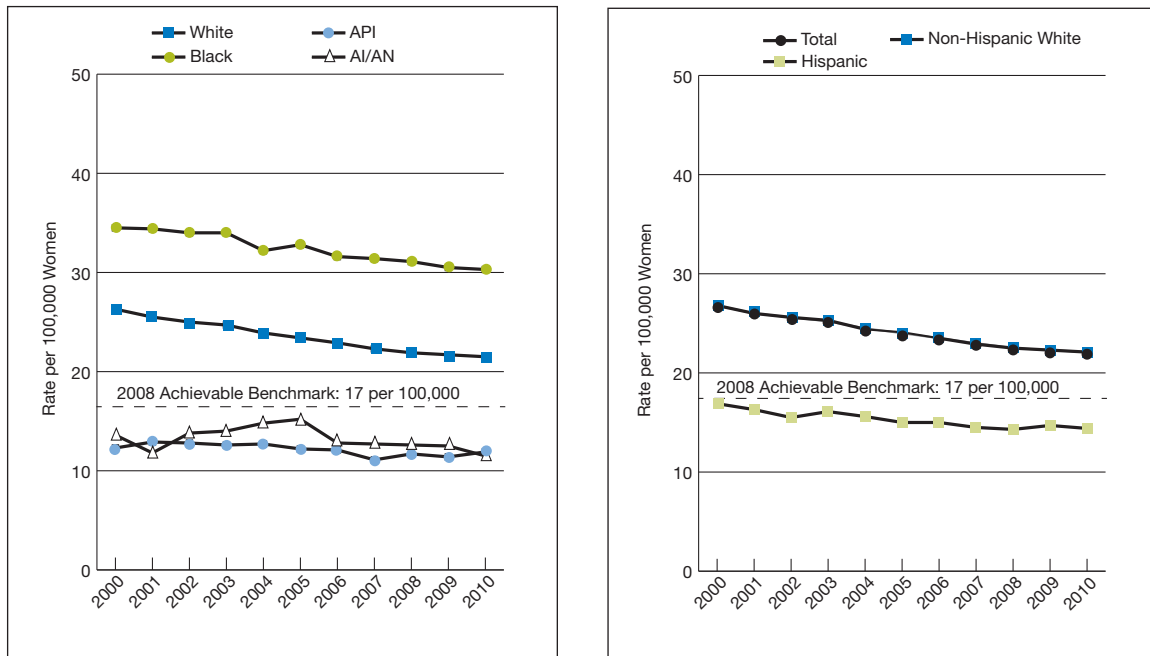
- ◆ In all years, women ages 40-49, 50-59, and 60-69 were more likely than women under age 40 to receive radiation therapy.
- ◆ In all years, among women under age 65, those with public insurance were less likely than those with private insurance to receive radiation therapy.

<sup>ix</sup> The top 5 States that contributed to the achievable benchmark are Kansas, Minnesota, Montana, North Dakota, and Wisconsin.

## 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 2.6. Age-adjusted breast cancer deaths per 100,000 women, by race and ethnicity, 2000-2010**



**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, 2000-2010.

**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.

- ◆ Overall, in 2010, the rate of breast cancer deaths was 22.1 per 100,000 population (Figure 2.6).
- ◆ From 2000 to 2010, the rates of breast cancer deaths decreased overall and for all racial/ethnic groups except AI/ANs.
- ◆ In all years, Hispanic women had lower breast cancer death rates than non-Hispanic White women.
- ◆ In all years, API and AI/AN women had lower breast cancer death rates than White women, while Black women had higher rates than White women.<sup>x</sup>

<sup>x</sup> Racial/ethnic data on death certificates are underreported, especially for Hispanics, AI/ANs, and APIs. For more information, see Arias E, Schauman WS, Eschbach K, et al. The validity of race and Hispanic origin reporting on death certificates in the United States. *Vital Health Stat* 2008;2(148).

## EFFECTIVENESS OF CARE FOR COMMON CLINICAL CONDITIONS

- ◆ The 2008 top 5 State achievable benchmark was 17 per 100,000 population.<sup>xi</sup> AI/AN, API, and Hispanic women have achieved the benchmark. White women could achieve the benchmark in 9 years, non-Hispanic White women in 10 years, and Black women in 28 years.

Also, in the NHQR:

- ◆ In all years, women ages 45-64 and 65 and over had higher rates of breast cancer death compared with women ages 18-44. There were no statistically significant differences by residence location.

This year, the NHDR features findings from a report by the Department of Native Hawaiian Health and its Center for Native and Pacific Health Disparities Research. They are located at the John A. Burns School of Medicine at the University of Hawaii. The report is titled *Assessment and Priorities for Health & Well-Being in Native Hawaiians and Other Pacific Peoples* (Look, et al., 2013).

### Cancer in Hawaii

Cancer is the second leading cause of death in the State of Hawaii. While rates vary by ethnic group, the four most common types of cancer in Hawaii are breast (female), colorectal, lung, and prostate cancers (Green, 2010). In general, Native Hawaiians tend to be diagnosed with cancer at a younger age and experience lower survival rates compared with other racial groups (Mau, 2010).

The recently reported incidence and mortality rates for both Native Hawaiian men and women were the highest of all ethnicities in Hawaii (Green, 2010). For Native Hawaiian males, the cancer incidence rate was comparable to all races, but a clear difference was found in the death rate: 231.7 per 100,000 population compared with 192.0 per 100,000 population for all races. For Native Hawaiian females, the incidence rate was 447.8 per 100,000 population compared with 382.2 per 100,000 population for all races. The cancer mortality rate was 171.0 per 100,000 population compared with 124.7 per 100,000 population for all races.

Patterns of cancer occurrence also differ between ethnic and racial groups in the Pacific region (Mishra, et al., 1996). For example, Samoan males residing in Hawaii have a relatively higher frequency of lung, prostate, thyroid, and liver cancers and a lower frequency of colon and rectal cancers compared with other Polynesians, such as Western Samoans and Native Hawaiians. Moreover, Samoan women have a higher frequency of leukemia and corpus uteri, thyroid, and pancreatic cancers than other Polynesian women (Mau, 2010). Throughout Micronesia, the Marshallese have the highest prevalence of breast, cervical, other genitourinary, and thyroid cancers compared with other Pacific Islanders, which may be due to effects of U.S. nuclear testing in the region between 1946 and 1958 (Palafox, et al., 2004).

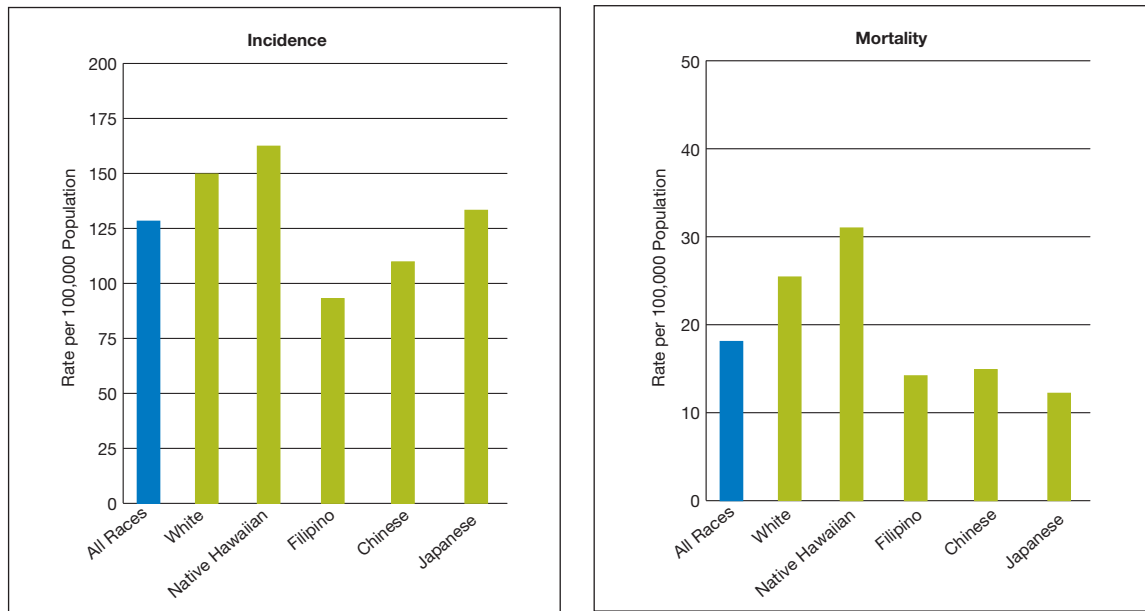
Compared with their counterparts in the continental United States, Samoan and Native Hawaiian women have the highest overall cancer death rates—higher than the rates for non-Hispanic White women and all Asian women. This is accounted for in large part by the high lung cancer and breast cancer death rates for Native Hawaiian and Samoan women (Cook, et al., 2010). Higher mortality rates among Native Hawaiian and other indigenous or minority Americans are partially attributed to barriers to accessing good cancer care and timely diagnosis and treatment (Green, 2010). These effects may be compounded by higher prevalence of poor diet and tobacco use among Native Hawaiians, the two leading causes of cancer (Green, 2010).

---

<sup>xi</sup> The top 5 States that contributed to the achievable benchmark are Alaska, Hawaii, Montana, Vermont, and Wyoming.



**Figure 2.7. Female breast cancer incidence and mortality by race/ethnicity, Hawaii, 1995-2000**



**Source:** American Cancer Society, 2004.

## Cardiovascular Disease

### Importance

#### Mortality

Number of deaths from major cardiovascular disease (2010 prelim.) ..... 777,548 (Murphy, et al., 2012)

Cause of death rank (2010 prelim.) ..... 1st (Murphy, et al., 2012)

#### Prevalence

Number of cases of heart failure (2010 est.) ..... 5.1 million (Go, et al., 2014)

Number of cases of high blood pressure among U.S. adults  
age 18 years and over (2003-2010 est.) ..... 67 million (MMWR, 2012)

#### Incidence

Number of heart attacks or cases of fatal coronary heart disease (2010 est.) ..... 915,000 (Go, et al., 2014)

#### Cost

Total cost of cardiovascular disease (2010 est.) ..... \$315.4 billion (Go, et al., 2014)

Total cost of heart disease (2010 est.) ..... \$204.4 billion (Go, et al., 2014)

Direct costs of cardiovascular disease (2010 est.) ..... \$193.4 billion (Go, et al., 2014)

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

### Measures

The NHQR and NHDR track several quality measures for preventing and treating cardiovascular disease. Three measures are highlighted here:

- ◆ Blood pressure monitoring.
- ◆ Inpatient deaths following heart attack.
- ◆ Hospitalization for congestive heart failure.

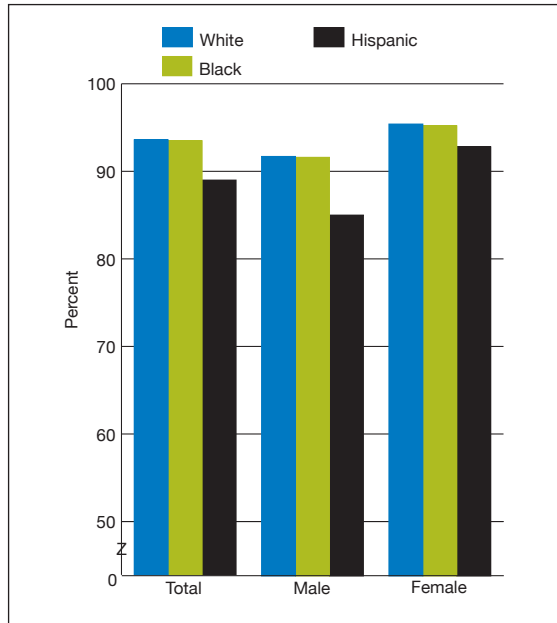
In addition, this chapter presents other measures focusing on Native Hawaiians and Other Pacific Islanders and the costs of disparities in hospitalizations for congestive heart failure. Several measures related to heart disease are also presented in other chapters of this report. Timeliness of cardiac reperfusion for heart attack patients is tracked in Chapter 5, Timeliness. Receipt of complete written discharge instructions by patients with heart failure is tracked in Chapter 7, Care Coordination.

### Findings

#### Prevention: Blood Pressure Monitoring

National screening guidelines for hypertension are well established (USPSTF, 2007). However, since high blood pressure is asymptomatic in most cases, it is not surprising that many of those affected do not know they have this condition.

**Figure 2.8. Adults who reported receiving a blood pressure measurement in the last 2 years and can state whether their blood pressure was normal or high, by race/ethnicity and sex, 2008**



**Source:** Centers for Disease Control and Prevention, National Center for Health Statistics, National Health Interview Survey, 2008.

**Denominator:** Civilian noninstitutionalized population age 18 and over.

**Note:** Rates are age adjusted to the 2000 U.S. standard population. White and Black are non-Hispanic; Hispanic includes all races.

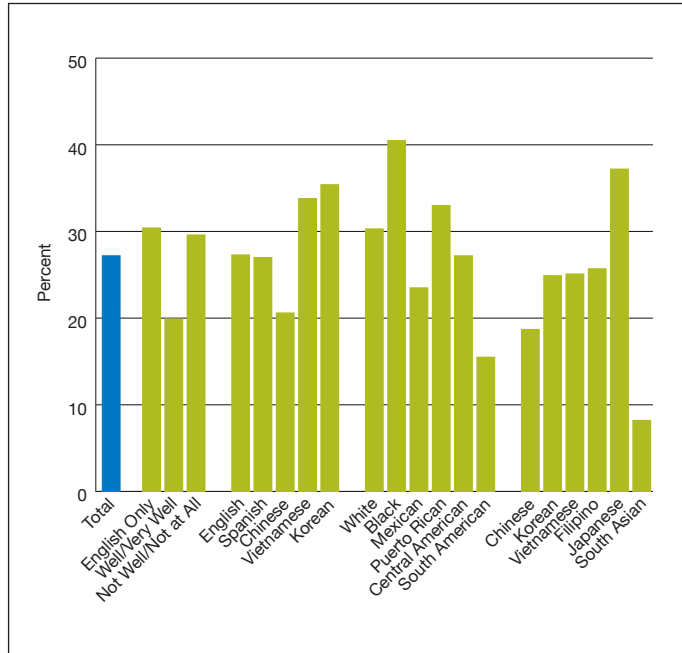
- ◆ In 2008, 93.6% of White, 93.5% of Black, and 89.0% of Hispanic adults reported they had a blood pressure measurement in the past 2 years (Figure 2.8).
- ◆ In 2008, Hispanic men were less likely to receive a blood pressure measurement than White men.
- ◆ In 2008, Hispanic women were less likely to receive a blood pressure measurement than White women.

Also, in the NHQR:

- ◆ In 2008, Hispanic adults with basic activity limitations were less likely to receive a blood pressure measurement than White adults with basic activity limitations.
- ◆ In 2008, Hispanic adults with neither activity limitation were less likely to receive a blood pressure measurement than White adults with neither activity limitation.

National data on cardiovascular care for some underserved populations are not available from the national data sources in the NHDR. These populations include people with limited English proficiency; individuals who speak a language other than English at home; lesbian, gay, bisexual, and transgender individuals; and Asian and Hispanic subpopulations. To address some of these data gaps, additional data from the CHIS are shown below.

**Figure 2.9. Adults who were diagnosed with high blood pressure, by English proficiency, preferred language, ethnicity, and Asian ethnicity, California, 2011-2012**

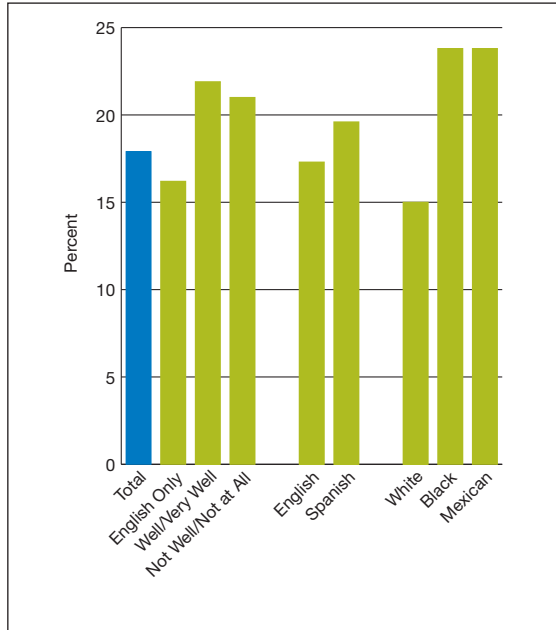


**Source:** University of California, Los Angeles, Center for Health Policy Research, California Health Interview Survey, 2011-2012 combined.

**Note:** For this measure, lower rates are better. White and Black are non-Hispanic.

- ◆ In 2011-2012, 27.2 % of adults living in California were diagnosed with high blood pressure (Figure 2.9).
- ◆ In 2011-2012, adults who spoke English well or very well (19.9%) were less likely to be diagnosed with high blood pressure than those who spoke English only (30.4%).
- ◆ In 2011-2012, adults who preferred to speak Vietnamese (33.8%) and Korean (35.4%) were more likely to be diagnosed with high blood pressure compared with those who preferred to speak English (27.3%). In the same period, adults who preferred to speak Chinese (20.6%) were less likely than those who preferred to speak English to be diagnosed with high blood pressure.
- ◆ In 2011-2012, Black adults (40.5%) were more likely to be diagnosed with high blood pressure than White adults (30.3%). Mexican (23.5%) and South American (15.5%) adults were less likely to be diagnosed with high blood pressure than White adults.
- ◆ In 2011-2012, Chinese (18.7%), Korean (24.9%), Vietnamese (25.1%), and South Asian (8.2%) adults were less likely to be diagnosed with high blood pressure than White adults (30.3%).

**Figure 2.10. Adults currently diagnosed with heart disease who had emergency room visits in the past 12 months, by English proficiency, preferred language, and ethnicity, California, 2011-2012**



**Source:** University of California, Los Angeles, Center for Health Policy Research, California Health Interview Survey, 2011-2012 combined.

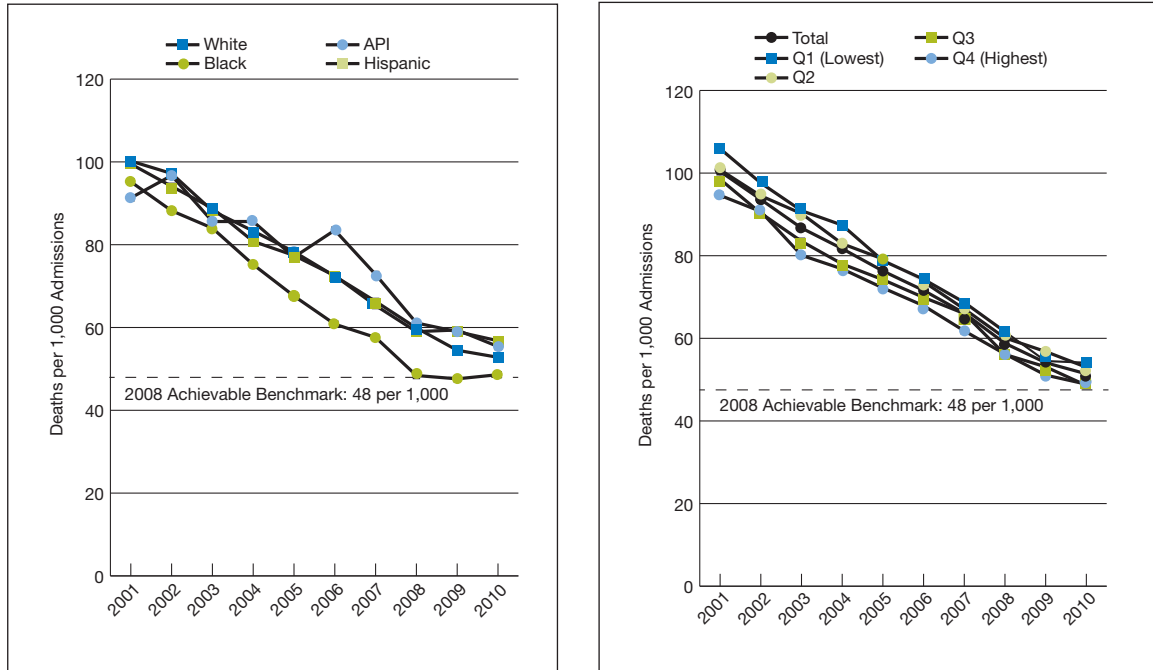
**Note:** For this measure, lower rates are better. White and Black are non-Hispanic.

- ◆ In 2011-2012, 17.9% of adults living in California with heart disease had an emergency room visit (Figure 2.10).
- ◆ In 2011-2012, there were no statistically significant differences by English proficiency, preferred language, or ethnicity in the percentage of adults with heart disease who had an emergency room visit.

### 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 2013 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.

**Figure 2.11. Inpatient deaths per 1,000 adult hospital admissions with heart attack, by race/ethnicity and area income, 2001-2010**

**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, 2001-2010.

**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, major diagnostic category, all payer refined-diagnosis related group risk of mortality score, and transfers into the hospital. White, Black, and API are non-Hispanic; Hispanic includes all races.

- ◆ From 2001 to 2010, the risk-adjusted inpatient mortality rate for hospital admissions with heart attack decreased significantly for each racial/ethnic and area income group (Figure 2.11).
- ◆ From 2005 to 2009, Blacks had lower inpatient mortality rates than Whites.
- ◆ In 5 of 10 years, residents of the lowest area income quartile had higher inpatient mortality rates than residents of the highest area income quartile.
- ◆ The 2008 top 4 State achievable benchmark for inpatient heart attack mortality was 48 per 1,000 admissions.<sup>xii</sup> At current rates of improvement, all racial/ethnic and area income groups would attain the benchmark within the next 2 years.

Also, in the NHQR:

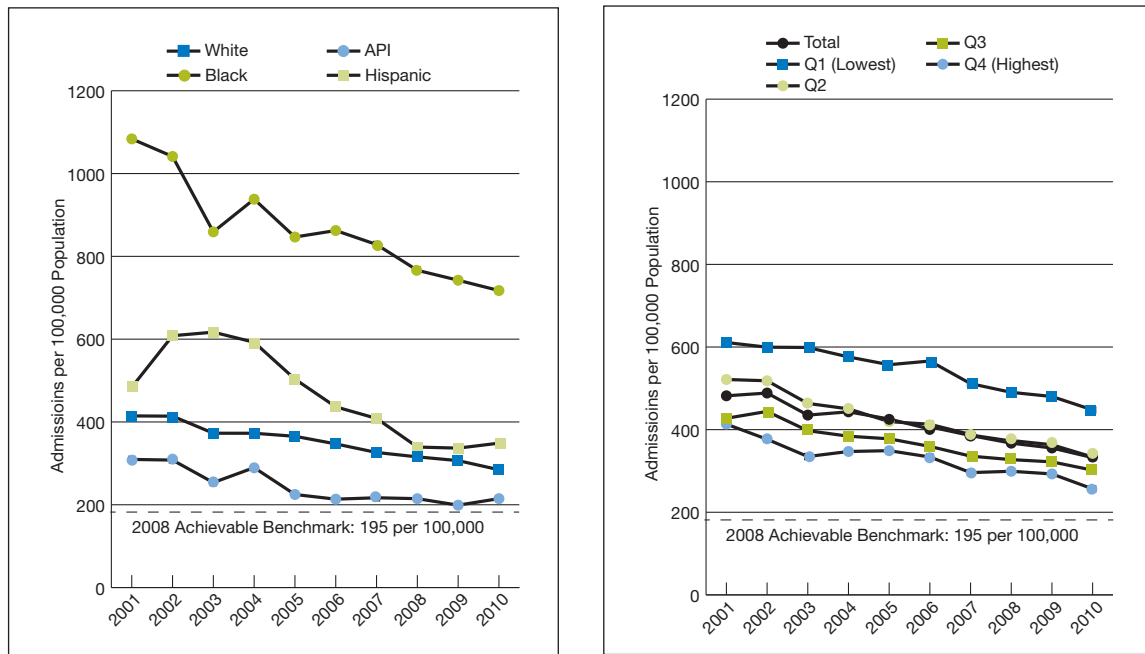
- ◆ In all years, women had higher rates of inpatient heart attack deaths than men and uninsured patients had higher rates than privately insured patients.

<sup>xii</sup> The top 4 States that contributed to the achievable benchmark are Arizona, Florida, Michigan, and Ohio.

## Outcome: Hospitalization for Congestive Heart Failure

Some hospitalizations for heart failure are unavoidable, but rates of hospitalization can be influenced by the quality of outpatient care.

**Figure 2.12. Adult admissions for congestive heart failure per 100,000 population, by race/ethnicity and area income, 2001-2010**



**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, 2001-2010.

**Denominator:** U.S. resident population age 18 and over.

**Note:** For this measure, lower rates are better. Rates are adjusted by age and sex. White, Black, and API are non-Hispanic; Hispanic includes all races.

- ◆ From 2001 to 2010, the hospitalization rate for congestive heart failure decreased significantly overall and for each racial/ethnic and area income group (Figure 2.12).
- ◆ In all years, Blacks had higher rates of admission for congestive heart failure compared with Whites while APIs had lower rates than Whites.
- ◆ In all years, residents of the highest area income quartile had lower rates than residents of the two lower area income quartiles.
- ◆ The 2008 top 4 State achievable benchmark for congestive heart failure admissions was 195 per 100,000 population.<sup>xiii</sup> At current rates of improvement, Whites could achieve the benchmark in 6 years. APIs, Hispanics, and Blacks could achieve the benchmark in 1, 4, and 9 years, respectively. Residents of the lowest income quartile would need 13 years while residents of other income quartiles could achieve the benchmark in 7 years.

<sup>xiii</sup> The top 4 States that contributed to the achievable benchmark are Colorado, Oregon, Utah, and Vermont.

Also, in the NHQR:

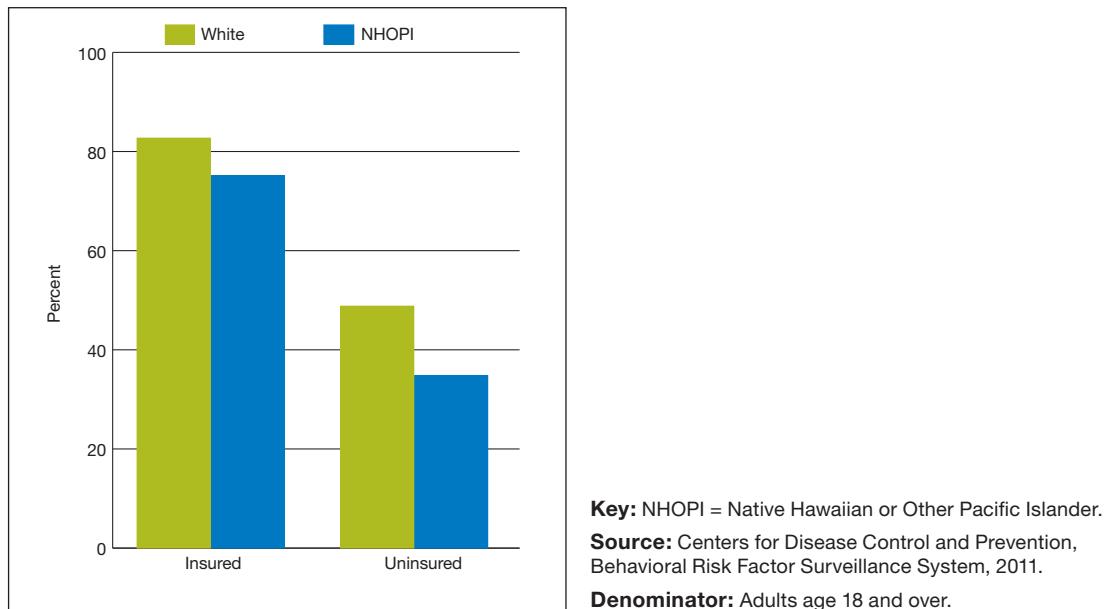
- ◆ In all years, patients ages 45-64 and 65 and over had higher hospitalization rates for congestive heart failure than patients ages 18-44, and men had higher rates than women.

### 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 (BRFSS) on cholesterol screening among NHOPIs, including people of mixed race who identify primarily as NHOPI. Note that the 2011 BRFSS cannot be compared with previous years because of the addition of cell phone data and the use of a new weighting methodology.

**Figure 2.13. Adults who reported receiving a cholesterol check in the last 5 years, by race and insurance, 2011**

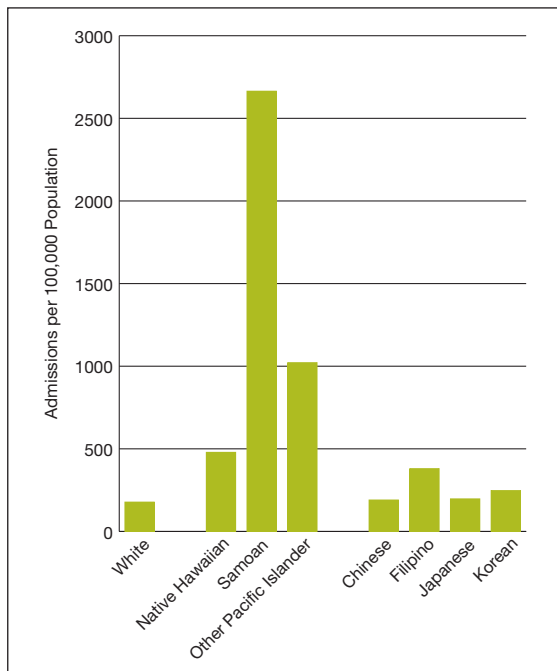


- ◆ In 2011, among adults with health insurance, the percentage of adults who received a cholesterol check in the last 5 years was lower among NHOPIs compared with Whites (Figure 2.13).
- ◆ Among adults without health insurance, the percentage of adults who received a cholesterol check in the last 5 years was also lower among NHOPIs compared with Whites.



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 2.14. Adult admissions for congestive heart failure per 100,000 population, State of Hawaii, by granular ethnicity, 2010**



**Source:** Agency for Healthcare Research and Quality, Healthcare Cost and Utilization Project, Hawaii State Inpatient Databases and AHRQ Quality Indicators, modified version 4.1, 2010.

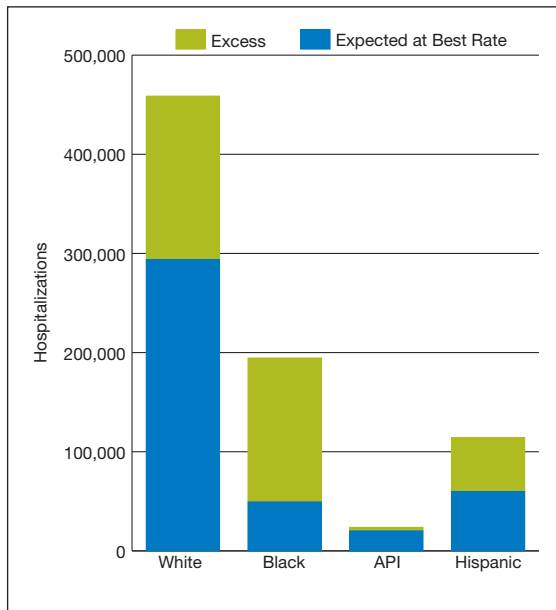
**Denominator:** Adults age 18 and over in Hawaii based on the Hawaii Health Survey.

**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.

- ◆ In Hawaii, in 2010, Native Hawaiians, Samoans, Other Pacific Islanders, and Filipinos had higher rates of hospital admissions for congestive heart failure than Whites (Figure 2.14).
- ◆ NHOPI and Asian subpopulations are quite diverse. Considerable variation in rates was observed among the different subgroups.

### Outcome: Costs of Disparities in Hospitalizations for Congestive Heart Failure

The following analysis estimates numbers of excess hospitalizations for congestive heart failure in 2010 by comparing adjusted rates of hospitalizations for congestive heart failure for different populations with the 2010 top 4 State achievable benchmark rate of 182 hospitalizations per 100,000 population. The benchmark rate was set based on the States with rates in the top 10%. For excess hospitalizations for congestive heart failure 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 2.15. Excess number of hospitalizations for congestive heart failure, by race/ethnicity, 2010**

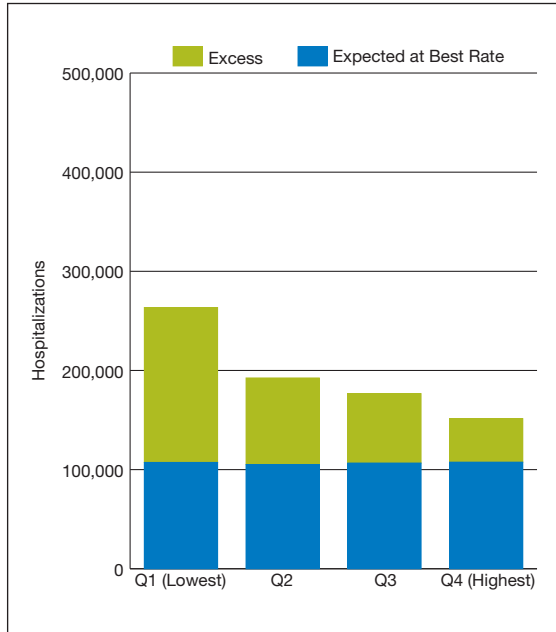
**Key:** API = Asian or Pacific Islander.

**Source:** Agency for Healthcare Research and Quality (AHRQ), Healthcare Cost and Utilization Project, Nationwide Inpatient Sample; and AHRQ Quality Indicators, modified version 4.1, 2010.

**Note:** White, Black, and API are non-Hispanic. Hispanic includes all races.

- ◆ In 2010, if Whites had the benchmark rate of congestive heart failure hospitalizations, they would have had 170,000 fewer hospitalizations (Figure 2.15). Instead of costing \$3.9 billion, preventable hospitalization among Whites would have cost \$2.5 billion, saving \$1.4 billion.
- ◆ If Blacks had the benchmark rate of congestive heart failure hospitalizations, they would have had 150,000 fewer hospitalizations. Instead of costing \$1.7 billion, preventable hospitalizations among Blacks would have cost \$400 million, saving \$1.3 billion.
- ◆ If Hispanics had the benchmark rate of congestive heart failure hospitalizations, they would have had 50,000 fewer hospitalizations. Instead of costing \$1.2 billion, preventable hospitalizations among Hispanics would have cost \$600 million, saving \$600 million.
- ◆ Because the overall rate among APIs was very close to the benchmark rate, there are almost no estimated excess congestive heart failure hospitalizations for this group.

Comparisons with the 4 State achievable benchmark for the composite rate of preventable hospitalizations in 2010 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 2.16. Excess number of hospitalizations for congestive heart failure, by area income, 2010**

**Source:** Agency for Healthcare Research and Quality (AHRQ), Healthcare Cost and Utilization Project, Nationwide Inpatient Sample; and AHRQ Quality Indicators, modified version 4.1, 2010.

- ◆ In 2010, if residents of the neighborhoods in the lowest income quartile had the benchmark rate of preventable hospitalizations, they would have had 160,000 fewer hospitalizations (Figure 2.16). Instead of costing \$2.2 billion, preventable hospitalizations among income quartile 1 residents would have cost \$900 million, saving \$1.3 billion.
- ◆ If residents of income quartile 2 neighborhoods had the benchmark rate of preventable hospitalizations, they would have had 90,000 fewer hospitalizations. Instead of costing \$1.6 billion, preventable hospitalizations would have cost \$900 million, saving \$700 million.
- ◆ If residents of income quartile 3 neighborhoods had the benchmark rate of preventable hospitalizations, they would have had about 70,000 fewer hospitalizations. Instead of costing \$1.6 billion, preventable hospitalizations would have cost \$1.0 billion, saving \$600 million.
- ◆ If residents of the highest income quartile neighborhoods had the benchmark rate of preventable hospitalizations, they would have had about 40,000 fewer hospitalizations. Instead of costing \$1.5 billion, preventable hospitalizations would have cost \$1.1 billion, saving \$400 million.

## Chronic Kidney Disease

### Importance

#### Mortality

Total ESRD deaths (2011) ..... 92,221 (USRDS, 2013b)

#### Prevalence

Total ESRD cases (2011) ..... 615,899 (USRDS, 2013b)

#### Incidence

Number of new ESRD cases (2011)..... 115,643 (USRDS, 2013b)

#### Cost

Total ESRD Medicare program expenditures (2011) ..... \$29.5 billion (USRDS, 2013b)

Overall Medicare expenditures for chronic kidney disease  
(all stages), including Part D (2011) ..... \$45.5 billion (USRDS, 2013b)

### Measures

The NHQR and NHDR track several measures of chronic kidney disease management to assess the quality of care provided to patients who have progressed to chronic kidney disease stage 5, kidney failure, also known as ESRD. A previous core measure, adequacy of dialysis, was retired because it achieved a rate above 95%.

Two measures are highlighted here:

- ◆ Nephrology care before kidney failure.
- ◆ Registration for transplantation.

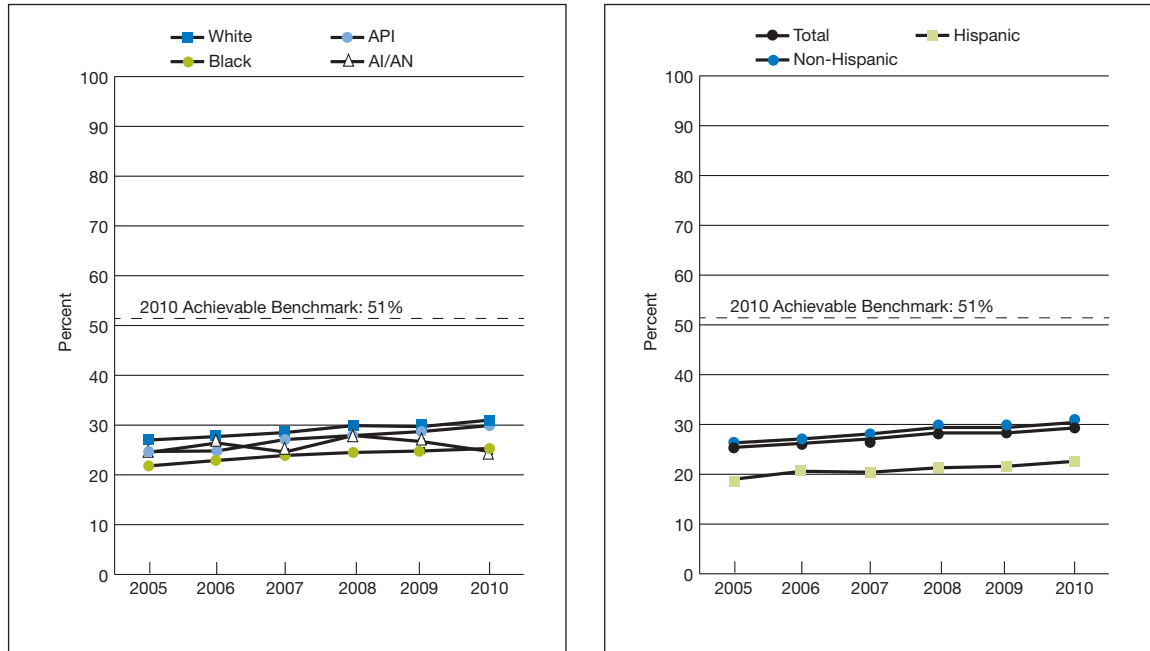
### Findings

#### Management: Nephrology Care Before Kidney Failure

Early referral to a nephrologist is important for patients with progressive chronic kidney disease who are approaching kidney failure. 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, 2013a).

Mindful management during the transition to ESRD permits informed selection of a renal replacement therapy from the range of options, including conservative management (no dialysis), hemodialysis, peritoneal dialysis, and kidney transplantation. Early and mindful management also permits, as applicable, timely placement and maturation of vascular access for dialysis and workup for kidney transplantation.

**Figure 2.17. New end stage renal disease patients age 18 and over who saw a nephrologist at least 12 months prior to initiation of renal replacement therapy, by race and ethnicity, 2005-2010**



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

**Source:** National Institutes of Health, National Institute of Diabetes and Digestive and Kidney Diseases, U.S. Renal Data System, 2005-2010.

**Denominator:** Denominator includes all new ESRD patients age 18 and over with valid CMS-2728 Medical Evidence form, and a nonmissing value for the question: did you see a nephrologist at all?

**Note:** Hispanic and non-Hispanic include all races.

- ◆ In 2010, only 29% of total new ESRD patients age 18 and over began nephrology care at least 12 months prior to initiation of renal replacement therapy. However, this was an increase from 2005, when the total percentage was 25% (Figure 2.17).
- ◆ In all years, the percentage of new ESRD patients who began nephrology care at least 12 months prior to initiation of renal replacement therapy was higher for non-Hispanics than for Hispanics.
- ◆ The percentage of AI/AN patients who began nephrology care at least 12 months prior to initiation of renal replacement therapy fluctuated slightly from year to year, from a low of 24.5% in 2005 to a high of 24.7% in 2010.
- ◆ In all years, Whites were more likely than Blacks and non-Hispanics were more likely than Hispanics to begin nephrology care at least 12 months prior to initiation of renal replacement therapy.
- ◆ The 2010 top 5 State achievable benchmark was 51%.<sup>xiv</sup> Whites, Blacks, and APIs show only slight progress toward the benchmark, with time to achieve the benchmark ranging from 19 years for APIs to 37 years for Blacks. AI/AN patients, however, show virtually no progress toward the benchmark and would take more than a century to reach it.

<sup>xiv</sup> The top 5 States that contributed to the achievable benchmark are Hawaii, Maine, Montana, North Dakota, and Vermont.

Also, in the NHQR:

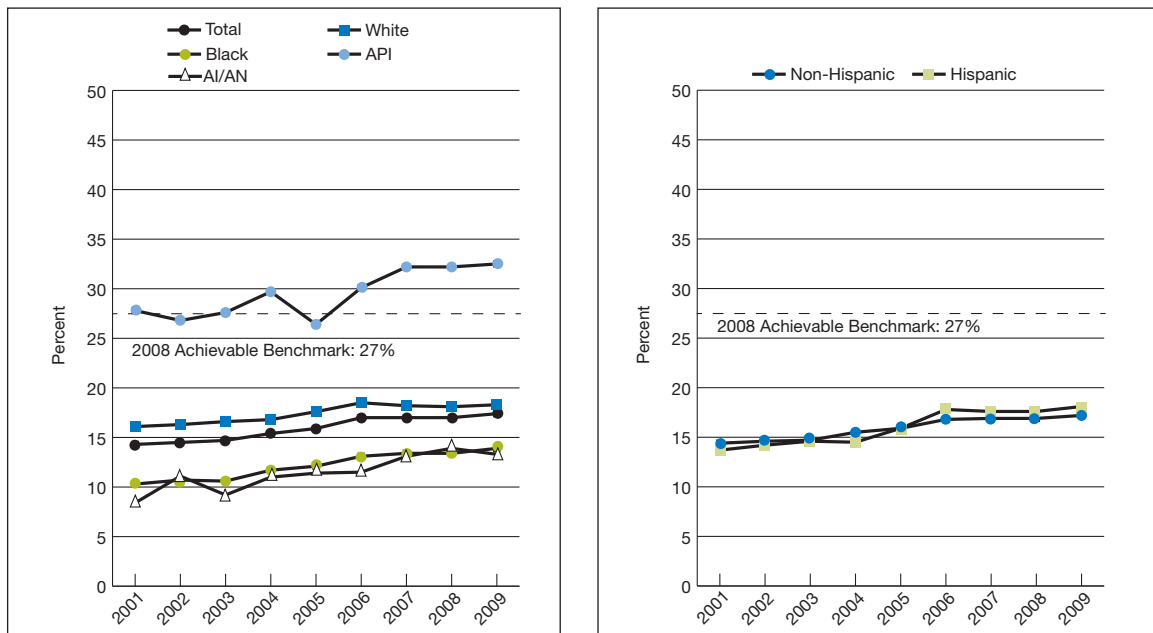
- ◆ In all years, the percentage of ESRD patients who began nephrology care at least 12 months prior to initiation of renal replacement therapy was higher for patients age 45 and over than for patients ages 18-44.

## Management: Registration for Transplantation

Kidney transplantation is a renal replacement therapy that replaces the failing kidney with a healthy donor kidney. ESRD patients who receive a kidney transplant have lower mortality and hospitalization rates than those on dialysis. First-year all-cause mortality rates in hemodialysis patients, for example, are nearly five times higher than rates among transplant patients (USRDS, 2013a).

If a patient is determined to be a good candidate for transplant, he or she is registered with a transplant program to wait for a match with the most suitable donor. The supply of donor kidneys, however, continues to lag behind demand. While there were 17,671 kidney transplants in 2011, by the end of the year, 55,371 active adult candidates remained on the waiting list. Waiting times continue to increase, with the median waiting time reaching 4.3 years for patients newly listed in 2007 (USRDS, 2013a). Despite these challenges, registration is a vital first step toward kidney transplantation.

**Figure 2.18. Dialysis patients under age 70 who were registered for transplantation within a year of ESRD initiation, by race and ethnicity, 2001-2009**



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

**Source:** National Institute of Diabetes and Digestive and Kidney Diseases, U.S. Renal Data System, 2001-2009.

**Denominator:** New end stage renal disease patients (receiving hemodialysis or peritoneal dialysis) in the given year who were under age 70 and had a known State of residence in the 50 States or the District of Columbia.

**Numerator:** Patients who were either wait-listed or received a deceased-donor kidney within 1 year of their ESRD initiation date.

**Note:** Patients who received a transplant at any time from a live donor or residing in American territories were excluded. Percentages are estimated using the Kaplan-Meier methodology. Hispanic and non-Hispanic include all races.

- ◆ From 2001 to 2009, the total percentage of dialysis patients under age 70 who were registered for transplantation within 1 year of progressing to ESRD increased from 14.3% to 17.4% (Figure 2.18).
- ◆ In 2009, improvements were observed across all racial and ethnic groups except AI/AN patients.
- ◆ From 2001 to 2004, the percentage of dialysis patients registered for transplantation within 1 year of progressing to ESRD was lower for Hispanics than for non-Hispanics. In 2005, the disparity was eliminated and after that, the percentage of dialysis patients registered for transplantation within 1 year of progressing to ESRD was higher for Hispanics than for non-Hispanics.
- ◆ In all years, Blacks and AI/ANs were less likely than Whites to be registered for transplantation within 1 year of progressing to ESRD. However, APIs were more likely than Whites to be registered.
- ◆ The 2008 top 5 State achievable benchmark for registration for transplantation within 1 year of progressing to ESRD was 27%.<sup>xv</sup> Although APIs have already surpassed the 2008 achievable benchmark, Blacks and AI/ANs could not attain the benchmark for 26 and 22 years, respectively, and Whites could not attain it for 27 years.

Also, in the NHQR:

- ◆ In 2009, as in all previous years, patients ages 20-69 were less likely than patients ages 0-19 to be registered for transplantation within 1 year of progressing to ESRD, and females were less likely than males to be registered for transplantation within 1 year of progressing to ESRD.

---

<sup>xv</sup> The top 5 States that contributed to the achievable benchmark are Delaware, Iowa, Minnesota, Montana, and Vermont.

## Diabetes

### Importance

#### Mortality

Number of deaths (2011) ..... 73,282 (Hoyert & Xu, 2012)

Cause of death rank (2011 prelim.) ..... 7th (Hoyert & Xu, 2012)

#### Prevalence

Total number of people with diabetes (all ages, 2010)<sup>xvi</sup> ..... 25.8 million (CDC, 2011c)

Number of people with diagnosed diabetes (all ages, 2010) ..... 18.8 million (CDC, 2011c)

Number of people with undiagnosed diabetes (age 20 years and over, 2010) ..... 7.0 million (CDC, 2011c)

#### Incidence

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

#### Cost

Total cost (2012) ..... \$245 billion (ADA, 2013)

Direct medical costs (2012) ..... \$176 billion (ADA, 2013)

Indirect costs (2012) ..... \$68.6 billion (ADA, 2013)

### Measures

Diabetes is one of the leading causes of hospitalization in the United States, with more than 600,000 discharges in 2009 (CDC, 2011a). With appropriate and timely ambulatory care, it may be possible to prevent many hospitalizations for diabetes and related complications. Routine monitoring of blood glucose levels, along with foot and dilated eye examinations and tests for hemoglobin A1c (HbA1c),<sup>xvii</sup> has been shown to help prevent or mitigate complications of diabetes, such as diabetic neuropathy, retinopathy, and vascular and kidney disease.

The NHQR and NHDR track several measures of diabetes management and outcomes to assess the quality of care provided to patients with diabetes. These measures examine the extent to which patients receive care needed to prevent complications, including serious problems such as the development of kidney failure.

<sup>xvi</sup> The total number of people with diabetes is the sum of the estimated number of those age 20 years and over with diagnosed or undiagnosed diabetes and the number of those younger than 20 years with diagnosed diabetes. The estimated number of adults age 20 years and over with diabetes (diagnosed or undiagnosed) was obtained using the fasting subsample from the 2005-2008 National Health and Nutrition Examination Survey (NHANES) data. The diabetes estimates from NHANES were applied to the 2010 U.S. resident population estimates to derive the estimated number of adults with diabetes. People who self-reported having been told by a doctor or health professional that they had diabetes were classified as having diagnosed diabetes. Those without a history of diabetes but with a fasting plasma glucose greater than or equal to 126 mg/dL or an HbA1c level greater than or equal to 6.5% were classified as having undiagnosed diabetes. Estimates of undiagnosed diabetes for people younger than 20 years are not available.

<sup>xvii</sup> The laboratory test for HbA1c, also known as "glycosylated hemoglobin," shows a patient's average blood glucose (in percent) over the previous 2 to 3 months.



Three measures are highlighted here:

- ◆ Receipt of four recommended diabetes services.
- ◆ Hospital admissions for uncontrolled diabetes.
- ◆ End stage renal disease due to diabetes.

In addition, this year we are highlighting a measure from the 2011-2012 California Health Interview Survey, with a focus on Asian and Hispanic subgroups:

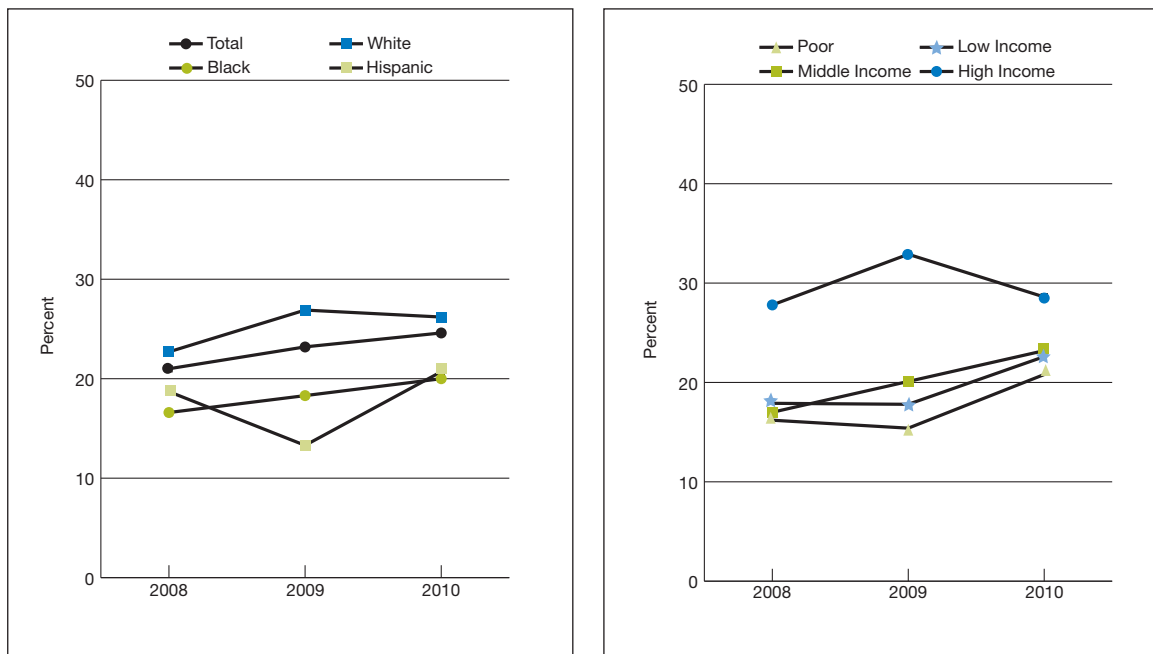
- ◆ Written diabetes management plan.

## Findings

### 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, a dilated eye examination, and a flu shot. These are basic process measures that provide an assessment of the quality of diabetes care. In 2011, to be more consistent with current recommendations, the frequency of HbA1c tests was increased to two per year and receipt of a flu shot was added to the measure.

**Figure 2.19. Adults age 40 and over with diagnosed diabetes who reported receiving four recommended services for diabetes in the calendar year (2+ hemoglobin A1c tests, foot exam, dilated eye exam, and flu shot), by race/ethnicity and income, 2008-2010**



**Source:** Agency for Healthcare Research and Quality, Medical Expenditure Panel Survey, 2008-2010.

**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 using two age groups: 40-59 and 60 and over. White and Black are non-Hispanic; Hispanic includes all races.

- ◆ In 2010, overall, among adults age 40 and over with diagnosed diabetes, only about one-fourth reported receiving all four recommended services (Figure 2.19).
- ◆ In 2009, Blacks and Hispanics were less likely than Whites to report receiving recommended care for diabetes. In 2010, however, there were no statistically significant differences by race.
- ◆ In 2008 and 2009, poor, low-income, and middle-income adults were less likely to receive recommended care for diabetes than high-income adults. In 2010, there were no statistically significant differences by income.

Also, in the NHQR:

- ◆ In 2009, residents of micropolitan (small town) and noncore (the most rural) areas were less likely than residents of large fringe metropolitan (suburban) areas to report receiving recommended care for diabetes. This finding is consistent with what we know about the relationship between a variety of health measures and the level of urbanization, that residents of suburban areas tend to have, for example, better access to care and report better health status than residents living in more urban or more rural areas (Ingram & Franco, 2012). In 2010, however, residents of micropolitan and noncore areas were just as likely as residents of large fringe metropolitan areas to report receiving recommended care for diabetes.

### Management: Written Diabetes Management Plan

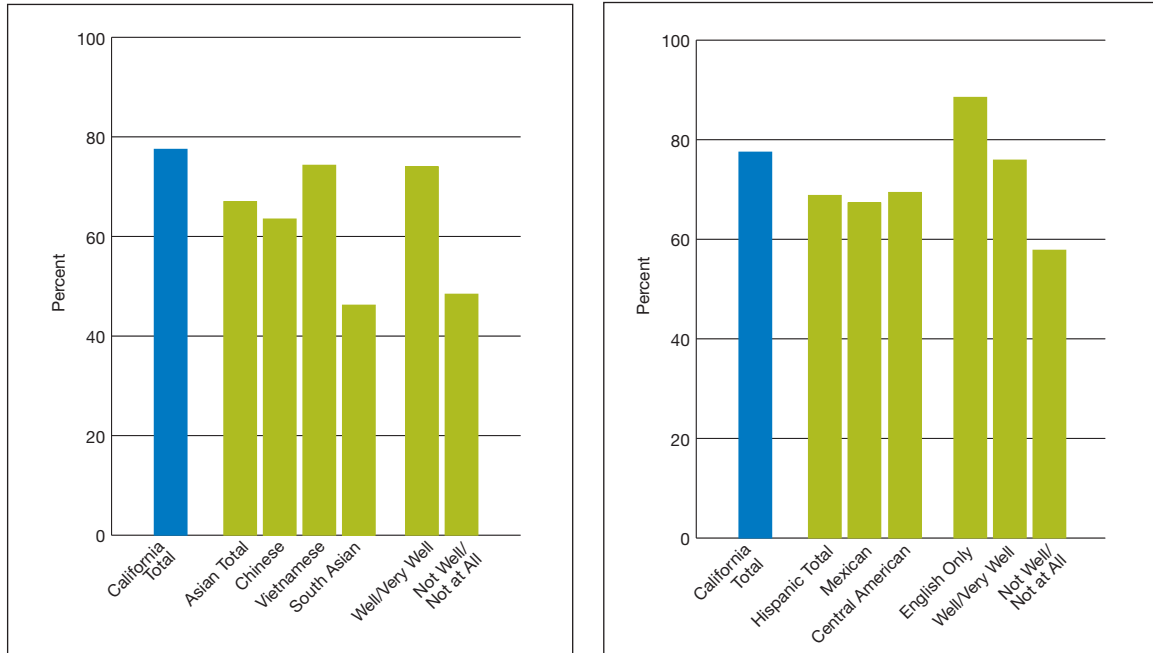
A successful partnership for diabetes care requires providers to educate patients about daily management of their diabetes. Hence, providers should develop a written diabetes management plan, especially for patients with a history of uncontrolled diabetes.

#### Focus on Asian and Hispanic Subpopulations

National data on diabetes management and outcomes for some underserved populations are not available from the national data sources in the NHDR. These populations include people with limited English proficiency; individuals who speak a language other than English at home; lesbian, gay, bisexual, and transgender individuals; and Asian and Hispanic subpopulations. To address some of these data gaps, additional data from CHIS are shown below.

In this section, we show the percentage of people with diabetes among Asian and Hispanic subpopulations in California whose doctor helped them to develop a diabetes management plan.

**Figure 2.20. People with current diabetes whose doctor helped to develop a diabetes management plan, by Asian and Hispanic subpopulations and English proficiency, California, 2011-2012**



**Source:** UCLA, Center for Health Policy Research, California Health Interview Survey, 2011-2012.

**Denominator:** Civilian noninstitutionalized population in California.

**Note:** The Asian subpopulation sample size for “English Only” speakers did not meet requirements for statistical reliability, data quality, or confidentiality and is not included.

- ◆ In 2011-2012, among Asian Californians, there was moderate variation among subgroups in the percentage of people with current diabetes whose doctor helped them to develop a diabetes management plan (Figure 2.20), from 46.2% of South Asian respondents to 74.3% of Vietnamese respondents.
- ◆ Asian respondents who speak English well/very well were more likely to have a doctor help them develop a diabetes management plan than Asian respondents who speak English not well/not at all.
- ◆ In 2011-2012, among Hispanic Californians, there was less variation among subgroups in the percentage of people with current diabetes whose doctor helped them to develop a diabetes management plan.
- ◆ Hispanic respondents who speak English only were more likely to have a doctor help them develop a diabetes management plan than Hispanic respondents who speak English not well/not at all.

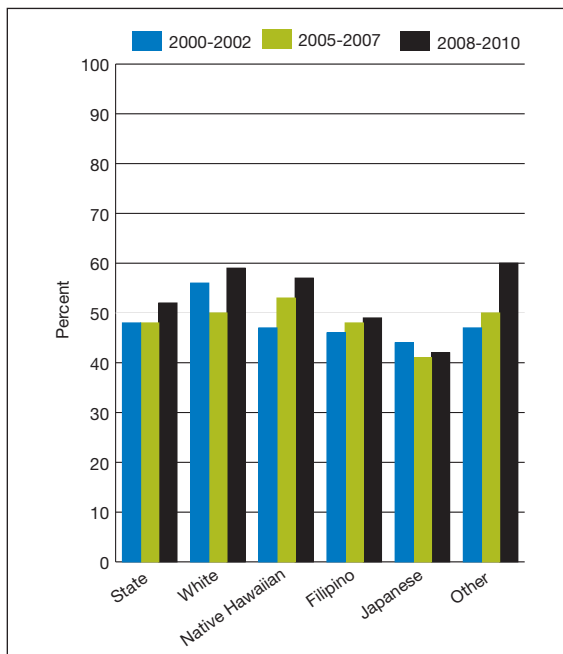
### Focus on Native Hawaiians

Various studies have found that one-third of Native Hawaiian adults have or are at risk for diabetes or prediabetes (Aluli, et al., 2009; Grandinetti, et al., 1998). The Hawaii State Department of Health reported in 2007 that NHOPIs in Hawaii had the highest age-adjusted percentage of people with diabetes (20.6%) among all racial groups, more than three times as high as Whites (6.8%), nearly twice as high as Hispanics/Latinos (11.1%), and more than double Asians (8.9%). Among older Native Hawaiian adults, 19.6% have diabetes, twice the rate among older White adults (9.4%) (Salvail, et al., 2007).

Diabetes is rising among Polynesians, Micronesians, and Melanesians, who have prolonged exposure to more westernized lifestyles (e.g., access to calorie-dense, high-fat foods and less physical activity) compared with more traditional subsistence-based lifestyles (Okihiro & Harrigan, 2005; Papoz, et al., 1996).

This year, the NHDR features findings from a report by the Department of Native Hawaiian Health and its Center for Native and Pacific Health Disparities Research (Look, et al., 2013). In this section, we show the percentage of adults in Hawaii with diabetes who reported receiving diabetes management education, by ethnicity.

**Figure 2.21. Adults with diabetes receiving diabetes management education, by ethnicity, Hawaii, 2011**



**Source:** Hawaii State Department of Health, 2011.

**Note:** All rates are 3-year averages.

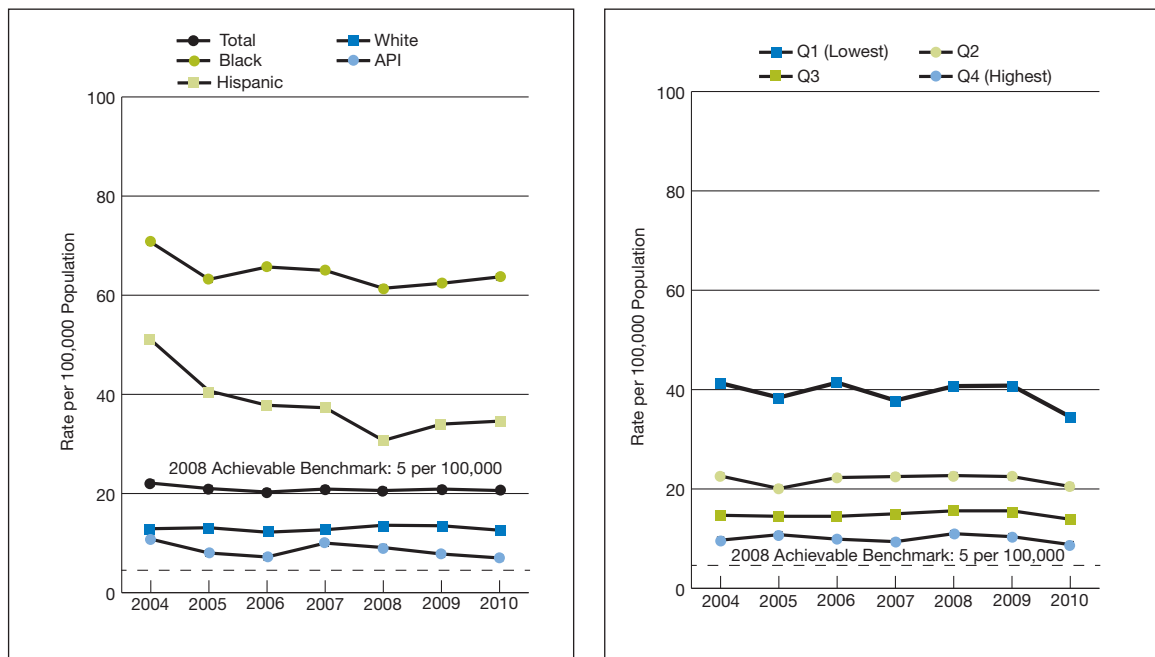
- ◆ With increased attention to diabetes management efforts on the part of community health clinics, the Native Hawaiian Health Care Systems, and private physicians, a growing number of Native Hawaiians are reporting increased diabetes awareness and access to diabetes management education (Figure 2.21).
- ◆ Between 2000 and 2010, the number of Native Hawaiians who reported receiving diabetes management education increased from 47% to 57%, a rate higher than the rate for the State as a whole.

The increased efforts to provide diabetes self-management education has not necessarily led to improved diabetes outcomes, which suggest that different approaches or strategies may be needed. A recent analysis of health insurance data in Hawaii found that Native Hawaiians and Filipinos are at greatest risk for poorly controlled diabetes, and these patients seem to be the least likely to achieve sustained appropriate long-term self-management of their disease (Juarez, et al., 2012).

### Outcome: Admissions for Uncontrolled Diabetes

Individuals who do not achieve good control of their diabetes may develop symptoms that require correction through hospitalization. Admission rates for uncontrolled diabetes may be reduced by better outpatient treatment and patients' tighter adherence to diet and medication.

**Figure 2.22. Hospital admissions for uncontrolled diabetes per 100,000 population, age 18 and over, by race/ethnicity and area income, 2004-2010**



**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 (AHRQ), Healthcare Cost and Utilization Project, Nationwide Inpatient Sample and AHRQ Quality Indicators, version 4.1, 2004-2010.

**Denominator:** U.S. resident population age 18 and over.

**Note:** For this measure, lower rates are better. White, Black, and API are non-Hispanic; Hispanic includes all races.

- ◆ In all years, the rate of hospital admissions for uncontrolled diabetes was higher for Blacks and Hispanics and lower for APIs and Whites (Figure 2.22).
- ◆ In all years, the rate of hospital admissions for uncontrolled diabetes was higher for adults living in communities with median household incomes in the first (lowest), second, and third quartiles than for people living in communities in the fourth quartile (highest).

- ◆ The 2008 top 4 State achievable benchmark was 5 admissions per 100,000 population.<sup>xviii</sup> Most racial/ethnic groups could not achieve the benchmark for about 20 years. However, APIs and Hispanics would need 9 years and 11 years, respectively, to achieve the benchmark. Adults living in the lowest income quartile (Q1) would need 51 years to achieve the benchmark.

Also, in the NHQR:

- ◆ From 2004 to 2009, there were no statistically significant changes in the annual overall adult admission rate for uncontrolled diabetes. In 2010, the rate decreased to 19.2 admissions per 100,000 population.

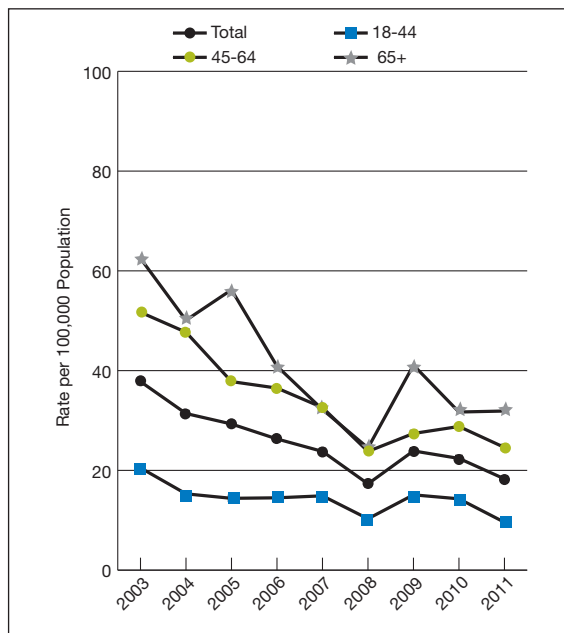
### Focus on Indian Health Service Facilities

AI/ANs who are members of federally recognized Tribes are eligible for services provided by the Indian Health Service (IHS). About 2 million 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 NHDR addresses 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 (IHS, 2011). 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.

In this section, we show the rate of hospital admissions for uncontrolled diabetes per 100,000 population in IHS, Tribal, and contract hospitals, by age group.

**Figure 2.23. Hospital admissions for uncontrolled diabetes per 100,000 population in IHS, Tribal, and contract hospitals, age 18 and over, by age group, 2003-2011**



**Source:** Indian Health Service, Office of Information Technology/National Patient Information Reporting System, National Data Warehouse, Workload and Population Data Mart, 2003-2011.

**Note:** For this measure, lower rates are better. Total estimates are age adjusted using the total U.S. population for 2000 as the U.S. standard population. Service population does not include the Portland and California regions.

<sup>xviii</sup> The top 4 States that contributed to the achievable benchmark are Colorado, Hawaii, Utah, and Vermont.

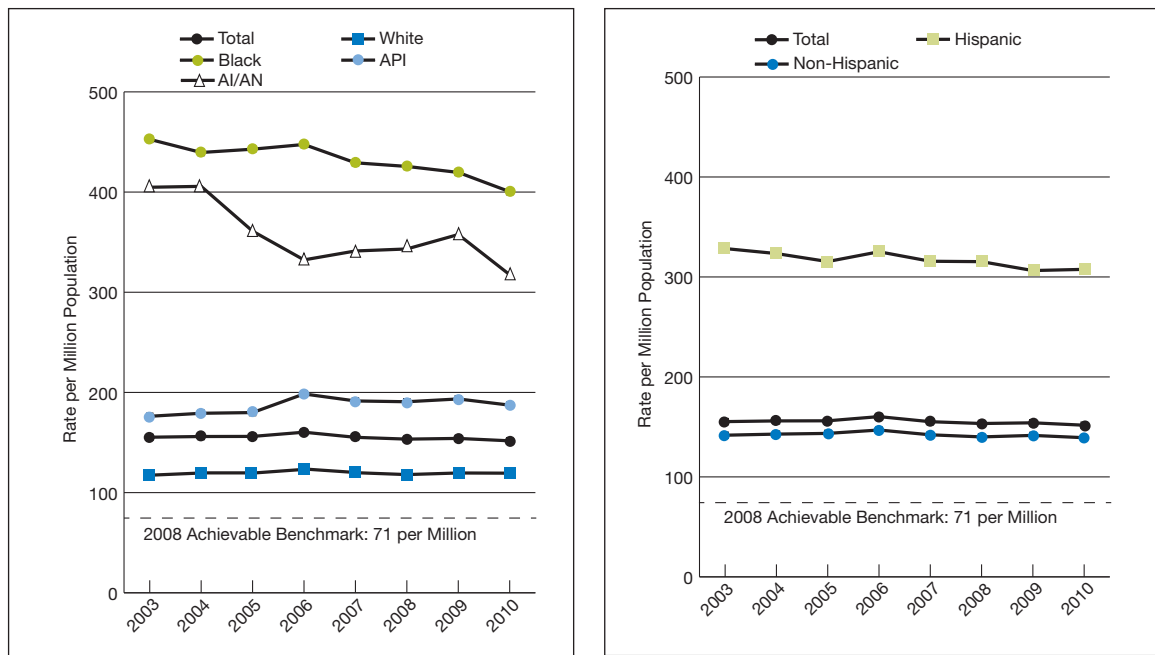
- ◆ From 2003 to 2011, the age-adjusted rate of total hospitalizations for uncontrolled diabetes in IHS, Tribal, and contract hospitals decreased from 37.8 to 18.3 per 100,000 population (Figure 2.23). Rates decreased among all age groups.
- ◆ In all years, patients ages 18-44 had lower rates than patients age 65 and over.

### Outcome: End Stage Renal Disease Due to Diabetes

Diabetes is the most common cause of kidney failure. Keeping blood glucose 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 kidney disease is detected late, however, it commonly progresses to chronic kidney disease stage 5, also known as ESRD.

Once the patient has progressed to ESRD, some type of renal replacement therapy is necessary, either conservative management (no dialysis), hemodialysis, peritoneal dialysis, or kidney transplantation. While some cases of kidney failure due to diabetes cannot be avoided, other cases reflect inadequate control of blood glucose or delayed detection and treatment of early kidney disease due to diabetes.

**Figure 2.24. Adults age 20 and over with end stage renal disease due to diabetes, per million population, by race and ethnicity, 2003-2010**



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

**Source:** National Institute of Diabetes and Digestive and Kidney Diseases, U.S. Renal Data System, 2003-2010.

**Denominator:** U.S. resident population.

**Note:** For this measure, lower rates are better. Rates are adjusted by age, sex, race, and interactions of age, sex, and race. When reporting is by race and ethnicity, the adjustment is by age, sex, and interactions of age and sex. Hispanic and non-Hispanic include all races.

- ◆ From 2003 to 2010, there were no statistically significant changes in the overall rate of new cases of ESRD due to diabetes (Figure 2.24). From 2009 to 2010, however, the rate decreased among Blacks, Hispanics, and AI/ANs.

## EFFECTIVENESS OF CARE FOR COMMON CLINICAL CONDITIONS

- ◆ In all years, AI/ANs, APIs, and Blacks had higher rates than Whites, and Hispanics had higher rates than non-Hispanics.
- ◆ The 2010 top 5 State achievable benchmark was 71 per million population.<sup>xix</sup> Among all racial groups, AI/ANs are progressing toward the benchmark but would not achieve it for 17 years. At their current rate of improvement, Blacks would take 77 years. Rates among non-Hispanics and Hispanics are improving slowly; neither group could achieve the benchmark for more than 60 years.

Also, in the NHQR:

- ◆ In all years, adults age 45 and over had higher rates of ESRD due to diabetes than adults ages 20-44. In addition, males had higher rates than females.

---

<sup>xix</sup> The top 5 States that contributed to the achievable benchmark are District of Columbia, Montana, New Hampshire, Vermont, and Wyoming.



## HIV and AIDS

### Importance

#### Mortality

Number of deaths of people with AIDS (2010)..... 15,529 (CDC, 2013b)

#### Prevalence

Number of people living with HIV infection (2010).....872,990 (CDC, 2013b)

Number of people living with AIDS (2010) ..... 487,692 (CDC, 2013b)

#### Incidence

Number of new HIV diagnoses (2010) .....49,273 (CDC, 2013b)

Number of new AIDS diagnoses (2010).....32,052 (CDC, 2013b)

### Cost

Federal spending on HIV/AIDS care, cash and housing assistance, prevention, and research (fiscal year 2014 est.)..... \$23.2 billion (KFF, 2013)

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 pass the virus 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, 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 (Tobias, et al., 2007).

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,
- ◆ Sexual risk behaviors (e.g., unprotected anal intercourse),
- ◆ Sexually transmitted co-infections,
- ◆ Unawareness of infection (people who do not know they are infected contribute to spreading this disease),
- ◆ 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
- ◆ Alcohol, 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 2010, Blacks represented 14% of the U.S. population but accounted for 44% of all diagnoses of new HIV infections (CDC, 2013b). The HIV/AIDS epidemic is also a serious threat to the Hispanic community. An estimated 21% of new HIV infections occurred among Hispanics in

2009, which is three times the infection rate of Whites (CDC, 2013b). 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 their HIV infection rates (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 (Cunningham, et al., 2006).

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 is 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 people with an AIDS diagnosis who have died.

In 2010, MSM accounted for more than half (63%) of all new HIV infections in the United States and 78% of infections among all newly infected men. Black MSM accounted for 36% of new HIV infections in 2010. Young MSM are disproportionately affected, with those ages 13-24 accounting for 72% of new HIV infections among all persons ages 13-24 and 30% of new infections among all MSM in 2010 (CDC, 2013a).

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 serves 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

One measure is presented focusing on the quality of preventive care for HIV-infected individuals:

- ◆ New AIDS cases.

Five measures are presented on access to care, retention in care, and treatment and 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).

This year, the report presents one measure on viral load:

- ◆ HIV viral load less than 400.

In addition, one measure is presented on HIV infection deaths.

**NEW**

This year, we present data from the Ryan White HIV/AIDS Program (Ryan White Program).<sup>xx</sup> It is important to note that not all people living with HIV use the Ryan White Program, so the data are not representative of the entire HIV population, which is estimated to be about 1.4 million people in the United States.

The two measures from the Ryan White Program are:

- ◆ Rate of HIV patients in Ryan White-funded care who were virally suppressed (HIV RNA <200 copies/mL).
- ◆ Rate of HIV patients in Ryan White-funded care who were retained in care (at least two ambulatory visit dates 90 days apart).

## Findings

### 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.

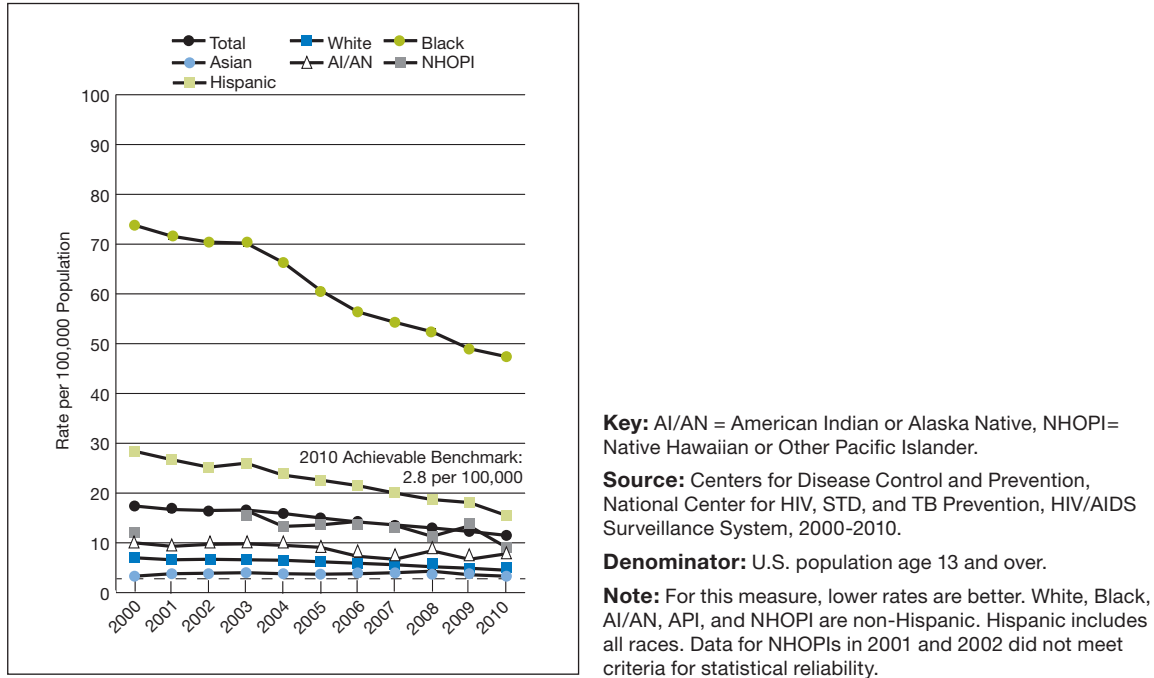
HIV/AIDS clinical performance measures are indicators for use in monitoring the quality of care provided to adults and adolescents living with HIV. Based on the set of quality measures developed by the HIV/AIDS Bureau (HAB) of the Health Resources and Services Administration (HRSA), U.S. Department of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

- ◆ Two or more medical visits in an HIV care setting in the measurement year.
- ◆ Two or more CD4 cell counts performed in the measurement year.
- ◆ HAART for patients with HIV disease.
- ◆ PCP prophylaxis for patients with CD4 cell count under 200.
- ◆ MAC prophylaxis for patients with CD4 cell count under 50.

### Outcome: New AIDS Cases

Changes in HIV infection rates reflect changes in behavior by at-risk individuals that may only partly be influenced by the health care system. However, individual and community programs have shown progress in influencing behavior change. Changes in the incidence of new AIDS cases are affected by changes in HIV infection rates, screening and early detection of HIV disease, and availability of appropriate treatments for HIV-infected individuals.

<sup>xx</sup> Data on clients who solely receive assistance from the AIDS Drug Assistance Program (ADAP) were not included in this analysis because they are reported into a different data system.

**Figure 2.25. New AIDS cases per 100,000 population age 13 and over, by race/ethnicity, 2000-2010**

- ◆ Overall, in 2010, the total rate of new AIDS cases was 11.5 per 100,000 population (Figure 2.24).
- ◆ From 2000 to 2010, rates of new AIDS cases decreased overall and for AI/ANs, Blacks, and Whites.
- ◆ In all years, Asians had lower rates of new AIDS cases than Whites.
- ◆ In 2010, Blacks (47.4 per 100,000 population), AI/ANs (7.8 per 100,000 population), NHPIs (9.1 per 100,000), and Hispanics (15.5 per 100,000 population) had higher rates of new AIDS cases than Whites (4.5 per 100,000 population).
- ◆ The 2010 top 5 State achievable benchmark for new AIDS cases was 2.8 per 100,000 population<sup>xxi</sup>. Asians have nearly achieved the benchmark. At the current rate, Whites could achieve the benchmark in 7 years, Hispanics in 10 years, Blacks in 15 years, and AI/ANs in 16 years.

Also, in the NHQR:

- ◆ From 2000 to 2010, rates of new AIDS cases decreased overall, for ages 18-44 and 45-64, and for both sexes.
- ◆ In all years, people ages 18-44 had a higher rate of new AIDS cases than other age groups, and males had a higher rate than females.

### Management: Recommended Care for HIV

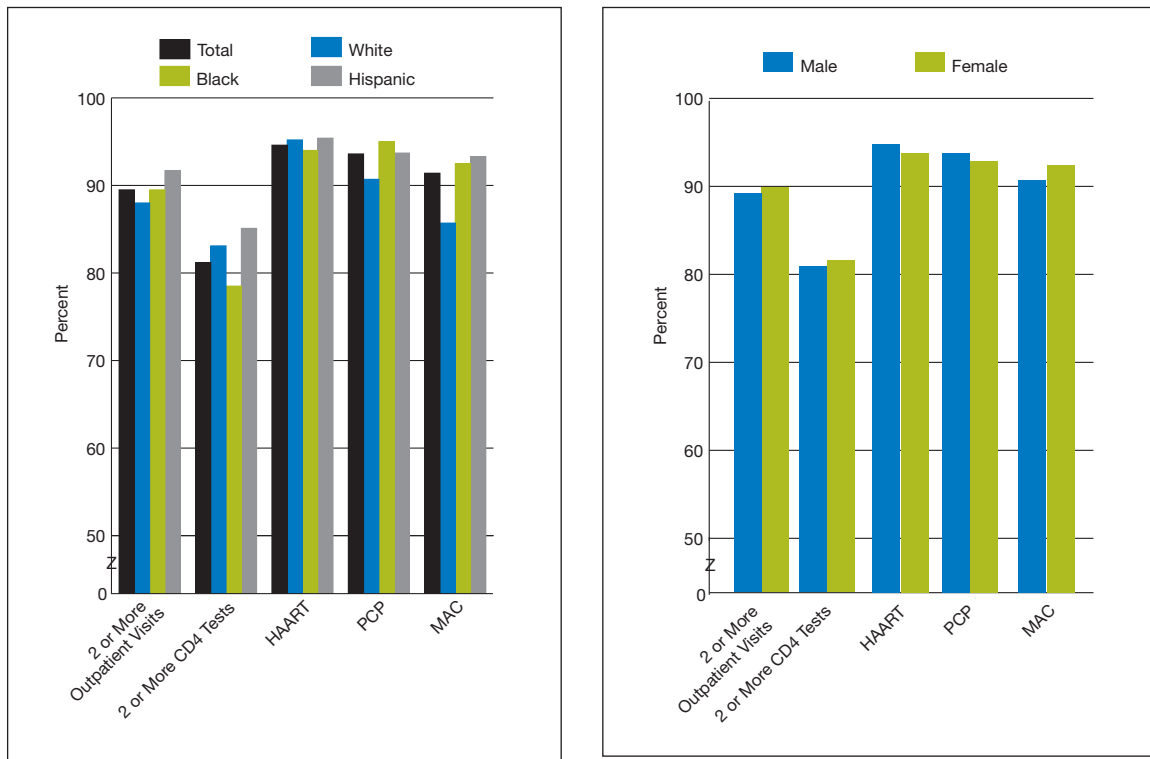
HIV measures tracked in the NHDR are from the HIV Research Network, which consists of 18 medical practices across the United States that treat large numbers of patients living with HIV. Data from the voluntary HIV Research Network are not nationally representative of the level of care received by everyone in the United States living with HIV.

<sup>xxi</sup> The top 5 States that contributed to the achievable benchmark are Iowa, Maine, South Dakota, Utah, and Wisconsin.

HIV Research 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 most complete data.

Below are data from the HIV Research Network that capture four of the HRSA quality 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), which is also tracked in the reports.

**Figure 2.26. HIV patients who received recommended care, by race/ethnicity and sex, 2010**



**Key:** HAART = highly active antiretroviral therapy; PCP = *Pneumocystis pneumonia*; MAC = *Mycobacterium avium* complex.

**Source:** Agency for Healthcare Research and Quality, HIV Research Network, 2010.

**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 2010, 89.5% of people with HIV had two or more outpatient visits during the year, and 81.2% of people with HIV had two or more CD4 tests during the year (Figure 2.25). In addition, 94.6% of people with HIV received HAART, 93.6% of people with HIV received PCP prophylaxis, and 91.4% of people with HIV received MAC prophylaxis.
- ◆ In 2010, there were no statistically significant differences by race/ethnicity or sex in the percentage of people with HIV receiving recommended services.

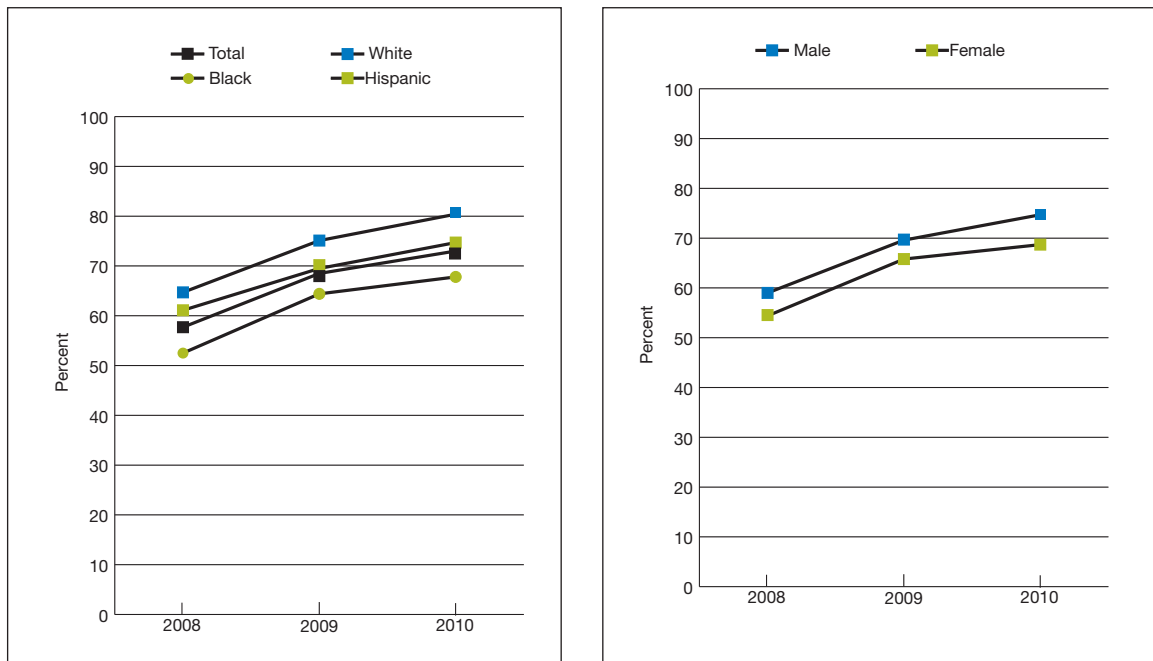
Also, in the NHQR:

- ◆ In 2010, the percentage of adults with HIV who had two or more outpatient visits, two or more CD4 tests, and HAART was higher for those age 45 and over compared with those ages 18-44.
- ◆ In 2010, the percentage of adults with HIV who had two or more outpatient visits and two or more CD4 tests was higher for those with Medicaid and Medicare/Dual Eligible insurance compared with those with private insurance.

**NEW Outcome: HIV Viral Load Suppression**

Low levels of HIV viral load are desired, as they decrease the chances of spreading HIV. Even if an HIV patient's viral load is low, the risk of HIV transmission is not completely prevented. Thus, it is essential for HIV patients to continue to adequately manage the disease, by getting tested and taking any necessary medication.

**Figure 2.27. Adult HIV patients with viral suppression for first test in the year, by ethnicity and sex, 2008-2010**



**Source:** Agency for Healthcare Research and Quality, HIV Research Network, 2008-2010.

**Denominator:** Includes adult HIV patients enrolled in an HIV Research Network medical practice prior to the year. Patients who died, did not have an outpatient visit, or did not have a CD4 test in the year are excluded.

**Note:** Viral load suppression means HIV RNA <400 copies/mL. White and Black are non-Hispanic. Hispanic includes all races.

- ◆ Overall in 2010, 73% of adult HIV patients had viral suppression for the first test in the year (Figure 2.26).
- ◆ In all years, the percentage of adult HIV patients with viral load suppression was lower for Blacks and Hispanics compared with Whites.
- ◆ In all years, the percentage of adult HIV patients with viral load suppression was higher for males compared with females.

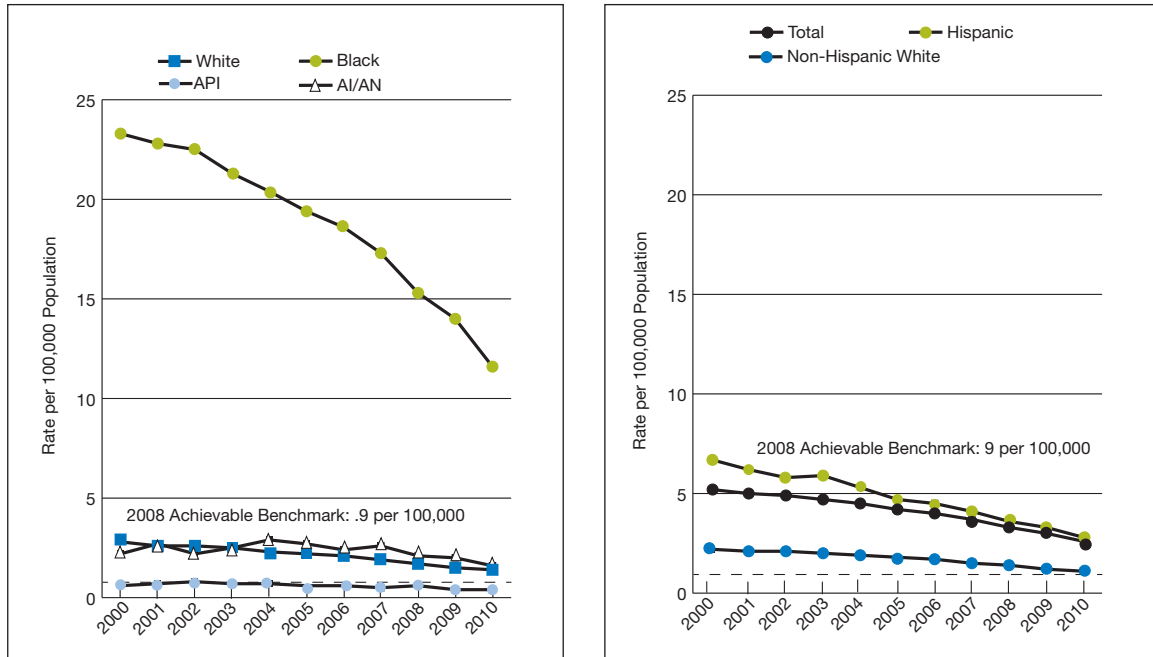
Also, in the NHQR:

- ◆ In all years, the percentage of adult HIV patients with viral load suppression was higher for those age 45 and over compared with those ages 18-44.
- ◆ In all years, the percentage of adult HIV patients with viral load suppression was lower for those with Medicaid compared with those with private insurance.

**Outcome: Deaths of People With HIV Infection**

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 2.28. HIV infection deaths per 100,000 population, by race and ethnicity, 2000-2010**



**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, 2000-2010.

**Note:** For this measure, lower rates are better. Rates are age adjusted to the 2000 U.S. standard population.

- ◆ Overall, in 2010, the total rate of HIV infection deaths was 2.6 per 100,000 population (Figure 2.26).
- ◆ HIV infection death rates are decreasing overall and for all racial/ethnic groups.
- ◆ From 2000 to 2010, HIV infection death rates were higher for Blacks than for Whites. APIs had lower rates than Whites in all years.<sup>xxii</sup>
- ◆ In all years, HIV infection death rates were higher for Hispanics than for Whites.
- ◆ The 2008 top 4 State achievable benchmark for HIV deaths was 0.9 per 100,000.<sup>xxiii</sup> At the current rate, Whites, non-Hispanic Whites, Hispanics, Blacks, and AI/ANs could achieve the benchmark in 3, 2, 4, 9, and 12 years, respectively. APIs have already reached the benchmark.

<sup>xxii</sup> Racial/ethnic data on death certificates are underreported, especially for Hispanics, AI/ANs, and APIs. For more information, see Arias E, Schauman WS, Eschbach K, et al. The validity of race and Hispanic origin reporting on death certificates in the United States. *Vital Health Stat* 2008; 2(148).

<sup>xxiii</sup> The top 4 States that contributed to the achievable benchmark are Kansas, Minnesota, Oregon, and Wisconsin.

Also, in the NHQR:

- ◆ In all years, the rate of HIV infection deaths was higher for males than for females.
- ◆ From 2000 to 2010, the rate of HIV infection deaths was higher for adults ages 45-64 than for those ages 18-44. The rate was lower for those 65 and over compared with those ages 18-44.



## Ryan White Program Overview

Over the past 23 years, the Ryan White Program has provided funds for primary care and support services for people living with and affected by HIV disease. Working with States, cities, and local community organizations, the Ryan White Program strives to improve the quality of HIV-related care to those who do not have sufficient health care coverage or financial resources for coping with HIV disease. In 2010, the Ryan White Program served a total of 556,175 non-ADAP clients.

The Ryan White Program, as authorized by the Ryan White HIV/AIDS Treatment Extension Act of 2009 (Public Law 111-87), is administered by HHS, HRSA, HAB. HRSA and HAB support the NHAS and its goals to reduce HIV incidence, increase access to care, optimize health outcomes, and reduce HIV-related health disparities. Annually, Ryan White-funded programs are required to report to HRSA HAB how the funds have been used to provide services to HIV-positive individuals and their families who lack sufficient health care coverage or financial resources. The Ryan White Program Services Report (RSR) is the annual reporting instrument that agencies and organizations receiving funds complete to describe organizational characteristics, number and characteristics of clients served, types of services provided, number of clients receiving services, and number of client visits by type of service.

All clients served by the Ryan White Program received some type of Ryan White service, not just medical care. Of the 556,175 clients served in 2010, 68.5% were male, 30.7% female, and 0.8% transgender<sup>xxiv</sup> (including male-to-female and female-to-male). Individuals under age 13 years accounted for 2.1% of the Ryan White population, followed by age 65 and over (2.9%), 13-24 (6.6%), 55-64 (13.7%), 25-34 (15.0%), 35-44 (25.7%), and 45-54 (33.9%). The racial/ethnic groups represented most commonly include non-Hispanic Black (47.2%), non-Hispanic White (28%), and Hispanic/Latino (22.1%); all other racial/ethnic groups are 1% or less.

In the RSR, HIV status is reported only for individuals who receive case management or medical care services. There were 313,170 HIV-positive individuals (56% of Ryan White clients) who received Ryan White-funded HIV medical care. Due to missing data on HIV medical care visits, viral load tests, and antiretroviral therapy for some of the 313,170 HIV-positive individuals, the following data have different denominators.

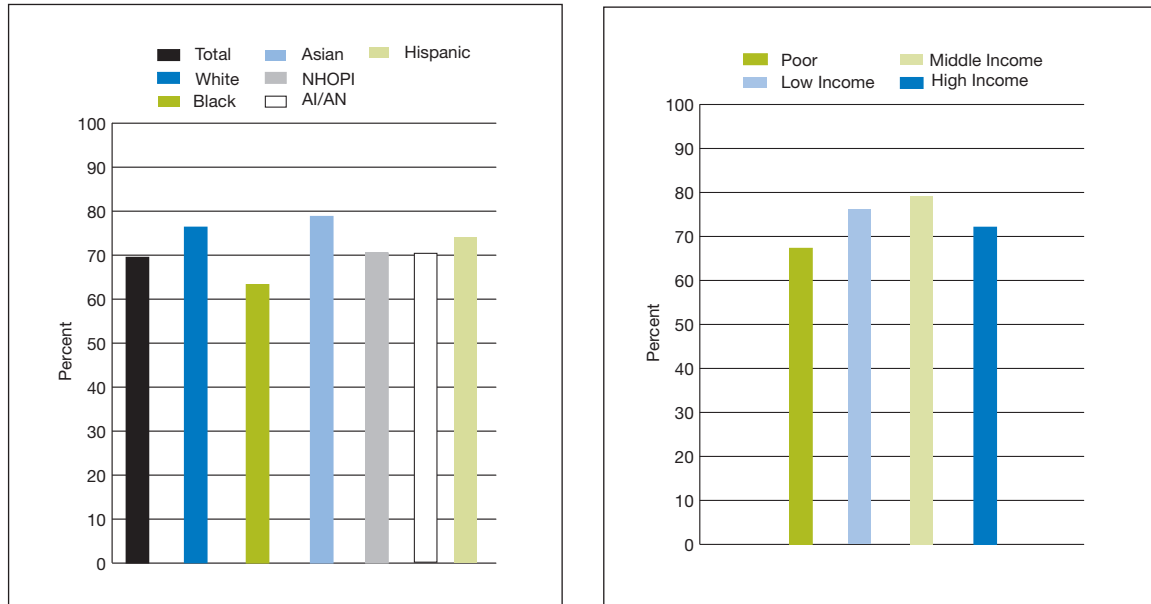
The number of HIV-positive clients with at least one HIV medical care visit and at least one viral load available was 255,172. The number of HIV-positive clients with at least one HIV medical service and at least one HIV medical care visit date available during the year was 297,042.

<sup>xxiv</sup>

Transgender is defined as an individual whose gender identity is not congruent with his or her biologic gender, regardless of the status of surgical and hormonal gender reassignment processes.



**Figure 2.29. HIV clients in Ryan White-funded care who were virally suppressed (most recent HIV RNA <200 copies/mL), by race/ethnicity and household income, 2010**



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

**Source:** Health Resources and Services Administration, 2010.

**Denominator:** HIV-positive clients all ages who received Ryan White-funded HIV care during the year and had visit date and viral load data available. Clients with missing viral load are excluded.

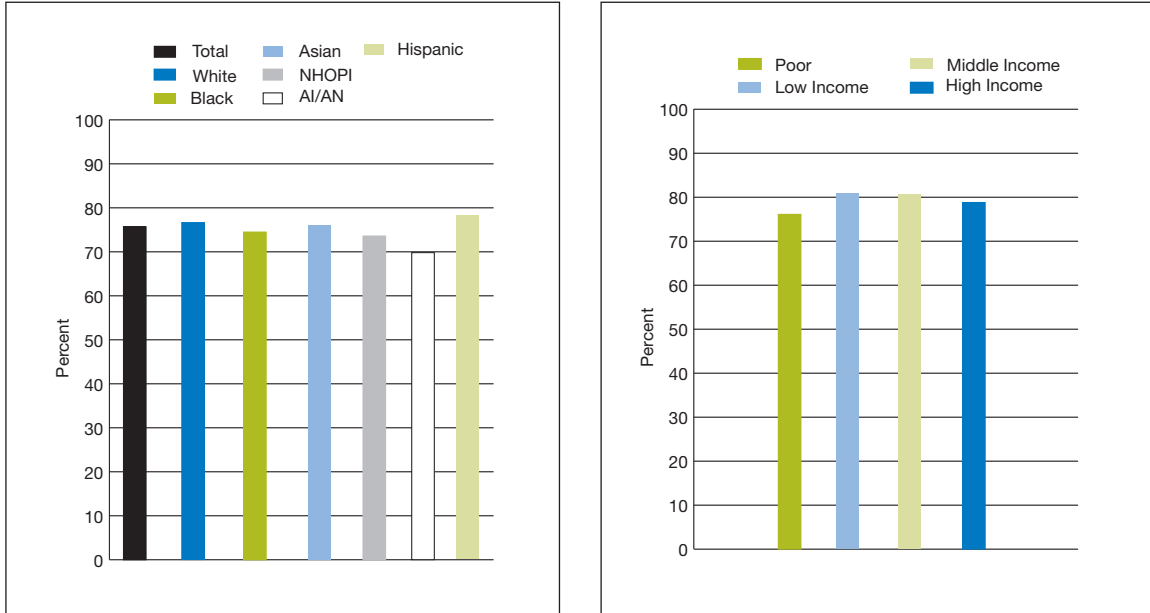
**Note:** White, Black, AI/AN, Asian, and NHOPI are non-Hispanic. Hispanic includes all races. Poor refers to household incomes below the Federal poverty line; low income, from the poverty line to just below 200% of the poverty line; middle income, 200% to just below 300% of the poverty line; and high income, 300% of the poverty line and over.

- ◆ In 2010, 69.5% of HIV-positive clients in Ryan White-funded care were virally suppressed (Figure 2.29).
- ◆ In 2010, Black (63.3%), NHOPI (70.5%), AI/AN (70.4%), and Hispanic (73.6%) HIV-positive clients were less likely to be virally suppressed compared with White (76.3%) HIV-positive clients. Asian HIV-positive clients (78.8%) were more likely than White HIV-positive clients to be virally suppressed.
- ◆ In 2010, HIV-positive clients from poor households (67.3%) were less likely to be virally suppressed than those from high-income households (72.1%). HIV-positive clients from low-income (76%) and middle-income (79.2%) households were more likely to be virally suppressed than those from high-income households.

Also, in the NHQR:

- ◆ In 2010, female and transgender HIV-positive clients were less likely to be virally suppressed than male HIV-positive clients.
- ◆ In 2010, HIV-positive clients with Medicaid and those without insurance were less likely to be virally suppressed than those with private insurance.

**Figure 2.30. HIV-positive clients in Ryan White-funded care who were retained in HIV care (at least 2 ambulatory visit dates at least 90 days apart), by race/ethnicity and household income, 2010**



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

**Source:** Health Resources and Services Administration, 2010.

**Denominator:** Total estimated number of HIV-positive clients all ages who received at least one Ryan White-funded care visit during the year and have visit dates available.

**Note:** White, Black, AI/AN, Asian, NHOPI are non-Hispanic. Hispanic includes all races. Poor refers to household incomes below the Federal poverty line; low income, from the poverty line to just below 200% of the poverty line; middle income, 200% to just below 300% of the poverty line; and high income, 300% of the poverty line and over.

- ◆ In 2010, 75.7% of HIV-positive clients in Ryan White-funded care were retained in care (Figure 2.30).
- ◆ In 2010, NHOPI (69.8%) and AI/AN (73.6%) HIV-positive clients were less likely to be retained in care compared with White HIV-positive clients (76.6%).
- ◆ In 2010, HIV-positive clients from poor households (76.1%) were less likely to be retained in care than those from high-income households (78.8%).

Also, in the NHQR:

- ◆ In 2010, transgender HIV-positive clients were less likely to be retained in care compared with male HIV-positive clients.
- ◆ In 2010, HIV-positive clients with Medicaid and those without insurance were less likely to be retained in care compared with those with private insurance.

## Mental Health and Substance Abuse

### Importance

#### Mortality

Number of deaths due to suicide (2011 prelim.) .....	38,285 (Hoyert & Xu, 2012)
Rank among causes of death in the United States—suicide (2011 prelim.).....	10th (Hoyert & Xu, 2012)
Rank of suicide among people ages 12-17 (2010).....	2nd (CDC, 2011d)
Alcohol-impaired driving fatalities (2012) .....	10,322 (NHTSA, 2013)
Overdose of prescription painkillers (2011) .....	15,000 (NCIPC, 2011)

#### Prevalence

People age 12 and over with alcohol and/or illicit drug dependence or abuse in the past year (2011).....	20.6 million (8.0%) (CBHSQ, 2012b)
Children ages 6-17 who had depression or anxiety in their lifetime (2007-2008 est. based on parent report).....	3.8 million (7.8%) (Ghandour, et al., 2012)
Youths ages 12-17 with a major depressive episode during the past year (2011).....	2.0 million (8.2%) (CBHSQ, 2012a)
Adults age 18 and over with a major depressive episode during the past year (2011) .....	15.2 million (6. 6%) (CBHSQ, 2012a)
Adults with at least one major depressive episode in their lifetime (2006).....	30.4 million (13.9%) (CBHSQ, 2007)

#### Cost

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

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

## Findings

### Treatment for Depression

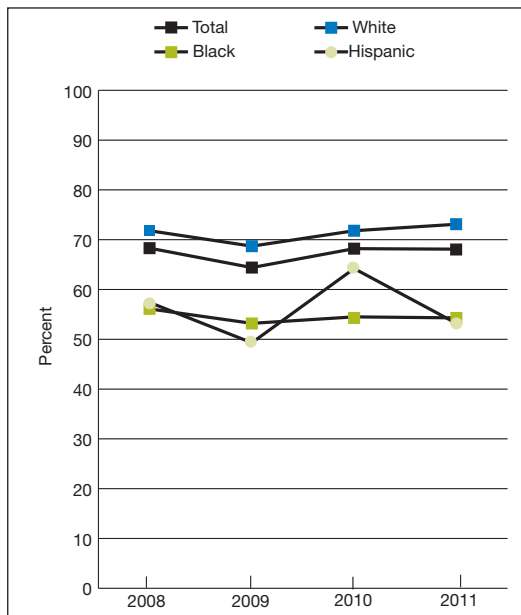
Treatment for depression can be very effective in reducing symptoms and associated illnesses and returning individuals to a productive lifestyle. The Sequenced Treatment Alternatives to Relieve Depression (STAR\*D) study, funded by the National Institute of Mental Health, was the largest clinical trial 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 (Glier, et al., 2010).

Barriers to high-quality mental health care include cost of care, lack of sufficient insurance for mental health services, discrimination and negative attitudes toward mental health problems, 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.

Barriers can exist for patients across the lifespan. The National Survey of Children's Health (HRSA, 2010) showed that among children with emotional, developmental, or behavioral conditions, 45.6% were receiving needed mental health services, and about half were taking medications. Recent data indicate, however, that service use for mental health is increasing among children (Pfundtner, et al., 2013).

**Figure 2.31. Adults with a major depressive episode in the past year who received treatment for depression in the past year, by race/ethnicity, 2008-2011**



**Source:** Substance Abuse and Mental Health Services Administration, National Survey on Drug Use and Health, 2008-2011.

**Denominator:** Adults age 18 and over with a major depressive episode in the past year.

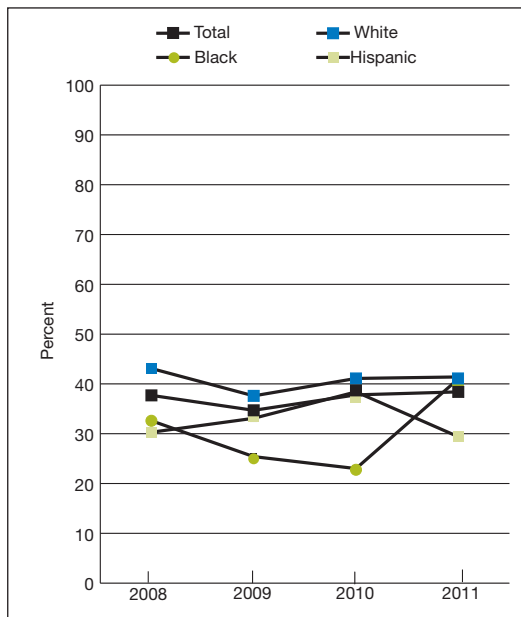
**Note:** Major depressive episode is defined as a period of at least 2 weeks when a person experienced a depressed mood or loss of interest or pleasure in daily activities and had a majority of the symptoms of depression described in the fourth edition of the *Diagnostic and Statistical Manual of Mental 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 are non-Hispanic; Hispanic includes all races.

- ◆ In 2011, only 68% of adults with a major depressive episode received treatment for depression (Figure 2.31).
- ◆ In all years, Black adults were less likely to receive treatment for depression than White adults.

Also, in the NHQR:

- ◆ In all years, adult males were less likely than adult females to receive treatment for depression.

**Figure 2.32. Adolescents with a major depressive episode in the past year who received treatment for depression in the past year, by race/ethnicity, 2008-2011**



**Source:** Substance Abuse and Mental Health Services Administration, National Survey on Drug Use and Health, 2008-2011.

**Denominator:** Adolescents ages 12-17 with a major depressive episode in the past year.

**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 are non-Hispanic; Hispanic includes all races.

- ◆ In 2011, only 38% of adolescents with a major depressive episode received treatment for depression (Figure 2.32).
- ◆ Until 2011, Black adolescents were less likely to receive treatment for depression than White adolescents.

Also, in the NHQR:

- ◆ In 2009 and 2010, adolescent males were less likely than adolescent females to receive treatment for depression; in 2008 and 2011, this difference was not statistically significant.

## 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. Identification of suicidal ideas and plans among individuals being treated for depression is expected to increase with the growing use of standardized screening instruments and electronic medical records. A National Institute of Mental Health (NIMH)-supported study recently reported that positive response to the final item ("thoughts that you would be better off dead, or of hurting yourself in some way") on the widely used Patient Health Questionnaire for depression (PHQ-9) was found to be a strong predictor of suicide attempts and completed suicides over the following year (Simon, et al., 2013).

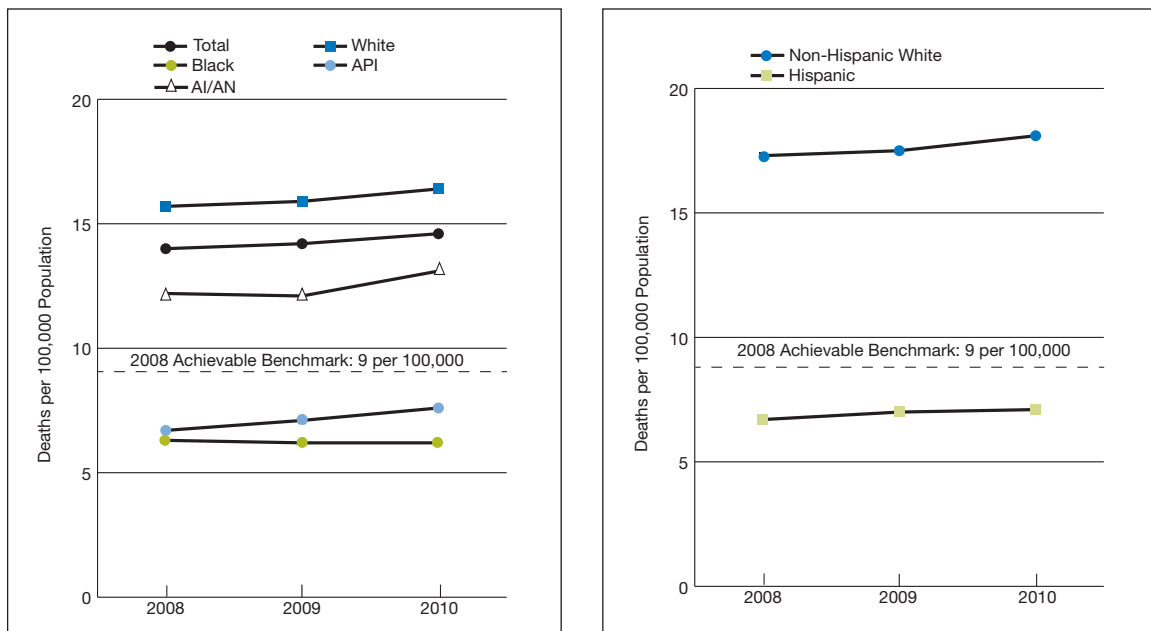
## EFFECTIVENESS OF CARE FOR COMMON CLINICAL CONDITIONS

The increasing use of technology to enhance the quality of mental health care is growing by delivering treatment services via the Internet to supplement routine face-to-face care and occasionally to replace it. Ongoing NIMH-supported research is showing promising results for Internet-based cognitive-behavioral therapy and psychoeducation in the treatment of individuals dealing with conditions such as mood, eating, and sleep disorders (Thorndike, et al., 2013). As such “mobile health” interventions become more sophisticated, they can be adapted to be culturally specific and sensitive (Burns, et al., 2013).

Suicide prevention is multifaceted and other methods include educating physicians and keeping lethal weapons away from suicidal people (Mann, et al., 2005), as well as:

- ◆ Cognitive-behavioral therapy (Tarrier, et al., 2008) and
- ◆ Universal strategies that target entire populations (e.g., public education and awareness programs), selective strategies that address at-risk populations (e.g., peer “natural helpers” and accessible crisis services), and indicated strategies that address specific high-risk individuals (e.g., case management and parent-supported programs) (Nordentoft, 2011).

**Figure 2.33. Suicide deaths per 100,000 population age 12 and over, by race and ethnicity, 2008-2010**



**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, 2008-2010.

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

- ◆ In 2010, the overall suicide death rate was 14.6 per 100,000 population age 12 and over (Figure 2.33).
- ◆ In all years, Blacks, APIs, and AI/ANs had lower suicide death rates than Whites, and Hispanics had lower suicide death rates than non-Hispanic Whites.<sup>xxv</sup>
- ◆ The 2008 top 5 State achievable benchmark was 9 suicide deaths per 100,000 population.<sup>xxvi</sup> Data are insufficient to assess progress toward the benchmark.

Also, in the NHQR:

- ◆ In all years, adolescents ages 12-17 had lower suicide death rates than adults ages 18-44. However, suicide is the second leading cause of death for youth ages 12-17 (CDC, 2011d). Adults ages 45-64 had higher suicide death rates than adults ages 18-44.
- ◆ In all years, residents of medium and small metropolitan areas, micropolitan areas, and noncore areas (the most rural) had higher suicide death rates than residents of large fringe metropolitan areas (suburbs).

### Treatment for Illicit Drug Use or Alcohol Problem

Use of illicit drugs<sup>xxvii</sup> can lead to addiction and other medical problems that can have a direct toxic effect on a number of bodily organs and exacerbate numerous physical 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 spectrum disorders. Alcoholism and illicit drug use increase the risk of death from car crashes and other injuries (Ringold, et al., 2006).

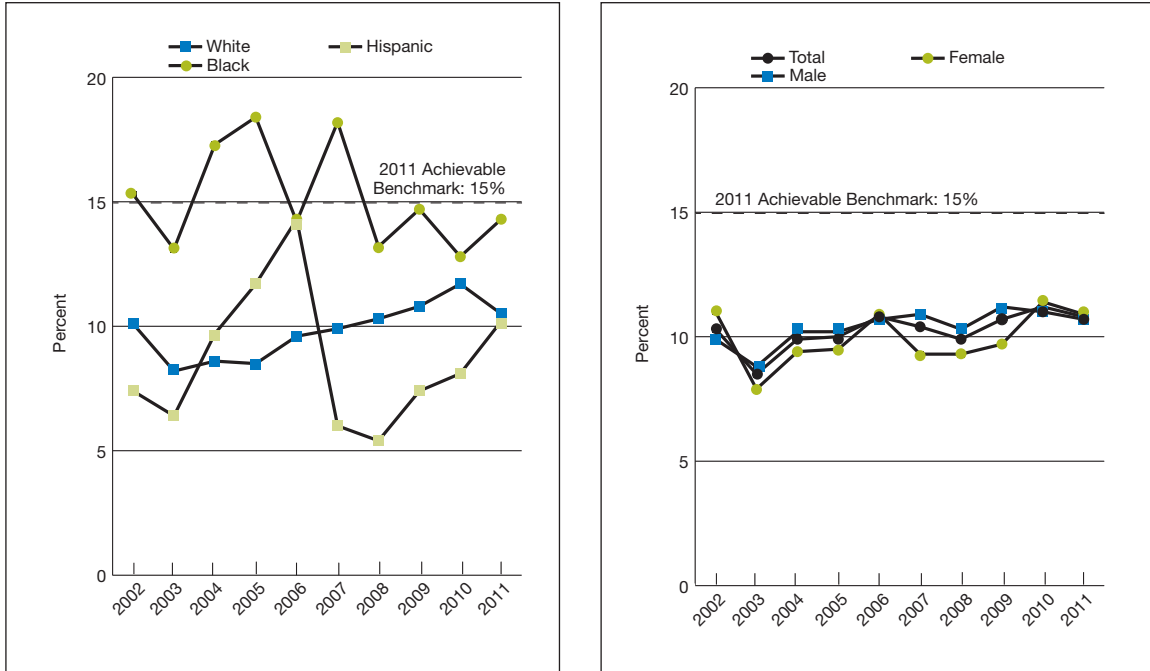
The Drug Abuse Warning Network (DAWN) estimates that in 2011, 2.5 million emergency department (ED) visits resulted from medical emergencies involving drug misuse or abuse (1.25 million involved illicit drugs, 1.24 million involved nonmedical use of pharmaceuticals, and 0.61 million involved drugs combined with alcohol [SAMHSA, 2013]). Illicit drug use and alcohol problems can be effectively treated at specialty facilities (e.g., hospitals [inpatient], drug or alcohol rehabilitation [inpatient or outpatient] facilities, or mental health centers).

<sup>xxv</sup> Racial/ethnic data on death certificates are underreported, especially for Hispanics, AI/ANs, and APIs. For more information, see Arias E, Schauman WS, Eschbach K, et al. The validity of race and Hispanic origin reporting on death certificates in the United States. *Vital Health Stat* 2008; 2(148).

<sup>xxvi</sup> The top 5 States that contributed to the achievable benchmark are Connecticut, District of Columbia, Massachusetts, New Jersey, and New York.

<sup>xxvii</sup> 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 2.34. 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/ethnicity and sex, 2002-2011**



**Source:** Substance Abuse and Mental Health Services Administration, National Survey on Drug Use and Health, 2002-2011.

**Denominator:** Civilian noninstitutionalized population age 12 and over who needed treatment for illicit drug use or an alcohol problem.

**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 mental health center. White and Black are non-Hispanic; Hispanic includes all races.

- ◆ In 2011, only 11% of people age 12 and over who needed treatment for illicit drug use or an alcohol problem received such treatment at a specialty facility in the last 12 months (Figure 2.34).
- ◆ From 2002 to 2007, Blacks were more likely to receive needed treatment for illicit drug use or an alcohol problem than Whites. There were no statistically significant differences between Blacks and Whites from 2008 to 2011.
- ◆ From 2007 to 2010, Hispanics were less likely to receive treatment than Whites.
- ◆ The 2011 top 5 State achievable benchmark was 15%.<sup>xxviii</sup> The overall population of people ages 12 and over as well as people of both sexes would need 30 years to achieve this benchmark. Whites could achieve the benchmark in 18 years while rates among Blacks are moving away from the benchmark.

Also, in the NHQR:

- ◆ In all years, people with any college education 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 3 of 4 years, adolescents ages 12-17 were less likely to receive treatment than adults ages 45-64.

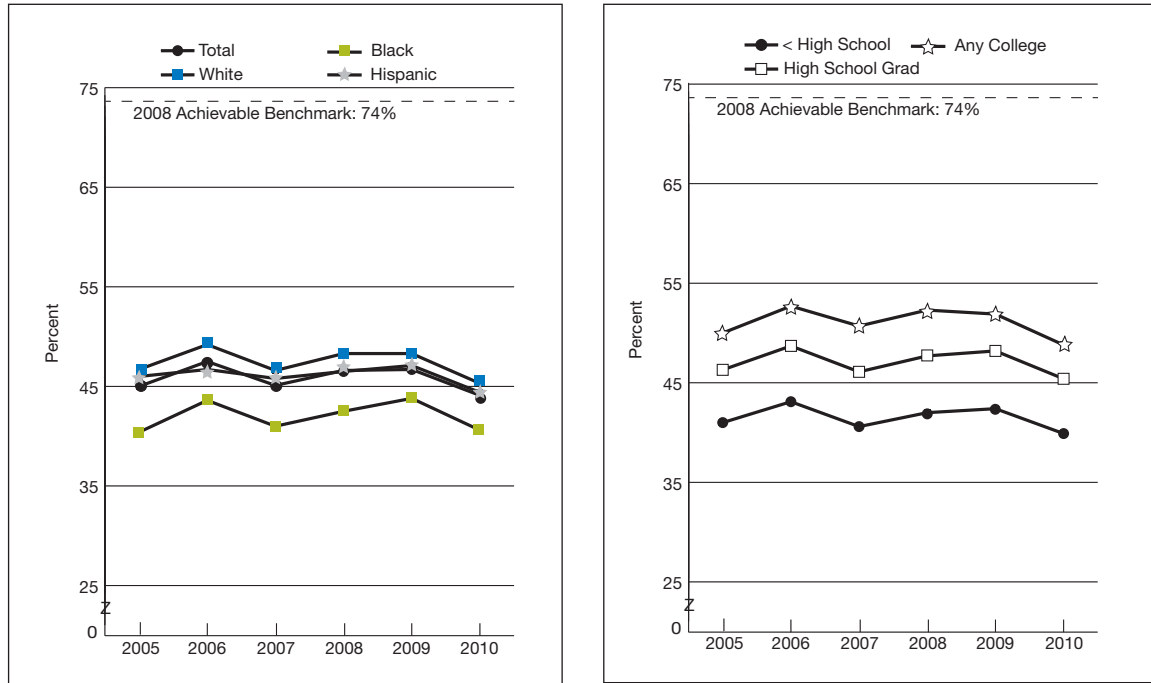
<sup>xxviii</sup> The top 5 States that contributed to the achievable benchmark are Alabama, Delaware, Maryland, Oregon, and Utah.



## 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 2.35. People age 12 and over treated for substance abuse who completed treatment course, by race/ethnicity and education, 2005-2010**



**Source:** Substance Abuse and Mental Health Services Administration, Treatment Episode Data Set, Discharge Data Set, 2005-2010.

**Denominator:** Discharges age 12 and over from publicly funded substance abuse treatment facilities.

**Note:** White and Black are non-Hispanic; Hispanic includes all races.

- ◆ In 2010, only 44% of people age 12 and over treated for substance abuse completed their treatment course (Figure 2.35).
- ◆ Except in 2009, Blacks who were treated for substance abuse were significantly less likely than Whites to complete treatment.
- ◆ In all years, people with less than a high school education who were treated for substance abuse were less likely than people with any college education to complete treatment.
- ◆ The 2008 top 5 State achievable benchmark was 74%.<sup>xxix</sup> No group showed progress toward the benchmark.

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 substance abuse treatment.

<sup>xxix</sup> The top 5 States that contributed to the achievable benchmark are Colorado, Connecticut, District of Columbia, Mississippi, and Texas.

## Musculoskeletal Diseases

### Importance

#### Prevalence

People who have arthritis, gout, lupus, or fibromyalgia (2010-2012) ..... 52.5 million (22.7% of U.S. adults) (MMWR, 2013)

Number of people with low bone density ..... 52 million (Crandall, et al., 2012)

#### Morbidity

Activity limitations attributable to arthritis, gout, lupus, or fibromyalgia (2010-2012) ..... 22.7 million adults (MMWR, 2013)

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

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

#### 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)

### Measures

This section tracks several quality measures for prevention and management of musculoskeletal diseases. The arthritis 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. Osteoporosis measures are usually tracked in this section, but no new data are available for this year's reports.

This section highlights three measures related to quality of care for arthritis:

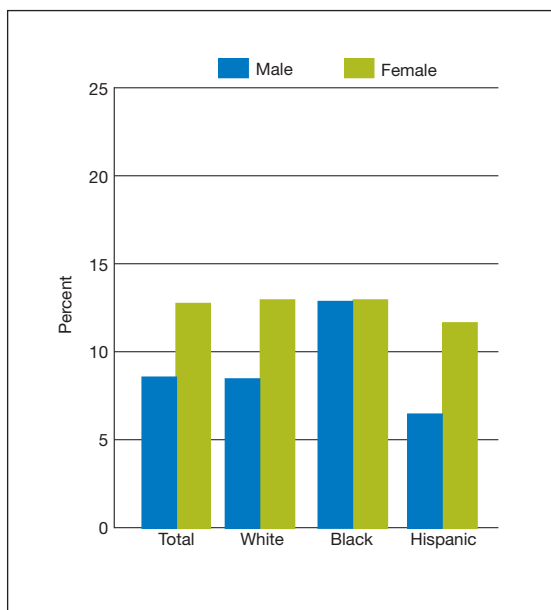
- ◆ Arthritis education for adults with arthritis.
- ◆ Counseling about physical activity for adults with arthritis.
- ◆ Counseling about weight reduction for overweight and obese adults with arthritis.

## Findings

### Management: Arthritis Education for 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 sex, 2009**



**Source:** Centers for Disease Control and Prevention, National Center for Health Statistics, National Health Interview Survey, 2009.

**Denominator:** Civilian noninstitutionalized adults with doctor-diagnosed arthritis.

**Note:** Estimates are age adjusted to the 2000 U.S. standard population. People were considered to have doctor-diagnosed arthritis if they answered yes to “Have you ever been told by a doctor or other health professional that you have some form of arthritis, rheumatoid arthritis, gout, lupus, or fibromyalgia?” White and Black are non-Hispanic. Hispanic includes all races.

- ◆ Rates for all groups regardless of ethnicity and sex are low; only about 7% to 13% of adults diagnosed with arthritis said they had arthritis education as part of the management of their condition (Figure 2.36).
- ◆ Male adults were less likely to receive education than female adults. However, there were no statistically significant differences between Black males and Black females.
- ◆ The percentage of adults who received education was higher for White females and Black females than for Hispanic females. There were no statistically significant differences between White females and Black females.

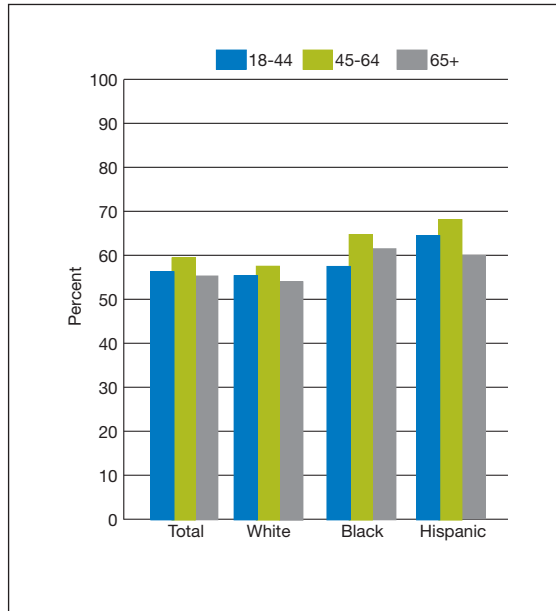
Also, in the NHQR:

- ◆ Adults with any college education were more likely to receive effective, evidence-based arthritis education than high school graduates and adults with less than a high school education.

## Management: Counseling About Physical Activity for 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 ethnicity/race and age, 2009**



**Source:** Centers for Disease Control and Prevention, National Center for Health Statistics, National Health Interview Survey, 2009.

**Denominator:** Civilian noninstitutionalized adults with doctor-diagnosed arthritis.

**Note:** Estimates are age adjusted to the 2000 U.S. standard population. White and Black are non-Hispanic. Hispanic includes all races. People were considered to have doctor-diagnosed arthritis if they answered yes to "Have you ever been told by a doctor or other health professional that you have some form of arthritis, rheumatoid arthritis, gout, lupus, or fibromyalgia?"

- ◆ More than 50% of all adults with doctor-diagnosed arthritis reported they received health care provider counseling, regardless of ethnicity and age (Figure 2.37).
- ◆ Among adults ages 45-64, Hispanics were more likely than Whites to receive exercise counseling. Overall, adults 45-64 were more likely to receive counseling about physical activity or exercise than those ages 18-44 and 65 and over.
- ◆ Hispanic and Black adults in all age categories with doctor-diagnosed arthritis were more likely to receive counseling than White adults.

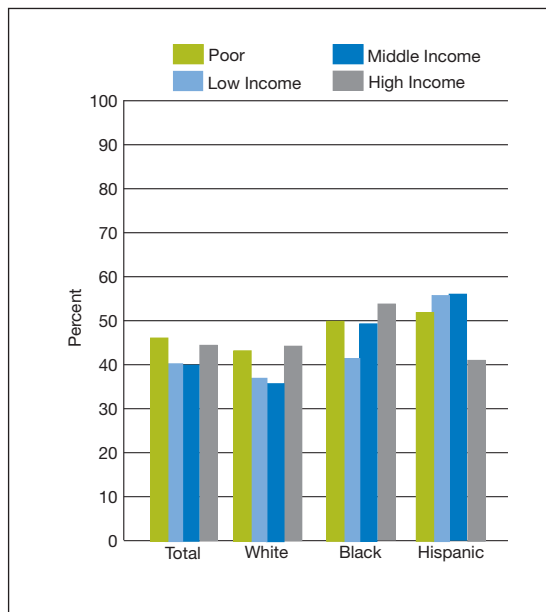
Also, in the NHQR:

- ◆ Poor, low-income, and middle-income adults were less likely than high-income adults to receive health care provider counseling about physical activity or exercise.

## Management: Counseling About Weight Reduction for Overweight And Obese Adults With Arthritis

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

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



**Source:** Centers for Disease Control and Prevention, National Center for Health Statistics, National Health Interview Survey, 2009.

**Denominator:** Civilian noninstitutionalized overweight and obese adults with doctor-diagnosed arthritis.

**Note:** Estimates are age adjusted to the 2000 U.S. standard population. White and Black are non-Hispanic. Hispanic includes all races. People were considered to have doctor-diagnosed arthritis if they answered yes to "Have you ever been told by a doctor or other health professional that you have some form of arthritis, rheumatoid arthritis, gout, lupus, or fibromyalgia?" For both men and women, overweight is BMI  $\geq 25$  to  $<30$ ; obese is BMI  $\geq 30$ .

- ◆ Overweight and obese Hispanics and Blacks were more likely to receive weight reduction counseling than Whites (Figure 2.38).
- ◆ Overweight and obese Black adults were more likely to receive counseling than overweight and obese White adults regardless of income level.
- ◆ Poor overweight and obese adults were more likely than high-income overweight and obese adults to report they received health care provider counseling about weight reduction (46.2% compared with 44.4%).

Also, in the NHQR:

- ◆ Overweight and obese adults with basic or complex activity limitations were more likely to receive weight reduction counseling than overweight and obese adults with neither limitation.

## Respiratory Diseases

### Importance

#### Mortality

Number of deaths due to chronic lower respiratory diseases (2011 prelim.).....	143,382 (Hoyert & Xu, 2012)
Number of deaths, influenza and pneumonia combined (2011 prelim.) .....	53,667 (Hoyert & Xu, 2012)
Cause of death rank for chronic lower respiratory diseases (2011 prelim.) .....	3rd (Hoyert & Xu, 2012)
Cause of death rank for influenza and pneumonia combined (2011 prelim.).....	8th (Hoyert & Xu, 2012)

#### Prevalence

Adults age 18 and over with current asthma (2011).....	18.7 million (Schiller, et al., 2012)
Children under age 18 with current asthma (2011) .....	7.0 million (Bloom, et al., 2012)

#### Incidence

Number of discharges attributable to pneumonia (2010).....	1.1 million (Pfuntner, et al., 2013)
New cases of tuberculosis (2012).....	9,945 (CDC, 2013c)

#### Cost

Total cost of upper respiratory infections (annual est.).....	\$40 billion (Fendrick, et al., 2003)
Total cost of asthma (2007).....	\$56 billion (Barnett & Nurmagambetov, 2011)
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 seven measures highlighted in this section are:

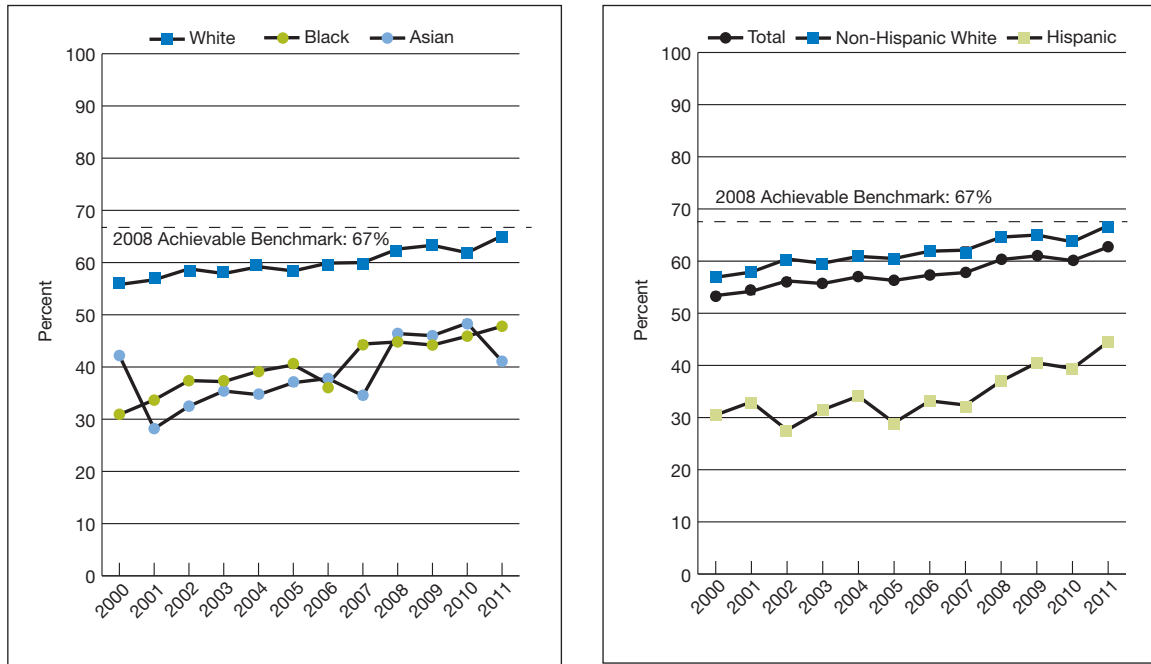
- ◆ Pneumococcal immunization.
- ◆ Influenza immunization among patients hospitalized with pneumonia.
- ◆ Influenza immunization among nursing home residents.
- ◆ Pneumococcal immunization among nursing home residents.
- ◆ Completion of tuberculosis therapy.
- ◆ Daily asthma medication.
- ◆ Written asthma management plans.

## Findings

### Prevention: Pneumococcal Immunization

Immunization 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 immunization, by race and ethnicity, 2000-2011**



**Source:** Centers for Disease Control and Prevention, National Center for Health Statistics, National Health Interview Survey, 2000-2011.

**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.

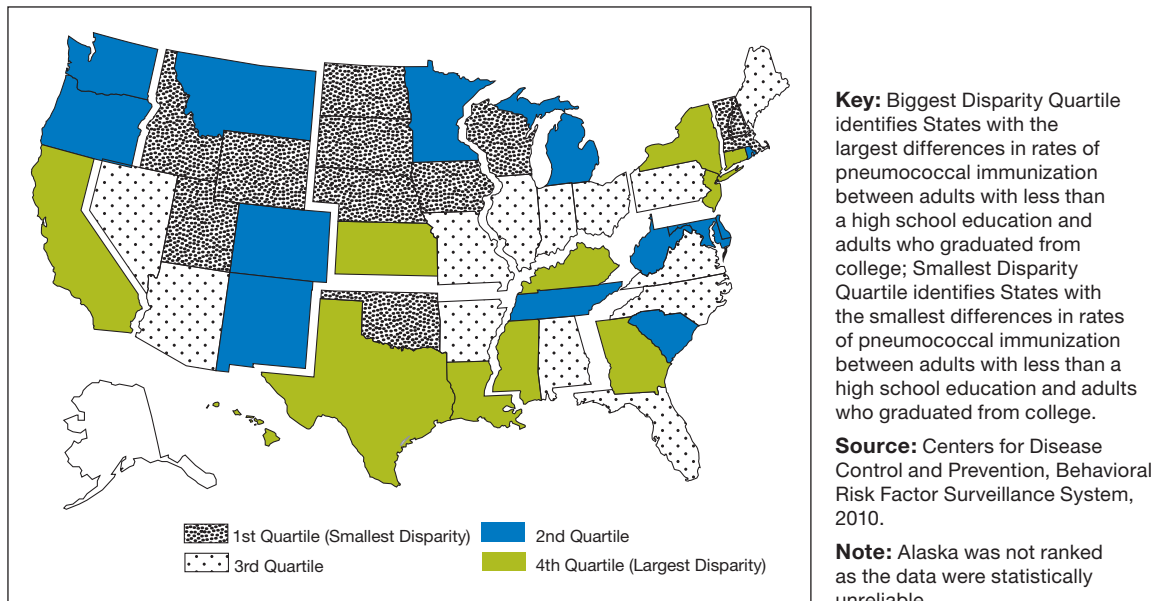
- ◆ Overall, the percentage of adults age 65 and over who reported ever receiving pneumococcal immunization increased from 53.4% in 2000 to 62.7% in 2011 (Figure 2.39). In 2011, increases were observed among Whites and Blacks, but Asians who reported ever receiving pneumococcal immunization decreased.
- ◆ In all years, Blacks and Asians were less likely than Whites and Hispanics were less likely than non-Hispanic Whites to receive pneumococcal immunization.
- ◆ The 2008 top 5 State achievable benchmark was 67%.<sup>xxx</sup> At the current annual rate of increase, this benchmark could be attained overall in about 5 years. Whites could achieve the benchmark in about 2 years, while Blacks, Asians, and Hispanics would not reach the benchmark for 13, 23, and 19 years, respectively.

<sup>xxx</sup> The top 5 States that contributed to the achievable benchmark are Colorado, Delaware, Maine, New Hampshire, and Oklahoma.

Also, in the NHQR:

- ◆ In all years, adults with basic activity limitations were more likely than adults with neither basic nor complex activity limitations to receive pneumococcal immunization.

**Figure 2.40. State variation in disparities related to education: adults age 65 and over who reported ever receiving pneumococcal immunization, 2010**



- ◆ The States in the biggest disparity quartile had differences of more than 11% between adults with less than a high school education and adults who graduated from college in the rate of pneumococcal immunization. In the States in the smallest disparity quartile, the differences were less than 4.7% (Figure 2.40).
- ◆ States in the Middle Atlantic, East South Central, and West South Central census divisions tended to have larger education-related disparities in pneumococcal immunization while States in the New England, West North Central, and Mountain census divisions tended to have smaller education-related disparities in pneumococcal immunization.

Also, in the NHQR:

- ◆ States in the East South Central and West South Central census divisions tended to have lower rates of pneumococcal immunization.

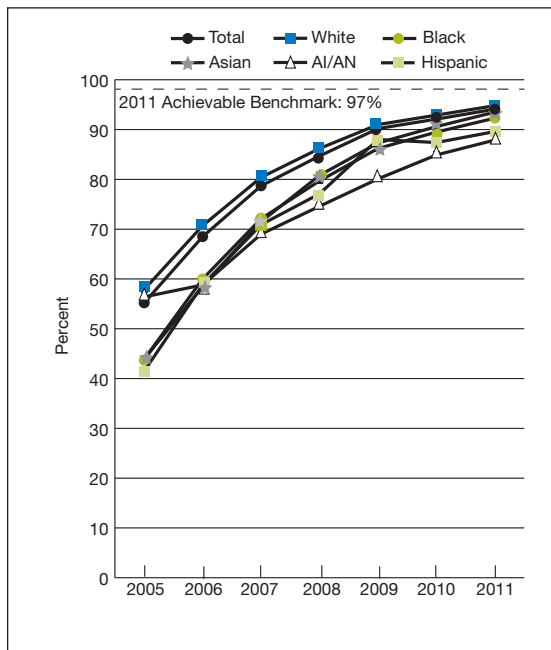


## Prevention: Influenza Immunization Among Patients Hospitalized With Pneumonia

In 2011, overall compliance with most of these measures surpassed 95%, our threshold for retiring measures. One pneumonia care measure that has not yet been retired is influenza immunization status assessment or provision, and this measure is presented here.

NEW

**Figure 2.41. Hospital patients age 50 and over with pneumonia who received influenza immunization status assessment or provision, by race/ethnicity, 2005-2011**



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

**Source:** Centers for Medicare & Medicaid Services, Medicare Quality Improvement Organization Program, 2005-2011.

**Denominator:** Patients age 50 and over discharged October-February 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 are non-Hispanic; Hispanic includes all races.

- ◆ From 2005 to 2011, the percentage of patients age 50 and over with pneumonia who received influenza immunization status assessment or provision increased from 55.2% to 94.1% (Figure 2.41). Improvements were observed among all racial/ethnic groups.
- ◆ In all years since 2006, Black, Hispanic, AI/AN, and Asian patients were less likely than White patients to receive influenza immunization status assessment or provision.
- ◆ In 2010, the 2008 top 5 State achievable benchmark of 91% was attained.
- ◆ In 2011, the new top 5 State achievable benchmark was 97%.<sup>xxxi</sup> All racial/ethnic groups were on track to attain the benchmark in about a year.

Also, in the NHQR:

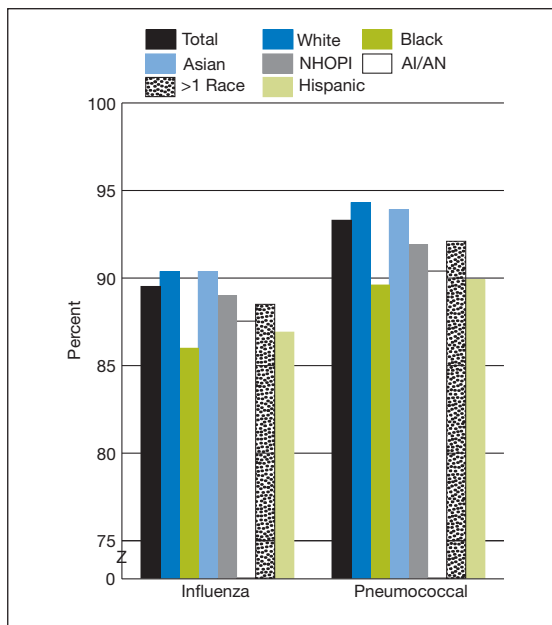
- ◆ In all years, patients ages 65-74, 75-84, and 85 and over were more likely to receive influenza immunization status assessment or provision than patients ages 50-64.

<sup>xxxi</sup> The top 5 States that contributed to the achievable benchmark are Florida, Maine, New Hampshire, New Jersey, and South Carolina.

## Prevention: Influenza and Pneumococcal Immunization Among Nursing Home Residents

Long-stay residents typically enter a nursing facility because they can no longer care for themselves at home. They tend to stay in the facility for several months or years. They are at high risk for influenza infections, complications, and mortality because of advanced age, comorbid conditions, and increased exposure in institutional settings. Hence, routine immunization of nursing home residents and staff against influenza is strongly recommended. Pneumococcal immunization is also appropriate for most long-stay nursing home residents based on age and comorbid conditions.

**NEW** Figure 2.42. Long-stay nursing home residents who were assessed and given influenza and pneumococcal immunization, by race/ethnicity, 2011



**Source:** Centers for Medicare & Medicaid Services, Minimum Data Set, 2011. Data are from the third quarter of each calendar year.

**Denominator:** All long-stay residents in Medicare- or Medicaid-certified nursing home facilities.

- ◆ In 2011, 89.5% of long-stay nursing home residents were assessed and given influenza immunization and 93.3% were assessed and given pneumococcal immunization (Figure 2.42).
- ◆ Black, AI/AN, multiple-race, and Hispanic residents were less likely than White residents to receive both influenza and pneumococcal immunization. NHOPI residents were less likely than White residents to receive pneumococcal immunization.
- ◆ In 2011, the top 5 State achievable benchmark for influenza immunization was 94%<sup>xxxii</sup> and the benchmark for pneumococcal immunization was 98%.<sup>xxxiii</sup> No racial/ethnic group has achieved the benchmarks.

Also, in the NHQR:

- ◆ Residents ages 0-64, 65-74, and 75-84 were less likely than residents age 85 and over to receive both influenza and pneumococcal immunization.
- ◆ Females were more likely than males to receive pneumococcal immunization.

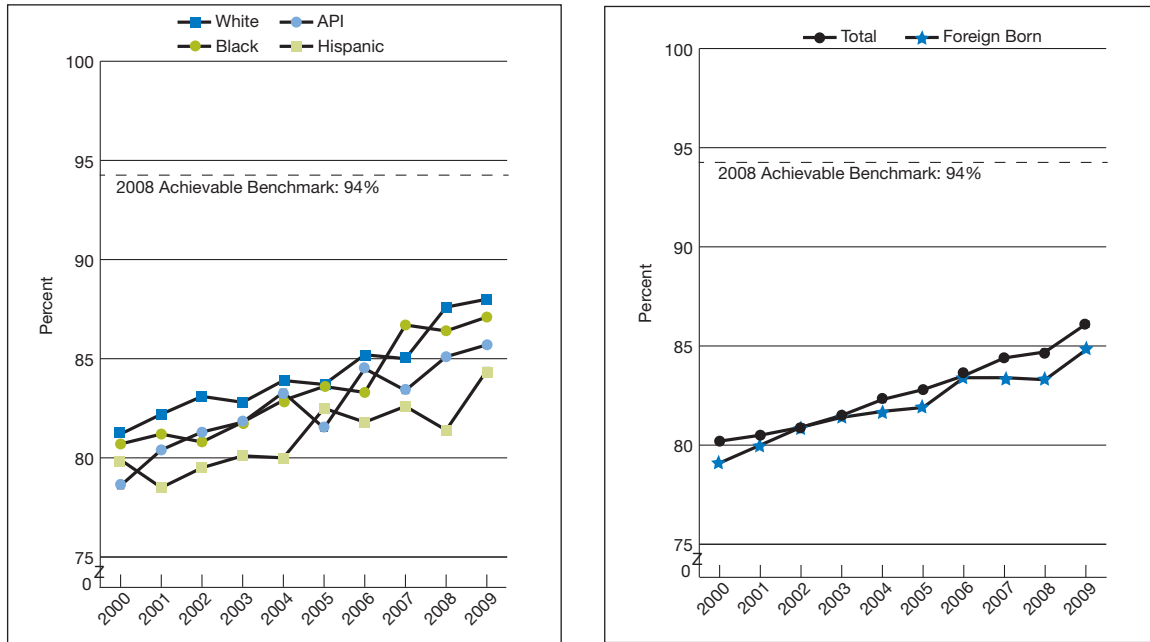
<sup>xxxii</sup> The top 5 States that contributed to the achievable benchmark are Alaska, Hawaii, New Hampshire, New Jersey, and South Dakota.

<sup>xxxiii</sup> The top 5 States that contributed to the achievable benchmark are Alaska, Iowa, New Hampshire, North Dakota, and Wisconsin.

### 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 2.43. Patients with tuberculosis who completed a curative course of treatment within 1 year of initiation of treatment, by race/ethnicity and place of birth, 2000-2009**



**Key:** API = Asian or Pacific Islander.

**Source:** Centers for Disease Control and Prevention, National Tuberculosis Surveillance System, 2000-2009.

**Denominator:** U.S. civilian noninstitutionalized population treated for tuberculosis.

**Note:** White, Black, and API are non-Hispanic; Hispanic includes all races.

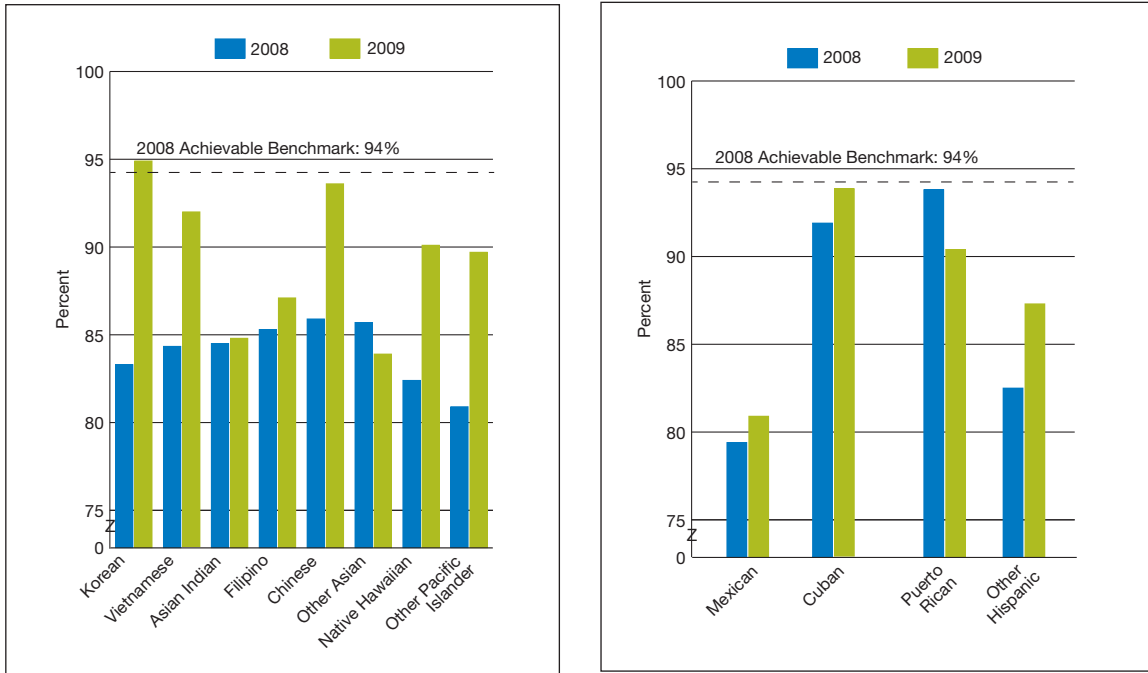
- ◆ The percentage of patients who completed tuberculosis therapy within 1 year increased from 80.2% in 2000 to 86.1% in 2009 (Figure 2.43). Improvements were observed among foreign-born patients and among all racial/ethnic groups.
- ◆ In 8 of 10 years, Hispanics were less likely than Whites to complete tuberculosis treatment.
- ◆ The 2008 top 4 State achievable benchmark was 94%.<sup>xxxiv</sup> At the current annual rate of increase, this benchmark could not be attained overall for about 12 years. Whites, Blacks, and APIs could achieve the benchmark sooner while Hispanics would need about 18 years. Foreign-born people would need about 16 years.

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.
- ◆ From 2004 to 2009, males were less likely than females to complete tuberculosis treatment.

<sup>xxxiv</sup> The top 4 States that contributed to the achievable benchmark are Colorado, Kansas, Mississippi, and Oregon.

**Figure 2.44. Patients with tuberculosis who completed a curative course of treatment within 1 year of initiation of treatment, by Asian and Pacific Islander and Hispanic granular ethnicities, 2008-2009**



**Source:** Centers for Disease Control and Prevention, National Tuberculosis Surveillance System, 2008-2009.

**Denominator:** U.S. civilian noninstitutionalized population treated for tuberculosis.

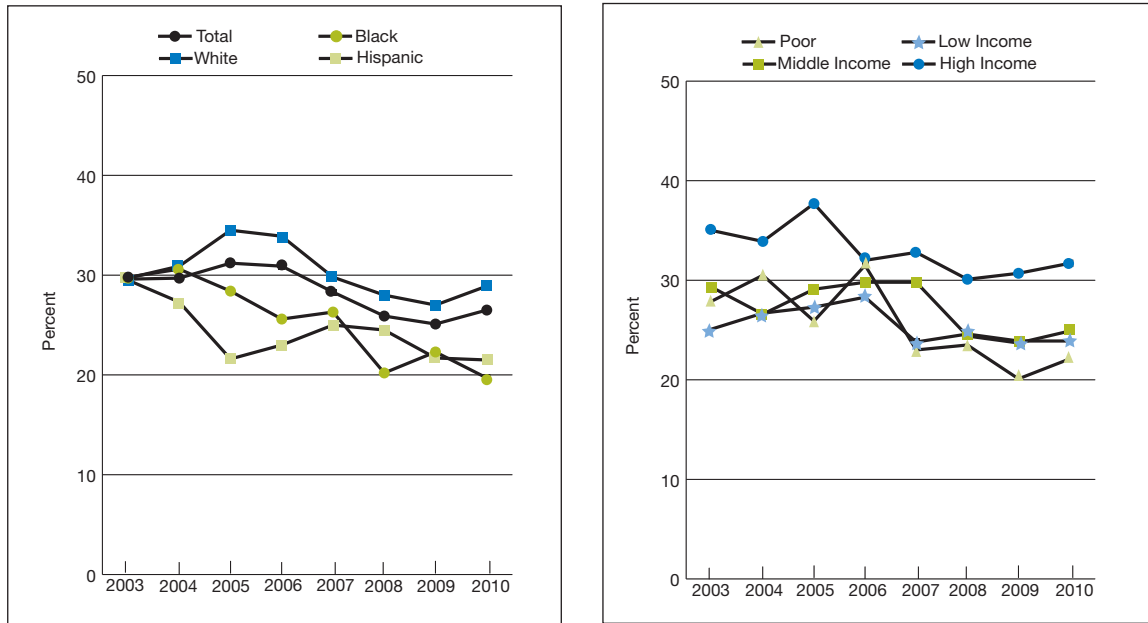
- ◆ There is considerable variation in completion of treatment for tuberculosis among API granular ethnicities and among Hispanic granular ethnicities (Figure 2.44).
- ◆ Most groups are far from the 2008 top 4 State achievable benchmark of 94%. Only Koreans reached the benchmark in 2009.

### 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 to take medications, patients with persistent asthma need daily long-term controller medication to prevent exacerbations and chronic symptoms. Preventive medications for people with persistent asthma include inhaled corticosteroids, inhaled long-acting beta-2 agonists, cromolyn, theophylline, and leukotriene modifiers.

**Figure 2.45. People with current asthma who report taking preventive asthma medicine daily or almost daily, by race/ethnicity and family income, 2003-2010**



**Source:** Agency for Healthcare Research and Quality, Medical Expenditure Panel Survey, 2003-2010.

**Denominator:** Civilian noninstitutionalized population with current asthma.

**Note:** Age adjusted to the 2000 U.S. standard population using four age groups: 0-17, 18-44, 45-64, and 65 and over. 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; Hispanic includes all races.

- ◆ From 2003 to 2010, the percentage of people with current asthma who reported taking preventive asthma medicine daily or almost daily fell from 29.6% to 26.5% (Figure 2.45). Significant decreases were observed among Blacks, Hispanics, high-income people, and poor people.
- ◆ In 5 of 8 years, Blacks were less likely than Whites to take daily preventive asthma medicine.
- ◆ In 5 of 8 years, poor and low-income people were less likely than high-income people to take daily preventive asthma medicine.

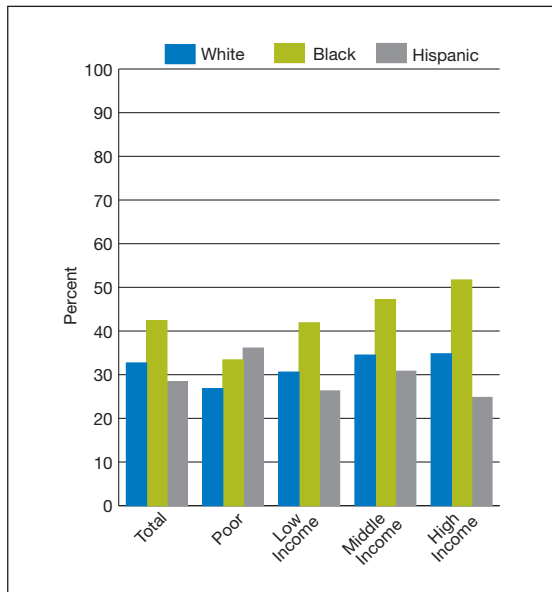
Also, in the NHQR:

- ◆ In all years, uninsured people under age 65 were less likely than people under age 65 with any private health insurance to take daily preventive asthma medicine.
- ◆ In all years, people ages 18-44 were less likely than other age groups to take daily preventive asthma medicine.

## Management: Written Asthma Management Plans

A successful partnership for asthma care requires providers to educate patients about daily management and how to recognize and handle worsening asthma. Hence, providers should develop written asthma management plans as part of educating patients regarding self-management, especially for patients with moderate or severe persistent asthma and those with a history of severe exacerbation.

**Figure 2.46. People with current asthma who received written asthma management plans from their health provider, by race/ethnicity and family income, 2008**



**Source:** Centers for Disease Control and Prevention, National Center for Health Statistics, National Health Interview Survey, 2008.

**Denominator:** Civilian noninstitutionalized population with current asthma.

**Note:** Estimates are age adjusted to the 2000 U.S. standard population. White and Black are non-Hispanic; Hispanic includes all races.

- ◆ In 2008, only one-third of people with current asthma received written asthma management plans from their provider (data not shown).
- ◆ Blacks were more likely than Whites to receive written asthma management plans (Figure 2.46). Black-White differences were most significant in middle- and high-income families.

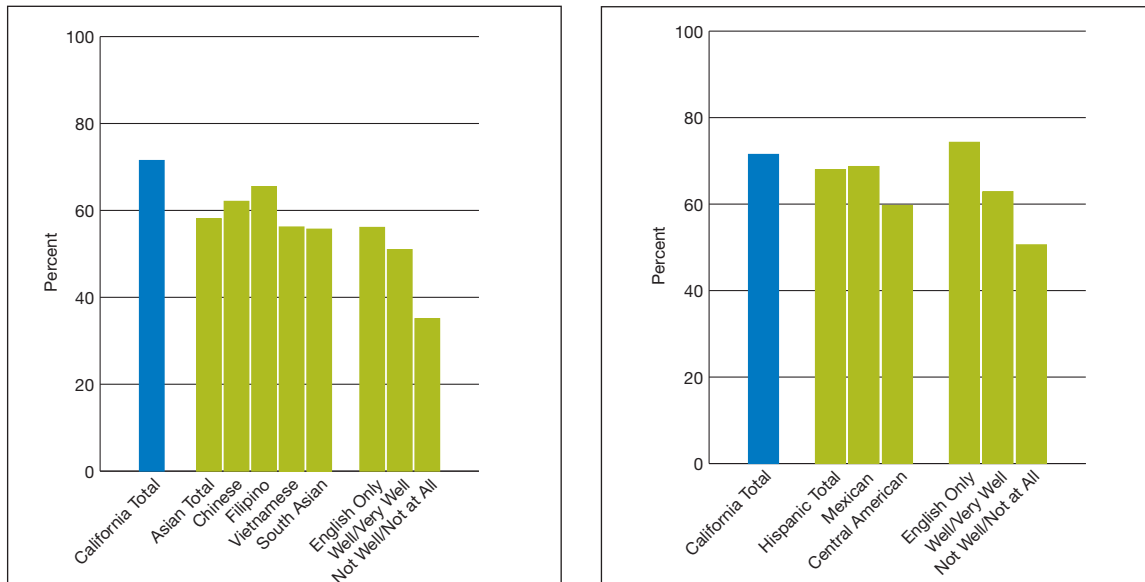
Also, in the NHQR:

- ◆ Children ages 0-17 were more likely to receive written asthma management plans than adults ages 18-44. This age effect was most significant in middle- and high-income families.

### Focus on Asian and Hispanic Subgroups

National data on Asian and Hispanic subgroups are limited. In this section, we show the percentage of people with current asthma whose doctor helped them to develop an asthma management plan among Asian and Hispanic subgroups in California. Data come from the 2011-2012 California Health Interview Survey.

**Figure 2.47. People with current asthma whose doctor helped them to develop an asthma management plan, by Asian and Hispanic subgroups and English proficiency, California, 2011-2012**



**Source:** UCLA, Center for Health Policy Research, California Health Interview Survey, 2011-2012.

**Denominator:** Civilian noninstitutionalized population in California.

- ◆ In 2011-2012, among Asian Californians, there was moderate variation among subgroups in the percentage of people with current asthma whose doctor helped them to develop an asthma management plan (Figure 2.47). Differences related to English proficiency were not statistically significant due in part to large standard errors for the subpopulations.
- ◆ In 2011-2012, among Hispanic Californians, there also was moderate variation among subgroups in the percentage of people with current asthma whose doctor helped them to develop an asthma management plan. Hispanics who did not speak English well were less likely to report help with developing an asthma management plan compared with Hispanics who spoke English at home. Other differences were not statistically significant due in part to large standard errors for many subpopulations.

## References

- Aluli NE, Jones KL, Reyes PW, et al. Diabetes and cardiovascular risk factors in Native Hawaiians. *Hawaii Med J* 2009 Aug;68:152-6.
- American Diabetes Association. Economic cost of diabetes in the U.S. in 2012. *Diabetes Care* 2013;36(4):1033-46.
- Barnett SB, Nurmagambetov TA. Costs of asthma in the United States: 2002-2007. *J Allergy Clin Immunol* 2011;127(1):145-52.
- Bloom B, Cohen RA, Freeman G. Summary health statistics for U.S. children: National Health Interview Survey, 2011. *Vital Health Stat* 10(254); 2012. Available at: [http://www.cdc.gov/nchs/data/series/sr\\_10/sr10\\_254.pdf](http://www.cdc.gov/nchs/data/series/sr_10/sr10_254.pdf). Accessed September 19, 2013.
- Burns MN, Montague E, Mohr DC. Initial design of culturally informed behavioral intervention technologies: developing an mHealth intervention for young sexual minority men with generalized anxiety disorder and major depression. *J Med Internet Res* 2013;15(12):e271, 1-9. Available at: <http://www.ncbi.nlm.nih.gov/pubmed/24311444>. Accessed February 20, 2014.
- Carrillo H, DeCarlo P. What are the HIV prevention needs of Mexican immigrants in the U.S.? San Francisco, CA. University of California Center for AIDS Prevention Studies; 2003.
- Center for Behavioral Health Statistics and Quality. Projections of national expenditures for mental health services and substance abuse treatment, 2004-2014. Rockville, MD: Substance Abuse and Mental Health Services Administration; 2008. Publication No. SMA 08-4326. Available at: <http://permanent.access.gpo.gov/gpo5877/2004-2014/file.pdf>. Accessed September 8, 2011.
- Center for Behavioral Health Statistics and Quality. Results from the 2006 National Survey on Drug Use and Health: national findings. NSDUH Series H-32. Rockville, MD: Substance Abuse and Mental Health Services Administration; 2007. Publication No. SMA 07-4293. Available at: <http://www.oas.samhsa.gov/nsduh/2k6nsduh/2k6results.pdf>. Accessed September 8, 2011.
- Center for Behavioral Health Statistics and Quality. Results from the 2011 National Survey on Drug Use and Health: mental health findings, NSDUH Series H-45. Rockville, MD: Substance Abuse and Mental Health Services Administration; 2012a. Publication No. SMA 12-4725. Available at: [http://www.samhsa.gov/data/NSDUH/2k11MH\\_FindingsandDetTables/Index.aspx](http://www.samhsa.gov/data/NSDUH/2k11MH_FindingsandDetTables/Index.aspx). Accessed November 5, 2013.
- Center for Behavioral Health Statistics and Quality. Results from the 2011 National Survey on Drug Use and Health: summary of national findings. NSDUH Series H-44. Rockville, MD: Substance Abuse and Mental Health Services Administration; 2012b. Publication No. SMA 12-4713. Available at: <http://www.samhsa.gov/data/NSDUH/2011SummNatFindDetTables/Index.aspx>. Accessed November 5, 2013.
- Centers for Disease Control and Prevention. Diabetes data and trends: distribution of first-listed diagnoses among hospital discharges with diabetes as any listed diagnosis, adults age 18 years and older, United States, 2009. Atlanta, GA: U.S. Department of Health and Human Services; 2011a. Available at: <http://www.cdc.gov/diabetes/statistics/hosp/adulttable1.htm>. Accessed October 25, 2010.
- Centers for Disease Control and Prevention. Diagnoses of HIV infection and AIDS in the United States and dependent areas, 2010. HIV Surveillance Report No. 22. Atlanta, GA: U.S. Department of Health and Human Services; 2010. Available at: [http://www.cdc.gov/hiv/library/reports/surveillance/2010/surveillance\\_Report\\_vol\\_22.html](http://www.cdc.gov/hiv/library/reports/surveillance/2010/surveillance_Report_vol_22.html). Accessed September 18 2013.
- Centers for Disease Control and Prevention. HIV among gay and bisexual men. Atlanta, GA: U.S. Department of Health and Human Services; 2013a. Available at [http://www.cdc.gov/hiv/pdf/risk\\_gender\\_238900B\\_HIV\\_Gay\\_Bisexual\\_MSM\\_FS\\_final.pdf](http://www.cdc.gov/hiv/pdf/risk_gender_238900B_HIV_Gay_Bisexual_MSM_FS_final.pdf). Accessed September 18 2013.
- Centers for Disease Control and Prevention. HIV among Latinos. Atlanta, GA: U.S. Department of Health and Human Services; 2011b. Available at: <http://www.cdc.gov/hiv/risk/raciaethnic/hispaniclatinos/facts/index.htm>. Accessed January 30, 2012.



Centers for Disease Control and Prevention. HIV in the United States: at a glance. Atlanta, GA: U.S. Department of Health and Human Services; 2013b. Available at [http://www.cdc.gov/hiv/pdf/statistics\\_basics\\_factsheet.pdf](http://www.cdc.gov/hiv/pdf/statistics_basics_factsheet.pdf). Accessed September 18, 2013.

Centers for Disease Control and Prevention. HIV prevention in the third decade. Atlanta, GA: U.S. Department of Health and Human Services; updated October 2005.

Centers for Disease Control and Prevention. National diabetes fact sheet, 2011. Atlanta, GA: U.S. Department of Health and Human Services; 2011c. Available at: [http://www.cdc.gov/diabetes/pubs/pdf/ndfs\\_2011.pdf](http://www.cdc.gov/diabetes/pubs/pdf/ndfs_2011.pdf). Accessed September 8, 2011.

Centers for Disease Control and Prevention. Reported tuberculosis in the United States, 2012. Atlanta, GA: U.S. Department of Health and Human Services, 2013c. Available at: <http://www.cdc.gov/tb/statistics/reports/2012/pdf/report2012.pdf>. Accessed September 19, 2013.

Centers for Disease Control and Prevention. Web-Based Injury Statistics Query and Reporting System (WISQARS). Atlanta, GA: U.S. Department of Health and Human Services; 2011d. Available at <http://www.cdc.gov/injury/wisqars/index.html>. Accessed February 20, 2014.

Cook WK, Chung C, Ve'e T. Native Hawaiian and Pacific Islander health disparities. San Francisco, CA: Asian & Pacific Islander American Health Forum; 2010.

Crandall CJ, Newberry SJ, Gellad WG, et al. Treatment to prevent fractures in men and women with low bone density or osteoporosis: update of a 2007 report. Comparative Effectiveness Review No. 53. (Prepared by Southern California Evidence-based Practice Center under Contract No. HHSA-290-2007-10062-I.) Rockville, MD: Agency for Healthcare Research and Quality; March 2012. Available at: <http://www.effectivehealthcare.ahrq.gov/search-for-guides-reviews-and-reports/?pageaction=displayproduct&productid=1006>. Accessed February 20, 2013.

Cunningham WE, Sohler NL, Tobias C, et al. Health services utilization for people with HIV infection: comparison of a population targeted for outreach with the U.S. population in care. *Med Care* 2006 Nov;44(11):1038-47.

Fendrick AM, Monto AS, Nightengale B, et al. The economic burden of non-influenza-related viral respiratory tract infection in the United States. *Arch Intern Med* 2003 Feb 24;163(4):487-94.

Ghandour RM, Logan MD, Blumberg SJ, et al. Mental health conditions among school-aged children: geographic and sociodemographic patterns in prevalence and treatment. *J Dev Behav Pediatr* 2012 Jan;33(1):42-54.

Glied S, Herzog K, Frank R. Review: the net benefits of depression management in primary care. *Med Care Res Rev* 2010 Jun;67(3):251-74.

Go A, Mozaffarian D, Roger VL, et al. Heart disease and stroke statistics-2014 update: a report from the American Heart Association. *Circulation* 2014;129:e28-e292; originally published online December 18, 2013. Available at: <http://circ.ahajournals.org/content/129/3/e28.full.pdf+html>. Accessed January 24, 2014.

Grandinetti A, Chang HK, Mau MK, et al. Prevalence of glucose intolerance among Native Hawaiians in two rural communities. Native Hawaiian Health Research (NHHR) Project. *Diabetes Care* 1998;21(4):549-54.

Green MD, ed. Hawaii cancer facts & figures 2010: a sourcebook for planning & implementing programs for cancer prevention & control. Honolulu, HI: American Cancer Society, Cancer Research Center of Hawaii, and Hawaii State Department of Health; September 2010.

Hawaii State Department of Health. Hawaii health survey 2008. Honolulu: State of Hawaii; July 2009. Available at: <http://health.hawaii.gov/hhs/hawaii-health-survey-2008/>. Accessed November 6, 2013.

Health Resources and Services Administration, Maternal and Child Health Bureau. The National Survey of Children's Health 2007. Rockville, MD: U.S. Department of Health and Human Services; 2010.

## EFFECTIVENESS OF CARE FOR COMMON CLINICAL CONDITIONS

Howlander N, Noone AM, Krapcho M, et al., eds. SEER Cancer Statistics Review, 1975-2009. Bethesda, MD: National Cancer Institute; 2012. Available at: [http://seer.cancer.gov/archive/csr/1975\\_2009\\_pops09](http://seer.cancer.gov/archive/csr/1975_2009_pops09). Accessed May 30, 2014.

Hoyert DL, Xu J. Deaths: preliminary data for 2011. *Natl Vital Stat Rep* 2012;61(6). Available at: [http://www.cdc.gov/nchs/data/nvsr/nvsr61/nvsr61\\_06.pdf](http://www.cdc.gov/nchs/data/nvsr/nvsr61/nvsr61_06.pdf). Accessed September 17, 2013.

Indian Health Service. Fact sheets: Disparities. Rockville, MD: U.S. Department of Health and Human Services; 2011. Available at: <http://www.ihs.gov/newsroom/factsheets/disparities/>. Accessed May 30, 2014.

Ingram DD, Franco SJ. NCHS urban-rural classification scheme for counties. *Vital Health Stat* 2012;2(154).

Insel TR, Wang PS. The STAR\*D trial: revealing the need for better treatments. *Psychiatr Serv* 2009 Nov;60(11):1466-7.

Juarez DT, Davis JW, Brady SK, et al. Prevalence of coronary heart disease and its risk factors related to age in Asians, Pacific Islanders, and Caucasians in Hawaii. *J Health Care Poor Underserved* 2012;23(3):1000-10.

Kaiser Family Foundation. HIV/AIDS policy fact sheet. U.S. federal funding for HIV/AIDS: the President's FY2014 budget request. Menlo Park, CA: Henry J. Kaiser Family Foundation; 2013. Available at: <http://kff.org/hiv/aids/fact-sheet/u-s-federal-funding-for-hiv-aids-the-presidents-fy-2014-budget-request/>. Accessed November 4, 2013.

Look MA, Trask-Batti MK, Agres R, et al. Assessment and priorities for health & well-being in Native Hawaiians & other Pacific peoples. Honolulu, HI: Center for Native and Pacific Health Disparities Research, John A. Burns School of Medicine, University of Hawaii; 2013. Available at: [http://www2.jabsom.hawaii.edu/native/docs/community/DNHH\\_Assessment&Priorities\\_Report\\_2013.pdf](http://www2.jabsom.hawaii.edu/native/docs/community/DNHH_Assessment&Priorities_Report_2013.pdf). Accessed November 6, 2013.

Maciosek MV, Coffield AB, Edwards NM, et al. Priorities among effective clinical preventive services: results of a systematic review and analysis. *Am J Prev Med* 2006 Jul;31(1):52-61.

Mann JJ, Apter A, Bertolote J, et al. Suicide prevention strategies: a systematic review. *JAMA* 2005 Oct 26;294(16):2064-74.

Mau MK. Health and health care of Native Hawaiian & Other Pacific Islander older adults. In: Periyakoil VJ, ed. *Ethnogeriatrics Curriculum and Training*. Stanford, CA: Stanford School of Medicine; 2010. Available at: [http://geriatrics.stanford.edu/ethnomed/hawaiian\\_pacific\\_islander/](http://geriatrics.stanford.edu/ethnomed/hawaiian_pacific_islander/). Accessed November 6, 2013.

Mishra SI, Luce-Aoelua P, Wilkens LR, et al. Cancer among American-Samoans: site-specific incidence in California and Hawaii. *Int J Epidemiol* 1996;25(4):713-21.

MMWR. National and state medical expenditures and lost earnings attributable to arthritis and other rheumatic conditions—United States, 2003. *MMWR* 2007;56(01):4-7. Available at: <http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5601a2.htm>. Accessed February 22, 2013.

MMWR. Prevalence of doctor-diagnosed arthritis and arthritis-attributable activity limitation—United States, 2010-2012. *MMWR* 2013;62(44):869-873. Available at: [http://www.cdc.gov/mmwr/preview/mmwrhtml/mm6244a1.htm?s\\_cid=mm6244a1\\_w](http://www.cdc.gov/mmwr/preview/mmwrhtml/mm6244a1.htm?s_cid=mm6244a1_w). Accessed March 31, 2014.

MMWR. Vital signs: awareness and treatment of uncontrolled hypertension among adults—United States, 2003-2010. *MMWR* 2012;61(35):703-9. Available at: [http://www.cdc.gov/mmwr/preview/mmwrhtml/mm6135a3.htm?s\\_cid=mm6135a3\\_w](http://www.cdc.gov/mmwr/preview/mmwrhtml/mm6135a3.htm?s_cid=mm6135a3_w). Accessed September 18, 2013.

Moscicki E. Epidemiology of completed and attempted suicide: toward a framework for prevention. *Clin Neuroscience Res* 2001;1(5):310-23.

Murphy S, Xu JQ, Kochanek KD. Deaths: preliminary data for 2010. *Natl Vital Stat Rep* 2012;60(4). Available at: [http://www.cdc.gov/nchs/data/nvsr/nvsr60/nvsr60\\_04.pdf](http://www.cdc.gov/nchs/data/nvsr/nvsr60/nvsr60_04.pdf). Accessed September 18, 2013.

National Center for Injury Prevention and Control, Centers for Disease Control and Prevention. Prescription painkiller overdoses in the U.S. Vital Signs 2011 Nov. Available at <http://www.cdc.gov/vitalsigns/pdf/2011-11-vitalsigns.pdf>. Accessed February 20, 2014.

National Heart, Lung, and Blood Institute. Fact book fiscal year 2012. Bethesda, MD: National Institutes of Health; 2012. Available at: <http://www.nhlbi.nih.gov/about/factbook/FactBook2012.pdf>. Accessed September 17, 2013.

National Heart, Lung, and Blood Institute, National Asthma Education and Prevention Program. Expert panel report 3: guidelines for the diagnosis and management of asthma. Full report 2007. Bethesda, MD: National Institutes of Health; 2007. Publication No. NIH 07-4051. Available at: <http://www.nhlbi.nih.gov/guidelines/asthma/asthgdln.pdf>. Accessed November 4, 2008.

National Highway Traffic Safety Administration. Traffic safety facts 2012 data. Washington, DC: U.S. Department of Transportation; 2013. Publication No. DOT HS 811-870. Available at: <http://www-nrd.nhtsa.dot.gov/Pubs/811870.pdf>. Accessed April 1, 2014.

National Osteoporosis Foundation. What Is Osteoporosis? Available at: <http://www.nof.org/articles/7>. Accessed February 15, 2013.

Nordentoft M. Crucial elements in suicide prevention strategies. *Prog Neuropsychopharmacol Biol Psychiatry* 2011 Jun 1;35(4):848-53. Epub 2010 Dec 2.

Office of National AIDS Policy. National HIV/AIDS strategy for the United States. Washington, DC: White House; July 2010. Available at: <http://www.whitehouse.gov/sites/default/files/uploads/NHAS.pdf>. Accessed December 1, 2011.

Okihiro M, Harrigan R. An overview of obesity and diabetes in the diverse populations of the Pacific. *Ethn Dis* 2005;15(4 Suppl 5):S5-71-80.

Palafox NA, Yamada S, Ou AC, et al. Cancer in Micronesia. *Pacific Health Dialog* 2004;11(2):78-83. Available at: <http://www.pacifichealthdialog.org.fj/Volume%2011/no2/PHD11%202%20p078%20083%20Palafox%20orig.pdf>. Accessed November 6, 2013.

Papoz L, Barny S, Simon D. Prevalence of diabetes mellitus in New Caledonia: ethnic and urban-rural differences. CALDIA Study Group. CALedonia DIAbetes Mellitus Study. *Am J Epidemiol* 1996 May 15;143(10):1018-24.

Pencharz JS, MacLean CH. Measuring quality in arthritis care: The Arthritis Foundation's quality indicator set for osteoarthritis. *Arthritis Rheum* 2004;51(4):538-48.

Pfuntner A, Weir LM, Stocks C. Most frequent conditions in U.S. hospitals, 2010. Healthcare Cost and Utilization Project Statistical Brief #148. Rockville, MD: Agency for Healthcare Research and Quality; 2013. Available at: <https://www.hcup-us.ahrq.gov/reports/statbriefs/sb148.pdf>. Accessed September 19, 2013.

Ringold S, Lynn C, Glass RM. Alcohol abuse and alcoholism. *JAMA* 2006 May 3;295(17):2100.

Salvail FR, Nguyen DH, Liang S. Hawaii, Behavioral Risk Factor Surveillance System, from 2005 to 2007 -- by ethnicity. Honolulu: Hawaii Department of Health; 2007.

Schiller JS, Lucas JW, Peregoy JA. Summary health statistics for U.S. adults: National Health Interview Survey, 2011. *Vital Health Stat* 2012;10(256). Available at: [http://www.cdc.gov/nchs/data/series/sr\\_10/sr10\\_256.pdf](http://www.cdc.gov/nchs/data/series/sr_10/sr10_256.pdf). Accessed February 13, 2013.

Simon GE, Rutter CM, Peterson D, et al. Does response on the PHQ-9 depression questionnaire predict subsequent suicide attempt or suicide death? *Psychiatr Serv* 2013; 64(12):1195-202. <http://www.ncbi.nlm.nih.gov/pubmed/24036589>. Accessed February 20, 2014.

Substance Abuse and Mental Health Services Administration. Drug Abuse Warning Network, 2011: national estimates of drug-related emergency department visits. HHS Publication No. (SMA) 13-4760. DAWN Series D-39. Rockville, MD: Substance Abuse and Mental Health Services Administration; 2013. Available at: <http://www.samhsa.gov/data/2k13/DAWN2k11ED/DAWN2k11ED.pdf>. Accessed April 1, 2014.

Tarrier N, Taylor K, Gooding P. Cognitive-behavioral interventions to reduce suicide behavior: a systematic review and meta-analysis. *Behav Modif* 2008 Jan;32(1):77-108.

Thorndike FP, Ritterband LM, Gonder-Frederick LA, et al. A randomized controlled trial of an internet intervention for adults with insomnia: effects on comorbid psychological and fatigue symptoms. *J Clin Psychol* 2013;69(10):1078-93. Available at: <http://www.ncbi.nlm.nih.gov/pubmed/24014057>. Accessed February 20, 2014.

Tobias C, Cunningham WE, Cunningham CO, et al. Making the connection: the importance of engagement and retention in HIV medical care. *AIDS Patient Care STDs* 2007;21(Suppl 1):S3-S8.

U.S. Cancer Statistics: an interactive atlas. Atlanta, GA: Centers for Disease Control and Prevention. Available at: [http://apps.nccd.cdc.gov/DCPC\\_INCA/DCPC\\_INCA.aspx](http://apps.nccd.cdc.gov/DCPC_INCA/DCPC_INCA.aspx). Accessed January 24, 2014.

U.S. Preventive Services Task Force. Screening for high blood pressure in adults. Rockville, MD: Agency for Healthcare Research and Quality; 2007. Available at: <http://www.uspreventiveservicestaskforce.org/uspstf/uspshype.htm>. Accessed September 18, 2013.

U.S. Renal Data System. USRDS 2013 annual data report: atlas of chronic kidney disease and end-stage renal disease in the United States. Bethesda, MD: National Institutes of Health, National Institute of Diabetes and Digestive and Kidney Diseases; 2013a. Available at: <http://www.usrds.org/2013/view/Default.aspx>. Accessed May 30, 2014.

U.S. Renal Data System. USRDS 2013 annual data report reference tables. Bethesda, MD: National Institutes of Health, National Institute of Diabetes and Digestive and Kidney Diseases; 2013b. Available at <http://www.usrds.org/reference.aspx>. Accessed September 19, 2013.

Wingo PA, King J, Swan J, et al. Breast cancer incidence among American Indian and Alaska Native women: U.S., 1999-2004. *Cancer* 2008;113(5 suppl):1191-202. Available at: <http://digitalcommons.unl.edu/cgi/viewcontent.cgi?article=1276&context=publichealthresources>. Accessed January 23, 2014.

Yeargin P, Donnelly R, Weyer D, eds. Clinical management of the HIV-infected adult: a manual for midlevel clinicians. Atlanta, GA: Southeast AIDS Training and Education Center; 2003.

## Chapter 3. Effectiveness of Care Across the Lifespan

Much valuable health care is delivered to prevent disease, disability, and discomfort rather than to treat specific clinical conditions. These services improve health and quality of life and are often better characterized by stage over a lifespan rather than by organ system. For example, effectively managing pain is an important aspect of health care regardless of the underlying etiology. Like effective care for common conditions, many Americans do not receive the full benefits of these services.

This chapter is organized around four types of health care services that typically cut across clinical conditions: maternal and child health, lifestyle modification, functional status preservation and rehabilitation, and supportive and palliative care. The lifestyle modification section relates closely to national priorities identified in the *National Strategy for Quality Improvement in Health Care*.<sup>i</sup> Tracking smoking cessation supports the priority “promoting the most effective prevention and treatment practices for the leading causes of mortality,” while tracking obesity measures supports the priority “working with communities to promote wide use of best practices to enable healthy living.”

In this chapter, process measures are organized the same way as in the chapter on effectiveness of care for common clinical conditions. In this chapter, more process measures relate to preventive care than to acute illness and chronic disease. Again, some measures may be considered to belong in more than one category. Outcome measures are also identified.

### 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.

---

<sup>i</sup> Available at <http://www.ahrq.gov/workingforquality/reports.htm>.

## Maternal and Child Health

### Importance

#### Mortality

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

Number of infant deaths (2011 prelim.).....23,910 (Hoyert & Xu, 2012)

#### Demographics

Number of children<sup>ii</sup> (2012 est.) ..... 73,728,088 (U.S. Census Bureau, 2013)

Number of babies born (2011 prelim.) ..... 3,953,593 (Hoyert & Xu, 2012)

#### Cost

Total cost of health care for children (2010).....\$115,785 billion (AHRQ, 2010)

Cost-effectiveness of childhood immunization series (2001)..... approx. \$16 per \$1 spent (Zhou, et al., 2005)

### Measures

The *National Healthcare Quality Report* (NHQR) and *National Healthcare Disparities Report* (NHDR) track several prevention, treatment, and outcome measures related to maternal and child access to and use of health care. The measures highlighted in this section are:

- ◆ Prenatal care.
- ◆ Receipt of recommended immunizations by young children.
- ◆ Dental visits.
- ◆ Untreated dental caries.
- ◆ Well-child visits in the last year.
- ◆ Receipt of meningococcal vaccine by adolescents.
- ◆ Adolescent receipt of counseling or information about birth control.

### Findings

#### Prevention: Early and Adequate Prenatal Care

The timing of initiation and the quality and quantity of prenatal care (PNC) may influence pregnancy outcomes, in particular the occurrence of preterm birth and low birth weight (Debiec, et al., 2010; Cox, et al., 2011; AAP, 2007). In the past, the NHQR and NHDR have followed a measure of PNC access in the first trimester as a key maternal and child health preventive measure. Because this measure does not take into account whether women then receive additional PNC throughout the pregnancy, we now report on a measure of early and adequate PNC.

<sup>ii</sup> In this report, children are defined as individuals under age 18, unless otherwise specified.

One of the Healthy People 2020 objectives is that 77.6% of pregnant women receive early and adequate PNC, based on the Adequacy of Prenatal Care Utilization Index. This index looks at both initiation of PNC and number of visits; thus, early and adequate PNC is defined as PNC initiated by month 4 of the pregnancy and in which the woman also had at least 80% of the number of expected PNC visits.

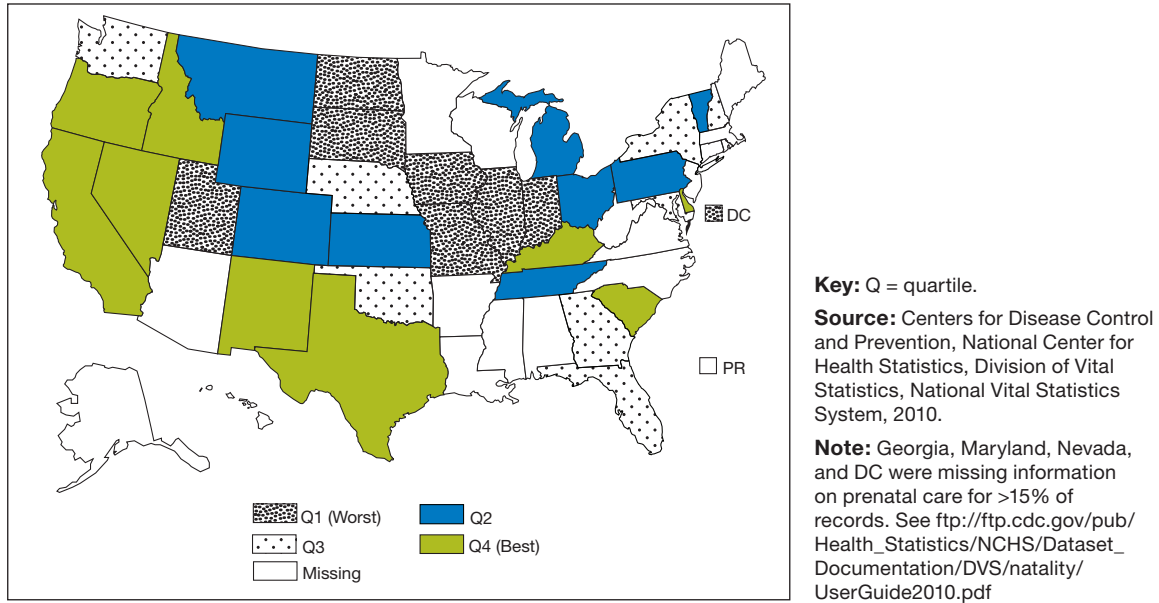
The target number of PNC visits is based on when PNC started and on the infant's gestational age at birth. Because of consistency problems between the 1998 and 2003 versions of birth certificates, PNC timing and adequacy were evaluated only for the 34 States using the 2003 standard birth certificate for all of 2010. Because we have data for only 34 States, national estimates were not generated. However, these 34 States accounted for 61% of live births in the United States in 2010.

Given the persistent Black-White disparity in infant mortality and low birth weight, we mapped the absolute percentage point differences between White and Black infants (based on the reported race of the mother) in the proportion whose mothers had obtained early and adequate PNC. The map below shows overall State rankings (by quartiles) for these differences. The first quartile represents States with the largest differences and the fourth quartile represents States with the smallest differences. States ranged from a minimum difference between Whites and Blacks of 3.3% to a maximum difference of 29.5%.<sup>iii</sup>

---

<sup>iii</sup> In States with small numbers of births to Black women, caution should be used in interpreting the White-Black differences in adequacy of prenatal care.

**Figure 3.1. Absolute differences between percentages of White and Black infants born in 2010 whose mothers had obtained early and adequate prenatal care, by State quartiles**



- ◆ Interquartile ranges were as follows:
  - Fourth quartile (best): 0.3%-8.9% (CA, DE, ID, KY, NM, NV, OR, SC, TX).
  - Third quartile (second best): 9.4%-11.3%.
  - Second quartile (second worst): 11.5%-16.5%.
  - First quartile (worst): 17.4%-29.5% (DC, IA, IL, IN, MO, ND, SD, UT).
- ◆ There was no clear pattern based on geographic region (Figure 3.1).
- ◆ Only two States (CA and OR) were in the best quartile for the overall State rates shown in the NHQR and also in the best quartile for the difference between White and Black rates as shown here. New Mexico was in the worst quartile for overall receipt of early and adequate PNC and was in the best quartile for differences between Blacks and Whites. This presumably reflects relatively poor performance in both the reference group (Whites) and the comparison group (Blacks).

Also, in the NHQR:

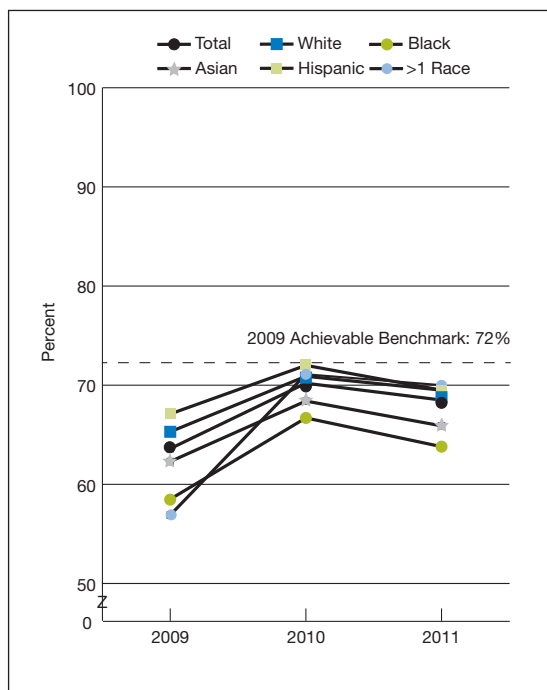
- ◆ State rates for obtaining early and adequate PNC ranged from 61.8% to 88%. There was no clear pattern based on geographic region.



## 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<sup>iv</sup> vaccine series tracked in Healthy People 2020. The Healthy People 2020 target is 80% coverage in the population ages 19-35 months.

**Figure 3.2. Children ages 19-35 months who received the 4:3:1:3:3:1:4 vaccine series, by race/ethnicity, 2009-2011**



**Source:** Centers for Disease Control and Prevention, National Center for Health Statistics and National Center for Immunization and Respiratory Diseases, National Immunization Survey, 2009-2011.

**Denominator:** U.S. civilian noninstitutionalized population ages 19-35 months.

**Note:** White, Black, Asian, and more than one race are non-Hispanic; Hispanic includes all races. Full series of *Haemophilus influenzae* type b (Hib) vaccine is ≥3 or ≥4 doses, depending on brand type.

- ◆ In 2011, 68.5% of children ages 19-35 months had received all recommended vaccinations (Figure 3.2).
- ◆ From 2009 to 2011, Black children were less likely than White children to receive all recommended vaccinations.
- ◆ The 2010 top 5 State achievable benchmark was 72%.<sup>v</sup> At the current rate of improvement, most racial/ethnic groups could achieve the benchmark in a year.

Also, in the NHQR:

- ◆ In 2011, children from high-income households were more likely to receive all the recommended vaccinations than those from poor, low-income, and middle-income households.

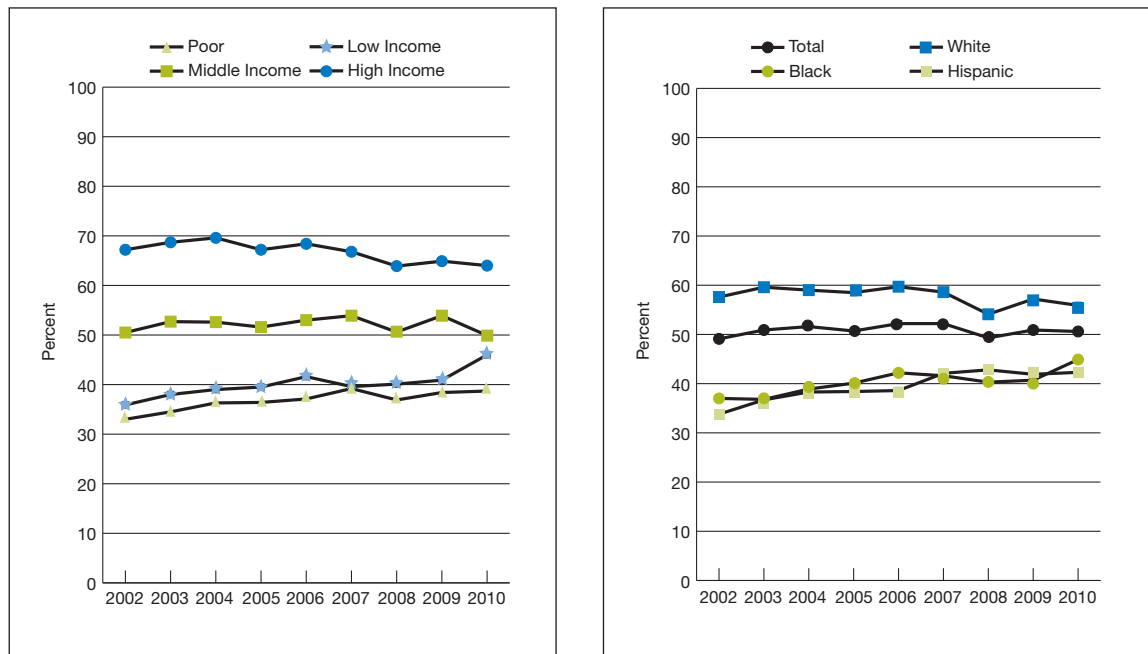
<sup>iv</sup> Full series of *Haemophilus influenzae* type b (Hib) vaccine is ≥3 or ≥4 doses, depending on brand type.

<sup>v</sup> The top 5 States that contributed to the achievable benchmark are Louisiana, Maryland, Massachusetts, New Hampshire, and Ohio.

### 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 (NIDCR, 2000), the second most common chronic disease in children. Regular dental visits help to improve overall oral health and prevent dental caries.

**Figure 3.3. Children ages 2-17 with a dental visit in the calendar year, by income and race/ethnicity, 2002-2010**



**Source:** Agency for Healthcare Research and Quality, Medical Expenditure Panel Survey, 2002-2010.

**Denominator:** U.S. civilian noninstitutionalized population ages 2-17.

**Note:** White and Black are non-Hispanic; Hispanic includes all races.

- ◆ Between 2002 and 2010, there were no statistically significant changes in the percentage of children ages 2-17 who had a dental visit in the calendar year (Figure 3.3). Increases were observed among Black, Hispanic, poor, and low-income children.
- ◆ In all years, Black and Hispanic children were less likely than White children to have a dental visit. Poor, low-income, and middle-income children were less likely than high-income children to have a dental visit.

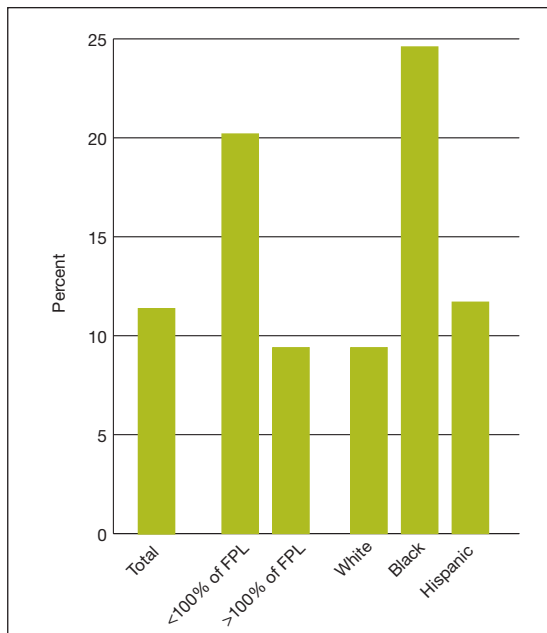
Also, in the NHQR:

- ◆ In all years, children ages 2-5 were less likely than children and teens ages 6-17 to have a dental visit, 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

Dental caries is the disease commonly known as tooth decay. Left untreated, dental caries can lead to pain, infection, and potential tooth loss. Among children, the lack of adequate treatment of dental caries may affect speech, nutrition, growth and function, social development, and quality of life. Left untreated, dental caries can progress to infections that can lead to life-threatening complications (NIDCR, 2000). Routine dental checkups help prevent dental caries and improve overall health (IOM, 2011). Early treatment will prevent infection and the tooth can usually be saved.

**Figure 3.4. Adolescents ages 13-15 with untreated dental caries, by income level and race/ethnicity, 2009-2010 combined**



**Key:** FPL = Federal poverty level.

**Source:** Dye BA, Li X, Thornton-Evans G. Oral health disparities as determined by selected Healthy People 2020 oral health objectives for the United States, 2009-2010. NCHS data brief, no 104. Hyattsville, MD: National Center for Health Statistics; 2012. Available at: <http://www.cdc.gov/nchs/data/databriefs/db104.htm>.

**Denominator:** U.S. civilian noninstitutionalized population ages 13-15.

**Note:** For this measure, lower rates are better. White and Black are non-Hispanic. Hispanic includes all races.

- ◆ Overall, 11.4% of adolescents ages 13-15 had untreated dental caries (Figure 3.4).
- ◆ Black (24.6%) adolescents were more likely than White adolescents (9.4%) to have untreated dental caries.
- ◆ About 20% of adolescents in families with incomes below 100% of the Federal poverty level had untreated dental caries compared with 9.4% of adolescents in families with incomes above 100% of the Federal poverty level.

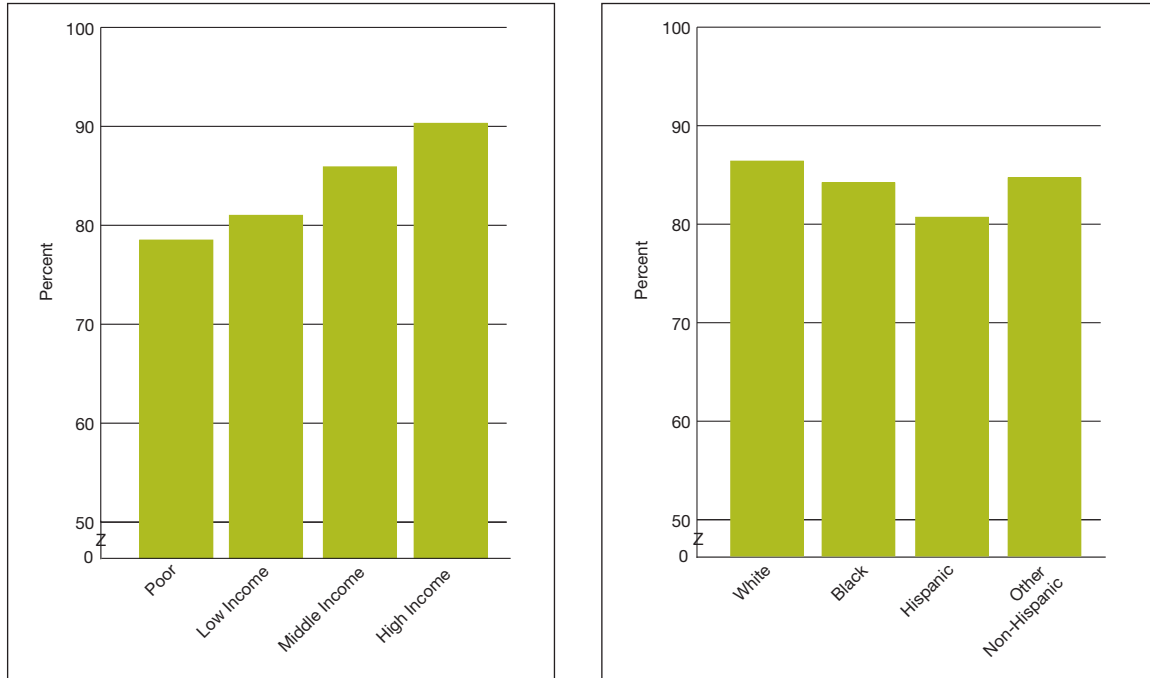
Also, in the NHQR:

- ◆ The percentage of children with untreated dental caries was higher for ages 6-9 than for ages 3-5 and 13-15.

## Prevention: Well-Child Visits in the Last Year

The American Academy of Pediatrics recommends annual preventive health care visits for all children (AAP, 2008). Current recommendations are for 7 well-child visits prior to 12 months of age; 5 well-child visits between 12 and 30 months of age, inclusive; and one well-child visit per year from 3 years of age on.

**Figure 3.5. Children ages 0-17 years with a well-child visit in the last 12 months, by income and race/ethnicity, 2011-2012 combined**



**Source:** Data Resource Center for Child and Adolescent Health, National Survey of Children's Health, 2011-2012.

**Denominator:** Civilian noninstitutionalized population ages 0-17.

**Note:** White and Black are non-Hispanic; Hispanic includes all races.

- ◆ In 2011-2012, children from poor (78.5%), low-income (81%), and middle-income (85.9%) households were less likely to have well-child visits than those from high-income (90.3%) households (Figure 3.5).
- ◆ Black children had lower rates of well-child visits compared with their White counterparts, while Hispanic children had lower rates than White, Black, and other non-Hispanic children.

Also, in the NHQR:

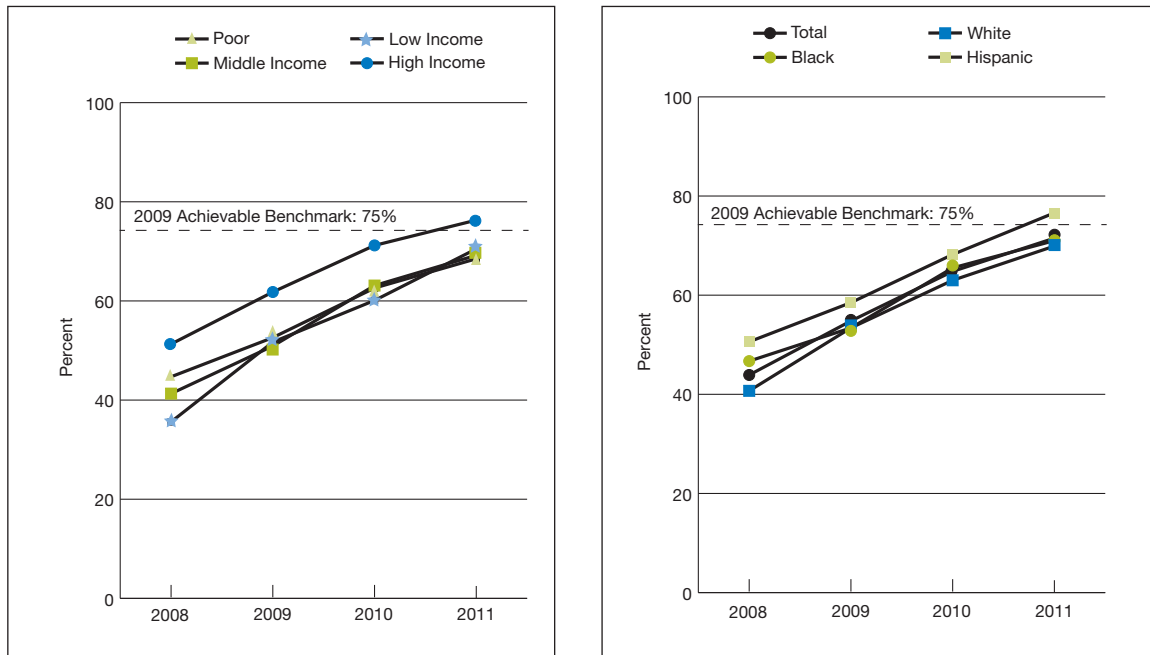
- ◆ In 2011-2012, uninsured children were less likely to have a well-child visit than children with private or public insurance.
- ◆ Children ages 0-5 were more likely to have a well-child visit than those ages 6-11 and 12-17.

### Prevention: Receipt of Meningococcal Vaccine by Adolescents

According to the 2010 Census, individuals ages 10-14 years made up 6.7% of the U.S. population while those ages 15-19 years made up 7.1% of the population (U.S. Census Bureau, 2010). Youth in these age groups are at risk of contracting meningitis, which 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. It can also cause meningococcemia, a serious bloodstream infection. 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 is recommended at age 16.

**Figure 3.6. Adolescents ages 13-15 who ever received at least 1 dose of the meningococcal vaccine, by income and race/ethnicity, 2008-2011**



**Source:** Centers for Disease Control and Prevention, National Center for Health Statistics and National Center for Immunization and Respiratory Diseases, National Immunization Survey, 2008-2011.

**Note:** White, Black, and Asian are non-Hispanic; Hispanic includes all races.

- ◆ In 2011, 71.5% of adolescents ages 13-15 had ever received at least 1 dose of the meningococcal vaccine (Figure 3.6).
- ◆ In all years, adolescents from high-income households were more likely to receive the meningococcal vaccine than those from poor, low-income, and middle-income households.
- ◆ In 2008, 2010, and 2011, Hispanic adolescents were more likely to receive the meningococcal vaccine than White adolescents.
- ◆ The 2009 top 5 State achievable benchmark was 75%.<sup>vi</sup> Adolescents in high-income families and Hispanics have achieved the benchmark. At the current rate, most other racial/ethnic and income groups could achieve the benchmark in a year.

Also, in the NHQR:

- ◆ From 2008 to 2011, there were no statistically significant differences by sex among adolescents ages 13-15 who received the meningococcal vaccine.
- ◆ In all years, residents of nonmetropolitan areas were less likely to receive the meningococcal vaccine than those living in metropolitan areas.

<sup>vi</sup> The top 5 States that contributed to the achievable benchmark are District of Columbia, Massachusetts, New Jersey, North Dakota, and Rhode Island.



## Prevention: Adolescent Receipt of Counseling or Information About Birth Control

Teen pregnancy rates are declining. In 2012, a total of 305,420 babies were born to teenagers 15 to 19 years old. The number of births to teenagers 15 to 19 years old dropped 7% during 2011-2012, an all-time low since the end of World War II (CDC, 2013). Eighty-seven percent of teen pregnancies are unintended (Finer & Zolna, 2011), and almost all teen births are to unmarried women (Hamilton, et al., 2013).

Racial disparities in teen birth rates are declining but persist. In 2012, the birth rate per 1,000 women for teenagers 15 to 19 years old was 46.3 for Hispanics, 43.9 for non-Hispanic Blacks, and 34.9 for American Indians and Alaska Natives (AI/ANs), compared with 20.5 per 1,000 for non-Hispanic Whites and 9.7 per 1,000 for Asians and Pacific Islanders (APIs) (Hamilton, et al., 2013).

In 2011, 47% of high school students reported ever having had sex, including 44% of non-Hispanic Whites, 60% of non-Hispanic Blacks, and 49% of Hispanics.<sup>vii</sup> Females (46%) and males (49%) were about equally likely to report having had sex. From 2006 to 2010, among never-married females, 42.1% of Hispanics, 41.9% of non-Hispanic Whites, and 46.4% of non-Hispanic Blacks reported ever having sex. Similarly, among never-married males, 46.0% of Hispanics, 36.7% of non-Hispanic Whites, and 58.4% of non-Hispanic Blacks reported ever having sex (Martinez, et al., 2011).

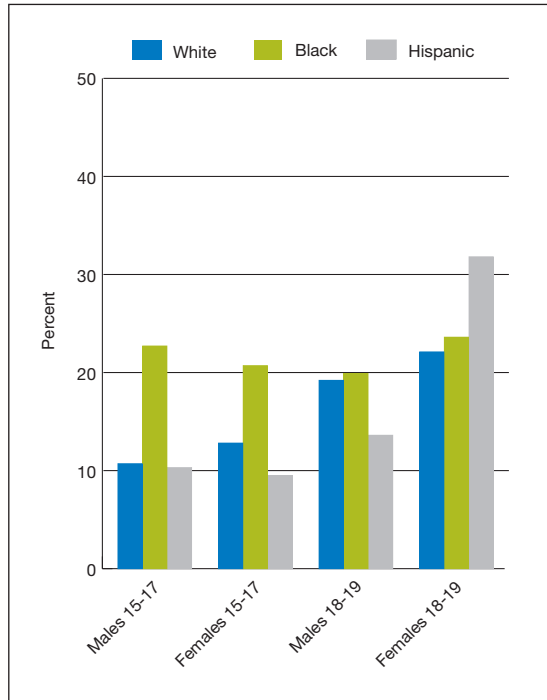
Much of teen sex is unprotected (MMWR, 2012). Without use of contraception, the rates of teen pregnancies and births are likely to remain elevated. A recent Institute of Medicine report pointed to teen pregnancy, births to teens, and decreased availability of contraceptives as key factors in the relatively poorer health of Americans versus people in similar countries (IOM, 2013).

Reducing teen pregnancy is the focus of the President's Teen Pregnancy Prevention Initiative. A key component of the initiative's relevant program model is increasing access to contraceptives among youth.<sup>viii</sup> Although evidence is limited (Jaccard & Levitz, 2013), health care provider counseling on the use of contraceptives can be effective in reducing teen pregnancy (Young, 2007; Oringanje, et al., 2009) and is recommended by leading professional societies and others (MQIC, 2012; Breuner, 2013). The Affordable Care Act requires that most health plans provide access at no cost to all contraceptive methods approved by the Food and Drug Administration, sterilization procedures, and patient education and counseling, as prescribed by a health care provider.

<sup>vii</sup> Data from the Youth Risk Behavior Surveillance System, which includes a national school-based Youth Risk Behavior Survey (YRBS) conducted by the Centers for Disease Control and Prevention; and State and large urban school district school-based YRBSs conducted by State and local education and health agencies.

<sup>viii</sup> More information is available at <http://www.cdc.gov/TeenPregnancy/PreventTeenPreg.htm>.

**Figure 3.7. Teens 15 to 19 years old who received counseling or information from a health care provider during the last 12 months about birth control, by sex and race/ethnicity, 2007-2010 combined**



**Source:** Centers for Disease Control and Prevention, National Center for Health Statistics, National Survey of Family Growth, 2007-2010.

**Denominator:** People ages 15-19 years.

**Note:** White and Black are non-Hispanic. Hispanic includes all races.

- ◆ Among males ages 15-17, Blacks (22.7%) were more likely than Whites (10.7%) or Hispanics (10.3%) to receive counseling from a health care professional on a method of birth control (Figure 3.7).
- ◆ Among Hispanic teens ages 18-19, females (31.8%) were more likely than males (13.6%) to receive counseling from a health care professional on a method of birth control.
- ◆ In 2007-2010, Hispanic males ages 15-19 (11.7%) were less likely than Hispanic females ages 15-19 (18.1%) to receive counseling from a health care professional on a method of birth control (data not shown).

Also, in the NHQR:

- ◆ In 2007-2010, 12.6% of females ages 15-17 and 12.9% of males ages 15-17 received counseling from a health care professional on a method of birth control.
- ◆ In 2007-2010, uninsured females ages 15-19 were more likely than uninsured males ages 15-19 to receive counseling from a health care professional on a method of birth control.
- ◆ In 2007-2010, females ages 18-19 were more likely than males in the same age group to receive counseling from a health care professional on a method of birth control.

## Lifestyle Modification

### Importance

#### Mortality

Number of deaths per year attributable to smoking (2005-2009 est.) ..... 480,000 (OSH, 2014)

#### Prevalence

Number of adult current cigarette smokers (2012) ..... 42.1 million (Agaku, et al., 2014)

Number of obese adults (2009-2010) ..... 78 million (Ogden, et al., 2012)

Number of obese children (2009-2010) ..... 12.5 million (Ogden, et al., 2012)

Percentage of adults with no leisure-time physical activity (2005) ..... 40% (Barnes, 2010)

Percentage of adults who are obese (2009-2010) ..... 35.7% (Fryar, et al., 2012b)

Percentage of children who are obese (2009-2010) ..... 16.9% (Fryar, et al., 2012a)

#### Cost

Annual cost of smoking (2009-2012 est.) ..... \$289-332.5 billion (OSH, 2014)

Total health care cost related to obesity (2008 est.) ..... \$147 billion (MMWR, 2010)

### 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 for children about physical activity.
- ◆ Counseling obese adults about healthy eating.
- ◆ Counseling for children about healthy eating.

## Findings

### Prevention: Counseling Smokers To Quit Smoking

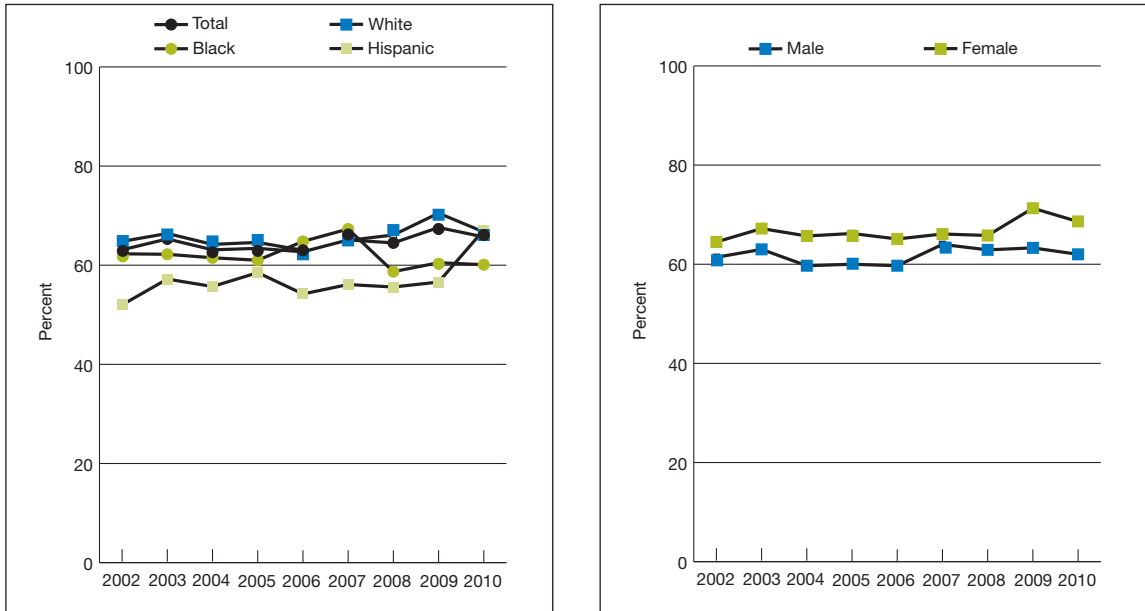
Smoking harms nearly every organ of the body and causes or exacerbates many diseases. Since the first Surgeon General's report on smoking and health in 1964, there have been more than 20 million premature deaths attributable to smoking and exposure to secondhand smoke (OSH, 2014). Smoking causes more than 87% of deaths from lung cancer and more than 79% of deaths from chronic obstructive pulmonary disease (OSH, 2014).

Quitting smoking has immediate as well as long-term benefits, reducing risks for diseases caused by smoking and improving health in general (OSH, 2004). Smoking is a modifiable risk factor, and health care providers can help encourage patients to change their behavior and quit smoking. The 2008 update of the Public Health Service Clinical Practice Guideline *Treating Tobacco Use and Dependence* concludes that counseling and medication are both effective tools alone, but the combination of the two methods is more effective in increasing smoking cessation.<sup>ix</sup>

---

<sup>ix</sup> More information about the 2008 Public Health Service Clinical Practice Guideline *Treating Tobacco Use and Dependence* can be found at <http://www.ahrq.gov/professionals/clinicians-providers/guidelines-recommendations/tobacco/index.html>.

**Figure 3.8. Adult current smokers with a checkup in the last 12 months who received advice from a doctor to quit smoking, by race/ethnicity and sex, 2002-2010**



**Source:** Agency for Healthcare Research and Quality, Medical Expenditure Panel Survey, 2002-2010.

**Denominator:** Civilian noninstitutionalized adult current smokers who had a checkup in the last 12 months.

**Note:** Estimates are age adjusted to the 2000 U.S. standard population using three age groups: 18-44, 45-64, and 65 and over. White and Black are non-Hispanic. Hispanic includes all races.

- ◆ Overall, in 2010, 65.7% of adult current smokers received advice to quit smoking (Figure 3.8).
- ◆ In 6 of 9 years, White adult current smokers were more likely to receive advice to quit smoking than Hispanic adult current smokers.
- ◆ From 2002 to 2010, the percentage of Hispanic adult current smokers who received advice to quit smoking improved from 52.0% to 67.1%.
- ◆ In 5 of 9 years, female adult current smokers were more likely than male adult current smokers to receive advice to quit smoking.

Also, in the NHQR:

- ◆ In all years, adult current smokers ages 45-64 and 65 and over were more likely to receive advice to quit smoking compared with those ages 18-44, except in 2007 for those age 65 and over.
- ◆ In 6 of 9 years, adults with basic or complex activity limitations were more likely to receive advice to quit smoking than those with neither basic nor complex activity limitations.

## Prevention: Counseling About Exercise

Approximately one-third of adults are obese and about 17% of children and adolescents ages 2-19 are obese (CDC, 2011). A larger proportion of individuals are overweight or obese among lower educated groups, Blacks, and Mexican Americans than among other racial, ethnic, and socioeconomic groups. Although women have lower body mass indexes than men, they gain weight faster, putting them at risk of disease (Truong & Sturm, 2005). Obesity increases the risk for many chronic, often deadly conditions, such as hypertension, cancer, diabetes, and CHD.

Physician-based exercise and diet counseling is an important component of effective weight loss interventions. Such interventions have been shown to increase levels of physical activity among sedentary

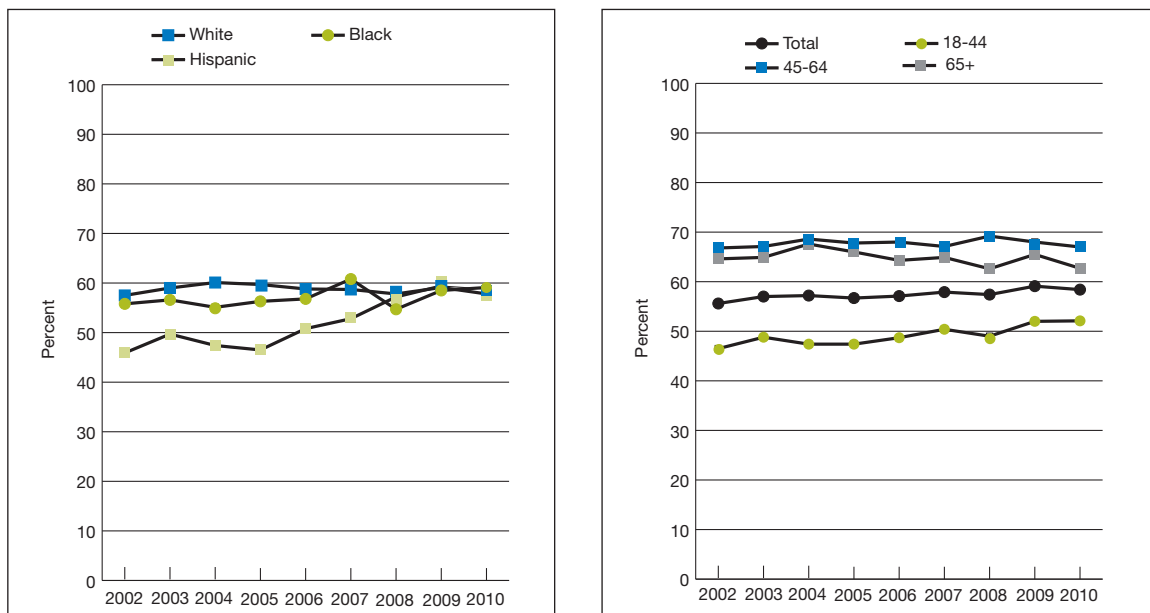
patients, resulting in a sustained favorable body weight and body composition (Lin, et al., 2010). Although every obese person may not need counseling about exercise and diet, many would likely benefit from improvements in these activities.

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 at least 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, or an equivalent combination of moderate- and vigorous-intensity aerobic activity.<sup>x</sup>

Although physician guidelines recommend that health care providers screen all adult patients for obesity (USPSTF, 2012), obesity remains underdiagnosed among U.S. adults. Opportunities for obesity screening and diagnosis are often missed in ambulatory care settings. Research shows that lifestyle modification counseling is rarely provided, even among patients with physician-diagnosed obesity (Ma, et al., 2009). Physicians encounter 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.

### Prevention: Counseling Obese Adults About Exercise

**Figure 3.9. Adults with obesity who ever received advice from a health provider to exercise more, by race/ethnicity and age, 2002-2010**



**Source:** Agency for Healthcare Research and Quality, Medical Expenditure Panel Survey, 2002-2010.

**Denominator:** Civilian noninstitutionalized adults age 18 and over with obesity.

**Note:** Estimates are age adjusted to the 2000 U.S. standard population using three age groups: 18-44, 45-64, and 65 and over. Obesity is defined as a body mass index of 30 or higher. White and Black are non-Hispanic; Hispanic includes all races.

<sup>x</sup> More information about the 2008 Physical Activity Guidelines for Americans is available at [www.health.gov/paguidelines/guidelines/default.aspx](http://www.health.gov/paguidelines/guidelines/default.aspx).

## EFFECTIVENESS OF CARE ACROSS THE LIFESPAN

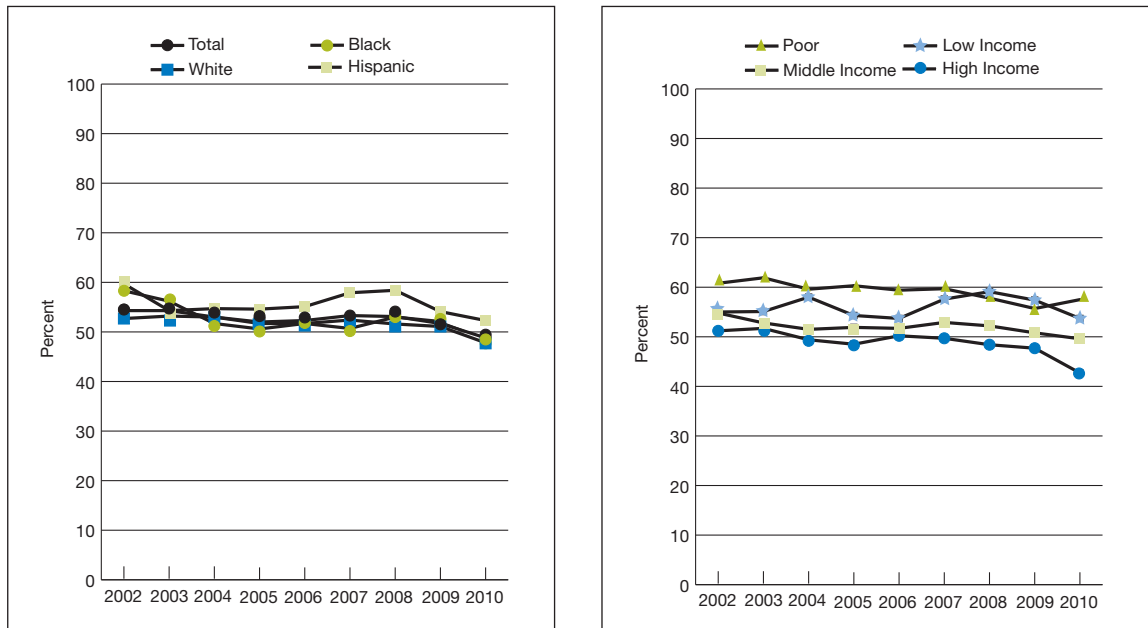
- ◆ Overall, in 2010, 58.4% of adults with obesity reported ever receiving advice from a health provider to exercise more (Figure 3.9).
- ◆ From 2002 to 2010, there were no statistically significant changes by race/ethnicity in the percentage of obese adults who received advice to exercise, except for obese Hispanic adults, who improved from 45.9% to 58.8%.
- ◆ Until 2008, obese White adults were more likely to receive advice to exercise than obese Hispanic adults.
- ◆ In all years, obese adults ages 45-64 and 65 and over were more likely to receive advice to exercise compared with obese adults ages 18-44.
- ◆ From 2002 to 2010, the percentage of obese adults ages 18-44 who received advice to exercise improved from 46.5% to 52.1%.

Also, in the NHQR:

- ◆ In all years, obese adults ages 18-64 without insurance were less likely to receive advice to exercise compared with those with private insurance.
- ◆ In all years, obese adults with basic or complex activity limitations were more likely to receive advice to exercise compared with those with neither basic nor complex activity limitations.

### Outcome: Obese Adults Who Do Not Exercise

**Figure 3.10. 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 income, 2002-2010**



**Source:** Agency for Healthcare Research and Quality, Medical Expenditure Panel Survey, 2002-2010.

**Denominator:** Civilian noninstitutionalized population age 18 and over with obesity.

**Note:** For this measure, lower rates are better. Estimates are age adjusted to the 2000 U.S. standard population using three age groups: 18-44, 45-64, and 65 and over. Obesity is defined as a body mass index of 30 or higher. White and Black are non-Hispanic; Hispanic includes all races.

- ◆ Overall, in 2010, 48.8% 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 3.10).
- ◆ In 8 of 9 years, there were no statistically significant differences between Blacks and Whites in the percentage of adults with obesity who did not spend half an hour or more engaged in moderate or vigorous physical activity.
- ◆ From 2002 to 2010, the percentage of obese adults who did not spend half an hour or more engaged in moderate or vigorous physical activity decreased for Blacks and people from poor and high-income households.
- ◆ In all years, adults from poor households were less likely to spend half an hour or more engaged in moderate or vigorous physical activity compared with those from high-income households. In 6 of 9 years, adults from low-income households were less likely to spend half an hour or more engaged in moderate or vigorous physical activity compared with those from high-income households.
- ◆ From 2002 to 2010, the percentage of obese adults who did not spend half an hour or more engaged in moderate or vigorous physical activity decreased for obese adults in high-income households (from 51.2% to 42.7%).

Also, in the NHQR:

- ◆ In all years, obese female adults were less likely to engage in half an hour or more of moderate or vigorous physical activity at least three times a week compared with obese male adults.
- ◆ In all years, obese adults age 65 and over and those ages 45-64 (except in 2003) were less likely to engage in half an hour or more of moderate or vigorous physical activity at least three times a week compared with those ages 18-44.

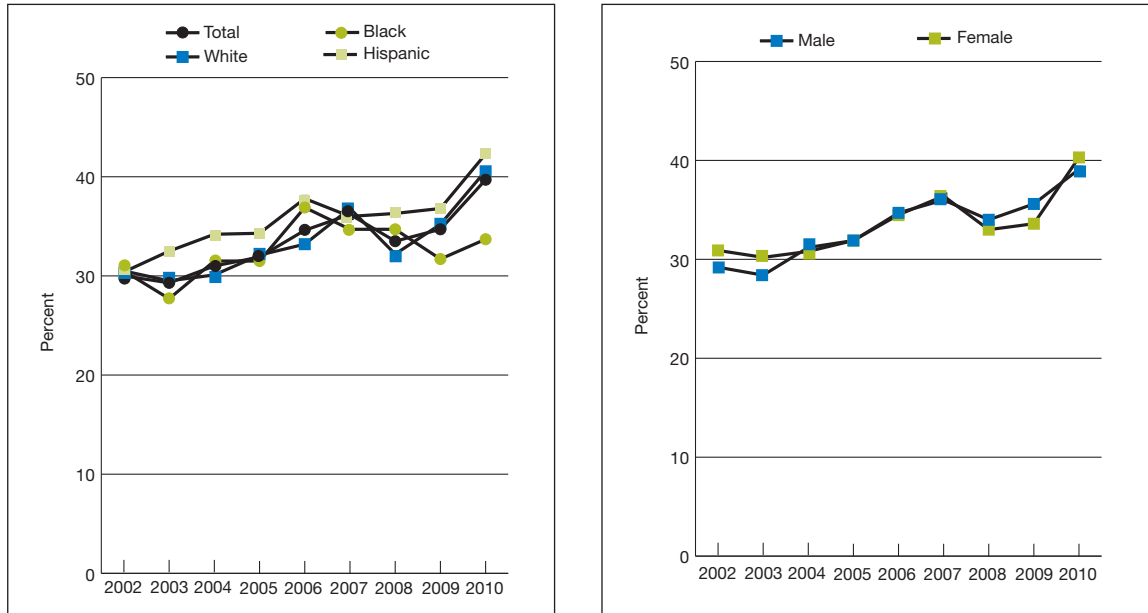
### Prevention: Counseling for Children About Physical Activity

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, the incidence of overweight and obesity has tripled since 1980. Children have become more sedentary in the last two decades, necessitating weight management through increased physical activity. In 2007-2008, 20% of children ages 6-11 years and 18% of people ages 12-19 were obese (MMWR, 2011). The 2008 Physical Activity Guidelines for Americans recommend that children and adolescents engage in 1 hour or more of physical activity everyday.<sup>xi</sup>

<sup>xi</sup> For more information about the 2008 Physical Activity Guidelines for Americans, go to [www.health.gov/paguidelines/guidelines/default.aspx](http://www.health.gov/paguidelines/guidelines/default.aspx).

**Figure 3.11. Children ages 2-17 for whom a health provider gave advice within the past 2 years about exercise, by race/ethnicity and sex, 2002-2010**



**Source:** Agency for Healthcare Research and Quality, Medical Expenditure Panel Survey, 2002-2010.

**Denominator:** U.S. civilian noninstitutionalized population ages 2-17.

**Note:** Exercise advice includes the amount and kind of exercise, sports, or physically active hobbies children should engage in. White and Black are non-Hispanic. Hispanic includes all races.

- ◆ Overall, in 2010, 39.7% of parents or guardians reported receiving advice within the past 2 years about the amount and kind of exercise, sports, or physically active hobbies their children should engage in (Figure 3.11).
- ◆ In 8 of 9 years, there were no statistically significant differences between Blacks and Whites in the percentage of children who were given advice about exercise.
- ◆ From 2002 to 2010, the percentage of children who were given advice about exercise improved for Whites (from 30.5% to 40.6%) and Hispanics (from 30.4% to 42.3%).
- ◆ In all years, there were no statistically significant differences by sex for children who received advice to exercise.
- ◆ From 2002 to 2010, the percentage of children who received advice to exercise improved for females (from 30.9% to 40.3%) and males (from 29.2% to 39.1%).

Also, in the NHQR:

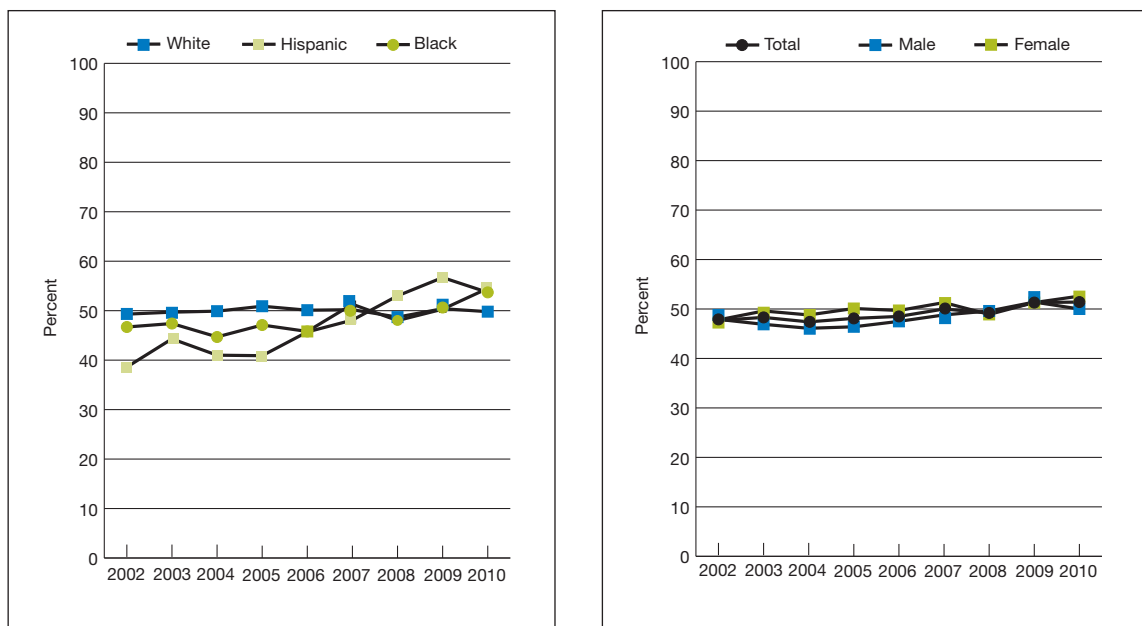
- ◆ From 2002 to 2010, the percentage of children who received advice to exercise improved for those with private insurance and public insurance.
- ◆ In all years, children with special health care needs were more likely to receive advice to exercise than those without such needs.

## 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.<sup>xii</sup>

**Figure 3.12. Adults with obesity who ever received advice from a health provider about eating fewer high-fat or high-cholesterol foods, by race/ethnicity and sex, 2002-2010**



**Source:** Agency for Healthcare Research and Quality, Medical Expenditure Panel Survey, 2002-2010.

**Denominator:** Civilian noninstitutionalized population age 18 and over with obesity.

**Note:** Estimates are age adjusted to the 2000 U.S. standard population using three age groups: 18-44, 45-64, and 65 and over. Obesity is defined as a body mass index of 30 or higher. White and Black are non-Hispanic; Hispanic includes all races.

- ◆ Overall, in 2010, 51.4% of adults with obesity received advice from a health provider about healthy eating (Figure 3.12).
- ◆ From 2002 to 2010, the percentage of obese Hispanic adults who received advice about healthy eating increased from 38.6% to 53.7%. The percentage of obese Blacks who received advice increased from 46.7% to 54.5%.
- ◆ In all years, there were no statistically significant differences by sex in the percentage of obese adults who received advice about healthy eating.

Also, in the NHQR:

- ◆ From 2002 to 2010, the percentage of adults who received advice about healthy eating increased for adults with public insurance and for those without insurance.
- ◆ In all years, adults with basic or complex activity limitations were more likely to receive advice about healthy eating compared with those with neither basic nor complex activity limitations.

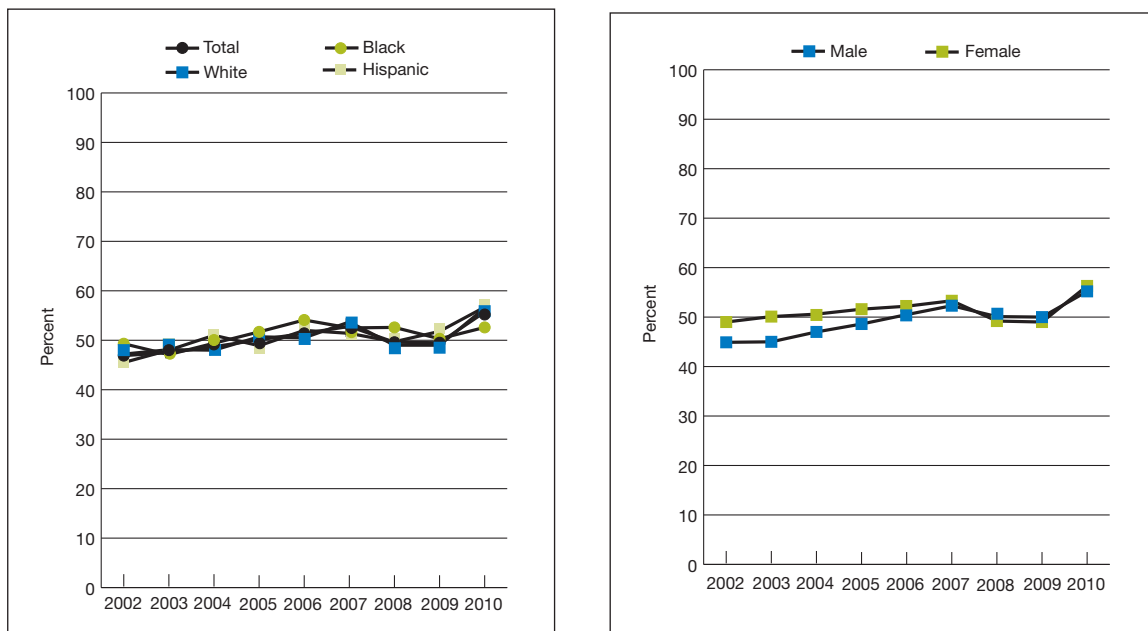
<sup>xii</sup> For more information about the Dietary Guidelines for Americans, go to [www.dietaryguidelines.gov](http://www.dietaryguidelines.gov).

## 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 3.13. Children ages 2-17 for whom a health provider ever gave advice about healthy eating, by race/ethnicity and sex, 2002-2010**



**Source:** Agency for Healthcare Research and Quality, Medical Expenditure Panel Survey, 2002-2010.

**Denominator:** U.S. civilian noninstitutionalized population ages 2-17.

**Note:** White and Black are non-Hispanic; Hispanic includes all races.

- ◆ Overall, in 2010, 55.7% of parents or guardians reported receiving advice within the past 2 years about their children eating a healthy diet (Figure 3.13).
- ◆ From 2002 to 2010, the percentage of children who received advice about healthy eating increased for Whites, Hispanics, and males.
- ◆ In all years, there were no statistically significant racial/ethnic differences in the percentage of children given advice about healthy eating.
- ◆ In all years, there were no statistically significant differences by sex in the percentage of children who received advice about healthy eating.



Also, in the NHQR:

- ◆ In all years, children without insurance were less likely to receive advice about healthy eating compared with those with private insurance.
- ◆ In all years, children with special health care needs were more likely to be given advice about healthy eating than those without such needs.

## Focus on Hawaii

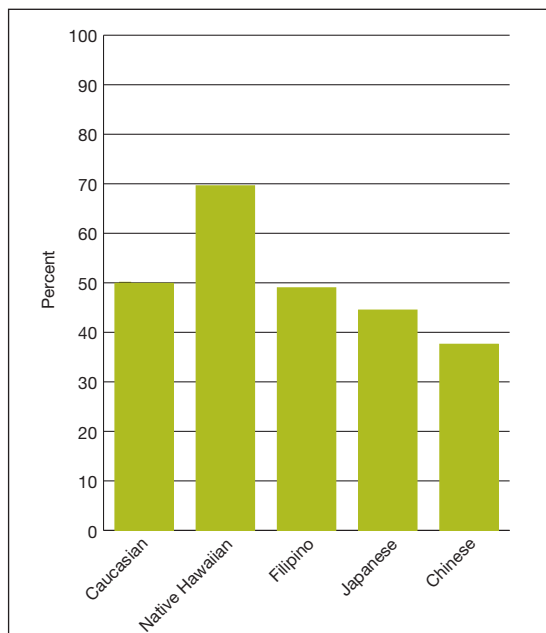
This year, the NHDR features findings from a report by the Department of Native Hawaiian Health and its Center for Native and Pacific Health Disparities Research. They are located at the John A. Burns School of Medicine at the University of Hawaii. The report is titled *Assessment and Priorities for Health & Well-Being in Native Hawaiians and Other Pacific Peoples* (Look, et al., 2013).

### Obesity in Hawaii

The prevalence of having two or more chronic conditions increases with obesity (Must, et al., 1999). In the United States, more than half of Native Hawaiians and Other Pacific Islanders (NHOPIs) are either overweight (31.7%) or obese (31.0%) (Cook, et al., 2010). This rate is higher than most other racial groups.

Existing literature identifies several factors contributing to the higher prevalence of overweight and obesity among NHOPIs. These include biologic and cultural factors (Grandinetti, et al., 1999); increasing adoption of Western lifestyles (McGarvey, 1991); and a high consumption of fatty foods (Blaisdell, 1993). A recent Hawaii study about childhood obesity shows the prevalence of overweight and obese children at 32.6%, with children of NHOPI ethnic backgrounds having distinctly higher levels than Whites or Asians (Novotny, et al., 2013).

**Figure 3.14. Overweight adults, by ethnicity, Hawaii, 2008**

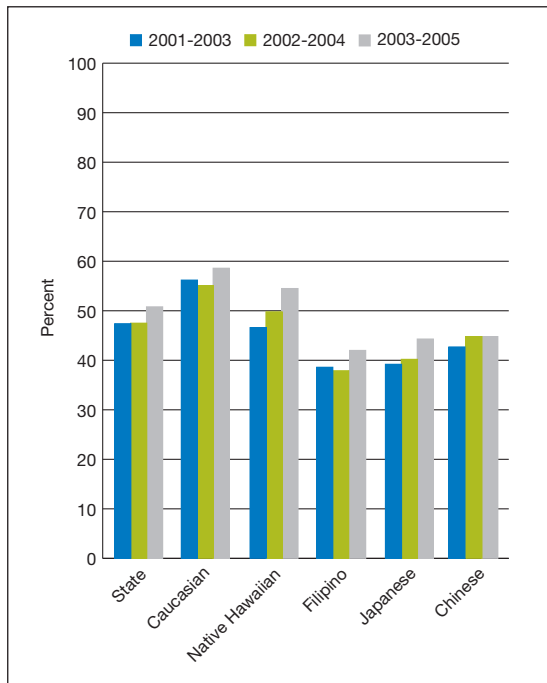


**Source:** Hawaii State Department of Health, 2009, Hawaii Health Survey 2008. Retrieved from <http://health.hawaii.gov/hhs/hawaii-health-survey-2008/>.

- ◆ In Hawaii, in 2008, the percentage of overweight adults varied by ethnic group. Native Hawaiians had the highest percentage of overweight adults (Figure 3.14).

A 2010 report noted that about two in five NHOPI adults (42%) in the United States were physically inactive, with others getting at least some exercise or regular exercise. This estimate is similar to other ethnic groups. However, given the burden of chronic diseases already present in many NHOPIs, interventions to increase physical activity would prove to be especially beneficial due to the health benefits of physical activity, such as lowering blood pressure and blood glucose and improving insulin sensitivity (Cook, et al., 2010).

**Figure 3.15. Adults achieving recommended physical activity levels, by ethnicity, Hawaii, 2001-2005**



**Source:** Hawaii State Department of Health, 2009. Physical activity levels. Retrieved from [http://www.hhdw.org/cms/uploads/Data%20Source\\_%20BRFSS/2006%20Aggregate%20Reports/Hysterectomy%20to%20Weight%20Control/BRFSS\\_Physical%20Activity\\_AGG3\\_00004.PDF](http://www.hhdw.org/cms/uploads/Data%20Source_%20BRFSS/2006%20Aggregate%20Reports/Hysterectomy%20to%20Weight%20Control/BRFSS_Physical%20Activity_AGG3_00004.PDF).

- ◆ The percentage of Native Hawaiians meeting recommended physical activity levels increased by almost 8% between 2001 and 2005, the highest increase among all groups examined (Figure 3.15).

## Functional Status Preservation and Rehabilitation

### Importance

#### Demographics

Noninstitutionalized adults needing help of another person with activities of daily living (ADLs)<sup>xiii</sup> (2011) .....5.2 million (Adams, et al., 2012)

Noninstitutionalized adults needing help with instrumental activities of daily living (IADLs)<sup>xiv</sup> (2011) .....9.8 million (Adams, et al., 2012)

Number of Medicare beneficiaries receiving inpatient rehabilitation facility care (2010)..... 371,000 (MedPAC, 2013)

#### Costs

Medicare payments for outpatient physical therapy (2008 est.) .....\$3.5 billion (Ciolek & Hwang, 2010)

Medicare payments for outpatient occupational therapy (2008 est.) .....\$928 million (Ciolek & Hwang, 2010)

Medicare payments for outpatient speech-language pathology services (2008 est.) .....\$336 million (Ciolek & Hwang, 2010)

Medicare payments for hospital outpatient rehabilitation (2011) ..... \$4.6 billion (CMS, 2012a)

Medicare payments for inpatient rehabilitation facility care (2011) .....\$7.0 billion (MedPAC, 2013)

### Measures

A person's ability to function can decline with disease or age, but it is not always an inevitable result. Threats to function span a wide variety of medical conditions. Services to maximize function are delivered in a variety of settings, including hospitals, providers' offices, patients' homes, long-term care facilities, and other post-acute care or rehabilitation facilities.

Some health care interventions, such as promoting physical activity and social interaction, can help prevent diseases that commonly cause declines in functional status. Other interventions, such as physical therapy, occupational therapy, and speech-language pathology services, can help patients regain function that has been lost or minimize the rate of decline in functioning.

The NHQR and NHDR track several measures related to functional status preservation and rehabilitation. Three measures are highlighted in this section:

- ◆ Improvement in mobility among home health care patients.
- ◆ Nursing home residents needing more help with daily activities.
- ◆ Functional Independence Measure scores among inpatient rehabilitation facility patients.

<sup>xiii</sup> ADLs consist of basic self-care tasks, such as bathing, dressing, eating, transferring, using the toilet, and walking.

<sup>xiv</sup> 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.

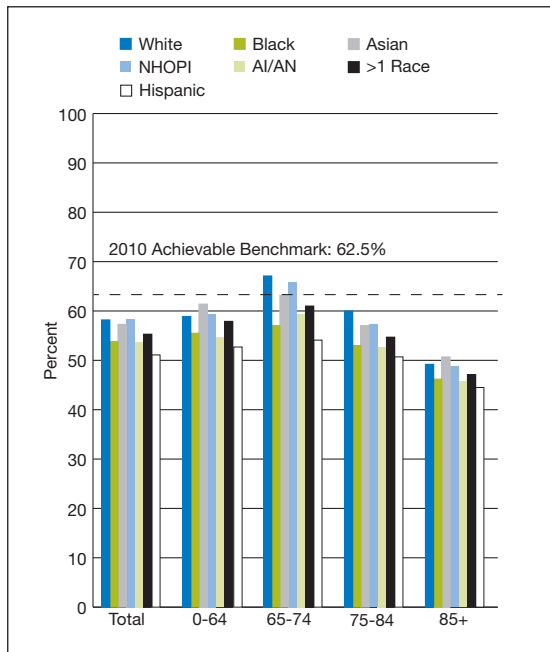
## Findings

### Outcome: Improvement in Mobility Among Home Health Care Patients

After an illness or injury, many patients may need temporary help getting around at home. Home health care providers can help patients get around and attend to daily activities until they recover. This can include assistance with walking and using equipment, such as a cane or wheelchair. If needed, they can also provide physical therapy to facilitate improvements in walking or moving with an assistive device.

Better quality physical therapy and support for mobility should yield more rapid improvement in a patient's ability to get around. However, mobility may not improve even when a home health agency provides good care. Progressive neurologic conditions, such as multiple sclerosis or Parkinson's disease, may impair mobility despite optimal home health care. In addition, the potential for mobility improvement may differ across patient populations referred to different home health agencies in different geographic areas.

**Figure 3.16. Adult home health care patients whose ability to walk or move around improved, by race/ethnicity and age, 2011**



**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 (OASIS), 2011.

**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.

- ◆ In 2011, Black, AI/AN, and Hispanic home health care patients were less likely than Whites to show improvement in their ability to walk or move around (Figure 3.16). These patients may face larger barriers to home health care related to insurance and out-of-pocket costs. Disparities were larger among patients ages 65-74 and 75-84 and smaller among patients age 85 and over.
- ◆ The 2010 top 5 State achievable benchmark was 62.5%.<sup>xv</sup> Only White, Asian, and NHOPi home health patients ages 65-74 have achieved this benchmark. Data are insufficient to determine time to benchmark.

<sup>xv</sup> The top 5 States that contributed to the achievable benchmark are Maine, Missouri, New Jersey, South Carolina, and Utah.

Also, in the NHQR:

- ◆ In 2010 and 2011, home health care patients age 85 and over were less likely than patients in other age groups to show improvement.

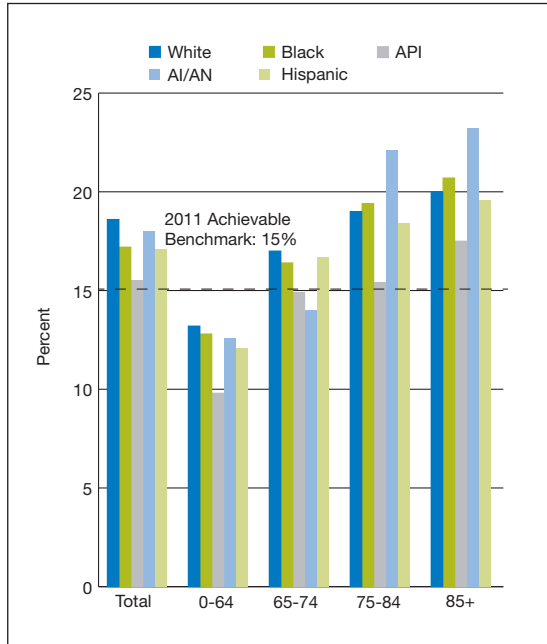
### Outcome: Nursing Home Residents Needing More Help With Daily Activities

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.<sup>xvi</sup>

Most residents want to care for themselves, and the ability to perform daily activities is important to their quality of life. While some functional decline among residents cannot be avoided, high-quality nursing home care should minimize the rate of decline and the number of patients experiencing 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. In 2011, the patient assessment instrument for nursing homes was changed to version 3.0 of the Minimum Data Set. Many measures, including the definition of long-stay nursing home residents, changed. Estimates in this report of need for help with daily activities by nursing home residents are not comparable with estimates in previous reports.

<sup>xvi</sup> 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](http://www.hhs.gov/ocr/civilrights/understanding/disability/serviceolmstead/index.html).

**NEW****Figure 3.17. Long-stay nursing home residents whose need for help with daily activities increased, by race/ethnicity and age, 2011**

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

Source: Centers for Medicare & Medicaid Services, Minimum Data Set, 2011. Data are from the third quarter of the 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. Hispanic includes all races.

- ◆ In 2011, 18.3% of long-stay nursing home residents had increased need for help with daily activities (data not shown).
- ◆ In all age groups, API residents were less likely than White residents to need increased help with daily activities (Figure 3.17).
- ◆ AI/AN residents ages 65-74 were also less likely than White residents to need increased help while AI/AN residents ages 75-84 and 85 and over were more likely than White residents to need increased help.
- ◆ The 2011 top 5 State achievable benchmark was 15%.<sup>xvii</sup> Residents ages 0-64 and API and AI/AN residents ages 65-74 have achieved the benchmark. Data are insufficient to determine time to benchmark.

Also, in the NHQR:

- ◆ Residents ages 0-64 and 65-74 were less likely than residents age 85 and over to need increased help with daily activities.

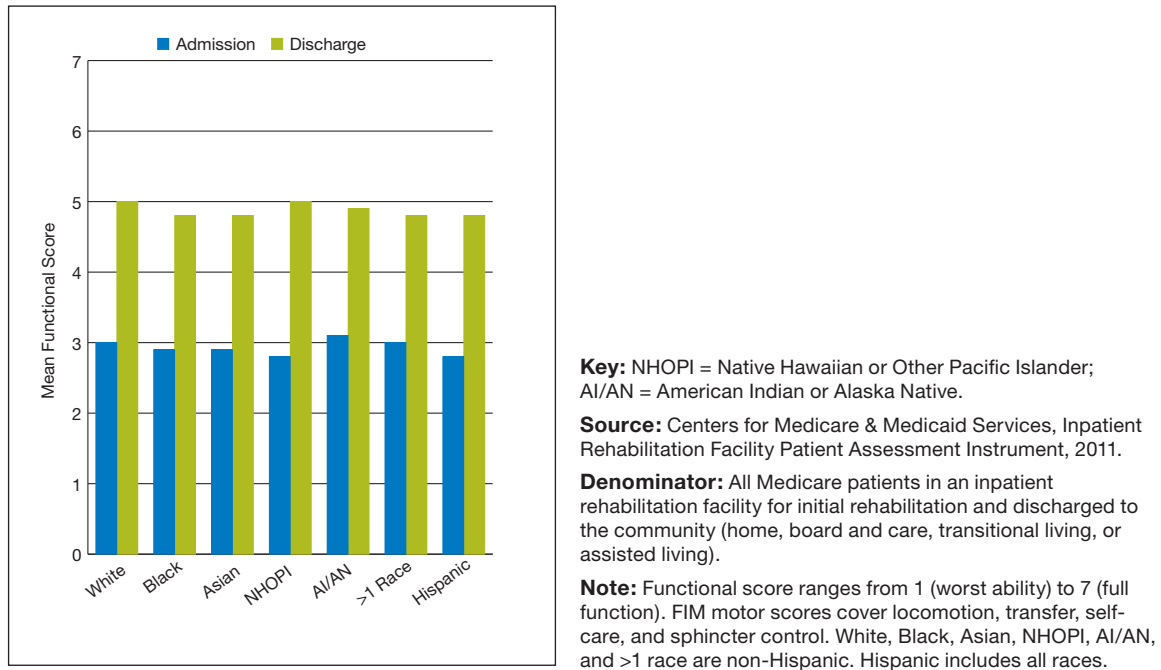
### Focus on Inpatient Rehabilitation Facility Patients

Patients receive rehabilitation therapies for a range of impairments from different types of providers, inpatient and outpatient. Inpatient rehabilitation facilities (IRFs) may be standalone facilities or part of hospitals and offer intensive physical therapy services as part of rehabilitation. Patients are often sent to IRFs for rehabilitation following joint replacements and strokes. Each Medicare-certified IRF collects measures of functional status (called the Functional Independence Measure or FIM) at admission and discharge for each Medicare patient as part of the IRF Patient Assessment Instrument.

<sup>xvii</sup> The top 5 States that contributed to the achievable benchmark are Alaska, California, Illinois, Oregon, and Utah.

By providing information on the change in functional ability between admission and discharge, we can see how much patients have improved in functional ability during their stay in the IRFs. We restricted analyses to patients who had initial rehabilitation and were discharged to the community (home, board and care, transitional living, or assisted living) as a way of controlling for patient case mix.

**Figure 3.18. Functional Independence Measure motor scores at admission and discharge, by race/ethnicity, 2011**



- ◆ In 2011, there were no statistically significant racial/ethnic differences in the motor ability of patients admitted to IRFs (Figure 3.18).
- ◆ Gains in motor function between admission and discharge to the community were smaller among AI/AN and multiple-race individuals compared with White individuals.

Also, in the NHQR:

- ◆ Gains in function between admission and discharge to the community were observed in all types of abilities and were largest in locomotion and transfer abilities.

## Supportive and Palliative Care

### Importance

#### Demographics

Number of Medicare nursing home residents ever admitted during the calendar year (2011) .....2.6 million (CMS, 2012b)

Number of Medicare fee-for-service (FFS) home health patients<sup>xviii</sup> (2011) .....3.5 million (CMS, 2012c)

Number of Medicare FFS beneficiaries using Medicare hospice services (2011) ..... 1.2 million (CMS, 2012d)

#### Cost

Total costs of nursing home care<sup>xix</sup> (2011) .....\$149.3 billion (CMS, 2011)

Total costs of home health care<sup>xix</sup> (2011) .....\$74.3 billion (CMS, 2011)

Medicare FFS payments for hospice services (2011)..... \$13.8 billion (CMS, 2012d)

### 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 needs 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. The five measures presented in this section reflect patient- and family-centered care, goal setting, and care planning, which are among the critical areas of care delivery identified by the Measure Applications Partnership (MAP, 2012):

- ◆ Relief of suffering:
  - Shortness of breath among home health care patients.
  - Moderate to severe pain among nursing home residents.

<sup>xviii</sup> Medicare FFS patients represent only a portion of all home health patients.

<sup>xix</sup> 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.



- ◆ Help with emotional and spiritual needs:
  - Right amount of emotional support among hospice patients.
- ◆ Effective communication:
  - Enough information about what to expect among hospice family caregivers.
- ◆ High-quality palliative care:
  - Care consistent with patient's wishes among hospice patients.

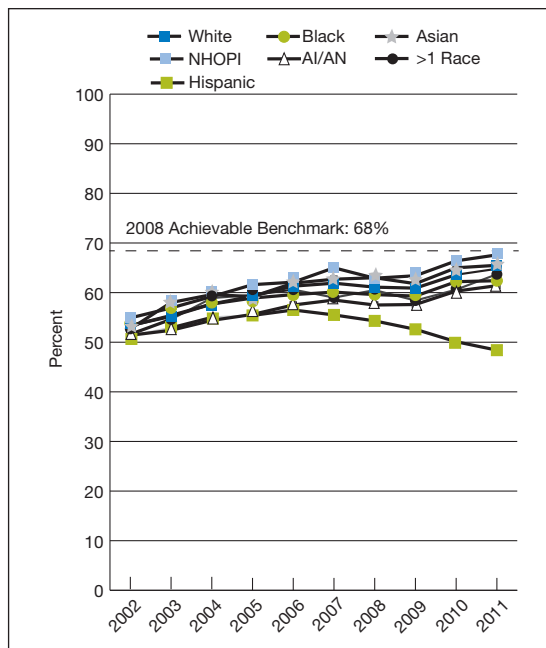
## Findings

### 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 3.19. Adult home health care patients who had less shortness of breath between the start and end of a home health care episode, by race/ethnicity, 2002-2011**



**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 (OASIS), 2002-2011.

**Denominator:** Adult nonmaternity patients completing an episode of skilled home health care.

**Note:** Starting January 1, 2010, the patient assessment instrument for home health agencies was changed to OASIS-C. Because dyspnea improvement is measured similarly in both the previous and current versions of the assessment instrument, we are presenting 2002 through 2010 trend data. White, Black, Asian, NHOPI, AI/AN, and >1 race are non-Hispanic. Hispanic includes all races.

- ◆ Between 2002 and 2011, the percentage of adult home health care patients who showed improvement in shortness of breath over the course of a home health episode increased for each racial/ethnic group except Hispanics (Figure 3.19). For Hispanics, the rate increased from 2002 to 2006 and then decreased.
- ◆ From 2006 to 2011, Hispanics were less likely than Whites to show improvement in shortness of breath.

- ◆ The 2008 top 5 State achievable benchmark was 68%.<sup>xx</sup> At the current annual rate of increase, this benchmark could be attained overall in about 5 years. NHOPIs could achieve the benchmark in less than a year. Whites, Asians, and multiple-race individuals could attain the benchmark in less than 5 years, while Blacks and AI/ANs would take about 6 years to attain the benchmark. Hispanics show movement away from the benchmark.

Also, in the NHQR:

- ◆ Between 2002 and 2011, the percentage of adult home health care patients who showed improvement in shortness of breath increased for the total population and for every age group.

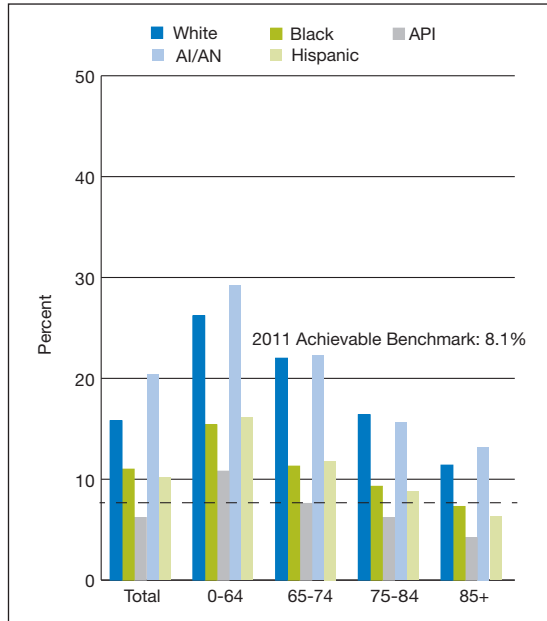
### Outcome: Moderate to Severe Pain Among Nursing Home Residents

Adequate pain management is an important indicator of quality of care and quality of life. Untreated and undertreated pain are common problems among older adults living in the community and in nursing homes. Assessment and management of pain in this population is complex and is made more difficult by the high prevalence of multiple chronic conditions, dementia, and other impairments. Previous NHQRs and NHDRs have shown that many long-stay nursing home residents with moderate to severe pain receive pain medications on an as-needed basis only and that few participate in special pain management programs.

In 2011, the patient assessment instrument for nursing homes was changed to version 3.0 of the Minimum Data Set, and many measures changed. Estimates in this report of nursing home residents with pain are not comparable with estimates in previous reports.

---

<sup>xx</sup> The top 5 States that contributed to the achievable benchmark are Georgia, Hawaii, New Jersey, Rhode Island, and South Carolina.

**Figure 3.20. Long-stay nursing home residents who have moderate to severe pain, by age and race/ethnicity, 2011**

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

**Source:** Centers for Medicare & Medicaid Services, Minimum Data Set, 2011. Data are from the third quarter of the 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. Hispanic includes all races.

- ◆ In 2011, 14.7% of long-stay nursing home residents had moderate to severe pain (data not shown).
- ◆ In all age groups, Black, API, and Hispanic residents were less likely than White residents to have moderate to severe pain (Figure 3.20).
- ◆ AI/AN residents were more likely than White residents to have moderate to severe pain, especially those ages 0-64 years.
- ◆ The 2011 top 5 State achievable benchmark was 8.1%.<sup>xxi</sup> API residents overall and Black and Hispanic residents age 85 and over have achieved the benchmark. Data are insufficient to determine time to benchmark.

Also, in the NHQR:

- ◆ Residents ages 0-64, 65-74, and 75-84 were more likely than residents age 85 and over to have moderate to severe pain.

## 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).

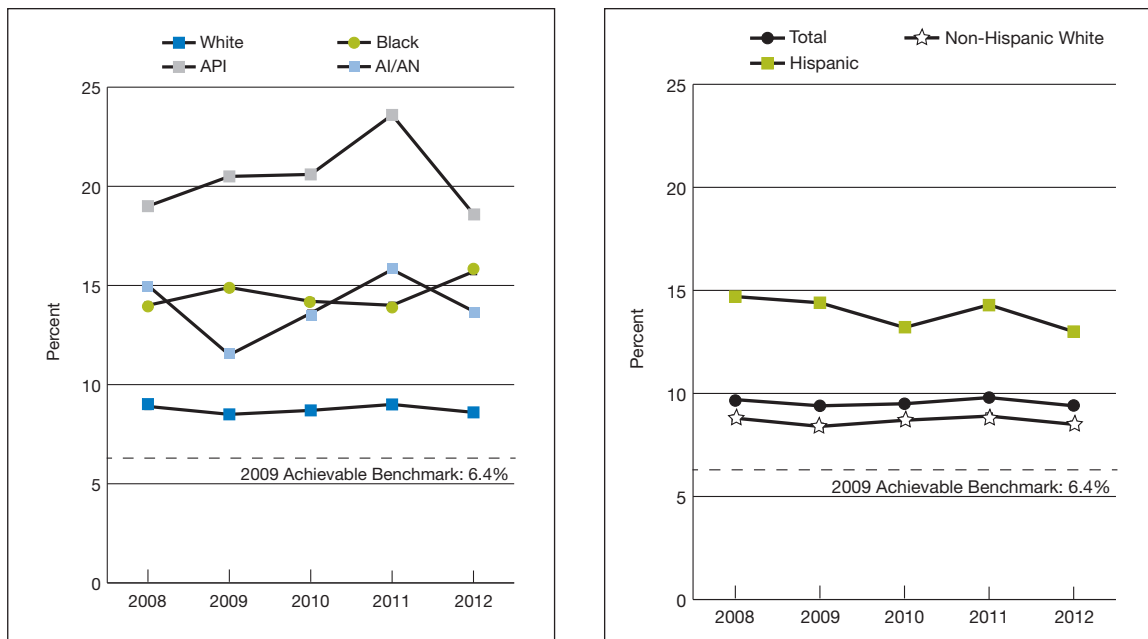
<sup>xxi</sup> The top 5 States that contributed to the achievable benchmark are District of Columbia, Hawaii, Maryland, New Jersey, and New York.

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.<sup>xxii</sup>

### Management: Right Amount of Emotional Support Among Hospice Patients

Dying is a stressful process, and 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.

**Figure 3.21. 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, 2008-2012**



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

**Source:** National Hospice and Palliative Care Organization, Family Evaluation of Hospice Care, 2008-2012.

**Denominator:** Adult hospice patients.

**Note:** For this measure, lower rates are better.

- ◆ 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 9.4% in 2012 (Figure 3.21).
- ◆ In all years, Blacks, APIs, and AI/ANs were less likely than Whites to receive the right amount of emotional support. Hispanics were less likely than non-Hispanic Whites to receive the right amount of emotional support.

<sup>xxii</sup> 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 patient's wishes and concerns. These limitations should be considered when interpreting these findings.

- ◆ The 2009 top 5 State achievable benchmark was 6.4%.<sup>xxiii</sup> Overall, hospice patients are not making progress toward this benchmark. Improvement is observed among Hispanic hospice patients, while Blacks, APIs, and AI/ANs are moving away from the benchmark.

Also, in the NHQR:

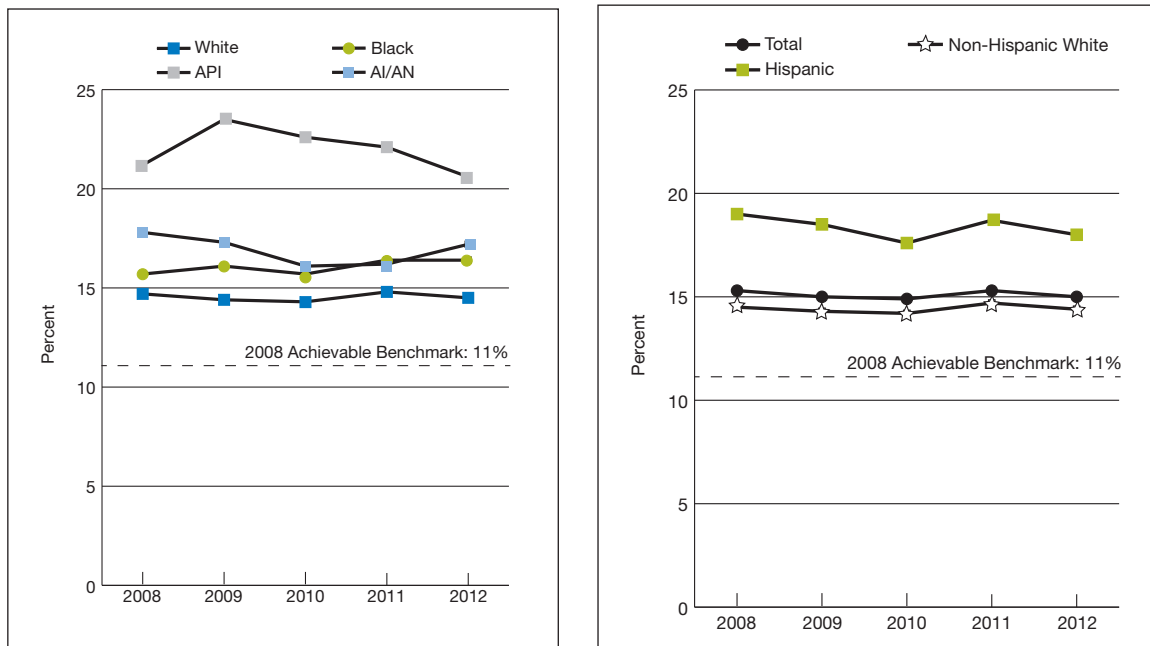
- ◆ In all years, hospice patients ages 18-44 and 45-64 were less likely than patients age 65 and over to receive the right amount of emotional support.

## 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, advance directives, and what to expect while the patient is dying. Health care providers need to be skilled at eliciting patients' values and preferences, accepting of different cultural and religious choices, and committed to continuing care regardless of patient treatment decisions.

**Figure 3.22. 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, 2008-2012**



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

**Source:** National Hospice and Palliative Care Organization, Family Evaluation of Hospice Care, 2008-2012.

**Denominator:** Adult hospice patients.

**Note:** For this measure, lower rates are better.

- ◆ The percentage of hospice patient family caregivers who reported that they wanted more information about what to expect while the patient was dying was 15.0% in 2012 (Figure 3.22).

<sup>xxiii</sup> The top 5 States that contributed to the achievable benchmark are Alabama, Alaska, Arkansas, Kansas, and South Carolina.

- ◆ In all years, family caregivers of API hospice patients were more likely than family caregivers of White patients to want more information. Family caregivers of Hispanic hospice patients were more likely than family caregivers of non-Hispanic White patients to want more information.
- ◆ The 2008 top 6 State achievable benchmark was 11%.<sup>xxiv</sup> Overall, no progress has been made toward this benchmark. Improvement is observed among API and AI/AN hospice patients, while Black hospice patients are moving away from the benchmark.

Also, in the NHQR:

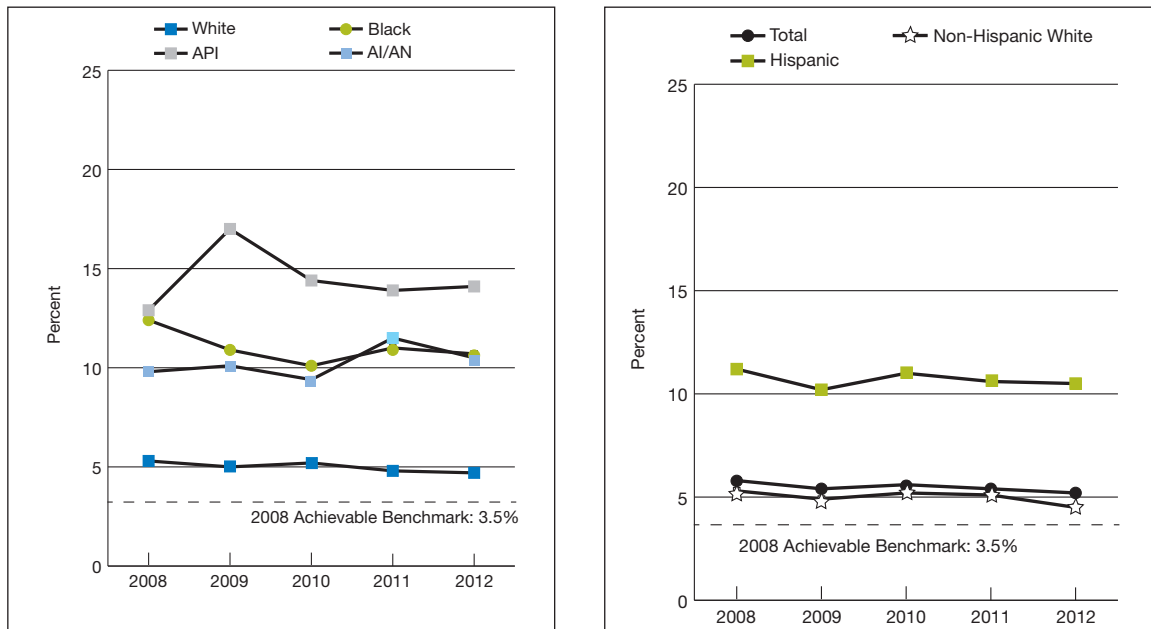
- ◆ In all years, family caregivers of hospice patients ages 18-44 and 45-64 were more likely than family caregivers of patients age 65 and over to want more information about what to expect while the patient was dying.

## High-Quality Palliative Care

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

Hospice care should respect patients' stated goals for care. Respecting patients' goals requires shared communication and decisionmaking between providers and hospice patients and their family members and sensitivity to cultural and religious beliefs.

**Figure 3.23. Hospice patients age 18 and over who did NOT receive care consistent with their stated end-of-life wishes, by race and ethnicity, 2008-2012**



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

**Source:** National Hospice and Palliative Care Organization, Family Evaluation of Hospice Care, 2008-2012.

**Denominator:** Adult hospice patients.

**Note:** For this measure, lower rates are better.

<sup>xxiv</sup> The top 6 States that contributed to the achievable benchmark are Alabama, Idaho, Iowa (tie), Kansas, South Dakota (tie), and West Virginia.

- ◆ The percentage of hospice patients whose families reported that they did not receive end-of-life care consistent with their stated wishes was 5.2% in 2012 (Figure 3.23).
- ◆ In all years, Blacks, APIs, and AI/ANs were less likely than Whites to receive end-of-life care consistent with their wishes. Hispanics were less likely than non-Hispanic Whites to receive end-of-life care consistent with their wishes.
- ◆ The 2008 top 5 State achievable benchmark was 3.5%.<sup>xxv</sup> At current rates of improvement, this benchmark could not be attained overall for about 15 years. Whites could attain the benchmark in about 8 years. Blacks and Hispanics would not attain the benchmark for more than 20 years. APIs and AI/ANs are not making progress toward the benchmark.

Also, in the NHQR:

- ◆ In 2011 and 2012, hospice patients ages 18-44 were less likely than patients age 65 and over to receive end-of-life care consistent with their wishes.

---

<sup>xxv</sup> The top 5 States that contributed to the achievable benchmark are Maine, Minnesota, Mississippi, New Hampshire, and Tennessee.

## References

Adams P, Kirzinger WK, Martinez ME. Summary health statistics for the U.S. population: National Health Interview Survey, 2011. *Vital Health Stat* 20(256);December 2012. Available at: [http://www.cdc.gov/nchs/data/series/sr\\_10/sr10\\_256.pdf](http://www.cdc.gov/nchs/data/series/sr_10/sr10_256.pdf). Accessed February 19, 2013.

Agaku IT, King BA, Dube SR. Current cigarette smoking among adults—United States, 2005–2012. *MMWR* 2014;63(02);29–34. Available at: <http://www.cdc.gov/mmwr/preview/mmwrhtml/mm6302a2.htm>. Accessed April 9, 2014.

Agency for Healthcare Research and Quality. Total health services-mean and median expenses per person with expense and distribution of expenses by source of payment: United States, 2010. Medical Expenditure Panel Survey component data. Generated interactively. Available at: [http://meps.ahrq.gov/mepsweb/data\\_stats/tables\\_compendia\\_hh\\_interactive.jsp?\\_SERVICE=MEPSSocket0&\\_PROGRAM=MEPSPGM.TC.SAS&File=HCFY2010&Table=HCFY2010%5FPLEXP%5F%40&VAR1=AGE&VAR2=SEX&VAR3=RACETH5C&VAR4=INSURCOV&VAR5=POVCA10&VAR6=MSA&VAR7=REGION&VAR8=HEALTH&VARO1=4+17+44+64&VARO2=1&VARO3=1&VARO4=1&VARO5=1&VARO6=1&VARO7=1&VARO8=1&\\_Debug](http://meps.ahrq.gov/mepsweb/data_stats/tables_compendia_hh_interactive.jsp?_SERVICE=MEPSSocket0&_PROGRAM=MEPSPGM.TC.SAS&File=HCFY2010&Table=HCFY2010%5FPLEXP%5F%40&VAR1=AGE&VAR2=SEX&VAR3=RACETH5C&VAR4=INSURCOV&VAR5=POVCA10&VAR6=MSA&VAR7=REGION&VAR8=HEALTH&VARO1=4+17+44+64&VARO2=1&VARO3=1&VARO4=1&VARO5=1&VARO6=1&VARO7=1&VARO8=1&_Debug).

American Academy of Pediatrics and American College of Obstetricians and Gynecologists. Guidelines for perinatal care. 6th ed. Elk Grove Village, IL: AAP; 2007.

American Academy of Pediatrics. Recommendations for preventive pediatric health care. Elk Grove Village, IL: AAP; 2008.

Barnes P. Physical activity among children and adolescents: United States, trends 1963–1965 through 2007–2008. Atlanta, GA: Centers for Disease Control and Prevention, National Center for Health Statistics; 2010.

Blaisdell RK. Health status of Kanaka Maoli (indigenous Hawaiians). *Asian Am Pac Isl J Health* 1993;1(2):116–60.

Breuner C. Emergency contraception in teens: AAP recommendations. Online presentation. January 2013.

Centers for Disease Control and Prevention. Adult obesity facts. Atlanta, GA: U.S Department of Health and Human Services; 2011. Available at: <http://www.cdc.gov/obesity/data/trends.html>. Accessed December 1, 2011.

Centers for Disease Control and Prevention. Teen pregnancy prevention 2010–2015. Available at: <http://www.cdc.gov/TeenPregnancy/PreventTeenPreg.htm#k3>. Accessed September 18, 2013.

Centers for Medicare & Medicaid Services. Table 1.4. Total personal health care (PHC) expenditures, by type of service: selected calendar years 1980–2010. Medicare & Medicaid Statistical Supplement, 2011. Downloaded from <http://www.cms.gov/Research-Statistics-Data-and-Systems/Statistics-Trends-and-Reports/MedicareMedicaidStatSupp/2011.html>. Accessed February 19, 2013.

Centers for Medicare & Medicaid Services. Table 10.2. Covered charges for hospital outpatient services under Medicare, by demographic characteristics, type of entitlement, and type of service: calendar year 2011. Medicare & Medicaid Statistical Supplement, 2012a. Downloaded from <http://www.cms.gov/Research-Statistics-Data-and-Systems/Statistics-Trends-and-Reports/MedicareMedicaidStatSupp/2012.html>. Accessed February 19, 2013.

Centers for Medicare & Medicaid Services. Table 6.2. Covered admissions, covered days of care, covered charges, and program payments for skilled nursing facility services used by Medicare beneficiaries, by demographic characteristics, type of entitlement, and discharge status: calendar year 2011. Medicare & Medicaid Statistical Supplement, 2012b. Downloaded from <http://www.cms.gov/Research-Statistics-Data-and-Systems/Statistics-Trends-and-Reports/MedicareMedicaidStatSupp/2012.html>. Accessed February 19, 2013.

Centers for Medicare & Medicaid Services. Table 7.1. Trends in persons served, total charges, visit charges and program payments for Medicare home health agency services, by year of service: selected calendar years 1974–2011. Medicare & Medicaid Statistical Supplement, 2012c. Downloaded from <http://www.cms.gov/Research-Statistics-Data-and-Systems/Statistics-Trends-and-Reports/MedicareMedicaidStatSupp/2012.html>. Accessed February 19, 2013.



Centers for Medicare & Medicaid Services. Table 8.1. Number of hospices, number of persons, covered days of care, total charges, and program payments for hospice services used by Medicare beneficiaries: calendar years 1994-2011. Medicare & Medicaid Statistical Supplement, 2012d. Downloaded from <http://www.cms.gov/Research-Statistics-Data-and-Systems/Statistics-Trends-and-Reports/MedicareMedicaidStatSupp/2012.html>. Accessed February 19, 2013.

Ciolek D, Hwang W. CY 2008 outpatient therapy utilization report. Baltimore, MD: Centers for Medicare & Medicaid Services; 2010. Available at: [http://www.cms.gov/Medicare/Billing/TherapyServices/downloads/CY\\_2008\\_Outpatient\\_Therapy\\_Utilization\\_Report.pdf](http://www.cms.gov/Medicare/Billing/TherapyServices/downloads/CY_2008_Outpatient_Therapy_Utilization_Report.pdf). Accessed April 7, 2014.

Cook WK, Chung C, Ve'e T. Native Hawaiian and Pacific Islander health disparities. San Francisco, CA: Asian & Pacific Islander American Health Forum; 2010.

Cox RG, Zhang L, Zotti ME, et al. Prenatal care utilization in Mississippi: racial disparities and implications for unfavorable birth outcomes. *Matern Child Health J* 2011 Oct;15(7):931-42.

Debiec KE, Paul KJ, Mitchell CM, et al. Inadequate prenatal care and risk of preterm delivery among adolescents: a retrospective study over 10 years. *Am J Obstet Gynecol* 2010 Aug;203(2):122.e1-6.

Field M, Cassell C, eds. Approaching death: improving care at the end of life. Washington, DC: National Academy Press;1997.

Finer LB, Zolna MR. Unintended pregnancy in the United States: incidence and disparities, 2006. *Contraception* 2011;84:478-85.

Ford ES, Bergmann MM, Kröger J, et al. Healthy living is the best revenge: findings from the European Prospective Investigation Into Cancer and Nutrition-Potsdam study. *Arch Intern Med* 2009;169(15):1355-62.

Fryar CD, Carroll MD, Ogden CL. Prevalence of obesity among children and adolescents: United States, trends 1963-1965 through 2009-2010. *NCHS Health E-Stat*;2012a.

Fryar CD, Carroll MD, Ogden CL. Prevalence of overweight, obesity, and extreme obesity among adults: United States, trends 1960-1962 through 2009-2010. *NCHS Health E-Stat*;2012b.

Grandinetti A, Chang HK, Chen R, et al. Prevalence of overweight and central adiposity is associated with percentage of indigenous ancestry among native Hawaiians. *Int J Obes Relat Metab Disord* 1999;23(7):733-7.

Hamilton B, Martin J, Ventura S. Births: preliminary data for 2012. *Natl Vital Stat Rep* 2013;62(3). Available at: [http://www.cdc.gov/nchs/data/nvsr/nvsr62/nvsr62\\_03.pdf](http://www.cdc.gov/nchs/data/nvsr/nvsr62/nvsr62_03.pdf). Accessed September 12, 2013.

Hoyert D, Xu J. Deaths: preliminary data for 2011. *Natl Vital Stat Rep* 2012;61(6). Available at: [http://www.cdc.gov/nchs/data/nvsr/nvsr61/nvsr61\\_06.pdf](http://www.cdc.gov/nchs/data/nvsr/nvsr61/nvsr61_06.pdf). Accessed September 17, 2013.

Institute of Medicine. Advancing oral health in America. Washington, DC: National Academies Press; 2011.

Institute of Medicine. U.S. health in international perspective: shorter lives, poorer health. Washington, DC: National Academies Press; 2013.

Jaccard J, Levitz N. Counseling adolescents about contraception: towards the development of an evidence-based protocol for contraceptive counselors. *J Adolesc Health* 2013;52(4 Suppl):S6-13.

Krebs NF, Jacobson MS. Prevention of pediatric overweight and obesity. *Pediatrics* 2003;112(2):424-30. Reaffirmed in 2006.

Lin JS, O'Connor E, Whitlock EP, et al. Behavioral counseling to promote physical activity and a healthful diet to prevent cardiovascular disease in adults: a systematic review for the U.S. Preventive Services Task Force. *Ann Intern Med* 2010 Dec 7;153(11):736-50.

## EFFECTIVENESS OF CARE ACROSS THE LIFESPAN

Look MA, Trask-Batti MK, Agres R, et al. Assessment and priorities for health & well-being in Native Hawaiians & other Pacific peoples. Honolulu, HI: Center for Native and Pacific Health Disparities Research, John A. Burns School of Medicine, University of Hawaii; 2013. Available at: [http://www2.jabsom.hawaii.edu/native/docs/community/DNHH\\_Assessment&Priorities\\_Report\\_2013.pdf](http://www2.jabsom.hawaii.edu/native/docs/community/DNHH_Assessment&Priorities_Report_2013.pdf). Accessed November 6, 2013.

Ma J, Xiao L, Stafford R. Adult obesity and office-based quality of care in the United States. *Obesity* 2009;17(5):1077-85.

Martinez G, Copen CE, Abma JC. Teenagers in the United States: sexual activity, contraceptive use, and childbearing, 2006-2010 National Survey of Family Growth. *Vital Health Stat* 2011;23(31). Available: [http://www.cdc.gov/nchs/data/series/sr\\_23/sr23\\_031.pdf](http://www.cdc.gov/nchs/data/series/sr_23/sr23_031.pdf). Accessed April 7, 2014.

McGarvey ST. Obesity in Samoans and a perspective on its etiology in Polynesians. *Am J Clin Nutr* 1991;53:1586S-94S.

Measure Applications Partnership. Performance measurement coordination strategy for hospice and palliative care. Final report. Washington, DC: National Quality Forum; June 2012.

MedPAC. A data book: health care spending and the Medicare program: Chart 8-13. Baltimore, MD: Centers for Medicare & Medicaid Services; June 2013. Available at: <http://www.medpac.gov/documents/Jun13DataBookEntireReport.pdf>. Accessed September 20, 2013.

MMWR. CDC Grand Rounds: childhood obesity in the United States. *MMWR* 2011;60(02):42-46. Available at: [http://www.cdc.gov/mmwr/preview/mmwrhtml/mm6002a2.htm?s\\_cid=mm6002a2\\_w](http://www.cdc.gov/mmwr/preview/mmwrhtml/mm6002a2.htm?s_cid=mm6002a2_w). Accessed February 22, 2013.

MMWR. Vital signs: state-specific obesity prevalence among adults --- United States, 2009. *MMWR* 2010;59(early release):1-5. Available at: <http://www.cdc.gov/mmwr/preview/mmwrhtml/mm59e0803a1.htm>. Accessed September 8, 2011.

MMWR. Youth risk behavior surveillance—United States, 2011. *MMWR Surveillance Summaries* 2012 Jun;61(4). Available at: <http://www.cdc.gov/mmwr/pdf/ss/ss6104.pdf>. Accessed November 6, 2013.

MQIC. Prevention of pregnancy in adolescents 12-17 years. Southfield, MI: Michigan Quality Improvement Consortium; 2012.

Must A, Spadano J, Coakley EH, et al. The disease burden associated with overweight and obesity. *JAMA* 1999;282(16):1523-9.

National Institute of Dental and Craniofacial Research. Oral health in America: a report of the Surgeon General. Rockville, MD: U.S. Department of Health and Human Services, National Institutes of Health; 2000. Available at: <http://profiles.nlm.nih.gov/ps/retrieve/ResourceMetadata/NNBBJT/>. Accessed September 8, 2011.

National Priorities Partnership. National priorities and goals: aligning our efforts to transform America's healthcare. Washington, DC: National Quality Forum; 2008.

Novotny R, Oshiro CE, Wilkens LR. Prevalence of childhood obesity among young multiethnic children from a health maintenance organization in Hawaii. *Child Obes* 2013;9(1):35-42.

Office on Smoking and Health. The health consequences of smoking: a report of the Surgeon General. Atlanta, GA: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion; 2004.

Office on Smoking and Health. The health consequences of smoking—50 years of progress: a report of the Surgeon General. Atlanta, GA: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion; 2014.

Ogden C, Carroll M, Kit BK, et al. Prevalence of obesity in the United States, 2009-2010. *NCHS Data Brief* 82; January 2012. Available at: <http://www.cdc.gov/nchs/data/databriefs/db82.htm>. Accessed September 17, 2013.

Oringanje C, Meremikwu M, Eko H, et al. Interventions for preventing unintended pregnancies among adolescents. *Cochrane Database Syst Rev* 2009 Oct 7;4(CD005215).

Satcher D, Higginbotham EJ. The public health approach to eliminating disparities in health. *Am J Public Health* 2008;98(9 Suppl):S8-11.

Truong KD, Sturm R. Weight gain trends across sociodemographic groups in the United States. *Am J Public Health* 2005;95(9):1602-6.

U.S. Census Bureau. Community facts: 2010 profile of general population and housing characteristics: 2010 demographic profile data. Available at: [http://factfinder2.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=DEC\\_10\\_DP\\_DPDP1](http://factfinder2.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=DEC_10_DP_DPDP1). Accessed September 18, 2013.

U.S. Census Bureau, Population Division. Annual estimates of the resident population for selected age groups by sex for the United States, States, counties, and Puerto Rico Commonwealth and municipios: April 1, 2010 to July 1, 2012; June 2013. Available at: [http://factfinder2.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=PEP\\_2012\\_PEPAGESEX&prodType=table](http://factfinder2.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=PEP_2012_PEPAGESEX&prodType=table). Accessed September 18, 2013.

U.S. Preventive Services Task Force. Screening for and management of obesity in adults: recommendation statement. Rockville, MD: Agency for Healthcare Research and Quality; 2012. Available at: <http://www.uspreventiveservicestaskforce.org/uspstf11/obeseadult/obesers.htm>. Accessed February 22, 2013.

Xu J, Kochanek K, Murphy S, et al. Deaths: final data for 2007. *Natl Vital Stat Rep* 2010;58(19). Available at: [http://www.cdc.gov/nchs/data/nvsr/nvsr58/nvsr58\\_19.pdf](http://www.cdc.gov/nchs/data/nvsr/nvsr58/nvsr58_19.pdf). Accessed November 12, 2011.

Young, F. Moving sexual health into primary care. *J Fam Health Care* 2007;17(6):189-90.

Zhou F, Santoli J, Messonnier ML, et al. Economic evaluation of the 7-vaccine routine childhood immunization schedule in the United States, 2001. *Arch Pediatr Adolesc Med* 2005;159(12):1136-44.



## Chapter 4. Patient Safety

### Importance

#### Mortality

Number of Americans who die in hospitals each year from medical errors (1999 est.)..... 44,000-98,000 (Kohn, et al., 2000)<sup>i</sup>

#### Prevalence

Rate of harms associated with hospital stays (2000-2007) ..... 25.1 per 100 admissions (Landrigan, et al., 2010)

Number of preventable adverse events among adults (excluding obstetrics) per year in U.S. hospitals (2004 est.)..... 3,023,000 (Jha, et al., 2009)

All-payer 30-day readmission rate..... 14.4% of admissions (HHS, 2012)

#### Cost

Cost of preventable adverse events for adults (nonobstetric) in U.S. hospitals (2013 est.).....\$22 billion (Jha, et al., 2009 adjusted)<sup>ii</sup>

Total cost per error in U.S. hospitals (2013 est.) ..... \$15,000 (Shreve, et al., 2010 adjusted)

### 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.

Measuring and tracking patient safety incidents is a necessary step to improving quality of care. Measuring patient safety is complicated by difficulties in ensuring the systematic reporting of patient safety incidents in ongoing, protected, consistent, and informative ways. For example, health care providers may fear that if they participate in the analysis of patient safety incidents, the findings may be used against them in court or harm their professional reputations.

Aggregating data that are defined differently across facilities or State lines is fraught with scientific difficulties, such as:

- ◆ Counting the relevant subpopulation for calculating rates of error,
- ◆ Having sufficient numbers to identify prevalent risks and hazards in the delivery of patient care, and
- ◆ Having the detail to identify underlying causes of these events and practices that are most effective in mitigating risks.

<sup>i</sup> Some argue that this estimate may be too high, while others argue the estimate is too low because diagnosis-related errors are not counted here. See diagnosis-related errors section below.

<sup>ii</sup> The Jha, et al., estimate for 2004 at \$16.622 billion was inflated by the Producer Price Index for medical and surgical hospitals through 2012, plus an assumed 2.2% increase for 2013.

A combination of administrative data, medical record abstraction, voluntary adverse event reporting, and patient surveys is needed to understand what is and is not improving.

Despite these challenges, progress has been made in raising awareness, passing legislation, developing reporting systems, establishing national data collection standards, and conducting research:

- ◆ The Joint Commission's sentinel event program, established in 1996, signaled to hospitals that accreditation depends on their timely review of unexpected death or serious injury and mitigation of such risks. It is believed that hospitals underreport sentinel events to the Joint Commission.
- ◆ President George W. Bush signed the Patient Safety and Quality Improvement Act of 2005 to spur the development of voluntary, provider-driven initiatives to improve the quality, safety, and outcomes of patient care.
- ◆ As of 2009, 27 States developed voluntary or mandatory reporting systems for, at a minimum, serious reportable events. These are adverse events that should never happen to a patient (NASHP, 2013).
- ◆ The Agency for Healthcare Research and Quality (AHRQ) has certified 76 Patient Safety Organizations (PSOs) as of November 18, 2013. PSOs work to develop learning communities in patient safety and collect patient safety event reports that are legally protected from legal disclosure when reported to a PSO. This new program shifts from a culture of blame to a learning collaboration among providers and patient safety experts.
- ◆ AHRQ has also developed a set of "common formats" for health care facilities and professionals to report patient safety events, near misses, and unsafe conditions to PSOs in a consistent way for aggregation and learning.
- ◆ The National Quality Strategy<sup>iii</sup> is the result of collaborations among private and public organizations and aims to increase access to high-quality, affordable health care for all Americans, by spurring health care providers to reduce rates of care-related injury to zero when possible and redesign systems that reliably provide high-quality health care.
- ◆ The Partnership for Patients, created by the U.S. Department of Health and Human Services, has set goals to make care safer.
- ◆ More than 100 studies, using myriad data sources, have addressed patient safety progress made since the IOM report (Raetzman, et al., 2012).

Based on these efforts, this 2013 *National Healthcare Disparities Report* (NHDR) presents a number of patient safety measures organized around the major health care settings that must measure, understand, and improve health care in order for Americans to be cared for in a safer health care environment:

Hospital setting:

- ◆ Hospital-acquired conditions overall.
- ◆ Postoperative sepsis.
- ◆ Catheter-associated urinary tract infections (UTIs).
- ◆ Central line-associated bloodstream infections (CLABSIs).
- ◆ Mechanical adverse events associated with central venous catheters.
- ◆ Obstetric trauma.

<sup>iii</sup> Available at <http://www.ahrq.gov/workingforquality/reports.htm>.

Nursing home setting:

- ◆ Pressure ulcers, use of restraints, and UTIs.

Home health setting:

- ◆ Improvement in surgical site wound healing.
- ◆ Ability to take medications orally.

Ambulatory care setting:

- ◆ Ambulatory visits due to adverse effects of medical care.
- ◆ Receipt of inappropriate prescription medications.
- ◆ Hospital readmissions.

Infrastructure:

- ◆ Patient safety event reporting in Pennsylvania.
- ◆ Patient safety culture.

## Findings

### Hospital Setting

#### Outcome: Overall Hospital-Acquired Condition Rate

Patient safety events that occur in the hospital setting are referred to as hospital-acquired conditions (HACs). Hospitals are a common setting for patient safety events in part because of the clinically compromised state of many patients admitted to the hospital and because of the high volume of care transactions and interventions that take place during a hospital stay.

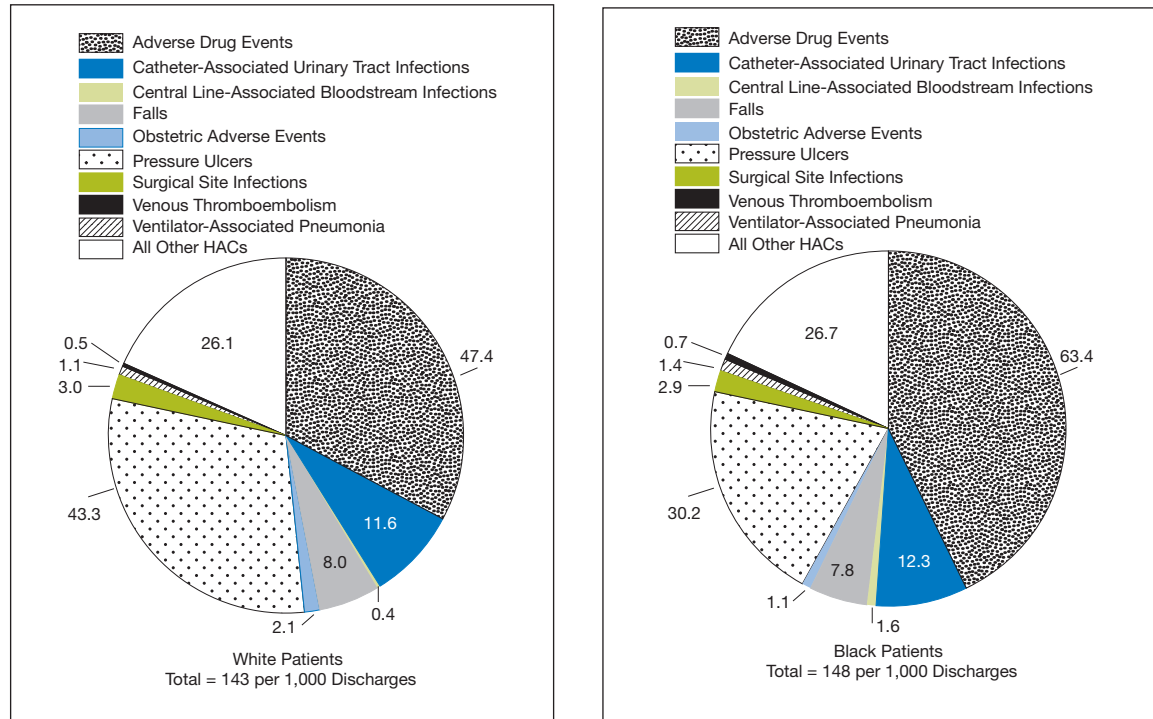
Hospitalized Blacks are at higher risk than Whites of experiencing nosocomial infections and adverse drug events due to anticoagulants and hypoglycemic agents (Metersky, et al., 2011). Higher rates of these patient safety events also occur in hospitals serving high percentages of Black patients.

A key goal of the Federal Government's Partnership for Patients program is to make hospital care safer by reducing the rate of preventable HACs. To track progress on this goal, a method for estimating HACs was developed based on 28 different measures from three national data sources: Medicare Patient Safety Monitoring System<sup>iv</sup> (MPSMS) implemented by AHRQ and the Centers for Medicare & Medicaid Services (CMS), Patient Safety Indicators (PSIs) implemented by AHRQ, and the National Healthcare Safety Network (NHSN) implemented by the Centers for Disease Control and Prevention (CDC). The rate developed is intended to reflect the entire population over age 17.

<sup>iv</sup> MPSMS data were based solely on patients from four patient groups whose charts were requested by CMS for hospitals as part of the Hospital Inpatient Quality Reporting Program. These groups included all-payer patients >17 years old with a principal discharge diagnosis of: (1) pneumonia, (2) acute myocardial infarction, (3) heart failure, or (4) major surgery (as described in the Surgical Care Improvement Project (SCIP)).

Although the 28 measures have been combined, the overall HAC rate is not an all-inclusive HAC rate. Some important types of adverse events are not included in the rate due to a lack of data. For example, the rate does not include adverse drug events due to allergies or use of narcotics, venous thromboembolic events in nonsurgical patients, or most infections that are hospital acquired but do not produce symptoms until after hospital discharge. In addition, retained surgical items and wrong-site surgeries are not included.

**Figure 4.1. Distribution of hospital-acquired conditions, based on national rates per 1,000 adult hospital discharges, by race/ethnicity, 2010**



**Source:** Agency for Healthcare Research and Quality, Medicare Patient Safety Monitoring System, 2010; Centers for Disease Control and Prevention, National Healthcare Safety Network, 2009-2011; Agency for Healthcare Research and Quality, Healthcare Cost and Utilization Project, State Inpatient Databases and AHRQ Quality Indicators, version 4.1, 2011.

**Note:** Data are for patients age 18 years and over. Estimates are rounded to the nearest tenth.

- ◆ The overall HAC rate includes nine specific HACs, as well as an “other” category that covers an additional 14 specific HACs (Figure 4.1).<sup>v</sup> In 2010, the overall HAC rate for Blacks was 148 per 1,000 hospital discharges compared with a rate for Whites of 143 per 1,000 hospital discharges.
- ◆ For both Blacks and Whites, the HAC categories with the highest rates in 2010 were adverse drug events, pressure ulcers, and all other HACs.

<sup>v</sup> All Other HACs includes: inadvertent femoral artery puncture for catheter angiographic procedures, adverse event associated with hip joint replacement, adverse event associated with knee joint replacement, contrast nephropathy associated with catheter angiography, hospital-acquired methicillin-resistant *Staphylococcus aureus* (MRSA), hospital-acquired vancomycin-resistant *Enterococcus* (VRE), hospital-acquired antibiotic-associated *Clostridium difficile*, mechanical complications associated with central venous catheters, postoperative cardiac events for cardiac and noncardiac surgeries, postoperative pneumonia, iatrogenic pneumothorax (HCUP Patient Safety Indicator [PSI] 6), postoperative hemorrhage or hematoma (PSI 9), postoperative respiratory failure (PSI 11), and accidental puncture or laceration (PSI 15).



- ◆ Among Blacks, the 2010 rate of adverse drug events is roughly double that of pressure ulcers (63.4 and 30.2 per 1,000 hospital discharges, respectively). Among Whites, the rates for adverse drug events and for pressure ulcers are more similar (47.4 and 43.3 per 1,000 hospital discharges, respectively).

Also, in the *National Healthcare Quality Report* (NHQR):

- ◆ In 2011, the national overall HAC rate was 142 per 1,000 hospital discharges. By comparison, the rate was 145 per 1,000 hospital discharges in 2010.

### Healthcare-Associated Infections

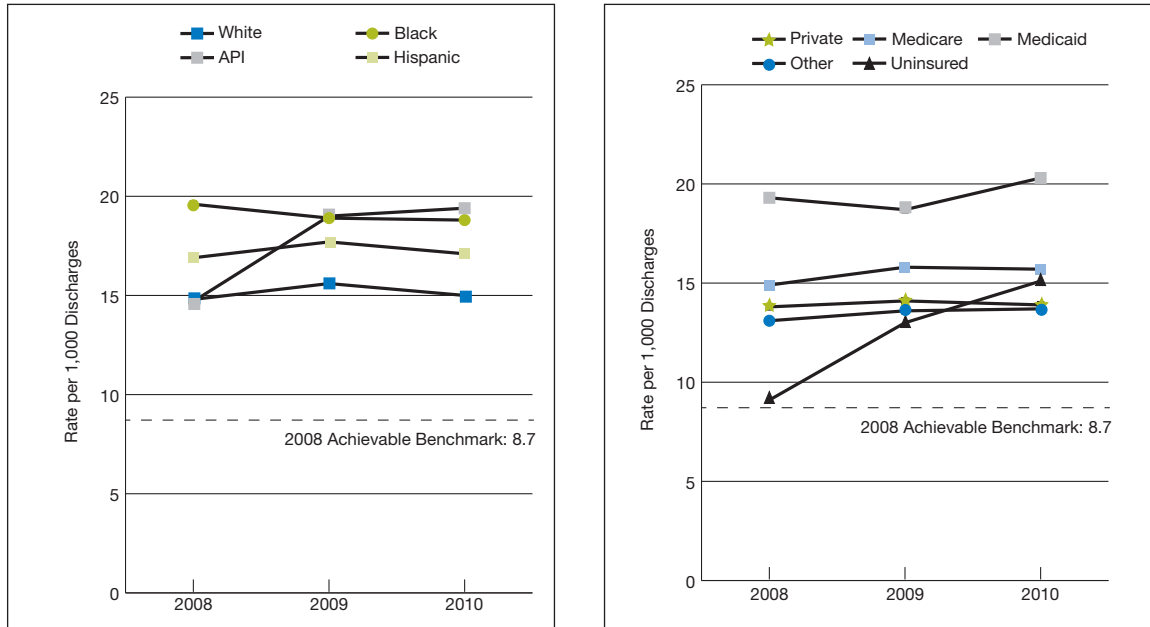
Infections acquired during hospital care (nosocomial infections) are one of the most serious patient safety concerns. They are the most common complication of hospital care (Gastmeier, 2004). Approximately 1 out of every 20 hospitalized patients will contract an HAI (CDC, 2010). Annual costs for adult inpatients that are attributable to the five HAIs with the highest impact on the health care system (CLABSIs, surgical site infections, catheter-associated UTIs, ventilator-associated pneumonia, and *Clostridium difficile* infections) are estimated at \$9.8 billion (Zimlichman, et al., 2013).

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.

### Outcome: Postoperative Sepsis

Sepsis is a potentially life-threatening bloodstream infection that can be acquired in various settings. One study of sepsis occurring in community settings as well as hospital settings found that both higher rates of infection and higher risk of acute organ dysfunction contributed to higher rates of sepsis seen among Blacks compared with Whites (Mayr, et al., 2010). Sepsis can occur after surgery, and another recent study showed that postoperative sepsis occurred in 5% of emergency surgery patients and 2% of elective surgery patients (Moore, et al., 2010). One way that sepsis rates can be reduced is by giving patients appropriate prophylactic antibiotics starting 1 hour prior to surgical incision.

#### 4.2. Postoperative sepsis per 1,000 adult discharges with an elective operating room procedure, by race/ethnicity and insurance, 2008-2010



**Key:** API = Asian or Pacific Islander.

**Source:** Agency for Healthcare Research and Quality (AHRQ), Healthcare Cost and Utilization Project, Nationwide Inpatient Sample and AHRQ Quality Indicators, modified version 4.1, State Inpatient Databases disparities analysis files, 2008-2010.

**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 API are non-Hispanic. Hispanic includes all races. Rates are adjusted by age, gender, age-gender interactions, comorbidities, and diagnosis-related group clusters.

- ◆ In all years, Whites had a lower risk-adjusted rate of postoperative sepsis than Blacks and Hispanics. The rate for Whites was also lower than for Asians and Pacific Islanders (APIs) in 2009 and 2010 (Figure 4.2).
- ◆ In 2008, only Medicaid patients had a higher risk-adjusted rate of postoperative sepsis than private insurance patients. Surgery patients with Medicare or Medicaid had higher rates than surgery patients with private insurance in 2009 and 2010.
- ◆ The 2008 top 3 State achievable benchmark was 8.7 per 1,000 discharges.<sup>vi</sup> No racial/ethnic group or insurance group has met the achievable benchmark. Data are insufficient to determine time to benchmark.

Also, in the NHQR:

- ◆ From 2008 to 2010, there were no statistically significant changes in the overall risk-adjusted rate of postoperative sepsis.
- ◆ In 2009 and 2010, surgery patients ages 18-44 had lower risk-adjusted rates of postoperative sepsis than those ages 45-64 and those age 65 and over.

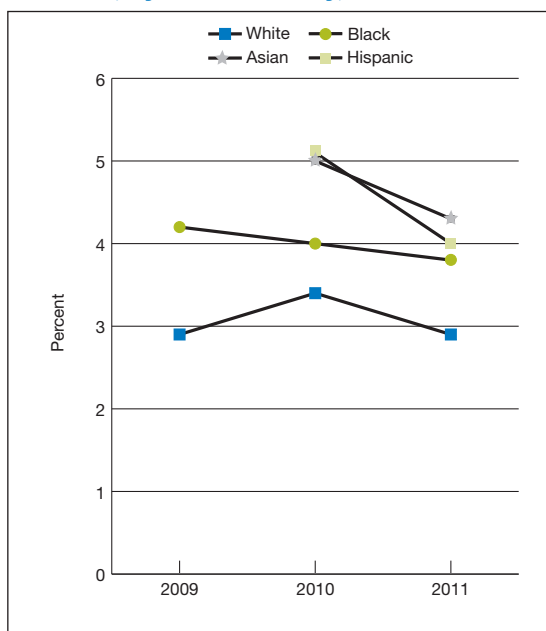
<sup>vi</sup> The top 3 States that contributed to the achievable benchmark are Nebraska, New Hampshire, and Rhode Island.

- ◆ In 2008, surgery patients in hospitals with fewer than 100 beds had lower risk-adjusted rates of postoperative sepsis than those in hospitals with 500 or more beds. In 2009 and 2010, the rate was higher in the smallest hospitals (under 100 beds) than in the largest hospitals (500 or more beds).
- ◆ As of 2010, the achievable benchmark had not been met for any age group or hospital bed size.

### Outcome: Catheter-Associated Urinary Tract Infections

The urinary tract is a common site of HAIs. Urinary catheter use and specific comorbid conditions can increase the risk of developing a UTI. Approximately 40% of all HAIs are attributed to catheter-associated UTIs (Niel-Weise & van den Broek, 2005).

**Figure 4.3. Adult surgery patients with postoperative catheter-associated urinary tract infection, by race/ethnicity, 2009-2011**



**Source:** Agency for Healthcare Research and Quality and Centers for Medicare & Medicaid Services, Medicare Patient Safety Monitoring System, 2009-2011.

**Denominator:** Selected discharges of hospitalized patients age 18 and over having major surgery and meeting specific criteria for each measure.

**Note:** For this measure, lower rates are better. White, Black, and Asian are non-Hispanic. Hispanic includes all races. Data for Asians and Hispanics in 2009 did not meet criteria for statistical reliability.

- ◆ In 2010, the percentage of adult surgery patients with catheter-associated UTIs was higher for Hispanics than for Whites. There were no statistically significant differences among racial/ethnic groups in 2009 or 2011 (Figure 4.3).

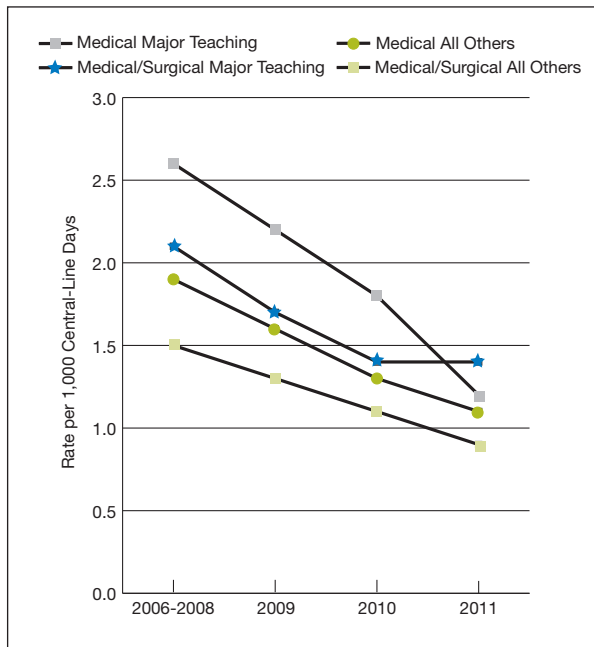
Also, in the NHQR:

- ◆ From 2009 to 2011, there were no statistically significant changes in the overall rate of postoperative catheter-associated UTIs.
- ◆ In all years, the percentage of adult surgery patients with catheter-associated UTIs was higher for those ages 65-74, 75-84, and 85 and over than for adult surgery patients under age 65.
- ◆ In all years, the percentage of adult surgery patients with catheter-associated UTIs was higher for patients with renal disease than for patients without renal disease.

### Outcome: Central Line-Associated Bloodstream Infections

Patients who require a central venous catheter are severely ill. The use of these catheters increases the risk of serious complications such as bloodstream infections. CDC collects data about CLABSIs and presents the rates of infection by the teaching status of the hospital for some types of units. Because major teaching hospitals generally have higher proportions of disadvantaged populations than do nonteaching hospitals, results of this comparison are shown in the NHDR.

**Figure 4.4. Rate per 1,000 central-line days of central-line-associated bloodstream infections in major teaching hospitals and non-major teaching hospitals, 2006-2011**



**Source:** Centers for Disease Control and Prevention, National Healthcare Safety Network annual reports, 2008-2011.

**Denominator:** Number of central-line days.

**Note:** For this measure, lower rates are better. Major teaching hospitals are hospitals that are an important part of a teaching program at a medical school.

- ◆ CLABSI rates in medical intensive care units (ICUs) located in major teaching hospitals were 2.6 per 1,000 central-line days during the baseline period of 2006-2008 and 1.2 per 1,000 central-line days in 2011. In comparison, CLABSI rates in medical ICUs located in other types of hospitals were 1.9 per 1,000 central-line days in 2006-2008 and 1.1 per 1,000 central-line days in 2011 (Figure 4.4).
- ◆ CLABSI rates in combined medical/surgical ICUs located in major teaching hospitals were 2.1 per 1,000 central-line days in 2006-2008 and 1.4 per 1,000 central-line days in 2011.

Also, in the NHQR:

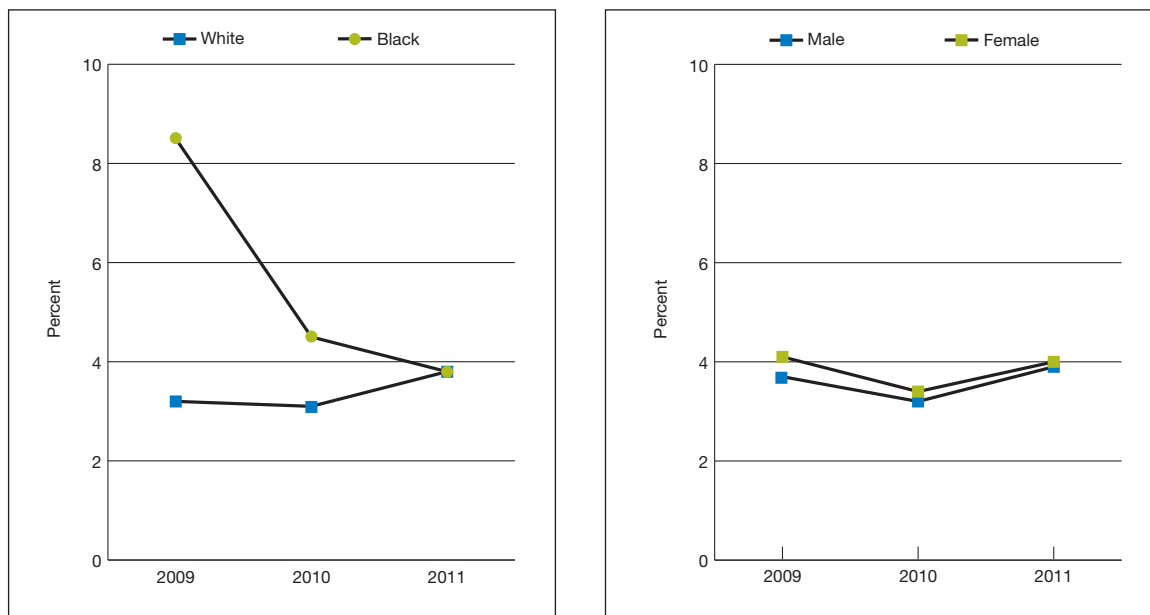
- ◆ From the referent period (2006-2008) to 2011, CLABSIs reported to the NHSN decreased by roughly 40%.
- ◆ There was a significant decrease in CLABSIs among facilities that reported in both 2010 and 2011 and among facilities that reported in both 2009 and 2010. There was no statistically significant difference reported from January-June 2009 to July-December 2009 among facilities that reported for both time periods.

## Other Adverse Events

### Outcome: Mechanical Adverse Events Associated With Central Venous Catheters

Some patients need central venous catheters inserted into major veins in the neck, chest, or groin so that health care providers can administer medication or fluids, obtain blood for tests, or 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 4.5. Composite: Mechanical adverse events associated with central venous catheter placement among adults, by race and sex, 2009-2011**



**Source:** Agency for Healthcare Research and Quality and Centers for Medicare & Medicaid Services, Medicare Patient Safety Monitoring System, 2009-2011.

**Denominator:** Selected discharges of hospitalized patients age 18 and over with central venous catheter placement.

**Note:** For this measure, lower rates are better. White and Black are non-Hispanic. 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.

- ◆ In all years from 2009 to 2011, there were no statistically significant differences by sex in the percentage of mechanical adverse events associated with central venous catheter placement (Figure 4.5).
- ◆ Only in 2009 did Blacks have a higher percentage of mechanical adverse events associated with central venous catheter placement than Whites.

Also, in the NHQR:

- ◆ From 2009 to 2011, there were no statistically significant changes in the overall percentage of mechanical adverse events associated with central venous catheter placement.
- ◆

- ◆ In all years, there were no statistically significant differences by age in the percentage of mechanical adverse events associated with central venous catheter placement.

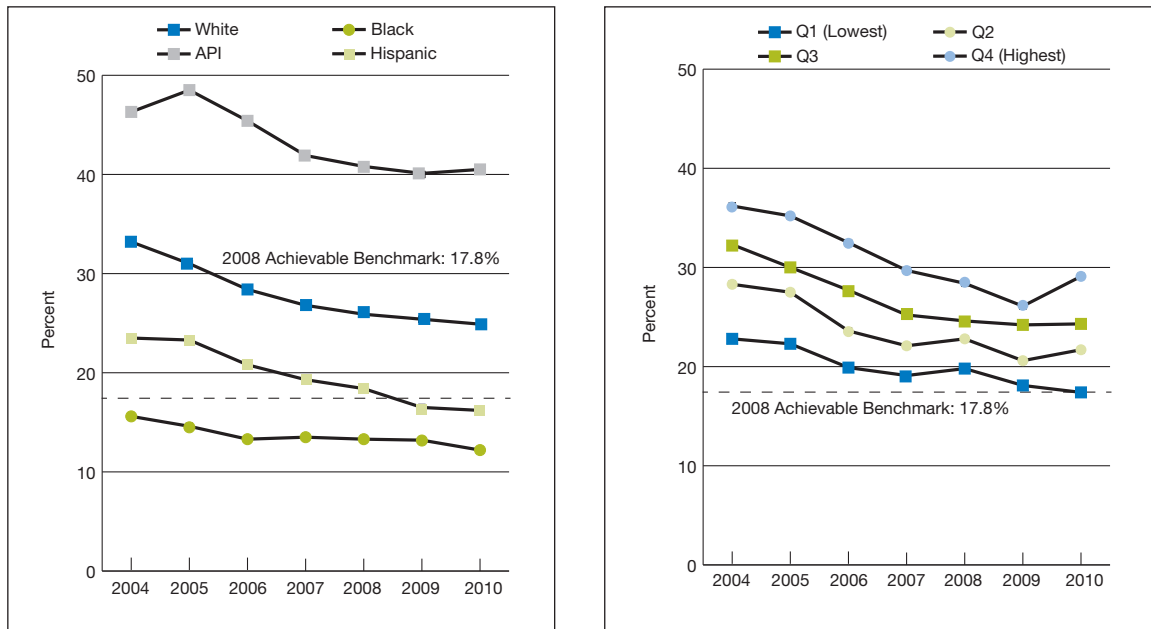
### Outcome: Obstetric Trauma

Childbirth and reproductive care are the most common reasons for women of childbearing age to use health care services. With an average of 10,957 babies born each day in the United States (Martin, et al., 2012), childbirth is the most common reason for hospital admission among women.

Obstetric trauma involving a severe tear to the vagina or surrounding perineal tissues during delivery is a frequent 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, 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. As of the 2011 NHQR, the reports use a modified version 4.1 of the software. While the effects of this version change are extremely small, these estimates should not be compared with estimates found in previous reports.

**Figure 4.6. Obstetric trauma with 3rd or 4th degree laceration per 1,000 vaginal deliveries without instrument assistance, by race/ethnicity and area income, 2004-2010**



**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 (AHRQ), Healthcare Cost and Utilization Project, Nationwide Inpatient Sample and AHRQ Quality Indicators, modified version 4.1, 2004-2010.

**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 are non-Hispanic; Hispanic includes all races.

- ◆ From 2004 to 2010, rates of obstetric trauma with 3rd or 4th degree laceration decreased for all racial/ethnic and area income groups (Figure 4.6).
- ◆ In all years from 2004 to 2010, API mothers had higher rates of obstetric trauma than White mothers. In the same period, Black and Hispanic mothers had lower rates of obstetric trauma than White mothers.
- ◆ In all years, residents in the upper three area income quartiles had higher rates than residents in the lowest area income quartile.
- ◆ The 2008 top 4 State achievable benchmark was 17.8 per 1,000 deliveries.<sup>vii</sup> Hispanic and Black mothers and residents in the lowest area income quartile already have attained the benchmark. At the current annual rate of decrease, it could take up to 5 years for White mothers and up to 16 years for API mothers to reach the benchmark. All income groups could achieve the benchmark within about 7 years.

Also, in the NHQR:

- ◆ From 2004 to 2010, the overall rate of obstetric trauma with 3rd or 4th degree laceration decreased from 30 to 22.8 per 1,000 vaginal deliveries without instrument assistance. The rates for all age groups and insurance types decreased.
- ◆ In most years, mothers ages 18-24 had a lower rate of obstetric trauma than mothers ages 10-14, 15-17, and 25-34. Similarly, mothers with private insurance had higher rates of obstetric trauma than all other insurance types in almost every year.
- ◆ At the current annual rate of decrease, the achievable benchmark could be attained within about 1 year by several age groups and insurance types. However, it could take up to 10 years for mothers under age 18 and ages 25-34, as well as for those with private insurance. Mothers with Medicare or Medicaid already have achieved the benchmark.

## Nursing Home Setting

### Outcome: Pressure Ulcers, Use of Restraints, and Urinary Tract Infections

People may seek nursing home care for short periods of time after hospitalization while they are recuperating to be able to return to their homes, or they may enter a nursing home permanently because they can no longer care for themselves at home. For both types of nursing home residents, optimal care seeks to maximize quality of life and minimize unintended complications.

Since 2002, CMS has collected data using the Minimum Data Set (MDS). The MDS provides data on nursing home residents at specified intervals during their stay that describe the resident's physical and clinical conditions. In 2010, nursing homes began reporting data using an updated instrument (MDS 3.0). We present the 2011 results for new quality measures developed for this version of the MDS that look at pressure ulcers, use of restraints, and UTIs.

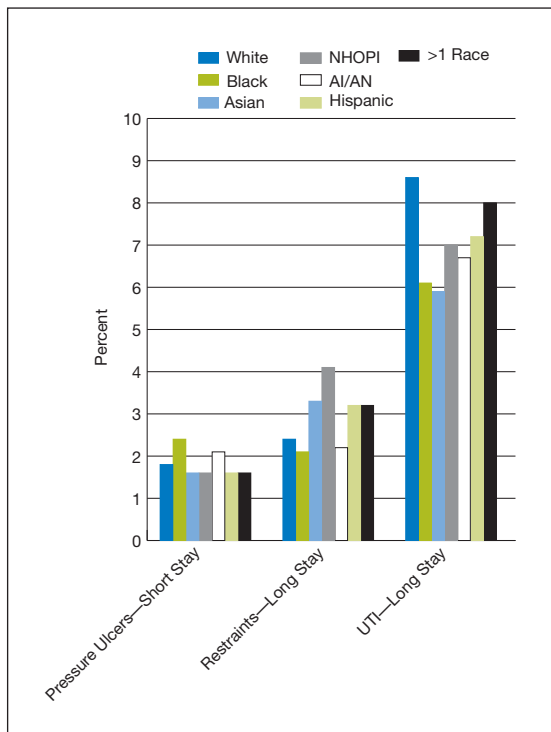
A pressure ulcer, or pressure sore, is an area of soft tissue injury caused by sitting or lying in one position for an extended time and can be very painful and lead to infections. Nursing homes can do several things that may help to prevent or treat pressure sores, such as frequently changing the resident's position, providing proper nutrition, and using soft padding to reduce pressure on the skin.

<sup>vii</sup> The top 4 States that contributed to the achievable benchmark are South Dakota, Utah, West Virginia, and Wyoming.

Residents who are restrained daily can become weak, lose their ability to go to the bathroom by themselves, and develop pressure sores or other medical conditions. Restraints should only be used when medically necessary, and even then only under careful supervision.

Most UTIs can be prevented by keeping the genital area clean, emptying the bladder regularly, and drinking enough fluid. Finding the cause and getting early treatment of a UTI can prevent the infection from spreading and becoming more serious or causing complications.

**Figure 4.7. Nursing home residents experiencing various adverse events, by race/ethnicity, 2011**



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

**Source:** Centers for Medicare & Medicaid Services, Minimum Data Set 3.0, 2011.

**Denominator:** For pressure ulcers, the denominator was short-stay residents, who are defined as residents whose cumulative stay was less than or equal to 100 days. For restraints and urinary tract infections, the denominator was long-stay residents, who are defined as residents whose cumulative stay was greater than 100 days.

**Note:** For these measures, lower rates are better. Measures were calculated as follows: Pressure ulcers: Percentage of short-stay residents for whom a look-back scan indicates one or more new or worsening stage II-IV pressure ulcers. Restraints: Percentage of long-stay residents who are physically restrained on a daily basis. UTI: Percentage of long-stay residents with a urinary tract infection within the 30 days prior to assessment.

- ◆ In 2011, a higher percentage of Black short-stay residents had pressure ulcers compared with White residents. The percentage was lower for Asian and Hispanic residents than for White residents (Figure 4.7).
- ◆ The percentage of long-stay residents with restraint use was higher for Asian, Native Hawaiian or Other Pacific Islander (NHOPI), Hispanic, and multiple-race residents than for White residents. The percentage was lower for Blacks than for Whites.
- ◆ The percentage of long-stay residents with a UTI was higher for Whites than for other racial and ethnic groups except residents described as multiple race.

Also, in the NHQR:

- ◆ In 2011, the percentage of short-stay residents with pressure ulcers was higher for males than for females.
- ◆ There were no statistically significant differences by sex in the percentage of long-stay residents who were physically restrained.



- ◆ The percentage of long-stay residents with UTIs was higher for females than for males.
- ◆ The percentage of short-stay residents with pressure ulcers and the percentage of long-stay residents with UTIs increase with age. For both measures, the percentage of residents ages 65-74, 75-84, and 85 and over who met the criteria was greater than the percentage of residents ages 0-64.
- ◆ Compared with long-stay residents under age 65, a lower percentage of long-stay residents ages 65-74 were physically restrained on a daily basis. There was no statistically significant difference in the percentage with restraint use between those under age 65 and those ages 75-84 or 85 and over.

## Home Health Setting

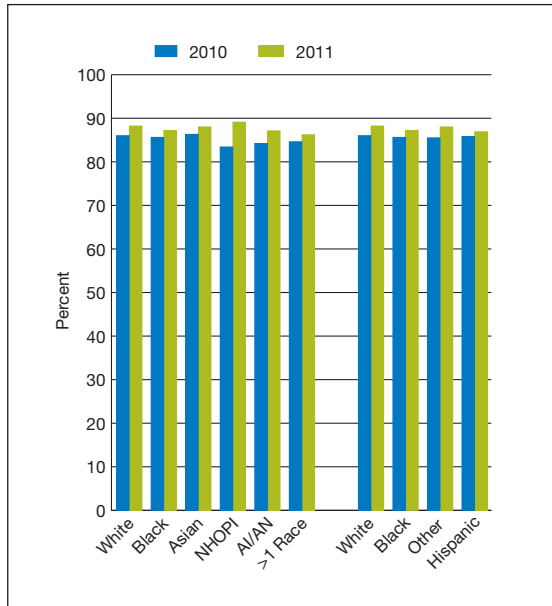
### Outcome: Improvement in Surgical Site Wound Healing

Normal wound healing after an operation is an important marker of good care. Patients whose wounds heal normally generally feel better and can get back to their daily activities sooner than those whose wounds do not heal normally. The home health team can assist with wound healing in several ways, including changing the wound dressing and teaching the patient or caregiver about wound healing (e.g., signs of wound healing, type of foods that promote wound healing, signs of infection, what to do about signs of infection or other concerns). One way to measure the quality of care that home health agencies give is to look at how well their patients' wounds heal after an operation.

Since 1999, CMS has required home health agencies to collect and report data using the Outcome and Assessment Information Set (OASIS). OASIS provides data on patients whose care is reimbursed by Medicare or Medicaid. Beginning in 2010, home health agencies used a revised version of the instrument called OASIS-C.

This outcome measure is derived from the OASIS-C dataset and describes the percentage of home health episodes where the status of the surgical incision site was better at the end of the home health care episode than at the start of the episode.

**Figure 4.8. Home health patients with improvement in their surgical site wounds, by race and ethnicity, 2010-2011**



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

**Source:** Centers for Medicare & Medicaid Services, Outcome and Assessment Information Set, 2010-2011.

**Denominator:** Number of home health episodes during the measurement period in which the patient had a surgical wound and the episode ended with the patient discharged from home health care.

**Note:** For ethnicity, White, Black, and Other are non-Hispanic. Hispanic includes all races.

- ◆ In 2010 and 2011, there were no statistically significant racial or ethnic differences in the percentage of home health patients with improvement in surgical site wound healing (Figure 4.8).
- ◆ In 2011, the percentage with improved wound healing ranged from 86.2% for multiple-race home health patients to 89.1% for NHOP home health patients.
- ◆ In 2011, the percentage of non-Hispanic White home health patients with improvement in their surgical site wounds was 88.2%; the percentage of non-Hispanic Black home health patients was 87.2%; the percentage of non-Hispanic Other home health patients was 88.0%; and the percentage of Hispanic home health patients was 86.9%.

Also, in the NHQR:

- ◆ The overall percentage of home health patients with improvement in their surgical site wound healing was 85.9% in 2010 and 87.9% in 2011.
- ◆ In 2011, 84.7% of home health patients ages 0-64 had improvement in their surgical site wounds; for home health patients ages 65-74, 88.2% had improvement. The percentage of home health patients ages 75-84 with improvement was 89.4%, and the percentage of patients age 85 and over was 90.4%.

### Outcome: Ability To Take Medications Orally

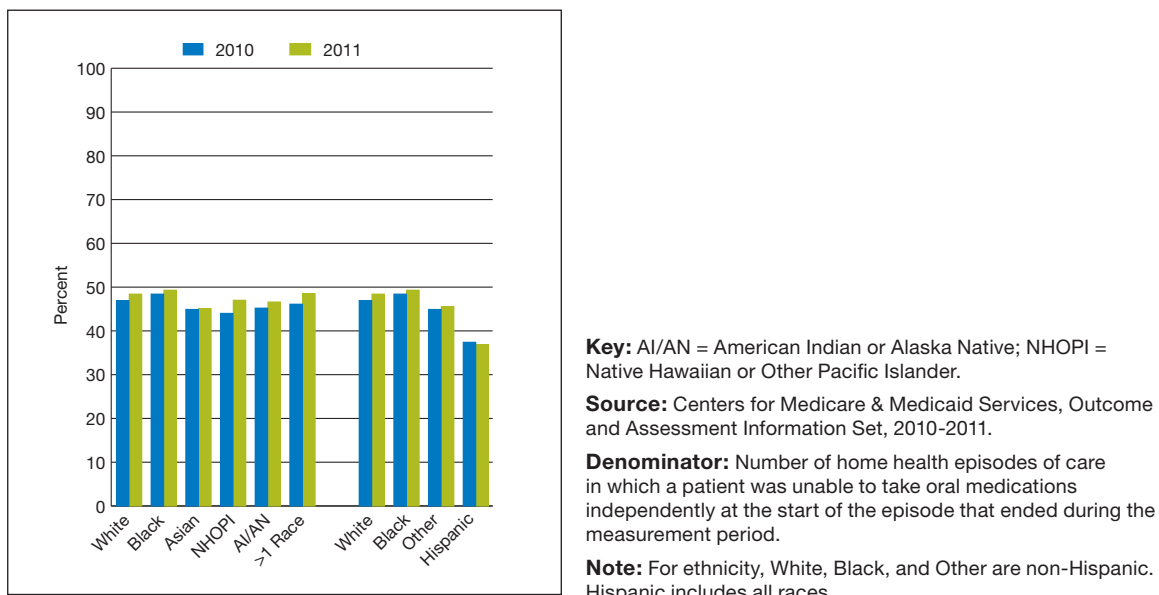
The ability to perform daily activities, such as taking medications correctly, is important to the health status and quality of life of people living in the community. Taking too much or too little can keep the medications from working properly and may cause unintended harm, including death.

The home health team can help teach patients ways to organize medications and to take them properly. Getting better at taking medications correctly means the home health team is doing a good job teaching patients how to take their medications and about the harm that can occur if they do not follow these instructions. Specific items that should be discussed include all the prescriptions and other medications

the patient takes, allergic or other adverse reactions to medications experienced in the past, and actions to take if a medication is not working.

This measure shows how often the home health team helped patients get better at taking their prescription and other medications correctly (including prescription medications, over-the-counter medications, vitamins, and herbal supplements). Only medications the patient takes by mouth are considered.

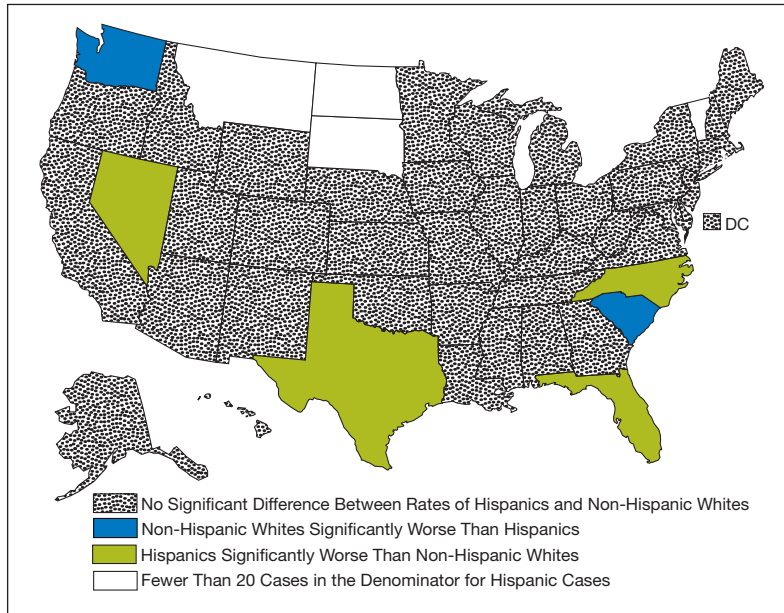
**Figure 4.9. Home health patients with improvement in their ability to take medications orally, by race and ethnicity, 2010-2011**



- ◆ The percentage of home health patients with improvement in their ability to take oral medications was significantly lower for Hispanics than for non-Hispanic Whites in 2010 and 2011 (Figure 4.9). In 2010, 37.4% of Hispanic home health patients showed improvement in their ability to take medications orally compared with 46.9% of non-Hispanic White home health patients. In 2011, 36.8% of Hispanic home health patients showed improvement compared with 48.4% of non-Hispanic White home health patients.
- ◆ In both years, there were no statistically significant racial differences in the percentage of home health patients with improvement in their ability to take medications orally. In 2011, the percentages were: White, 48.4%; Black, 49.3%; Asian, 45.1%; NHOPI, 47.0%; American Indian or Alaska Native (AI/AN), 46.6%; and multiple race, 48.5%.

National data suggest that Hispanics have significantly lower rates of improvement in their ability to take medications orally compared with non-Hispanic Whites. The figure below examines this disparity by State.

**Figure 4.10. Improvement in the ability of home health patients to take medications orally, by ethnicity and State, 2011**



- ◆ In Nevada, Texas, North Carolina, and Florida, the percentage of patients with improvement in their ability to take medications orally was significantly lower for Hispanics than for non-Hispanic Whites (Figure 4.10).
- ◆ In Washington and South Carolina, the percentage of patients with improvement in their ability to take medications orally was significantly higher for Hispanics than for non-Hispanic Whites.

Also, in the NHQR:

- ◆ The overall percentage of home health patients with improvement in their ability to take medications orally was 46.2% in 2010 and 47.3% in 2011.
- ◆ In 2010 and 2011, the percentage of home health patients with improvement in their ability to take medications orally was significantly lower for those age 85 and over compared with those ages 0-64.

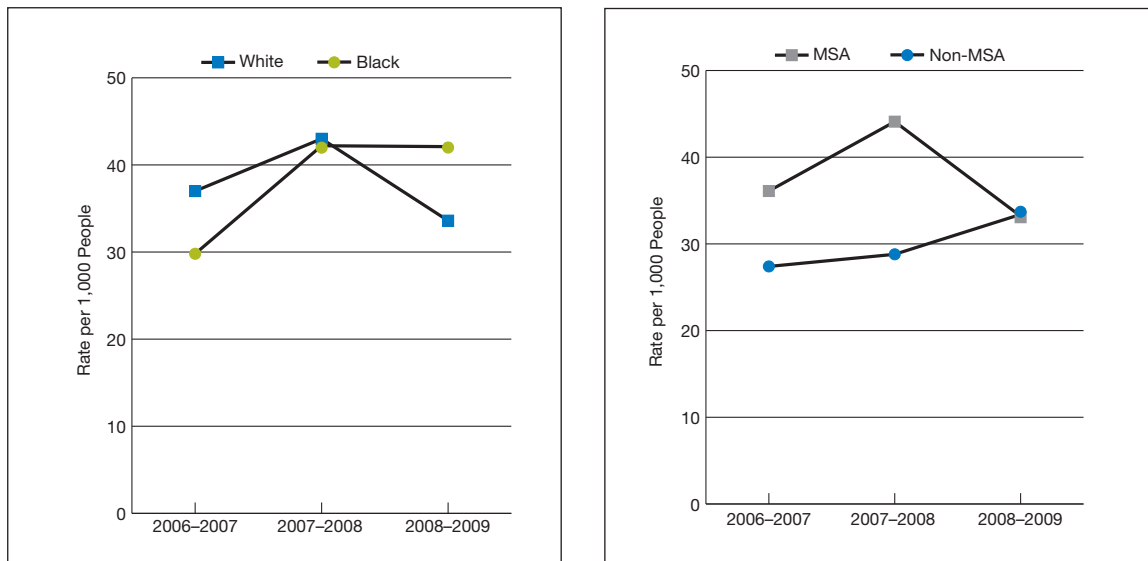
## Ambulatory Care Setting

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

Although patient safety initiatives are predominantly focused on inpatient hospital events, many adverse effects of medical care will be treated during visits to outpatient settings. Outpatient providers who see patients experiencing adverse effects of medical care include physician offices, urgent care centers, ambulatory surgery centers, and hospital outpatient departments. Patient safety events that are identified and treated in the ambulatory setting may also originate from that setting.

While most ambulatory care is less technologically complex than inpatient care, it is often more complex logistically, potentially involving failures in communication and coordination among a number of providers and locations. Some adverse effects, such as known side effects of appropriately prescribed medications, may be unavoidable, while others may be considered avoidable medical errors.

**Figure 4.11. Ambulatory care visits due to adverse effects of medical care per 1,000 people, by race and geographic area, 2006-2009**



**Key:** MSA = metropolitan statistical area.

**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 as of July 1 of each data year.

**Note:** For this measure, lower rates are better. Ambulatory care includes visits to office-based physicians, hospital outpatient departments, and hospital emergency departments.

- ◆ For the 2-year rolling averages shown, there were no statistically significant racial differences in the rate of ambulatory care visits due to adverse effects of medical care (Figure 4.11).
- ◆ Only in 2007-2008 was the rate of ambulatory care visits due to adverse effects of medical care different (higher) for residents of metropolitan areas compared with residents of nonmetropolitan areas (44.1 vs. 28.8 visits per 1,000 population, respectively).

Also, in the NHQR:

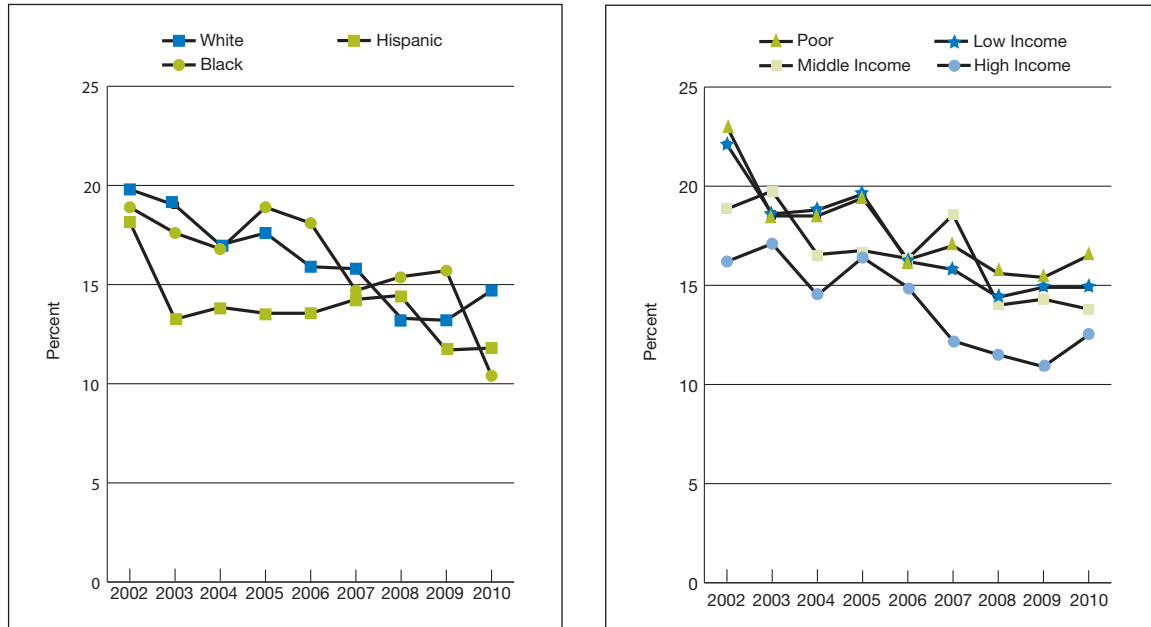
- ◆ There was no statistically significant difference between 2006-2007 and 2008-2009 in the rate of ambulatory care visits due to adverse effects of medical care.
- ◆ In all three time periods, the rates of ambulatory care visits due to adverse effects were higher for patients ages 18-44, 45-64, and 65 and over than for patients ages 0-17.
- ◆ The rate of ambulatory care visits due to adverse effects of medical care was higher for females compared with males in all three time periods.

### **Outcome: Receipt of Potentially Inappropriate Prescription Medications**

Some medications are potentially harmful for older patients but still are prescribed to them (Zhan, et al., 2001).<sup>viii</sup> Using inappropriate medications can be life threatening and may result in hospitalization, as well as increased costs of pharmaceutical services (Lau, et al., 2005). Measures of inappropriate medication use include the Beers criteria, which have been generally accepted by the medical community and by expert opinion, although there is still some disagreement (Fick, et al., 2012). This disagreement relates to the many factors that must be considered when identifying what constitutes inappropriate use by certain populations (Zhan, et al., 2001).

<sup>viii</sup> Medications that should always be avoided for older patients include barbiturates, flurazepam, meprobamate, chlorpropamide, meperidine, pentazocine, trimethobenzamide, belladonna alkaloids, dicyclomine, hyoscyamine, and propantheline. Medications that are rarely appropriate for older patients or sometimes indicated for older patients but often misused include carisoprodol, chlorzoxazone, cyclobenzaprine, metaxalone, methocarbamol, amitriptyline, chlordiazepoxide, diazepam, doxepin, indomethacin, dipyridamole, ticlopidine, methyl dopa, reserpine, disopyramide, oxybutynin, chlorpheniramine, cyproheptadine, diphenhydramine, hydroxyzine, promethazine, and propoxyphene.

**Figure 4.12. Adults age 65 and over who received potentially inappropriate prescription medications in the calendar year, by race/ethnicity and family income, 2002-2010**



**Source:** Agency for Healthcare Research and Quality, Medical Expenditure Panel Survey, 2002-2010.

**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. White and Black are non-Hispanic. Hispanic includes all races.

- ◆ The percentage of older adults who received potentially inappropriate medications decreased for all racial/ethnic and family income groups from 2002 to 2010 (Figure 4.12).
- ◆ In all years, there were no statistically significant racial/ethnic differences in the percentage of adults age 65 and over who received potentially inappropriate medications.
- ◆ In most years, there were no statistically significant income differences in the percentage of adults age 65 and over who received potentially inappropriate medications.

Also, in the NHQR:

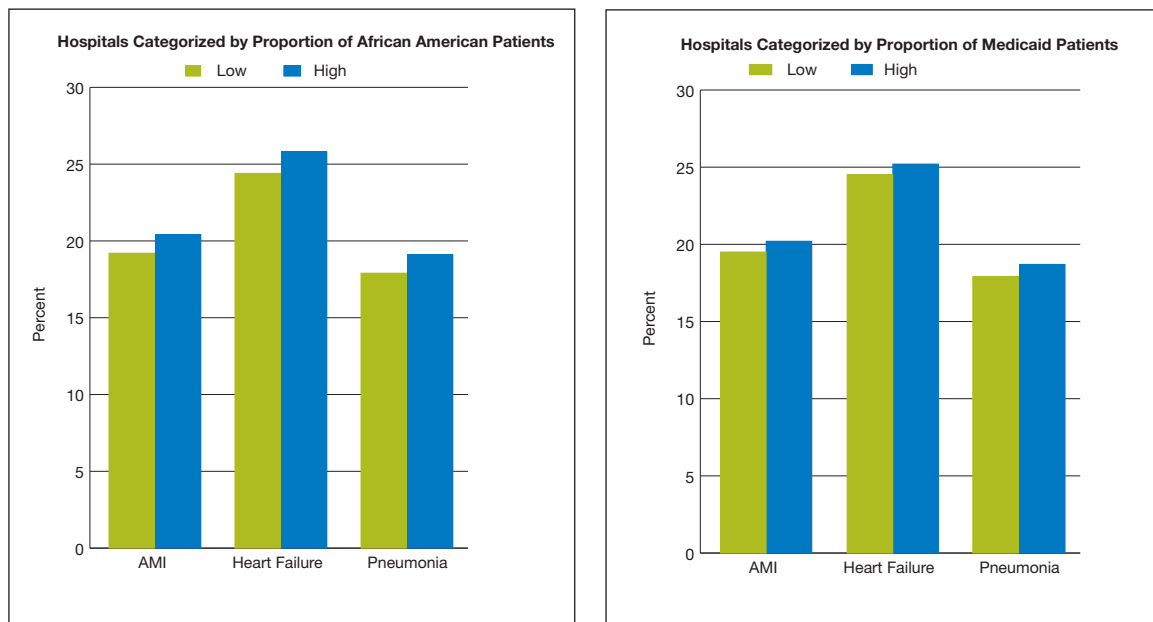
- ◆ From 2002 to 2010, the overall percentage of adults age 65 and over who received potentially inappropriate medications decreased. The percentages for all age groups (except those ages 65-69) and all health status groups also declined.
- ◆ Except in 2002, there were no statistically significant differences between adults ages 65-69 and older age groups in the percentage who received potentially inappropriate medications.
- ◆ In all years, the percentage of adults age 65 and over who received potentially inappropriate medications was higher for those with fair/poor perceived health than for those with excellent/very good/good perceived health.

### Outcome: Hospital Readmissions

One aim of the National Quality Strategy (NQS) is to make care safer by reducing the harm caused in the delivery of care. One of the two measures that the NQS has endorsed to describe improved safety is an all-payer 30-day readmission rate. The baseline rate calculated for the all-payer 30-day readmission rate in 2010 was 14.4% based on 32.9 million admissions. The goal is to reduce this rate by 20% by the end of 2014. In 2011, the rate was 14.4% based on 32.7 million admissions (HHS, 2013).

In addition, for certain diseases (acute myocardial infarctions [i.e., heart attacks], heart failure, and pneumonia), CMS's Hospital Quality Alliance (2008-2010)<sup>ix</sup> tracked and published 30-day risk-standardized readmission rates among Medicare fee-for-service patients age 65 and over in hospitals on their Hospital Compare Web site. Rates of readmission may reflect hospital efforts to prevent complications, teach patients at discharge, and ensure that patients make a smooth transition to their home or another setting such as a nursing home.

**Figure 4.13. Median hospital 30-day risk standardized readmission rate, by proportion of African American and Medicaid patients, 2008-2010**



**Key:** AMI = acute myocardial infarction.

**Source:** Hospital Compare Chartbook, 2012.

**Denominator:** Expected number of readmissions for each disease type given the hospital's case mix.

**Note:** For this measure, lower rates are better. For a hospital's proportion of patients who are African American, low is defined as 0% for all three measures. High is defined as  $\geq 22\%$  for AMI,  $\geq 23\%$  for heart failure, and  $\geq 22\%$  for pneumonia. For the proportion of the hospital's patients who are insured by Medicaid, low is defined as  $\leq 8\%$  for AMI,  $\leq 7\%$  for heart failure, and  $\leq 6\%$  for pneumonia. High is defined as  $\geq 30\%$  for AMI,  $\geq 29\%$  for heart failure, and  $\geq 29\%$  for pneumonia.

<sup>ix</sup> The Hospital Quality Alliance no longer exists but did collect and report data for 2008-2010 used on the Hospital Compare Web site. Future data on readmissions will come from the Hospital Inpatient Quality Reporting Program.



- ◆ There were no statistically significant differences between hospitals serving a high percentage of African Americans and hospitals serving a low percentage of African Americans in the median 30-day risk-standardized readmission rates for all three diseases (Figure 4.13).
- ◆ The median 30-day risk-standardized readmission rate for acute myocardial infarction was 20.4% in hospitals that served a high percentage of African American patients compared with 19.2% in hospitals that served a low percentage of African American patients. For heart failure, the rates were 25.8% and 24.4%, respectively. For pneumonia, the rates were 19.1% and 17.9%, respectively.
- ◆ There were no statistically significant differences between hospitals serving a high percentage of Medicaid recipients and hospitals serving a low percentage of Medicaid recipients in the median 30-day risk-standardized readmission rates for all three diseases.
- ◆ The median 30-day risk-standardized readmission rate for acute myocardial infarction was 20.2% in hospitals that served a high percentage of Medicaid recipients compared with 19.5% in hospitals that served a low percentage of Medicaid recipients. For heart failure, the rates were 25.2% and 24.5%, respectively. For pneumonia, the rates were 18.7% and 17.9%, respectively.

Also, in the NHQR:

- ◆ The median 30-day risk-standardized readmission rates for hospitals remained stable from 2006 to 2010 for all three diseases.

## Patient Safety Infrastructure

The patient safety infrastructure also plays a role in making care better. This infrastructure includes scientific research, lessons from data-driven investigations, cultural shifts, and other actions taken to make care safer. This section highlights two hallmark activities in this regard:

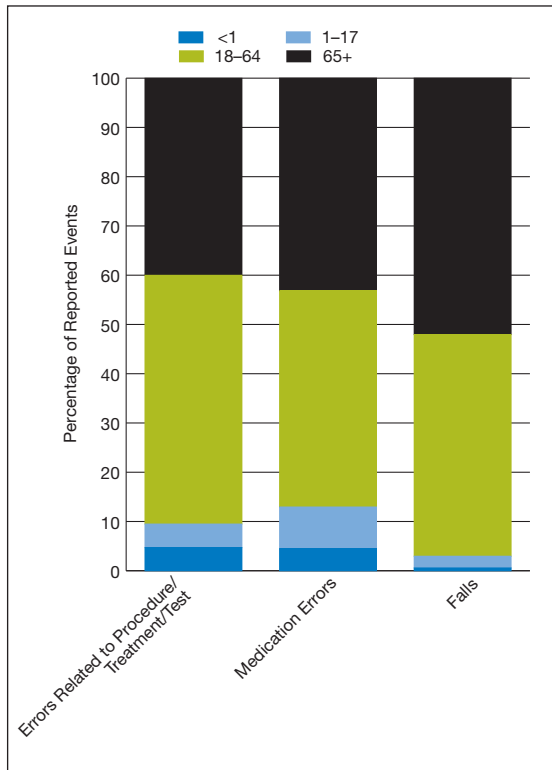
- ◆ An innovative State reporting system that allows learning from near misses and unsafe conditions; and
- ◆ An assessment of the patient safety culture in U.S. hospitals.

## Patient Safety Event Reporting in Pennsylvania

In June 2004, Pennsylvania began implementing a statewide mandatory reporting system for patient safety events. All hospitals, ambulatory surgical facilities, birthing centers, and abortion facilities licensed by the State report through the Pennsylvania Patient Safety Reporting System. Pennsylvania was the first State to require the reporting of both patient safety events that cause harm and those events, such as “near-misses” or “unsafe conditions,” that do not result in patient harm. The mandatory reporting laws and longstanding patient safety culture in the State provide a unique opportunity to view disparities in patient safety events among subgroups.

Figure 4.14 shows the variation in patient age for all hospital and ambulatory surgical facility event reports for the top three reported patient safety event categories in 2012 overall.

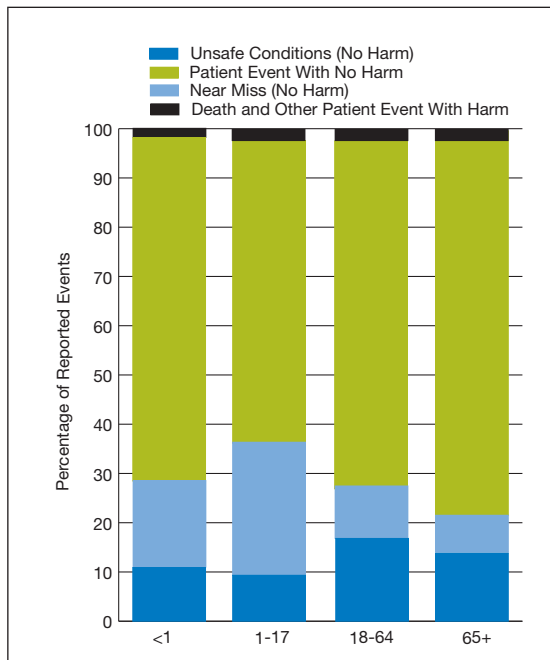
**Figure 4.14. Pennsylvania patient safety reports, by event type and patient age, 2012**



**Source:** Pennsylvania Patient Safety Reporting System, 2012.

**Note:** Only hospital and ambulatory surgical facility data are presented.

- ◆ In 2012, for errors related to procedures, treatment, or tests, most reported events (50.5%) occurred among adults ages 18-64. This was followed by adults age 65 and over (40%). In contrast, infants under the age of 1 (including newborns) and children ages 1-17 experienced 4.7% and 4.8%, respectively, of these errors (Figure 4.14).
- ◆ For medication errors, the largest number of reported events (43.9 %) also occurred among adults ages 18-64. This was closely followed by adults age 65 and over (43.1%). In contrast, infants under the age of 1 (including newborns) experienced 4.5% percent of these errors, and children ages 1-17 experienced 8.5 % of all medication errors.
- ◆ Adults age 18 and over accounted for nearly all reported falls. The majority (52.0%) occurred among those age 65 and over, while adults ages 18-64 also made up a large percentage of falls (45.0%).

**Figure 4.15. Pennsylvania patient safety reports by harm and age, 2012**

**Source:** Pennsylvania Patient Safety Reporting System, 2012.

**Note:** Only hospital and ambulatory surgical facility data are presented.

- ◆ In 2012, most (96.5%) of the more than 235,000 patient safety events reported by Pennsylvania hospitals and ambulatory surgical facilities did not involve patient harm (data not shown). The Pennsylvania Patient Safety Authority's collection and analysis of information reported about near misses and other no-harm events is an essential component of learning how to minimize patient safety events that cause harm.
- ◆ The percentage of events that were near misses was higher for children and teens ages 1-17 than for those involving other age groups (Figure 4.15). A near miss is an event that did not reach the individual because of either chance alone or active recovery efforts by caregivers.
- ◆ Of the events reported in 2012 that involved infants under the age of 1, 1.6% caused patient harm or death. Patient harm or death was somewhat more likely to occur among reported events involving older children, adults ages 18-64, and adults age 65 and over. Patient harm or death was the result for 3.5% of reported events involving children ages 1-17, 3.7% for adults ages 18-64, and 3.3% for those age 65 and over.

### Outcome: Patient Safety Culture

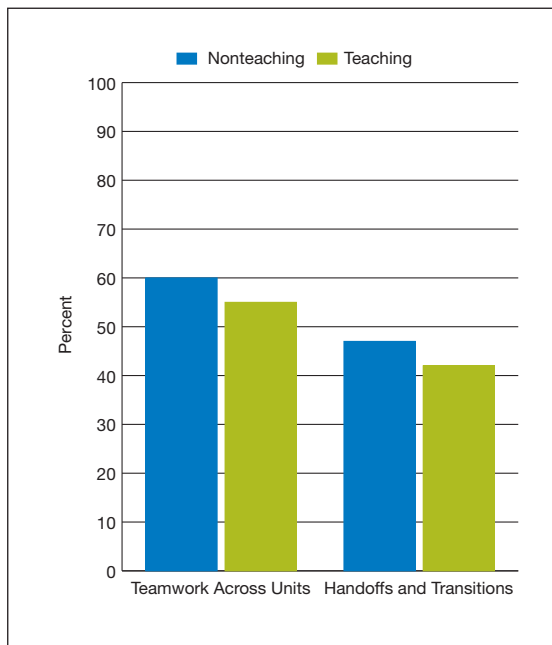
High-reliability organizations—those that perform high-risk work but achieve low rates of adverse events—establish “cultures of safety.” A culture of safety is characterized by shared dedication to making work safe, nonpunitive reporting and communication about error, collaboration and teamwork across disciplines, and adequate resources to prevent adverse events. AHRQ developed the Hospital Survey on Patient Safety Culture to help hospitals assess the culture of safety in their facilities. The 2013 NHDR presents data from the *Hospital Survey on Patient Safety Culture: 2012 User Comparative Database Report*.

This report is based on survey responses collected from 567,703 hospital staff in 1,128 hospitals that represent approximately 18% of the country's hospitals. The average hospital response rate was 53%, with an average of 503 completed surveys per participating hospital. Hospitals contributing data to the comparative database mirror the population of U.S. hospitals as a whole, but participation is entirely voluntary.

Most hospitals administered Web surveys (66%). Web surveys resulted in slightly lower response rates (51%) than response rates from paper surveys (61%) but were about the same as mixed-mode administered surveys (49%). Most hospitals administered the survey to all staff or to a sample of all staff from all hospital departments. Nurses accounted for more than one-third of respondents. More than three-quarters of respondents had direct interaction with patients.

The survey assesses 12 patient safety culture composites, as an average percent positive response. Percent positive refers to the percentage of responses that agree or strongly agree with a positively worded item (e.g., "People support one another in this unit") and the percentage that disagree or disagree strongly with a negatively worded item (e.g., "We have patient safety problems in this unit").

**Figure 4.16. Average percent positive response for teamwork across units and handoffs and transitions, by hospital teaching status, 2012**



**Source:** Agency for Healthcare Research and Quality, Hospital Survey on Patient Safety Culture, 2012.

- ◆ Nearly two-thirds (66%) of the database hospitals were nonteaching, which is slightly lower than the proportion of 2010 American Hospital Association registered hospitals (76%) that were nonteaching. Nonteaching hospitals scored higher than teaching hospitals across all 12 patient safety culture composites (data not shown).
- ◆ In particular, nonteaching hospitals on average scored higher by 5 percentage points on Teamwork Across Units (60% positive compared with 55%) and Handoffs and Transitions (47% positive compared with 42%) (Figure 4.16).

## References

- 2013 annual progress report to Congress: National Strategy for Quality Improvement in Health Care. Washington, DC: U.S. Department of Health and Human Services; July 2013. Available at: <http://www.ahrq.gov/workingforquality/nqs/nqs2013annlrpt.pdf>. Accessed July 24, 2013.
- 2012 annual progress report to Congress. National Strategy for Quality Improvement in Health Care. Washington, DC: U.S. Department of Health and Human Services; April 2012, corrected August 2012. Available at: <http://www.ahrq.gov/workingforquality/nqs/nqs2012annlrpt.pdf>. Accessed May 13, 2013.
- Healthcare-associated infections (HAIs) data and statistics. Atlanta, GA: Centers for Disease Control and Prevention; December 13, 2010. Available at: <http://www.cdc.gov/HAI/surveillance/index.html>. Accessed April 15, 2014.
- Fick D, Semla T, Beizer J, et al. American Geriatrics Society updated Beers criteria for potentially inappropriate medication use in older adults. *J Am Geriatr Soc* 2012;60(4):616-31.
- Gastmeier P. Nosocomial infection surveillance and control policies. *Curr Opin Infect Dis* 2004 Aug;17(4):295-301.
- Jha AK, Chan DC, Ridgway AB, et al. Improving safety and eliminating redundant tests: cutting costs in U.S. hospitals. *Health Aff (Milwood)* 2009 Sep-Oct;28(5):1475-84.
- Kohn L, Corrigan J, Donaldson M, eds. To err is human: building a safer health system. Institute of Medicine, Committee on Quality of Health Care in America. Washington, DC: National Academy Press; 2000.
- Kudish B, Sokol RJ, Kruger M. Trends in major modifiable risk factors for severe perineal trauma, 1996-2006. *Int J Gynaecol Obstet* 2008 Aug;102(2):165-70.
- Landrigan CP, Parry GJ, Bones CB, et al. Temporal trends in rates of patient harm resulting from medical care. *N Engl J Med* 2010 Nov 25;363(22):2124-34. Erratum in: *N Engl J Med*. 2010 Dec 23;363(26):2573.
- Lau DT, Kasper JD, Potter DE, et al. Hospitalization and death associated with potentially inappropriate medication prescriptions among elderly nursing home residents. *Arch Intern Med* 2005 Jan 10;165(1):68-74.
- Martin JA, Hamilton BE, Ventura SJ, et al. Births: final data for 2010. *Natl Vital Stat Rep* 2012 Aug 28;61(1).
- Mayr FB, Yende S, Linde-Zwirble WT, et al. Infection rate and acute organ dysfunction risk as explanations for racial differences in severe sepsis. *JAMA* 2010 Jun 23;303(24):2495-2503.
- Metersky ML, Hunt DR, Kliman R, et al. Racial disparities in the frequency of patient safety events: results from the National Medicare Patient Safety Monitoring System. *Med Care* 2011 May;49(5):504-10.
- Moore LJ, Moore FA, Todd SR, et al. Sepsis in general surgery: the 2005-2007 National Surgical Quality Improvement Program perspective. *Arch Surg* 2010 Jul;145(7):695-700.
- National Academy for State Health Policy. Patient Safety Toolbox. Available at: <http://www.nashp.org/pst-welcome>. Accessed May 13, 2013.
- Niel-Weise BS, van den Broek PJ. Antibiotic policies for short-term catheter bladder drainage in adults. *Cochrane Database Syst Rev* 2005;3.
- Raetzman SO, Fullerton C, Frankel S. Review to support AHRQ report on effective strategies for improving patient safety. (Prepared by Truven Health Analytics for AHRQ under the Network of Patient Safety Databases contract.) Rockville, MD: Agency for Healthcare Research and Quality; November 26, 2012.
- Shreve J, Van Den Bos J, Gray T, et al. The economic measurement of medical errors. Schaumburg, IL: Society of Actuaries/Milliman; 2010.
- Zhan C, Sangl J, Bierman AS, et al. Potentially inappropriate medication use in the community-dwelling elderly: findings from the 1996 Medical Expenditure Panel Survey. *JAMA* 2001 Dec 12;286(22):2823-9.
- Zimlichman E, Henderson D, Tamir O, et al. A meta-analysis of costs and financial impact on the U.S. health care system. *JAMA Intern Med* 2013 Dec 9-23;173(22):2039-46.



## Chapter 5. 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 (IOM, 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 (Kazley, et al., 2010).
- ◆ Timely delivery of appropriate care can help reduce mortality and morbidity for chronic conditions such as kidney disease (Smart & Titus, 2011).
- ◆ Timeliness in 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 (Cartmill, et al., 2012).

#### 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 can reduce admissions for pediatric asthma, which account for more than \$1.25 billion in total hospitalization charges annually (AHRQ, 2009; Schatz, et al., 2009).

### Measures

This report includes three measures related to timeliness of primary, emergency, and hospital care:

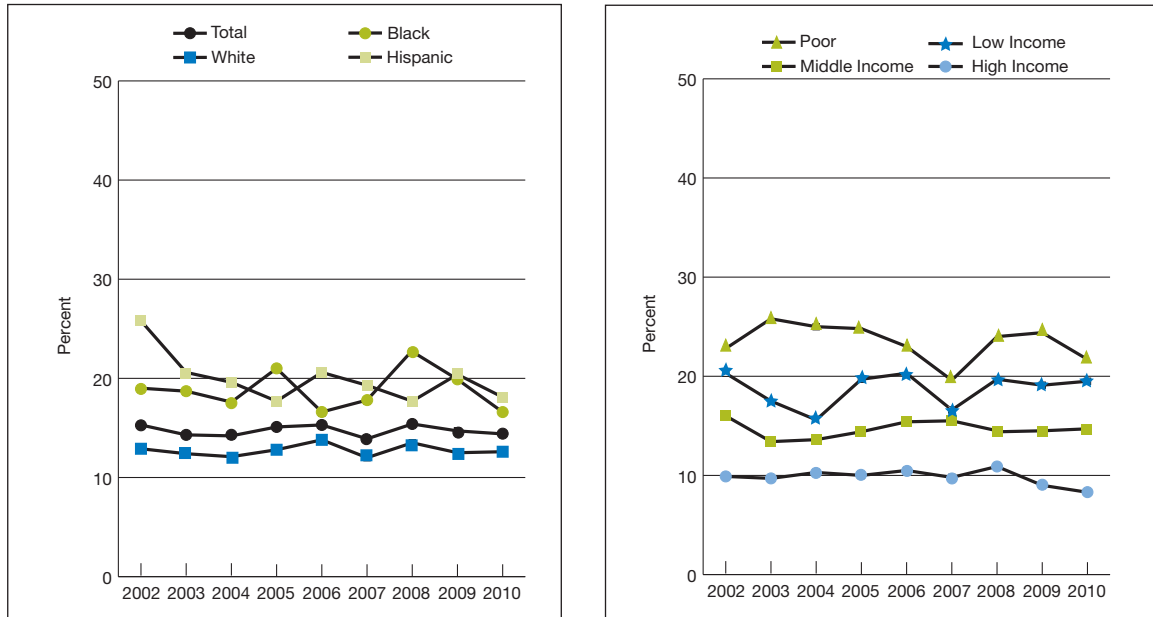
- ◆ Getting care for illness or injury as soon as wanted.
- ◆ ED waiting times.
- ◆ Timeliness of cardiac reperfusion for heart attack patients.

### 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 5.1. Adults who needed care right away for an illness, injury, or condition in the last 12 months who sometimes or never got care as soon as wanted, by race/ethnicity and income, 2002-2010**



**Source:** Agency for Healthcare Research and Quality, Medical Expenditure Panel Survey, 2002-2010.

**Denominator:** Civilian noninstitutionalized population age 18 and over.

**Note:** For this measure, lower rates are better. White and Black are non-Hispanic. Hispanic includes all races.

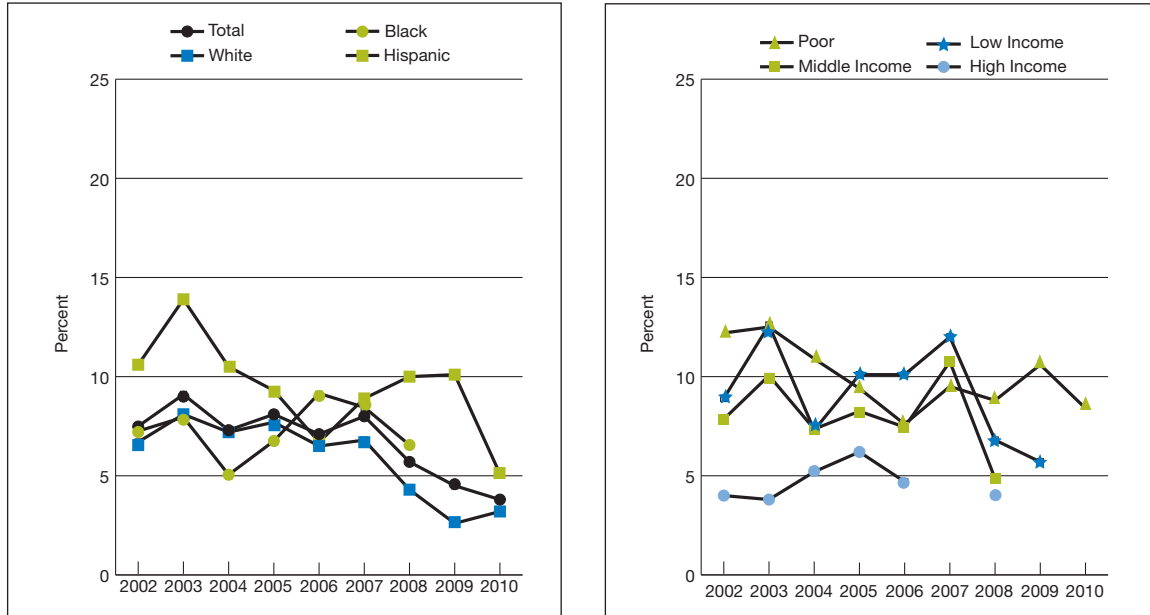
- ◆ From 2002 to 2010, the percentage of adults who needed care right away for an illness, injury, or condition in the last 12 months who sometimes or never got care as soon as wanted was significantly lower for Whites than for Blacks and Hispanics (Figure 5.1).
- ◆ In all years, the percentage who reported not getting needed care as soon as wanted was significantly lower for high-income people than for poor, low-income, and middle-income people.
- ◆ In 7 of 9 years, the percentage who reported not getting care as soon as wanted was significantly lower for people who spoke English most often at home than for people who spoke other languages (data not shown).

Also, in the NHQR:

- ◆ In 2010, the percentage of adults who sometimes or never got care as soon as wanted was significantly lower for adults with neither basic nor complex activity limitations than for adults with complex activity limitations.



**Figure 5.2. Children who needed care right away for an illness, injury, or condition in the last 12 months who sometimes or never got care as soon as wanted, by race/ethnicity and income, 2002-2010**



**Source:** Agency for Healthcare Research and Quality, Medical Expenditure Panel Survey, 2002-2010.

**Denominator:** Civilian noninstitutionalized population under age 18.

**Note:** For this measure, lower rates are better. White and Black are non-Hispanic. Hispanic includes all races. The 2009 and 2010 data for Blacks; the 2007, 2009, and 2010 data for high-income families; the 2009 and 2010 data for middle-income families; and the 2010 data for low-income families did not meet criteria for statistical reliability, data quality, or confidentiality.

- ◆ From 2002 to 2010, the percentage of children who sometimes or never received care as soon as wanted decreased for Whites and Hispanics (Figure 5.2).
- ◆ In 4 of 6 years where data were available, the percentage of children who did not receive care as soon as wanted was significantly lower for children from high-income families than for children from poor families. In 3 of 6 years where data were available, the percentage of children who did not receive care as soon as wanted was significantly lower for children from high-income families than for children from low-income families.

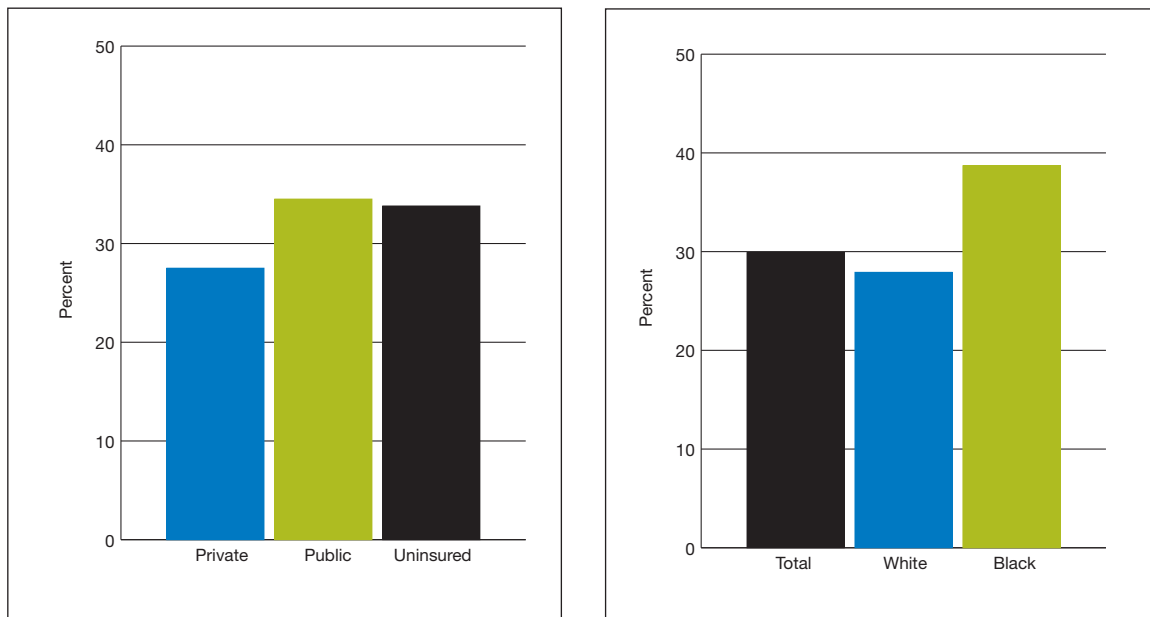
Also, in the NHQR:

- ◆ From 2002 to 2010, the percentage of 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 decreased for children without special health care needs.
- ◆ From 2002 to 2009, the percentage also decreased for children with special health care needs.

## Emergency Department Visit Waiting Times

In 2010, an estimated 130 million visits were made to hospital EDs compared with almost 124 million visits in 2008 (CDC, 2010). The median waiting time for patients to be seen by a physician during an ED visit in the United States was 28 minutes (CDC, 2010). Not all patients seeking care in an ED need urgent care, and use of EDs for nonurgent care could lead to longer waiting times.

**Figure 5.3. Emergency department visits where patient was transferred or admitted and length of visit was 6 hours or more, by insurance and race, 2010-2011**



**Source:** Centers for Disease Control and Prevention, National Center for Health Statistics, National Hospital Ambulatory Medical Care Survey, 2010-2011.

**Note:** For this measure, lower rates are better. 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. For general information about survey methodology, reliability of estimates, and other technical information, refer to the National Hospital Ambulatory Medical Care Survey: 2006 emergency department summary (<http://www.cdc.gov/nchs/data/nhsr/nhsr007.pdf>).

- ◆ In 2010-2011, a higher percentage of patients with public insurance had to wait 6 hours or more compared with patients with private insurance (Figure 5.3).
- ◆ The percentage of patients who were transferred or admitted and had to wait 6 hours or more was significantly higher for Blacks than for Whites.

Also, in the NHQR:

- ◆ In 2010-2011, the percentage of patients who were transferred or admitted and had to wait 6 hours or more was significantly higher for those ages 18-44 than for those under age 18 and those age 65 and over.
- ◆ In 2010-2011, the percentage of ED patients who had to wait 6 hours or more was about 2½ times as high in metropolitan areas as in nonmetropolitan areas.

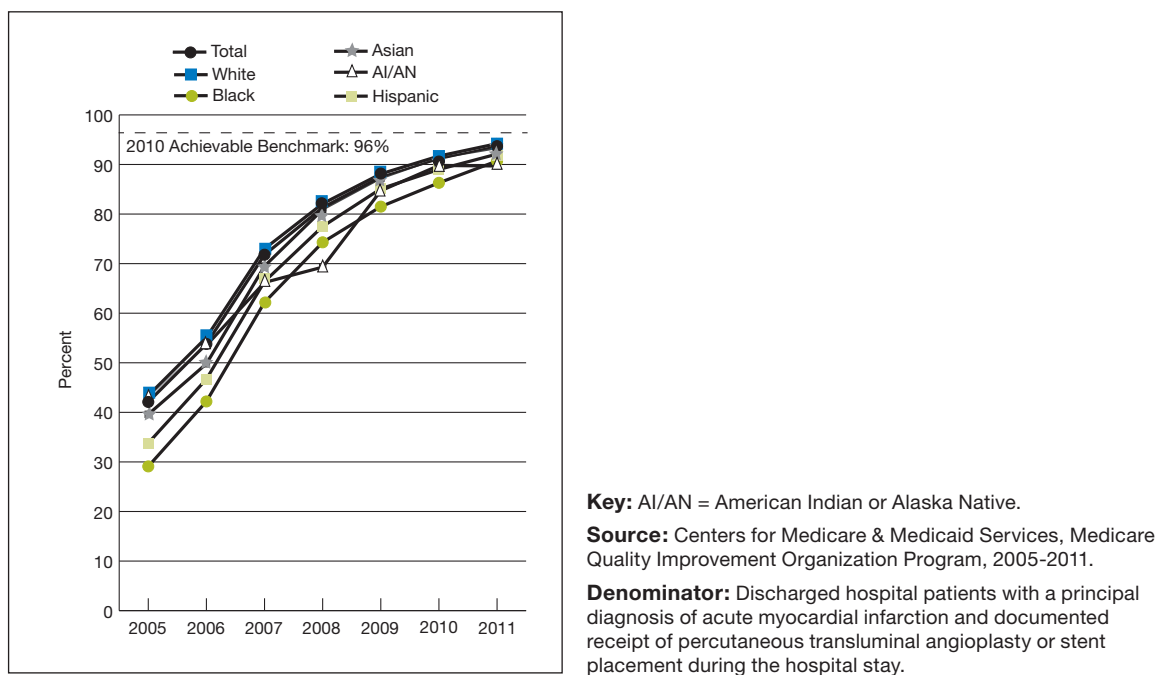
## Timeliness of Cardiac Reperfusion for Heart Attack Patients

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 (Gerczuk & Kloner, 2012). 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 5.4. Hospital patients with heart attack given percutaneous coronary intervention within 90 minutes of arrival, by race/ethnicity, 2005-2011**



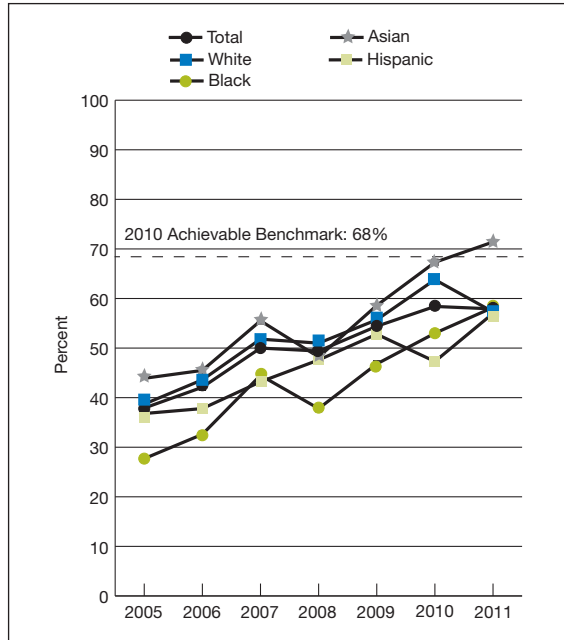
- ◆ Among heart attack patients, the percentage of patients receiving timely PCI improved for all racial/ethnic groups from 2005 to 2011 (Figure 5.4).
- ◆ In all years, Blacks and Hispanics were less likely than Whites to receive timely PCI.
- ◆ The 2010 top 5 State achievable benchmark was 96%.<sup>i</sup> At the current rates of improvement, the achievable benchmark could be attained overall and among all racial/ethnic groups in less than 1 year.

Also, in the NHQR:

- ◆ From 2005 to 2011, the percentage of patients receiving PCI within 90 minutes improved significantly for both males and females.

<sup>i</sup> The top 5 States that contributed to the achievable benchmark are Maine, Minnesota, North Carolina, Rhode Island, and South Carolina.

**Figure 5.5. Hospital patients with heart attack given fibrinolytic medication within 30 minutes of arrival, by race/ethnicity, 2005-2011**



**Source:** Centers for Medicare & Medicaid Services, Medicare Quality Improvement Organization Program, 2005-2011.

**Denominator:** Discharged hospital patients with a principal diagnosis of acute myocardial infarction and documented receipt of thrombolytic therapy during the hospital stay.

- ◆ Among heart attack patients, the percentage of patients receiving timely fibrinolytic medication improved for all racial/ethnic groups from 2005 to 2011 (Figure 5.5). In 6 of 7 years, Blacks were less likely to receive timely fibrinolytic medication compared with Whites.
- ◆ In 2010, the top 5 State achievable benchmark was 68%.<sup>ii</sup> At the current rate of improvement, the achievable benchmark could be attained overall in less than 3 years. At their current rate of improvement, Whites should reach the achievable benchmark in about 3 years, Blacks in about 2 years, and Hispanics in about 3 years. Asians have already achieved the benchmark.

Also, in the NHQR:

- ◆ In all years, the percentage of patients who received fibrinolytic medication was significantly higher for males than for females.

<sup>ii</sup> The top 5 States that contributed to the achievable benchmark are Arkansas, California, Georgia, Mississippi, and Texas.

## References

Agency for Healthcare Research and Quality. Calculated from Healthcare Cost and Utilization Project. Kids' Inpatient Database. Available at: <http://hcupnet.ahrq.gov/>. Accessed April 24, 2009.

Boudreau RM, McNally C, Rensing EM, et al. Improving the timeliness of written patient notification of mammography results by mammography centers. *Breast J* 2004 Jan-Feb;10(1):10-9.

Caro JJ, Ward AJ, O'Brien JA. Lifetime costs of complications resulting from type 2 diabetes in the U.S. *Diabetes Care* 2002 Mar;25(3):476-81.

Cartmill RS, Walker JM, Blosky MA, et al. Impact of electronic order management on the timeliness of antibiotic administration in critical care patients. *Int J Med Inform* 2012;81(11):782-91.

Centers for Disease Control and Prevention. National Hospital Ambulatory Medical Care Survey: 2010 emergency department summary tables. Available at [http://www.cdc.gov/nchs/data/ahcd/nhamcs\\_emergency/2010\\_ed\\_web\\_tables.pdf](http://www.cdc.gov/nchs/data/ahcd/nhamcs_emergency/2010_ed_web_tables.pdf). Accessed March 8, 2013.

Gerczuk PZ, Kloner, RA. An update on cardioprotection: a review of the latest adjunctive therapies to limit myocardial infarction size in clinical trials. *J Am Coll Cardiol* 2012;59:969-78.

Himelhoch S, Weller WE, Wu AW, et al. Chronic medical illness, depression, and use of acute medical services among Medicare beneficiaries. *Med Care* 2004 Jun;42(6):512-21.

Institute of Medicine. Crossing the quality chasm: a new health system for the 21st century. Washington, DC: National Academy Press; 2001.

Kazley AS, Hillman DG, Johnston KC, et al. Hospital care for patients experiencing weekend vs. weekday stroke: a comparison of quality and aggressiveness of care. *Arch Neurol* 2010 Jan;67(1):39-44.

Luman ET, Barker LE, Shaw KM, et al. Timeliness of childhood vaccinations in the United States: days undervaccinated and number of vaccines delayed. *JAMA* 2005 Mar 9;293(10):1204-11.

Ramsey SD, Newton K, Blough D, et al. Patient-level estimates of the cost of complications in diabetes in a managed-care population. *Pharmacoecon* 1999 Sep;16(3):285-95.

Schatz M, Rachelefsky G, Krishnan JA. Followup after acute asthma episodes: what improves future outcomes? *Proc Am Thorac Soc* 2009;6: 386-93.

Smart NA, Titus TT. Outcomes of early versus late nephrology referral in chronic kidney disease: a systematic review. *Am J Med* 2011 Nov;124(11):1073-80e2.



## Chapter 6. Patient Centeredness

The Institute of Medicine identifies patient centeredness as a core component of quality health care (IOM, 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 (IOM, 2001b).

Patient centeredness “encompasses qualities of compassion, empathy, and responsiveness to the needs, values, and expressed preferences of the individual patient” (IOM, 2001a). In addition, translation and interpretation services facilitate communication between the provider and the patient and are often a legal requirement.<sup>i</sup> 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 (IOM, 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 (OMH, 2013).<sup>ii</sup>

---

<sup>i</sup> 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.

<sup>ii</sup> This free online educational program (available at [www.thinkculturalhealth.hhs.gov](http://www.thinkculturalhealth.hhs.gov)) is accredited for Continuing Medical Education credits for physicians, as well as Continuing Education Units for physician assistants, nurse practitioners, registered nurses, social workers, and emergency response personnel.

These modules are based on the National Standards on Culturally and Linguistically Appropriate Services (CLAS). Enhanced CLAS standards now also include broader conceptualization of culture, audience, health, and recipients.<sup>iii</sup> The standards are directed at health care organizations and aim to improve patient centeredness of care for people with limited English proficiency (LEP).

Similarly, the HHS Office for Civil Rights' (OCR) Medical Education Initiative promotes a scenario-based curriculum on health disparities and cultural competency designed to educate student physicians, medical educators, and other health care providers on their civil rights obligations under Title VI of the Civil Rights Act of 1964. The curriculum, *Stopping Discrimination Before It Starts: The Impact of Civil Rights Laws on Health Care Disparities*, funded in part by the National Institutes of Health and the Stanford University School of Medicine, was presented to more than 300 student physicians and other health care providers in 2013.

The curriculum discusses, in part, the HHS OCR's Guidance to Federal Financial Assistance Recipients Regarding Title VI's Prohibition Against National Origin Discrimination Affecting Limited English Proficient Persons. This guidance explains how recipients of Federal financial assistance must take reasonable steps to ensure individuals with LEP are provided 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, 2003).

In addition, the HHS OCR is responsible for the enforcement of Section 1557 of the Affordable Care Act, 42 U.S.C. 18116. This section provides that an individual shall not, 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), be excluded from participation in, be denied the benefits of, or be subjected to discrimination 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.

On February, 26, 2013, the Department published its 2013 Language Access Plan (2013 HHS LAP; HHS, 2013), ensuring access to HHS programs and activities for people with LEP. The covered programs and activities include, but are not limited to, Medicare, civil rights enforcement, and other HHS programs that provide benefits or services. The 2013 HHS LAP was developed by the HHS Language Access Steering Committee, which is led by the Director of the OCR on behalf of the Secretary.

In accordance with Executive Order 13166, *Improving Access to Services for Persons With Limited English Proficiency* (White House, 2000), the 2013 HHS LAP establishes the Department's policy and strategy for serving individuals with LEP and reaffirms the Department's commitment to language access principles. The 2013 HHS LAP serves as a blueprint for HHS staff and operating divisions charged with developing their own agency-specific language access plans. Additional information regarding language access requirements is available from the Department of Justice (DOJ, 2011).

<sup>iii</sup> National CLAS Standards Factsheet available at <https://www.thinkculturalhealth.hhs.gov/Content/clas.asp>



The 2013 HHS LAP is organized into 10 cross-cutting elements:

1. Assessment – Needs and Capacity;
2. Oral Language Assistance Services;
3. Written Translations;
4. Policies and Procedures;
5. Notification of the Availability of Language Assistance at No Cost;
6. Staff Training;
7. Assessment – Access and Quality;
8. Stakeholder Consultation;
9. Digital Information; and
10. Grant Assurance and Compliance.

## Importance

### Morbidity and Mortality

- ◆ Patient-centered decisionmaking (when physicians take into account the needs and circumstances of a patient) for planning a patient's care has been shown to improve health care outcomes (Weiner, et al., 2013).
- ◆ 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

- ◆ Poor communication, lack of collaboration, and lack of support for self-care are associated with suffering and waste in health care (Øvretveit, 2012).
- ◆ 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).

## 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 is engaged as partners in their care, found in the *National Strategy for Quality Improvement in Health Care* (National Quality Strategy).<sup>iv</sup> 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 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 Quality Strategy, the 2013 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-patient communication among adults receiving home health care.
- ◆ Adults with LEP, by whether they had a usual source of care with or without language assistance.
- ◆ Adults who needed an interpreter during their last office visit.
- ◆ Provider's involvement of the patient in making treatment decisions.

The last measure also relates to the National Quality Strategy goal of patient engagement.

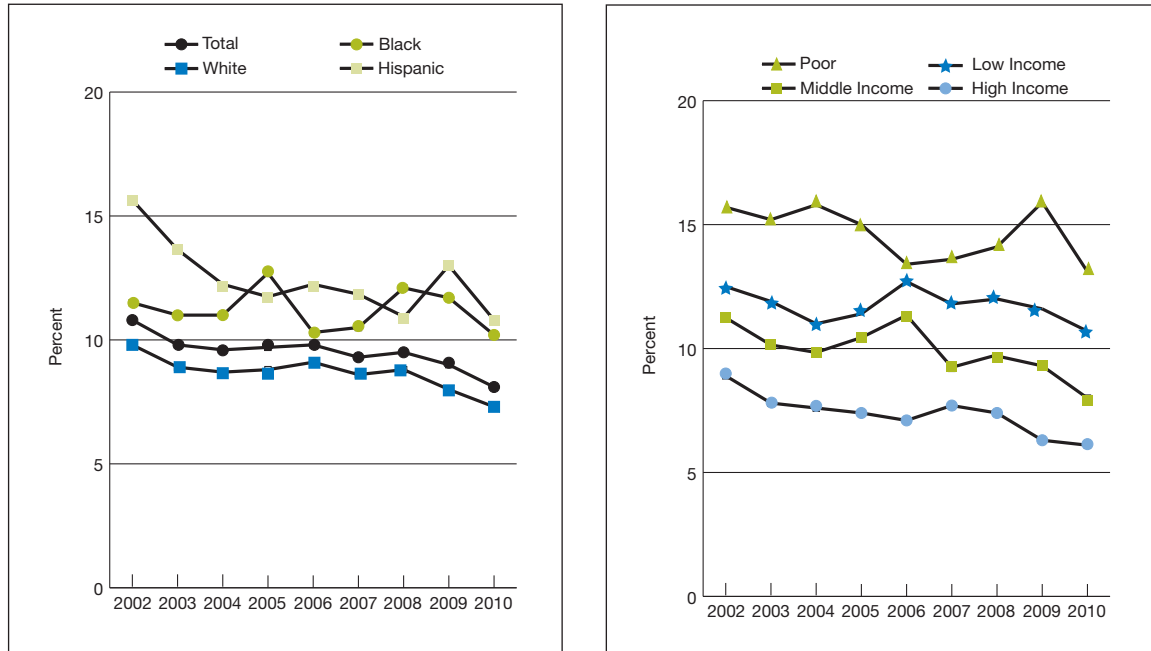
## Findings

### 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.

<sup>iv</sup> Available at <http://www.ahrq.gov/workingforquality/reports.htm>.

**Figure 6.1. Composite: Adults who had a doctor's office or clinic visit in the last 12 months who reported poor communication with health providers, by race/ethnicity and income, 2002-2010**



**Source:** Agency for Healthcare Research and Quality, Medical Expenditure Panel Survey, 2002-2010.

**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. White and Black are non-Hispanic. Hispanic includes all races. 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.

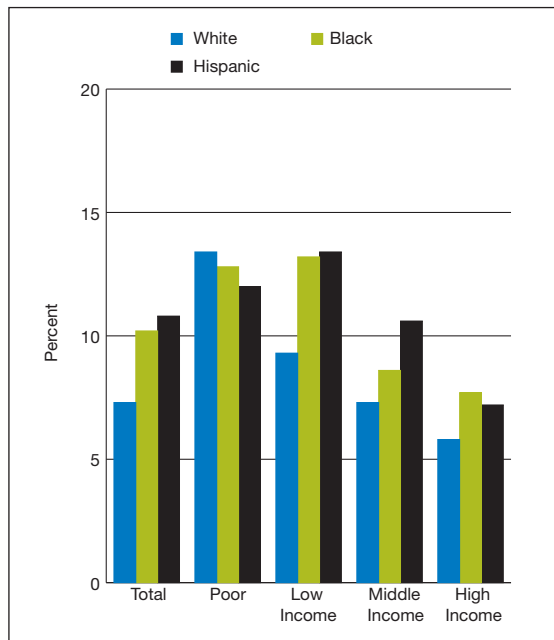
- ◆ From 2002 to 2010, the percentage of Hispanic and White adults who reported poor communication with their health providers decreased. There were no statistically significant changes for Blacks (Figure 6.1).
- ◆ In all years, Hispanics were significantly more likely than Whites to report poor communication.
- ◆ In 2010, the percentage who reported poor communication was significantly higher for Black adults than for White adults.
- ◆ From 2002 to 2010, the percentage of middle-income and high-income adults who reported poor communication with their health providers decreased.
- ◆ In all years, poor and low-income adults were more likely than high-income adults to report poor communication with health providers.
- ◆ In 2010, the percentage of patients reporting poor communication was higher for poor, low-income, and middle-income groups than for the high-income group (13.1%, 10.7%, 8.0%, and 6.1%, respectively).

Also, in the NHQR:

- ◆ In all years, a significantly lower percentage of adults with private insurance reported poor communication with their health providers compared with adults who were uninsured and those with public insurance.
- ◆ In 2010, the percentage of adults age 65 and over reporting poor communication with their health providers was significantly higher for those with Medicare and other public insurance than for those with Medicare only or Medicare and private insurance.

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

**Figure 6.2. Composite: Adults who had a doctor's office or clinic visit who reported poor communication with health providers, by race/ethnicity, stratified by income, 2010**



**Source:** Agency for Healthcare Research and Quality, Medical Expenditure Panel Survey, 2010.

**Denominator:** Civilian noninstitutionalized population age 18 and over.

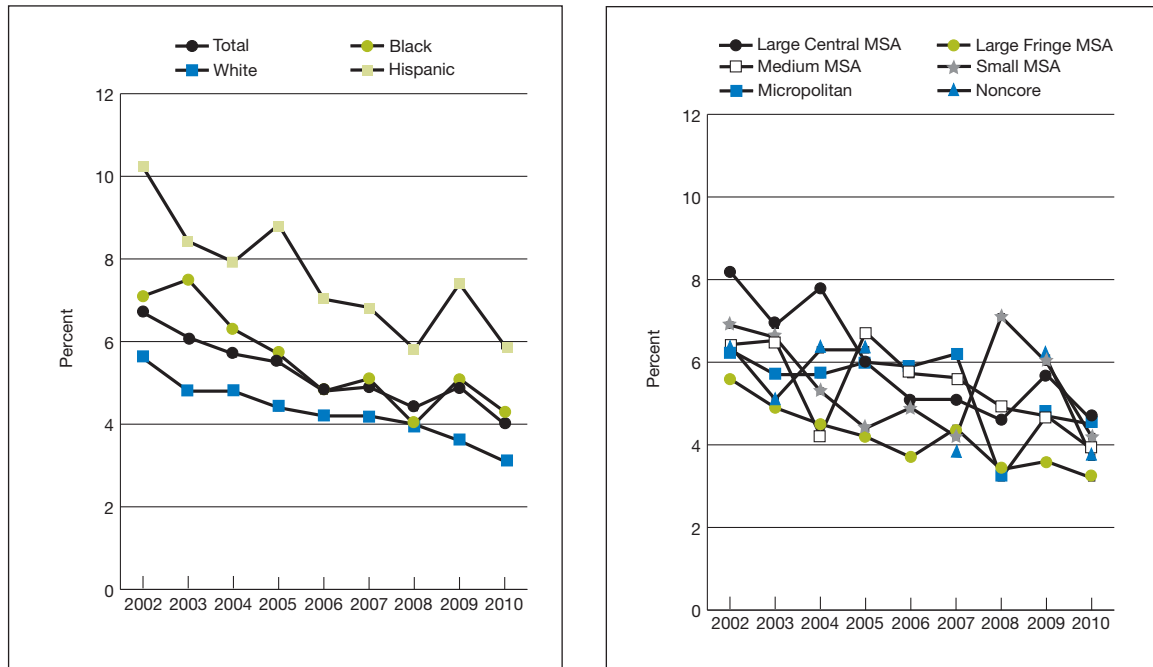
**Note:** For this measure, lower rates are better. White and Black are non-Hispanic. Hispanic includes all races. Patients who report that their health providers sometimes or never listened carefully, explained things clearly, showed respect for what they had to say, or spent enough time with them are considered to have poor communication.

- ◆ In 2010, Hispanics and Blacks were more likely to report poor communication than Whites (10.8% and 10.2%, respectively, compared with 7.3%) overall (Figure 6.2). For poor and high-income adults, there were no statistically significant differences between Hispanics and Whites and Blacks and Whites.
- ◆ Among low-income adults, Blacks and Hispanics had a higher percentage reporting poor communication than Whites (13.2% and 13.4%, respectively, compared with 9.3%).
- ◆ Among middle-income adults, a higher percentage of Hispanics reported poor communication than Whites (10.6% compared with 7.3%).

## 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 to the patient in an age-appropriate manner. Optimal communication in children's health care can therefore have a significant impact on receipt of high-quality care and subsequent health status.

**Figure 6.3. Composite: Children who had a doctor's office or clinic visit in the last 12 months whose parents reported poor communication with health providers, by race/ethnicity and geographic location, 2002-2010**



**Key:** MSA = metropolitan statistical area.

**Source:** Agency for Healthcare Research and Quality, Medical Expenditure Panel Survey, 2002-2010.

**Denominator:** Civilian noninstitutionalized population under age 18 who had a doctor's office or clinic visit in the last 12 months.

**Note:** For this measure, lower rates are better. White and Black are non-Hispanic. Hispanic includes all races. Data for children in noncore areas in 2006 and 2008 did not meet criteria for statistical reliability. Parents who report that their child's health providers sometimes or never listened carefully, explained things clearly, showed respect for what they had to say, or spent enough time with them are considered to have poor communication.

- ◆ Overall, from 2002 to 2010, the percentage of children whose parents reported poor communication significantly decreased (from 6.7% to 4.0%; Figure 6.3).
- ◆ From 2002 to 2010, the percentage of children whose parents reported poor communication significantly decreased among Hispanics, Blacks, and Whites.
- ◆ In 2010, the percentage of children whose parents reported poor communication with their health providers was higher for Hispanics compared with non-Hispanic Whites (5.9% compared with 3.1%).
- ◆ From 2002 to 2010, the percentage of children whose parents reported poor communication with their health providers decreased for all metropolitan groups, except small metropolitan areas and noncore areas.

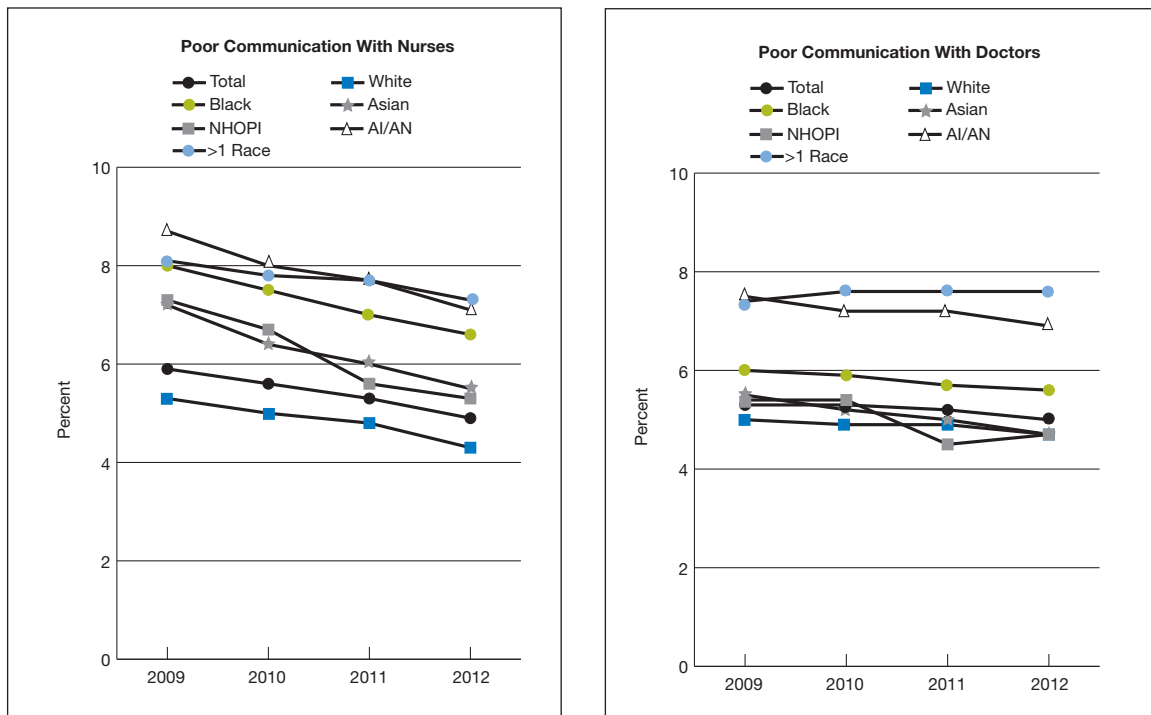
Also, in the NHQR:

- ◆ In 2010, the percentage of children whose parents reported poor communication was higher for those with public insurance only and for those with no insurance than for those with any private insurance.

## Patients' Experience of Care—Hospital

Using methods developed for the CAHPS® (Consumer Assessment of Healthcare Providers and Systems) 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 6.4. Adult hospital patients who reported poor communication with nurses and doctors, by race, 2009-2012**



**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, 2009-2012.

**Denominator:** Adult hospital patients.

**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 2012, overall, 4.9% of adult hospital patients reported poor communication with nurses during their hospital stay, and 5.0% reported poor communication with doctors (Figure 6.4).
- ◆ From 2009 to 2012, the percentage of adult hospital patients who reported poor communication with nurses decreased for all groups.
- ◆ From 2009 to 2012, the percentage of adult hospital patients who reported poor communication with doctors decreased for all racial/ethnic groups except Native Hawaiians and Other Pacific Islanders (NHOPIs) and multiple-race individuals.

- ◆ In 2012, compared with Whites, all racial groups were more likely to report poor communication with nurses.
- ◆ Blacks, American Indians and Alaska Natives (AI/ANs), and patients of more than one race were more likely than Whites to report poor communication with doctors.

Also, in the NHQR:

- ◆ In 2012, the percentage of patients who reported poor communication with nurses was lower for adults age 65 and over compared with those ages 18-44.
- ◆ From 2009 to 2012, the percentage of adult hospital patients who reported poor communication with doctors decreased overall and for all age groups except 65 and over.

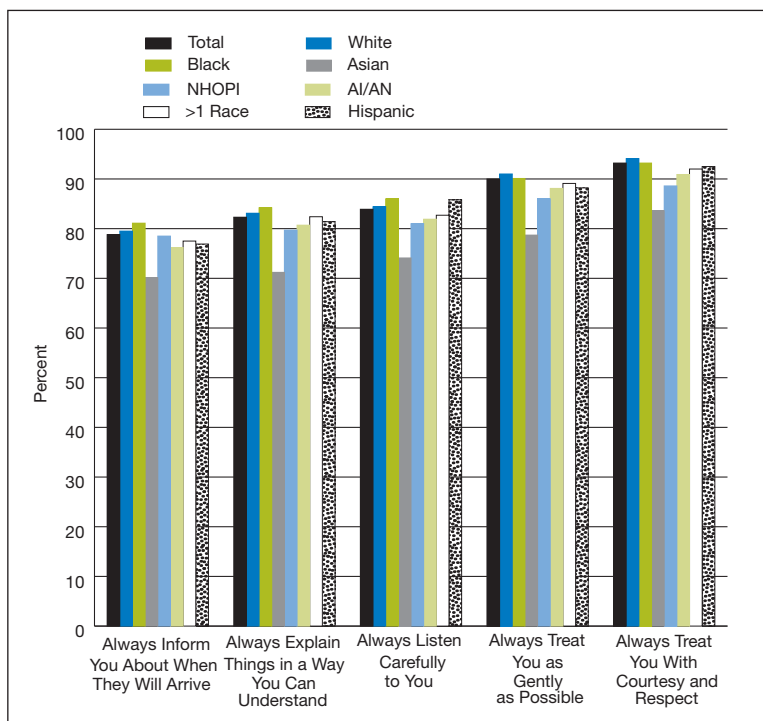


## Patients' Experience of Care – Home Health Care

The Consumer Assessment of Healthcare Providers and Systems (CAHPS®) Home Health Care Survey (Home Health Care CAHPS Survey) was designed to measure the experiences of people receiving home health care from Medicare-certified home health care agencies. In April 2012, the Centers for Medicare & Medicaid Services began publicly reporting results from this survey on Home Health Compare to create incentives for home health agencies to improve quality of care and to provide patients with information to help them choose home health care providers.

The results presented here reflect data collected from a sample of patients who received home health care between October 2011 and September 2012.

**Figure 6.5. Provider-patient communication among adults receiving home health care, by race/ethnicity, 2011-2012**



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

**Source:** Centers for Medicare & Medicaid Services, Home Health Care CAHPS (Consumer Assessment of Healthcare Providers and Systems), 2011-2012.

**Denominator:** Adults who had at least two visits from a Medicare-certified home health agency during a 2-month look-back period. Patients receiving hospice care and who had "maternity" as the primary reason for receiving home health care are excluded.

- ◆ In 2012, among adult home health care patients, about 80% reported that home health care providers always informed them about when they would arrive, always explained things in a way they could understand, and always listened carefully to them. About 90% reported that home health care providers always treated them as gently as possible and with courtesy and respect (Figure 6.5).
- ◆ Asian and AI/AN adult home health care patients were less likely than White patients to report that home health care providers always informed them about when they would arrive, always explained things in a way they could understand, and always listened carefully to them.
- ◆ Compared with Whites, adult home health care patients in all other racial and ethnic groups were less likely to report that home health care providers always treated them as gently as possible and with courtesy and respect.

Also, in the NHQR:

- ◆ The percentage of adult home health care patients who answered “Always” was lower on all five measures for those who spoke a language other than English or Spanish at home compared with patients who spoke English.
- ◆ Adult home health care patients who spoke Spanish at home were more likely to report that providers always listened carefully to them. However, the percentage was lower on the other four measures compared with patients who spoke English.

## 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. 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.

For people with LEP, 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.

### 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.

To address these barriers, the HHS OCR enforces Title VI of the Civil Rights Act of 1964, 42 U.S.C. 2000d *et seq.* Title VI prohibits discrimination on the basis of race, color, or national origin in any program that receives Federal financial assistance. Title VI requires that recipients of Federal funds, like most hospitals and health care providers, take reasonable steps to ensure meaningful access to their programs and services by individuals with LEP.

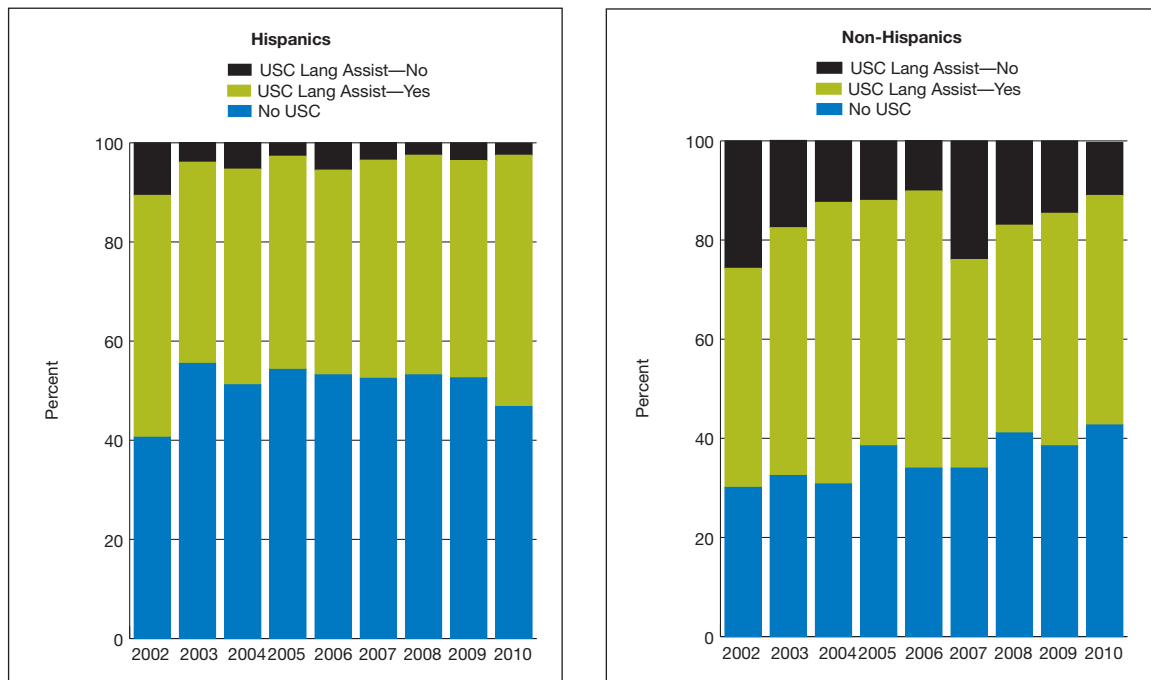
As part of its Title VI enforcement activities, OCR recently entered into a voluntary compliance agreement with the North Carolina Department of Health and Human Services (NCDHHS), which administers an annual budget of \$18.3 billion, including the State’s Medicaid; Early and Periodic Screening, Diagnosis, and Treatment; and Children’s Health Insurance Programs. To comply with Title VI, NCDHHS has agreed to provide timely and competent language assistance services, including oral interpreters and written translations of vital documents, at no cost to individuals with LEP.



In addition, the HHS OMH's enhanced National Standards for Culturally and Linguistically Appropriate Services in Health Care (National CLAS Standards) recognized the advancements in the field of cultural and linguistic competency and the Nation's increased diversity since the first National CLAS Standards were published in 2000. For example, the National CLAS Standards address professional licensure in medicine and nursing, as well as in health care policies, such as policies issued through the Affordable Care Act.

The enhanced National CLAS Standards strengthened the initial framework for health care organizations to best serve the Nation's increasingly diverse communities, expanded the scope of the initial set of standards, and improved their clarity to ensure understanding and implementation via *A Blueprint for Advancing and Sustaining CLAS Policy and Practice* (The Blueprint). The Blueprint, an implementation guide to help policymakers and practitioners advance and sustain CLAS within their organizations, dedicates one chapter to each of the 15 standards. Each chapter includes a review of the standard's purpose, components, and strategies for implementation, as well as resources that offer additional information and guidance on that Standard.

**Figure 6.6. Adults with limited English proficiency, by whether they had a usual source of care with or without language assistance, Hispanics and non-Hispanics, 2002-2010**



**Key:** USC = usual source of care.

**Source:** Agency for Healthcare Research and Quality, Medical Expenditure Panel Survey, 2002-2010.

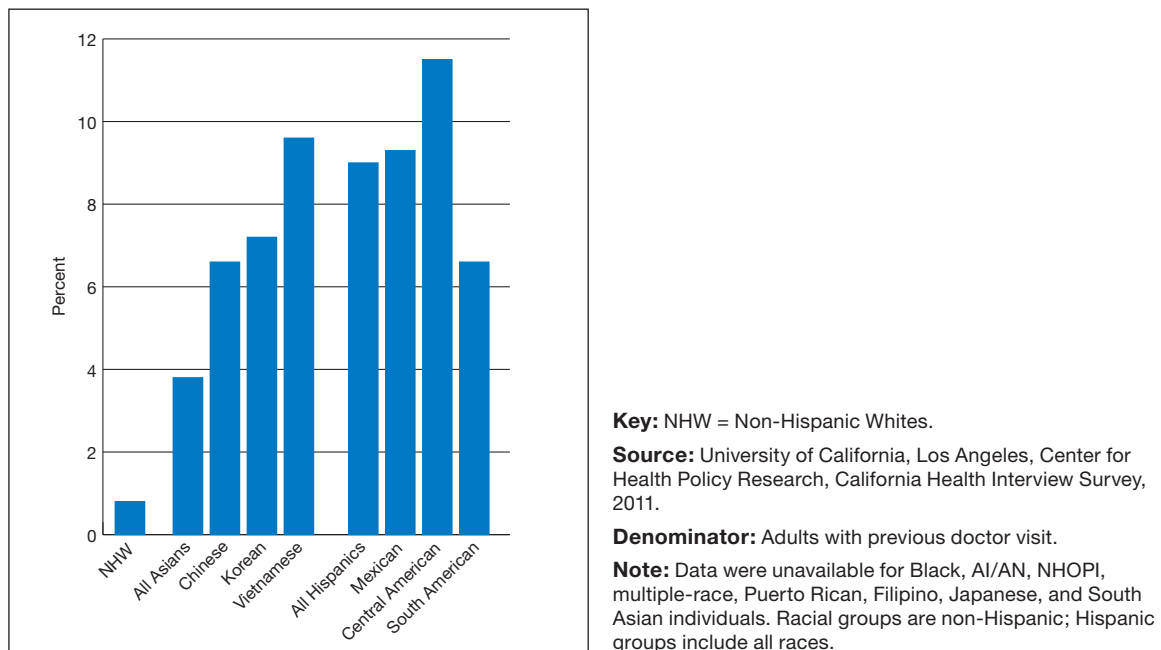
- ◆ In all years, from 2002 to 2010, the percentage of adults with LEP who did not have a usual source of care was higher for Hispanics than for non-Hispanics (Figure 6.6).
- ◆ During the same period, non-Hispanics were more likely than Hispanics to have a usual source of care that did not provide language assistance, except in 2004.

### Need for an Interpreter

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 LEP 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.

National data on the need and use of interpreters in health care settings for underserved populations are not available from the national data sources in the NHDR. To address some of this data gap, additional data from the California Health Interview Survey (CHIS) are shown below. The oversampling methods used in CHIS are an example of how important disparities can be examined when data are collected this way.

**Figure 6.7. Adults age 18 and over who needed an interpreter during last doctor visit (California only), by race/ethnicity and granular ethnicities, 2011**



- ◆ In 2011, Asians and Hispanics overall were more likely than Whites to need an interpreter (Figure 6.7).
- ◆ Overall, 3.8% of Asians needed an interpreter. However, among Asian subgroups, 7.2% of Koreans, 6.6% of Chinese people, and 9.6% of Vietnamese people needed an interpreter.
- ◆ Overall, about 9 percent of Hispanics needed an interpreter. However, among Hispanic subgroups, 11.5% of Central Americans, 9.3% of Mexicans, and 6.6% of South Americans needed an interpreter.

### Providers Asking Patients To Assist in Making Treatment Decisions

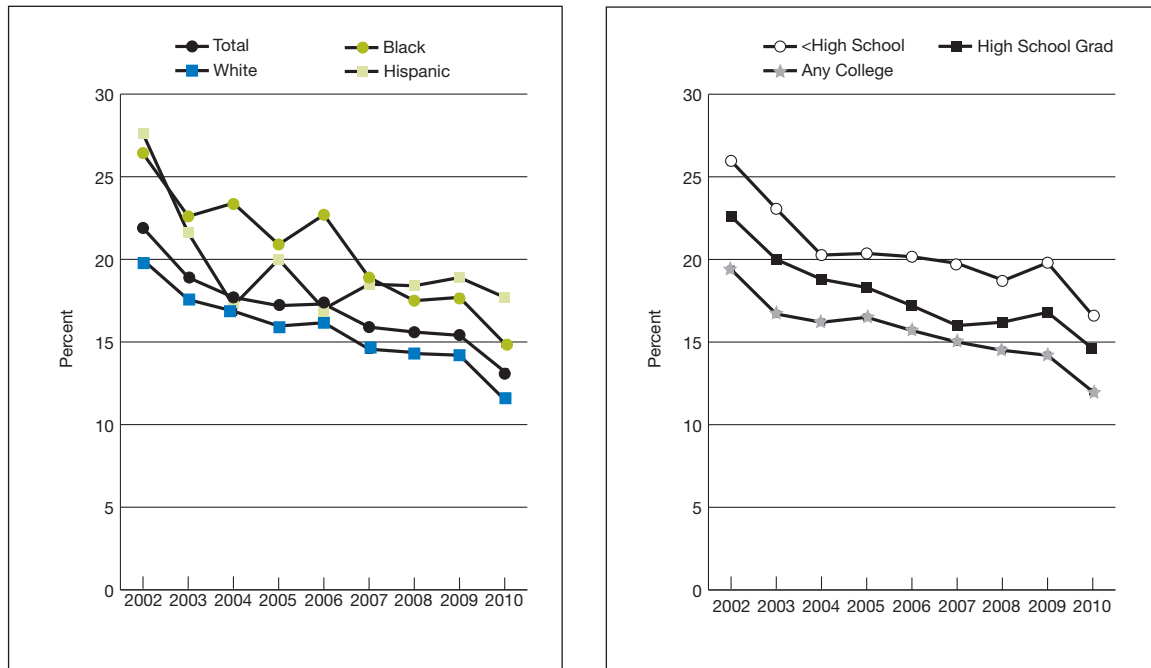
The increasing prevalence of chronic diseases has placed more responsibility on patients, since conditions such as diabetes and hypertension require self-management. Patients need to be provided with information that allows them to make educated decisions and feel engaged in their treatment. Treatment plans also need to incorporate their values and preferences.

**Figure 6.8. 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 and education, 2002-2010**

**Source:** Agency for Healthcare Research and Quality, Medical Expenditure Panel Survey, 2002-2010.

**Denominator:** Civilian noninstitutionalized population with a usual source of care.

**Note:** For this measure, lower rates are better. White and Black are non-Hispanic. Education status applies to adults age 18



and over.

- ◆ From 2002 to 2010, the percentage of patients whose usual source of care did not ask for their help in making treatment decisions decreased overall and for all racial/ethnic groups except AI/ANs (Figure 6.8; data not shown for Asians, AI/ANs, and multiple-race individuals).
- ◆ In 2010, Blacks and Hispanics were significantly more likely than Whites to have a usual source of care who did not ask for their help in making treatment decisions (14.9% and 17.7%, respectively, compared with 11.5%).
- ◆ In 2010, adults with a high school education and less than a high school education were more likely than patients with any college education to have a usual source of care who did not ask for their help in making treatment decisions (14.6% and 16.6%, respectively, compared with 12.0%).

Also, in the NHQR:

- ◆ From 2002 to 2010, the percentage of adults whose usual source of care did not ask for their help in making treatment decisions decreased for all activity limitation groups.
- ◆ In 2010, adults with basic activity limitations and adults with complex activity limitations were more likely than adults with neither basic nor complex activity limitations to have a usual source of care who did not ask for their help in making treatment decisions.

## References

- Anderson EB. Patient-centeredness: a new approach. *Nephrol News Issues* 2002;16(12): 80-2.
- Bechel DL, Myers WA, Smith DG. Does patient-centered care pay off? *Jt Comm J Qual Improv* 2000;26(7):400-9.
- Beck RS, Daughtridge R, Sloane PD. Physician-patient communication in the primary care office: a systematic review. *J Am Board Fam Pract* 2002;15(1):25-38.
- Berry LL, Seiders K, Wilders SS. Innovations in access to care: a patient-centered approach. *Ann Intern Med* 2003;139(7):568-74.
- DiMatteo MR. The role of the physician in the emerging health care environment. *West J Med* 1998;168(5):328-33.
- Hargraves JL, Hays RD, Cleary PD, et al. Psychometric properties of the Consumer Assessment of Health Plans Study (CAHPS) 2.0 adult core survey. *Health Serv Res* 2003;38(6 Pt 1):1509-27.
- Institute of Medicine. Crossing the quality chasm: a new health system for the 21st century. Washington, DC: National Academy Press; 2001a.
- Institute of Medicine. Envisioning the National Health Care Quality Report. Washington, DC: National Academy Press; 2001b.
- Little P, Everitt H, Williamson I, et al. Observational study of effect of patient centredness and positive approach on outcomes of general practice consultations. *BMJ* 2001;323(7318):908-11.
- Office of Minority Health. Think cultural health: advancing health equity at every point of contact. Washington, DC: U.S. Department of Health and Human Services. Available at: <http://www.thinkculturalhealth.hhs.gov>. Accessed September 10, 2013.
- Øvretveit, J. Do changes to patient-provider relationships improve quality and save money? A review of the evidence about value improvements made by changing communication, collaboration, and support for self-care. London, UK: The Health Foundation; 2012.
- Rhoades DR, McFarland KF, Finch WH, et al. Speaking and interruptions during primary care office visits. *Fam Med* 2001;33(7):528-32.
- Stewart M, Brown JB, Donner A, et al. The impact of patient-centered care on outcomes. *J Fam Pract* 2000;49(9):796-804.
- U.S. Department of Health and Human Services. Language Access Plan 2013. Available at: <http://www.hhs.gov/open/execorders/2013-hhs-language-access-plan.pdf>. Accessed September 10, 2013.
- U.S. Department of Health and Human Services, Office for Civil Rights. Guidance to federal financial assistance recipients regarding Title VI prohibition against national origin discrimination affecting limited English proficient persons. 68 Fed Reg 47311-47323; August 8, 2003. Available at: <http://www.gpo.gov/fdsys/pkg/FR-2003-08-08/pdf/03-20179.pdf>. Accessed September 10, 2013.
- U.S. Department of Justice, Civil Rights Division, Federal Coordination and Compliance Section. Common language access questions, technical assistance, and guidance for federally conducted and federally assisted programs; August 2011. Available at: [http://www.lep.gov/resources/081511\\_Language\\_Access\\_CAQ\\_TA\\_Guidance.pdf](http://www.lep.gov/resources/081511_Language_Access_CAQ_TA_Guidance.pdf). Accessed September 10, 2013.
- Weiner SJ, Schwartz A, Sharma G, et al. Patient-centered decision making and health care outcomes. *Ann Intern Med* 2013;158(8):573-9.
- White House. Executive Order 13166: Improving access to services for persons with limited English proficiency. 65 Fed Reg 50121; August 16, 2000. Available at: <http://www.gpo.gov/fdsys/pkg/FR-2000-08-16/pdf/00-20938.pdf>. Accessed September 10, 2013.

## Chapter 7. 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 care 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, 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 transitions from one care setting to another. The objective was 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.<sup>i</sup>

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 for hard-to-reach populations who have never been in care.

---

<sup>i</sup> For more information, see <http://hab.hrsa.gov/abouthab/special/underservedcommunities.html>.

The Agency for Healthcare Research and Quality (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.

### Importance

#### Morbidity and Mortality

Care coordination interventions have been shown to:

- ◆ Reduce mortality among patients with heart failure;
- ◆ Reduce mortality and dependency among patients with stroke;
- ◆ Reduce symptoms among patients with depression and at the end of life; and
- ◆ Improve glycemic control among patients with diabetes (Shojania, et al., 2007).

#### Cost

Care coordination interventions have been shown to:

- ◆ Reduce hospitalizations among patients with heart failure;
- ◆ Reduce readmissions among patients with mental health conditions; and
- ◆ Be cost-effective when applied to treatment of depression (Shojania, et al., 2007).

### Measures

The *National Strategy for Quality Improvement in Health Care*<sup>ii</sup> identified care coordination as one of six national priorities for health care. The vision is health care providers, patients, and caregivers all 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:
  - Adequate hospital discharge information.
- ◆ Integration of information:
  - Provider asking about medications and treatments from other doctors.
  - Electronic exchange of medication information.
  - Information gathering by home health care providers.
- ◆ Care for children with special health care needs (CSHCN):
  - CSHCN with effective care coordination.
  - CSHCN with a medical home.

<sup>ii</sup> Available at <http://www.ahrq.gov/workingforquality/reports.htm>.

## Findings

### Transitions of Care

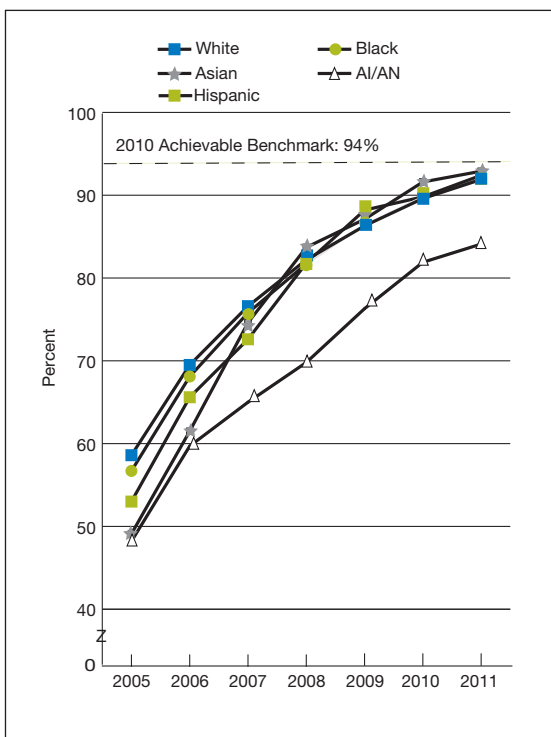
As health care conditions and needs change, patients often need to move from one setting to another. These transitions of care place patients at heightened risk of adverse events. Important information may be lost or miscommunicated as responsibility is delivered to new parties.

#### 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 7.1. Hospitalized adult patients with heart failure who were given complete written discharge instructions, by race/ethnicity, 2005-2011**



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

**Source:** Centers for Medicare & Medicaid Services, Quality Improvement Organization Program, 2005-2011.

**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 2011, the percentage of hospitalized adult patients with heart failure who were given complete written discharge instructions improved from 57.4% to 92.0% (data not shown).
- ◆ Improvements were observed among all racial and ethnic groups (Figure 7.1).
- ◆ In 2011, the percentage of hospitalized adult patients with heart failure who were given complete written discharge instructions was lower for American Indians and Alaska Natives (AI/ANs) than for Whites (84.1% compared with 91.9%).
- ◆ The 2010 top 5 State achievable benchmark was 94%.<sup>iii</sup> This benchmark could be attained by most of the racial/ethnic 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:

- ◆ There were no statistically significant differences by age or sex.

## 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.

### Management: Provider Asking About Medications and Treatments From Other Doctors

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.

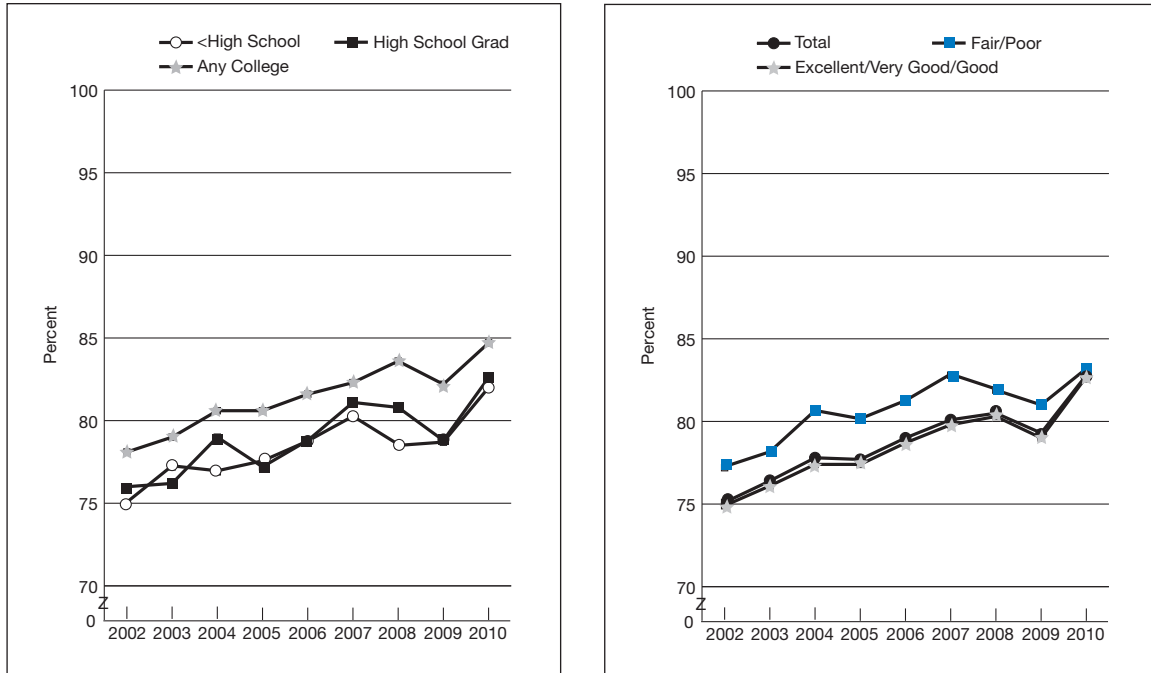
In addition, providers need to periodically review all of a patient's medications to ensure that they are taking what is needed and only what is needed. Medication reconciliation has been shown to reduce both medication errors and adverse drug events (Whittington & Cohen, 2004).

Medication information generated in different settings might 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.

<sup>iii</sup> The top 5 States that contributed to the achievable benchmark are Colorado, Delaware, New Hampshire, New Jersey, and Utah..



**Figure 7.2. People with a usual source of care whose health provider usually asks about prescription medications and treatments from other doctors, by education and perceived health status, United States, 2002-2010**



**Source:** Agency for Healthcare Research and Quality, Medical Expenditure Panel Survey, 2002-2010.

**Denominator:** Civilian noninstitutionalized population who report a usual source of care.

**Note:** Education status applies only to adults age 18 and over.

- ◆ From 2002 to 2010, 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 75.1% to 82.8% (Figure 7.2).
- ◆ From 2008 to 2010, adults with any college education were significantly more likely than adults with less than a high school education to report that a health provider usually asked about prescription medications and treatments from other doctors.
- ◆ From 2008 to 2010, there were no statistically significant differences by perceived health status.

Also, in the NHQR:

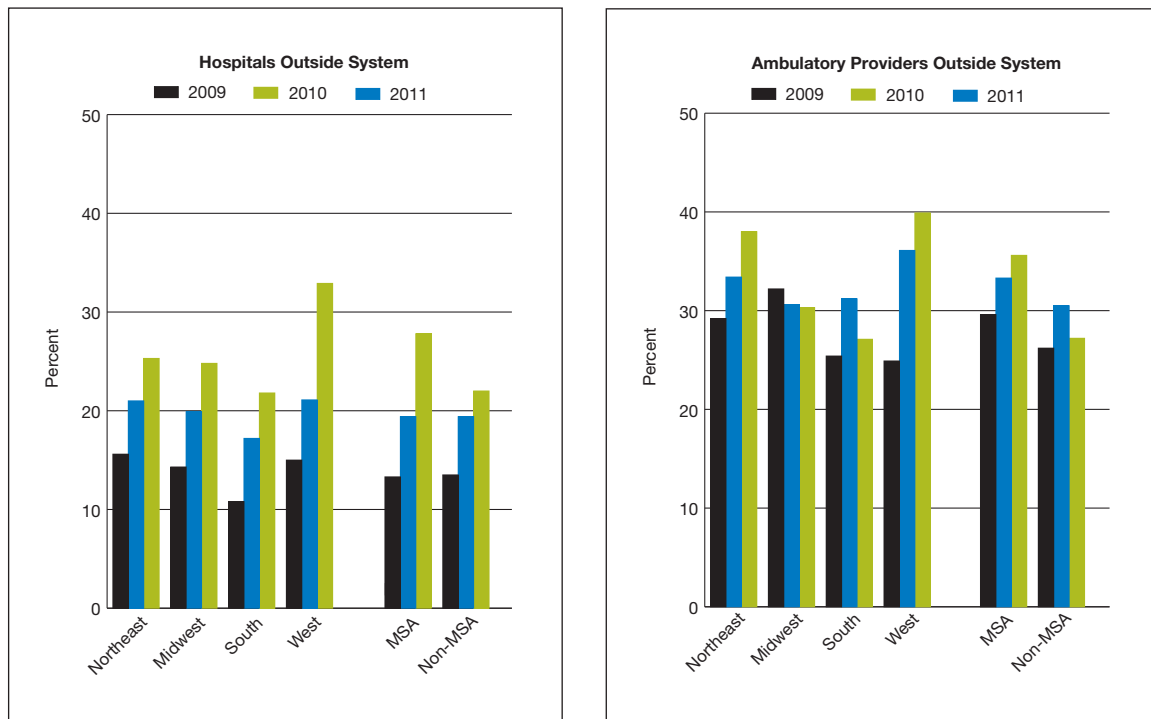
- ◆ In the last 3 years (2008-2010), people with public insurance were less likely than people with private insurance to be asked about prescription medications and treatments from other doctors.

### 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 (urban or rural) of the hospitals. Urban hospitals provide a disproportionate share of care to low-income and minority patients.

**Figure 7.3. Hospitals with electronic exchange of patient information on medication history, by region and geographic location, 2009-2011, with hospitals outside their system and with ambulatory providers outside their system**



**Key:** MSA = metropolitan statistical area.

**Source:** American Hospital Association Annual Survey Information Technology Supplement, 2009-2011.

- ◆ From 2009 to 2011, all regions and geographic locations showed improvement in the percentage of hospitals that exchanged patient information on medication history with hospitals outside their system (Figure 7.3).
- ◆ In 2011, urban hospitals were more likely than rural hospitals to share information with ambulatory providers outside their system (35.6% compared with 27.2%).
- ◆ In 2011, hospitals in the West were the most likely to exchange information with ambulatory providers outside their system, followed by hospitals in the Northeast, Midwest, and South (39.9%, 38.0%, 30.3%, and 27.1%, respectively).

Also, in the NHQR:

- ◆ In 2011, 25.2% of hospitals electronically exchanged patient information on medication history with hospitals outside their system, up from 19.4% in 2010. Although 31.8% of hospitals exchanged information with ambulatory providers outside their system, this was down from 32.1% in 2010.

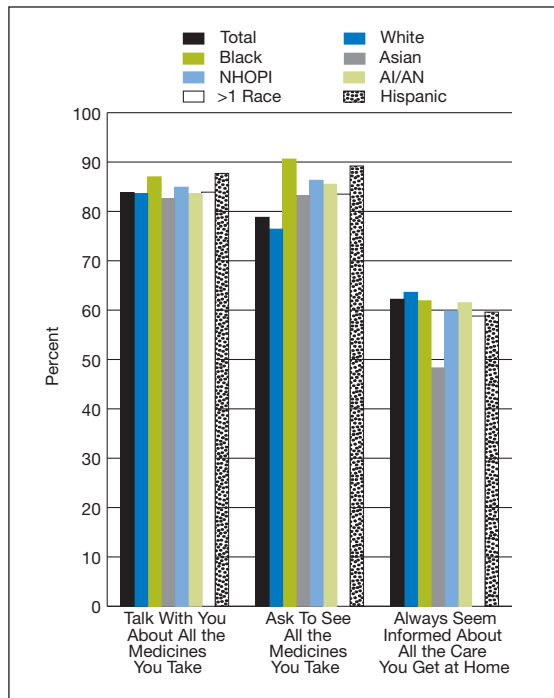


### Management: Information Gathering by Home Health Care Providers

Home health care providers deliver a variety of services to patients in their homes, including medication and pain management, wound care, and patient education. Coordination with referring physicians is critical to ensure that patients receive the services and medications they need.

The Consumer Assessment of Healthcare Providers and Systems (CAHPS®) Home Health Care Survey (Home Health Care CAHPS Survey) was designed to measure the experiences of people receiving home health care from Medicare-certified home health care agencies. In April 2012, the Centers for Medicare & Medicaid Services began publicly reporting results from this survey on Home Health Compare to create incentives for home health agencies to improve quality of care and to provide patients with information to help them choose home health care providers. The results presented here reflect data collected from a sample of patients who received home health care between October 2011 and September 2012.

**Figure 7.4. Information gathering by home health care providers among adults receiving home health care, by race/ethnicity, 2011-2012**



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

**Source:** Centers for Medicare & Medicaid Services, Home Health Care CAHPS (Consumer Assessment of Healthcare Providers and Systems) Survey, 2011-2012.

**Denominator:** Adults who had at least two visits from a Medicare-certified home health agency during a 2-month look-back period. Patients receiving hospice care and who had “maternity” as the primary reason for receiving home health care are excluded.

- ◆ In 2011-2012, among adult home health care patients, 83.8% reported that home health care providers talked with them about all the medicines they took, 78.8% asked to see all the medicines they took, and 62.2% always seemed informed about all the care they got at home (Figure 7.4).
- ◆ Black and Hispanic adult home health care patients were more likely than White patients to report that home health care providers talked with them about all the medicines they took.
- ◆ Compared with Whites, all other racial and ethnic groups were more likely to report that home health care providers asked to see all the medicines they took.

- ◆ Asian, NHOPI, multiple-race, and Hispanic adult home health care patients were less likely than White patients to report that home health care providers always seemed informed about all the care they got at home.

Also, in the NHQR:

- ◆ Adult home health care patients who spoke a language other than English at home were more likely than English speakers to report that home health care providers talked with them about their medicines and asked to see all the medicines they took.
- ◆ Adult home health care patients who spoke a language other than English at home were less likely than English speakers to report that home health care providers always seemed informed about all the care they got at home.

### Care for Children With Special Health Care Needs

Addressing questions on access to and quality of care for children with chronic conditions is difficult due to the low prevalence of most conditions in children. A standard definition of CSHCN was developed in 1995. This definition was subsequently used to develop the CSHCN Screener Questionnaire and was included in the National Survey of Children With Special Health Care Needs, among other surveys.

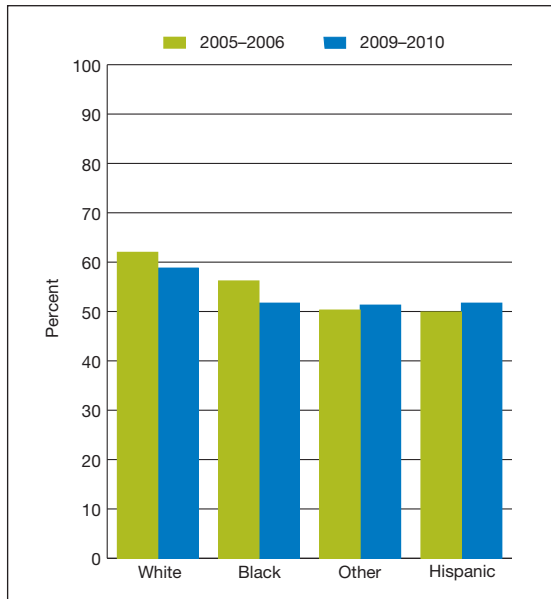
According to the 2009/10 National Survey of Children With Special Health Care Needs, approximately 11.2 million children, or 15.1% of the population ages 0-17, were identified as having a special health care need. The Maternal and Child Health Bureau defines CSHCN as those who have or are at increased 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.

Having greater health care needs makes CSHCN susceptible to cost, quality, and access weaknesses in the health care system. Because they need more medical care, CSHCN have higher medical expenses, on average, than other children. For more than one in five CSHCN, costs of care caused financial problems for their families. According to the Medical Expenditure Panel Survey, the most commonly treated conditions of childhood in 2008 were acute bronchitis, asthma, trauma-related disorders, otitis media (middle ear infection), and mental disorders. A total of \$32.9 billion was spent on these top five conditions.

In addition to facing financial burdens, families of CSHCN spend considerable time caring for them. An estimated 9.7% of CSHCN had families who spent 11 or more hours per week providing or coordinating care in 2005-2006 (HRSA, 2008). Studies have documented that children with chronic conditions in poor families and racial and ethnic minority groups may experience lower quality care.

Children with chronic conditions are reported by their parents to be less likely than other children to receive the full range of needed health services. Among CSHCN, minorities are more likely than White children to be without health insurance coverage or a usual source of care.

**Figure 7.5. Effective care coordination among children with special health care needs, by race/ethnicity, 2005-2006 and 2009-2010**



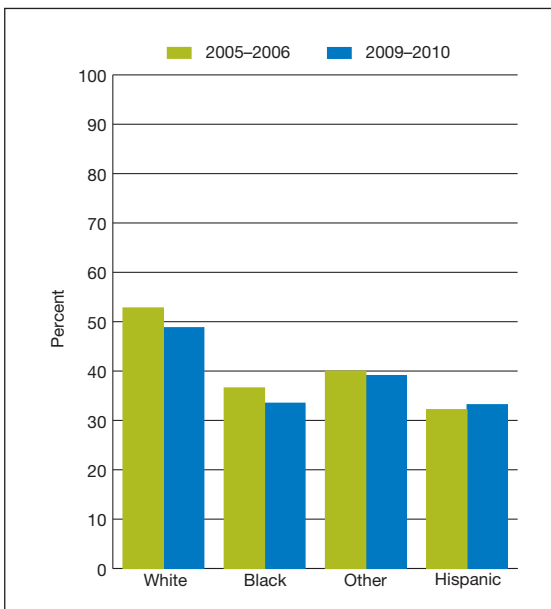
**Source:** Data query from the Child and Adolescent Health Measurement Initiative, Data Resource Center for Child and Adolescent Health Web site, using the 2005/06 and 2009/10 National Survey of Children With Special Health Care Needs.

**Denominator:** CSHCN who were reported to use more than one service during the survey period.

**Note:** White, Black, and Other are non-Hispanic. Hispanic includes all races.

- ◆ In 2005-2006 and 2009-2010, the percentage of CSHCN with effective care coordination was lower for Black and Hispanic children than for White children (Figure 7.5).

**Figure 7.6. Children with special health care needs with a medical home, by race/ethnicity, 2005-2006 and 2009-2010**



**Source:** Data query from the Child and Adolescent Health Measurement Initiative, Data Resource Center for Child and Adolescent Health Web site, using the 2005/06 and 2009/10 National Survey of Children With Special Health Care Needs.

**Denominator:** Civilian noninstitutionalized population ages 0-17 with special health care needs.

**Note:** White, Black, and Other are non-Hispanic. Hispanic includes all races. Medical home outcome is defined by having at least one personal doctor or nurse; family-centered care in previous 12 months; no referral problems; usual source or sources of sick and well care; and effective care coordination

- ◆ In 2005-2006 and 2009-2010, the percentage of CSHCN with a medical home was higher for White children than for Black and Hispanic children (Figure 7.6).

## References

- Bodenheimer T. Coordinating care—a perilous journey through the health care system. *New Engl J Med* 2008;358(10):1064-71.
- Coleman EA, Parry C, Chalmers S, et al. The care transitions intervention: results of a randomized controlled trial. *Arch Intern Med* 2006;166(17):1822-8.
- Health Resources and Services Administration, Maternal and Child Health Bureau. National Survey of Children With Special Health Care Needs Chartbook 2005-2006. Rockville, Maryland: U.S. Department of Health and Human Services; 2008. Available at: <http://mchb.hrsa.gov/cshcn05/NF/7impact/time.htm>.
- Powell-Davies G, Williams AM, Larsen K, et al. Coordinating primary health care: an analysis of the outcomes of a systematic review. *Med J Aust* 2008;188(8 Suppl):S65-68.
- Shojania K, McDonald K, Wachter R, et al. Closing the quality gap: a critical analysis of quality improvement strategies—Volume 7: Care coordination. Rockville, MD: Agency for Healthcare Research and Quality; 2007. Available at: <http://www.ahrq.gov/clinic/tp/caregaptp.htm>. Accessed September 12, 2013.
- Whittington J, Cohen H. OSF Healthcare’s journey in patient safety. *Qual Manag Health Care* 2004;13(1): 53-9.

## Chapter 8. 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 (IOM, 2013). Improving efficiency in the Nation's health care system is an important component of Department of Health and Human Services 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, the Agency for Healthcare Research and Quality (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. This report 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 Improvement in Health Care*,<sup>i</sup> “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<sup>ii</sup>:

- ◆ Preventable hospitalizations:
  - Potentially avoidable hospitalization rates.
  - Excess avoidable hospitalizations.
- ◆ Preventable emergency department visits:
  - Emergency treatment for mental illness or substance abuse.
- ◆ Perforated appendixes.

---

<sup>i</sup> Available at <http://www.ahrq.gov/workingforquality/nqs/nqs2011annlrpt.htm>.

<sup>ii</sup> Inappropriate medications measure is now in Chapter 4, Patient Safety.

## Findings

### Preventable Hospitalizations

#### 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).

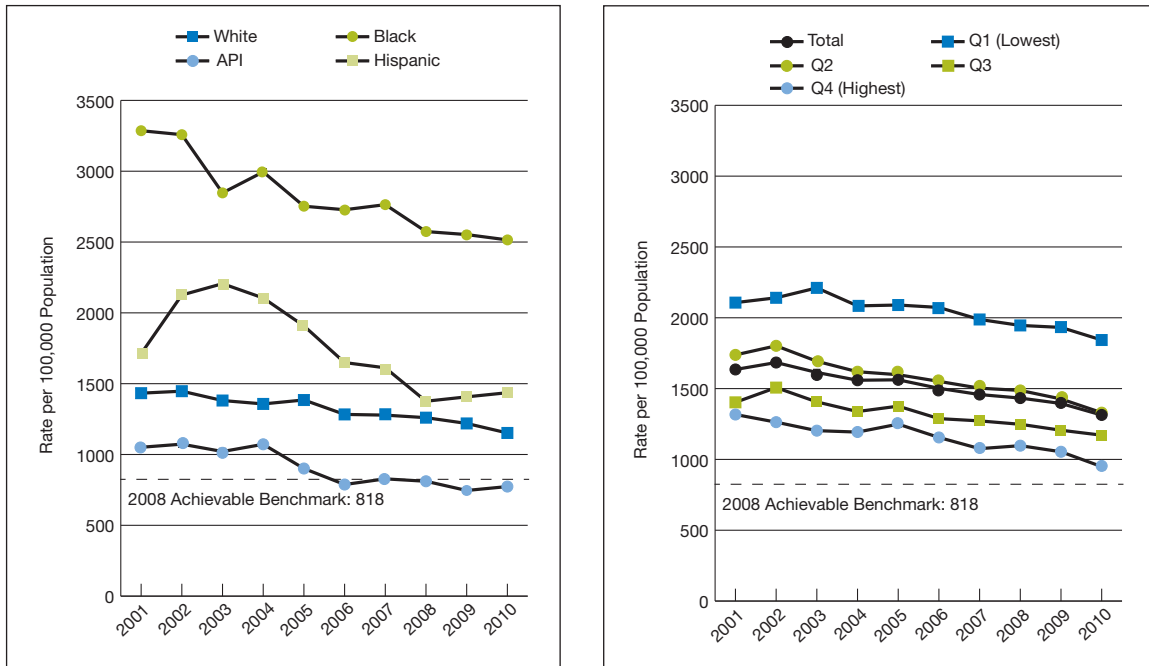
Not all hospitalizations that the AHRQ PQIs track are preventable. But ambulatory care-sensitive conditions are those for which good outpatient care can prevent the need for hospitalization or for which early intervention can prevent complications or more severe disease.

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 8.1. Potentially avoidable hospitalization rates, by race/ethnicity and area income, 2001-2010**



**Key:** API = Asian or Pacific Islander.

**Source:** Agency for Healthcare Research and Quality (AHRQ), Healthcare Cost and Utilization Project, Nationwide Inpatient Sample and State Inpatient Databases disparities analysis file, and AHRQ Quality Indicators, modified version 4.1, 2001-2010.

**Denominator:** U.S. resident population age 18 and over.

**Note:** For this measure, lower rates are better. Annual rates are adjusted by age and gender. White, Black, and API are non-Hispanic. Hispanic includes all races. Income quartiles are based on median income of ZIP Code of patient's residence.

- ◆ From 2001 to 2010, the overall rate of avoidable hospitalizations fell from 1,635 to 1,313 per 100,000 population. Declines in avoidable hospitalizations were observed among all racial/ethnic and income groups (Figure 8.1).
- ◆ In all years, rates of potentially avoidable hospitalizations were higher among Blacks than Whites and lower among Asians and Pacific Islanders (APIs) than Whites. Except in 2001 and 2008, rates were also higher among Hispanics than 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 population.<sup>iii</sup> The overall achievable benchmark could not be attained for 14 years.
- ◆ The only racial/ethnic group to attain the achievable benchmark as of 2010 was APIs, whereas Whites could not attain the benchmark for 11 years. Blacks would not attain the benchmark for 20 years, but Hispanics could attain the benchmark in 8 years.
- ◆ High-income groups would attain the benchmark sooner than lower income groups (lowest quartile, about 31 years; second quartile, 11 years; third quartile, 11 years; and highest quartile, 4 years).

<sup>iii</sup> The top 3 States that contributed to the achievable benchmark are Hawaii, Utah, and Washington.

Also, in the NHQR:

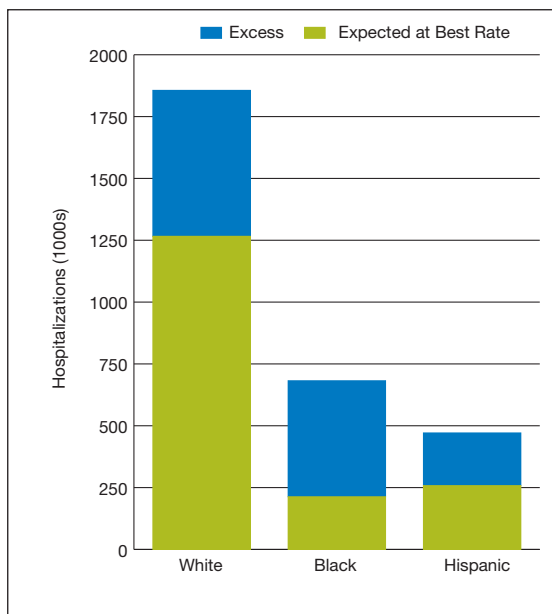
- ◆ In all years, adults ages 45-64 and age 65 and over had higher rates of potentially avoidable ED visits compared with adults ages 18-44.

### Excess Avoidable Hospitalizations

The following analysis estimates numbers of excess preventable hospitalizations for 2010 by comparing adjusted rates of the AHRQ PQI composite with the 2010 top 4 State achievable benchmark rate of 786 hospitalizations per 100,000 population. Overall, there were 1,823,430 preventable hospitalizations expected at best rate and 1,271,601 excess hospitalizations.

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 8.2. Excess number of potentially preventable hospitalizations, by race/ethnicity, 2010**

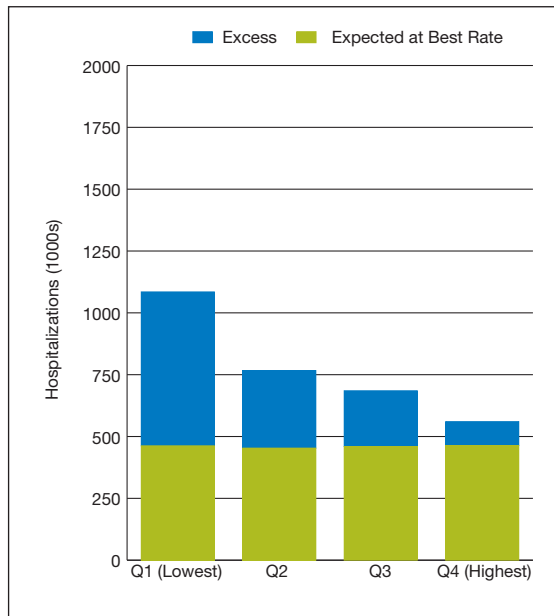


**Source:** Agency for Healthcare Research and Quality (AHRQ), Healthcare Cost and Utilization Project, HCUP State Inpatient Databases disparities analysis file, and AHRQ Quality Indicators, modified version 4.1, 2010.

- ◆ In 2010, if Whites had the benchmark rate of preventable hospitalizations, they would have had about 590,000 fewer hospitalizations (Figure 8.2). Instead of costing \$15.1 billion, preventable hospitalizations among Whites would have cost \$10.3 billion, saving \$4.8 billion.
- ◆ If Blacks had the benchmark rate of preventable hospitalizations, they would have had about 470,000 fewer hospitalizations. Instead of costing \$5.6 billion, preventable hospitalizations among Blacks would have cost \$1.7 billion, saving \$3.9 billion.
- ◆ If Hispanics had the benchmark rate of preventable hospitalizations, they would have had about 215,000 fewer hospitalizations. Instead of costing \$4.3 billion, preventable hospitalizations among Hispanics would have cost \$2.3 billion, saving \$2.0 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 top 4 State achievable benchmark<sup>iv</sup> for the composite rate of preventable hospitalizations in 2010 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 8.3. Excess number of potentially preventable hospitalizations, by income, 2010**



**Source:** Agency for Healthcare Research and Quality (AHRQ), Healthcare Cost and Utilization Project, Nationwide Inpatient Sample, and AHRQ Quality Indicators, modified version 4.1, 2010.

- ◆ In 2010, if residents of the neighborhoods in the lowest income quartile had the benchmark rate of preventable hospitalizations, they would have had about 620,000 fewer hospitalizations (Figure 8.3). Instead of costing \$8.5 billion, preventable hospitalizations among income quartile 1 residents would have cost \$3.6 billion, saving \$4.9 billion.
- ◆ If residents of income quartile 2 neighborhoods had the benchmark rate of preventable hospitalizations, they would have had about 315,000 fewer hospitalizations. Instead of costing \$6.0 billion, preventable hospitalizations would have cost \$3.5 billion, saving \$2.5 billion.
- ◆ If residents of income quartile 3 neighborhoods had the benchmark rate of preventable hospitalizations, they would have had 225,000 fewer hospitalizations. Instead of costing \$5.9 billion, preventable hospitalizations would have cost \$3.9 billion, saving \$2.0 billion.
- ◆ If residents of the highest income quartile neighborhoods had the benchmark rate of preventable hospitalizations, they would have had about 100,000 fewer hospitalizations. Instead of costing \$5.1 billion, preventable hospitalizations would have cost \$4.2 billion, saving \$0.9 billion.

## Preventable Emergency Department Visits

### Emergency Treatment for Mental Illness or Substance Abuse

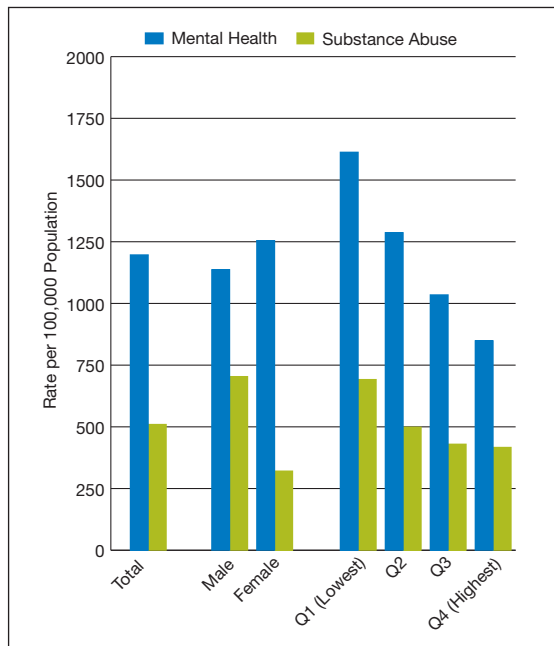
When high-quality mental health care is not available in the community, patients with mental illness tend to rely on emergency departments (EDs) for care (Alakeson, et al., 2010). EDs are often not staffed or equipped to provide optimal psychiatric care, and patients with mental illness often wait long periods before receiving appropriate care. ED staff observing patients waiting for psychiatric care cannot efficiently care for patients with other medical emergencies. This growing problem reflects a need for greater

<sup>iv</sup> The top 4 State achievable benchmark is an average of the following States' estimates: Colorado, Oregon, Utah, and Washington.

collaboration among hospital emergency departments and community mental health providers in the delivery of care to individuals who present to emergency departments and are also in need of mental health services.

This measure provides information on the quality of the local mental health care system and the degree to which EDs function as safety net providers for people with mental health and substance abuse problems.

**Figure 8.4. Rate of emergency department visits with a principal diagnosis related to mental health and alcohol or substance abuse, per 100,000 population, by sex and area income, 2010**



**Source:** Agency for Healthcare Research and Quality, Healthcare Cost and Utilization Project, Nationwide Emergency Department Sample, 2010.

**Denominator:** U.S. population.

**Note:** For this measure, lower rates are better. Substance abuse includes visits for co-occurring substance abuse and mental health disorders.

- ◆ In 2010, the rate of ED visits for mental health was 1,197 per 100,000 population, and the rate of ED visits for substance abuse (including co-occurring substance abuse and mental health disorders) was 510 per 100,000 population (Figure 8.4).
- ◆ Compared with males, females had a higher rate of ED visits for mental health but a lower rate of ED visits for substance abuse.
- ◆ Residents of the highest income quartile had the lowest rate of ED visits for mental health. For substance abuse, residents of the highest income quartile had a lower rate than residents of the first and second quartiles.

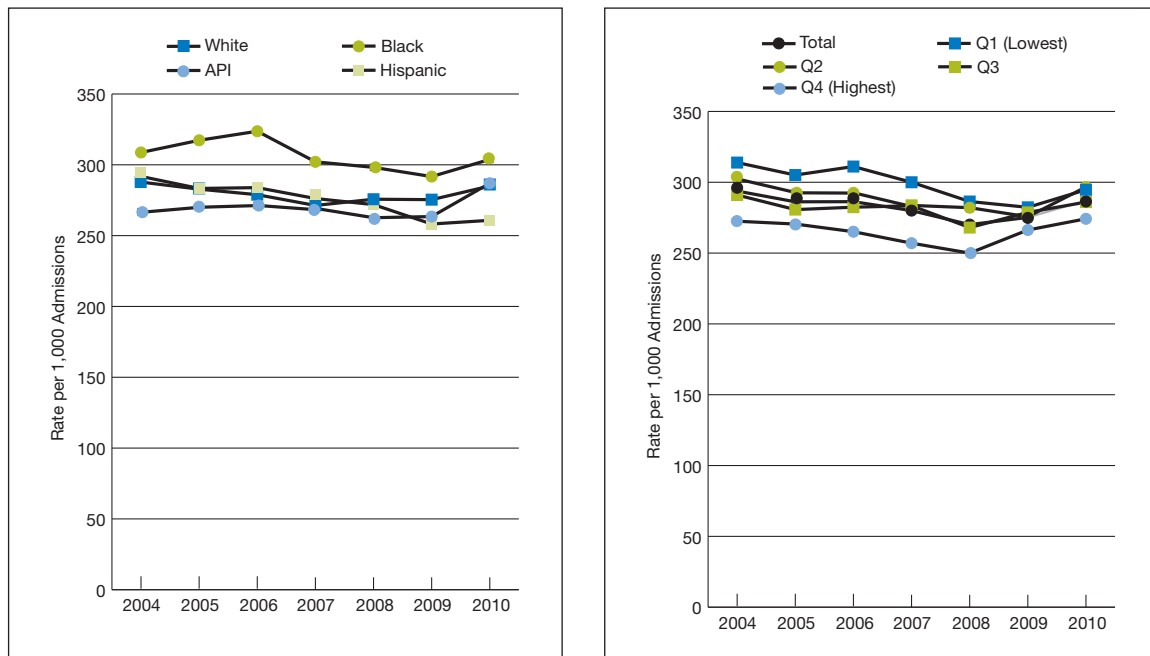
Also, in the NHQR:

- ◆ Children ages 0-17 had the lowest rate of ED visits for mental health compared with adults of all age groups, except for adults ages 65-84 (the difference was not statistically significant). Children ages 0-17 had the lowest rate compared with all other age groups for substance abuse.
- ◆ Residents of medium metropolitan and micropolitan areas had higher rates of ED visits for mental health compared with residents of large fringe metropolitan areas (suburbs). Residents of large central metropolitan areas had higher rates of ED visits for substance abuse compared with residents of large fringe metropolitan areas.

## 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 8.5. Perforated appendixes per 1,000 admissions for appendicitis, age 18 and over, by race/ethnicity and area income, 2004-2010**



**Key:** API = Asian or Pacific Islander.

**Source:** Agency for Healthcare Research and Quality, Healthcare Cost and Utilization Project, Nationwide Inpatient Sample and State Inpatient Databases disparities analysis file, 2004-2010.

**Note:** For this measure, lower rates are better. White, Black, and API are non-Hispanic. Hispanic includes all races.

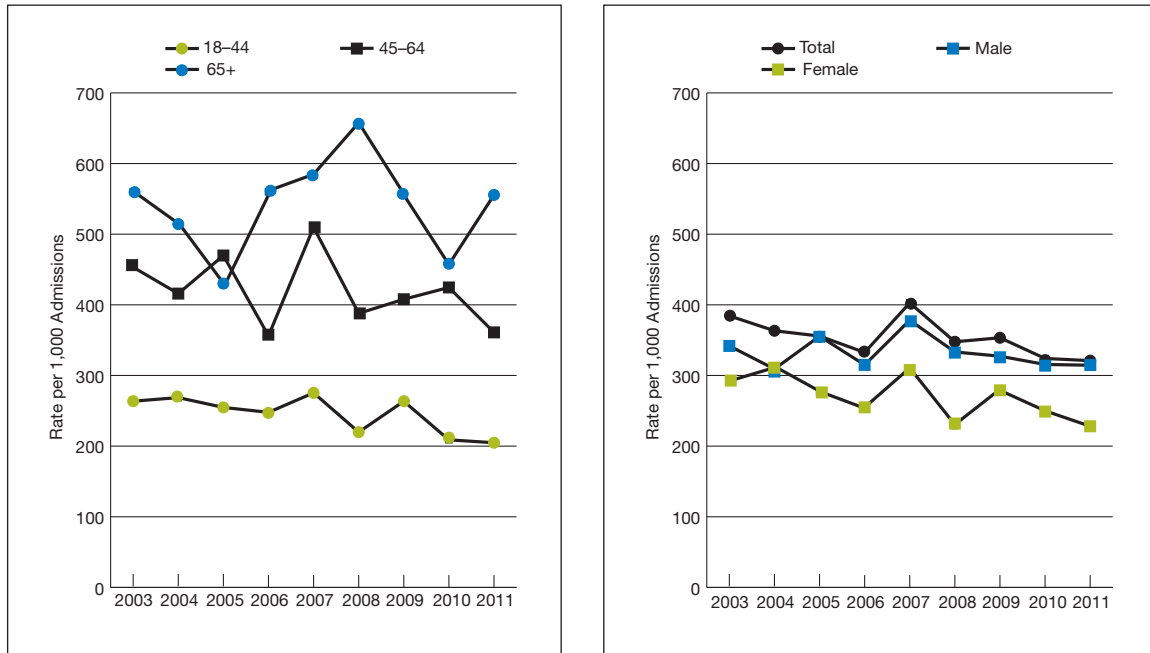
- ◆ From 2004 to 2010, there were no statistically significant differences between racial/ethnic groups or income groups in the rate of perforated appendixes (Figure 8.5).

Also, in the NHQR:

- ◆ In 2010, the rate of perforated appendixes was higher for those age 65 and over and those ages 45-64 than for those ages 18-44.

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 8.6. Perforated appendixes per 1,000 admissions for appendicitis, age 18 and over, in IHS, Tribal, and contract hospitals, by age and sex, 2003-2011**



**Source:** Indian Health Service, National Patient Information Reporting System, National Data Warehouse, Workload and Population Data Mart, 2003-2011.

**Note:** For this measure, lower rates are better. The total for each year is age adjusted.

- ◆ In 2011, 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 (361.0 and 555.6 per 1,000 appendicitis admissions, respectively, compared with 204.8; Figure 8.6).
- ◆ Also in 2011, for IHS facilities, the rate of perforated appendixes for males was higher than for females (314.5 per 1,000 appendicitis admissions compared with 228.1). This is similar to national trends. Males are more likely to delay treatment, resulting in higher hospitalization rates.

## References

Alakeson V, Pande N, Ludwig M. A plan to reduce emergency room “boarding” of psychiatric patients. *Health Aff (Millwood)* 2010 Sep;29(9):1637-42.

Institute of Medicine. Interim report of the Committee on Geographic Variation in Health Care Spending and Promotion of High-Value Care: preliminary committee observations. Washington, DC: National Academies Press; 2013. Available at: <http://iom.edu/Reports/2013/Geographic-Variation-in-Health-Care-Spending-and-Promotion-of-High-Care-Value-Interim-Report.aspx>. Accessed September 13, 2013.

McGlynn E. Identifying, categorizing, and evaluating health care efficiency measures. Rockville, MD: Agency for Healthcare Research and Quality; 2008. AHRQ Publication No. 08-0030. Available at: <http://www.ahrq.gov/research/findings/final-reports/efficiency/index.html>. Accessed September 13, 2013.

## Chapter 9. Health System Infrastructure

In its report *Future Directions for the National Healthcare Quality and Disparities Reports*, 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:

These 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. Care coordination and 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 required 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 illustrate the strength of the U.S. health system infrastructure and how this infrastructure may influence quality of care. The chapter is divided into three sections, each addressing a unique aspect of the health care system:

- ◆ Health information technology (IT),
- ◆ Workforce diversity, and
- ◆ Health care safety net.

The chapter begins with data to describe the adoption and use of health IT. Use of health IT can be an effective way to manage health care costs and improve quality of care.

The recently released report *Equity in the Digital Age: How Health Information Technology Can Reduce Disparities*<sup>i</sup> points out that the use of health IT is an opportunity to dramatically improve patient understanding of their medication instructions and prescriptions. Having a limited understanding of English can increase the odds of misunderstanding English language prescription labels up to three times for Spanish-speaking Latinos and for those who speak Korean, and up to four times for those speaking dialects of Chinese. Documenting the patient's language as part of the electronic health record and electronic prescription can help providers ensure that medication instructions and prescription drug labels will be understandable.

---

<sup>i</sup> Available at [http://cpehn.org/sites/default/files/resources-files/pdfs/EquityInTheDigitalAge2013\\_0.pdf](http://cpehn.org/sites/default/files/resources-files/pdfs/EquityInTheDigitalAge2013_0.pdf).

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).

After presenting measures on the use of health IT, we present data on health care workforce diversity. 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 nursing, dental, pharmacy, allied health, and primary care physician workforce. This year, the NHQR and NHDR present data on the geographic and racial/ethnic distribution of nurse practitioners and physician assistants.

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 and 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 of this chapter 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 disease surveillance and reporting for public health purposes.



The IOM report *Future Directions for the National Healthcare Quality and Disparities Reports* highlights the adoption and use of health IT as a tool to manage cost and improve the quality of care delivered (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 Medicare and Medicaid EHR Incentive Programs provide financial incentives for the “meaningful use” of certified EHR technology to improve patient care. One component of meaningful use is electronic prescribing (e-prescribing). An e-prescribing system enables electronic transmission of prescriptions to pharmacies from a provider’s office. E-prescribing was intended to improve patient safety by eliminating the time gap between provider office and pharmacy, reducing medication errors, improving quality of care and patient satisfaction, and reducing illegible prescriptions (Kannry, 2011).

Poor adherence to medication therapy is a large and costly problem in the United States. The World Health Organization estimates that as many as 50% of patients do not adhere fully to their medication treatment, leading to 125,000 premature deaths and billions in preventable health care costs. Analysis suggests that an increase in first-filled medication adherence combined with other e-prescribing benefits could, over the next 10 years, lead to between \$140 billion and \$240 billion in health care savings and improved health outcomes (Health Manag Technol, 2012).

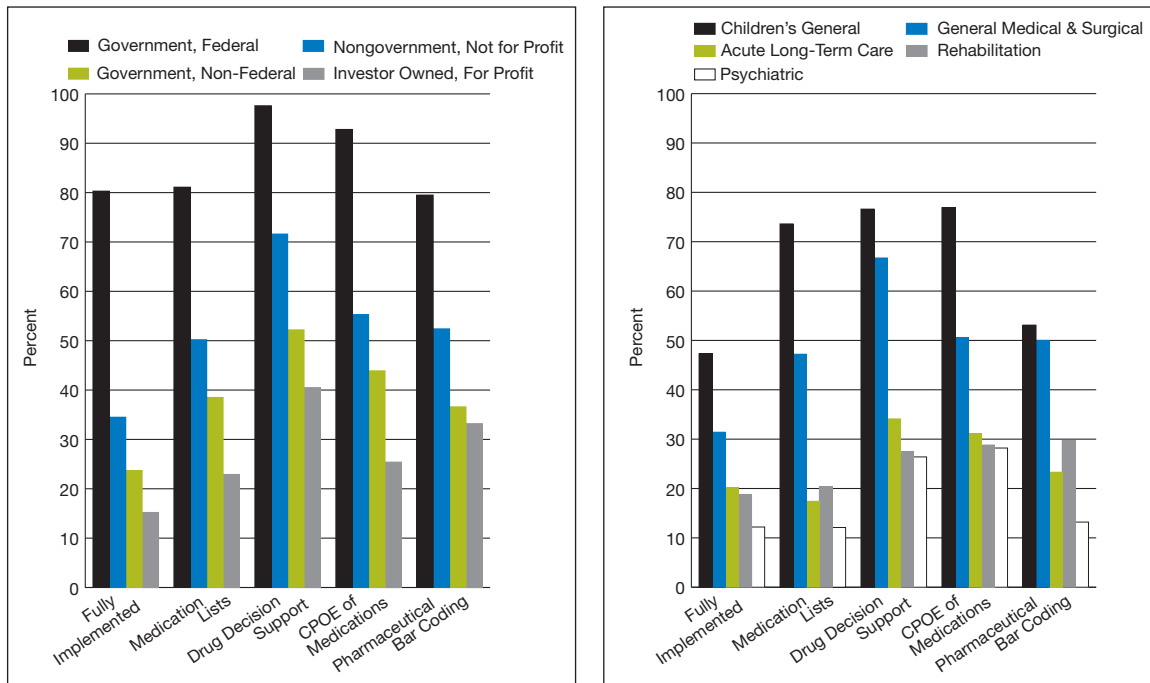
The recent report *Equity in the Digital Age*, noted above, highlights the importance of ensuring that everyone benefits from the tremendous potential of health IT to improve access to care, enhance health care quality, and create targeted strategies that promote health equity. Implementation of EHR advancements must respond to the needs of all populations, particularly racial and ethnic minority communities, immigrants, and people with limited English proficiency.

### **Electronic Health Records in Hospitals**

The 2012 Commonwealth Fund report *Using Electronic Health Records To Improve Quality and Efficiency: The Experience of Leading Hospitals* found that successful implementation of EHRs depends on strong leadership, full involvement of clinical staff in design and implementation, and mandatory staff training. EHRs can improve health care quality and patient safety through the use of checklists and alerts and promotion of evidence-based practices. EHRs can increase efficiency by alerting physicians to duplicate orders and enabling faster prescribing and test ordering while reducing errors and redundancy. This year’s NHDR tracks overall EHR use in hospitals and inclusion of several specific components.

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.

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 account for a larger percentage of total uncompensated costs compared with for-profit hospital groups (GAO, 2005).

**Figure 9.1. Electronic health record use in hospitals, by hospital control and hospital type, 2011**

**Key:** CPOE = computerized provider order entry.

**Source:** American Hospital Association, 2011 Annual Survey Information Technology Supplement.

**Note:** Data were obtained from an average of 3,414 hospitals.

### Fully Implemented EHR

- ◆ In 2011, 80.3% of hospitals run by the Federal Government, 34.5% of not-for-profit, 23.7% of non-Federal, and 15.2% of investor-owned hospitals had a fully implemented EHR system (Figure 9.1).
- ◆ More than 47% of children's general hospitals, 31.4% of general medical and surgical hospitals, 20.2% of acute long-term care hospitals, 18.8% of rehabilitation hospitals, and 12.2% of psychiatric hospitals had a fully implemented EHR system.
- ◆ Nearly 52% of hospitals that are members of the Council of Teaching Hospitals (COTH) and 27.8% of non-COTH member hospitals had a fully implemented EHR system (data not shown).

### Medication Lists

- ◆ In 2011, 81.1% of hospitals run by the Federal Government, 50.2% of not-for-profit, 38.5% of non-Federal, and 22.9% of investor-owned hospitals had an EHR system that supports medication lists.
- ◆ More than 73% of children's general hospitals, 47.2% of general medical and surgical hospitals, 17.4% of acute long-term care hospitals, 20.4% of rehabilitation hospitals, and 12.1% of psychiatric hospitals had an EHR system that supports medication lists.
- ◆ About 64% of hospitals that are members of COTH and 41.8% of non-COTH member hospitals had an EHR system that supports medication lists (data not shown).

### Drug Decision Support

- ◆ In 2011, 97.6% of hospitals run by the Federal Government, 71.6% of not-for-profit, 52.2% of non-Federal, and 40.5% of investor-owned hospitals had an EHR system with a component for drug decision support.

- ◆ Nearly 77% of children's general hospitals, 66.7% of general medical and surgical hospitals, 34.1% of acute long-term care hospitals, 27.5% of rehabilitation hospitals, and 26.4% of psychiatric hospitals had an EHR system with a component for drug decision support.
- ◆ Eighty-three percent of hospitals that are members of COTH and 60.3% of non-COTH member hospitals had an EHR system with a component for drug decision support (data not shown).

### Computerized Provider Order Entry of Medications

- ◆ In 2011, 92.8% of hospitals run by the Federal Government, 55.3% of not-for-profit, 43.9% of non-Federal, and 25.4% of investor-owned hospitals had an EHR system that supports CPOE of medications.
- ◆ About 77% of children's general hospitals, 50.6% of general medical and surgical hospitals, 31.1% of acute long-term care hospitals, 28.8% of rehabilitation hospitals, and 28.2% of psychiatric hospitals had an EHR system that supports CPOE of medications.
- ◆ More than 80% of hospitals that are members of COTH and 45.7% of non-COTH member hospitals had an EHR system that supports CPOE of medications (data not shown).

### Pharmaceutical Bar Coding

- ◆ In 2011, 79.5% of hospitals run by the Federal Government, 52.4% of not-for-profit, 36.6% of non-Federal, and 33.2% of investor-owned hospitals had an EHR system that supports pharmaceutical bar coding.
- ◆ About 53% of children's general hospitals, 50.0% of general medical and surgical hospitals, 23.3% of acute long-term care hospitals, 29.7% of rehabilitation hospitals, and 13.2% of psychiatric hospitals had an EHR system that supports pharmaceutical bar coding.
- ◆ More than half (54%) of hospitals that are members of COTH and 45.3% of non-COTH member hospitals had an EHR system that supports pharmaceutical bar coding (data not shown).

Also, in the NHQR:

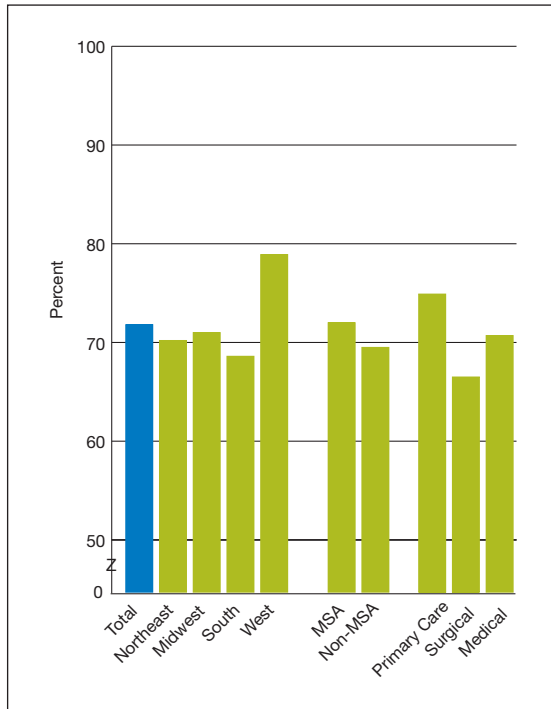
- ◆ In 2011, 29.6% of hospitals had a fully implemented EHR system, and the Midwest had the highest implementation rate (36.8%). Nearly 30% of hospitals in the West, 27.2% of hospitals in the South, and 18.3% of hospitals in the Northeast had a fully implemented EHR system.
- ◆ In 2011, 32.2% of urban hospitals and 26.5% of rural hospitals had a fully implemented EHR system.

### Electronic Health Records in Physician Practices

In addition to alerts, guidelines, and electronic ordering, efficient exchange of health information between providers can lead to better care and improved patient safety. Many factors outside of the physician's control may help determine his or her ability to adopt an EHR system. Unfortunately, practice size and availability of resources affect EHR adoption rates. Thus, the potential quality and efficiency benefits of an EHR system may be unavailable to resource-constrained organizations that are constantly challenged to "do more with less" (McAlearney, et al., 2010).

The most frequent reasons cited for not adopting health IT are cost and potential loss of productivity. EHRs cost almost \$44,000 per full-time-equivalent provider, with ongoing costs of \$8,400 annually (Samantaray, et al., 2011).

**Figure 9.2. Office-based physicians with an electronic health record system, by region, metropolitan status, and specialty, 2012**



**Key:** MSA = metropolitan statistical area.

**Source:** Centers for Disease Control and Prevention, National Center for Health Statistics, National Ambulatory Medical Care Survey (NAMCS), 2012 NAMCS National Electronic Health Records Survey.

**Denominator:** Non-federally employed physicians who provide direct patient care in the 50 States and the District of Columbia, excluding radiologists, anesthesiologists, and pathologists.

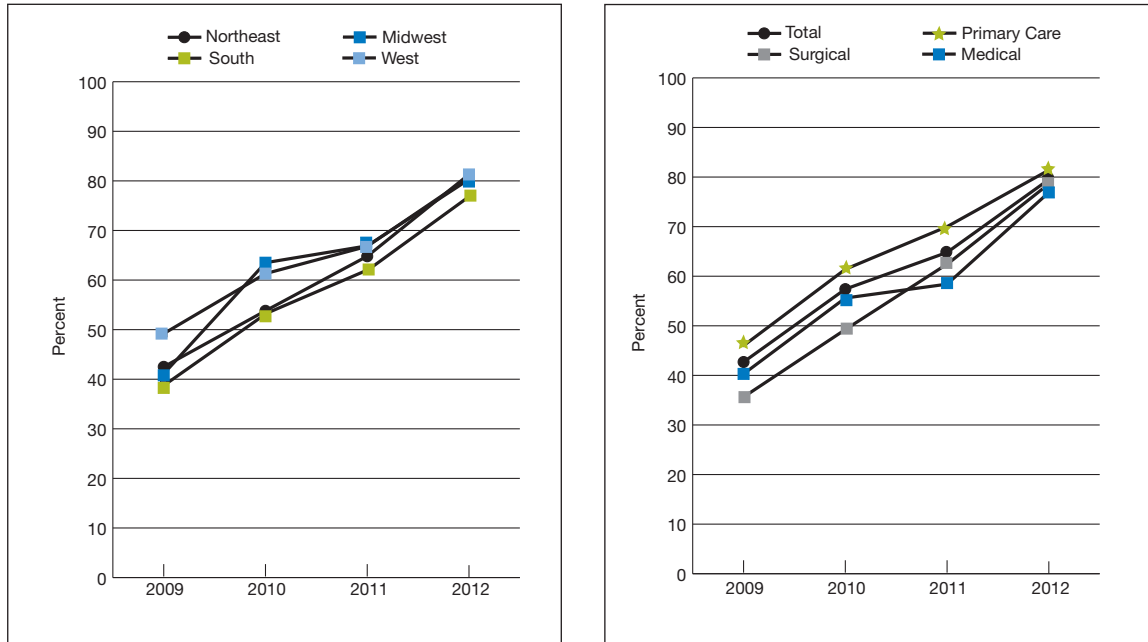
- ◆ In 2012, 78.9% of physician offices in the West, 71% in the Midwest, 70.2% in the Northeast, and 68.6% in the South had an EHR system (Figure 9.2).
- ◆ In 2012, 72.0% of physician offices in metropolitan areas and 69.5% of physician offices in nonmetropolitan areas had an EHR system.
- ◆ In 2012, 74.9% of primary care specialists, 70.7% of medical specialists, and 66.5% of surgical specialists had an EHR system.

Also, in the NHQR:

- ◆ In 2012, 71.8% of physicians had an EHR system.
- ◆ Nearly 84% of physicians under age 35 had an EHR system, which is significantly higher than the 62.8% of physicians age 55 and over who had an EHR system.

E-prescribing is widely recognized as a component of the prescribing process that facilitates handoffs, improves clinical decisionmaking, and may improve medication adherence (Johnson & Lehmann, 2013). Also, in the outpatient setting, e-prescribing is critical given the high rate of prescribing errors and adverse drug events, as well as the frequency with which medications are prescribed (Abramson, et al., 2013). In 2011, 570 million electronic prescriptions were written, compared with 326 million in 2010 and 191 million in 2009 (Jariwala, et al., 2013).

**Figure 9.3. Office-based physicians with a computerized system for ordering prescriptions, by region and specialty, 2009-2012**



**Source:** Centers for Disease Control and Prevention, National Center for Health Statistics, National Ambulatory Medical Care Survey (NAMCS), 2009-2010 NAMCS Core and Electronic Medical Record Supplement and 2011-2012 NAMCS National Electronic Health Records Survey.

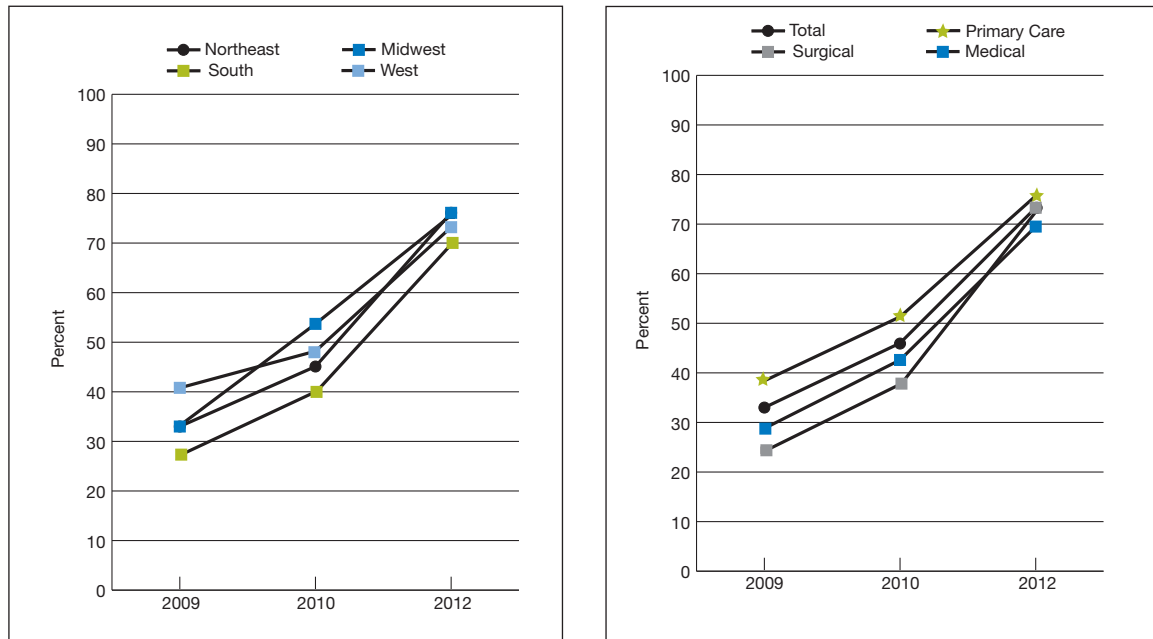
**Denominator:** Non-federally employed physicians who provide direct patient care in the 50 States and the District of Columbia, excluding radiologists, anesthesiologists, and pathologists.

- ◆ From 2009 to 2012, the percentage of physician offices with an e-prescribing system improved from 39.0% to 77.1% in the South, from 41.1% to 80.3% in the Midwest, from 42.5% to 81.3% in the Northeast, and from 49.2% to 80.7% in the West (Figure 9.3).
- ◆ During this same period, the percentage of surgical practices with an e-prescribing system improved from 35.9% to 78.9%. For medical specialty practices, the percentage improved from 40.3% to 76.9%, and for primary care practices, the percentage improved from 46.0% to 81.4%.
- ◆ The percentage of physician offices with an e-prescribing system improved from 43.4% to 80.0% in metropolitan areas and from 36.6% to 75.4% in nonmetropolitan areas (data not shown).

Also, in the NHQR:

- ◆ In all years, the percentage of practices using e-prescribing was significantly higher for practices with more than 10 physicians than for practices with 10 or fewer physicians.

**Figure 9.4. Office-based physicians with a computerized system for sending prescriptions electronically to pharmacies, by region and specialty, 2009-2010 and 2012**



**Source:** Centers for Disease Control and Prevention, National Center for Health Statistics, National Ambulatory Medical Care Survey (NAMCS), 2009-2010 NAMCS Core and Electronic Medical Record Supplement and 2012 NAMCS National Electronic Health Records Survey.

**Denominator:** Non-federally employed physicians who provide direct patient care in the 50 States and the District of Columbia, excluding radiologists, anesthesiologists, and pathologists.

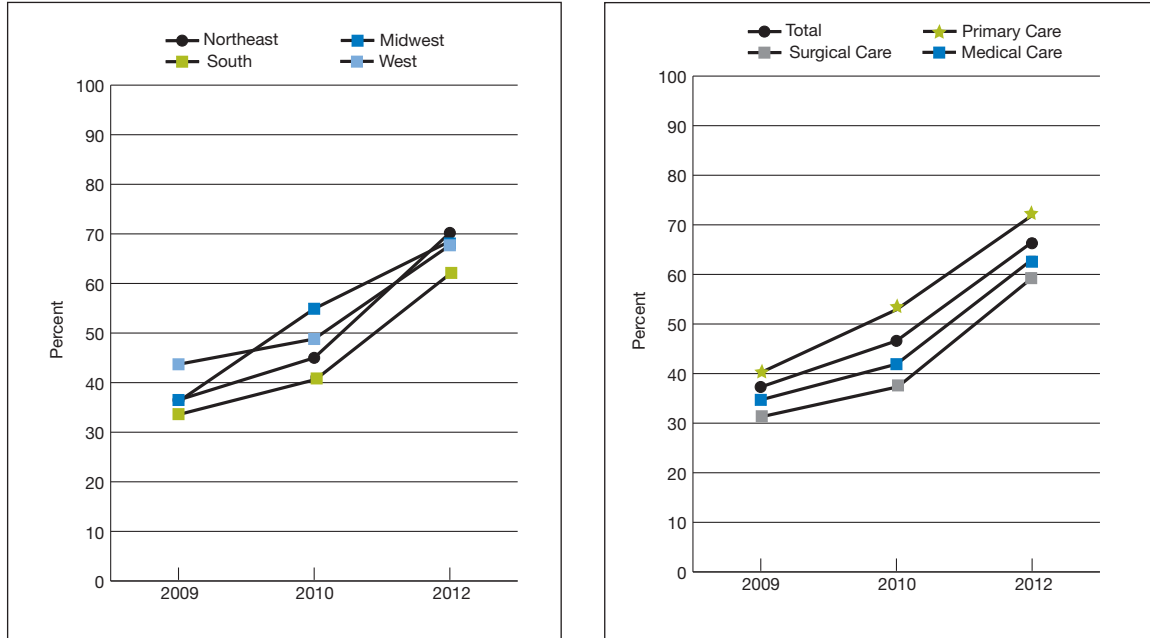
**Note:** The 2011 data were not available.

- ◆ From 2009 to 2012, the percentage of physician offices with a computerized system for sending prescriptions electronically to pharmacies improved from 27.4% to 70.1% in the South, from 33.0% to 76.1% in the Northeast, from 33.2% to 75.6% in the Midwest, and from 40.8% to 73.2% in the West (Figure 9.4).
- ◆ During this same period, the percentage of surgical practices with a computerized system for sending prescriptions electronically to pharmacies improved from 24.4% to 72.9%. For medical specialty practices, the percentage increased from 28.8% to 69.5%, and for primary care practices, from 38.4% to 75.7%.
- ◆ The percentage of physician offices with a computerized system for sending prescriptions electronically to pharmacies improved from 33.4% to 73.8% in metropolitan areas and from 30.4% to 69.2% in nonmetropolitan areas (data not shown).

Also, in the NHQR:

- ◆ From 2009 to 2012, the overall adoption of computerized systems for sending prescriptions electronically to pharmacies showed significant improvement from 33.0% to 73.3%. All physician age groups and practice sizes showed improvement.

**Figure 9.5. Office-based physicians with an e-prescribing system with a component for providing warnings of drug interactions or contraindications, by region and specialty, 2009-2010 and 2012**



**Source:** Centers for Disease Control and Prevention, National Center for Health Statistics, National Ambulatory Medical Care Survey (NAMCS), 2009-2010 NAMCS Core and Electronic Medical Record Supplement and 2012 NAMCS National Electronic Health Records Survey.

**Denominator:** Non-federally employed physicians who provide direct patient care in the 50 States and the District of Columbia, excluding radiologists, anesthesiologists, and pathologists.

**Note:** The 2011 data were not available.

- ◆ From 2009 to 2012, the percentage of physician offices with an e-prescribing system with a component for providing warnings of drug interactions or contraindications improved from 33.7% to 62.2% in the South, from 36.2% to 68.5% in the Midwest, from 36.5% to 70.2% in the Northeast, and from 43.7% to 67.7% in the West (Figure 9.5).
- ◆ During this same period, the percentage of surgical practices with an e-prescribing system with a component for providing warnings of drug interactions or contraindications improved from 31.4% to 59.6%. For medical specialty practices, the percentage improved from 34.7% to 63.0%, and for primary care practices, from 40.2% to 71.9%.
- ◆ The percentage of physician offices with an e-prescribing system with a component for providing warnings of drug interactions or contraindications improved from 37.9% to 67.0% in metropolitan areas and from 32.2% to 63.0% in nonmetropolitan areas (data not shown).

Also, in the NHQR:

- ◆ In 2012, 74.8% of physicians under age 35, 72.3% of physicians ages 45-54, and 71.7% of physicians ages 35-44 had an e-prescribing system with a component for providing warnings of drug interactions or contraindications. Only 59.2% of physicians age 55 and over had an e-prescribing system with a component for providing warnings of drug interactions or contraindications, which was significantly lower than the percentage for physicians under age 35.

### Workforce Diversity

Diversity in the composition of the health care workforce is important because it affects outcomes, quality, safety, and satisfaction.

Racial and ethnic disparities in health outcomes and the lack of health providers highlight the need for primary care providers. Members of racial and ethnic minority groups, who make up the majority of inner-city residents, are less likely than others to receive needed services, including treatment for HIV infection, mental health problems, cardiovascular disease, and cancer.

Health disparities affecting minorities have been traced to many causes, including language and cultural barriers that can deter minorities from seeking care or lead to suboptimal care. Racial and ethnic concordance in health care provider-patient relationships has been shown to improve care. Race-concordant patient-provider relationships, as opposed to race-discordant, have been found to result in longer medical visits with higher ratings of positive affect, shared decisionmaking, and satisfaction (Schoenthaler, et al., 2012).

Additional research has found that health care providers from groups underrepresented in the health professions are more likely to serve minority and economically disadvantaged patients. It has also been found that Black and Hispanic physicians practice in areas with larger Black and Hispanic populations than other physicians (Brown, et al., 2009).

Language differences between patients and clinicians jeopardize communication, leading to compromised care, increased health disparities and inequalities, dissatisfaction with care, and inefficiency in the health care system (Tang, et al., 2011). Research has also shown that linguistic minorities suffer more serious adverse outcomes from medical errors and receive worse care than English-speaking patients (Tang, et al., 2011).

Patient-clinician language concordance can enhance health care quality and equity, patient safety and satisfaction, and resource stewardship. Workforce diversity has been associated with both greater satisfaction with care received and improved provider-patient communication. Conversely, the lack of a diverse workforce may foster linguistic and cultural barriers, bias, and clinical uncertainty within the provider-patient relationship (Mitchell & Lassiter, 2012).

The adequacy and distribution of the primary care workforce to meet the current and future needs of Americans continue to be a cause for concern. Nurse practitioners, along with physicians and physician assistants, provide most of the primary care in the United States, with nurse practitioners accounting for 19% of the U.S. primary care workforce and physician assistants accounting for 7% (O'Neil & Dower, 2011).

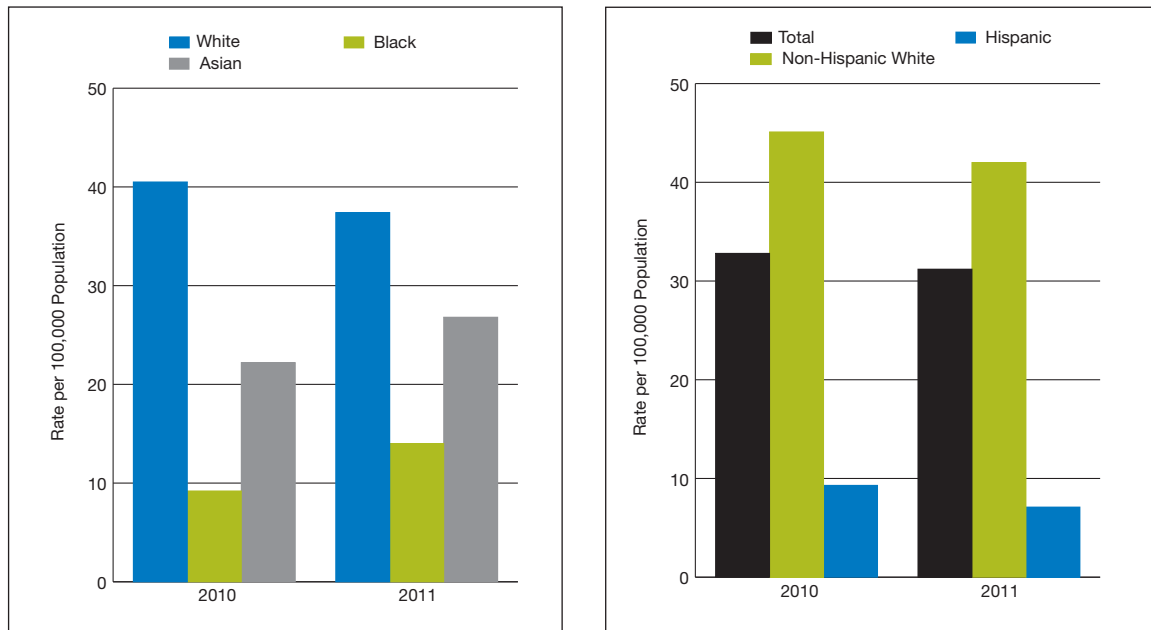
Nurse practitioners provide an extensive range of care that includes taking health histories and providing complete physical exams. They diagnose and treat acute and chronic illnesses, provide immunizations, prescribe and manage medications and other therapies, order and interpret lab tests and x rays, and provide health education and supportive counseling.

Nurse practitioners deliver primary care in small and large, private and public practices and in clinics, schools, and workplaces. They function in both independent and collaborative practice arrangements, often taking the lead clinical, management, and accountability roles in innovative primary care models such as nurse-managed health centers and retail clinics (Naylor and Kurtzman, 2010).



Physician assistants practice collaboratively with physicians to address the health needs of the population served. Multiple studies have compared the scope of patient care services provided by physician assistants and physicians in primary care settings and have concluded that physician assistants can perform 85% to 90% of services traditionally provided by primary care physicians (Hooker & Everett, 2012). Physician assistants practicing in primary care are more likely to be female, older, and Hispanic (Coplan, et al., 2013).

**Figure 9.6. Rate of nurse practitioners per 100,000 population, by race and ethnicity, 2010-2011**

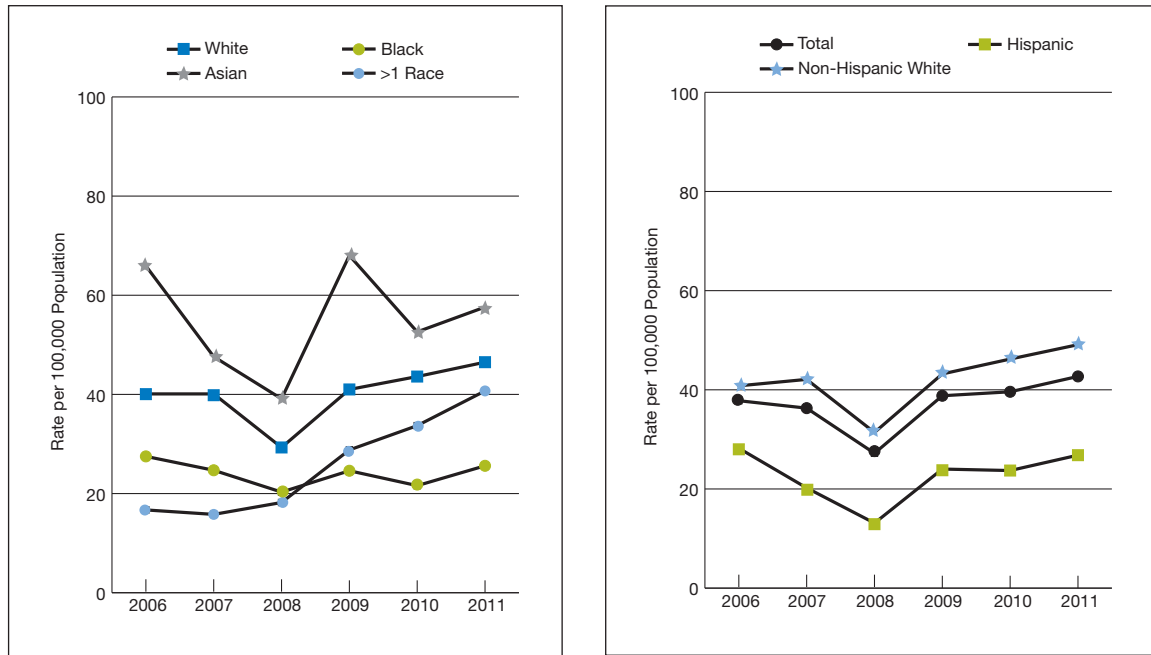


**Source:** U.S. Census Bureau, American Community Survey, 2010-2011.

- ◆ In 2010 and 2011, the rate of nurse practitioners was significantly higher for Whites than for other racial groups (Figure 9.6).
- ◆ The rate of nurse practitioners for non-Hispanic Whites was nearly six times the rate for Hispanics.

Also, in the NHQR:

- ◆ In 2011, there were 31.2 nurse practitioners per 100,000 population.
- ◆ The Northeast tended to have higher rates of nurse practitioners while the West tended to have lower rates.

**Figure 9.7. Rate of physician assistants per 100,000 population, by race and ethnicity, 2006-2011**

**Source:** U.S. Census, American Community Survey, 2006-2011.

- ◆ From 2006 to 2011, Whites had significantly higher rates of physician assistants than Blacks (Figure 9.7).
- ◆ In all years, physician assistants were significantly more likely to be Asian than Black; in 4 of 6 years, physician assistants were significantly more likely to be Asian than of multiple races. In 2011, the rate for Asians was more than twice the rate for Blacks.
- ◆ In all years, physician assistants were significantly more likely to be non-Hispanic White than Hispanic.

Also, in the NHQR:

- ◆ The Northeast tended to have higher rates of physician assistants while the Midwest tended to have lower rates.
- ◆ There was considerable variation by State, ranging from 23.6 to 64.1 per 100,000 population.

### Organizational Capacity: Focus on the Health Care Safety Net

Concern has arisen about the composition and distribution of the health workforce and whether the Nation's health workforce will be able to meet the increasing demand for care that a growing and aging U.S. population will have. 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 needs. As defined in an IOM report, 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 Health Resources and Services Administration (HRSA)-supported health centers (HSHCs). For the nearly 50 million uninsured people and for individuals with low income, safety net providers serve an essential function, eliminating financial barriers to care and enhancing access to services. As workforce shortages escalate, demand for safety net services is likely to increase.

The National Health Service Corps (NHSC) helps bring health care to patients in communities with limited access to health care. About one in five people in the United States (21 percent) live in a Health Professional Shortage Area. In 2009, the American Recovery and Reinvestment Act provided a significant infusion of \$300 million over 3 years to grow the NHSC. The Affordable Care Act built on these efforts and provided \$1.5 billion of support over 5 years (HRSA, 2013).

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 and ethnic subgroups. The measures focus on two types of safety net providers: hospitals and HSHCs. The first measure focuses on trauma center utilization for severe injuries. Trauma centers often provide care unavailable elsewhere in the community and thus can become part of the safety net. The second measure highlights the role of HSHCs as safety net providers by describing the characteristics of people with an HSHC visit in 2010.

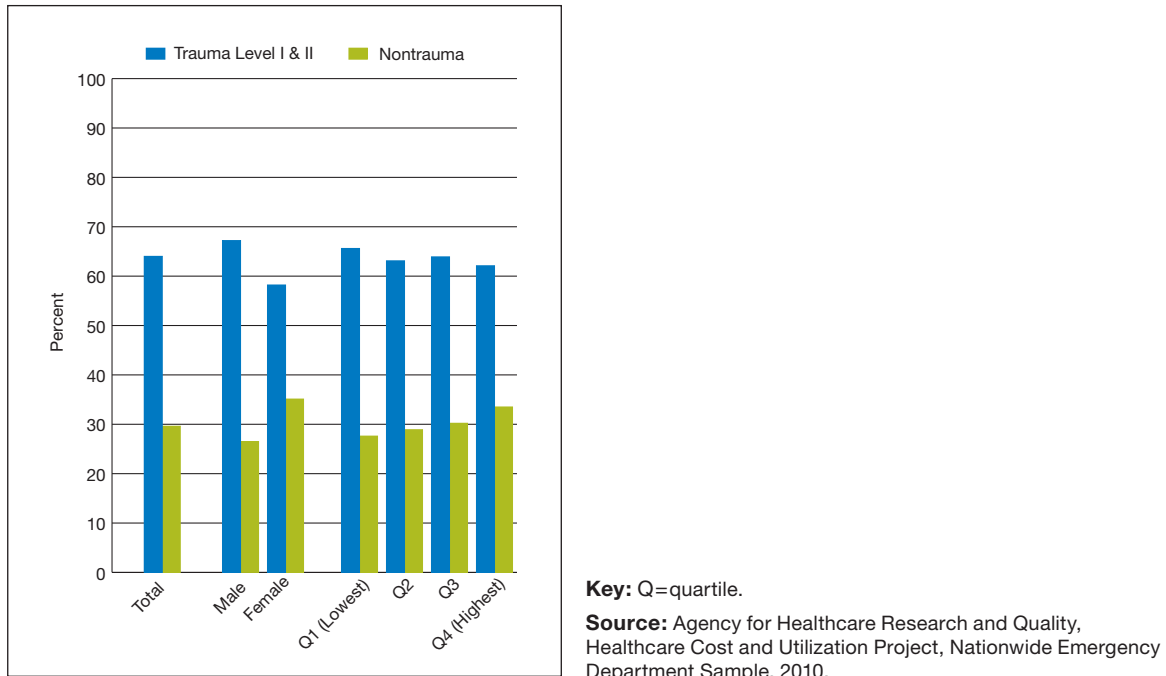
### **Trauma Center Utilization for Severe Injuries**

Trauma remains a considerable cause of mortality and morbidity worldwide, constituting a tangible public health burden with significant associated social and economic cost (Mansoor & DuBose, 2012). Trauma care systems, which were developed because it was recognized that trauma requires complex medical care, include a network of care facilities that provides a range of care for all injured patients.

Trauma systems usually have a lead hospital, which should be the highest level available within the system. Levels range from level I to level III, with level I denoting the most clinically sophisticated hospitals:

- ◆ Level I facilities are required to have a specific number of surgeons and anesthesiologists on duty at all times, as well as education, prevention, and outreach programs. The 24-hour coverage of surgery also provides trauma patients with many surgical specialties, including neurosurgery, as well as radiology, internal medicine, and critical care.
- ◆ Level II trauma centers provide initial definitive trauma care regardless of the severity of the injury. When a level II center cannot provide the required care, the patient is transferred to a level I center.
- ◆ Level III trauma centers are often considered community or rural-based hospitals and provide prompt assessment, resuscitation, emergency operations, and stabilizations and arrange for transfer to a facility that can provide necessary care.

**Figure 9.8. Distribution of trauma center utilization for severe injuries in the United States, by sex and area income, 2010**



- ◆ In 2010, males were more likely to use level I and II trauma centers than females (Figure 9.8).
- ◆ In 2010, there were no statistically significant differences by area income in the percentage of injuries treated at level I and II trauma centers.

Also, in the NHQR:

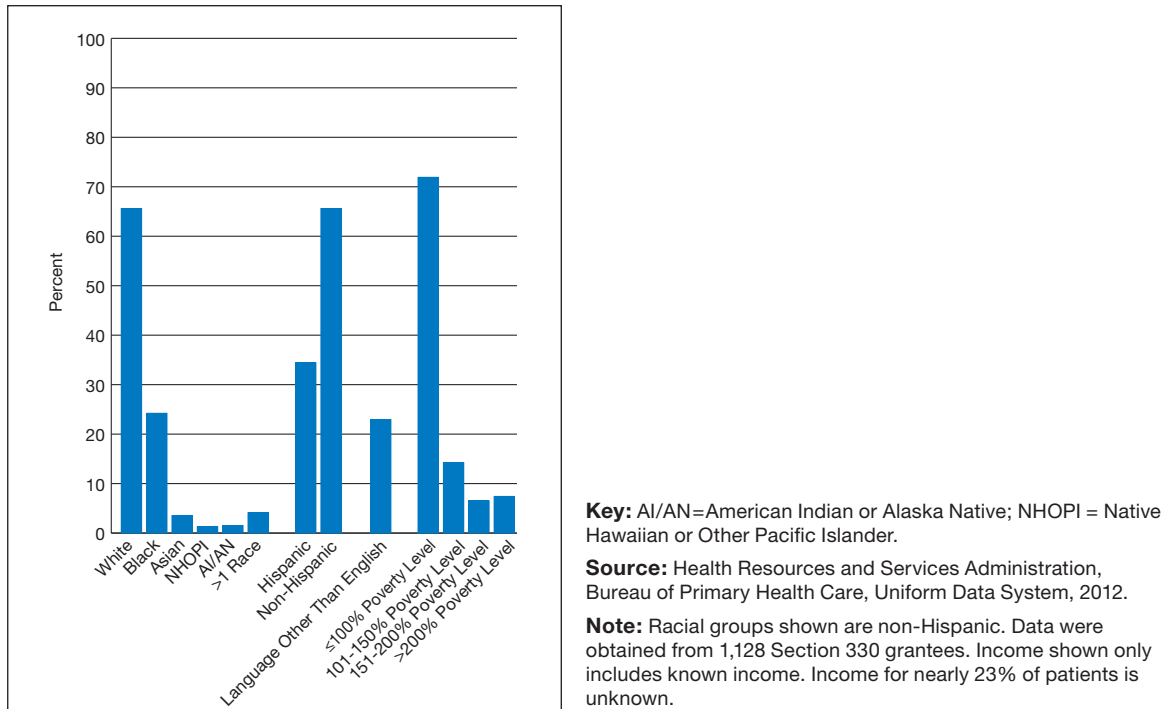
- ◆ In 2010, people ages 25-44 were more likely to use level I and II trauma centers than people age 45 and over. Adults age 65 and over were more likely than people under age 65 to use nontrauma centers.
- ◆ In 2010, the percentage of injuries treated at level I and II trauma centers was significantly higher in large fringe metropolitan areas than in small metropolitan and micropolitan areas.

### Patients Using HRSA-Supported Health Centers

HSHCs 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, migratory and seasonal agricultural workers, 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, referrals to mental health care, 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 linked to patients' family income. More than 21 million people visited an HSHC in 2012.

**Figure 9.9. Race, ethnicity, and income of patients receiving care in an HSHC, United States, 2012**



- ◆ In 2012, approximately two-thirds (65.6%) of patients seen at an HSHC were White (Hispanic and non-Hispanic), and about one-quarter were Black (Figure 9.9).
- ◆ In 2012, 34.4% of HSHC patients were Hispanic and nearly one-quarter of patients were determined by the HSHC to be best served in a language other than English.
- ◆ For those for whom income is known, almost three-quarters of patients seen in an HSHC in 2012 had income at or below the Federal poverty level but only 7.4% of patients had an income over 200% of the poverty level.

Also, in the NHQR:

- ◆ In 2012, 36.0% of patients seen at an HSHC were uninsured and 40.8% had Medicaid/CHIP.

### Hawaiian Patients Using Federally Qualified Health Centers

This year, the NHDR features findings from a report by the Department of Native Hawaiian Health and its Center for Native and Pacific Health Disparities Research at the John A. Burns School of Medicine of the University of Hawaii. The report is *Assessment and Priorities for Health & Well-Being in Native Hawaiians and Other Pacific Peoples* (Look, et al., 2013).

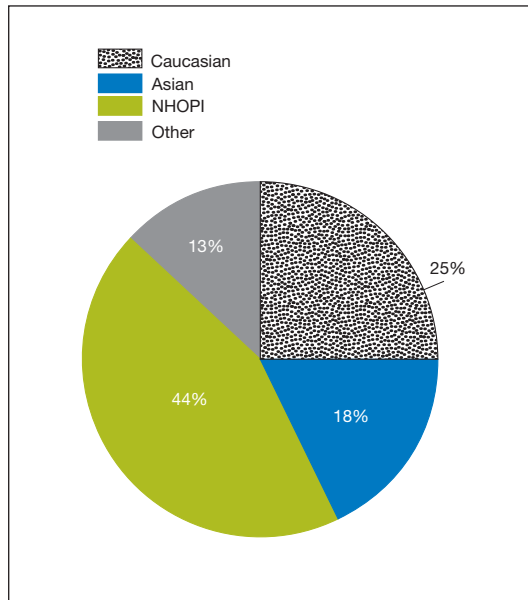
While the network of community health centers has helped to improve access to health services, the shortage of health professionals continues to be a primary challenge for many communities across the State. According to the State of Hawaii Primary Care Needs Assessment Data Book 2009, all of the islands except for some portions of Oahu are federally designated as medically underserved areas, indicating that the population has a shortage of personal health services. In addition, there is a shortage of

mental health professionals on Molokai and in some areas on the other islands, including West Kauai, the North Shore of Oahu, East Maui, and in the Hamakua, Puna, and Kau communities of Hawaii Island.

Hawaii has 19 federally qualified community health centers (Hawaii Primary Care Association, 2010). While they are diverse in many ways, they are all independent community-run, nonprofit health organizations with the commitment to serving the health needs of their respective communities, regardless of an individual's ability to pay. These rural and urban clinics are purposefully located in areas with limited access to medical services and thus receive annual supplemental Federal funds for clinical service support.

Collectively, these clinics provide primary care to 10% of Hawaii's population, 50% of whom are Medicaid patients and 25% of whom are uninsured. More than 40% of their patients are NHOPI (Figure 9.10). Most have diversified their health services to include behavioral health, dental care, and vision care. The number of patients they serve has more than doubled over the past 10 years (Hawaii Primary Care Association, 2011).

**Figure 9.10. Ethnicity of patients served by community health centers, Hawaii, 2010**



**Source:** Hawaii Primary Care Association, Community health centers in Hawaii, 2010.

The Native Hawaiian Health Care Systems (NHHCS) is primarily funded by Federal appropriations through HRSA. The NHHCS works to improve the health status of Native Hawaiians. They use a combination of outreach, referral, and linkage mechanisms to provide a range of services that include nutrition programs, enabling services, screening and control of hypertension and diabetes, immunizations, and basic primary care services. They are composed of five nonprofit organizations created under the Native Hawaiian Health Care Act of 1988 and recently reauthorized under the Affordable Care Act. They include Ho'ola Lahui Hawai'i on Kauai, Ke Ola Mamo on Oahu, Na Pu'uwai on Molokai, Hui No Ke Ola Pono on Maui, and Hui Malama Ola Na 'Oiwai on Hawaii Island.

Hospital Admissions of Vulnerable Populations

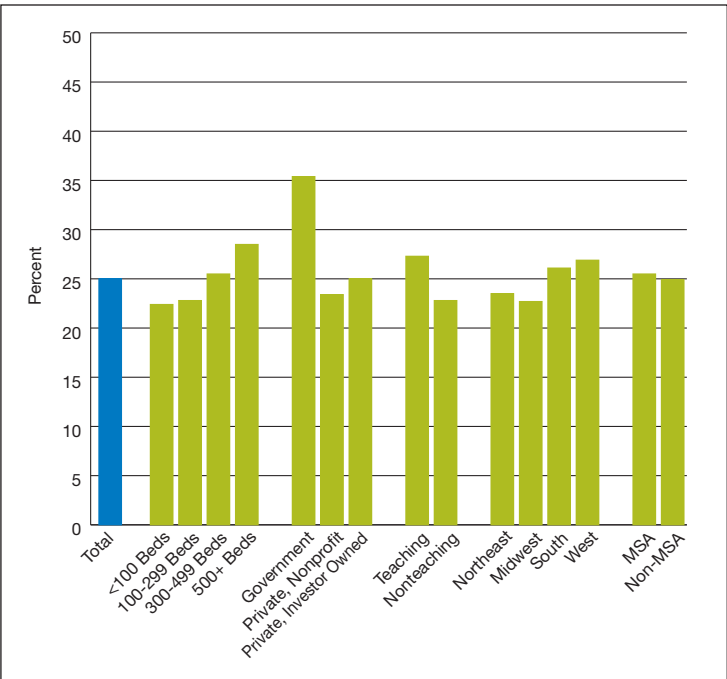
Hospitals continue to play a major role in the health care safety net and, increasingly, safety net hospitals are defined by their low-income population as opposed to control or governance (e.g., public hospitals).<sup>ii</sup> This section includes one measure suggestive of hospitals’ willingness or 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:

- 1. (Number of Medicaid and uninsured discharges ÷ total number of discharges) × 100
- 2. (Total Medicaid and uninsured costs ÷ total costs across all payers) × 100

As indicated in Figure 9.11, the proportion of inpatient days and discharges provided to these vulnerable groups varied by hospital characteristics.

Figure 9.11. Medicaid and uninsured discharges, by facility characteristics, U.S. short-term acute hospitals, 2011



Source: Agency for Healthcare Research and Quality, Healthcare Cost and Utilization Project, HCUPnet, 2011. Available at <http://hcupnet.ahrq.gov/>.

- ◆ On average, Medicaid recipients and medically uninsured people accounted for about one in four discharges from acute care hospitals in 2011 (Figure 9.11).
- ◆ Twenty-five percent of Medicaid and uninsured patients were discharged from private, investor-owned hospitals compared with 35.4% from government hospitals.

<sup>ii</sup> Concerned with the impact of hospital closures on the health care safety net, the Department of Health and Human Services Office for Civil Rights 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 relocate.

## HEALTH SYSTEM INFRASTRUCTURE

- ◆ Compared with hospitals with 500 or more beds, hospitals with bed sizes under 300 had a smaller percentage of Medicaid or uninsured patients.
- ◆ About 27% of patients discharged from teaching hospitals were uninsured or covered by Medicaid, compared with 22.8% of patients in non-teaching hospitals.
- ◆ Hospitals in the West discharged a greater proportion of Medicaid and uninsured patients (26.9%), while hospitals in the Midwest discharged the lowest percentage of these patients (22.7%).



## References

- Abramson EL, Malhotra S, Osorio N, et al. A long-term followup evaluation of electronic health record prescribing safety. *J Am Med Inform Assoc* 2013 Jun;20(e1):e52-8.
- Annual report 2011. Honolulu: Hawaii Primary Care Association; October 2011. Available at: <http://www.hawaiiipca.net/media/assets/AR2011-WebVersion091011.pdf>. Accessed April 21, 2014.
- Brown T, Liu JX, Scheffler RM. Does the under or overrepresentation of minority physicians across geographical areas affect the location decisions of minority physicians? *Health Serv Res* 2009;44:1290-1308.
- Community health centers in Hawaii. Honolulu: Hawaii Primary Care Association; 2010. Available at: <http://www.hawaiiipca.net/media/assets/CongressionalCHCFactSheet-CommunityHealthCentersinHawaii.pdf>. Accessed April 21, 2014.
- Coplan B, Cawley J, Stoeckl J. Physician assistants in primary care: trends and characteristics. *Ann Fam Med* 2013;11(1):75-9.
- Donabedian A. The definition of quality and approaches to its assessment. Chicago: Health Administration Press; 1980.
- E-prescribing shown to improve outcomes, save billions. *Health Manag Technol* 2012 Apr;33(4):22-3.
- Government Accountability Office. Testimony before the Committee on Ways and Means, House of Representatives. Nonprofit, for-profit, and government hospitals: uncompensated care and other community benefits. Statement of David M. Walker, Comptroller General of the United States. Washington, DC: GAO; 2005. Available at: <http://www.gao.gov/assets/120/111707.pdf>. Accessed March 15, 2013.
- Helping primary care clinicians practice in the communities where they are needed most: National Health Service Corps loan repayment and scholarships. Rockville, MD: Health Resources and Services Administration; November 2013. Available at: <http://nhsc.hrsa.gov/currentmembers/fieldstrength.pdf>. Accessed January 23, 2014.
- Hooker RS, Everett CM. The contributions of physician assistants in primary care systems. *Health Soc Care Community* 2012;20(1):20-31.
- Institute of Medicine, Board of Health Care Services. Future directions for the National Healthcare Quality and Disparities Reports. Washington, DC: National Academies Press; 2010.
- Jariwala KS, Holmes ER, Banaha BF, et al. Factors that physicians find encouraging and discouraging about electronic prescribing: a quantitative study. *J Am Med Inform Assoc* 2013 Jun;20(e1):e39-43.
- Johnson KB, Lehmann CU; Council on Clinical Information Technology of the American Academy of Pediatrics. Electronic prescribing in pediatrics: toward safer and more effective medication management. *Pediatrics* 2013 Apr;131(4):e1350-6.
- Kannry J. Effect of e-prescribing systems on patient safety. *Mt Sinai J Med* 2011;78:827-33.
- Look MA, Trask-Batti MK, Agres R, et al. Assessment and priorities for health & well-being in Native Hawaiians & other Pacific peoples. Honolulu: Center for Native and Pacific Health Disparities Research, John A. Burns School of Medicine, University of Hawaii; 2013. Available at: [http://www2.jabsom.hawaii.edu/native/docs/community/DNHH\\_Assessment&Priorities\\_Report\\_2013.pdf](http://www2.jabsom.hawaii.edu/native/docs/community/DNHH_Assessment&Priorities_Report_2013.pdf). Accessed April 21, 2014.
- Mansoor K, DuBose JJ. Improving trauma care in the ICU: best practices, quality improvement initiatives, and organization. *Surg Clin N Am* 2012;92(4):893-901.
- McAlearney AS, Robbins J, Hirsch A, et al. Perceived efficiency impacts following electronic health record implementation: an exploratory study of an urban community health center network. *Int J Med Inform* 2010;79(12):807-16.

## HEALTH SYSTEM INFRASTRUCTURE

Mitchell DA, Lassiter SL. Addressing health care disparities and increasing workforce diversity: the next step for the dental, medical, and public health professions. *Am J Public Health* 2012;96(12):2093-7.

Naylor MD, Kurtzman ET. The role of nurse practitioners in reinventing primary care. *Health Aff (Millwood)* 2010;29(5):893-9.

O'Neil E, Dower C. Primary care health workforce in the United States. *Synth Proj Res Synth Rep* 2011 Jul;(22). E-pub 2011 Jul 1.

Resnick HE, Alwan M. Use of health information technology in home health and hospice agencies: United States, 2007. *J Am Med Inform Assoc* 2010;17:389-95.

Samantaray R, Njoku V, Brunner JW, et al. Promoting electronic health record adoption among small independent primary care practices. *Am J Manag Care* 2011;17(5):353-8.

Schoenthaler A, Allegante JP, Chaplin W, et al. The effect of patient-provider communication on medication adherence in hypertensive Black patients: does race concordance matter? *Ann Behav Med* 2012 Jun;43(3):372-82.

Tang G, Lansa O, Rodriquez FM, et al. The Kaiser Permanente Clinical Cultural and Linguistic Assessment Initiative: research and development in patient-provider language concordance. *Am J Public Health* 2011;101:2005-8.

## Chapter 10. 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)<sup>i</sup> 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 measures were 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.

According to the Centers for Disease Control and Prevention (CDC), the lack of access to health care that results from inadequate insurance coverage should be greatly reduced by the Affordable Care Act. The Affordable Care Act is expected to extend insurance coverage to an additional 25 million people by 2019 (CBO, 2013).

Recent studies by the Office of the Assistant Secretary for Planning and Evaluation in the Department of Health and Human Services have demonstrated early evidence of greater rates of insurance coverage among young adults. Before Affordable Care Act implementation, young adults with private insurance were more than twice as likely to lose insurance coverage as older adults (Schwartz & Sommers, 2012). New estimates, however, show that from September 2010 to December 2011, more than 3 million additional young adults had coverage (Sommers, 2012). This includes an estimated 913,000 Latino, 509,000 African American, and 121,000 Asian young adults (Sommers & Kronick, 2012). Overall, males have significantly benefited from the expanded coverage, and their rate of coverage has increased from 57.9% to 72.0% (Sommers, 2012).

The Affordable Care Act also makes significant changes to the Medicaid program. All citizens and legal permanent residents with a household income up to 133% of the poverty level who reside in a State that chooses to participate in the expansion will be eligible for Medicaid. This change could improve the health of millions of Americans. Medicaid expansions have been shown to reduce mortality among adults, particularly those ages 35-64 years, minorities, and residents of low-income areas (Sommers, et al., 2012).

---

<sup>i</sup> 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 Sources appendixes provide more information on income groups by data source.

## 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

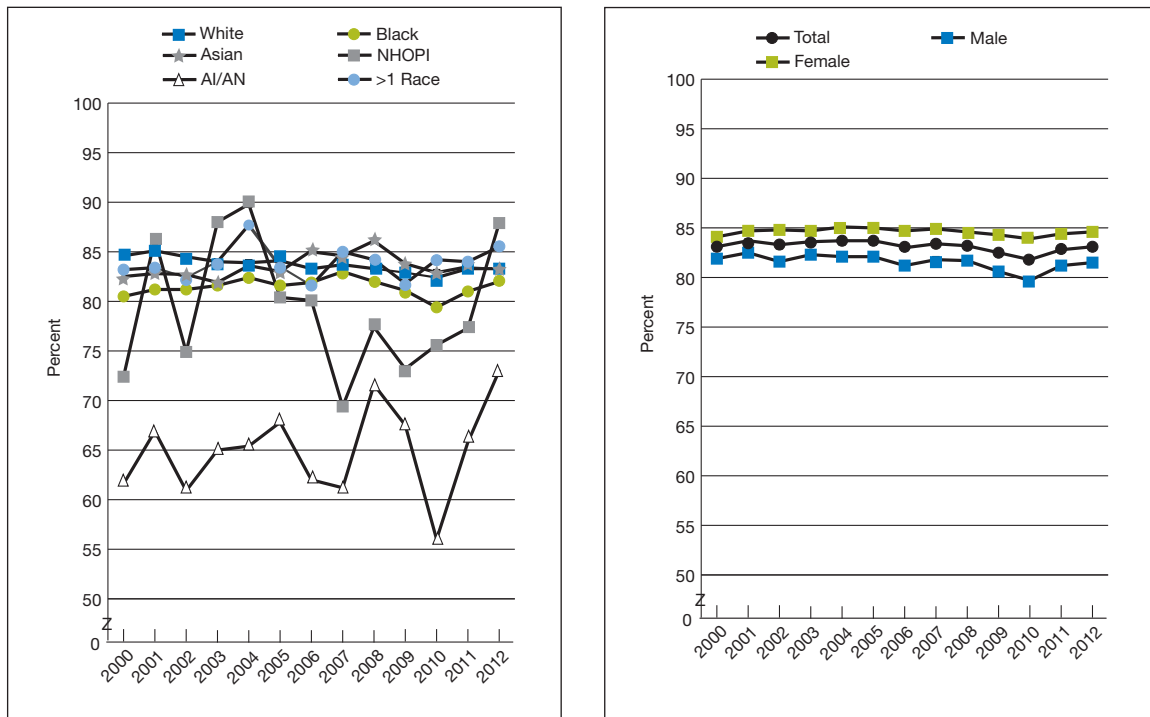
Facilitators and barriers to health care discussed in this chapter include health insurance, financial burden of health care costs, usual source of care (including having a specific source of ongoing care and a usual primary care provider), and patient perceptions of need.

## 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. In 2008, uninsured people received approximately \$86 billion in medical care during the time they lacked insurance coverage for all or any part of the year (Hadley, et al., 2008).

The financial burden of uninsurance is also high for uninsured individuals; more than 60% of personal bankruptcy filings are due to medical expenses (Himmelstein, et al., 2009). Uninsured individuals are more likely to go without needed care than insured people. They are also more likely to visit the emergency department and be admitted to the hospital for ambulatory care-sensitive conditions. Chronically ill uninsured people are less likely to have a usual source of medical care and thus are less likely to receive preventive and primary care. A recent study showed that uninsured adults under age 65 are nearly twice as likely to die as adults under age 65 with insurance (Wilper, et al., 2009).

**Figure 10.1. People under age 65 with health insurance, by race and sex, 2000-2012**

**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), 2000-2012.

**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.<sup>ii</sup> Estimates are not age adjusted.

- ◆ Overall, there was no statistically significant change from 2000 to 2010 in the percentage of people under age 65 with health insurance. From 2010 to 2012, health insurance for people under age 65 improved (81.8% in 2010, 82.8% in 2011, and 83.1% in 2012; Figure 10.1).
- ◆ In all years from 2000 to 2012, American Indians and Alaska Natives under age 65 were less likely than Whites to have health insurance (in 2012, 73.0% compared with 83.3%). In 8 of 13 years, Blacks under age 65 were also less likely than Whites to have health insurance.
- ◆ In all years, Hispanics under age 65 were less likely to have health insurance compared with non-Hispanic Whites (data not shown).
- ◆ From 2000 to 2012, there were no statistically significant changes in the percentage of males and females who had health insurance.
- ◆ Females were more likely to have health insurance than males throughout this period (in 2012, 84.6% compared with 81.5%).

<sup>ii</sup> NHIS data on insured population does not include coverage provided by the Indian Health Service (IHS). However, the IHS provides a comprehensive health service delivery system for approximately 2.1 million of the Nation's estimated 3.4 million American Indians and Alaska Natives. See the fact sheet at <http://www.ihs.gov/newsroom/factsheets/quicklook/> for more information.

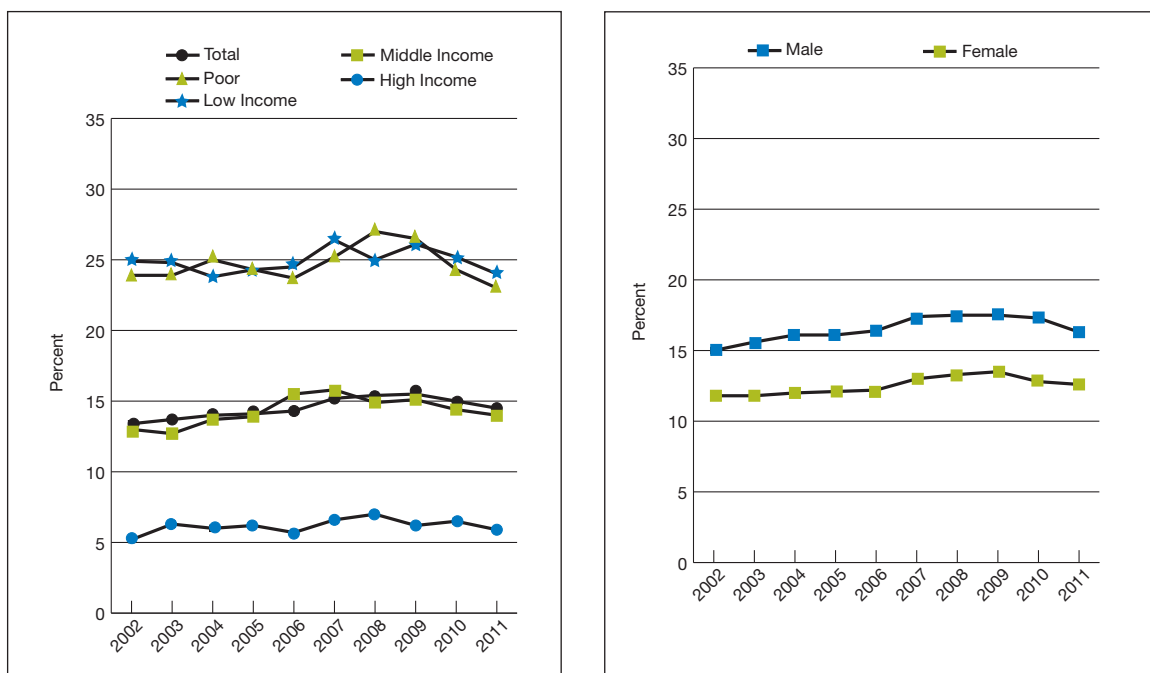
Also, in the NHQR:

- ◆ From 2000 to 2012, the percentage of children ages 0-17 who had health insurance increased. However, for adults ages 18-44 and 45-64, the percentage decreased.
- ◆ In all years, adults ages 18-44 were less likely than children ages 0-17 and adults ages 45-64 to have health insurance.

## 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 10.2. People under age 65 who were uninsured all year, by income and sex, 2002-2011**



**Source:** Agency for Healthcare Research and Quality, Medical Expenditure Panel Survey, 2002-2011.

**Denominator:** Civilian noninstitutionalized population under age 65.

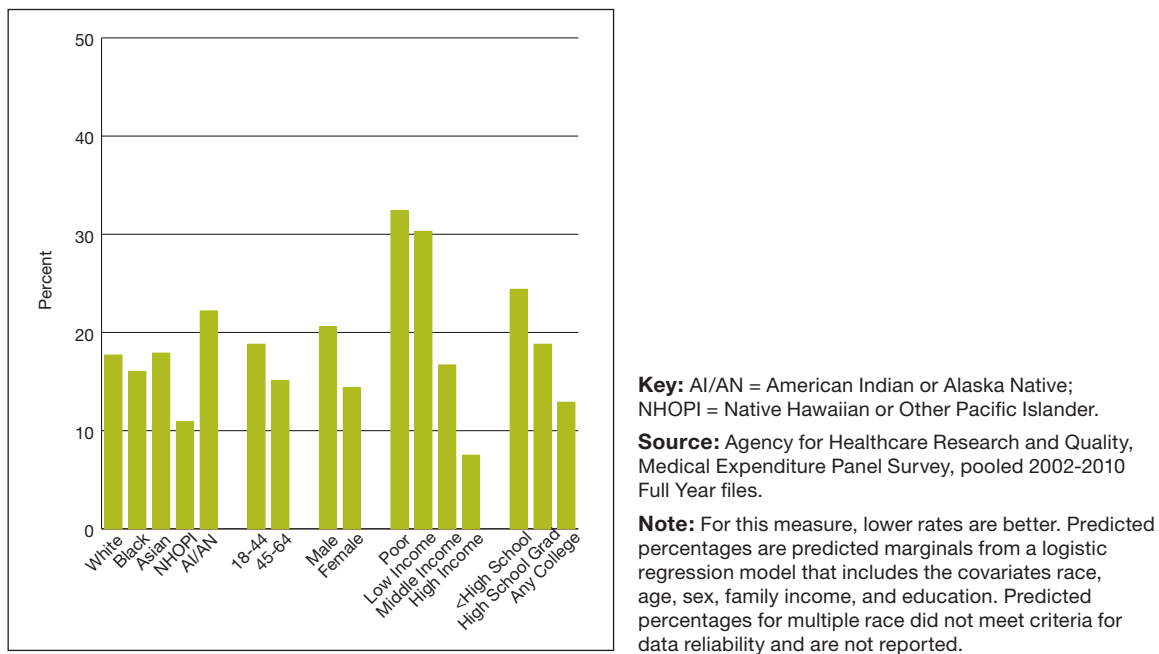
**Note:** For this measure, lower rates are better.

- ◆ From 2002 to 2010, the percentage of people under age 65 who were uninsured all year increased from 13.4% to 15.0%. In 2011, the overall percentage was 14.5% (Figure 10.2).
- ◆ In 2011, poor (23%) and low-income (24%) people were about four times as likely to be uninsured compared with high-income (5.9%) people, while middle-income (14%) people were more than twice as likely to be uninsured as high-income people.
- ◆ In all years, females were less likely to be uninsured all year than males (in 2011, 12.6% compared with 16.3%).

Also, in the NHQR:

- ◆ From 2002 to 2011, 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.

**Figure 10.3. Predicted percentages of adults ages 18-64 who were uninsured all year, by race, age, sex, family income, and education, 2002-2010**



- ◆ In the multivariate model used, after adjustment, 16.0% of Blacks and 10.9% of Native Hawaiians and Other Pacific Islanders would have been uninsured all year compared with 17.7% of Whites (Figure 10.3). American Indians and Alaska Natives would have been more likely than Whites to be uninsured all year (22.2% compared with 17.7%).
- ◆ After adjustment, people ages 18-44 would have been more likely than people ages 45-64 to be uninsured all year (18.8% compared with 15.1%).
- ◆ After adjustment, 32.4% of poor, 30.3% of low-income, and 16.7% of middle-income individuals would have been uninsured all year compared with 7.5% of high-income individuals.
- ◆ After adjustment, 24.4% of people with less than a high school education and 18.8% of high school graduates would have been uninsured all year compared with 12.9% of those with any college education.

### Hispanic and Asian Subgroups

The Hispanic population in the United States includes people from multiple regions and countries. Almost 65% of all Hispanics in the country are of Mexican descent, making this group the largest subpopulation. People originating from Puerto Rico, Central America, and South America are the next largest subgroups. Variation is seen in access to care among Hispanics related to country of origin. Similar variation is seen among Asians.

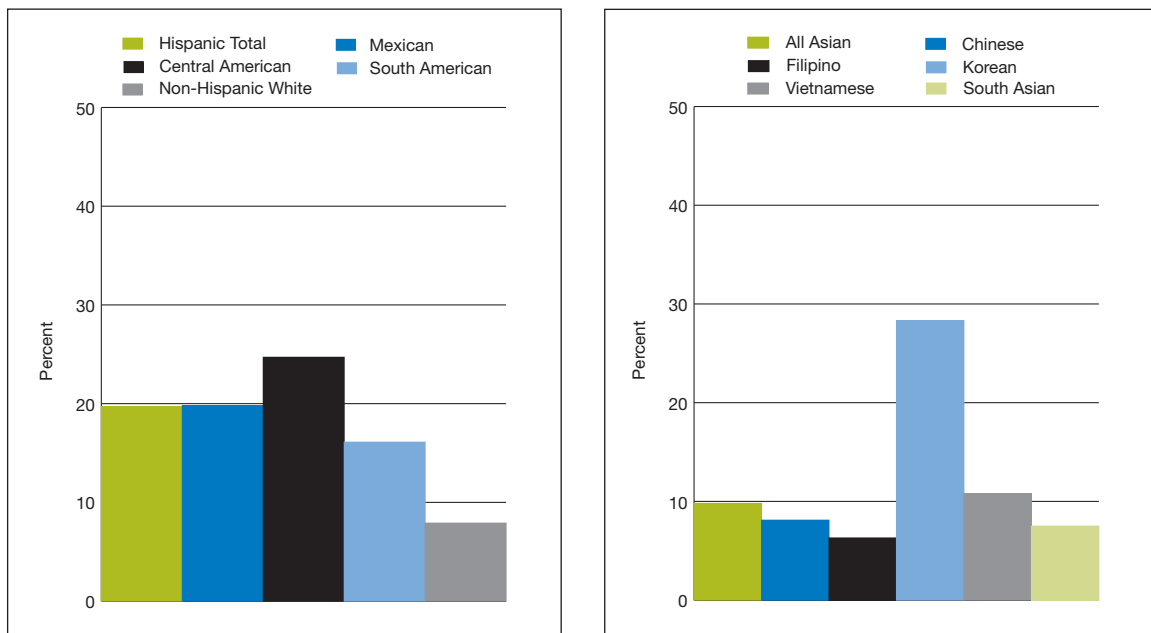
National data on uninsured Hispanic and Asian subgroups are not currently available from the national data sources in the NHDR. To address some of these data gaps, additional data from the California Health

Interview Survey (CHIS) are shown below. The sampling methods used in CHIS are an example of how important disparities can be examined when data are collected this way. We chose the CHIS because of California's large Hispanic and Asian populations.

In 2012, California's Hispanic population was more than twice the percentage in the United States overall (38.1% in California compared with 16.7% of the U.S. population; U.S. Census Bureau, 2012). Almost 30% of the Hispanic population in the United States lives in California (U.S. Census Bureau, 2012).

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.

**Figure 10.4. People under age 65 who were uninsured all year, Hispanics and Asians, California, 2011/2012 combined**



**Source:** University of California, Los Angeles, Center for Health Policy Research, California Health Interview Survey, 2011/12.

**Denominator:** Hispanic and Asian civilian noninstitutionalized population ages 0-64 in California.

**Note:** For this measure, lower rates are better.

- ◆ In 2011/2012, Mexicans, Central Americans, and South Americans in California were more likely than non-Hispanic Whites to be uninsured all year (Figure 10.4).
- ◆ In 2011/2012, Koreans in California were more likely than all other Asian ethnic groups to be uninsured all year.
- ◆ In 2011/2012, Hispanics in California who were not born in the United States were twice as likely as Hispanics born in the United States to be uninsured all year. Similarly, Asians not born in the United States were about twice as likely as Asians born in the United States to be uninsured all year (data not shown).

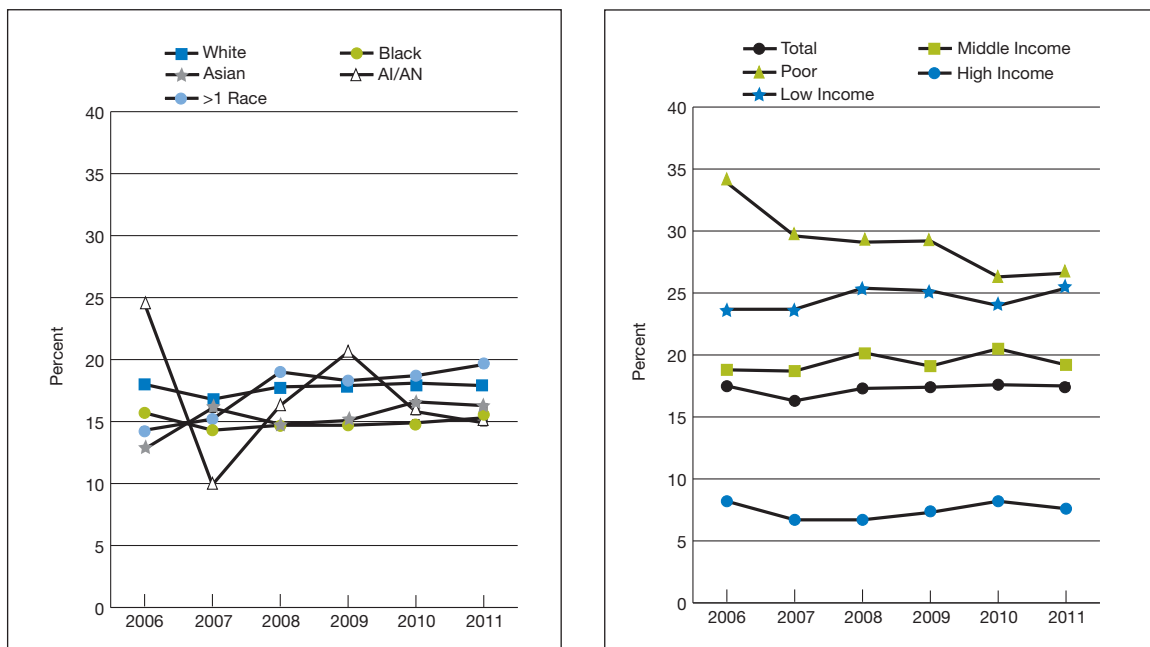


## Financial Burden of Health Care Costs

Health insurance is supposed to protect individuals from the burden of high health care costs. However, even with health insurance, the financial burden of 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 (Chappel, et al., 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 10.5. 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 and income, 2006-2011**



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

**Source:** Agency for Healthcare Research and Quality, Medical Expenditure Panel Survey, 2006-2011.

**Denominator:** Civilian noninstitutionalized population under age 65.

**Note:** For this measure, lower rates are better. Total financial burden includes premiums and out-of-pocket costs for health care services.

- ◆ Overall, in 2011, 17.5% 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 10.5).
- ◆ In all years from 2006 to 2011, 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 (in 2011, 15.3% compared with 17.9%).
- ◆ In all years, 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 3.5 times as high for poor individuals and low-income individuals and more than twice as high for middle-income individuals compared with high-income individuals.

Also, in the NHQR:

- ◆ In all years from 2006 to 2011, the percentage of people under age 65 whose family's health insurance premium and out-of-pocket medical expenses were more than 10% of total family income was about three times as high for individuals with private nongroup insurance as for individuals with private employer-sponsored insurance.
- ◆ In all years, people ages 18-64 with basic or complex activity limitations were significantly more likely than people with neither type of activity limitation to have family health insurance premium and out-of-pocket medical expenses that were more than 10% of total family income.

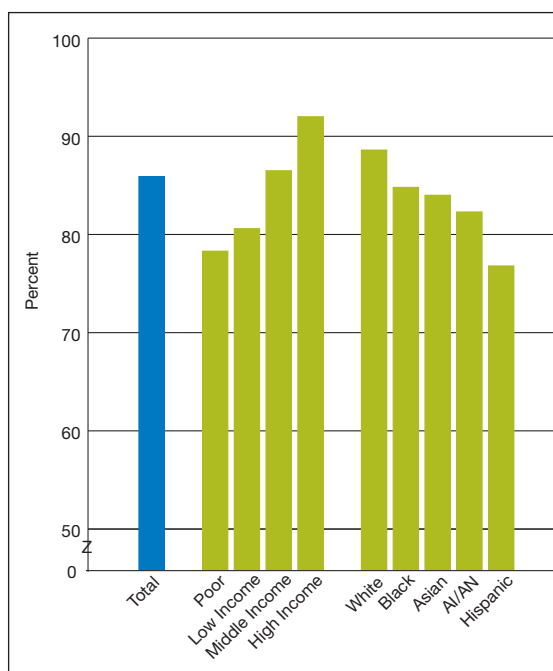
## Usual Source of Care

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. For example, women of childbearing age and older people 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 10.6. People with a specific source of ongoing care, by income and race/ethnicity, 2012**



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

**Source:** Centers for Disease Control and Prevention, National Center for Health Statistics, National Health Interview Survey, 2012.

**Denominator:** Civilian noninstitutionalized population of all ages.

**Note:** A hospital emergency room is not included as a specific source of ongoing care. White and Black are non-Hispanic. Hispanic includes all races.

- ◆ In 2012, overall, 85.9% of people had a specific source of ongoing care (Figure 10.6).
- ◆ The percentage of people with a specific source of ongoing care was significantly lower for Hispanics than for Whites (76.8% compared with 88.6%).
- ◆ 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 (78.3% and 80.6%, respectively, compared with 92.0%).

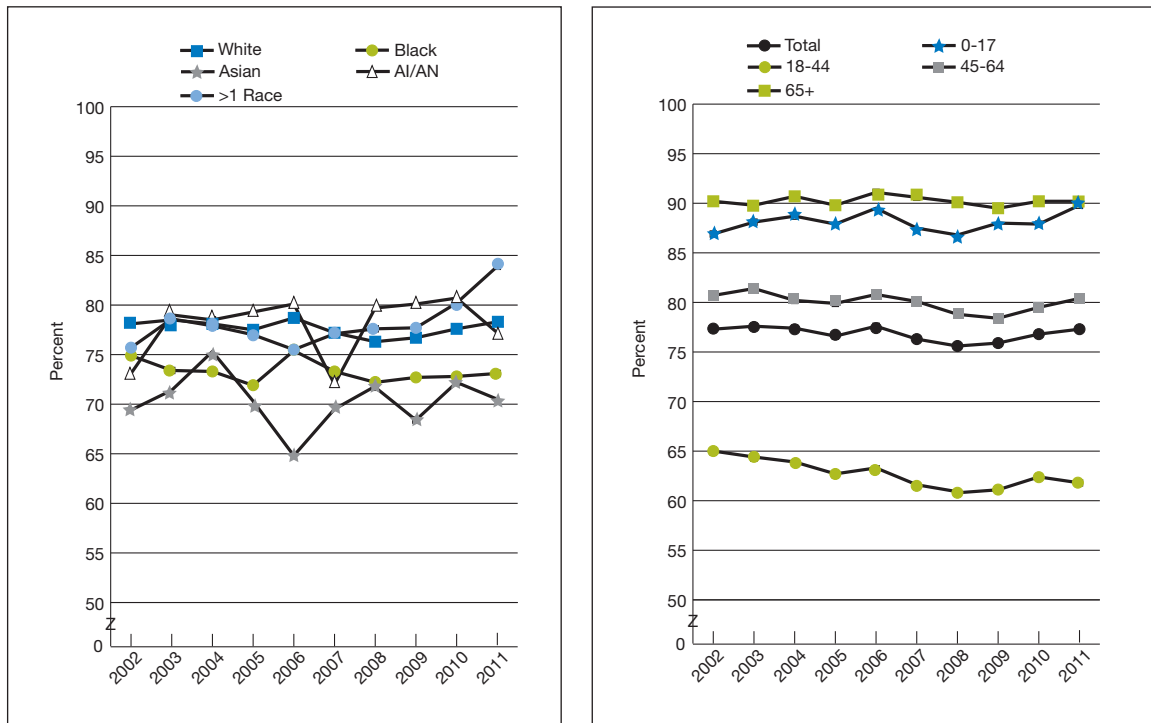
Also, in the NHQR:

- ◆ In 2012, 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.
- ◆ In 2012, people with private insurance were nearly twice as likely to have a specific source of ongoing care as uninsured people.

### 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 (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 10.7. People with a usual primary care provider, by race and age, 2002-2011**

**Key:** AI/AN = American Indian/ Alaska Native.

**Source:** Agency for Healthcare Research and Quality, Medical Expenditure Panel Survey, 2002-2011.

**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.

- ◆ Overall, in 2011, 77.3% of people had a usual primary care provider (Figure 10.7).
- ◆ From 2002 to 2011, Blacks and Asians were less likely than Whites to have a usual primary care provider in all years except 2004.
- ◆ In all years, people ages 18-44 were least likely to have a usual primary care provider, while people age 65 and over were most likely to have a usual primary care provider (in 2011, 61.8% and 90.2%, respectively).

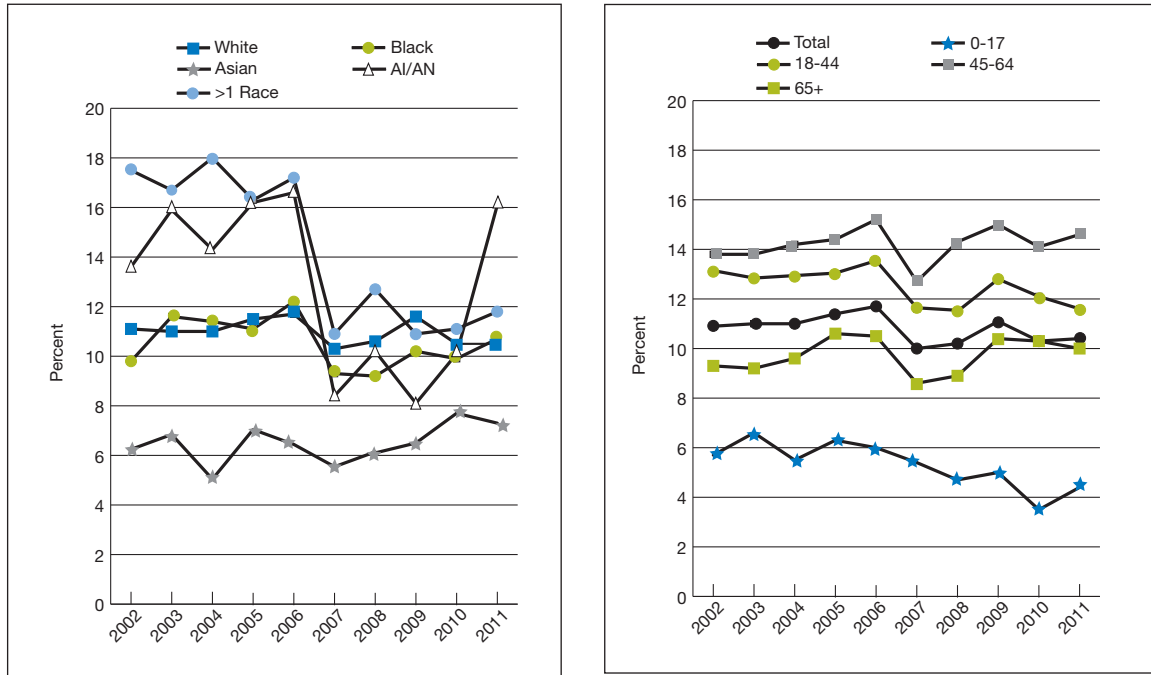
Also, in the NHQR:

- ◆ In all years, the percentage of people with a usual primary care provider was higher for people with basic activity limitations and complex activity limitations than for people with neither limitation.

## 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 10.8. People who were unable to get or delayed in getting needed medical care, dental care, or prescription medicines in the last 12 months, by race/ethnicity and age, 2002-2011**



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

**Source:** Agency for Healthcare Research and Quality, Medical Expenditure Panel Survey, 2002-2011.

**Denominator:** Civilian noninstitutionalized population of all ages.

**Note:** For this measure, lower rates are better.

- ◆ In 2011, 10.4% of people were unable to get or delayed in getting needed medical care, dental care, or prescription medicines (Figure 10.8).
- ◆ In 2011, Asians (7.3%) were less likely than Whites (11.2%) to report that they were unable to get or delayed in getting needed medical care, dental care, or prescription medicines.
- ◆ In all years, adults ages 45-64 were more likely than adults age 65 and over, adults ages 18-44, and children ages 0-17 to be unable to get or delayed in getting needed medical care, dental care, or prescription medicines.

Also, in the NHQR:

- ◆ For people under age 65, uninsured people and people with public insurance were more likely than people with private insurance to be unable to get or delayed in getting needed medical care, dental care, or prescription medicines.

## References

- Alexander GC, Casalino LP, Meltzer DO. Patient-physician communication about out-of-pocket costs. *JAMA* 2003;290(7):953-8.
- Banthin JS, Bernard DM. Changes in financial burdens for health care: national estimates for the population younger than 65 years, 1996 to 2003. *JAMA* 2006;296(22):2712-9.
- Chappel A, Kronick R, Glied S. The value of health insurance: few of the uninsured have adequate resources to pay potential hospital bills. ASPE Research Brief. Washington, DC: U.S. Department of Health and Human Services; May 2011. Available at: <http://aspe.hhs.gov/health/reports/2011/ValueofInsurance/rb.pdf>. Accessed June 29, 2011.
- Congressional Budget Office. Effects of the Affordable Care Act on health insurance coverage—February 2013 baseline. Washington, DC: CBO; February 2013. Available at <http://www.cbo.gov/publication/43900>. Accessed March 14, 2013.
- De Maeseneer J, De Prins L, Gosset C, et al. Provider continuity in family medicine: does it make a difference for total health care costs? *Ann Fam Med* 2003;(1):144-8.
- Ettner SL. The timing of preventive services for women and children: the effect of having a usual source of care. *Am J Public Health* 1996;86(12):1748-54.
- Hadley J, Holahan J, Coughlin T, et al. Covering the uninsured in 2008: current costs, sources of payment, and incremental costs. *Health Aff* 2008;27(5):w399-w415 (published online August 25, 2008).
- Himmelstein DU, Thorne D, Warren E, et al. Medical bankruptcy in the United States, 2007: results of a national study. *Am J Med* 2009 Aug;122(8):741-6. Epub 2009 Jun 6.
- Inkelas M, Schuster MA, Olson LM, et al. Continuity of primary care clinician in early childhood. *Pediatrics* 2004;113(6 Suppl):1917-25.
- Institute of Medicine, Committee on Monitoring Access to Personal Health Care Services. Access to health care in America. Washington, DC: National Academy Press; 1993.
- Parchman ML, Burge SK. Continuity and quality of care in type 2 diabetes: a Residency Research Network of South Texas study. *J Fam Pract* 2002;51(7):619-24.
- Phillips R, Proser M, Green L, et al. The importance of having health insurance and a usual source of care. *Am Fam Physician* 2004 Sep 15;70(6):1035.
- Schwartz K, Sommers BD. Young adults are particularly likely to gain stable health insurance coverage as a result of the Affordable Care Act. Washington, DC: Office of the Assistant Secretary for Planning and Evaluation, U.S. Department of Health and Human Services; 2012. Available at: <http://aspe.hhs.gov/health/reports/2012/UninsuredYoungAdults/rb.pdf>. Accessed March 14, 2013.
- Sommers B. Number of young adults gaining insurance due to the Affordable Care Act now tops 3 million. Washington, DC: Office of the Assistant Secretary for Planning and Evaluation, U.S. Department of Health and Human Services; 2012. Available at: <http://aspe.hhs.gov/aspe/gaininginsurance/rb.shtml>. Accessed March 14, 2013.
- Sommers B, Kronick R. Report shows Affordable Care Act has expanded insurance coverage among young adults of all races and ethnicities. ASPE Issue Brief. Washington, DC: Office of the Assistant Secretary for Planning and Evaluation, U.S. Department of Health and Human Services; 2012. Available at: <http://aspe.hhs.gov/health/reports/2012/YoungAdultsbyGroup/ib.shtml>. Accessed March 14, 2013.
- Sommers BD, Baicker K, Epstein AM. Mortality and access to care among adults after State Medicaid expansions. *N Engl J Med* 2012;367:1025-34.
- Starfield B, Shi L. The medical home, access to care, and insurance: a review of evidence. *Pediatrics* 2004;113(5 Suppl):1493-8.

U.S. Census Bureau. Facts for Features, Asian/Pacific American Heritage Month: May 2011. Available at: [http://www.census.gov/newsroom/releases/archives/facts\\_for\\_features\\_special\\_editions/cb11-ff06.html](http://www.census.gov/newsroom/releases/archives/facts_for_features_special_editions/cb11-ff06.html). Accessed August 24, 2011.

U.S. Census Bureau. American Fact Finder. Profile of general population and housing characteristics: 2010. Search results for California. Available at <http://factfinder2.census.gov/faces/nav/jsf/pages/index.xhtml>. Accessed March 14, 2013.

U.S. Census Bureau. State & County QuickFacts, 2012. Available at: <http://quickfacts.census.gov/qfd/states/06000.html>. Accessed March 13, 2013.

Wilper AP, Woolhandler S, Lasser KE, et al. Health insurance and mortality in U.S. adults. *Am J Public Health* 2009 Dec;99(12):2289-95. Epub 2009 Sep 17.





## Chapter 11. 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.”<sup>i</sup> 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 10 of this report are racial, ethnic, socioeconomic, sex, 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 into these chapters where data are available.

Chapter 11 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.<sup>ii</sup> This chapter summarizes findings from data available on differences for racial, ethnic, and low-income populations, as well as for residents of rural areas and people with disabilities (activity limitations).

This year the NHDR displays prevalence of multiple chronic conditions (MCC) among Medicare beneficiaries. According to the Centers for Medicare & Medicaid Services (CMS), Medicare beneficiaries with MCC are at increased risk for poor outcomes such as mortality and functional limitations and associated high-cost services such as hospitalizations and emergency room visits.

The NHDR also continues to feature health care data on lesbian, gay, bisexual, and transgender (LGBT) populations using data from the California Health Interview Survey (CHIS). This section will continue 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 online data tables include detailed data that allow examination of racial, ethnic, and socioeconomic disparities both in the general population and across priority populations for most measures.

---

<sup>i</sup> For statutory requirements, refer to 42 U.S.C. 299a-1(a)(6)

<sup>ii</sup> 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.<sup>iii</sup>
- ◆ Low-income groups.<sup>iv</sup>
- ◆ Women.
- ◆ Children (under age 18).
- ◆ Older adults (age 65 and over).
- ◆ Residents of rural areas.<sup>v</sup>
- ◆ Individuals with special health care needs,<sup>vi</sup> including individuals with disabilities and individuals who need chronic care or end-of-life care.

Although not mandated, other populations, such as LGBT and people with MCC, 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.
- ◆ Individuals with MCC.
- ◆ LGBT individuals.

Measures related to women, children, and older adults are integrated into other chapters of this report and the online data tables and include comparisons by sex and age. A list of where this information for these populations can be found in the reports is provided in the online Priority Populations appendix.

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.

---

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

<sup>iv</sup> 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 2012, the Federal poverty threshold for a family of two adults and two children was \$23,050.

<sup>v</sup> Rural areas can be defined in different ways depending on the data source. The NHDR uses the 2006 National Center for Health Statistics (NCHS) Urban–Rural Classification Scheme for Counties, which is built on the Office of Management and Budget definitions of metropolitan and micropolitan Core Based Statistical Areas (2000). The NCHS scheme describes the six “levels of urbanization” on a continuum from the large central metropolitan area (most urban/inner city) to the noncore or “most rural” area.

<sup>vi</sup> 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.

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 and other data collection instruments.

## Racial and Ethnic Minorities

In 2012, the total minority population of the United States, which includes all racial and ethnic groups except for non-Hispanic Whites, was 116 million (37% of the U.S. population; Census Bureau, 2012c). By 2050, it is projected that these groups will account for almost half of the U.S. population (Census Bureau, 2012a).

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 (Aud, et al., 2010).

Previous chapters of the NHDR describe health care differences by racial and ethnic categories as defined by the Office of Management and Budget (OMB) 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 be statistically significant at the  $\alpha \leq 0.05$  level (two-tailed test) and that the relative difference from the reference group be 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 2000-2003 to 2005-2012, 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. A linear regression model is used to estimate the difference in the annual rate of change for the comparison group relative to the reference group. 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

According to the U.S. Census Bureau, in 2011, the Black population of the United States was 43.9 million, an increase of 1.6% from 2010 (Census Bureau, 2013b). The Black population is projected to be 69.5 million by the year 2050, constituting 17.4% of the U.S. population (Census Bureau, 2012a).

Previous NHDRs showed that Blacks had poorer quality of care and worse access to care than Whites for many measures tracked in the reports. Among 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 78 measures.

Most of these measures showed no significant change in disparities over time. These include preventive care measures for cancer, children's dental care, and flu vaccinations for adults over age 65; hospital admissions for diabetes complications; hospital admissions for asthma; hospital care for pneumonia; hospital care for heart attack; HIV infection deaths; infant mortality; patient safety events; patient-centered care; and access to care.

For 13 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 congestive heart failure per 100,000 population.
- ◆ Incidence of end stage renal disease (ESRD) due to diabetes per million population.
- ◆ Hospital admissions for uncontrolled diabetes per 100,000 population age 18 and over.
- ◆ New AIDS cases per 100,000 population age 13 and over.
- ◆ HIV infection deaths per 100,000 population.
- ◆ Hospital patients age 65 and over with pneumonia who received pneumococcal 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.
- ◆ Short-stay nursing home residents with pressure sores.
- ◆ Adults age 65 and over with any private insurance.
- ◆ Deaths per 1,000 elective surgery admissions having developed specified complications of care during hospitalization, ages 18-89 or obstetric admissions.

For 3 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.
- ◆ Adults age 40 and over with diagnosed diabetes who received at least two hemoglobin A1c measurements in the calendar year.

## Asians

In 2011, U.S. Census Bureau data showed that the Asian population (single or multiple race) was 18.2 million (Census Bureau, 2013a), which represents a 2.3% increase from 2010. It is projected that the Asian population will reach 21 million by 2020 and 35.7 million by 2050 (Census Bureau, 2012a).

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. Among 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 38 measures.

Most of these measures showed no significant change in disparities over time. These include measures on preventive care for breast cancer, cervical cancer, and colorectal cancer; obstetric trauma; hospice care; timeliness of care; patient-centered care; and access to care.

For 2 measures, the gap between Asians and Whites grew smaller, indicating improvement:

- ◆ Adults with limited English proficiency and a usual source of care that had language assistance.
- ◆ Hospital patients age 65 and over with pneumonia who received pneumococcal screening or vaccination.

For 2 measures, the gap grew larger, indicating worsening disparities:

- ◆ Adults ages 18-64 at high risk (e.g., chronic obstructive pulmonary disease) who ever received pneumococcal vaccination.
- ◆ 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

With a population of 1.2 million, NHOPIs (single or multiple race) are 0.4% of the U.S. population. From 2000 to 2010, the NHOPi population increased more than three times as fast as the total U.S. population (35% compared with 9.7% for the total U.S. population). More than half of the NHOPi population reported being of multiple race (56%). While three-fourths of the NHOPi population lived in the West, the South experienced the fastest growth in the NHOPi population (66%) (Hixson, et al., 2012).

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, OMB 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.

In 2011, HHS released new data standards that more consistently measure race, ethnicity, sex, primary language, and disability status. As part of the Affordable Care Act, Federal data collection efforts require that all health surveys sponsored by HHS include standardized information. This effort is expected to improve the specificity, uniformity, and quality of data available for disparity populations such as NHOPIs.

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 the new data standards for analyzing data for minority populations, including NHOPIs.

Currently in the NHDR, some data on NHOPIs are available for some measures throughout the report, such as measures related to 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 System 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.

HHS and the Centers for Disease Control and Prevention have launched the Native Hawaiian/Pacific Islanders National Health Interview Survey, which uses the Census Bureau's American Community Survey to collect data from approximately 4,000 households, starting in February 2014. Findings will be available in the summer of 2015. These data will help to address the issue of small sample sizes that often impede research focused on NHOPIs.

This year, the NHDR features findings from a report by the Department of Native Hawaiian Health and its Center for Native and Pacific Health Disparities Research at the John A. Burns School of Medicine of the University of Hawaii. The report is called *Assessment and Priorities for Health & Well-Being in Native Hawaiians and Other Pacific Peoples* (Look, et al., 2013).

### Demographic Profile of NHOPIs in Hawaii

NHOPI is a population classification frequently used in Federal reports. This group includes Native Hawaiians, Samoans, Tongans, Guamanians/Chamorro, Micronesians (people of the Federated States of Micronesia, Palau, Marshall Islands, and the Commonwealth of the Northern Marianas), and Fijians.

- ◆ In the State of Hawaii, the population of Native Hawaiians increased by 21%, Samoans by 33%, Tongans by 35%, and Guamanians and Chamorro by 58% from 2000 to 2010 (Essoyan, 2012; Hawaii State Data Center, 2012).
- ◆ Overall, growth in the NHOPI population represents a 40% increase, compared with 9.7% growth in the U.S. population.
- ◆ More than half (56%) of people who identified themselves as NHOPI reported being of multiple races/ethnicities (Hixson, et al., 2012).

### Morbidity and Mortality of NHOPIs in Hawaii

- ◆ Life expectancy for Native Hawaiians, in comparison with other ethnicities, has remained consistently lower than the Hawaii State total, at 74.3 years of age. There has been steady improvement from 1950 to 2000 (Park, et al., 2009).

- ◆ Native Hawaiians have higher death rates compared with all other ethnicities in Hawaii. Native Hawaiians have higher mortality across the lifespan with rates 40% higher when compared with Whites. Similar to Blacks across the Nation, Hawaiians are dying at younger ages, with dramatic differences starting in the midlife age range (Panapasa, et al., 2010; Ka'opua, et al., 2011).
- ◆ In 2002, the infant mortality rate among Native Hawaiians was second highest of any racial/ethnic group and 66% higher than Whites (Mathews, et al., 2004). There continues to be a large disparity between Native Hawaiians and Whites, with infants born to Native Hawaiian mothers more than twice as likely to die as those born to White mothers in Hawaii (Hirai, et al., 2013).
- ◆ NHOPs bear a disproportionately higher prevalence of many chronic medical conditions, such as obesity, diabetes, and cardiovascular disease, collectively known as cardiometabolic disorders (Mau, et al., 2009).
- ◆ Native Hawaiians not only have higher rates of death from diabetes and heart disease but also from cancer and other leading causes of death compared with the overall State population (Johnson, et al., 2004).

Other selected findings from this report on NHOPs in the State of Hawaii are in Chapter 2, Cancer, Cardiovascular Disease, and Diabetes; Chapter 3, Lifestyle Modification; and Chapter 9, Health System Infrastructure.

## American Indians and Alaska Natives

In 2012, the population of AI/ANs (single or multiple race) was about 5.2 million, which represents 1.6% of the population.<sup>vii</sup> From 2000 to 2010, the AI/AN population increased by 1.1 million, an increase of about 27% (U.S. Census Bureau, 2012b). The projected population of AI/ANs is estimated to be 4.5 million by 2020 and 5.6 million by 2050 (U.S. Census Bureau, 2012a).

There are 566 federally recognized tribes (U.S. Department of the Interior, 2013) and 324 federally recognized American Indian reservations. In 2010, 22% of AI/ANs (single or multiple race) lived in American Indian areas or Alaska Native Village Statistical Areas (Census Bureau, 2012b).

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. Among 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 40 measures.

Most of these measures showed no significant change in disparities over time. Such measures include measures for HIV/AIDS, preventive care for children, care for residents in nursing homes, home health care, hospice care, and access to care.

For one measure, the gap between AI/ANs and Whites grew smaller, indicating improvement:

- ◆ Incidence of ESRD due to diabetes per million 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.

<sup>vii</sup> Data taken from the 2012 American Community Survey, available at [http://factfinder2.census.gov/bkmk/table/1.0/en/ACS/12\\_1YR/S0201//popgroup-009](http://factfinder2.census.gov/bkmk/table/1.0/en/ACS/12_1YR/S0201//popgroup-009)

## Hispanics or Latinos

In 2012, the Hispanic population of the United States was 53 million. Hispanics are the largest ethnic or racial minority group, representing 17% of the total population. Between 2011 and 2012, the Hispanic population increased by 1.1 million, a 2.2% increase (Census Bureau, 2013c). The Hispanic population is projected to be 63.8 million in 2020 and 111.7 million in 2050 (Census Bureau, 2012a).

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. Among 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 72 measures.

Most of these measures showed no significant change in disparities over time. Such measures include measures on preventive care for cervical cancer and colorectal cancer; diabetes care; HIV/AIDS; hospital admissions for asthma; quality of care for residents of nursing homes; home health care; timeliness of care; patient-centered care; and access to care.

For 7 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 age 65 and over with pneumonia who received pneumococcal screening or vaccination.
- ◆ Short-stay nursing home residents who were assessed for pneumococcal vaccination.
- ◆ Hospital admissions for congestive heart failure per 100,000 population.
- ◆ Hospital admissions for long-term complications of diabetes per 100,000 adults.
- ◆ Adults age 65 and over with any private health insurance.

For 3 measures, the gap between Hispanics and non-Hispanic Whites grew larger, indicating worsening disparities:

- ◆ Adult home health care patients whose ability to walk or move around improved.
- ◆ Adult home health care patients whose shortness of breath decreased.
- ◆ Adult home health care patients whose management of oral medications improved.

## 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 (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 48.5 million in 2011. In 2011, 15.9% of the U.S. population had incomes below their respective poverty thresholds (Bishaw, 2012).

Poverty varies by race and ethnicity. In 2012, 13.0% of Whites, 28.1% of Blacks, 29.1% of AI/ANs, 13.0% of Asians, 21.3% of NHOPIs, and 25.4% of Hispanics had incomes below the poverty level.<sup>viii</sup> People from

<sup>viii</sup> Data taken from the 2012 American Community Survey, available at [http://factfinder2.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ACS\\_12\\_1YR\\_S1701&prodType=table](http://factfinder2.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ACS_12_1YR_S1701&prodType=table).



the lowest SES groups are 2.5 times more likely to have repeat emergency department visits and 2.7 times more likely to have repeat hospitalizations during a 1-year period compared with those from higher SES groups (Chen & Miller, 2013).

In general, poor populations have reduced access to high-quality care. Studies have shown that adults ages 51-61 years old who lack health insurance have higher risk-adjusted rates of decline in their overall health and physical functioning compared with individuals with private insurance. Reduced access to care can have serious consequences for health outcomes via lack of preventive services use, delayed diagnosis of disease, and poor monitoring and control of chronic disease (Sudano & Baker, 2006).

Previous chapters of this report describe health care differences by income. Among all measures of health care quality and access that are tracked in the reports and support trends over time, poor<sup>ix</sup> individuals had worse care than high-income<sup>x</sup> individuals in the most recent year for 77 measures. Most of these measures showed no significant change in disparities over time. These measures include measures for preventive care for children, diabetes care, asthma care, obesity prevention, patient safety, and access to care.

For 5 measures, the gap between poor and high-income individuals grew smaller, indicating improvement:

- ◆ 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, ages 2-17.
- ◆ People under age 65 whose family's health insurance premium and out-of-pocket medical expenditures were more than 10% of total family income.
- ◆ People under age 65 with private insurance whose family's health insurance premium and out-of-pocket medical expenditures were more than 10% of total family income.

For 4 measures, the gap grew larger, indicating worsening disparities:

- ◆ Adults age 50 and over who ever received a colonoscopy, sigmoidoscopy, or proctoscopy.
- ◆ Hospital admissions for short-term complications of diabetes per 100,000 population, adults.
- ◆ Adolescents ages 16-17 who received 1 or more doses of tetanus toxoid, reduced diphtheria toxoid, and acellular pertussis (Tdap) since the age of 10 years.
- ◆ People without a usual source of care who indicated a financial or insurance reason for not having a source of care.

## Residents of Rural Areas

According to 2010 U.S. Census data (Census Bureau, 2010), 19.3 % of the U.S. population lives in a rural area. 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 are more likely to report having deferred care due to cost (Bennett, et al., 2008).

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

<sup>ix</sup> Household income less than Federal poverty thresholds.

<sup>x</sup> Household income 400% of Federal poverty thresholds and higher.

## PRIORITY POPULATIONS

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.

Language barriers are often greater in rural areas. Through the “Advancing Effective Communication in Critical Access Hospitals Initiative,” the HHS Office for Civil Rights (OCR) piloted a multistate compliance review and technical assistance project to support CAHs in providing language access services to limited-English-proficient (LEP) populations in rural and isolated areas. During 2012 and 2013, OCR conducted compliance reviews of 45 CAHs, one hospital in each of the 45 States served by the CAH program (a combined total of more than 1,125 beds). Each CAH established a comprehensive language access program:

- ◆ A needs assessment of its service area;
- ◆ Oral language services;
- ◆ Written translation services;
- ◆ Written policies and procedures, including grievance and nondiscrimination policies;
- ◆ Notification of the availability of language assistance at no cost;
- ◆ Staff training;
- ◆ An assessment of access and quality;
- ◆ Stakeholder consultations;
- ◆ Information management; and
- ◆ Compliance with Title VI of the Civil Rights Act of 1964.

Under this ongoing Initiative, OCR will conduct language assistance compliance reviews in each of the 45 States served by the CAH program.

Similarly, 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”<sup>xi</sup> in the Nation, most have limited health care services and many do not have any (Frontier Education Center, 2000).

One challenge for interpreting research findings for “rural” residents is that the geographic location or “level of urbanization” is 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<sup>xii</sup> (the most 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 than residents of the most rural areas.

<sup>xi</sup> “Frontier counties” have a population density of less than 7 people per square mile; thus, residents may have to travel long distances for care.

<sup>xii</sup> Noncore areas are outside of metropolitan or micropolitan statistical areas and are considered “the most rural” on a “level of urbanization” continuum.

Among 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 32 measures. Most of these measures showed no significant change in disparities over time. These include measures for cancer mortality, obesity prevention, patient-centered care, and access to care.

For 2 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.

## Individuals With Disabilities or Special Health Care Needs

The NHDR tracks many measures of relevance to individuals with disabilities or special health care needs and this year particular focus is placed on the health care Americans with disabilities receive. Data are often limited, and AHRQ has worked with Federal partners to improve reporting on health care quality for individuals with disabilities.

The disability measure for adults used in the 2013 NHDR/NHQR has been used in these reports since 2007 and is based on the work of a 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 effort, the subgroup focused on measures for adults, a population for which the most survey data are available.

For the 2013 NHDR, AHRQ is again using a broad, inclusive measure of disability for adults. This measure 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 ([Office of the Surgeon General, 2005; LaPlante, 1991]) and other Federal program definitions of disability.

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

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

Limitations in basic activities include problems with mobility, self-care (activities of daily living), domestic life (instrumental activities of daily living), and activities that depend on sensory functioning (limited to people who are blind or deaf). Limitations in complex activities include limitations experienced in work and in community, social, and civic life. The use of the subgroup's recommendation of these paired measures of basic and complex activity limitations is conceptually similar to the way others have divided disability (LaPlante, 1991; Altman and Bernstein, 2008) and is consistent with the International Classification of Functioning, Disability, and Health separation of activities and participation domains (WHO, 2001).

## PRIORITY POPULATIONS

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 limitation for adults are presented for selected measures in Chapter 2, Cancer, Cardiovascular Disease, Musculoskeletal Diseases, and Respiratory Diseases; Chapter 3, Lifestyle Modification; Chapter 6, Patient Centeredness; Chapter 7, Care Coordination; Chapter 8, Efficiency; and Chapter 10, Access to Health Care in the NHQR. In addition, the online data tables include activity limitations as a stub variable for all National Health Interview Survey and Medical Expenditure Panel Survey tables.

Among 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 21 measures. Most of these measures showed no significant change in disparities over time. Such measures included measures for patient-centered care and access to care.

For 2 measure, the gap between individuals with basic activity limitations and individuals with neither basic nor complex activity limitations narrowed, indicating improvement:

- ◆ People under age 65 with any private health insurance.
- ◆ People under age 65 whose family's health insurance premium and out-of-pocket medical expenditures were more than 10% of total family income.

For 1 measure, the gap grew larger, indicating worsening disparities:

- ◆ People under age 65 with health insurance.

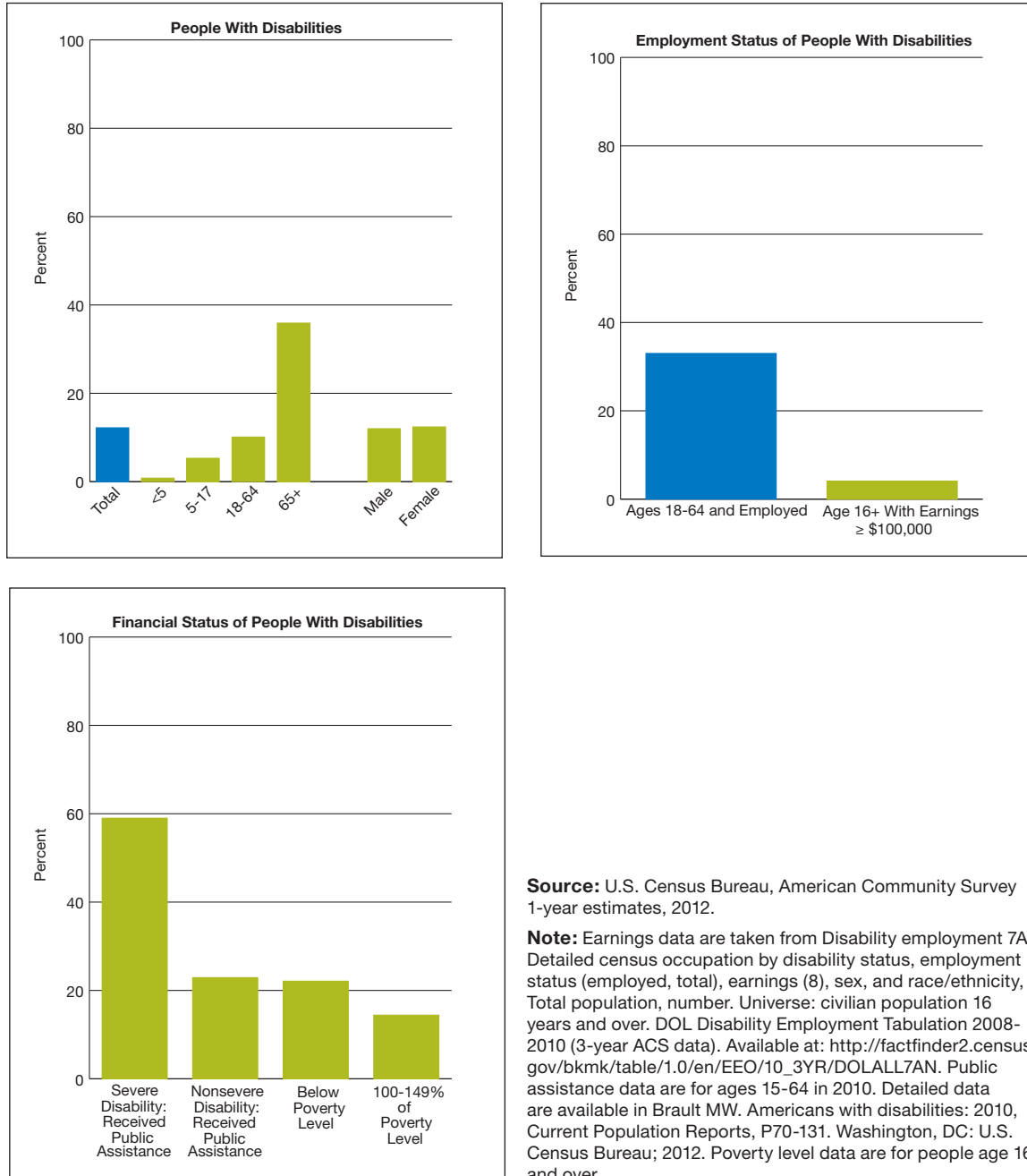
Individuals with complex activity limitations had worse care than individuals with neither basic nor complex activity limitations in the most recent year for 21 measures. Most of these measures showed no significant change in disparities over time. Such measures included measures for patient-centered care and access to care.

For 1 measure, the gap between individuals with complex activity limitations and individuals with neither basic nor complex activity limitations narrowed, indicating improvement:

- ◆ People under age 65 whose family's health insurance premium and out-of-pocket medical expenditures were more than 10% of total family income.

In June 2009, HHS created the Community Living Initiative (CLI) to promote Federal partnerships that advance the directive of the Olmstead decision, which develops and implements innovative strategies that increase opportunities for Americans with disabilities and older American to enjoy meaningful community living. Figure 11.1 highlights some characteristics of Americans living with disabilities.

**Figure 11.1. People living with disability, by age, sex, 2012, and economic status, 2010 and 2012**



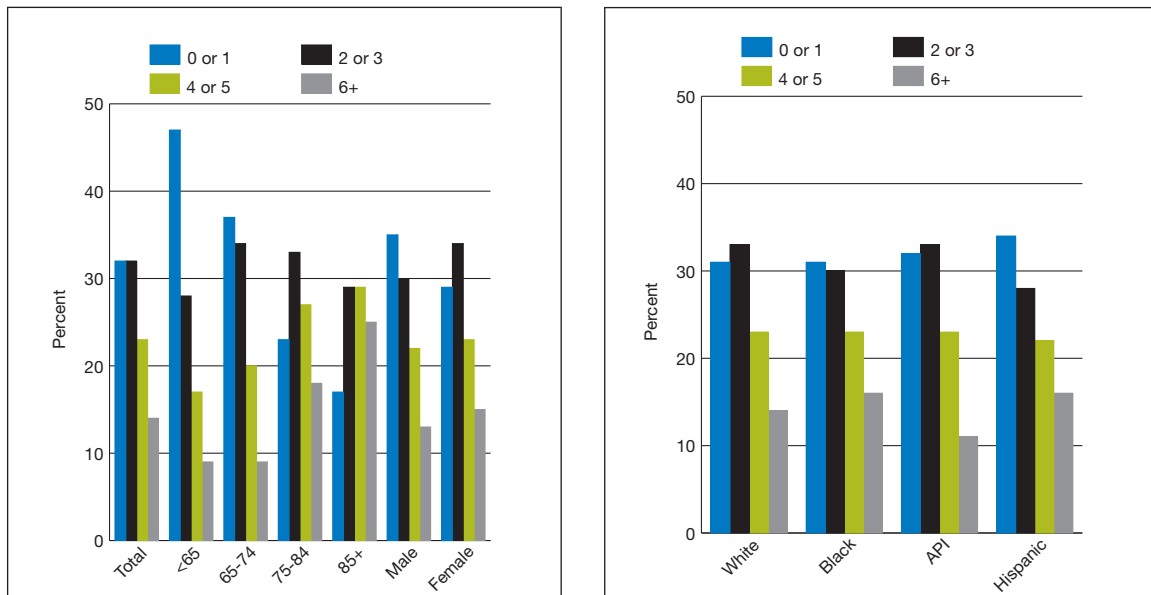
- ◆ In 2012, there were 37.6 million civilian noninstitutionalized people (12.2%) living with a disability. About 1% of children under age 5, 5% of children ages 5-17, 10% of adults ages 18-64, and 36% of adults age 65 and over were living with a disability (Figure 11.1).
- ◆ In 2012, about 12% of males and females were living with a disability.

- ◆ In 2012, one-third of adults ages 18-64 living with a disability were employed. Data for 2010 show that about 300,000 of employed individuals with a disability made \$100,000 or more.
- ◆ In 2012, the median earnings in the past 12 months for adults with a disability was \$20,184 compared with \$30,660 for those without a disability (data not shown).
- ◆ In 2010, nearly 60% of people with a severe disability received some type of public assistance, and 22.9% of people with a nonsevere disability received assistance.
- ◆ Twenty-two percent of people with a disability lived below the poverty level and 14.4% were at 100% to 149% of the poverty level compared with 12.7% and 8.3%, respectively, of people without a disability.

## Individuals With Multiple Chronic Conditions

Chronic illnesses are conditions that last more than a year and require ongoing medical attention and/or limit activities of daily living (HHS, 2010). Nearly half the adult population is affected by chronic conditions and more than one in four have multiple, concurrent chronic conditions (HHS, 2010; Ward & Schiller, 2013). CMS analyzed 15 common chronic conditions, including high blood pressure, heart failure, diabetes, and chronic kidney disease, for 31 million Medicare beneficiaries who were enrolled continuously in the Medicare fee-for-service (FFS) program in 2010.

**Figure 11.2. Medicare FFS beneficiaries by number of chronic conditions, age and sex, and race/ethnicity, 2010**



**Key:** API = Asian or Pacific Islander.

**Source:** Centers for Medicare & Medicaid Services, Chronic conditions among Medicare beneficiaries: chartbook, 2012 edition.

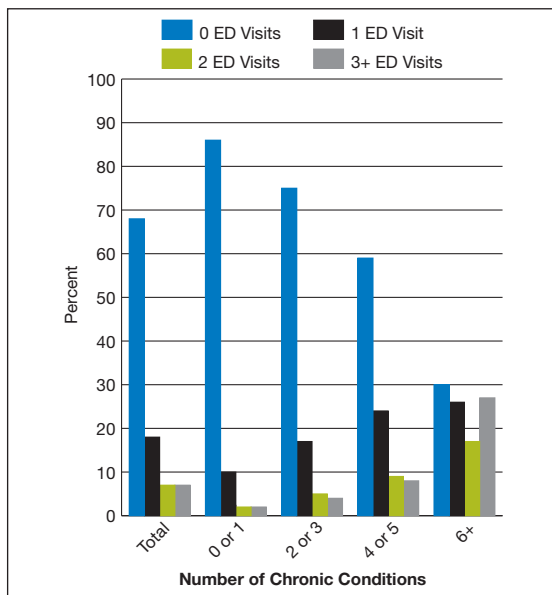
**Note:** White, Black, and API are non-Hispanic. Hispanic includes all races.

- ◆ In 2010, 32% of Medicare FFS beneficiaries had zero or one chronic condition, 32% had two or three chronic conditions, about one-quarter had four or five chronic conditions, and 14% had six or more (Figure 11.2).

- ◆ In 2010, 9% of adults under age 65 and 9% of adults ages 65-74 had six or more chronic conditions compared with 18% of adults ages 75-84 and 25% of adults age 85 and over.
- ◆ In 2010, 11% of API, 14% of White, and 16% of both Black and Hispanic Medicare beneficiaries had six or more chronic conditions.

MCC increase the risks for poor outcomes such as mortality and functional limitations. They also increase the risk for high-cost services such as hospitalizations and emergency department (ED) visits. Medicare beneficiaries with MCC are the heaviest users of health care services. Hospitalizations are an important driver of health care cost, so it is critical to know the impact chronic conditions have on inpatient admissions. In 2010, about one in five Medicare beneficiaries was admitted to a hospital, costing more than \$100 billion (CMS, 2012).

**Figure 11.3. Medicare FFS beneficiaries by number of ED visits and number of chronic conditions, 2010**



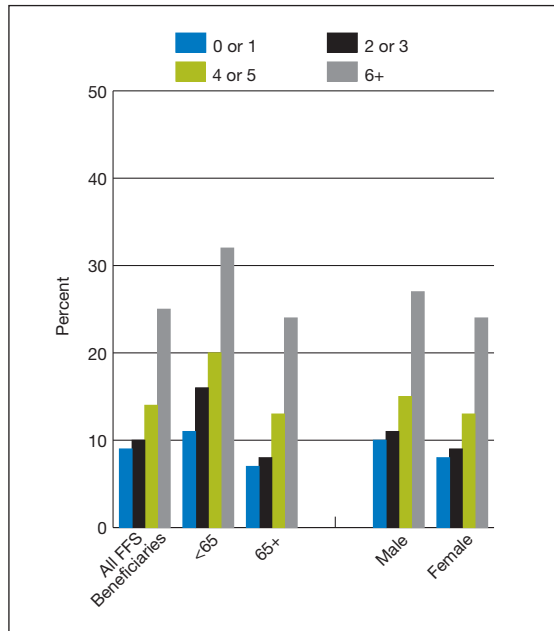
**Source:** Centers for Medicare & Medicaid Services, Chronic conditions among Medicare beneficiaries: chartbook, 2012 edition.

- ◆ In 2010, 75% of Medicare FFS beneficiaries with two or three chronic conditions had no ED visits compared with 59% of beneficiaries with four or five and 30% of beneficiaries with six or more (Figure 11.3).
- ◆ In 2010, 17% of Medicare beneficiaries with two or three chronic conditions had one ED visit compared with 24% of beneficiaries with four or five and 26% of beneficiaries with six or more.
- ◆ In 2010, 5% of Medicare beneficiaries with two or three chronic conditions had two ED visits compared with 9% of beneficiaries with four or five and 17% of beneficiaries with six or more.
- ◆ In 2010, only 4% of Medicare beneficiaries with two or three chronic conditions had three or more ED visits compared with 8% of beneficiaries with four or five and 27% of beneficiaries with six or more.

MCC are associated with higher rates of death, disability, adverse effects, institutionalization, use of health care resources, and poorer quality of life (AGS Expert Panel, 2012). Older adults with MCC require considerable health services and complex care. The intensity and complexity of treating people with MCC account for a large proportion of health care costs, including more than 80% of Medicare expenditures.

Individuals with MCC typically receive multiple interventions, each of which may affect other coexisting conditions positively or negatively and may interact with other interventions.

**Figure 11.4. Hospital admissions with a readmission within 30 days for Medicare FFS beneficiaries, by number of chronic conditions, age, and sex, 2010**

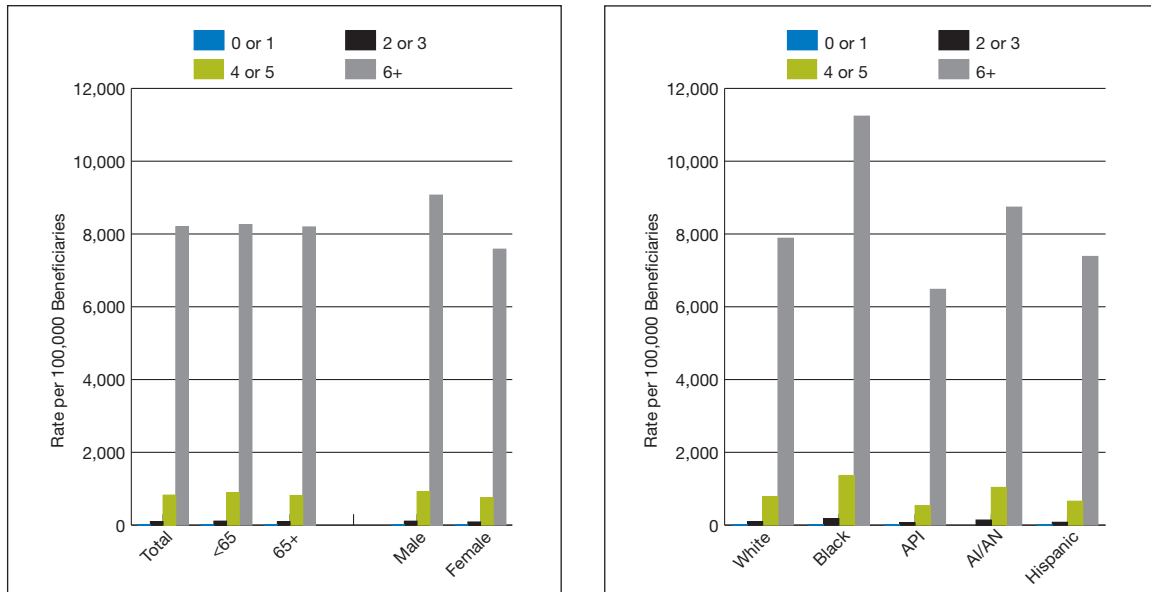


**Source:** Centers for Medicare & Medicaid Services, Chronic conditions among Medicare beneficiaries: chartbook, 2012 edition.

- ◆ In 2010, 11% of Medicare FFS beneficiaries under age 65 with zero or one chronic condition had a readmission within 30 days compared with 16% of beneficiaries with two or three, 20% of beneficiaries with four or five, and 32% with six or more (Figure 11.4).
- ◆ Seven percent of Medicare beneficiaries age 65 and over with zero or one chronic condition had a readmission within 30 days compared with 8% of beneficiaries with two or three, 13% of beneficiaries with four or five, and 24% of beneficiaries with six or more.
- ◆ In 2010, 10% of male beneficiaries with zero or one chronic condition had a readmission within 30 days compared with 11% of beneficiaries with two or three, 15% of beneficiaries with four or five, and 27% of beneficiaries with six or more.
- ◆ Eight percent of female beneficiaries with zero or one chronic condition had a readmission within 30 days compared with 9% of beneficiaries with two or three, 13% of beneficiaries with four or five, and 24% of beneficiaries with six or more.



**Figure 11.5. Heart failure admissions for Medicare FFS beneficiaries, by number of chronic conditions, age and sex, and race/ethnicity, 2011**



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

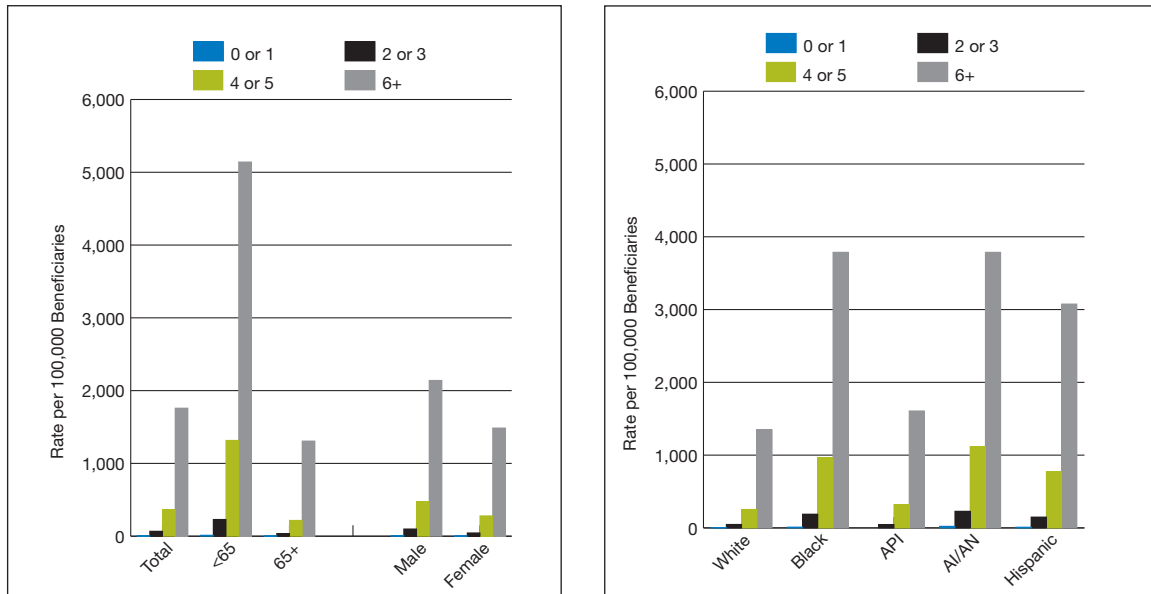
**Source:** Centers for Medicare & Medicaid Services, Medicare beneficiary enrollment and claims for both institutional and noninstitutional settings available from the CMS Chronic Conditions Data Warehouse (CCW), [www.ccwdata.org](http://www.ccwdata.org).

**Note:** White, Black, API, and AI/AN are non-Hispanic. Hispanic includes all races. Data for AI/ANs with zero or one chronic condition did not meet criteria for statistical reliability.

- ◆ In 2011, the overall rate of hospital admission for heart failure was 1,399 per 100,000 Medicare FFS beneficiaries (data not shown). The rate of admission for beneficiaries with six or more chronic conditions was more than 900 times the rate for beneficiaries with zero or one chronic condition (8,203 per 100,000 beneficiaries compared with 9 per 100,000 beneficiaries; Figure 11.5).
- ◆ In 2011, the rate of hospital admission for heart failure for Medicare beneficiaries under age 65 with six or more chronic conditions was more than 1,000 times the rate for Medicare beneficiaries under age 65 with zero or one chronic condition (8,260 per 100,000 beneficiaries compared with 8 per 100,000 beneficiaries).
- ◆ In 2011, the rate of hospital admission for heart failure for male Medicare beneficiaries with six or more chronic conditions was 1,000 times the rate for Medicare beneficiaries with zero or one chronic condition (9,069 per 100,000 beneficiaries compared with 9 per 100,000 beneficiaries).
- ◆ In 2011, the rate of hospital admission for heart failure for female Medicare beneficiaries with six or more chronic conditions was more than 800 times the rate for female Medicare FFS beneficiaries with zero or one chronic condition (7,584 per 100,000 beneficiaries compared with 9 per 100,000 beneficiaries).
- ◆ In 2011, the rate of hospital admission for heart failure for White Medicare beneficiaries with six or more chronic conditions was more than 800 times the rate for White Medicare beneficiaries with zero or one chronic condition (7,885 per 100,000 beneficiaries compared with 9 per 100,000 beneficiaries).

- ◆ In 2011, the rate of hospital admission for heart failure for Hispanic Medicare beneficiaries with six or more chronic conditions was more than 1,000 times the rate for Hispanic Medicare beneficiaries with zero or one chronic condition (7,384 per 100,000 beneficiaries compared with 7 per 100,000 beneficiaries). Similarly, the rate of hospital admission for heart failure for Black Medicare beneficiaries with six or more chronic conditions was 11,239 per 100,000 beneficiaries compared with 14 per 100,000 for Black Medicare beneficiaries with zero or one chronic condition.

**Figure 11.6. Admissions for long-term complications of diabetes for Medicare FFS beneficiaries, by number of chronic conditions, age and sex, and race/ethnicity, 2011**



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

**Source:** Centers for Medicare & Medicaid Services, Medicare beneficiary enrollment and claims for both institutional and noninstitutional settings available from the CMS Chronic Conditions Data Warehouse (CCW), [www.ccwdata.org](http://www.ccwdata.org).

**Note:** White, Black, API, and AI/AN are non-Hispanic. Hispanic includes all races. Data for APIs with zero or one chronic condition did not meet criteria for statistical reliability.

- ◆ In 2011, the rate of admission for long-term complications of diabetes for Medicare FFS beneficiaries under age 65 with six or more chronic conditions was nearly 400 times the rate for Medicare beneficiaries under age 65 with zero or one chronic condition (5,141 per 100,000 beneficiaries compared with 13 per 100,000 beneficiaries).
- ◆ In 2011, the rate of admission for long-term complications of diabetes for male Medicare beneficiaries with six or more chronic conditions was about 300 times the rate for male Medicare beneficiaries with zero or one chronic condition (2,140 per 100,000 beneficiaries compared with 7 per 100,000 beneficiaries).
- ◆ In 2011, the rate of admission for long-term complications of diabetes for female Medicare beneficiaries with six or more chronic conditions was nearly 500 times the rate for female Medicare beneficiaries with zero or one chronic condition (1,486 per 100,000 beneficiaries compared with 3 per 100,000 beneficiaries).
- ◆ In 2011, the rate of admission for long-term complications of diabetes for White Medicare beneficiaries with six or more chronic conditions was more than 300 times the rate for White Medicare beneficiaries with zero or one chronic condition (1,350 per 100,000 beneficiaries compared with 4 per 100,000 beneficiaries).

- ◆ In 2011, the rate of admission for long-term complications of diabetes for Black Medicare beneficiaries with six or more chronic conditions was more than 300 times the rate for Black Medicare beneficiaries with zero or one chronic condition (3,787 per 100,000 beneficiaries compared with 11 per 100,000 beneficiaries).
- ◆ In 2011, the rate of admission for long-term complications of diabetes for AI/AN Medicare beneficiaries with six or more chronic conditions was more than 170 times the rate for AI/AN Medicare beneficiaries with zero or one chronic condition (3,787 per 100,000 beneficiaries compared with 22 per 100,000 beneficiaries).
- ◆ In 2011, the rate of admission for long-term complications of diabetes for Hispanic Medicare beneficiaries with six or more chronic conditions was more than 300 times the rate for Hispanic Medicare beneficiaries with zero or one chronic condition (3,076 per 100,000 beneficiaries compared with 10 per 100,000 beneficiaries).

## Lesbian, Gay, Bisexual, and Transgender Populations

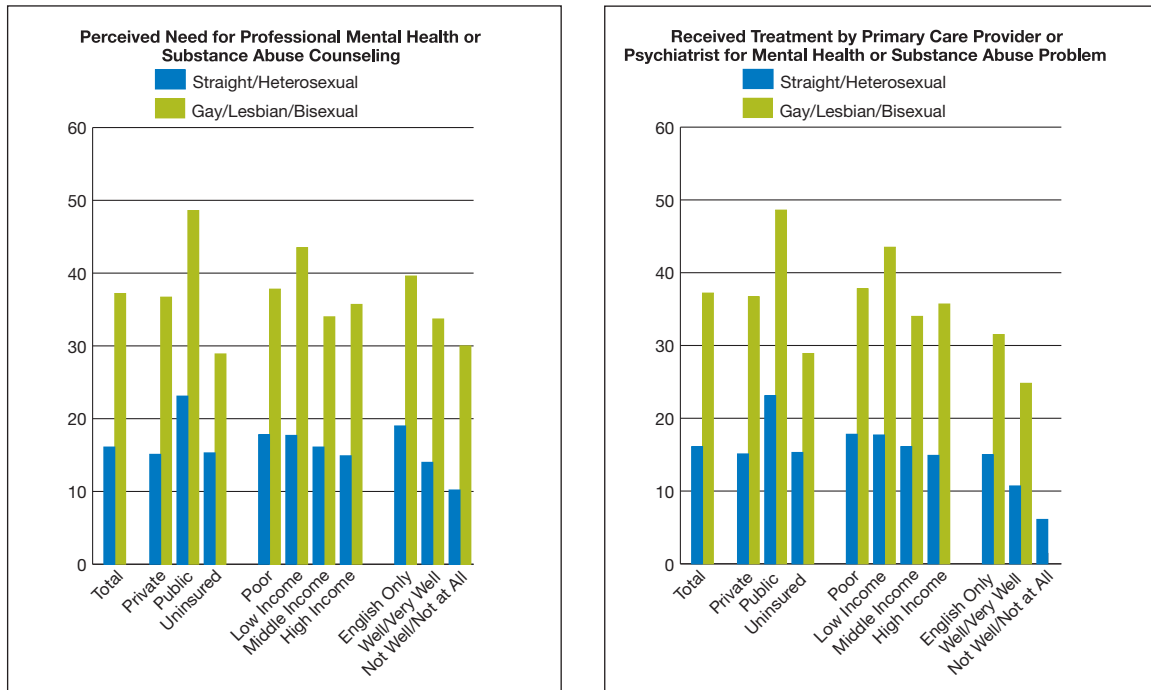
LGBT individuals encompass all races and ethnicities, religions, and social classes. Sexual orientation and gender identity questions are not asked on most national or State surveys, making it difficult to estimate the number of LGBT individuals and their health needs. Evidence is emerging that suggests that LGBT people face a variety of personal and structural barriers to obtaining high-quality medical care.

Personal barriers may include disrespectful behavior from staff and providers, perceived threatening environment, and stigma associated with being a sexual minority (IOM, 2011). Discrimination against LGBT individuals has been associated with high rates of psychiatric disorders (McLaughlin, et al., 2010), substance abuse (Ibanez, et al., 2005; Herek & Garnets, 2007), and suicidal behavior (Remafedi, et al., 1998; Haas, et al., 2011).

Structural barriers include difficulty obtaining health insurance, since many employer-sponsored insurance plans do not recognize same-sex unions, and a lack of culturally competent providers (Ash & Badgett, 2006; Heck, et al., 2006). Improving the health, safety, and well-being of LGBT individuals is one of the goals of Healthy People 2020.

National data on mental health and access to care for some underserved populations are not available from the national data sources in the NHDR. These populations include people with limited English proficiency; individuals who speak a language other than English at home; LGBT individuals; and Asian and Hispanic subpopulations. To address some of these data gaps, additional data from the CHIS are shown below. The sampling methods used in CHIS are an example of how important disparities can be examined when data are collected this way.

**Figure 11.7. Individuals ages 12 and older seen by their primary care provider or a psychiatrist in the last 12 months for problems with mental health or use of alcohol or drugs, by sexual orientation, insurance status, family income, and English proficiency, California, 2009**



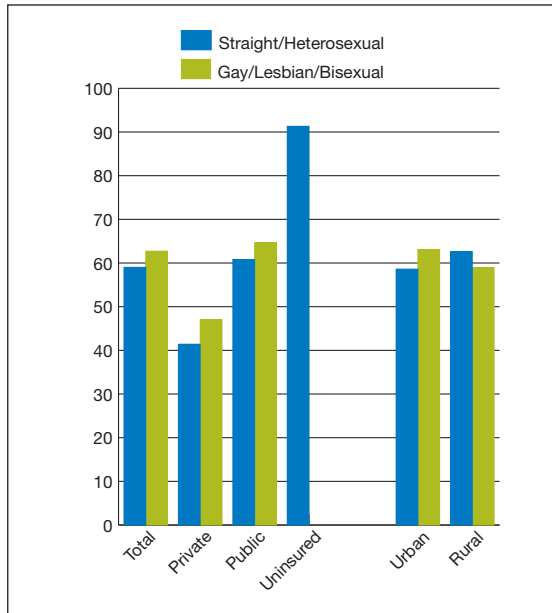
**Source:** University of California, Los Angeles, Center for Health Policy Research, California Health Interview Survey, 2009.

**Note:** Data for Gay/Lesbian/Bisexual who received treatment is not available for individuals who did not speak English well or at all.

- ◆ Overall, in 2009, among California residents, homosexual or bisexual individuals were significantly more likely than heterosexual individuals to report a perceived need for a health professional for problems with mental health or use of alcohol or drugs (Figure 11.7).
- ◆ Homosexual or bisexual individuals in all income groups were significantly more likely than heterosexual individuals in the same income groups to need a health professional for problems with mental health or use of alcohol or drugs.
- ◆ Overall, in 2009, homosexual or bisexual individuals were significantly more likely than heterosexual individuals to see a health professional for problems with mental health or use of alcohol or drugs.
- ◆ Homosexual or bisexual individuals with all types of insurance were significantly more likely than heterosexual individuals with the same types of insurance to see a health professional for problems with mental health or use of alcohol or drugs.

While members of the LGBT community share similar health care needs as the rest of the population, they often face additional health care barriers, including stigma and a lack of awareness and insensitivity to their unique needs (Pelletier & Tschurtz, 2012). One study found that both men and women in same-sex relationships had significantly lower rates of health insurance coverage and higher rates of unmet medical needs than did individuals in different-sex relationships (Buchmueller & Carpenter, 2010).

**Figure 11.8. Delayed in getting medical care due to cost or lack of health insurance, by sexual orientation, insurance status, and residence location, 2009**



**Source:** University of California, Los Angeles, Center for Health Policy Research, California Health Interview Survey, 2009.

**Note:** Data for uninsured Gay/Lesbian/Bisexual are statistically unreliable.

- ◆ In 2009, among California residents, there were no statistically significant differences between homosexual or bisexual individuals and heterosexual individuals overall, by insurance status, or by residence location in the percentage who reported delaying medical care due to cost or lack of health insurance (Figure 11.8).

## References

Altman B, Bernstein A. Disability and health in the United States, 2001-2005. Hyattsville, MD: National Center for Health Statistics; 2008. Available at: <http://www.cdc.gov/nchs/data/misc/disability2001-2005.pdf>. Accessed April 24, 2014.

American Geriatrics Society Expert Panel on the Care of Older Adults With Multimorbidity. Patient-centered care for older adults with multiple chronic conditions: a stepwise approach from the American Geriatrics Society. *J Am Geriatr Soc* 2012. Available at: <http://www.americangeriatrics.org/files/documents/MCC.stepwise.approach.pdf>. Accessed April 24, 2014.

Ash MA, Badgett MVL. Separate and unequal: the effect of unequal access to employment-based health insurance on same-sex and unmarried different-sex couples. *Contemp Econ Pol* 2006;24:582-99.

Aud S, Fox MA, Kewal-Ramani A. Status and trends in the education of racial and ethnic groups. Washington, DC: National Center for Education Statistics, Institute of Education Sciences, U.S. Department of Education; 2010. Publication No. NCES 2010-015. Available at: <http://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=2010015>. Accessed July 8, 2013.

Bennett KJ, Olatosi B, Probst JC. Health disparities: a rural-urban chartbook. Columbia, SC: South Carolina Rural Health Research Center; 2008. Available at: <http://rhr.sph.sc.edu/report/%287-3%29%20Health%20Disparities%20A%20Rural%20Urban%20Chartbook%20-%20Distribution%20Copy.pdf>. Accessed April 24, 2014.

Bishaw A. Poverty: 2010 and 2011. American Community Survey Briefs. Suitland, MD: U.S. Census Bureau; September 2012. Publication No. ACSBR/11-01. Available at: <http://www.census.gov/prod/2012pubs/acsbr11-01.pdf>. Accessed April 24, 2014.

Buchmueller T1, Carpenter CS. Disparities in health insurance coverage, access, and outcomes for individuals in same-sex versus different-sex relationships, 2000-2007. *Am J Public Health* 2010 Mar;100(3):489-95. Epub 2010 Jan 14.

Census Bureau. 2010 Census Urban and Rural Classification and Urban Area Criteria. Suitland, MD: U.S. Census Bureau. Available at: <http://www.census.gov/geo/reference/ua/urban-rural-2010.html>. Accessed April 24, 2014.

Census Bureau. 2012 National population projections: summary tables. Suitland, MD: U.S. Census Bureau; 2012a. Available at: <http://www.census.gov/popuation/projections/data/national/2012/summarytables.html>. Accessed April 24, 2014.

Census Bureau. Facts for Features. American Indian and Alaska Native Heritage Month: November 2012. CB 12-FF.22. Washington, DC: U.S. Census Bureau; 2012b. Available at [http://www.census.gov/newsroom/releases/archives/facts\\_for\\_features\\_special\\_editions/cb12-ff22.html](http://www.census.gov/newsroom/releases/archives/facts_for_features_special_editions/cb12-ff22.html). Accessed August 28, 2013.

Census Bureau. Facts for Features. Asian/Pacific American Heritage Month: May 2013. Suitland, MD: U.S. Census Bureau; 2013a. Publication No. CB 13-FF.09. Available at [http://www.census.gov/newsroom/releases/archives/facts\\_for\\_features\\_special\\_editions/cb13-ff09.html](http://www.census.gov/newsroom/releases/archives/facts_for_features_special_editions/cb13-ff09.html). Accessed August 28, 2013.

Census Bureau. Facts for Features. Black (African-American) History Month: February 2013. Suitland, MD: U.S. Census Bureau; 2013b. Publication No. CB 13-FF.02. Available at [http://www.census.gov/newsroom/releases/archives/facts\\_for\\_features\\_special\\_editions/cb13-ff02.html](http://www.census.gov/newsroom/releases/archives/facts_for_features_special_editions/cb13-ff02.html). Accessed August 28, 2013.

Census Bureau. Facts for Features. Hispanic Heritage Month 2013: September 15 – October 15. Suitland, MD: U.S. Census Bureau; 2013c. Publication No. CB 13-FF.19. Available at [http://www.census.gov/newsroom/releases/archives/facts\\_for\\_features\\_special\\_editions/cb13-ff19.html](http://www.census.gov/newsroom/releases/archives/facts_for_features_special_editions/cb13-ff19.html). Accessed August 28, 2013.

Census Bureau. Poverty thresholds. Suitland, MD: U.S. Census Bureau; 2011b. Available at: <http://aspe.hhs.gov/poverty/11poverty.shtml>. Accessed on August 24, 2011.

Census Bureau. U.S. Census Bureau projections show a slower growing, older, more diverse nation a half century from now. Suitland, MD: U.S. Census Bureau; 2012c. Available at <http://www.census.gov/newsroom/releases/archives/population/cb12-243.html>. Accessed April 24, 2014.

Centers for Medicare & Medicaid Services. Chronic conditions among Medicare beneficiaries: chartbook, 2012 edition. Baltimore, MD: CMS; 2012.

Chen E, Miller GE. Socioeconomic status and health: Mediating and moderating factors. *Annu Rev Clin Psychol* 2013;9:723-49.

Essoyan S. Native Hawaiian, Pacific Islander population swells. *Star Advertiser* 2012 May 9.

Executive Office of the President. Revisions to the standards for the classification of federal data on race and ethnicity. Washington, DC: Office of Management and Budget; 1997. Available at: [http://www.whitehouse.gov/omb/fedreg\\_1997standards/](http://www.whitehouse.gov/omb/fedreg_1997standards/). Accessed August 24, 2011.

Fast facts on U.S. hospitals. [Data from the 2009 annual survey]. Chicago: American Hospital Association; 2011.

Geography of frontier America: the view at the turn of the century. Sante Fe, NM: Frontier Education Center; 2000.

Haas AP, Eliason M, Mays VM, et al. Suicide and suicide risk in lesbian, gay, bisexual, and transgender populations: review and recommendations. *J Homosexual* 2011;58(1):10-51.

Hawaii State Data Center. Filipino Population by County, Island and Census Tract in the State of Hawaii: 2010. Honolulu: Hawaii State Department of Business, Economic Development & Tourism; 2012. Available at: [http://files.hawaii.gov/dbedt/census/Census\\_2010/SF1/HSDC2010-5\\_Filipino.pdf](http://files.hawaii.gov/dbedt/census/Census_2010/SF1/HSDC2010-5_Filipino.pdf). Accessed April 24, 2014.

Heck JE, Sell RL, Gorin S. Health care access among individuals involved in same-sex relationships. *Am J Public Health* 2006;96(6):1111-8.

Herek GM, Garnets LD. Sexual orientation and mental health. *Annu Rev Clin Psychol* 2007;3:353-75.

Hirai AH, Hayes DK, Taualli MM, et al. Excess infant mortality among Native Hawaiians: identifying determinants for preventive action. *Am J Public Health* 2013;103:e88-e95.

Hixson L, Hepler BB, Kim MO. The Native Hawaiian and Other Pacific Islander population: 2010. 2010 Census Briefs. Suitland, MD: U.S. Census Bureau; May 2012. Available at: <http://www.census.gov/prod/cen2010/briefs/c2010br-12.pdf>. Accessed August 9, 2012.

Ibanez GE, Purcell DW, Stall R, et al. Sexual risk, substance use, and psychological distress in HIV-positive gay and bisexual men who also inject drugs. *AIDS* 2005 Apr;19(suppl 1):S49-55.

Improving health care for rural populations. Rockville, MD: Agency for Health Care Policy and Research (now Agency for Healthcare Research and Quality); 1996. Publication No. AHCPR 96-P040. Available at: <http://archive.ahrq.gov/research/rural.htm>. Accessed April 24, 2014.

Institute of Medicine. The health of lesbian, gay, bisexual, and transgender people: building a foundation for better understanding. Washington, DC: National Academies Press; 2011.

Institute of Medicine, Committee on the Future of Rural Health Care. Quality through collaboration: the future of rural health. Washington, DC: National Academies Press; 2005.

International Classification of Functioning, Disability, and Health (ICF). Geneva, Switzerland: World Health Organization; 2001. Available at: <http://www.who.int/classifications/icf/en/>. Accessed August 27, 2009.

Johnson DB, Oyama N, LeMarchand L, et al. Native Hawaiians mortality, morbidity, and lifestyle: comparing data from 1982, 1990, and 2000. *Pac Health Dialog* 2004;11(2):120-30.

## PRIORITY POPULATIONS

Ka'opua LS, Braun KL, Browne C, et al. Why are Native Hawaiians underrepresented in Hawai'i's older adult population? Exploring social and behavioral factors of longevity. *J Aging Res* 2011. Available at: <http://dx.doi.org/10.4061/2011/701232>. Accessed April 24, 2014.

LaPlante MP. The demographics of disability. *Milbank Q* 1991;69 (Suppl 1-2):55-77.

Lillie-Blanton M, Rushing OE, Ruiz S. Key facts: race, ethnicity, and medical care. Menlo Park, CA: Kaiser Family Foundation; 2003. Available at: <http://kaiserfamilyfoundation.files.wordpress.com/2013/01/key-facts-race-ethnicity-medical-care-chartbook.pdf>. Accessed November 11, 2008.

Look MA, Trask-Batti MK, Agres R, et al. Assessment and priorities for health & well-being in Native Hawaiians & other Pacific peoples. Honolulu, HI: Center for Native and Pacific Health Disparities Research, John A. Burns School of Medicine, University of Hawaii; 2013. Available at: [http://www2.jabsom.hawaii.edu/native/docs/community/DNHH\\_Assessment&Priorities\\_Report\\_2013.pdf](http://www2.jabsom.hawaii.edu/native/docs/community/DNHH_Assessment&Priorities_Report_2013.pdf). Accessed April 23, 2014.

Mathews TJ, Menacker F, MacDorman MF. Infant mortality statistics from the 2002 period: linked birth/infant death data set. *Natl Vital Stat Rep* 2004;53(10):1-29.

Mau MK, Sinclair K, Saito EP, et al. Cardiometabolic health. *Epidemiol Rev* 2009;31(1):113-29.

McLaughlin KA, Hatzenbuehler ML, Keyes KM. Responses to discrimination and psychiatric disorders among black, Hispanic, female, and lesbian, gay, and bisexual individuals. *Am J Public Health* 2010;100(8):1477-84.

Office of the Surgeon General. The Surgeon General's call to action to improve the health and wellness of people with disabilities. Washington, DC: U.S. Department of Health and Human Services; 2005.

Panapasa SV, Mau MK, Williams DR, et al. Mortality patterns of Native Hawaiians across their lifespan: 1990-2000. *Am J Public Health* 2010 Nov;100(11):2304-10.

Park CB, Braun KL, Horiuchi BY, et al. Longevity disparities in multiethnic Hawaii: an analysis of 2000 life tables. *Public Health Rep* 2009;124(4):579-84.

Pelletier MG, Tschurtz B. Meeting the health care needs of LGBT patients. *J Nurs Care Qual* 2012 Apr-Jun;27(2):95-8.

Remafedi G, French S, Story M, et al. The relationship between suicide risk and sexual orientation: results of a population-based study. *Am J Public Health* 1998;88(1):57-60.

Rosenblatt RA, Chen FM, Lishner DM, et al. The future of family medicine and implications for rural primary care physician supply. Final Report #125. Seattle, WA: WWAMI Rural Health Research Center, University of Washington; August 2010. Available at: [http://depts.washington.edu/uwrhrc/uploads/RHRC\\_FR125\\_Rosenblatt.pdf](http://depts.washington.edu/uwrhrc/uploads/RHRC_FR125_Rosenblatt.pdf). Accessed April 24, 2014.

Sudano JJ, Baker DW. Explaining U.S. racial/ethnic disparities in health declines and mortality in late middle age: the role of socioeconomic status, health behaviors, and health insurance. *Soc Sci Med* 2006;62:909-22.

U.S. Department of Health and Human Services. Multiple chronic conditions — a strategic framework: optimum health and quality of life for individuals with multiple chronic conditions. Washington, DC: HHS; 2010. Available at: [http://www.hhs.gov/ash/initiatives/mcc/mcc\\_framework.pdf](http://www.hhs.gov/ash/initiatives/mcc/mcc_framework.pdf). Accessed February 21, 2013.

US Department of the Interior. Indian Affairs. *Fed Reg* 2013 May;78(87):26384-9.

Ward BW, Schiller JS. Prevalence of multiple chronic conditions among U.S. adults: estimates from the National Health Interview Survey, 2010. *Prev Chronic Dis* 2013;10:E65. Published online April 25, 2013. Available at: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3652717/>. Accessed April 24, 2014.

Ziller EC, Coburn AF, Loux SL, et al. Health insurance coverage in rural America. Washington, DC: Kaiser Commission on Medicaid and the Uninsured; 2003. Available at: <http://www.kff.org/uninsured/4093.cfm>. Accessed August 24, 2011.



