

2013 National Healthcare Quality Report

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

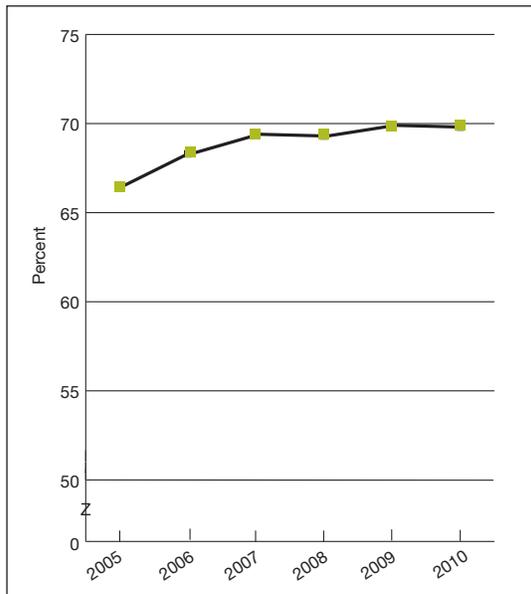
- ◆ Measures of the extent to which diagnostic errors are made in ambulatory care;
- ◆ Measures of the extent to which pain is reduced or function improves for patients undergoing back surgery, total joint replacement, or other orthopedic procedures;
- ◆ Measures of the rate of decline in function for 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.)

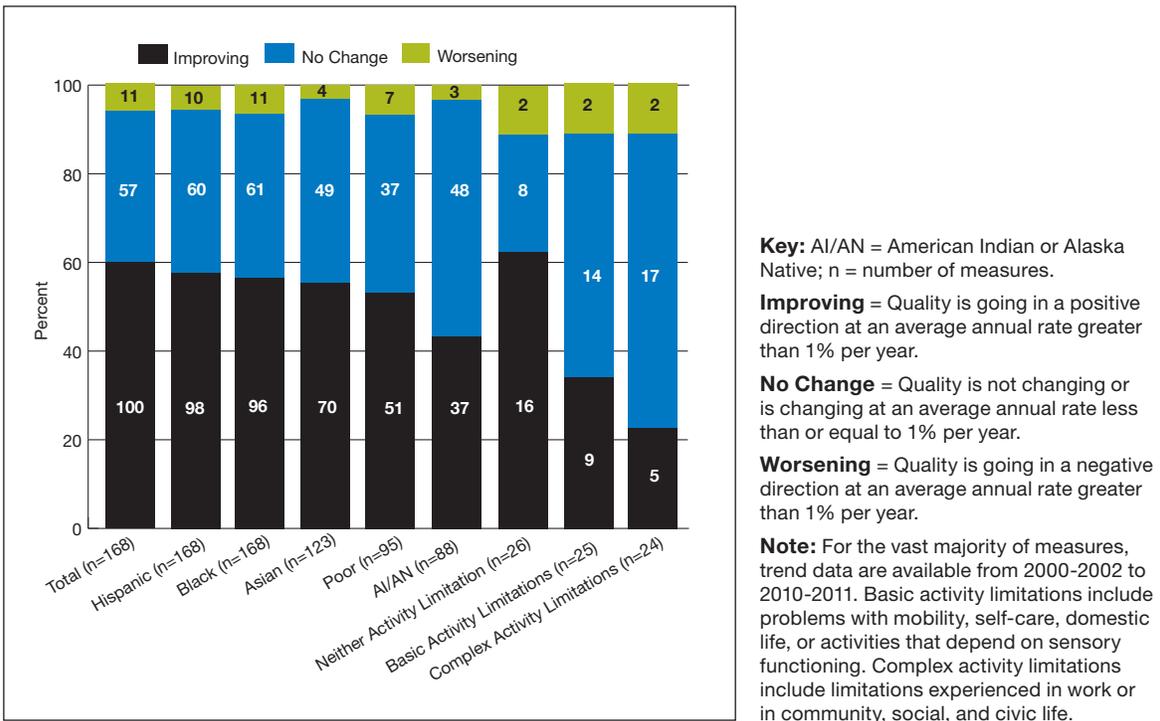
HIGHLIGHTS

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.

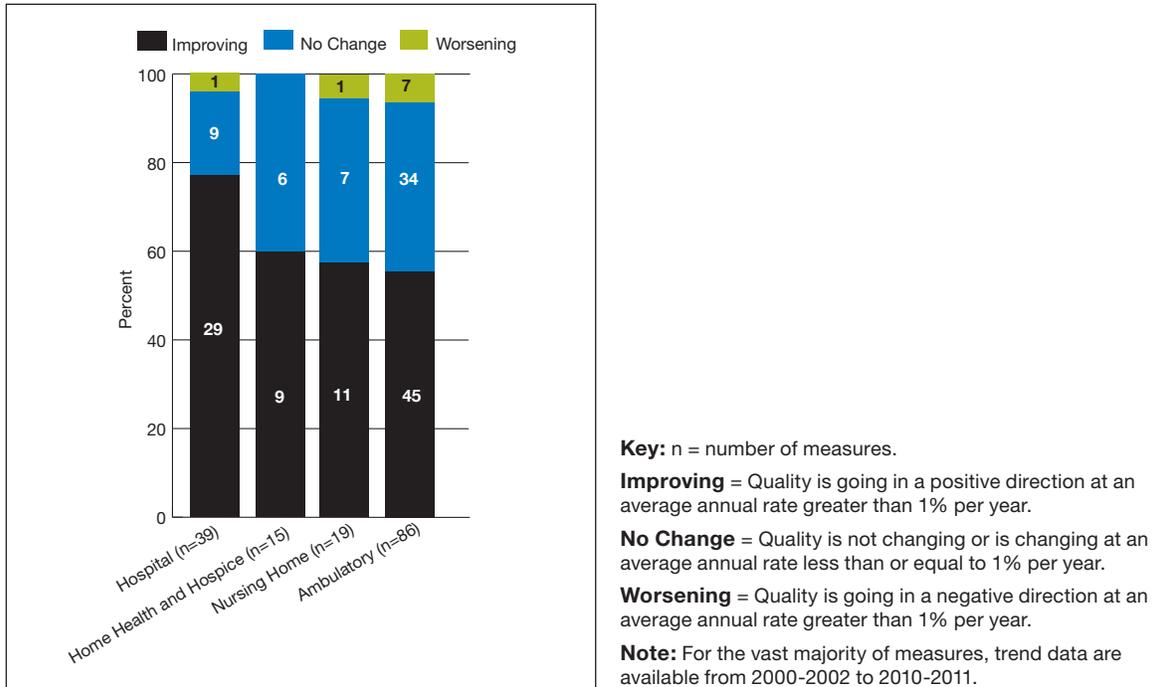
Figure H.2. Number and proportion of all quality measures that are improving, not changing, or worsening, overall and for select populations



- ◆ 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.

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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
Hospital patients with heart attack who: <ul style="list-style-type: none"> Received aspirin within 24 hours of admission Received beta blocker within 24 hours of admission Were prescribed aspirin at discharge Were prescribed a beta blocker at discharge Were prescribed ACE inhibitor or ARB at discharge Received smoking cessation counseling while hospitalized 	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+
Hospital patients with heart failure who: <ul style="list-style-type: none"> Received an evaluation of left ventricular ejection fraction Were prescribed ACE inhibitor or ARB at discharge 	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 <i>Haemophilus influenzae</i> 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)
Hospital patients with pneumonia who: <ul style="list-style-type: none"> Had blood cultures collected before antibiotics were administered Received antibiotics within 6 hours of hospital arrival Received a pneumococcal screening or vaccination 	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	
Adult surgery patients who: <ul style="list-style-type: none"> Received prophylactic antibiotics within 1 hour prior to surgical incision Had prophylactic antibiotics discontinued within 24 hours after surgery end time 	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).

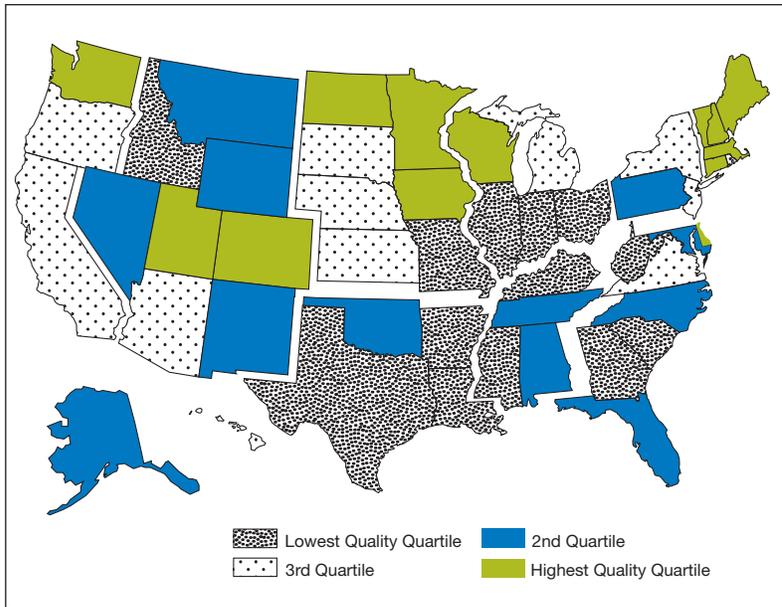
Quality of care varies not only across types of care but also across parts of the country. Knowing where to focus efforts improves the efficiency of interventions. Delivering data that can be used for local benchmarking and improvement is a key step in raising awareness and driving quality improvement.

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.

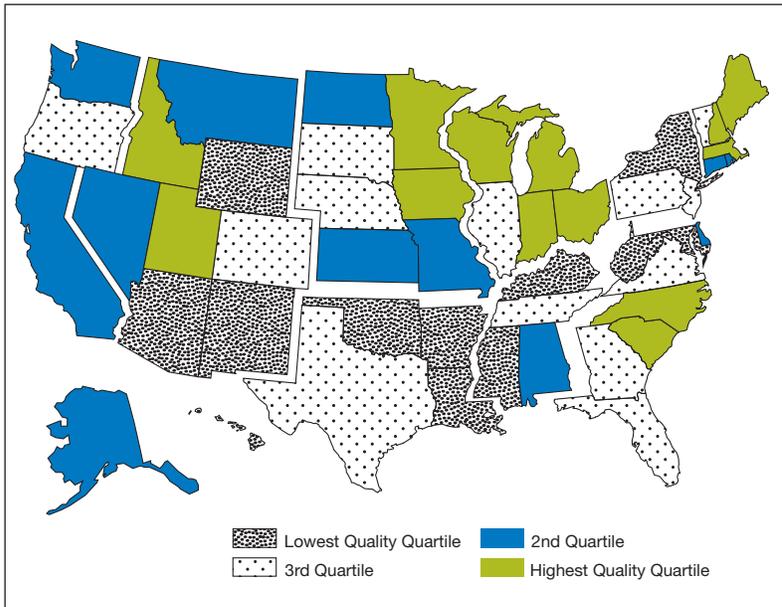
The State Snapshots are based on more than 100 NHQR measures, each of which evaluates a different aspect of health care performance and shows each state's strengths and weaknesses. Here, we use data from the 2012 State Snapshots to examine variation in quality across states by setting of care.

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



Quality of Ambulatory Care



Quality of Hospital Care

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◆ **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.

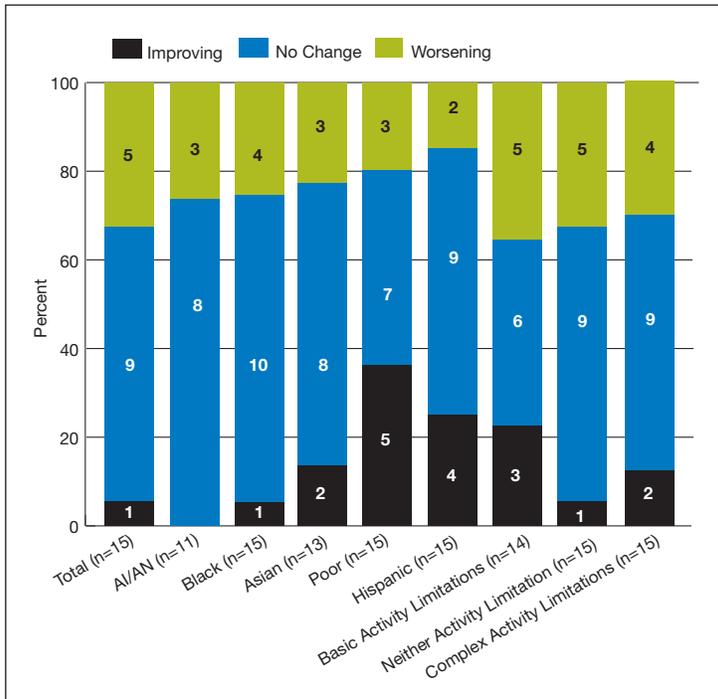
What Is the Status of Health Care Access?

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



Key: AI/AN = American Indian or Alaska Native; n = number of measures.

Improving = Access is going in a positive direction at an average annual rate greater than 1% per year.

No Change = Access is not changing or is changing at an average annual rate less than or equal to 1% per year.

Worsening = Access is going in a negative direction at an average annual rate greater than 1% per year.

Note: For the vast majority of measures, trend data are available from 2000-2002 to 2010-2011. Basic activity limitations include problems with mobility, self-care, domestic life, or activities that depend on sensory functioning. Complex activity limitations include limitations experienced in work or in community, social, and civic life.

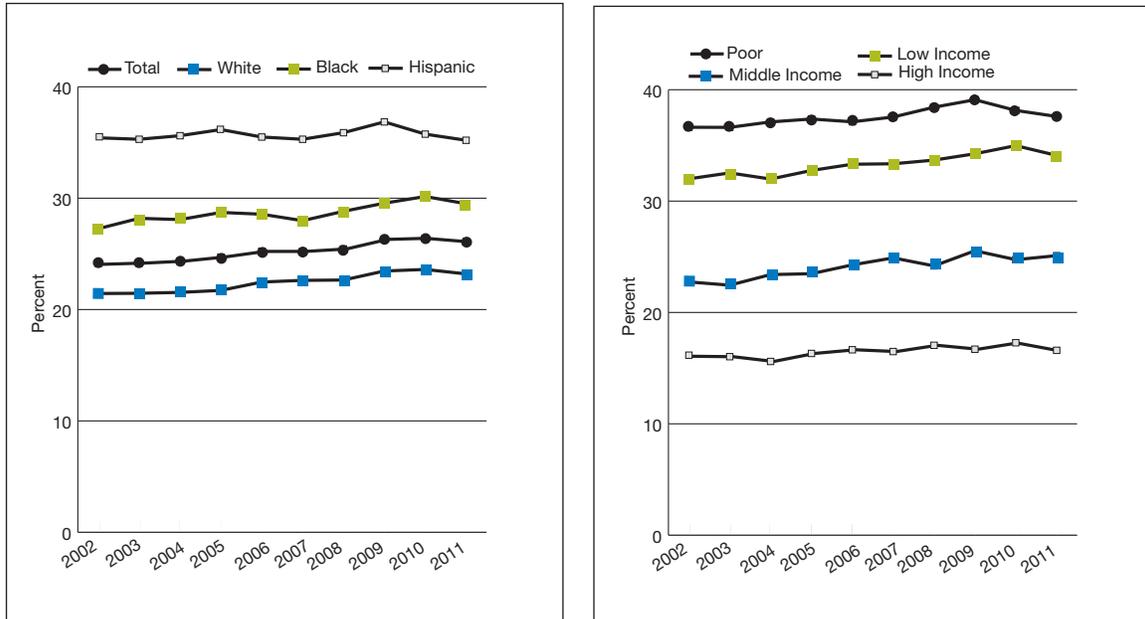
◆ **Access got worse for many groups from 2000-2002 to 2010-2011, but some improvement was observed:**

- 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.

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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 poorⁱ 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:

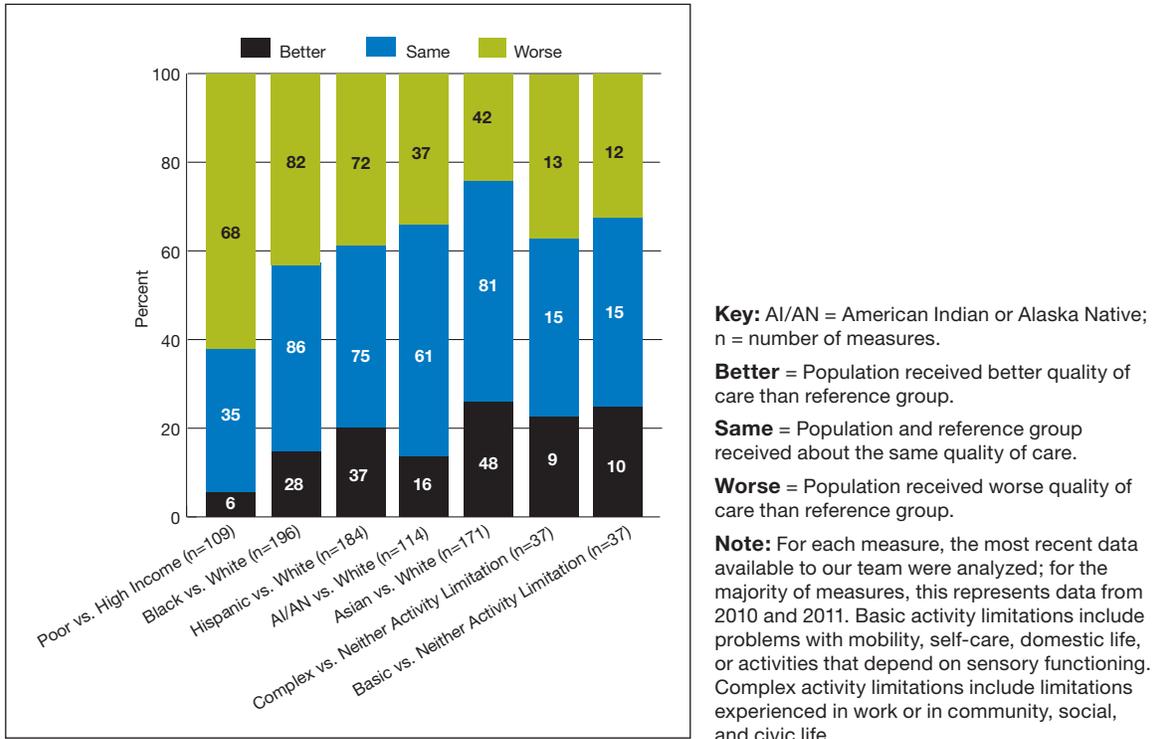
- ◆ Differences that are statistically significant, are equal to or larger than 10%, and favor the reference group are labeled as indicating worse quality or access for the selected group.
- ◆ Differences that are statistically significant, are equal to or larger than 10%, and favor the selected group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

ⁱ 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

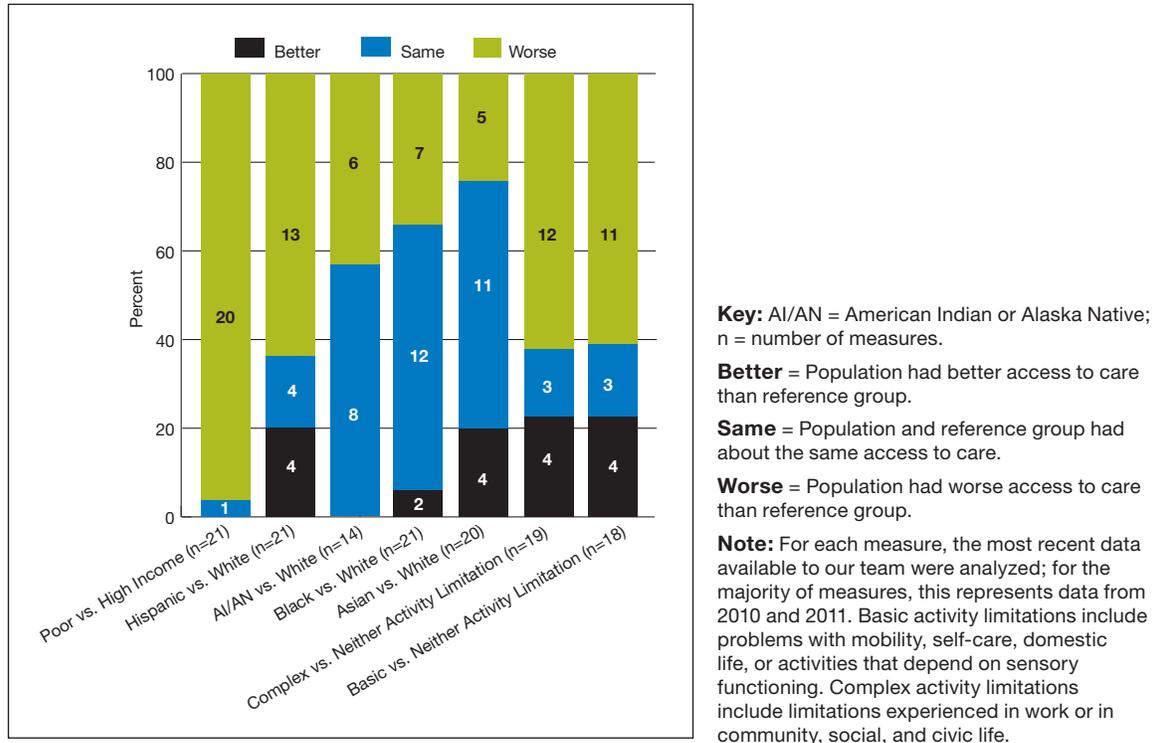
Figure H.7. Number and proportion of all quality measures for which members of selected groups experienced better, same, or worse quality of care compared with reference group



◆ **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?

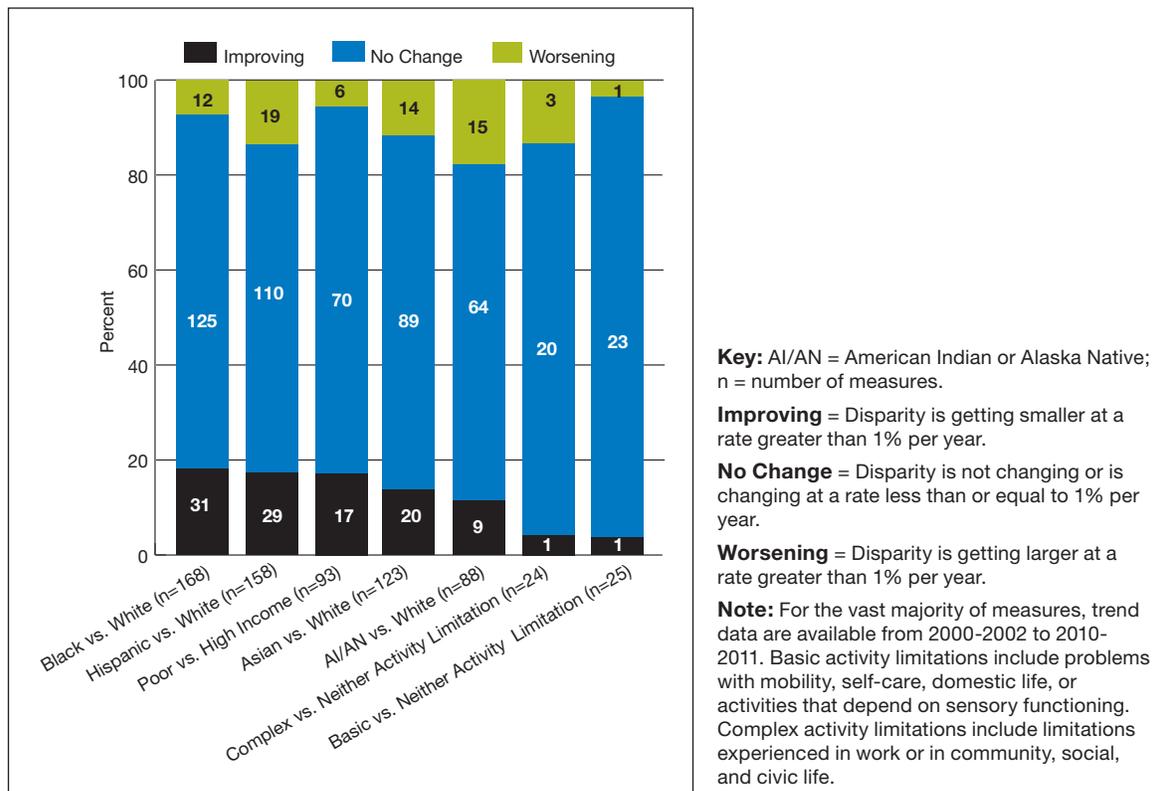
A new approach to assess change in disparities is introduced this year. First, a selected group's rate of change and its reference group's rate of change are calculated using weighted least squares regression. Next, this difference in rates of change is assessed for statistical significance. Then, the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

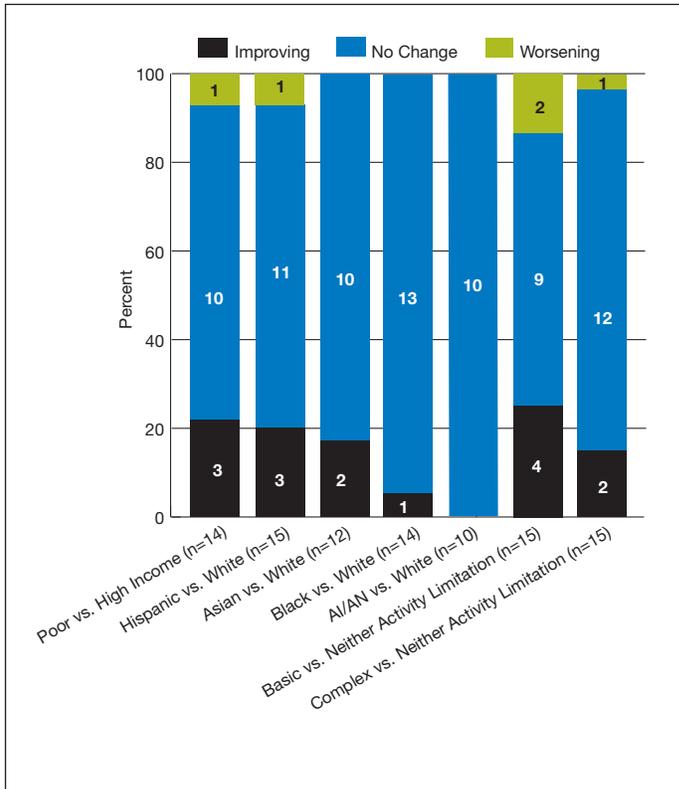
Process measures that are retired or removed because they have achieved a performance level of 95% or better are not included in these analyses; if included, many would be labeled as disparities improving over time.

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



Key: AI/AN = American Indian or Alaska Native; n = number of measures.

Improving = Disparity is getting smaller at a rate greater than 1% per year.

No Change = Disparity is not changing or is changing at a rate less than or equal to 1% per year.

Worsening = Disparity is getting larger at a rate greater than 1% per year.

Note: For the vast majority of measures, trend data are available from 2000-2002 to 2010-2011. Basic activity limitations include problems with mobility, self-care, domestic life, or activities that depend on sensory functioning. Complex activity limitations include limitations experienced in work or in community, social, and civic life.

- ◆ 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.

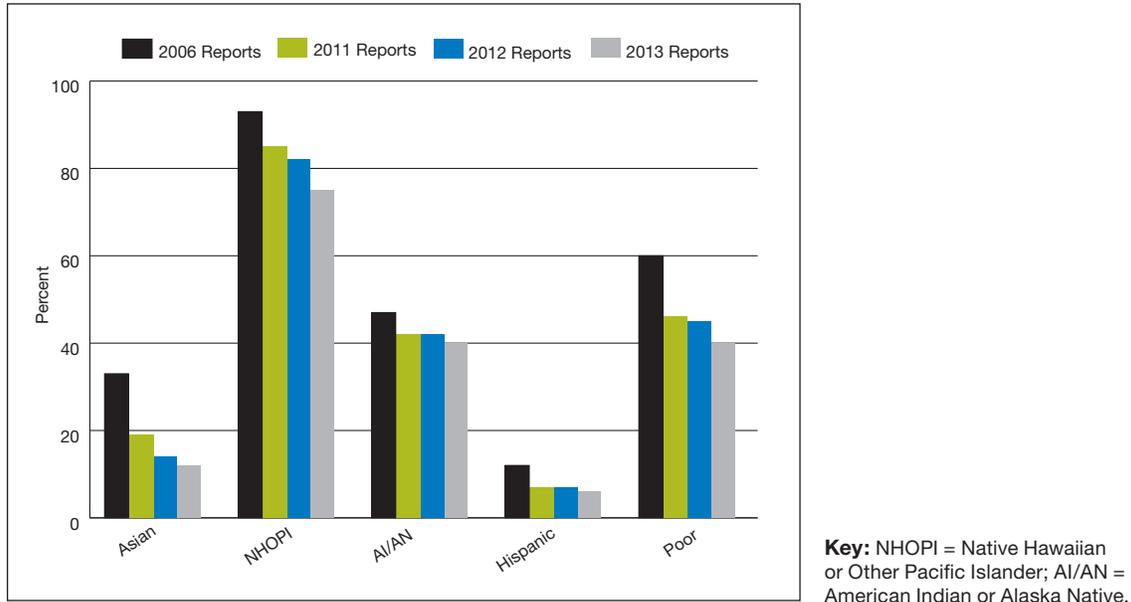
Where Are Health Care Disparities Decreasing and Where Are They Increasing?

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,ⁱⁱ reliable estimates for all measures could be generated for Blacks, so they are not shown.

ⁱⁱ 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.”ⁱ With support from the Department of Health and Human Services (HHS) and private-sector partners, AHRQ has designed and produced the *National Healthcare Quality Report* (NHQR) to respond to this legislative mandate. The NHQR provides a comprehensive overview of the quality of health care received by the general U.S. population and is designed to summarize data across a wide range of patient needs—staying healthy, getting better, living with chronic illness and disability, and coping with the end of life.

AHRQ was further tasked with producing an annual report that tracks “prevailing disparities in health care delivery as it relates to racial factors and socioeconomic factors in priority populations.”ⁱⁱ 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.

ⁱ 42 U.S.C. 299b-2(b)(2).

ⁱⁱ 42 U.S.C. 299a-1(a)(6).

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- ◆ 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,ⁱⁱⁱ HHS produced a report to Congress on a *National Strategy for Quality Improvement in Health Care* (National Quality Strategy; HHS, 2011).^{iv} 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.

ⁱⁱⁱ Public Law 111-148.

^{iv} 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.

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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.^v
- ◆ Ethnicity: Hispanic and non-Hispanic.^{vi}
- ◆ Income: Poor, low income, middle income, and high income.^{vii}
- ◆ Education: People with less than a high school education,^{viii} high school graduates, and people with any college.
- ◆ Health insurance, ages 0-65: Any private insurance, public insurance^{ix} 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.

^v 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.

^{vi} 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.)

^{vii} 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.

^{viii} Less than a high school education refers to people who did not complete high school.

^{ix} 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^x 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%.

^x 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.^{xi} 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.

Model: $\ln(M) = \beta_0 + \beta_1 Y$, where $\ln(M)$ is the natural logarithm of the measure value, β_0 is the intercept or constant, and β_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

^{xi} Regression models were specified as follows: $\ln(M) = \beta_0 + \beta_1(Y)$, where $\ln(M)$ = natural logarithm of the measure value (M); β_0 = intercept or constant; $\beta_1(Y)$ = coefficient corresponding to year (Y). The average annual rate of change was calculated as $100 \times (\exp(\beta_1) - 1)$.

Progress on individual measures was determined as follows:

- ◆ Progress on a measure is deemed to be improving if the average annual rate of change is greater than 1% in the desirable direction, and $p < 0.10$.^{xii}
- ◆ 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, β_0 is the intercept or constant, and β_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.

^{xii} 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

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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"> • 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) • Women under age 70 treated for breast cancer with breast-conserving surgery who received radiation therapy to the breast within 1 year of diagnosis • Patients with colon cancer who received recommended treatment: resected colon specimen had at least 12 regional lymph nodes pathologically examined • Hospital patients with heart failure and left ventricular systolic dysfunction who were prescribed angiotensin-converting enzyme inhibitor or angiotensin receptor blocker at discharge • Adults age 40 and over with diagnosed diabetes who received 2 or more hemoglobin A1c measurements in the calendar year • Adults age 40 and over with diagnosed diabetes who received a dilated eye examination in the calendar year • Adults age 40 and over with diagnosed diabetes who had their feet checked for sores or irritation in the calendar year • 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 • 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 • Children ages 19-35 months who received 4 or more doses of diphtheria-tetanus-pertussis vaccine • Children ages 19-35 months who received 3 or more doses of polio vaccine • Children ages 19-35 months who received 1 or more doses of measles-mumps-rubella vaccine • Children ages 19-35 months who received 3 or more doses of <i>Haemophilus influenzae</i> type B vaccine • Children ages 19-35 months who received 3 or more doses of hepatitis B vaccine • Children ages 19-35 months who received 1 or more doses of varicella vaccine • Children who had their height and weight measured by a health provider within the past 2 years • Children ages 2-17 who had a dental visit in the calendar year • Children ages 3-6 who ever had their vision checked by a health provider • 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

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.

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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*.ⁱ 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 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.

ⁱ 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 (Howlader, 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 costⁱⁱ (2009) \$216.6 billion (NHLBI, 2012)

Direct costsⁱⁱⁱ (2009).....\$86.6 billion (NHLBI, 2012)

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

Cost-effectiveness^{iv} 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.

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

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

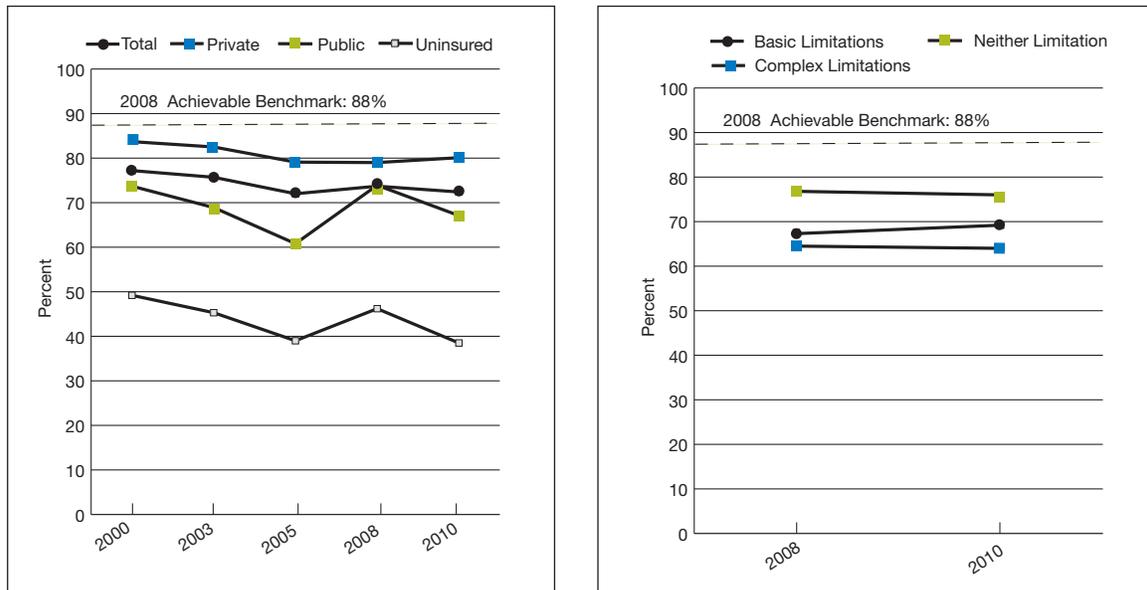
^{iv} Cost-effectiveness is measured here by the average net cost of each quality-adjusted life year (QALY) that is saved by the provision of a particular health intervention. QALYs are a measure of survival adjusted for its value: 1 year in perfect health is equal to 1.0 QALY, while a year in poor health 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 who reported they had a mammogram within the past 2 years, by insurance (ages 50-64), 2000, 2003, 2005, 2008, and 2010, and activity limitations (ages 50-74), 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 50-64 (left). Civilian noninstitutionalized women ages 50-74 (right).

Note: Rates are age adjusted to the 2000 U.S. standard population. Basic activity limitations include problems with mobility, self-care, domestic life, or activities that depend on sensory functioning. Complex activity limitations include limitations experienced in work or in community, social, and civic life. Data for activity limitations are not available for 2000, 2003, and 2005.

- ◆ Overall, in 2010, 72.4% of women ages 50-74 had received a mammogram in the past 2 years (Figure 2.1).
- ◆ 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.

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- ◆ 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. While people with activity limitations often have more visits to health care providers, these may be more focused on managing chronic conditions than on delivering preventive care. Research shows that women with mobility limitations are less likely to receive breast examinations and mammograms (Allen, et al., 2009).
- ◆ The 2008 top 5 State achievable benchmark was 88%.^y There is no evidence of progress toward the benchmark by any activity limitation or insurance group.

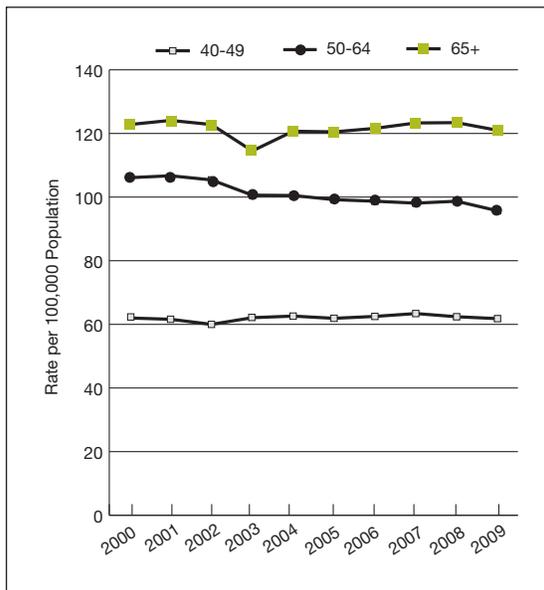
Also, in the NHDR:

- ◆ In 2000, 2003, and 2005, Hispanic women were less likely to receive a mammogram compared with non-Hispanic White women.
- ◆ 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.

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 2.2. Age-adjusted rate of advanced stage breast cancer per 100,000 women age 40 and over, by age, 2000-2009



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.

^y The top 5 States that contributed to the achievable benchmark are Connecticut, Delaware, Massachusetts, New Hampshire, and Rhode Island.

- ◆ In all years, women ages 50-64 and 65 and over had higher rates of advanced stage breast cancer than women ages 40-49 (Figure 2.2).
- ◆ The rate of advanced stage breast cancer was decreasing for women ages 50-64.

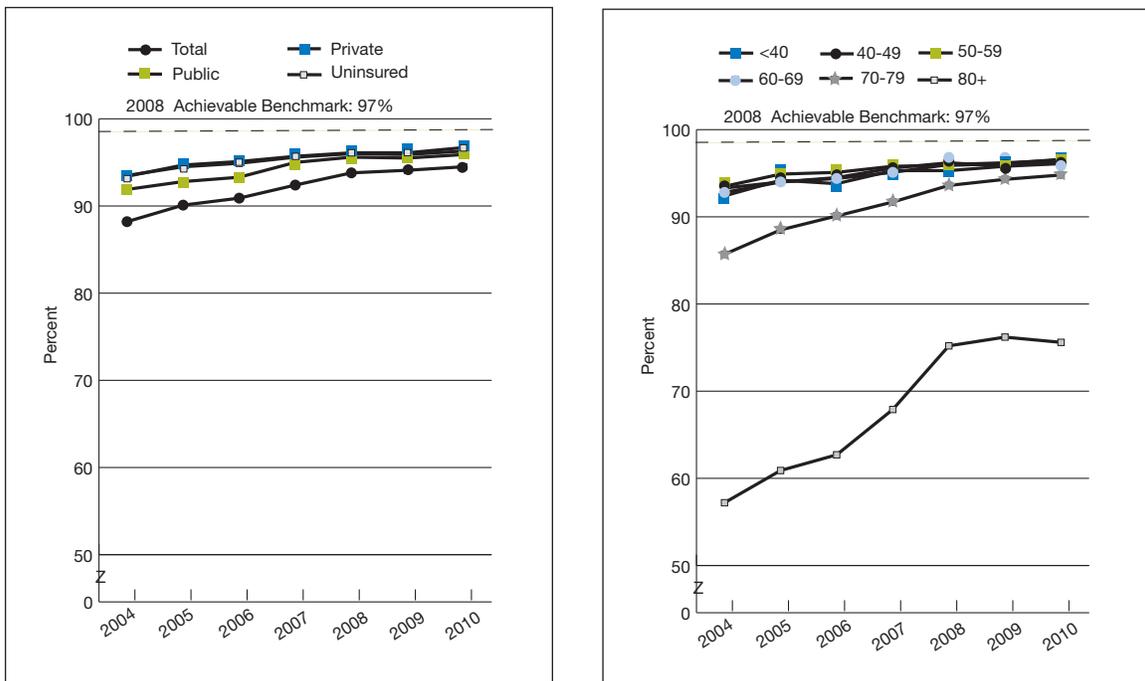
Also, in the NHDR:

- ◆ 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.
- ◆ From 2002 to 2009, the rates of advanced stage breast cancer were higher for Black women compared with White women.

Treatment: Recommended Care for Breast Cancer

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

Figure 2.3. Women with clinical Stage I-IIb breast cancer who received axillary node dissection or sentinel lymph node biopsy at the time of lumpectomy or mastectomy, by insurance status (under age 65) and age, 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.

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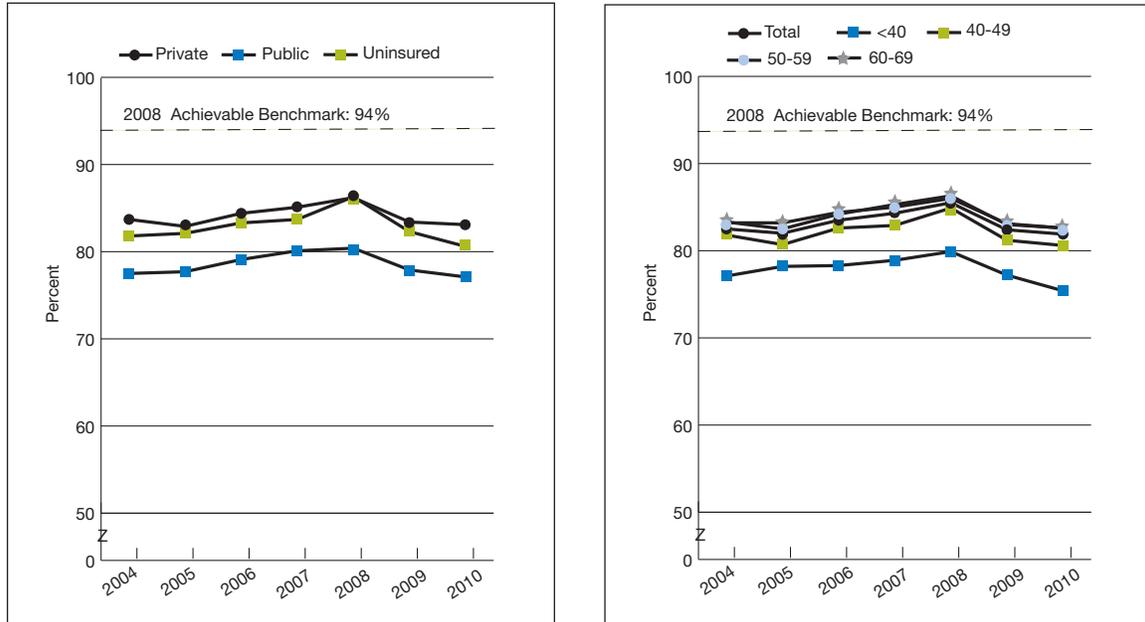
- ◆ Overall in 2010, 94.5% of women with clinical Stage I-IIb breast cancer had received axillary node dissection or sentinel lymph node biopsy at the time of lumpectomy or mastectomy (Figure 2.3).
- ◆ From 2004 to 2010, the percentage of women who received axillary node dissection or sentinel lymph node biopsy improved for all age and insurance groups.
- ◆ 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. Breast cancer treatment for older women (80 and over) may be complicated by other chronic conditions they may be experiencing at the same time.
- ◆ 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.
- ◆ The 2008 top 5 State achievable benchmark was 97%.^{vi} At the current rate of increase, women in all age and insurance groups could achieve the benchmark within 2 years, except those age 80 and over.

Also, in the NHDR:

- ◆ 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 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.

^{vi} The top 5 States that contributed to the achievable benchmark are Alaska, Arkansas, Mississippi, Montana, and Oklahoma.

Figure 2.4. Women under age 70 treated for breast cancer with breast-conserving surgery who received radiation therapy within 1 year of diagnosis, by insurance (under age 65) and age, 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: 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 2.4).
- ◆ 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.
- ◆ The 2008 top 5 State achievable benchmark was 94%.^{vii} There is no evidence of progress toward the benchmark by any insurance or age group.

Also, in the NHDR:

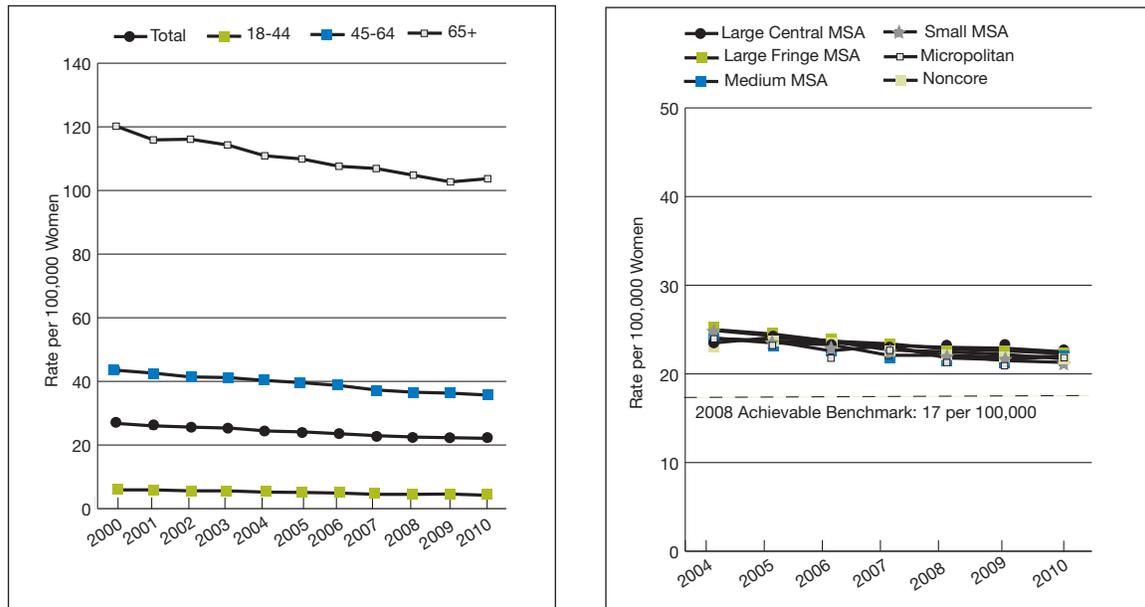
- ◆ In all years, Black, Hispanic, and Mexican women were less likely to receive radiation therapy compared with White women. In 5 of 7 years, Cuban women were less likely to receive radiation therapy than White women.
- ◆ In 4 of 7 years, women from poor households were less likely to receive radiation therapy compared with those from high-income households.

^{vii} 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 2.5. Age-adjusted breast cancer deaths per 100,000 women, by age (2000-2010) and residence location (2004-2010)



Key: MSA = metropolitan statistical area.

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 2.5).
- ◆ From 2000 to 2010, the rates of breast cancer deaths decreased for women from all age groups and residence locations.
- ◆ 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.
- ◆ The 2008 top 5 State achievable benchmark was 17 per 100,000 population.^{viii} At the current rate of decrease, women in all residence locations displayed could achieve the benchmark in 14 years.

Also, in the NHDR:

- ◆ 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.

^{viii} The top 5 States that contributed to the achievable benchmark are Alaska, Hawaii, Montana, Vermont, and Wyoming.

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.

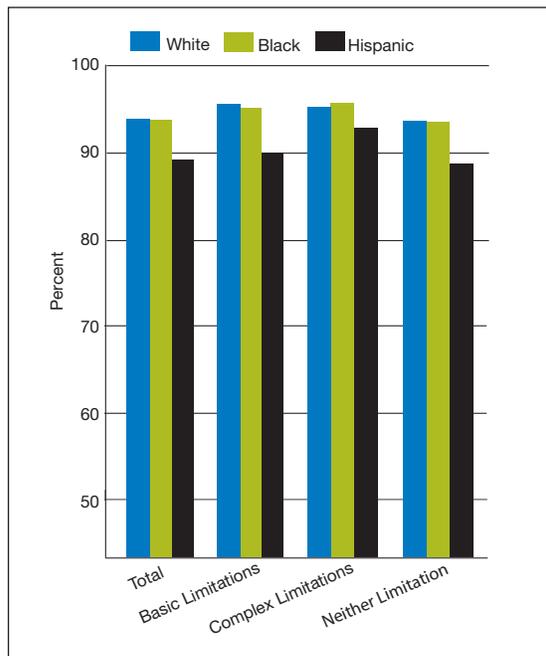
In addition, this chapter presents a measure focusing on the costs of hospitalizations for congestive heart failure. Several measures related to heart disease are also presented in other chapters of this report. Timeliness of cardiac reperfusion for heart attack patients is tracked in Chapter 5, Timeliness. 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 2.6. 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 activity limitations, 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: White and Black are non-Hispanic; Hispanic includes all races. Rates are age adjusted to the 2000 U.S. standard population. Basic activity limitations include problems with mobility, self-care, domestic life, or activities that depend on sensory functioning. Complex activity limitations include limitations experienced in work or in community, social, and civic life.

- ◆ 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 2.6).
- ◆ 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.

Also, in the NHDR:

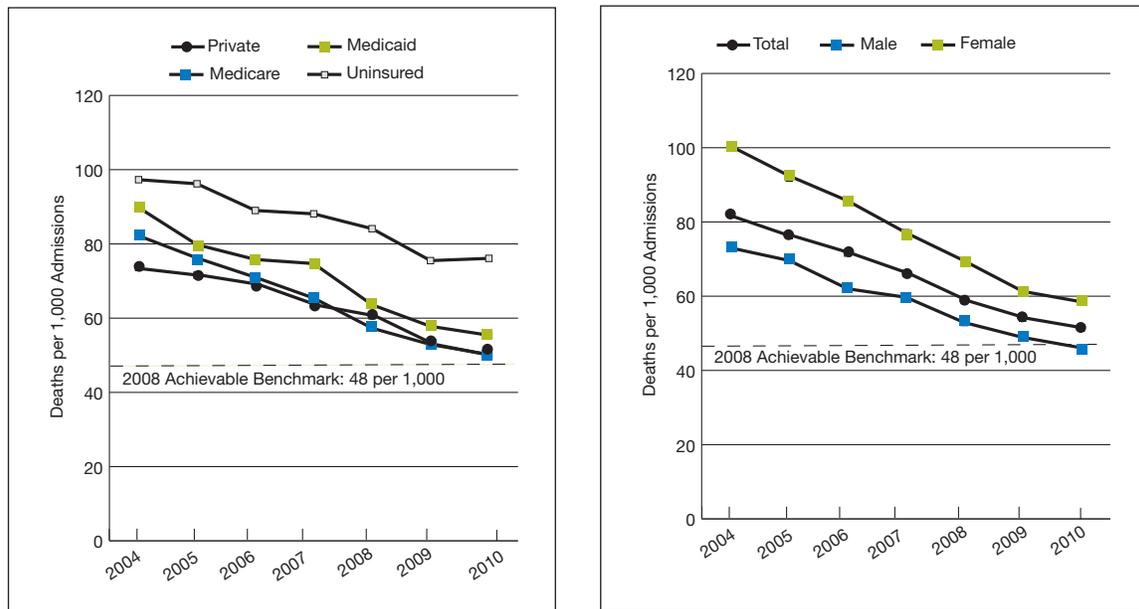
- ◆ In 2008, Hispanic women were less likely to receive a blood pressure measurement than White women.
- ◆ In 2008, Hispanic men were less likely to receive a blood pressure measurement than White men.

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 2.7. Inpatient deaths per 1,000 adult hospital admissions with heart attack, by expected payment source and sex, 2004-2010



Source: Agency for Healthcare Research and Quality, Healthcare Cost and Utilization Project, Nationwide Inpatient Sample and AHRQ Quality Indicators, modified version 4.1, 2004-2010.

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.

- ◆ From 2004 to 2010, the risk-adjusted inpatient mortality rate for hospital admissions with heart attack decreased significantly overall and for both sexes and all expected payment sources (Figure 2.7).
- ◆ In all years, women had higher rates of inpatient heart attack deaths than men and uninsured patients had higher rates than privately insured patients.

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- ◆ The 2008 top 4 State achievable benchmark for inpatient heart attack mortality was 48 per 1,000 admissions.^{ix} Men have achieved the benchmark. At current rates of improvement, women would need 2 years to achieve it. Patients with private insurance and Medicare could achieve the benchmark in less than a year, and it would take those with Medicaid 1 year to achieve it. Uninsured patients would need 7 years to achieve the benchmark.

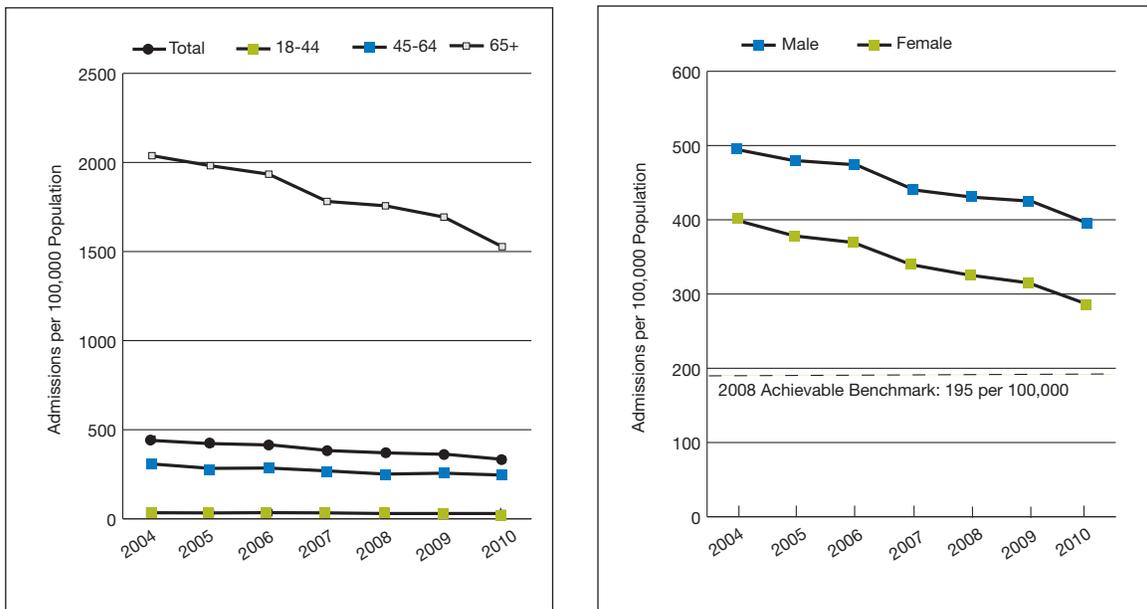
Also, in the NHDR:

- ◆ 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.

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 2.8. Adult admissions for congestive heart failure per 100,000 population, by age and sex, 2004-2010



Source: Agency for Healthcare Research and Quality, Healthcare Cost and Utilization Project, Nationwide Inpatient Sample and AHRQ Quality Indicators, modified version 4.1, 2004-2010.

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

Note: For this measure, lower rates are better. Age rates are adjusted by sex; sex rates are adjusted by age.

- ◆ From 2004 to 2010, the hospitalization rate for congestive heart failure decreased significantly overall and for each age group and both sexes (Figure 2.8).

^{ix} The top 4 States that contributed to the achievable benchmark are Arizona, Florida, Michigan, and Ohio.

- ◆ 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.
- ◆ The 2008 top 4 State achievable benchmark for heart failure admissions was 195 per 100,000 population.^x Women could achieve the benchmark in 5 years while men would take 12 years.

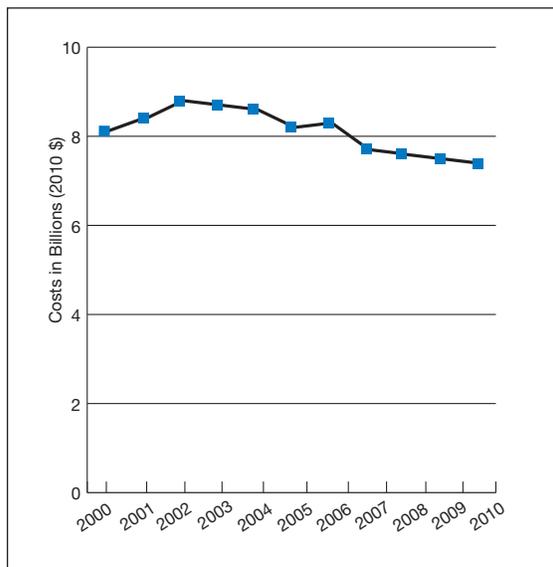
Also, in the NHDR:

- ◆ 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.

Outcome: Costs of Hospitalizations for Congestive Heart Failure

The Efficiency chapter examines the costs across potentially avoidable conditions; this section focuses on hospitalization costs for congestive heart failure. Hospitalizations for congestive heart failure are expensive. Preventing avoidable hospitalizations for congestive heart failure could improve the efficiency of health care delivery. For this analysis, total hospital charges were converted to costs using Healthcare Cost and Utilization Project (HCUP) cost-to-charge ratios based on hospital accounting reports from the Centers for Medicare & Medicaid Services. Therefore, cost estimates in this section refer to hospital costs for providing care but do not include either payers' costs or costs for physician care that are billed separately.

Figure 2.9. Total national costs of hospitalizations for congestive heart failure, 2000-2010



Source: Agency for Healthcare Research and Quality (AHRQ), Healthcare Cost and Utilization Project, Nationwide Inpatient Sample and AHRQ Quality Indicators, modified version 4.1, 2000-2010.

Denominator: Civilian noninstitutionalized adults age 18 and over.

Note: For this measure, lower rates are better. Annual rates are adjusted for age and sex. Costs are adjusted for inflation and are represented in 2010 dollars.

- ◆ From 2000 to 2002, total national hospital costs associated with congestive heart failure^{xi} increased from \$8.1 billion to \$8.8 billion. Since then, costs have been gradually declining, to \$7.4 billion in 2010 (Figure 2.9).

^x The top 4 States that contributed to the achievable benchmark are Colorado, Oregon, Utah, and Vermont.

^{xi} Adjusted for inflation using the gross domestic product implicit price deflator.

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%.

Three measures are highlighted here:

- ◆ Nephrology care before kidney failure.
- ◆ Hemodialysis facility patient death rate.
- ◆ Registration for transplantation.

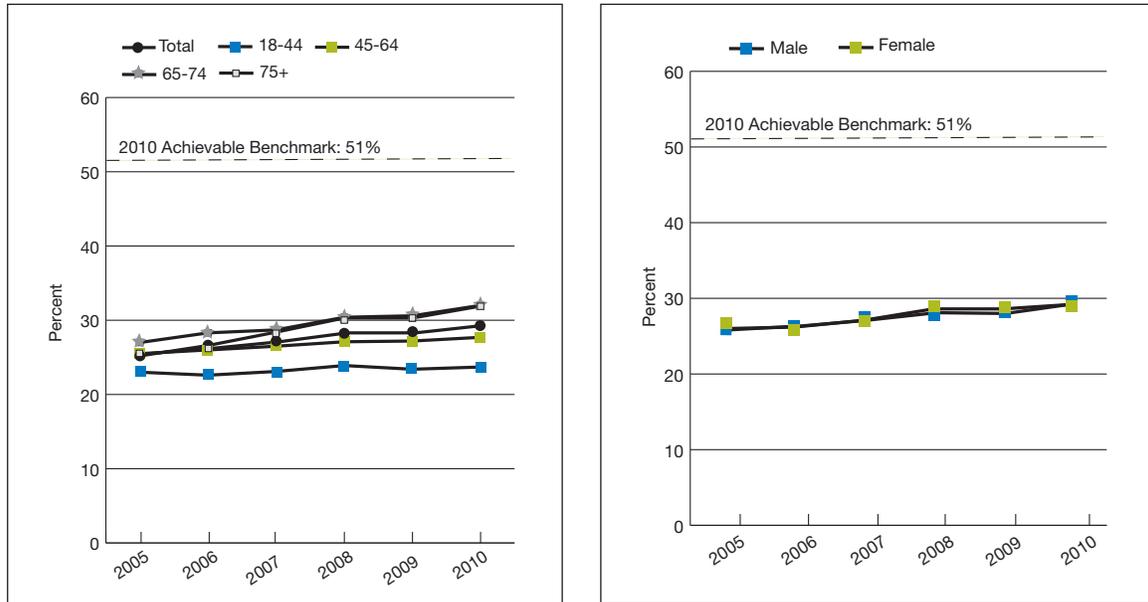
Findings

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 2.10. 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 age and sex, 2005-2010



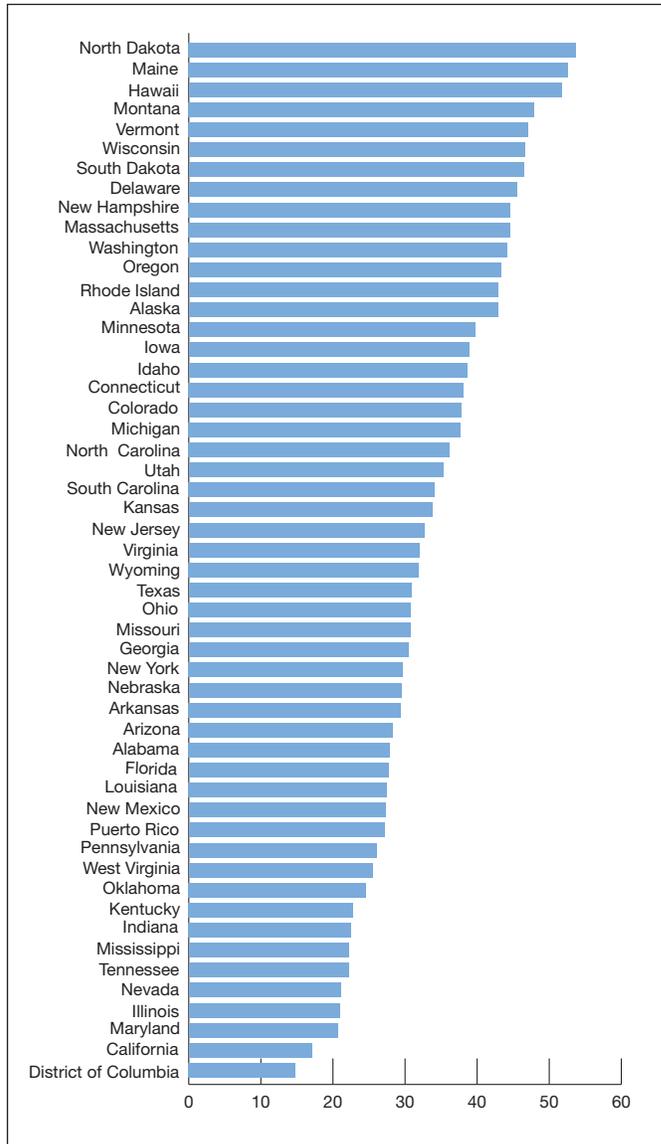
Source: National Institutes of Health, National Institute of Diabetes and Digestive and Kidney Diseases, U.S. Renal Data System, 2005-2010.

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?

- ◆ 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 2.10).
- ◆ 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.
- ◆ In 2010, 29% of both males and females began nephrology care at least 12 months prior to initiation of renal replacement therapy. There was no statistically significant improvement in this measure for males or females from 2005 to 2010.
- ◆ The 2010 top 5 State achievable benchmark was 51%.^{xii} Males and females both show progress toward the benchmark but could not achieve it for more than 30 years. Most age groups show progress toward the benchmark, albeit slow. For example, adults age 75 and over would take 14 years to reach the benchmark. Adults ages 18-44 show virtually no progress toward the benchmark and would take more than a century to reach it.

^{xii} The top 5 States that contributed to the achievable benchmark are Hawaii, Maine, Montana, North Dakota, and Vermont.

Figure 2.11. 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 State, United States, 2010



Source: National Institutes of Health, National Institute of Diabetes and Digestive and Kidney Diseases, United States Renal Data System, 2010.

Denominator: New end stage renal disease patients age 18 and over.

Note: Data are not available for the U.S. territories American Samoa, Guam, Northern Mariana Islands, or Virgin Islands because they do not meet the criteria for statistical reliability, data quality, or confidentiality.

- ◆ The percentage of ESRD patients who began nephrology care at least 12 months prior to initiation of renal replacement therapy varies across U.S. States and the District of Columbia (Figure 2.11).
- ◆ The five jurisdictions with the lowest percentage of ESRD patients who began nephrology care at least 12 months prior to initiation of renal replacement therapy are the District of Columbia, California, Maryland, Illinois, and Nevada.

Also, in the NHDR:

- ◆ 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.

Outcome: Hemodialysis Patient Death Rate

Hemodialysis patient mortality varies across dialysis facilities and, correspondingly, across States. The standardized mortality ratio (SMR) is designed to summarize the observed death rate at a facility relative to the death rate that was expected based on national death rates during that year for patients with the same characteristics as those in a given facility.

The SMR adjusts for many patient characteristics known to be associated with mortality: age, race, ethnicity, sex, diabetes status, duration of ESRD, nursing home status, comorbidities at ESRD incidence, body mass index (BMI) at incidence, calendar year, and race-specific State population death rates. The remaining variation in death rates across facilities is at least partly explained by factors relating to the processes and quality of care received at a given facility.

While this adjustment accounts for many factors that may explain differences in mortality between facilities aggregated by State, it cannot account for all factors. For example, since the SMR accounts for age and diabetes, an older average age or large percentage of diabetic patients at a facility would not elevate the SMR. Other factors, such as nutritional status, factors relating to the process of care, or comorbid conditions that developed after ESRD incidence, are not accounted for.

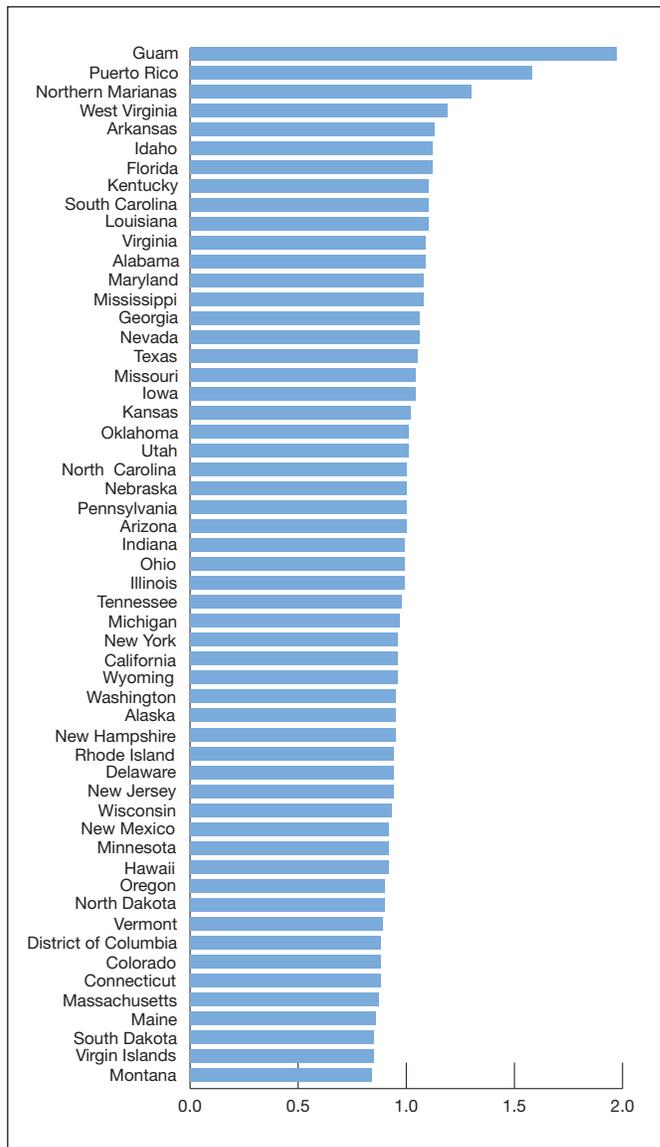
An SMR greater than 1 indicates that a facility death rate typically exceeds the national death rate for patients with the same characteristics as those in the facility. An SMR less than 1 indicates that a facility death rate is typically below the national death rate for patients with the same characteristics as those in the facility.

Focus on U.S. Territories

Few data sources can assess quality of care received by residents of U.S. territories. The data that do exist suggest that care in U.S. territories is suboptimal (Nunez-Smith, et al., 2011). Data compiled by the University of Michigan Kidney Epidemiology and Cost Center are used in this analysis, as they include information about U.S. citizens residing in U.S. territories.

The figure below shows dialysis facility SMRs aggregated by U.S. State and four territories, Guam, Puerto Rico, Northern Mariana Islands, and Virgin Islands (there are no data for the fifth territory, American Samoa).

Figure 2.12. Standardized mortality ratios on hemodialysis, by State or territory, 2010-2011



Source: University of Michigan Kidney Epidemiology and Cost Center, 2010-2011 Dialysis Facility Report.

Denominator: Number of deaths that would be expected among Medicare dialysis patients (adult and pediatric) at the facility during the reporting period, given the patient mix at the facility, aggregated by State.

Note: For this measure, ratios for 2010 and 2011 are averaged. Lower ratios are better.

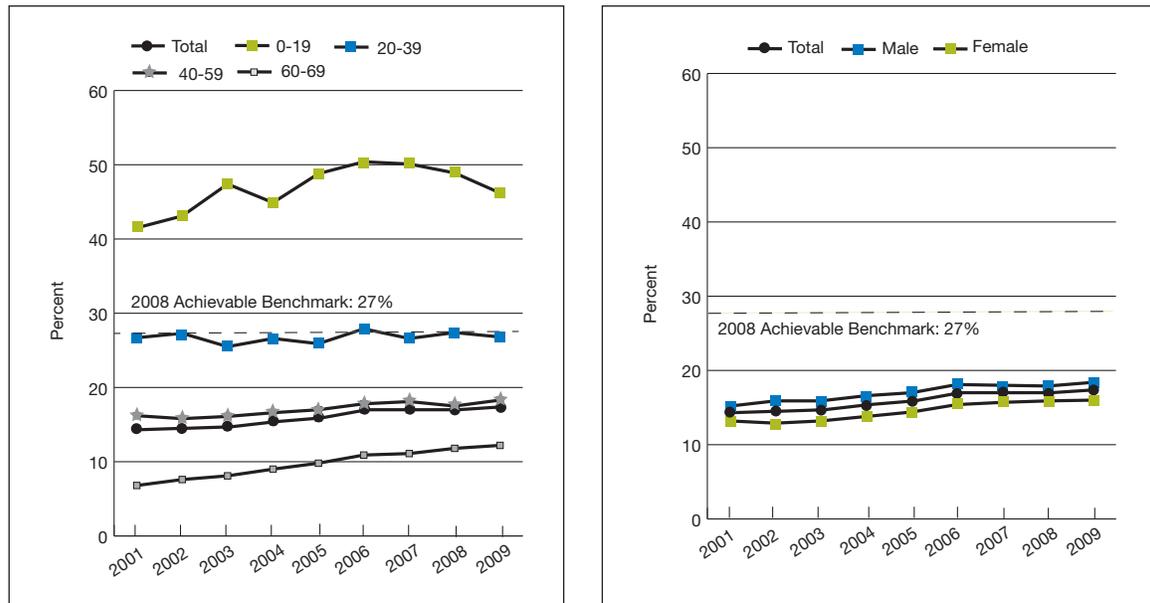
- ◆ SMRs vary across U.S. States and territories, from a low in Montana to a high in Guam. Montana’s SMR of 0.84 indicates facility death rates that are typically 16% below the national death rate. Guam’s SMR of 1.97 indicates facility death rates that are 97% above the national death rate. This finding is consistent with studies suggesting that patient care in the U.S. territories is suboptimal (Nunez-Smith, et al., 2011) (Figure 2.12).
- ◆ The three jurisdictions with the highest SMRs are the territories Guam, Puerto Rico, and Northern Mariana Islands, with facility death rates that are typically 30% or more above the national death rate. Completing the top five jurisdictions with the highest SMRs are West Virginia at 19% and Arkansas at 13% above the national death rate.

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 2.13. Dialysis patients under age 70 who were registered for transplantation within a year of ESRD initiation, by age and sex, 2001-2009



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.

- ◆ 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 2.13).
- ◆ The percentage of patients under age 40 who were registered for transplantation within 1 year of progressing to ESRD continued to decrease, from a high of 50.4% in 2006 among patients ages 0-19 and 27.9% among patients ages 20-39 to 46.2% and 26.8%, respectively, in 2009.

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- ◆ Conversely, the percentage of patients over age 39 who were registered for transplantation within 1 year of progressing to ESRD continued to increase, from a low of 15.8% in 2002 among patients ages 40-59 and 6.8% in 2001 among patients ages 60-69 to 18.3% and 12.2%, respectively, in 2009.
- ◆ 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.
- ◆ The 2008 top 5 State achievable benchmark for registration for transplantation within 1 year of progressing to ESRD was 27%.^{xiii} Patients ages 0-19 have already surpassed the 2008 achievable benchmark and patients ages 20-39 have reached it. At the current rate of improvement, however, patients ages 40-59 would need 28 years and patients ages 60-69 would need 21 years to achieve the benchmark.

Also, in the NHDR:

- ◆ 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.

^{xiii} The top 5 States that contributed to the achievable benchmark are Delaware, Iowa, Minnesota, Montana, and Vermont.

Diabetes

Importance

Mortality

Number of deaths (2011 prelim.) 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)^{xiv} 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 years 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^{xv}), 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.

^{xiv} 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.

^{xv} 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:

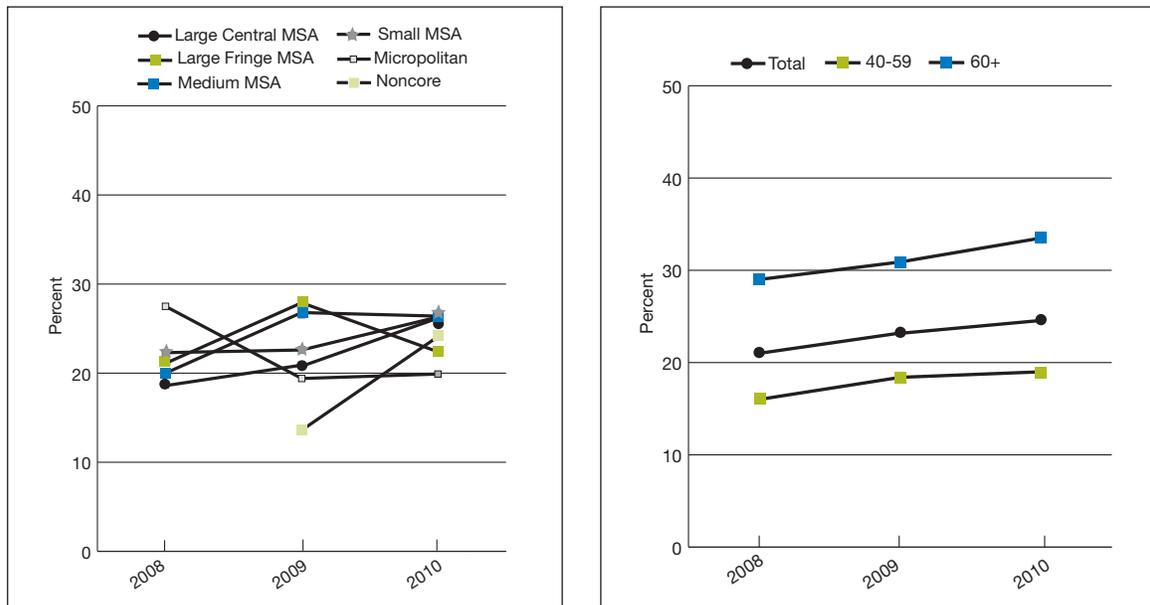
- ◆ Receipt of four recommended diabetes services.
- ◆ Hospital admissions for uncontrolled diabetes.
- ◆ End stage renal disease due to diabetes.

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 2.14. 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 residence location and age, 2008-2010



Key: MSA = metropolitan statistical area.

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. The noncore residence location sample size in 2008 did not meet requirements for statistical reliability, data quality, or confidentiality and is not included.

- ◆ In 2010, overall, among adults age 40 and over with diagnosed diabetes, only about one-fourth reported receiving all four recommended services (Figure 2.14).
- ◆ 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.

- ◆ In all years, adults ages 40-59 were less likely than adults age 60 and over to report receiving recommended care for diabetes.

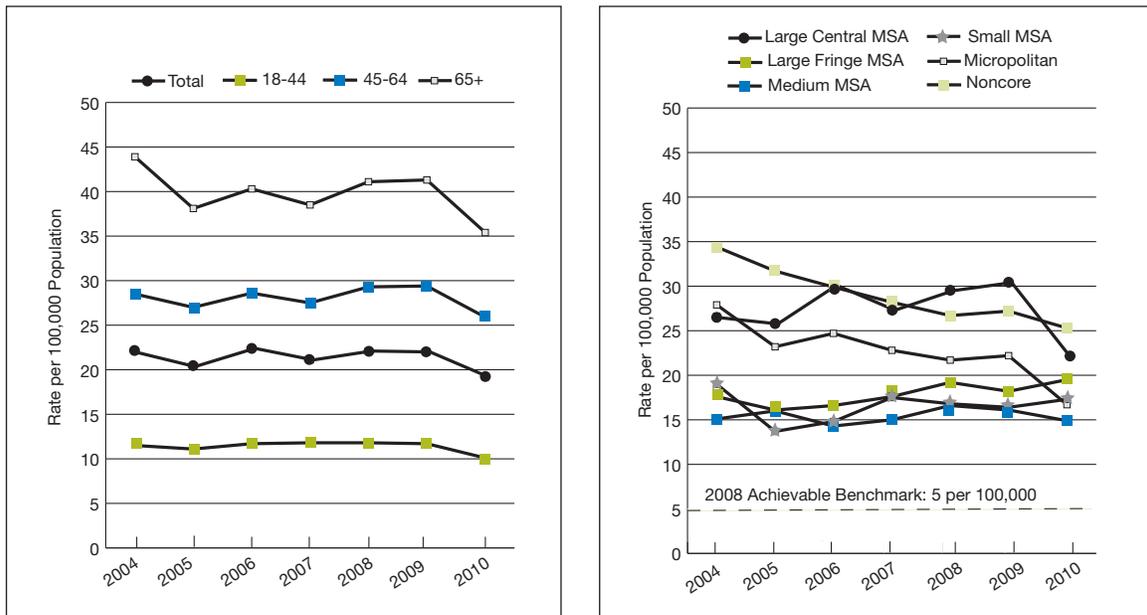
Also, in the NHDR:

- ◆ In 2009, Blacks and Hispanics were less likely than Whites to report receiving recommended care for diabetes. In 2010, however, Blacks and Hispanics were just as likely as Whites to report receiving recommended care for diabetes.

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 2.15. Hospital admissions for uncontrolled diabetes without complications per 100,000 population, age 18 and over, by age and residence location, 2004-2010



Key: MSA = metropolitan statistical area.

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.

- ◆ 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.
- ◆ In all years, adults ages 45-64 and 65 and over had higher admission rates for uncontrolled diabetes than adults ages 18-44.
- ◆ From 2009 to 2010, hospital admission rates for uncontrolled diabetes decreased among patients of all ages and among residents of large central (inner city) and medium metropolitan, micropolitan (small town), and noncore (the most rural) areas. Conversely, from 2009 to 2010, residents of large fringe (suburban) and small metropolitan areas experienced a slight increase in hospital admission rates.
- ◆ The 2008 top 4 State achievable benchmark was 5 admissions for uncontrolled diabetes per 100,000 population.^{xvi} Residents of micropolitan and noncore areas show progress toward the benchmark but could not achieve it for about 9 and 15 years, respectively.

Also, in the NHDR:

- ◆ In all years, the rate of hospital admissions for uncontrolled diabetes was higher for Blacks and Hispanics and lower for APIs and Whites.
- ◆ 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).

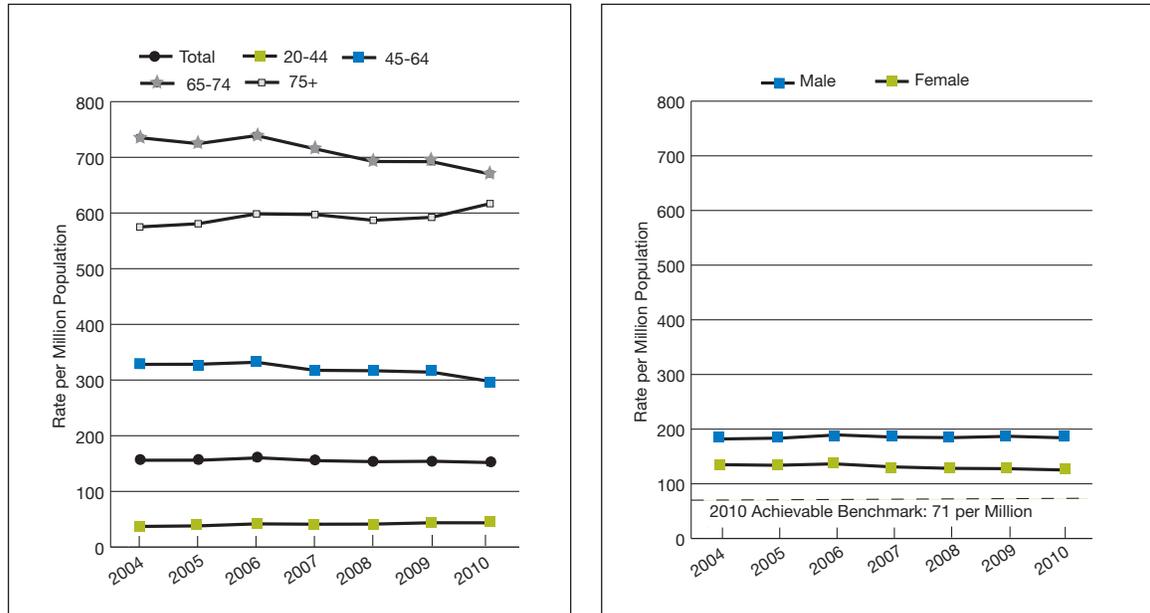
Outcome: End Stage Renal Disease Due to Diabetes

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—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.

^{xvi} The top 4 States that contributed to the achievable benchmark are Colorado, Hawaii, Utah, and Vermont.

Figure 2.16. Adults age 20 and over with end stage renal disease due to diabetes, per million population, by age and sex, 2004-2010



Source: National Institute of Diabetes and Digestive and Kidney Diseases, U.S. Renal Data System, 2004-2010.

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 age, the adjustment is by sex, race, and interactions of sex and race. When reporting is by sex, the adjustment is by age, race, and interactions of age and race.

- ◆ From 2004 to 2010, there were no statistically significant changes in the overall rate of new cases of ESRD due to diabetes (Figure 2.16).
- ◆ 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.
- ◆ The 2010 top 5 State achievable benchmark was 71 per million population.^{xvii} Females are moving slightly toward the benchmark but will not achieve it for 31 years.

Also, in the NHDR:

- ◆ In all years, AI/ANs, APIs, and Blacks had higher rates than Whites, and Hispanics had higher rates than non-Hispanics.

^{xvii} 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).^{xviii} 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:

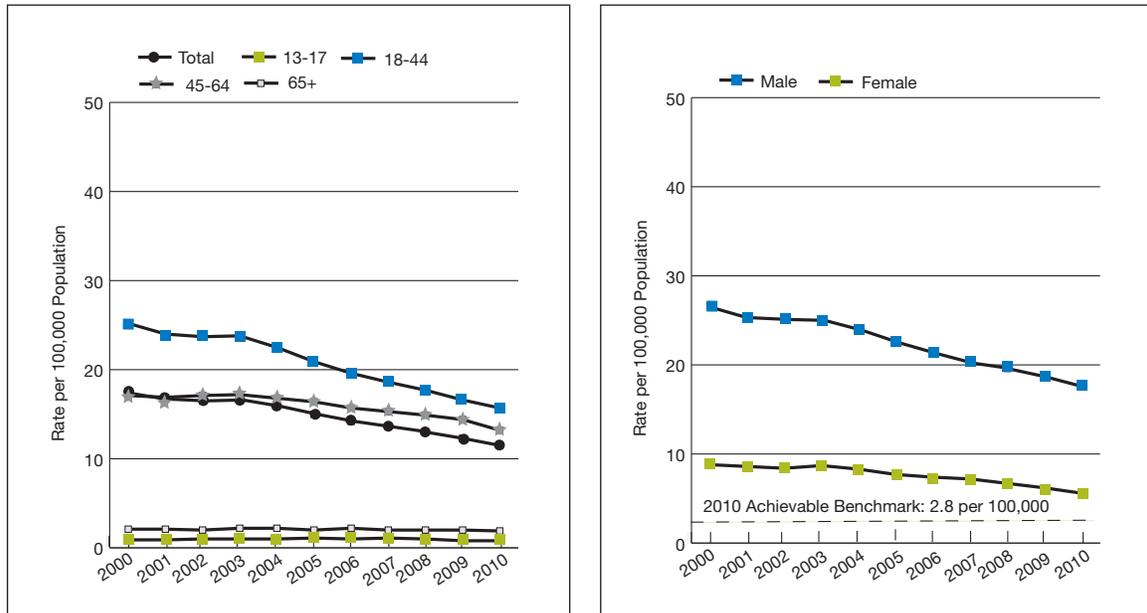
- ◆ Two or more medical visits in an HIV care setting in the measurement year.
- ◆ Two or more CD4 cell counts performed in the measurement year.
- ◆ HAART for patients with HIV disease.
- ◆ PCP prophylaxis for patients with CD4 cell count under 200.
- ◆ MAC prophylaxis for patients with CD4 cell count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

^{xviii} 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 2.17. New AIDS cases per 100,000 population age 13 and over, by age and sex, 2000-2010



Source: Centers for Disease Control and Prevention, National Center for HIV, STD, and TB Prevention, HIV/AIDS Surveillance System, 2000-2010.

Denominator: U.S. population age 13 and over.

Note: For this measure, lower rates are better.

- ◆ Overall, in 2010, the total rate of new AIDS cases was 11.5 per 100,000 population (Figure 2.17).
- ◆ 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.
- ◆ The 2010 top 5 State achievable benchmark for new AIDS cases was 2.8 per 100,000 population.^{xix} At the current rate, it would take females 8 years to reach the benchmark and males 16 years.

Also, in the NHDR:

- ◆ From 2000 to 2010, rates of new AIDS cases decreased overall and for AI/ANs, Blacks, and Whites.
- ◆ In 2010, Blacks, AI/ANs, Native Hawaiians and Other Pacific Islanders (NHOPIs), and Hispanics had higher rates of new AIDS cases than Whites.

^{xix} The top 5 States that contributed to the achievable benchmark are Iowa, Maine, South Dakota, Utah, and Wisconsin.

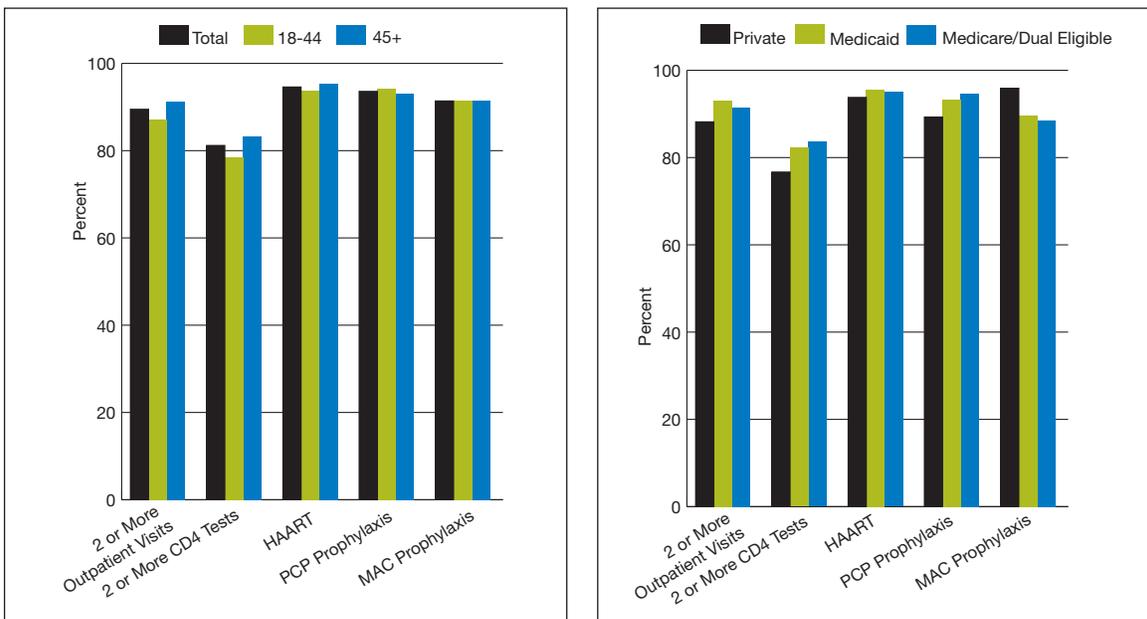
Management: Recommended Care for HIV

HIV measures tracked in the NHQR 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.

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 2.18. HIV patients who received recommended care, by age and expected payment source, 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 2.18). 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, 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.

Also, in the NHDR:

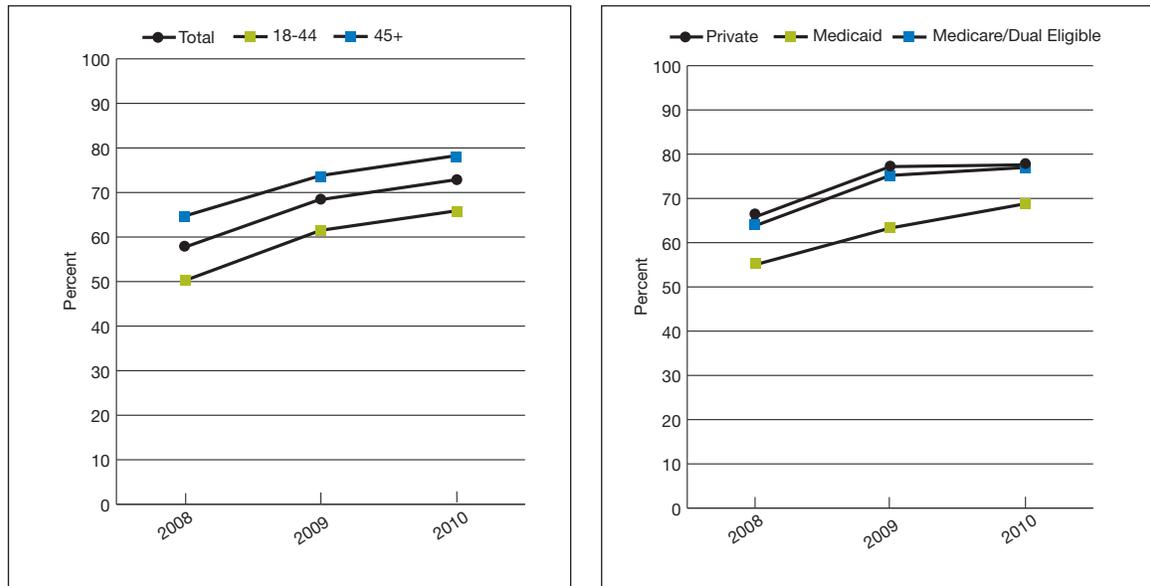
- ◆ In 2010, there were no statistically significant differences by race/ethnicity or sex in the percentage of people with HIV receiving recommended services.

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 2.19. Adult HIV patients with viral load suppression for first test in the year, by age and insurance, 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.

- ◆ Overall, in 2010, 73% of adult HIV patients had viral load suppression for the first test in the year (Figure 2.19).
- ◆ 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.

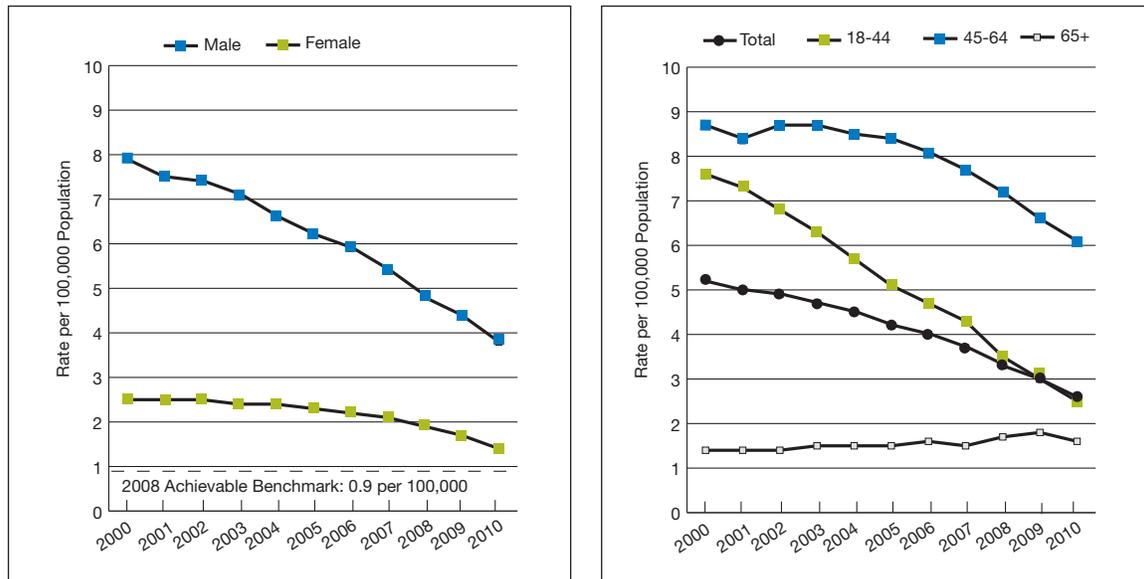
Also, in the NHDR:

- ◆ 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.

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 2.20. HIV infection deaths per 100,000 population, by sex and age, 2000-2010



Source: Centers for Disease Control and Prevention, National Center for Health Statistics, National Vital Statistics System—Mortality, 2000-2010.

Denominator: U.S. population.

Note: For this measure, lower rates are better. Rates are age adjusted to the 2000 U.S. standard population. Age data are unadjusted. Respondents for which age is not reported are not included in the age adjustment calculations and are excluded from numerators.

- ◆ Overall, in 2010, the total rate of HIV infection deaths was 2.6 per 100,000 population (Figure 2.20).
- ◆ HIV infection death rates are decreasing overall, for both sexes, and for people ages 18-44 and 45-64.
- ◆ 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 age 65 and over compared with those ages 18-44.

- ◆ The 2008 top 4 State achievable benchmark for HIV deaths was 0.9 per 100,000 population.^{xx} Females would take 5 years and males 7 years to reach the benchmark.

Also, in the NHDR:

- ◆ From 2000 to 2010, HIV infection death rates were higher for Blacks than for Whites. APIs had lower rates than Whites in all years.
- ◆ In all years, HIV infection death rates were higher for Hispanics than for Whites.

NEW 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^{xxi} (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.

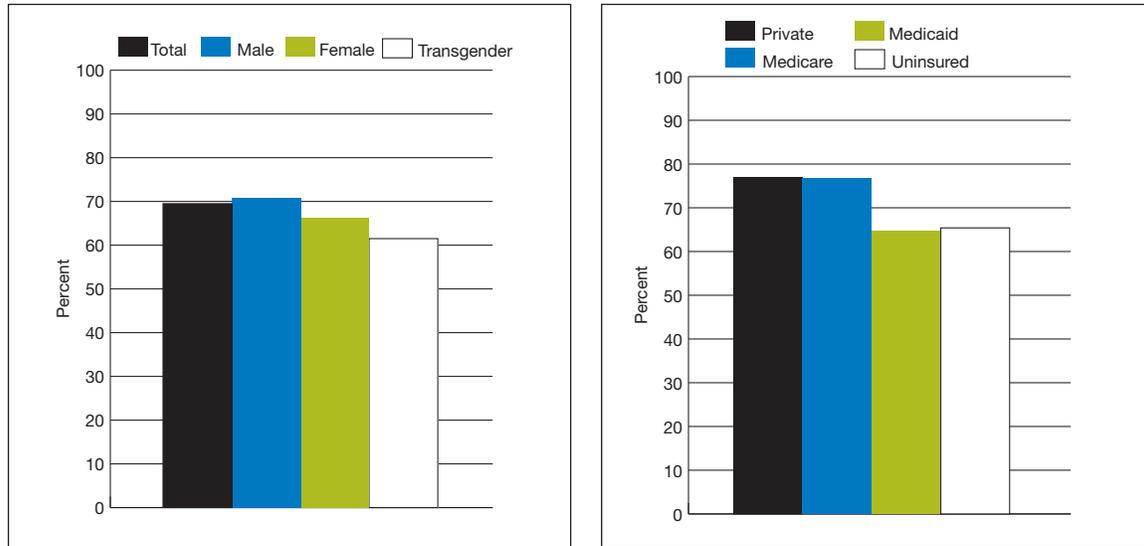
In the RSR, HIV status is reported only for individuals who receive case management or medical care services. There were 313,170 HIV-positive individuals (56% of Ryan White clients) who received Ryan White-funded HIV medical care. Due to missing data on HIV medical care visits, viral load tests, and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

^{xx} The top 4 States that contributed to the achievable benchmark are Kansas, Minnesota, Oregon, and Wisconsin.

^{xxi} 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 2.21. HIV clients in Ryan White-funded care who were virally suppressed (most recent HIV RNA <200 copies/mL), by current gender identity and health insurance, 2010



Source: Health Resources and Services Administration, 2010.

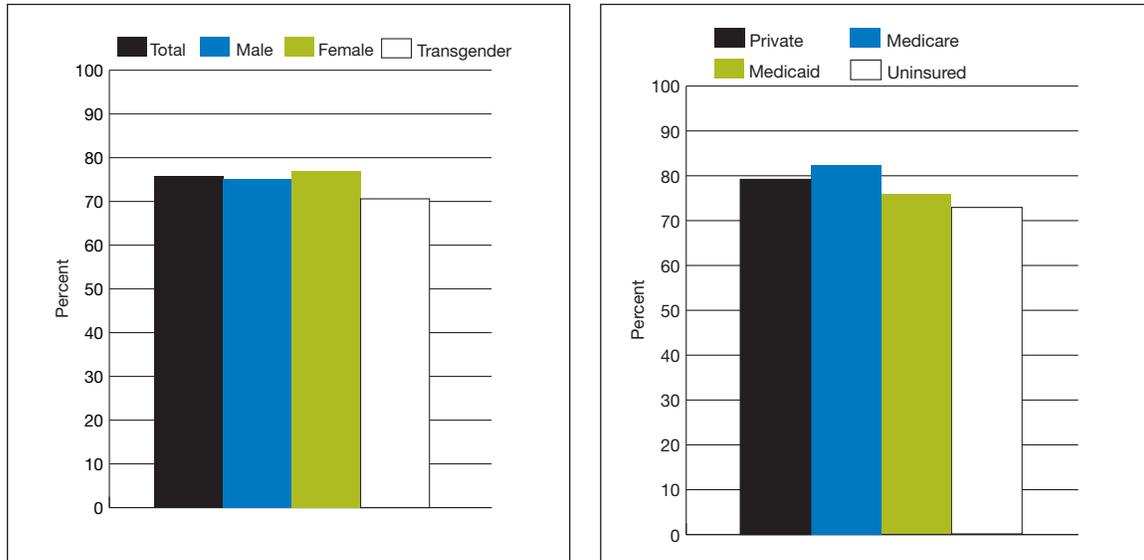
Denominator: HIV-positive clients all ages who received Ryan White-funded HIV care during the year and had visit date and viral load data available. Clients with missing viral load data are excluded.

- ◆ In 2010, 69.5% of HIV-positive clients in Ryan White-funded care were virally suppressed (Figure 2.21).
- ◆ In 2010, female (66.3%) and transgender (61.5%) HIV-positive clients were less likely to be virally suppressed than male (70.9%) HIV-positive clients.
- ◆ In 2010, HIV-positive clients with Medicaid (64.6%) and those without insurance (65.4%) were less likely to be virally suppressed than those with private insurance (76.9%).

Also, in the NHDR:

- ◆ In 2010, Black, NHOPI, AI/AN, and Hispanic HIV-positive clients were less likely to be virally suppressed compared with White HIV-positive clients. Asian HIV-positive clients were more likely than White HIV-positive clients to be virally suppressed.
- ◆ In 2010, HIV-positive clients from poor households were less likely to be virally suppressed than those from high-income households. HIV-positive clients from low-income and middle-income households were more likely to be virally suppressed than those from high-income households.

Figure 2.22. HIV clients in Ryan White-funded care who were retained in HIV care (at least 2 ambulatory visits at least 90 days apart), by gender identity and insurance, 2010



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.

- ◆ In 2010, 75.7% of HIV-positive clients in Ryan White-funded care were retained in care (Figure 2.22).
- ◆ In 2010, transgender HIV-positive clients (70.6%) were less likely to be retained in care compared with male HIV-positive clients (75.2%).
- ◆ In 2010, HIV-positive clients with Medicaid (75.2%) and those without insurance (72.8%) were less likely to be retained in care compared with those with private insurance (78.4%).

Also, in the NHDR:

- ◆ In 2010, NHOPI and AI/AN HIV-positive clients were less likely to be retained in care compared with White HIV-positive clients.
- ◆ In 2010, HIV-positive clients from poor households were less likely to be retained in care than those from high-income households.

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)	15,500 (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

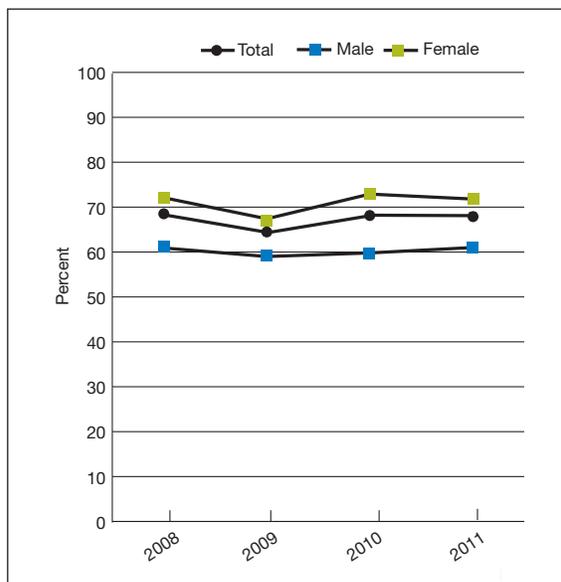
Treatment for depression can be very effective in reducing symptoms and associated illnesses and returning individuals to a productive lifestyle. The Sequenced Treatment Alternatives to Relieve Depression (STAR*D) study, funded by the National Institute of Mental Health, was the largest clinical trial 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 (Glied, 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 2.23. Adults with a major depressive episode in the past year who received treatment for depression in the past year, by sex, 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.

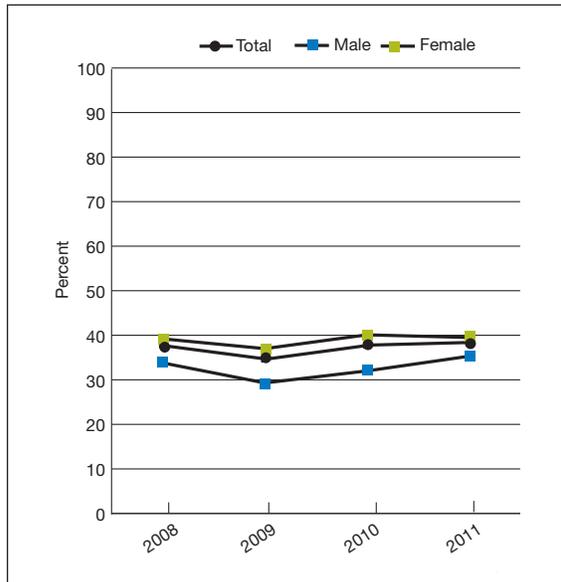
EFFECTIVENESS OF CARE FOR COMMON CLINICAL CONDITIONS

- ◆ In 2011, only 68% of adults with a major depressive episode received treatment for depression (Figure 2.23).
- ◆ In all years, adult males were less likely than adult females to receive treatment for depression.

Also, in the NHDR:

- ◆ In all years, Black adults were less likely to receive treatment for depression than White adults.

Figure 2.24. Adolescents with a major depressive episode in the past year who received treatment for depression in the past year, by sex, 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.

- ◆ In 2011, only 38% of adolescents with a major depressive episode received treatment for depression (Figure 2.24).
- ◆ 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.

Also, in the NHDR:

- ◆ In all years, Black adolescents were less likely to receive treatment for depression than White adolescents.

Outcome: Suicide Deaths

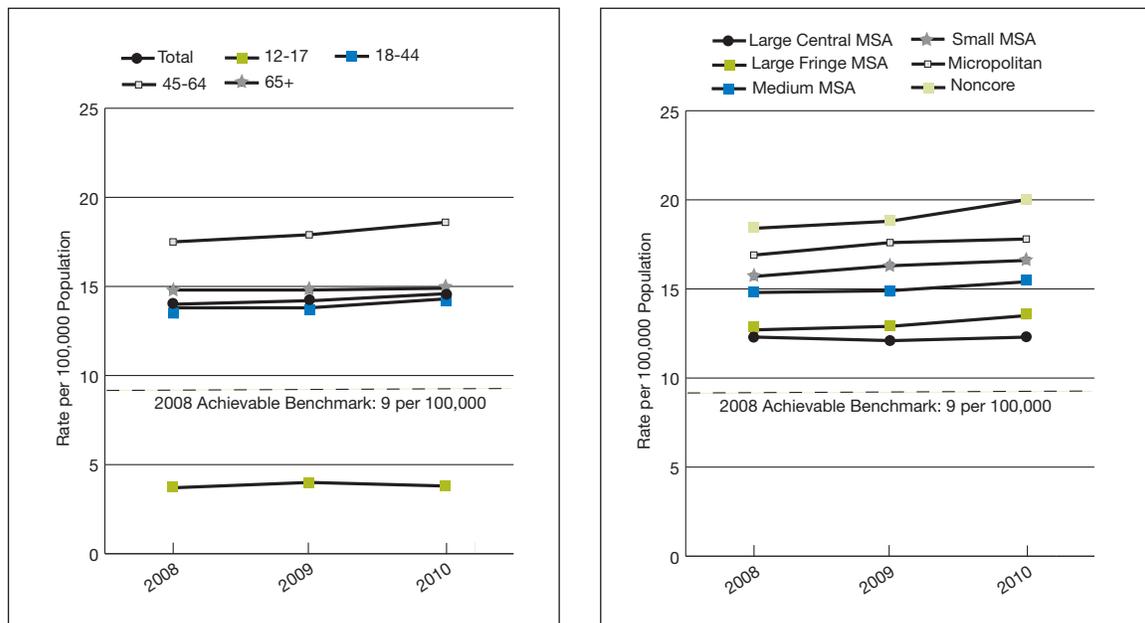
Most individuals who die by suicide have mental illnesses, such as depression or schizophrenia, or have substance abuse problems (Moscicki, 2001). Suicide may be prevented when its warning signs are detected and treated. Identification of suicidal ideas and plans among individuals being treated for depression 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).

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 (Tarrrier, 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 2.25. Suicide deaths per 100,000 population age 12 and over, by age and residence location, 2008-2010



Key: MSA = metropolitan statistical area.

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 2.25).
- ◆ 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.

EFFECTIVENESS OF CARE FOR COMMON CLINICAL CONDITIONS

- ◆ 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).
- ◆ The 2008 top 5 State achievable benchmark was 9 suicide deaths per 100,000 population.^{xxii} Data are insufficient to assess progress toward the benchmark.

Also, in the NHDR:

- ◆ 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.

Treatment for Illicit Drug Use or Alcohol Problem

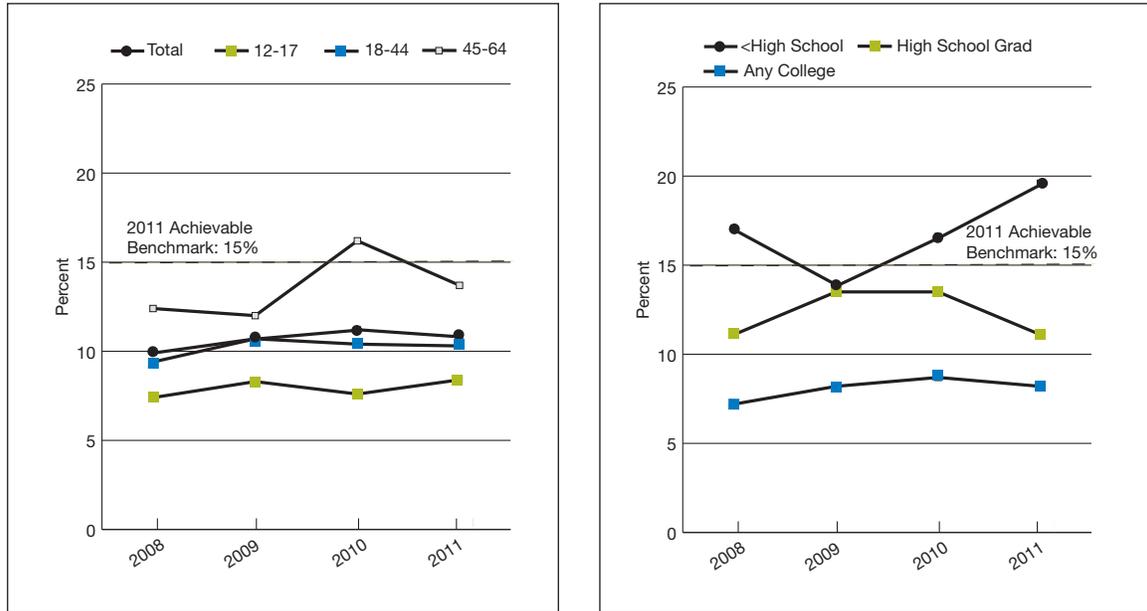
Use of illicit drugs^{xxiii} can lead to addiction and other medical problems that can have a direct toxic effect on a number of bodily organs and exacerbate numerous physical and mental health conditions. Alcohol problems also can lead to serious health risks. Heavy drinking can increase the risk of 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).

^{xxii} The top 5 States that contributed to the achievable benchmark are Connecticut, District of Columbia, Massachusetts, New Jersey, and New York.

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

Figure 2.26. 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 age and education, 2008-2011



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

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

Note: Total includes people age 65 and over, but data were not statistically reliable enough to produce specific estimates for this group. 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.

- ◆ 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 2.26).
- ◆ 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. Individuals with a lower socioeconomic status may be more likely to receive needed substance abuse treatment due to linkages in service delivery between substance abuse and public assistance services in many States.
- ◆ In 3 of 4 years, adolescents ages 12-17 were less likely to receive treatment than adults ages 45-64.
- ◆ The 2011 top 5 State achievable benchmark was 15%.^{xxiv} People with less than a high school education have achieved this benchmark and adults ages 45-64 are within 2 years of achieving this benchmark. Other groups, as well as the overall population of people age 12 and over, would need 20 to 30 years to achieve this benchmark.

Also, in the NHDR:

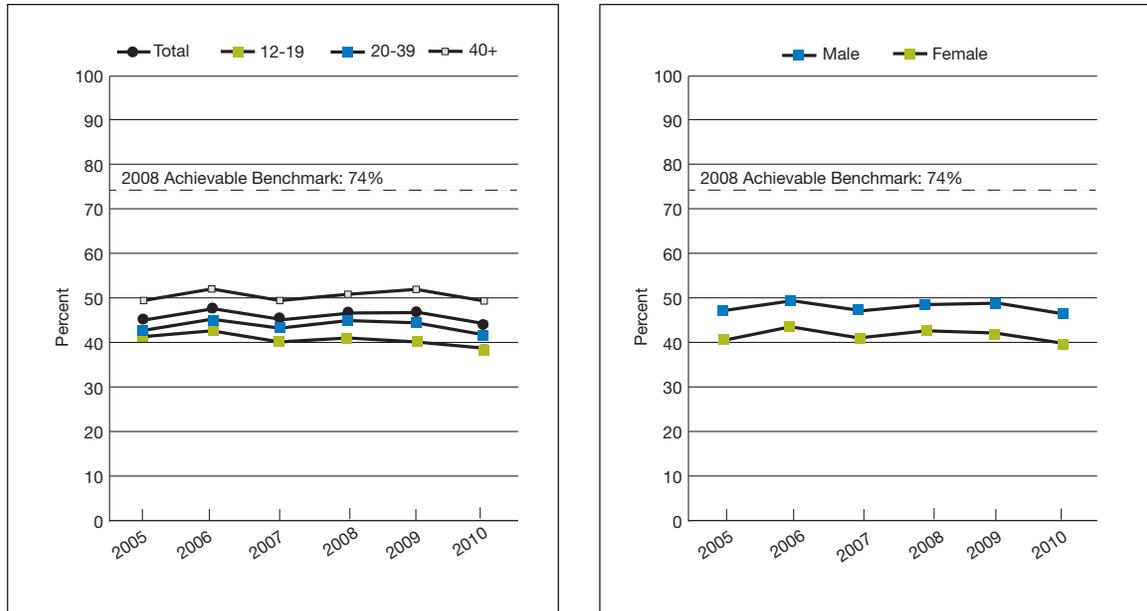
- ◆ From 2002 to 2007, Blacks were more likely to receive needed treatment for illicit drug use or an alcohol problem than Whites. There were no statistically significant differences between Blacks and Whites from 2008 to 2011.
- ◆ From 2007 to 2010, Hispanics were less likely to receive treatment than Whites.

^{xxiv} 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 2.27. People age 12 and over treated for substance abuse who completed treatment course, by age and sex, 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.

- ◆ In 2010, only 44% of people age 12 and over treated for substance abuse completed their treatment course (Figure 2.27).
- ◆ 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 who were treated for substance abuse were significantly less likely than males to complete treatment.
- ◆ The 2008 top 5 State achievable benchmark was 74%.^{xxv} No group showed progress toward the benchmark.

Also, in the NHDR:

- ◆ In all years, people with less than a high school education who were treated for substance abuse were significantly less likely than people with any college education to complete treatment.

^{xxv} 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 density52 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:

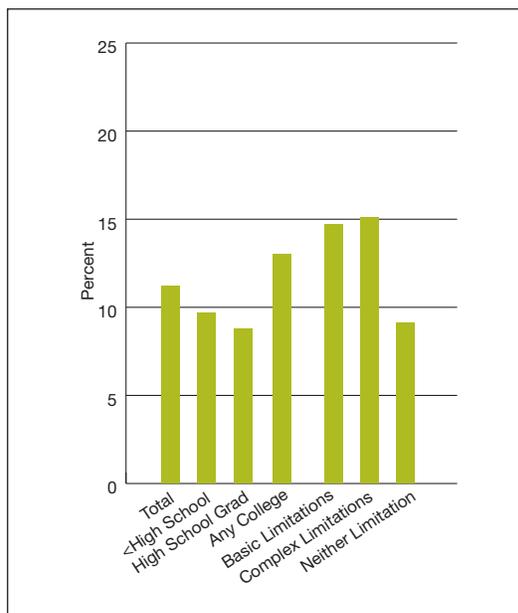
- ◆ Arthritis education for adults with arthritis.
- ◆ Counseling about physical activity for adults with arthritis.
- ◆ Counseling about weight reduction for overweight and obese adults with arthritis.

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 2.28. 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 education and activity limitations, 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. Basic activity limitations include problems with mobility, self-care, domestic life, or activities that depend on sensory functioning. Complex activity limitations include limitations experienced in work or in community, social, and civic life.

- ◆ Rates for all groups regardless of education level and activity limitation are low; only about 9% to 15% of adults diagnosed with arthritis reported they received education as part of the management of their condition (Figure 2.28).
- ◆ 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 (13% compared with 8.8% and 9.7%, respectively).

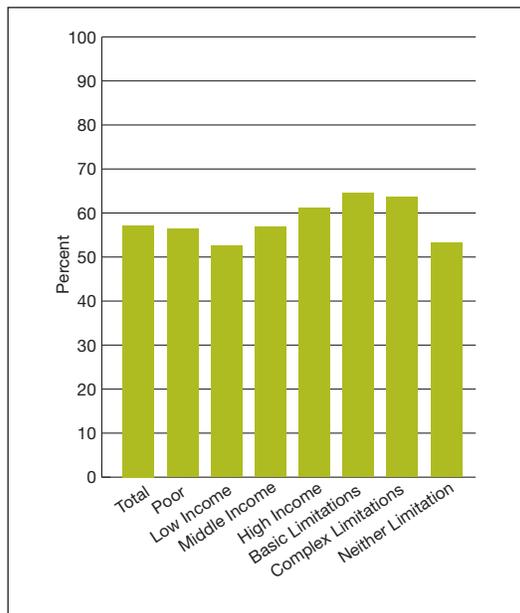
Also, in the NHDR:

- ◆ 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.

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 2.29. Adults with doctor-diagnosed arthritis who reported they received health care provider counseling about physical activity or exercise, by income and activity limitations, 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. Basic activity limitations include problems with mobility, self-care, domestic life, or activities that depend on sensory functioning. Complex activity limitations include limitations experienced in work or in community, social, and civic life.

- ◆ In 2009, overall, 57.2% of adults with doctor-diagnosed arthritis received health care provider counseling (Figure 2.29).
- ◆ 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.
- ◆ Adults with basic or complex activity limitations were more likely to receive health care provider counseling about physical activity or exercise than adults with neither limitation.

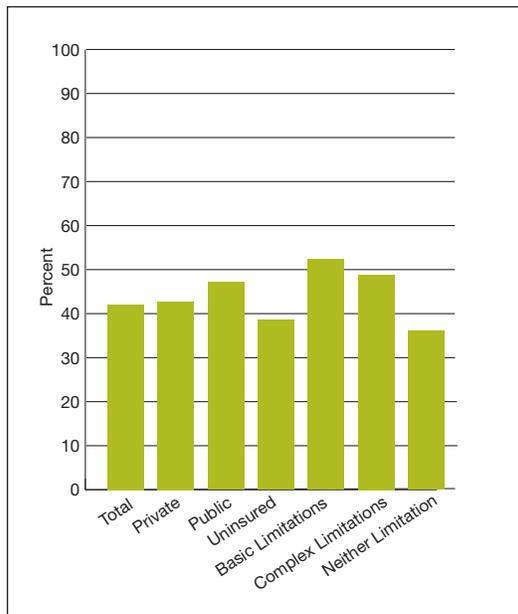
Also, in the NHDR:

- ◆ Among adults ages 45-64, Hispanics were more likely than Whites to receive exercise counseling.

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 2.30. Overweight and obese adults with doctor-diagnosed arthritis who reported they received health care provider counseling about weight reduction, by insurance (under age 65) and activity limitations, 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. Basic activity limitations include problems with mobility, self-care, domestic life, or activities that depend on sensory functioning. Complex activity limitations include limitations experienced in work or in community, social, and civic life. 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 ≥ 25 to <30 ; obese is BMI ≥ 30 .

- ◆ In 2009, overall and in each insurance group, less than 50% of overweight and obese adults received provider counseling about weight reduction (Figure 2.30).
- ◆ There were no statistically significant differences by insurance status in the percentage of overweight and obese adults who received weight reduction counseling.
- ◆ 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 (52.3% and 48.8%, respectively, compared with 36.1%).

Also, in the NHDR:

- ◆ 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.

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 (Pfundner, 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:

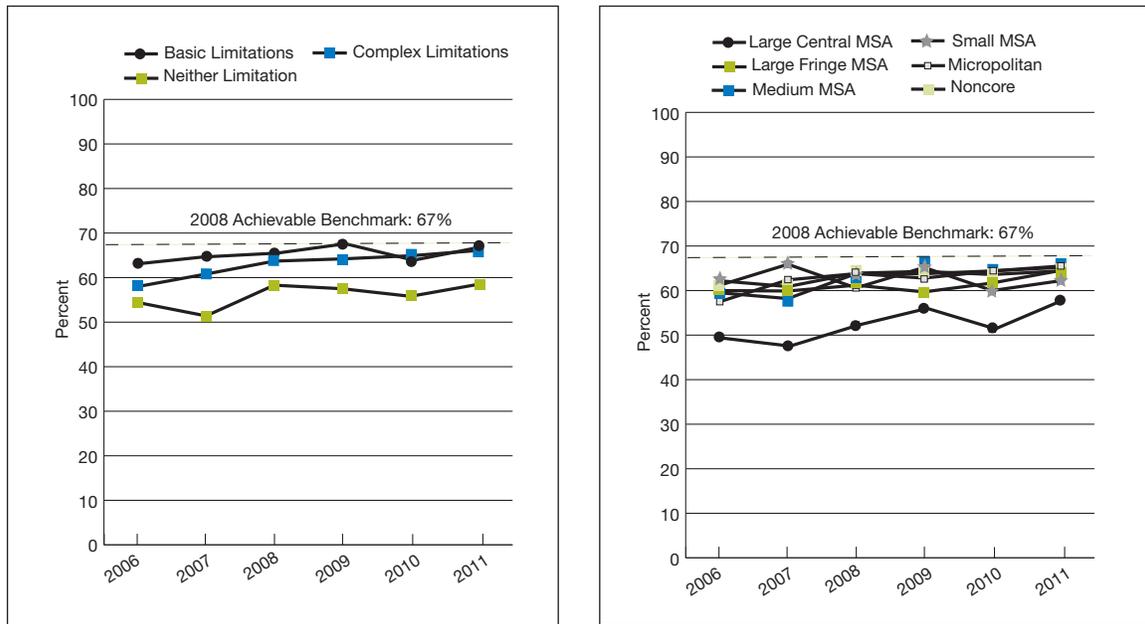
- ◆ Pneumococcal immunization.
- ◆ Influenza immunization among patients hospitalized with pneumonia.
- ◆ Influenza immunization among long-stay nursing home residents.
- ◆ Pneumococcal immunization among long-stay nursing home residents.
- ◆ Completion of tuberculosis therapy.
- ◆ Daily asthma medication.
- ◆ 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 2.31. Adults age 65 and over who reported ever receiving pneumococcal immunization, by activity limitations and residence location, 2006-2011



Key: MSA = metropolitan statistical area.

Source: Centers for Disease Control and Prevention, National Center for Health Statistics, National Health Interview Survey, 2006-2011.

Denominator: Civilian noninstitutionalized population age 65 and over.

Note: Age adjusted to the 2000 U.S. standard population. Basic activity limitations include problems with mobility, self-care, domestic life, or activities that depend on sensory functioning. Complex activity limitations include limitations experienced in work or in community, social, and civic life. Benchmark is derived from the Behavioral Risk Factor Surveillance System; see Chapter 1, Introduction and Methods, for details.

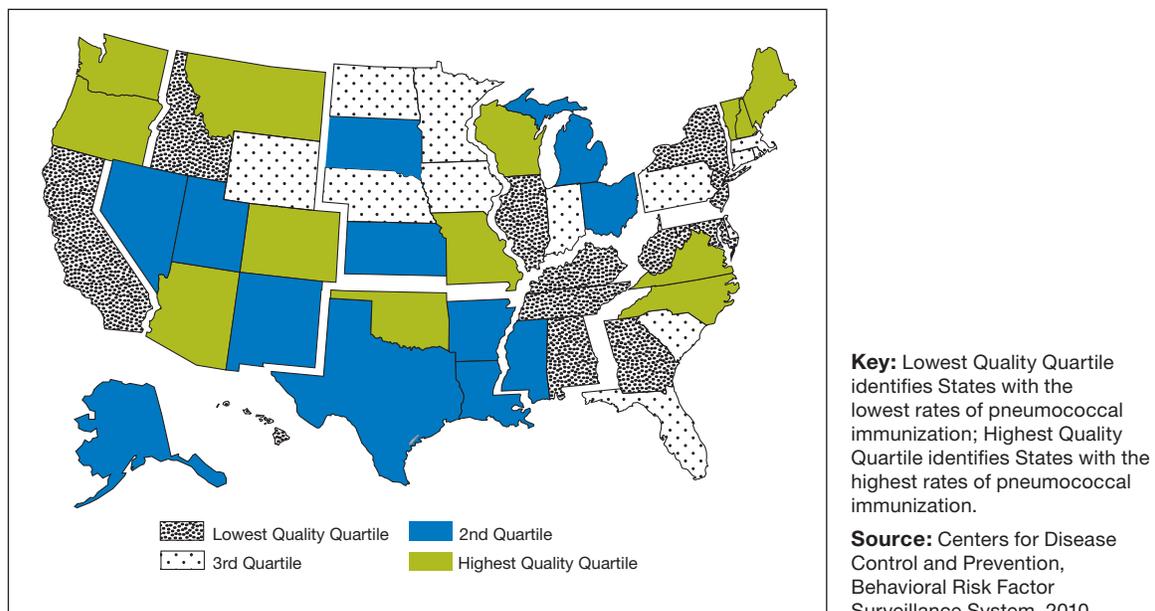
- ◆ Overall, the percentage of adults age 65 and over who reported ever receiving pneumococcal immunization increased from 53.4% in 2006 to 62.7% in 2011 (data not shown).
- ◆ Improvements were observed among adults with complex activity limitations (Figure 2.31). Improvements were also observed among residents of large central, large fringe, and medium metropolitan areas, micropolitan areas, and noncore areas.
- ◆ In all years, adults with basic activity limitations were more likely than adults with neither basic nor complex activity limitations to receive pneumococcal immunization.
- ◆ Except in 2009, residents of large central metropolitan areas were less likely than residents of large fringe metropolitan areas to receive pneumococcal immunization.

- ◆ The 2008 top 5 State achievable benchmark was 67%.^{xxvi} At the current annual rate of increase, this benchmark could be attained overall in about 5 years. Adults with basic or complex activity limitations and residents of large fringe metropolitan, medium metropolitan, micropolitan, and noncore areas could achieve the benchmark sooner. Adults with neither basic nor complex activity limitations would need 9 years to reach the benchmark.

Also, in the NHDR:

- ◆ In all years, Blacks and Asians were less likely than Whites and Hispanics were less likely than non-Hispanic Whites to receive pneumococcal immunization.

Figure 2.32. State variation: adults age 65 and over who reported ever receiving pneumococcal immunization, 2010



- ◆ The States in the lowest quality quartile had pneumococcal immunization rates under 67.4% while the States in the highest quality quartile had pneumococcal immunization rates above 71.3%.
- ◆ States in the East South Central and West South Central census divisions tended to have lower rates of pneumococcal immunization while States in the New England and West North Central census divisions tended to have higher rates of pneumococcal immunization (Figure 2.32).

Also, in the NHDR:

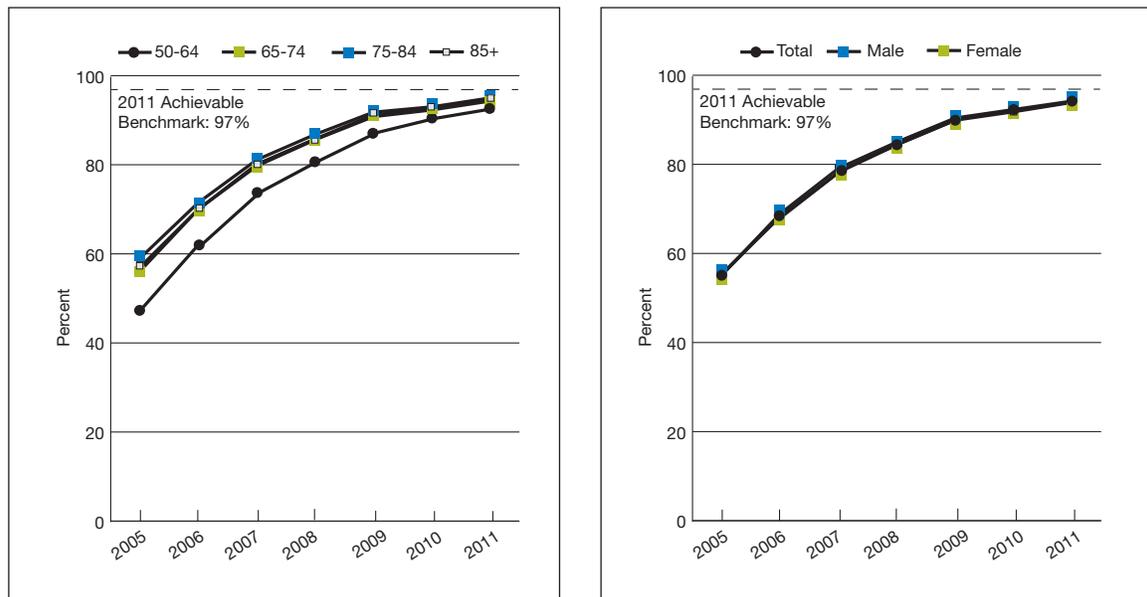
- ◆ States in the Middle Atlantic, East South Central, and West South Central census divisions tended to have larger education-related disparities in pneumococcal immunization.

^{xxvi} The top 5 States that contributed to the achievable benchmark are Colorado, Delaware, Maine, New Hampshire, and Oklahoma.

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 2.33. Hospital patients age 50 and over with pneumonia who received influenza immunization status assessment or provision, by age and sex, 2005-2011



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.

- ◆ 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 2.33). Improvement was observed among all age groups and both sexes.
- ◆ 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.
- ◆ In 2010, the 2008 top 5 State achievable benchmark of 91% was attained.
- ◆ In 2011, the new top 5 State achievable benchmark was 97%.^{xxvii} All age groups and both sexes were within 1 year of the benchmark.

Also, in the NHDR:

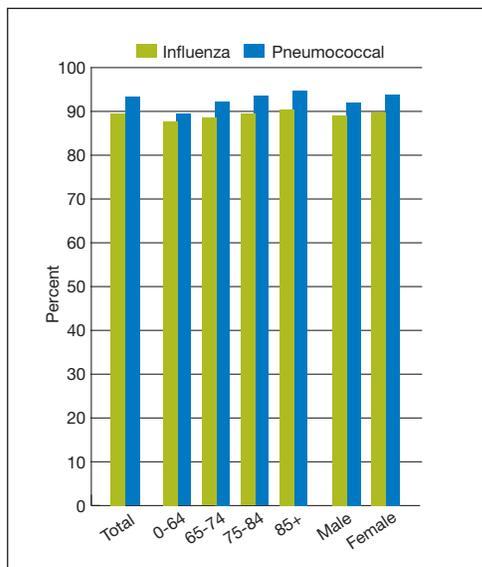
- ◆ In all years since 2006, Black, Hispanic, AI/AN, and Asian patients were less likely than White patients to receive influenza immunization status assessment or provision.

^{xxvii} 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 Long-Stay 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 2.34. Long-stay nursing home residents who were assessed and given influenza and pneumococcal immunization, by age and sex, 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 2.34).
- ◆ 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.
- ◆ In 2011, the top 5 State achievable benchmark for influenza immunization was 94%^{xxviii} and the benchmark for pneumococcal immunization was 98%.^{xxix} No age group or sex has achieved the benchmark.

Also, in the NHDR:

- ◆ 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.

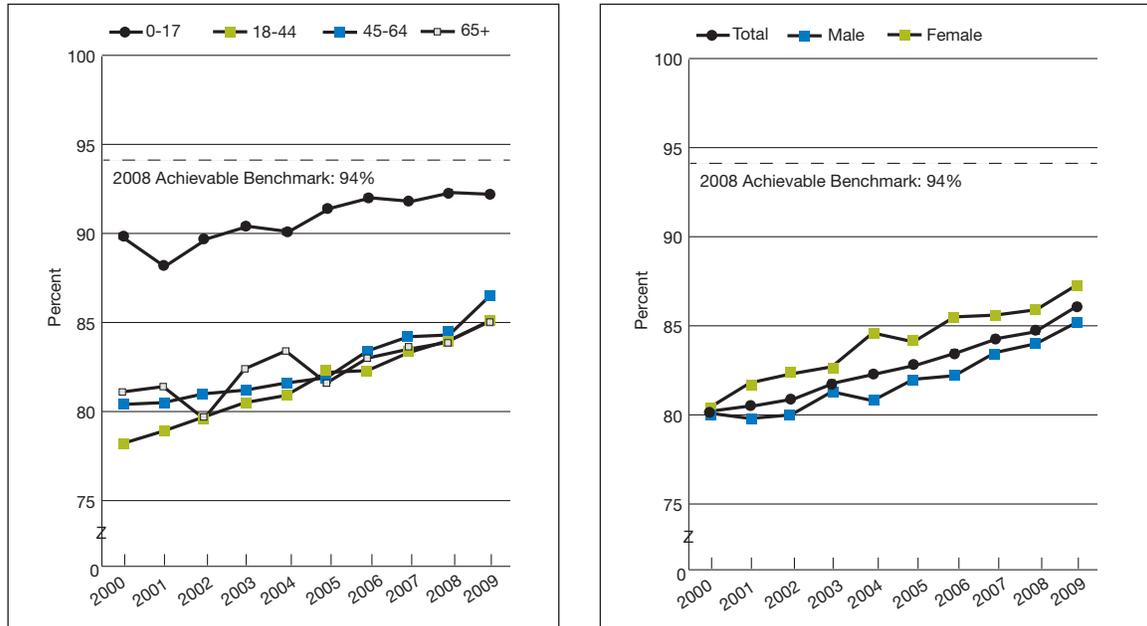
^{xxviii} The top 5 States that contributed to the achievable benchmark are Alaska, Hawaii, New Hampshire, New Jersey, and South Dakota.

^{xxix} 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 2.35. Patients with tuberculosis who completed a curative course of treatment within 1 year of initiation of treatment, by age and sex, 2000-2009



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

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

- ◆ The percentage of patients who completed tuberculosis therapy within 1 year increased from 80.2% in 2000 to 86.1% in 2009 (Figure 2.35). Improvements were observed among all age and sex categories.
- ◆ 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.
- ◆ The 2008 top 4 State achievable benchmark was 94%.^{xxx} At the current annual rate of increase, this benchmark could not be attained overall for about 12 years. Children ages 0-17 could achieve the benchmark in about 4 years while patients age 65 and over would need 20 years. Females could not achieve the benchmark for about 9 years while males would need about 15 years.

Also, in the NHDR:

- ◆ In 8 of 10 years, Hispanics were less likely than non-Hispanic Whites to complete tuberculosis treatment.

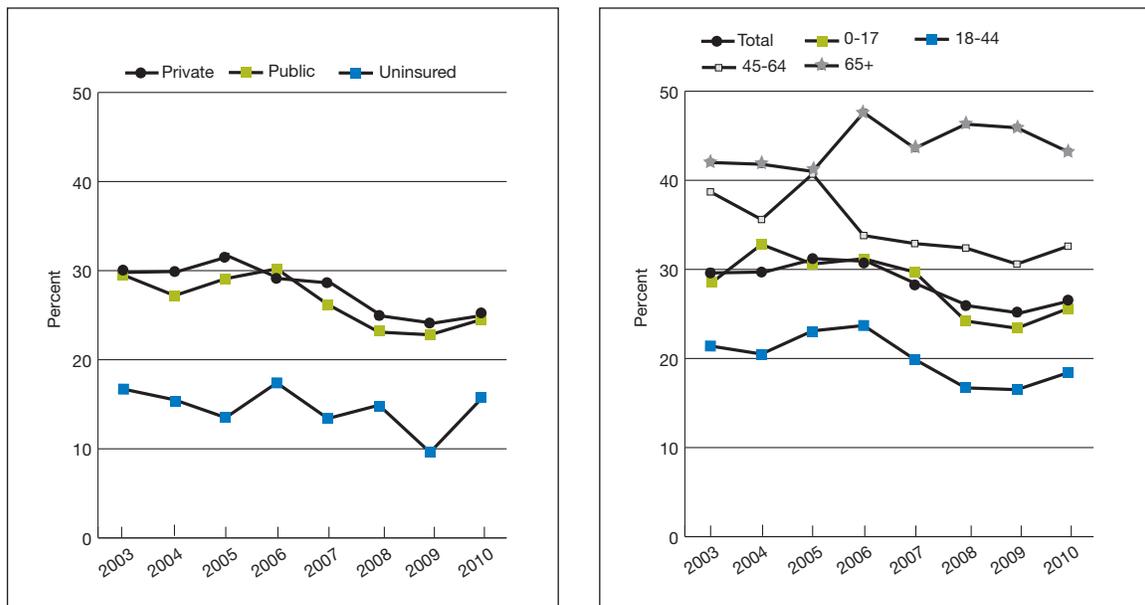
^{xxx} The top 4 States that contributed to the achievable benchmark are Colorado, Kansas, Mississippi, and Oregon.

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 evidence-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 people 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 2.36. People with current asthma who reported taking preventive asthma medicine daily or almost daily, by insurance and age, 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 report that they still have asthma or had an asthma attack in the last 12 months. Insurance groups presented are for patients under age 65.

- ◆ 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 2.36). Significant decreases were observed among children ages 0-17 and people with private and public insurance.
- ◆ 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.

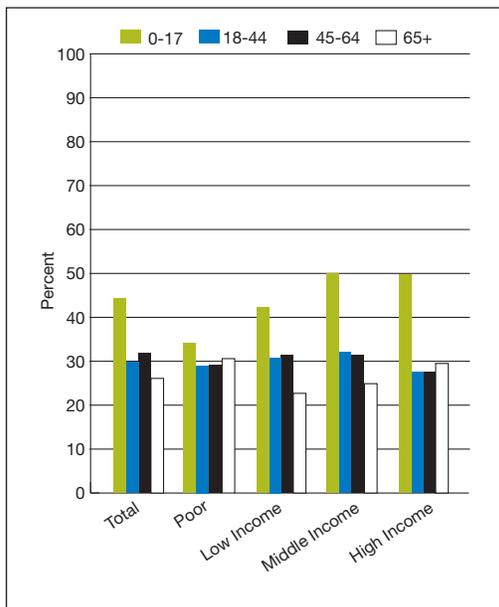
Also, in the NHDR:

- ◆ 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.

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 2.37. People with current asthma who received written asthma management plans from their health provider, by age 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.

- ◆ In 2008, only one-third of people with current asthma received written asthma management plans from their provider (data not shown).
- ◆ Children ages 0-17 were more likely to receive written asthma management plans than adults ages 18-44 (Figure 2.37). This age effect was most significant in middle- and high-income families.

Also, in the NHDR:

- ◆ Blacks were more likely than Whites to receive written asthma management plans. Black-White differences were most significant in middle- and high-income families.

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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*.ⁱ 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.

ⁱ 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 childrenⁱⁱ (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.

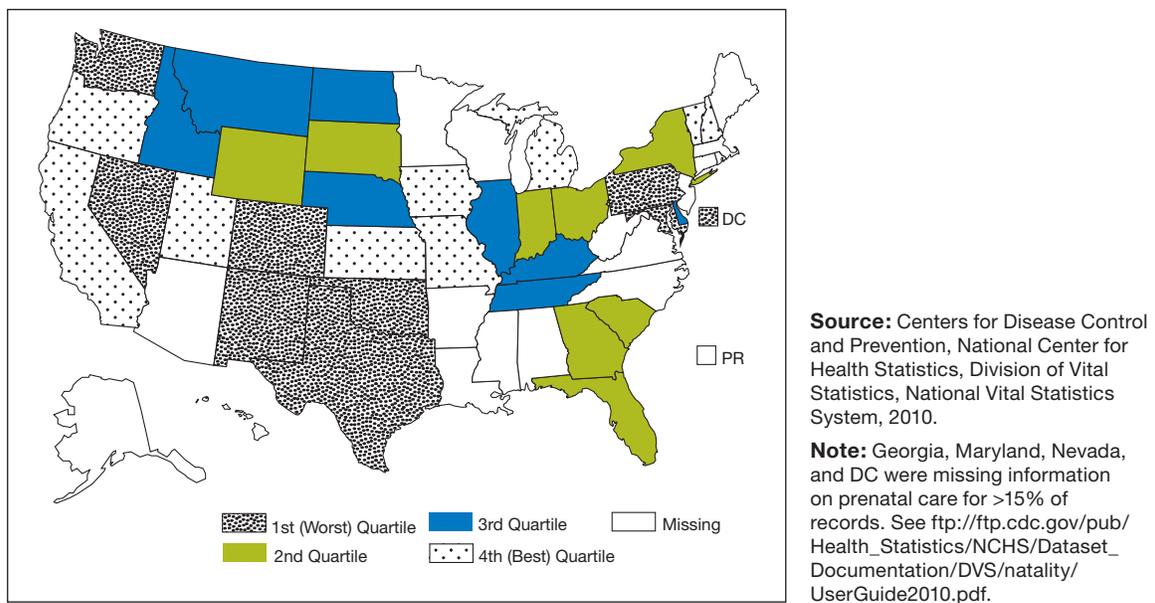
ⁱⁱ In this report, children are defined as individuals under age 18, unless otherwise specified.

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.

The data are shown in the map below. This map shows overall State rankings by quartiles in the percentage of infants born to women who received early and adequate PNC. State values ranged from 61.8% to 88%.

Figure 3.1. Infants born in 2010 whose mothers had obtained early and adequate prenatal care, by State quartiles



- ◆ Interquartile ranges were as follows:
 - Fourth quartile (best): 78.1%-88% (CA, IA, KS, MI, MO, NH, OR, UT, VT).
 - Third quartile (second best): 73.2%-77.9%.
 - Second quartile (second worst): 70.6%-73.1%.
 - First quartile (worst): 61.8%-70.0% (CO, DC, MD, NM, NV, OK, PA, TX, WA).
- ◆ There was no clear pattern based on geographic region (Figure 3.1).

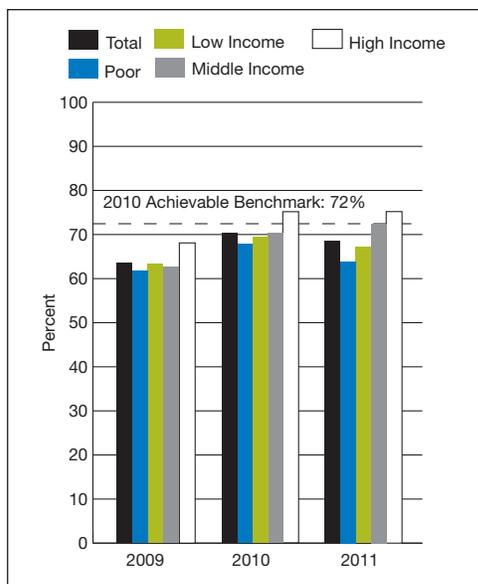
Also, in the NHDR:

- ◆ Within individual States, the NHDR mapped the absolute differences between White and Black infants (based on the reported race of the mother) in the percentage whose mothers had obtained early and adequate PNC in 2010. States ranged from a minimum difference between Whites and Blacks of 3.3% to a maximum difference of 30.1%.

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 4:3:1:3:3:1:4ⁱⁱⁱ 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 income, 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: 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). Children from high-income households were more likely to receive all the recommended vaccinations than those from poor, low-income, and middle-income households.
- ◆ The 2010 top 5 State achievable benchmark was 72%.^{iv} Children from middle-income and high-income groups achieved the benchmark in 2011.

Also, in the NHDR:

- ◆ From 2009 to 2011, Black children were less likely than White children to receive all recommended vaccinations.

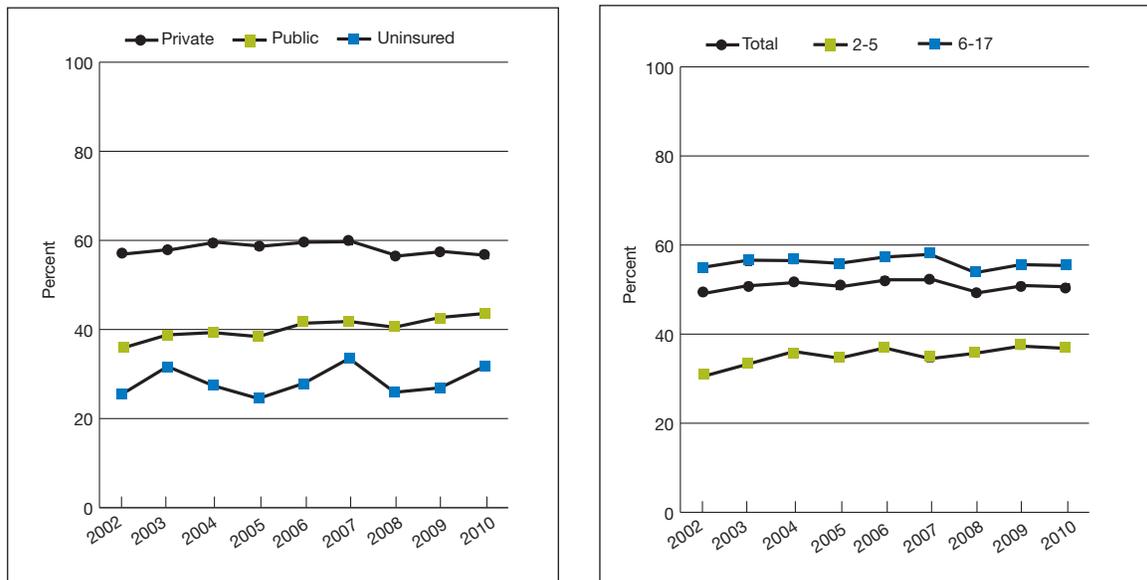
ⁱⁱⁱ Full series of *Haemophilus influenzae* type b (Hib) vaccine is ≥ 3 or ≥ 4 doses, depending on brand type.

^{iv} 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 insurance status and age, 2002-2010



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

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

- ◆ From 2002 to 2010, there was no statistically significant change in the percentage of children ages 2-17 who had a dental visit in the calendar year (Figure 3.3). Increases were observed among children ages 2-5 and among children with public health insurance only.
- ◆ 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.

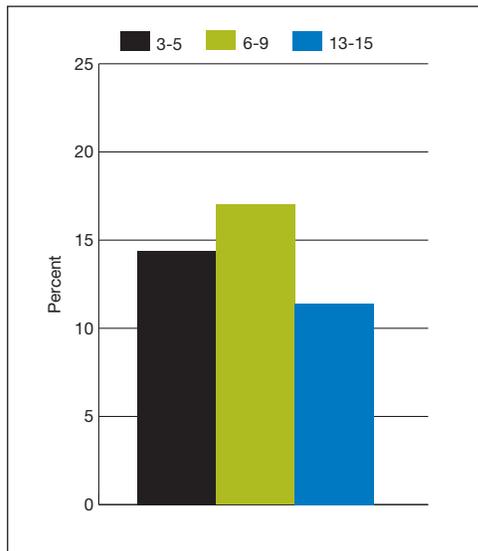
Also, in the NHDR:

- ◆ 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.

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. Children ages 3-9 and 13-15 with untreated dental caries, by age, 2009-2010 combined



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.

Denominator: U.S. civilian noninstitutionalized population ages 3-9 and 13-15.

Note: For this measure, lower rates are better. Data for ages 10-12 are unavailable.

- ◆ In 2009-2010, 14.4% of children ages 3-5 years had untreated dental caries; among children ages 6-9 years, 17% had untreated dental caries; and among adolescents ages 13-15, 11.4% had untreated dental caries (Figure 3.4).

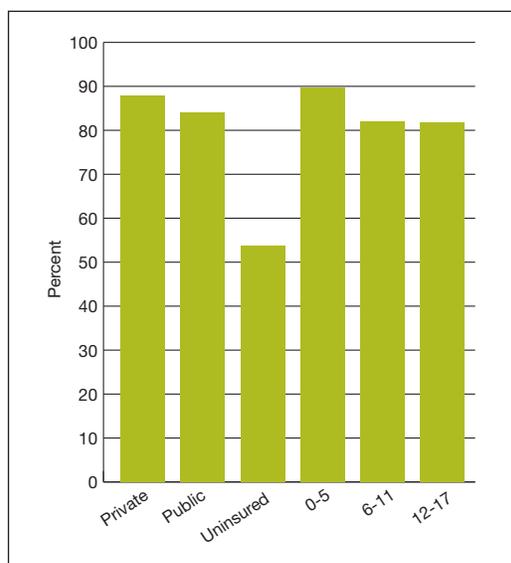
Also, in the NHDR:

- ◆ Black adolescents were more likely than White adolescents to have untreated dental caries.

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 with a well-child visit in the last 12 months, by insurance status and age, 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.

- ◆ In 2011-2012, uninsured children were less likely to have a well-child visit than children with private or public insurance (Figure 3.5).
- ◆ In 2011-2012, 89.7% of children ages 0-5 had well-child visits in the last 12 months compared with 82.0% for ages 6-11 and 81.7% for ages 12-17.

Also, in the NHDR:

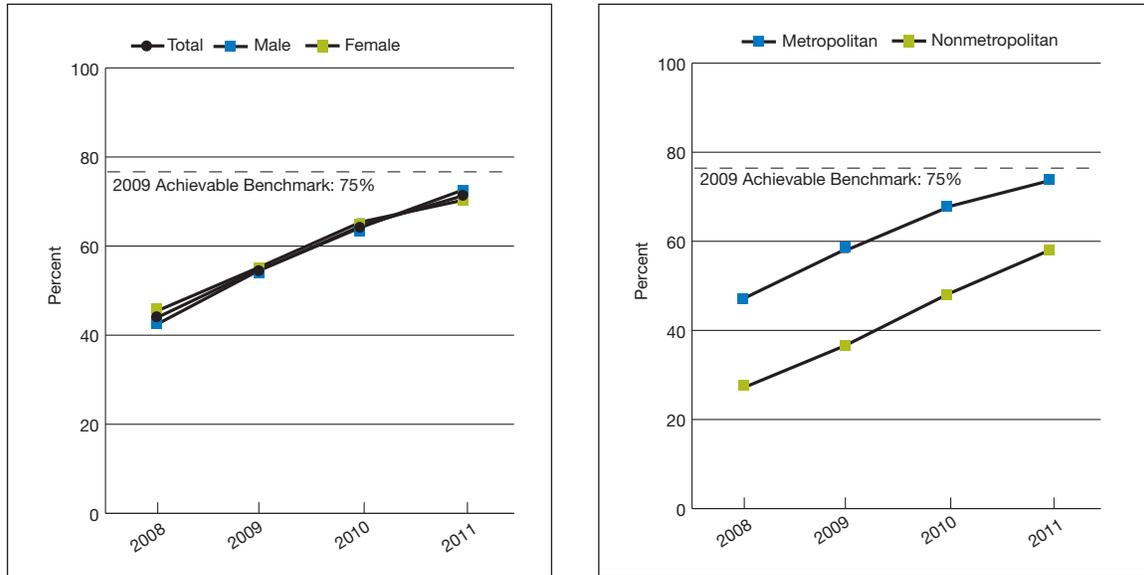
- ◆ In 2011-2012, children from poor, low-income, and middle-income households were less likely to have well-child visits than those from high-income households.
- ◆ Black children had lower rates of well-child visits compared with their White counterparts, while Hispanic children had lower rates than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

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 meningococemia, 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 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 sex and residence location, 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.

- ◆ In 2011, 71.5% of adolescents ages 13-15 had ever received at least 1 dose of the meningococcal vaccine (Figure 3.6).
- ◆ 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.
- ◆ The 2009 top 5 State achievable benchmark was 75%.^v At the current rate of increase, all groups could achieve the benchmark in a year.

Also, in the NHDR:

- ◆ 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 non-Hispanic White adolescents.

NEW 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).

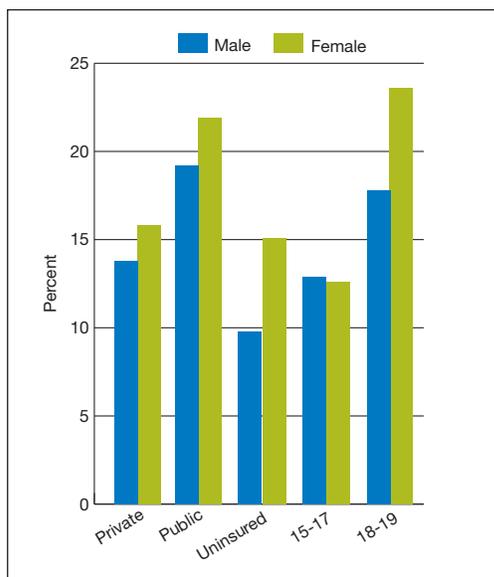
^v The top 5 States that contributed to the achievable benchmark are District of Columbia, Massachusetts, New Jersey, North Dakota, and Rhode Island.

In 2011, 47% of high school students reported ever having had sex (MMWR, 2012).^{vi} Females (46%) and males (49%) were about equally likely to report having had sex. From 2006 to 2010, 42.6% of never-married females and 41.8% of never-married males ages 15 to 19 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.^{vii} 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.

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, insurance status, and age, 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.

^{vi} 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.

^{vii} More information is available at <http://www.cdc.gov/TeenPregnancy/PreventTeenPreg.htm>.

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- ◆ 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 (Figure 3.7).
- ◆ In 2007-2010, uninsured females ages 15-19 (15.1%) were more likely than uninsured males ages 15-19 (9.8%) to receive counseling from a health care professional on a method of birth control.
- ◆ In 2007-2010, females ages 18-19 (23.6%) were more likely than males in the same age group (17.8%) to receive counseling from a health care professional on a method of birth control.

From the NHDR:

- ◆ Among males ages 15-17, Blacks were more likely than Whites or Hispanics to receive counseling from a health care professional on a method of birth control.
- ◆ Among Hispanic teens ages 18-19, females were more likely than males to receive counseling from a health care professional on a method of birth control.
- ◆ In 2007-2010, Hispanic males ages 15-19 were less likely than Hispanic females ages 15-19 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 (MMWR, 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 (2005-2009 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 NHQR 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.

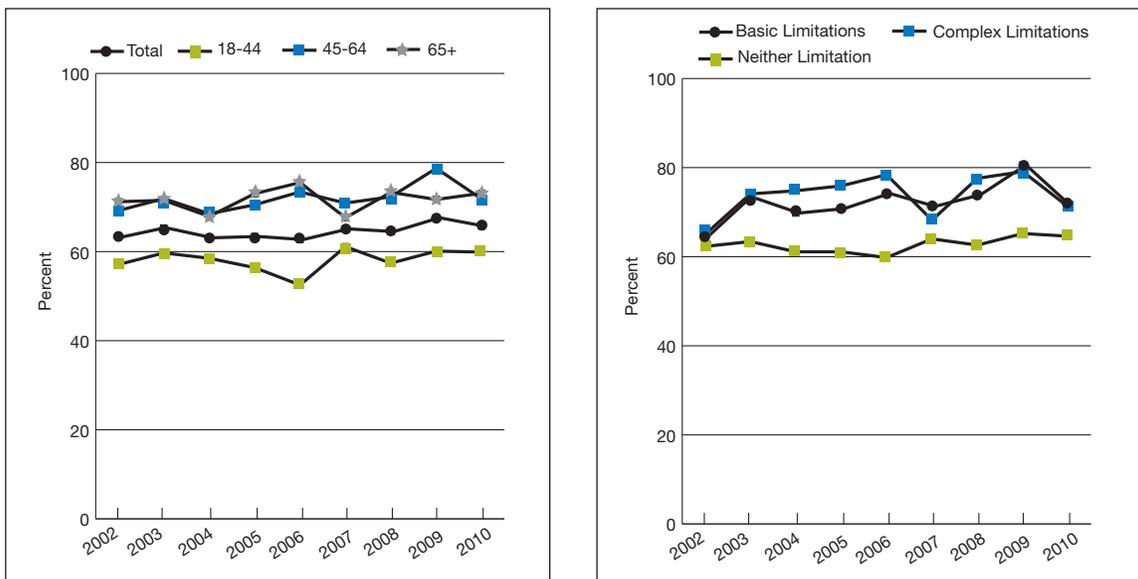
Findings

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.^{viii}

Figure 3.8. Adult current smokers with a checkup in the last 12 months who received advice to quit smoking, by age and activity limitations, 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. Basic activity limitations include problems with mobility, self-care, domestic life, or activities that depend on sensory functioning. Complex activity limitations include limitations experienced in work or in community, social, and civic life.

^{viii} 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>.

- ◆ Overall, in 2010, 65.7% of adult current smokers received advice to quit smoking (Figure 3.8).
- ◆ From 2002 to 2010, the percentage of adult current smokers who were advised to quit improved for those ages 45-64.
- ◆ 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.

Also, in the NHDR:

- ◆ From 2002 to 2010, the percentage of Hispanic adult current smokers who received advice to quit smoking improved.
- ◆ In 5 of 9 years, female adult current smokers were more likely than male adult current smokers to receive advice to quit smoking.

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.

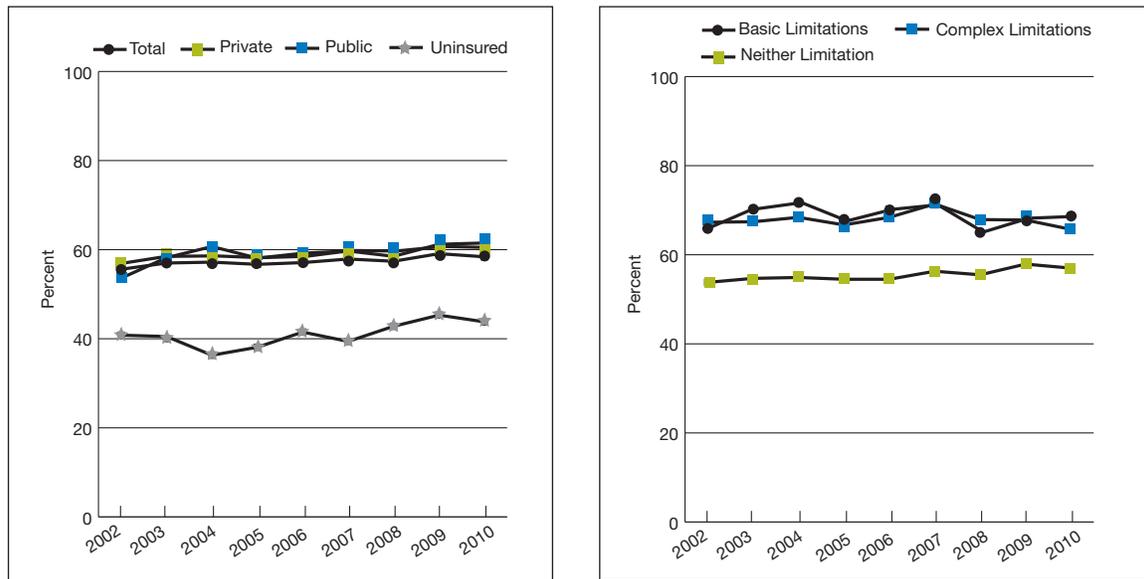
Regular exercise and a healthy diet aid in maintaining normal blood cholesterol levels, weight, and blood pressure, reducing the risk of heart disease, stroke, diabetes, and other comorbidities of obesity. Populations at risk for overweight and obesity may not receive adequate advice about lifestyle 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.^{ix}

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.

^{ix} More information about the 2008 Physical Activity Guidelines for Americans is available at www.health.gov/paguidelines/guidelines/default.aspx.

Prevention: Counseling Obese Adults About Exercise

Figure 3.9. Adults with obesity who ever received advice from a health provider to exercise more, by insurance (ages 18-64) and activity limitations, 2002-2010



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

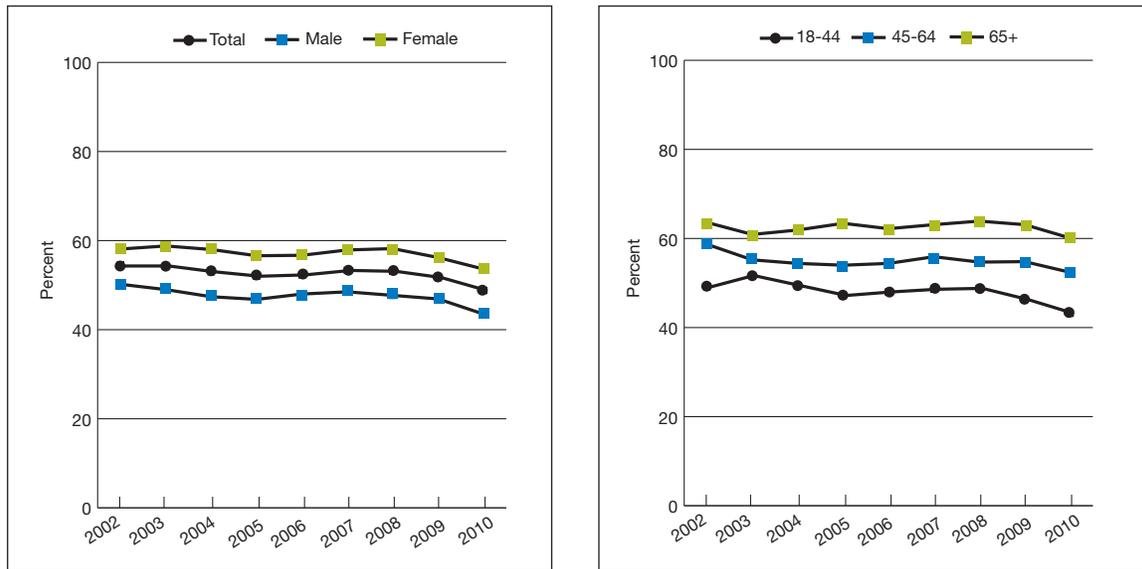
Denominator: Civilian noninstitutionalized adults age 18 and over with obesity.

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. Basic activity limitations include problems with mobility, self-care, domestic life, or activities that depend on sensory functioning. Complex activity limitations include limitations experienced in work or in community, social, and civic life.

- ◆ Overall, in 2010, 58.4% of adults with obesity reported ever receiving advice from a health provider to exercise more (Figure 3.9).
- ◆ In all years, obese adults ages 18-64 without insurance were less likely to receive advice to exercise compared with those with private insurance.
- ◆ From 2002 to 2010, the percentage of obese adults ages 18-64 who received advice to exercise improved for all insurance groups.
- ◆ 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.

Also, in the NHDR:

- ◆ 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.
- ◆ 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.

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 sex and age, 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.

- ◆ 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 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.
- ◆ 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 at least three times a week decreased for those ages 18-44 and for males.
- ◆ 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.

Also, in the NHDR:

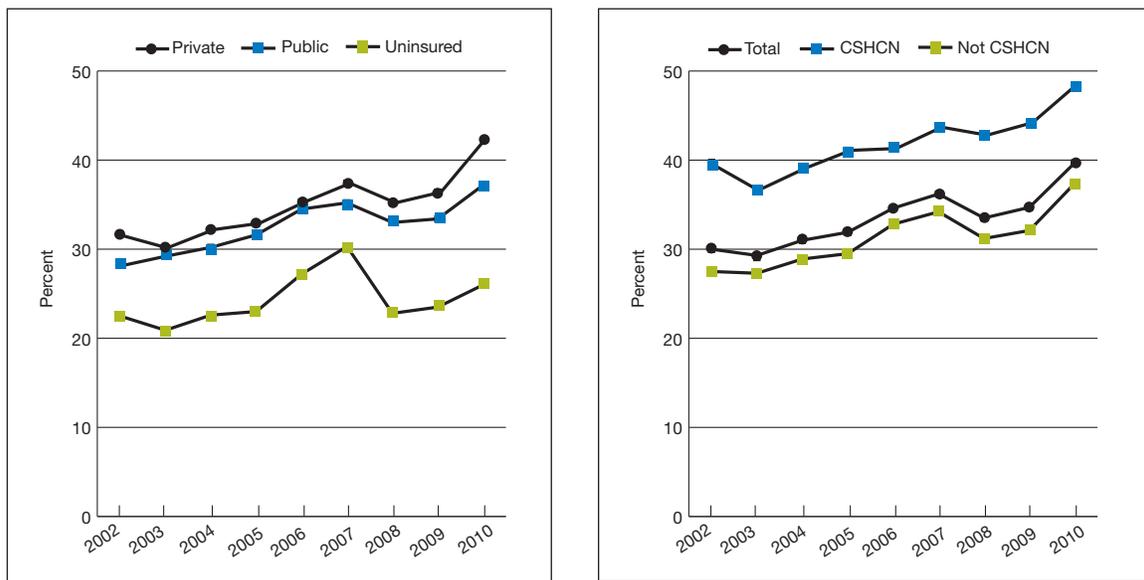
- ◆ In 8 of 9 years, there were no statistically significant differences between Blacks and Whites in the percentage of adults with obesity who did not spend half an hour or more engaged in moderate or vigorous physical activity.
- ◆ In all years, adults from poor households were less likely to spend half an hour or more engaged in moderate or vigorous physical activity compared with those from high-income families. 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.

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.^x

Figure 3.11. Children ages 2-17 for whom a health provider gave advice within the past 2 years about exercise, by insurance and special health care needs, 2002-2010



Key: CSHCN = children with special health care needs. See Medical Expenditure Panel Survey documentation for the 2010 Full Year Consolidated Data File at http://meps.ahrq.gov/data_stats/download_data_files_detail.jsp?cboPufNumber=HC-138 for details.

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.

- ◆ 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 all years, children without insurance were less likely to receive advice to exercise compared with those with private insurance.
- ◆ From 2002 to 2010, the percentage of children who received advice to exercise improved for those with private insurance (from 31.6% to 42.5%) and public insurance (from 28.1% to 37.2%).

^x For more information about the 2008 Physical Activity Guidelines for Americans, go to www.health.gov/paguidelines/guidelines/default.aspx.

- ◆ In all years, children with special health care needs were more likely to receive advice to exercise than those without such needs.
- ◆ From 2002 to 2010, the percentage of children who were given advice about exercise improved for both children with special health care needs (from 39.6% to 48.6%) and those without such needs (from 27.5% to 37.4%).

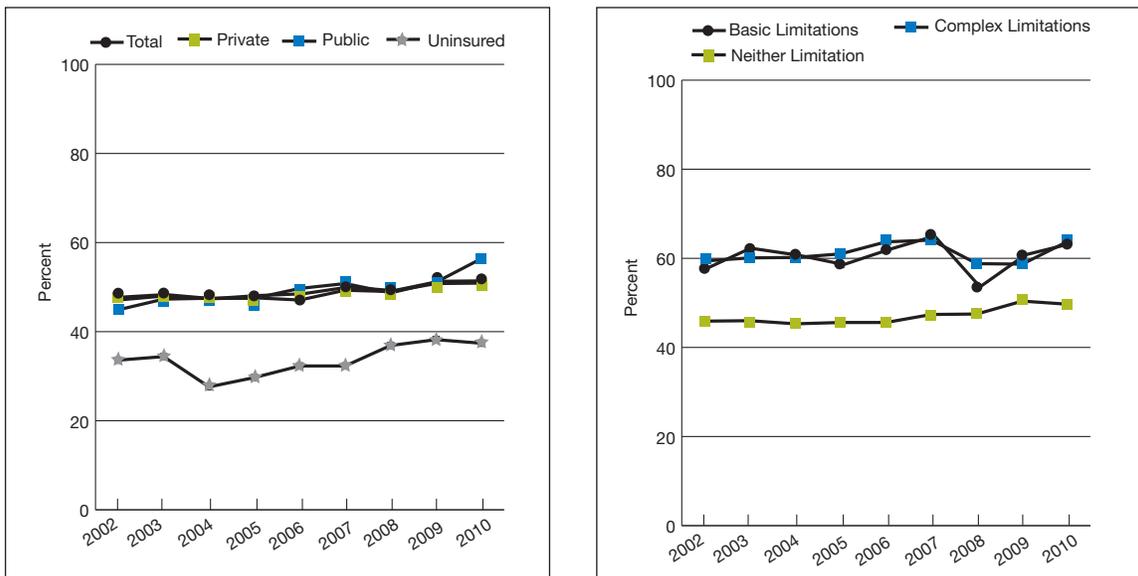
Also, in the NHDR:

- ◆ From 2002 to 2010, the percentage of children who were given advice about exercise improved for Whites and Hispanics.
- ◆ From 2002 to 2010, the percentage of children who received advice to exercise improved for females and males.^{xi}

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.^{xi}

Figure 3.12. Adults with obesity who ever received advice from a health provider about eating fewer high-fat or high-cholesterol foods, by insurance (ages 18-64) and activity limitations, 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. Basic activity limitations include problems with mobility, self-care, domestic life, or activities that depend on sensory functioning. Complex activity limitations include limitations experienced in work or in community, social, and civic life.

^{xi} For more information about the Dietary Guidelines for Americans, go to www.dietaryguidelines.gov

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Overall, in 2010, 51.4% of adults with obesity received advice from a health provider about healthy eating (Figure 3.12).

- ◆ In all years, obese adults without insurance were less likely to receive advice about healthy eating compared with those with private insurance.
- ◆ From 2002 to 2010, the percentage of adults who received advice about healthy eating increased for adults with public insurance (from 44.9% to 56.4%) and for those without insurance (from 33.6% to 37.4%).
- ◆ 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.

Also, in the NHDR:

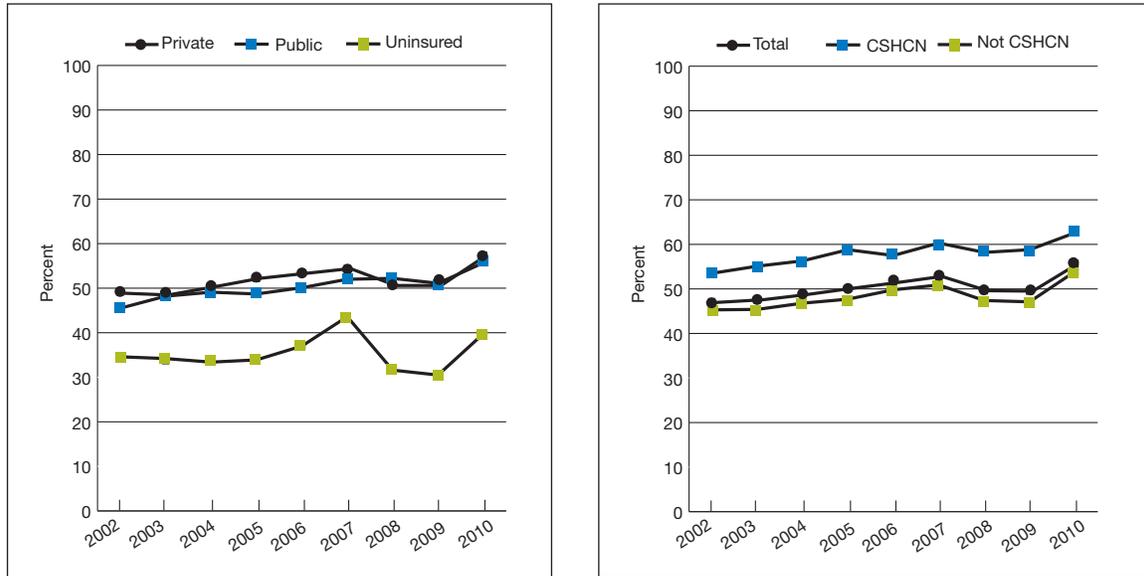
- ◆ From 2002 to 2010, the percentage of obese Hispanic adults who received advice about healthy eating increased, as did the percentage of obese Blacks receiving advice.
- ◆ In all years, there were no statistically significant differences by sex in the percentage of obese adults who received advice about healthy eating.

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 insurance and special health care needs, 2002-2010



Key: CSHCN = children with special health care needs. See Medical Expenditure Panel Survey documentation for the 2010 Full Year Consolidated Data File at http://meps.ahrq.gov/data_stats/download_data_files_detail.jsp?cboPufNumber=HC-138 for details.

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

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

- ◆ 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 those with public insurance (from 45.5% to 55.7%) and private insurance (from 48.9% to 57.4%).
- ◆ In all years, children without insurance were less likely to receive advice about healthy eating compared with those with private insurance.
- ◆ In all years, the percentage of children who were given advice about healthy eating improved for both children with special health care needs (from 53.5% to 62.6%) and those without such needs (from 45.3% to 53.9%).
- ◆ In all years, children with special health care needs were more likely to be given advice about healthy eating than those without such needs.

Also, in the NHDR:

- ◆ 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.

Functional Status Preservation and Rehabilitation

Importance

Demographics

Noninstitutionalized adults needing help of another person with activities of daily living (ADLs) ^{xii} (2011).....	5.2 million (Adams, et al., 2012)
Noninstitutionalized adults needing help with instrumental activities of daily living (IADLs) ^{xiii} (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.

^{xii} ADLs consist of basic self-care tasks, such as bathing, dressing, eating, transferring, using the toilet, and walking.

^{xiii} 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.

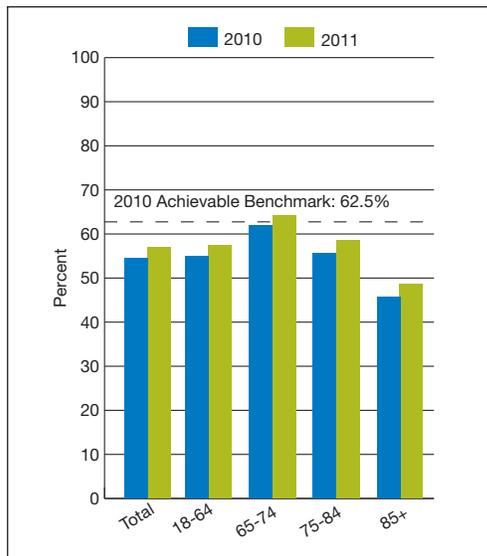
Findings

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 3.14. Adult home health care patients whose ability to walk or move around improved, by age, 2010-2011



Source: Centers for Medicare & Medicaid Services, Outcome and Assessment Information Set (OASIS), 2010-2011.

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, the percentage of home health care patients who got better at walking or moving around was 57.0% (Figure 3.14).
- ◆ In both years, patients age 85 and over were less likely than patients in other age groups to show improvement. These patients may have higher levels of disability or infirmity than younger patients that make improvements in mobility harder to achieve.
- ◆ The 2010 top 5 State achievable benchmark was 62.5%.^{xiv} Data are insufficient to determine time to benchmark.

Also, in the NHDR:

- ◆ In 2011, Black, American Indian or Alaska Native (AI/AN), and Hispanic home health patients were less likely than Whites to show improvement in their ability to walk or move around.

^{xiv} The top 5 States that contributed to the achievable benchmark are Maine, Missouri, New Jersey, South Carolina, and Utah.

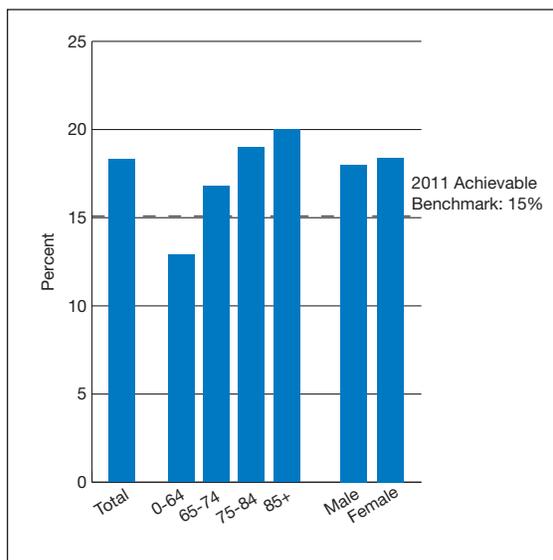
Outcome: Nursing Home Residents Needing More Help With Daily Activities

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.^{xv}

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.

Figure 3.15. Long-stay nursing home residents whose need for help with daily activities increased, by age and sex, 2011



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.

- ◆ In 2011, 18.3% of long-stay nursing home residents had increased need for help with daily activities (Figure 3.15).
- ◆ Residents ages 0-64 and 65-74 were less likely than residents age 85 and over to need increased help with daily activities.

^{xv} 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.

- ◆ The 2011 top 5 State achievable benchmark was 15%.^{xvi} In 2011, residents ages 0-64 had a rate lower than the benchmark. Data are insufficient to determine time to benchmark.

Also, in the NHDR:

- ◆ In all age groups, Asian or Pacific Islander (API) residents were less likely than White residents to need increased help with daily activities.

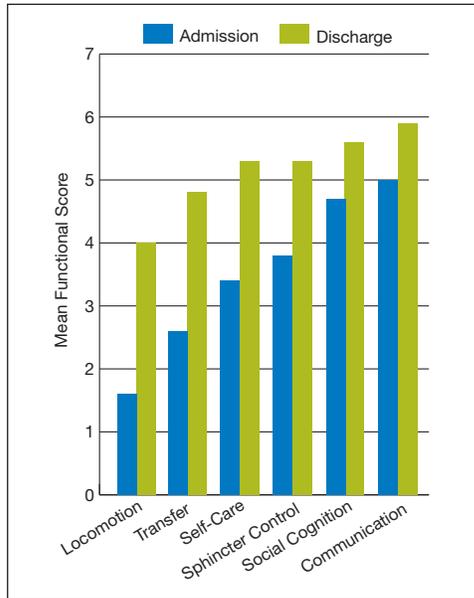
Focus on Inpatient Rehabilitation Facility Patients

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.

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.

^{xvi} The top 5 States that contributed to the achievable benchmark are Alaska, California, Illinois, Oregon, and, Utah.

Figure 3.16. Functional Independence Measure scores at admission and discharge by type of function, 2011



Source: Centers for Medicare & Medicaid Services, Inpatient Rehabilitation Facility Patient Assessment Instrument, 2011.

Denominator: All Medicare patients in an inpatient rehabilitation facility for initial rehabilitation and discharged to the community (home, board and care, transitional living, or assisted living).

Note: Functional score ranges from 1 (worst ability) to 7 (full function). FIM motor scores cover locomotion, transfer, self-care, and sphincter control.

- ◆ In 2011, patients admitted to IRFs had lower function in their locomotion and transfer abilities and higher function in their social cognition and communication abilities (Figure 3.16).
- ◆ 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.

Also, in the NHDR:

- ◆ Gains in motor function between admission and discharge to the community were smaller among AI/AN and multiple-race individuals compared with White individuals.

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 ^{xvii} (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 ^{xviii} (2011)	\$149.3 billion (CMS, 2011)
Total costs of home health care ^{xviii} (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.

^{xvii} Medicare FFS patients represent only a portion of all home health patients.

^{xviii} 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.

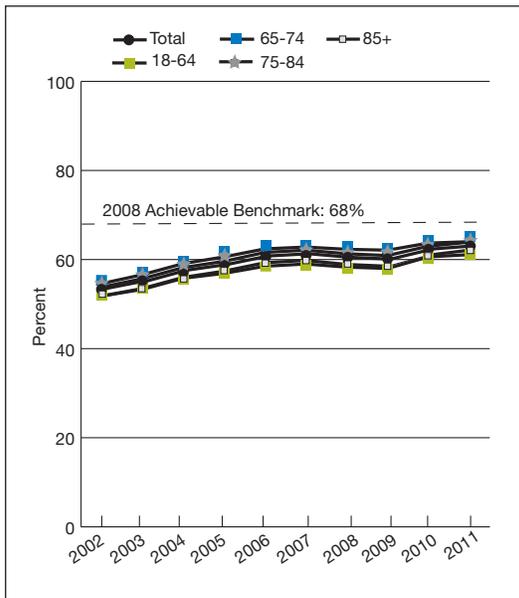
Findings

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 3.17. Adult home health care patients who had less shortness of breath between the start and end of a home health care episode, by age, 2002-2011



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 2011 trend data.

- ◆ 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 the total population (Figure 3.17) and for every age group.

- ◆ The 2008 top 5 State achievable benchmark was 68%.^{xix} At the current annual rate of increase, this benchmark could be attained overall in about 5 years. Patients ages 65-74 and 75-84 could attain the benchmark in about 4 years, while patients ages 18-64 and 85 and over would take between 5 and 7 years to attain the benchmark.

Also, in the NHDR:

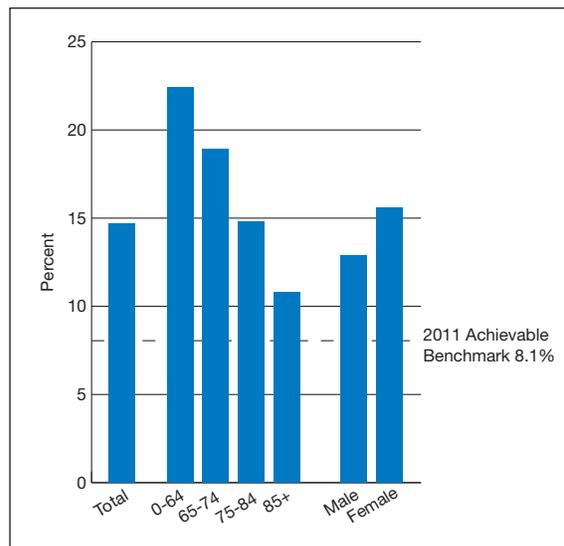
- ◆ Between 2002 and 2011, the percentage of adult home health care patients who showed improvement in shortness of breath increased for each racial/ethnic group except Hispanics.
- ◆ From 2006 to 2011, Hispanics were less likely than Whites to show improvement in shortness of breath.

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.

NEW Figure 3.18. Long-stay nursing home residents who have moderate to severe pain, by age and sex, 2011



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.

- ◆ In 2011, 14.7% of long-stay nursing home residents had moderate to severe pain (Figure 3.18).
- ◆ Residents ages 0-64, 65-74, and 75-84 were more likely than residents age 85 and over to have moderate to severe pain.

^{xix} The top 5 States that contributed to the achievable benchmark are Georgia, Hawaii, New Jersey, Rhode Island, and South Carolina.

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- ◆ The 2011 top 5 State achievable benchmark was 8.1%.^{xx} In 2011, no group had achieved the benchmark. Data are insufficient to determine time to benchmark.

Also, in the NHDR:

- ◆ In all age groups, Black, API, and Hispanic residents were less likely than White residents to have moderate to severe pain.
- ◆ AI/AN residents were more likely than White residents to have moderate to severe pain, especially those ages 0-64 years.

Help With Emotional and Spiritual Needs

Hospice care is generally delivered at the end of life to patients with a terminal illness or condition who desire palliative medical care; it also includes practical, psychosocial, and spiritual support for the patient and family. The goal of end-of-life care is to achieve a “good death,” defined by the IOM as one that is “free from avoidable distress and suffering for patients, families, and caregivers; in general accord with the patients’ and families’ wishes; and reasonably consistent with clinical, cultural, and ethical standards” (Field & Cassell, 1997).

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

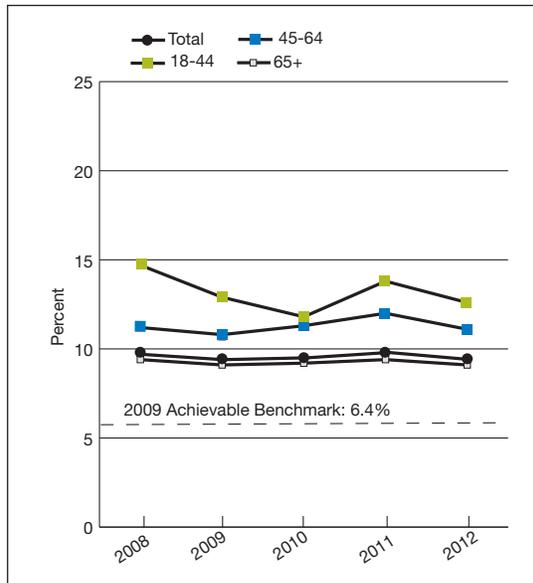
Management: Right Amount of Emotional Support Among Hospice Patients

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.

^{xx} The top 5 States that contributed to the achievable benchmark are District of Columbia, Hawaii, Maryland, New Jersey, and New York.

^{xxi} 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.

Figure 3.19. Hospice patients age 18 and over who did NOT receive the right amount of help for feelings of anxiety or sadness, by age, 2008-2012



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 3.19).
- ◆ 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.
- ◆ The 2009 top 5 State achievable benchmark was 6.4%.^{xxii} Overall, hospice patients are not making progress toward this goal. Improvement is observed among hospice patients ages 18-44, but at the current annual rate of improvement, the benchmark would not be achieved for about 20 years.

Also, in the NHDR:

- ◆ In all years, Blacks, APIs, and AI/ANs were less likely than Whites and Hispanics were less likely than non-Hispanic Whites to receive the right amount of emotional support.

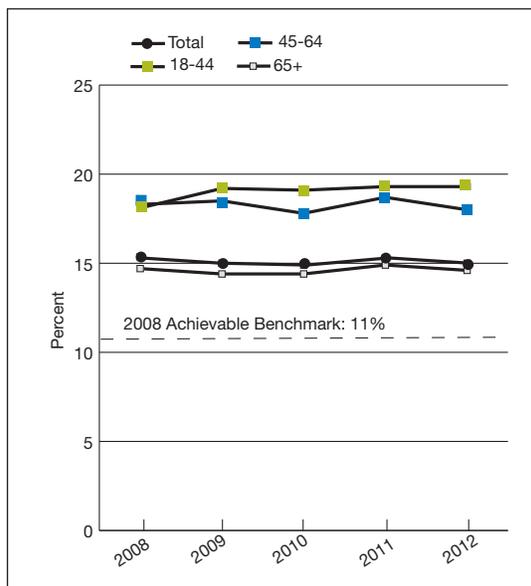
^{xxii} The top 5 States that contributed to the achievable benchmark are Alabama, Alaska, Arkansas, Kansas, and South Carolina.

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 3.20. Hospice patients age 18 and over whose family caregivers wanted more information about what to expect while the patient was dying, by age, 2008-2012



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 3.20).
- ◆ 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.
- ◆ The 2008 top 6 State achievable benchmark was 11%.^{xxiii} Overall, no progress has been made toward this benchmark. Hospice patients ages 18-44 are moving away from the benchmark.

Also, in the NHDR:

- ◆ In all years, family caregivers of API hospice patients were more likely than family caregivers of White patients to want more information about what to expect while the patient was dying. Family caregivers of Hispanic patients were more likely than family caregivers of non-Hispanic White patients to want more information.

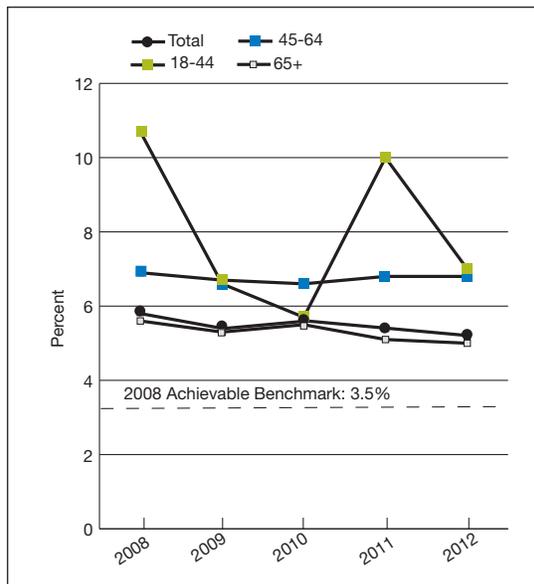
^{xxiii} The top 6 States that contributed to the achievable benchmark are Alabama, Idaho, Iowa (tie), Kansas, South Dakota (tie), and West Virginia.

High-Quality Palliative Care

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

Hospice care should respect patients' stated goals for care. 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 3.21. Hospice patients age 18 and over who did NOT receive care consistent with their stated end-of-life wishes, by age, 2008-2012



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 end-of-life care consistent with their stated wishes was 5.2% in 2012 (Figure 3.21).
- ◆ 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.
- ◆ The 2008 top 5 State achievable benchmark was 3.5%.^{xxiv} At current rates of improvement, this benchmark could not be attained overall for about 15 years. Patients ages 18-44 and 65 and over could achieve the benchmark in about 10 years. Patients ages 45-64 show no progress toward the benchmark.

Also, in the NHDR:

- ◆ In all years, Blacks, APIs, and AI/ANs were less likely than Whites and Hispanics were less likely than non-Hispanic Whites to receive end-of-life care consistent with their wishes.

^{xxiv} The top 5 States that contributed to the achievable benchmark are Maine, Minnesota, Mississippi, New Hampshire, and Tennessee

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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)ⁱ

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)ⁱⁱ

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.

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.

ⁱ 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.

ⁱⁱ 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.

PATIENT SAFETY

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 Strategyⁱⁱⁱ 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 Quality Report* (NHQR) 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).
- ◆ Surgical site infections (SSIs).
- ◆ Mechanical adverse events associated with central venous catheters.
- ◆ Obstetric trauma.

ⁱⁱⁱ 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 potentially inappropriate prescription medications.
- ◆ Hospital readmissions.

Infrastructure:

- ◆ Diagnosis-related errors.
- ◆ Patient safety event reporting in Pennsylvania.
- ◆ Patient safety culture.
- ◆ Root cause analysis and risk mitigation—Veterans Health Administration.

Findings

Hospital Setting

Outcome: Overall Hospital-Acquired Condition Rate

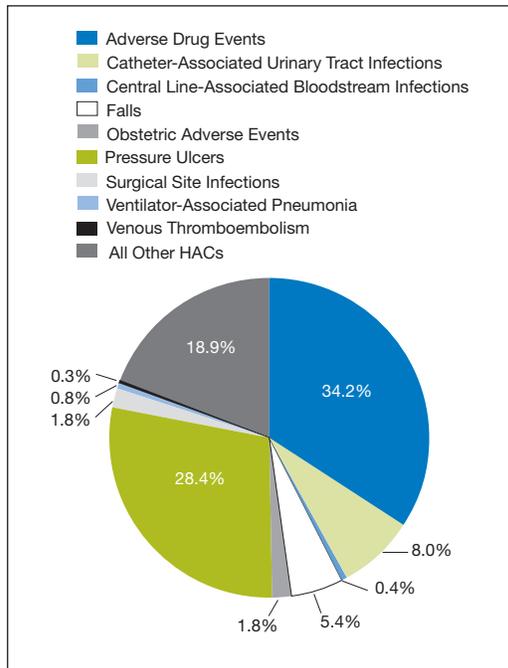
Patient safety events that occur in the hospital setting are referred to as hospital-acquired conditions (HACs). Hospitals are a common setting for patient safety events in part because of the clinically compromised state of many patients admitted to the hospital and because of the high volume of care transactions and interventions that take place during a hospital stay.

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 national estimate of HACs was developed based on 28 different measures from three national data sources: Medicare Patient Safety Monitoring System^{iv} (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.

Although the 28 measures have been combined, the overall 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.

^{iv} MPSMS data were based solely on patients from four patient groups whose charts were requested by CMS for hospitals as part of the 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]).

Figure 4.1. Distribution of hospital-acquired conditions, based on national rates per 1,000 adult hospital discharges, 2011



Source: Agency for Healthcare Research and Quality, Medicare Patient Safety Monitoring System, 2011; Centers for Disease Control and Prevention, National Healthcare Safety Network, 2010-2012; Agency for Healthcare Research and Quality, Healthcare Cost and Utilization Project (HCUP), Nationwide Inpatient Sample 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.

- ◆ 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.
- ◆ The overall HAC rate in 2011 includes nine specific HACs as well as an “other” category that covers an additional 14 specific HACs^v (Figure 4.1):
 - Adverse drug events (48.7 per 1,000 hospital discharges [34.2% of total]).
 - Pressure ulcers (40.3 per 1,000 hospital discharges [28.4% of total]).
 - Catheter-associated UTIs (11.4 per 1,000 hospital discharges [8% of total]).
 - Falls (7.7 per 1,000 hospital discharges [5.4% of total]).
 - SSIs (2.6 per 1,000 hospital discharges [1.8% of total]).
 - Obstetric adverse events (2.6 per 1,000 hospital discharges [1.8% of total]).
 - Ventilator-associated pneumonia (1.1 per 1,000 hospital discharges [0.8% of total]).
 - CLABSIs (0.52 per 1,000 hospital discharges [0.4% of total]).

^v 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).

- Venous thromboembolisms (0.5 per 1,000 hospital discharges [0.3% of total]).
- All other HACs (26.8 per 1,000 hospital discharges [18.9% of total]). Note that this category covers 14 specific HACs but does not include every type of HAC beyond the nine specific HACs listed above.

Also, in the *National Healthcare Disparities Report* (NHDR):

- ◆ 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.
- ◆ Among Blacks, the 2010 rate of adverse drug events is roughly double that of pressure ulcers. Among Whites, the rates for adverse drug events and for pressure ulcers are more similar.

Healthcare-Associated Infections

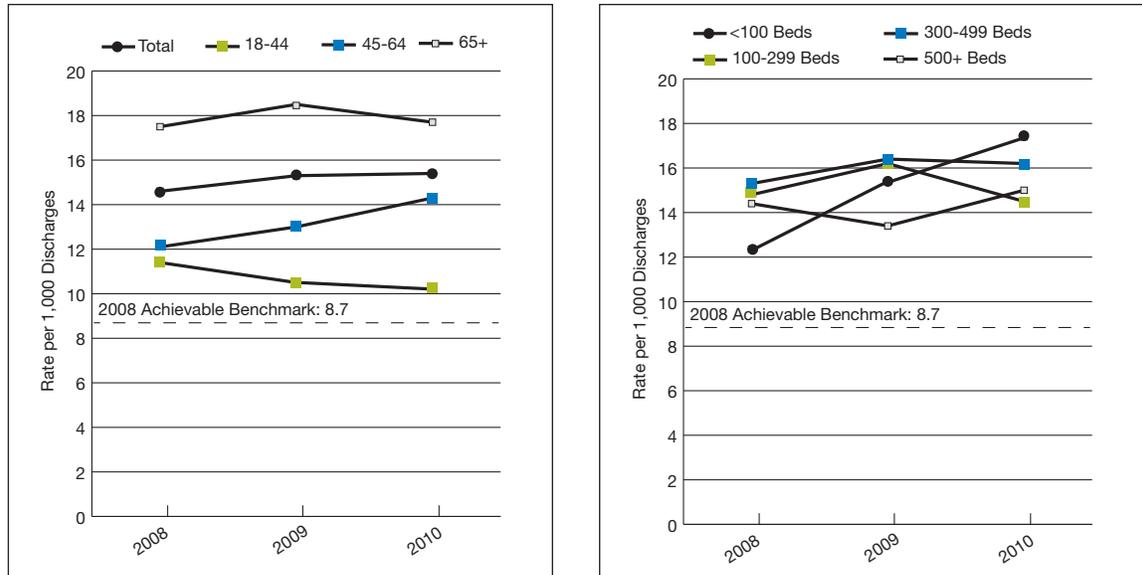
Infections acquired during hospital care (nosocomial infections) are one of the most serious patient safety concerns. They are the most common complication of hospital care (Gastmeier, 2004). Approximately 1 out of every 20 hospitalized patients will contract an HAI (CDC, 2010). Annual costs for adult inpatients that are attributable to the five HAIs with the highest impact on the health care system (CLABSIs, SSIs, 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.

Figure 4.2. Postoperative sepsis per 1,000 adult discharges with an elective operating room procedure, by age and hospital bed size, 2008-2010



Source: Agency for Healthcare Research and Quality (AHRQ), Healthcare Cost and Utilization Project, Nationwide Inpatient Sample and AHRQ Quality Indicators, modified version 4.1, 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. Rates are adjusted by age, gender, age-gender interactions, comorbidities, major diagnostic category (MDC), diagnosis-related group (DRG), and transfers into the hospital. When reporting by age, the adjustment is by gender, comorbidities, MDC, DRG, and transfers into the hospital.

- ◆ From 2008 to 2010, there were no statistically significant changes in the overall risk-adjusted rate of postoperative sepsis (Figure 4.2).
- ◆ 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.
- ◆ 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).
- ◆ The 2008 top 3 State achievable benchmark was 8.7 per 1,000 discharges.^{vi} As of 2010, the benchmark had not been met for any age group or hospital bed size. Based on the available trend data, it is unclear when any groups would reach the benchmark.

Also, in the NHDR:

- ◆ 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.

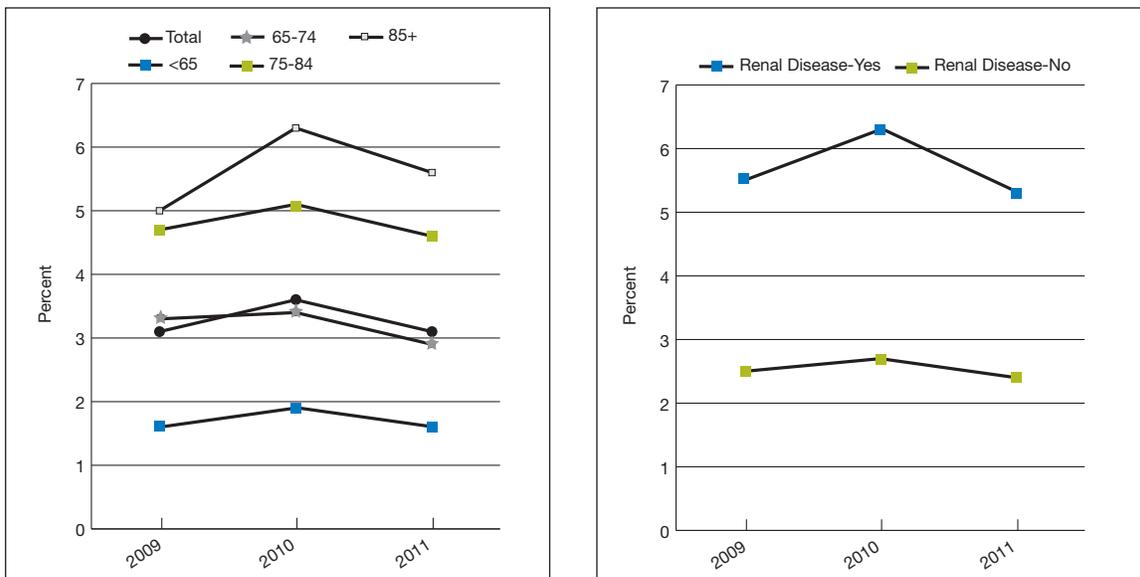
^{vi} The top 3 States that contributed to the achievable benchmark are Nebraska, New Hampshire, and Rhode Island.

- ◆ Surgery patients with Medicare or Medicaid had higher risk-adjusted rates of postoperative sepsis than surgery patients with private insurance in 2009 and 2010. In 2008, only Medicaid patients had a higher rate than private insurance patients.
- ◆ No racial/ethnic group or insurance group has met the achievable benchmark.

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 age and renal disease status, 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.

- ◆ From 2009 to 2011, there were no statistically significant changes in the overall rate of postoperative catheter-associated UTIs (Figure 4.3).
- ◆ 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. The percentage was more than double for renal disease patients in each of these years.

Also, in the NHDR:

- ◆ 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.

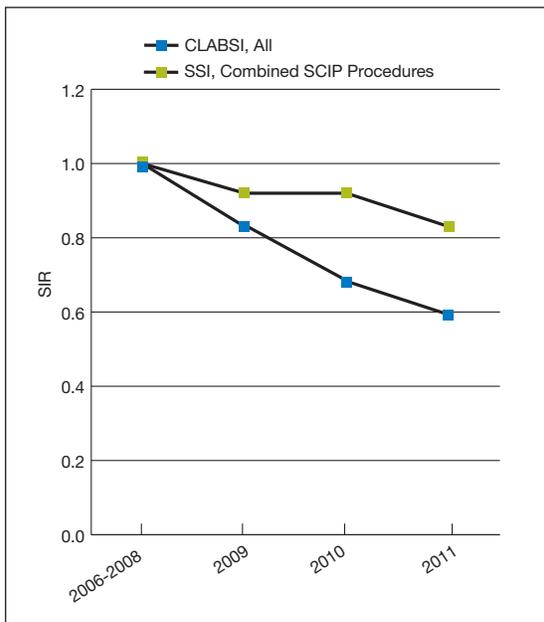
Outcome: Central Line-Associated Bloodstream Infections and Surgical Site Infections

SSIs and bloodstream infections often increase the patient’s length of stay in the hospital, risk of mortality, and hospital costs. SSIs can occur at the site of surgical incisions and in deeper tissues affected by the procedure. In the inpatient setting, bloodstream infections and other complications are often associated with the placement and use of central venous lines that are passed into the great vessels leading to the heart to administer medications or fluids, draw blood for tests, or directly obtain cardiovascular measurements.

Standardized infection ratios (SIRs) calculated by CDC using data reported to the NHSN compare the number of infections, such as CLABSIs or SSIs, seen in adults in a hospital’s intensive care unit with a national benchmark. SIRs are based on the infection rates in a referent time period (in this case, January 2006 through December 2008). A score of less than 1 means that the hospital had fewer infections than hospitals of similar type and size during the referent time period.

CLABSI SIRs are adjusted for key factors, including the type of patient care location, bed size of the care location, and hospital affiliation with a medical school. SIRs for SSIs are adjusted for procedure-related risk factors such as duration of surgery, surgical wound class, use of endoscopes, status as a reoperation, patient age, and anesthesiologist-assessed patient preoperative mortality risk.

Figure 4.4. Standardized infection ratios for central line-associated bloodstream infections and surgical site infections in adults, 2009-2011



Source: 2009-2011 national and State healthcare-associated infections standardized infection ratio report using National Healthcare Safety Network (NHSN) data.

Note: For this measure, lower numbers are better. This SIR compares the number of infections reported to NHSN in 2011 with the number of infections predicted based on 2006-2008 national historic data. Because the 2006-2008 data are used as a baseline, that period is reported as 1.000. There were 1,603 facilities that reported CLABSI rates to NHSN in 2009, 2,389 facilities in 2010, and 3,468 facilities in 2011. SCIP procedures refers to Surgical Care Improvement Project procedures performed on adults. These procedures include abdominal aortic aneurysm repair, peripheral vascular bypass surgery, coronary artery bypass graft with both chest and donor site incisions or with chest incision only, other cardiac surgery, colon surgery, rectal surgery, hip arthroplasty, abdominal hysterectomy, knee arthroplasty, and vaginal hysterectomy.

- ◆ From the referent period (2006-2008) to 2011, CLABSIs reported to the NHSN decreased roughly 40% (Figure 4.4).
- ◆ 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 in SIRs from January-June 2009 to July-December 2009 among facilities that reported for both time periods.

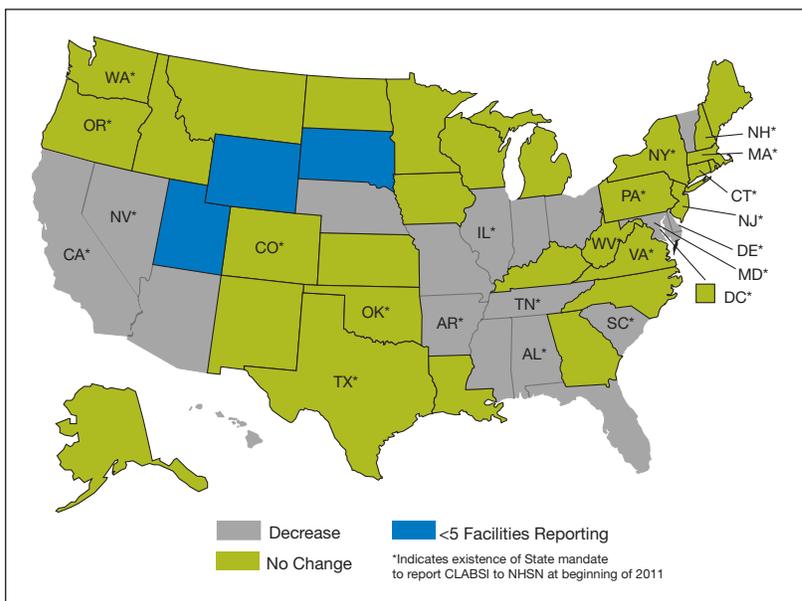
- ◆ From the referent period (2006-2008) to 2011, SSIs reported to the NHSN decreased 17%.
- ◆ There was a significant decrease from 2010 to 2011 in SIRs among facilities that reported rates for both years. There was no statistically significant change in SIRs from 2009 to 2010 and from the first half of 2009 to the second half of 2009 reported among facilities continuously enrolled for these time periods.

Also, in the NHDR:

- ◆ CLABSI rates per 1,000 central line days in medical intensive care units (ICUs) and combined medical/surgical ICUs located in major teaching hospitals were higher than rates in similar units in nonteaching hospitals.

The information above describes CLABSIs among reporting hospitals when aggregated nationally. The map below shows the change between 2010 and 2011 in the CLABSI SIRs at the State level.

Figure 4.5. Change in State-specific hospital SIRs for CLABSIs in adults, 2010-2011

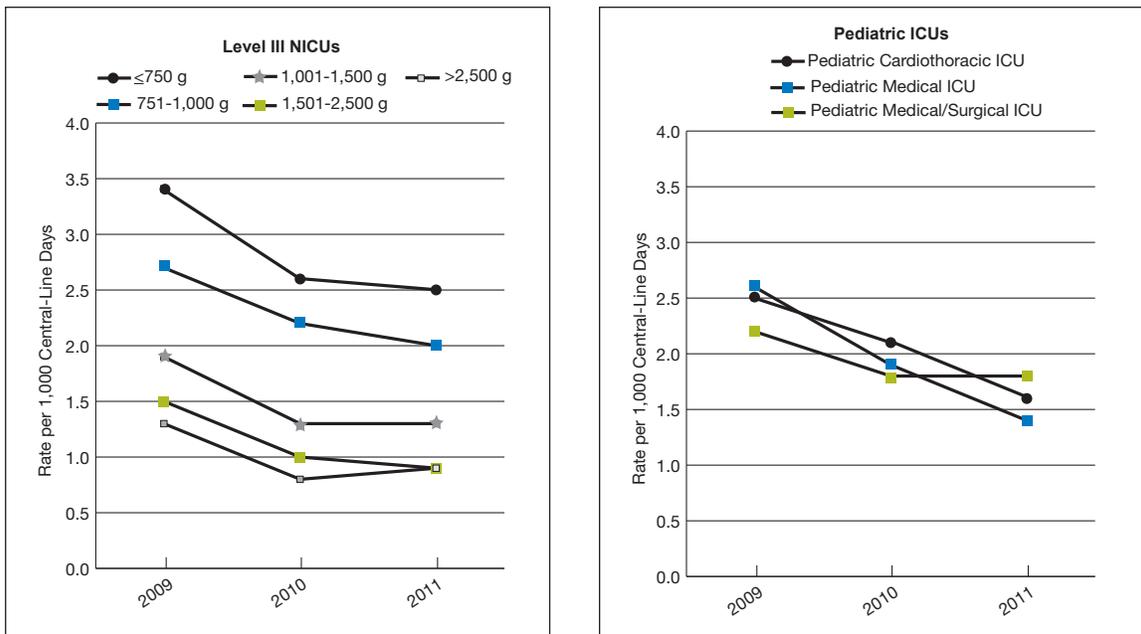


- ◆ CLABSI SIRs in 2011 were significantly less than 1.0. Among the 50 States, District of Columbia, and Puerto Rico, hospitals in 49 jurisdictions had fewer CLABSIs than hospitals of similar type and size across the Nation during the January 2006 through December 2008 referent period.
- ◆ All but three States and Puerto Rico had sufficient data to produce an overall CLABSI SIR in both 2010 and 2011. Of the remaining 48 jurisdictions, 30 had no change in the CLABSI SIR from 2010 to 2011 and 18 reported a decrease (Figure 4.5).
- ◆ States that reported a CLABSI SIR decrease from 2010 to 2011 were more likely than States that did not experience a CLABSI rate decrease to have a State mandate at the beginning of 2011 to report CLABSI rates to the NHSN.

Outcome: Central Line-Associated Bloodstream Infections in Neonatal and Pediatric Intensive Care Units

Children who require central lines are often already in critical condition due to illness, trauma, or premature birth; any new infections generally reduce their chances of recovering. Proper insertion and management of central lines can lower infection rates significantly.

Figure 4.6. Bloodstream infections per 1,000 central-line days in neonates and older children, by birth weight of child in Level III neonatal ICU and by type of pediatric ICU, 2009-2011



Key: ICU = intensive care unit.

Source: Centers for Disease Control and Prevention, National Healthcare Safety Network, 2009-2011.

Denominator: Number of central-line days.

Note: For this measure, lower rates are better.

- ◆ In 2011, among patients in Level III neonatal ICUs, which treat the smallest and sickest neonates, the pooled mean CLABSI rates ranged from a low of 0.9 per 1,000 central-line days among neonates born at >1,500 grams to a high of 2.5 per 1,000 central-line days among neonates born at ≤750 grams (Figure 4.6).
- ◆ In 2011, the pooled mean rates of CLABSIs were 1.8 per 1,000 central-line days for pediatric medical-surgical ICUs, 1.6 per 1,000 central-line days for pediatric cardiothoracic ICUs, and 1.4 per 1,000 central-line days for pediatric medical ICUs.

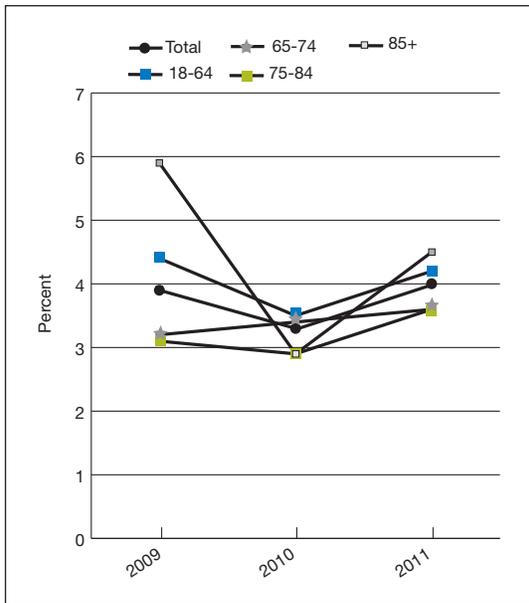
Other Adverse Events

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 4.7. Composite: Mechanical adverse events associated with central venous catheter placement in adults, by age, 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. Mechanical adverse events include allergic reaction to the catheter, tamponade, perforation, pneumothorax, hematoma, shearing off of the catheter, air embolism, misplaced catheter, thrombosis or embolism, knotting of the pulmonary artery catheter, and certain other events.

- ◆ From 2009 to 2011, there were no statistically significant changes in the overall percentage of mechanical adverse events associated with central venous catheter placement (Figure 4.7).
- ◆ In all years, there were no statistically significant differences by age in the percentage of mechanical adverse events associated with central venous catheter placement.

Also, in the NHDR:

- ◆ In all years, there were no statistically significant differences by sex in the percentage of mechanical adverse events associated with central venous catheter placement.
- ◆ Only in 2009 did Blacks have a higher percentage of mechanical adverse events associated with central venous catheter placement than Whites.

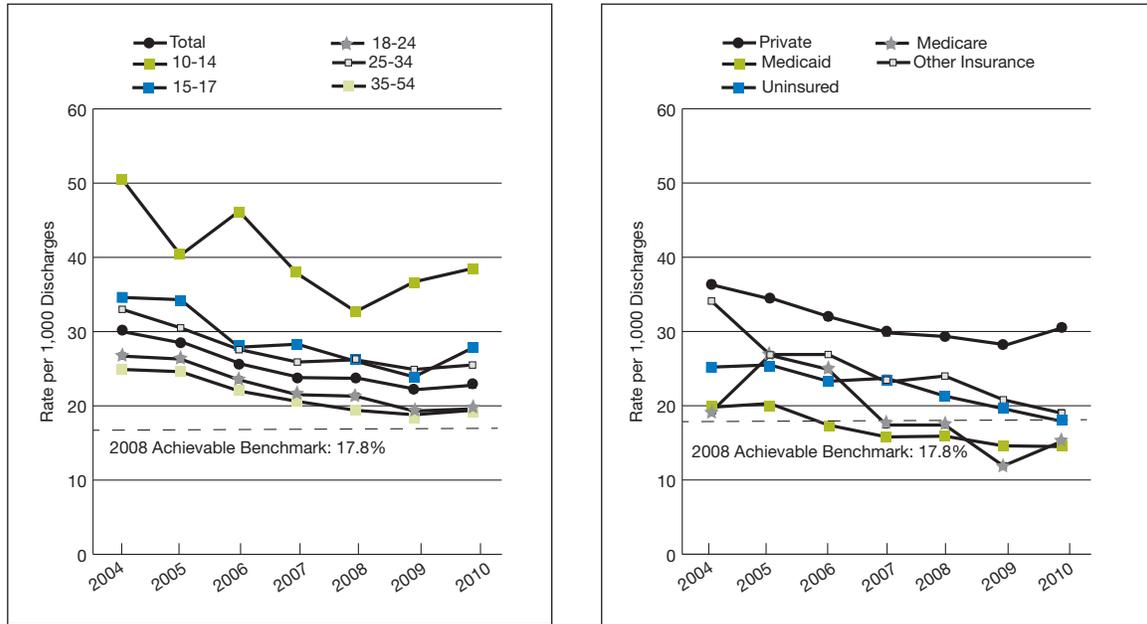
Outcome: Obstetric Trauma

Childbirth and reproductive care are the most common reasons that women of childbearing age 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 potentially serious 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 4.8. Obstetric trauma with 3rd or 4th degree laceration per 1,000 vaginal deliveries without instrument assistance, by age and insurance, 2004-2010



Key: Private indicates private health insurance as the payment source; uninsured indicates self-pay, uninsured, or no charge as the payment source.

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. Rates by age are not age adjusted.

- ◆ 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 (Figure 4.8).
- ◆ 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.
- ◆ The 2008 top 4 State achievable benchmark was 17.8 per 1,000 deliveries.^{vii} At the current annual rate of decrease, this 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.

^{vii} The top 4 States that contributed to the achievable benchmark are South Dakota, Utah, West Virginia, and Wyoming.

Also, in the NHDR:

- ◆ From 2004 to 2010, rates of obstetric trauma with 3rd or 4th degree laceration decreased for all racial/ethnic and area income groups.
- ◆ In each year 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.
- ◆ Hispanic and Black mothers and residents in the lowest area income quartile already have attained the achievable 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. All income groups could reach the benchmark within about 7 years.

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.

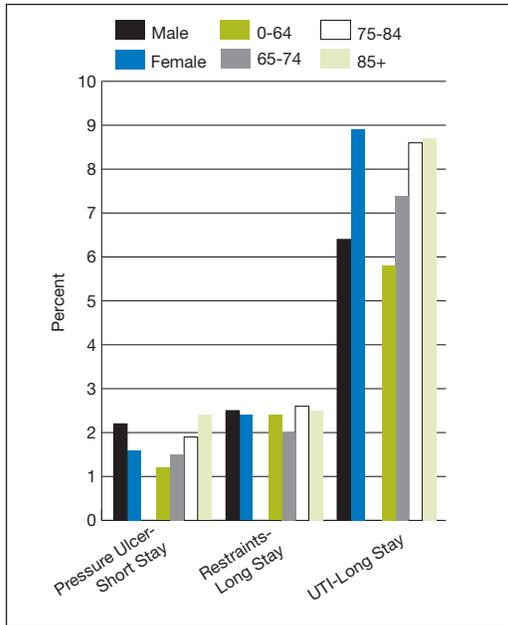
Since 2002, CMS has collected data using the Minimum Data Set (MDS). The MDS provides data on nursing home residents at specified intervals during their stay that describe the resident's physical and clinical conditions. In 2010, nursing homes began reporting data using an updated instrument (MDS 3.0). 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.

Residents who are restrained daily can become weak, lose their ability to move around (e.g., to go to the bathroom by themselves), and may 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 4.9. Nursing home residents experiencing various adverse events, by sex and age, 2011



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, the percentage of short-stay residents with pressure ulcers was higher for males than for females (Figure 4.9).
- ◆ 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.

Also, in the NHDR:

- ◆ 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.
- ◆ The percentage of long-stay residents with restraint use was higher for Asian, Native Hawaiian or Other Pacific Islander, 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.

Home Health Setting

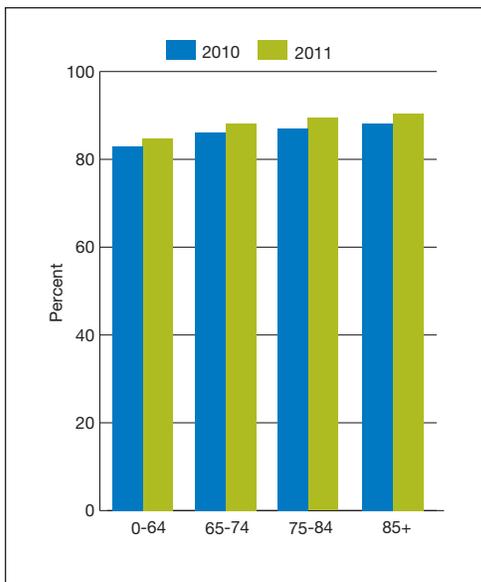
Outcome: Improvement in Surgical Site Wound Healing

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 4.10. Home health patients with improvement in their surgical site wounds, by age, 2010-2011



Source: Centers for Medicare & Medicaid Services, Outcome and Assessment Information Set, 2010-2011.

Denominator: The 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.

- ◆ 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 (data not shown).
- ◆ 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% (Figure 4.10).

PATIENT SAFETY

Also, in the NHDR:

- ◆ 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.

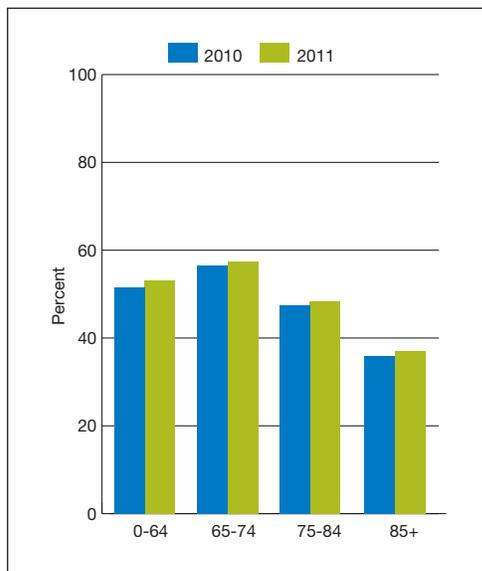
Outcome: Ability To Take Medications Orally

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 drugs 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. If patients get better at taking medications correctly, this means the home health team is doing a good job teaching patients how to take their drugs, 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 drugs 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 4.11. Home health patients with improvement in their ability to take medications orally, by age, 2010-2011



Source: Centers for Medicare & Medicaid Services, Outcome and Assessment Information Set, 2010-2011.

Denominator: Number of home health episodes of care in which a patient was unable to take oral medications independently at the start of the episode that ended during the measurement period.

- ◆ 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 (data not shown).
- ◆ 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.

Also, in the NHDR:

- ◆ The percentage of home health patients with improvement in their ability to take medications orally was significantly lower for Hispanics than for non-Hispanic Whites in 2010 and 2011.
- ◆ 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 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.
- ◆ 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.

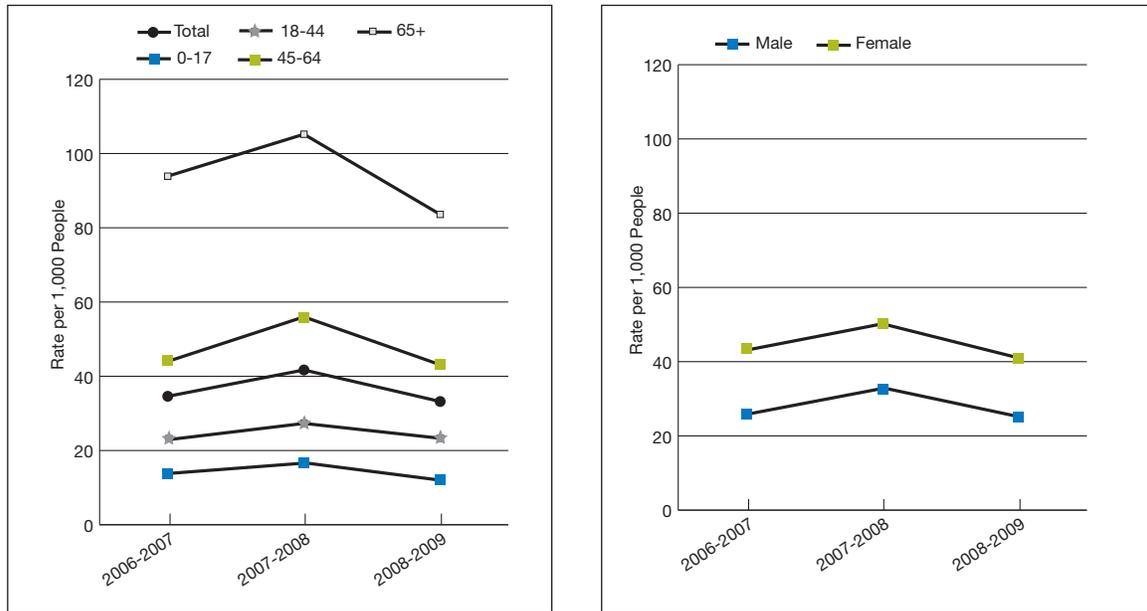
Ambulatory Care Setting

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 4.12. Ambulatory care visits due to adverse effects of medical care, per 1,000 people, by age and sex, 2006-2009



Source: Centers for Disease Control and Prevention, National Center for Health Statistics, National Ambulatory Medical Care Survey and National Hospital Ambulatory Medical Care Survey, 2006-2009.

Denominator: U.S. Census Bureau estimated civilian noninstitutionalized population 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 differences between 2006-2007 and 2008-2009 in the rate of ambulatory care visits due to adverse effects of medical care seen in different subgroups (Figure 4.12).
- ◆ In all three time periods (2006-2007, 2007-2008, 2008-2009), 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.

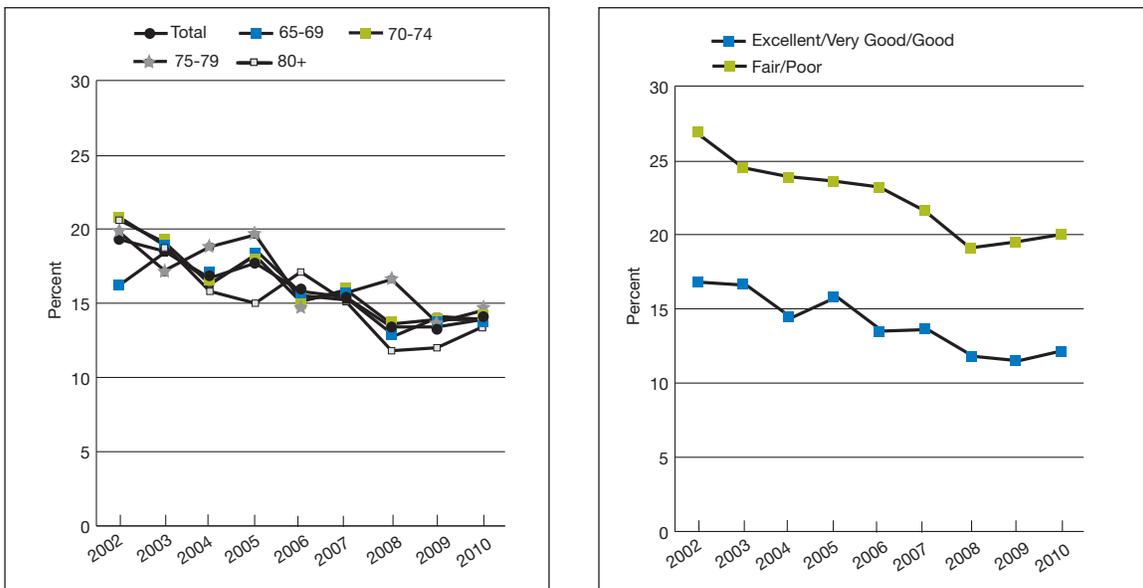
Also, in the NHDR:

- ◆ 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.

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).^{viii} 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).

Figure 4.13. Adults age 65 and over who received potentially inappropriate prescription medications in the calendar year, by age and perceived health status, 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.

- ◆ From 2002 to 2010, the overall percentage of adults age 65 and over who received potentially inappropriate medications decreased from 19.3% to 13.9%. The percentages for all age groups (except those ages 65-69) and all health status groups also declined during this period (Figure 4.13).
- ◆ 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.

^{viii} Medications that should always be avoided in 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.

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- ◆ 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.

Also, in the NHDR:

- ◆ The percentage of older adults who received potentially inappropriate medications decreased for all racial/ethnic and family income groups from 2002 to 2010.
- ◆ 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.

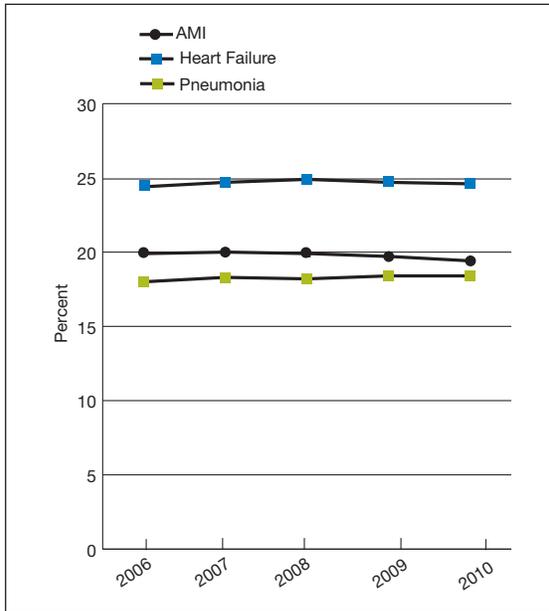
Outcome: Hospital Readmissions

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)^{ix} tracked and published 30-day risk-standardized readmission rates among Medicare fee-for-service hospital patients age 65 and over 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.

^{ix} 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.

Figure 4.14. Median hospital 30-day risk-standardized readmission rate for certain conditions in adults, 2006-2010



Key: AMI = acute myocardial infarction.

Source: Medicare Hospital Quality Chartbook, 2010, 2011, and 2012.

Denominator: Expected number of readmissions for each disease type given the hospital's case mix.

Note: For this measure, lower rates are better. Readmission rates presented for 2006 do not include Veterans Affairs hospitals. Rates after 2006 include these hospitals.

- ◆ The median 30-day risk-standardized readmission rates for hospitals remained stable from 2006 to 2010 for all three diseases (Figure 4.14).
- ◆ The median 30-day risk-standardized readmission rates for acute myocardial infarction ranged from 19.4% (2010) to 20% (2007).
- ◆ The median 30-day risk-standardized readmission rates for heart failure ranged from 24.4% (2006) to 24.9% (2008).
- ◆ The median 30-day risk-adjusted readmission rates for pneumonia ranged from 18.0% (2006) to 18.4% (2009 and 2010).

Also, in the NHDR:

- ◆ 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.
- ◆ 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.

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 four hallmark activities in this regard:

- ◆ Investigation of a new frontier of frequently invisible diagnosis-related errors;
- ◆ An innovative State reporting system that allows learning from near misses and unsafe conditions;

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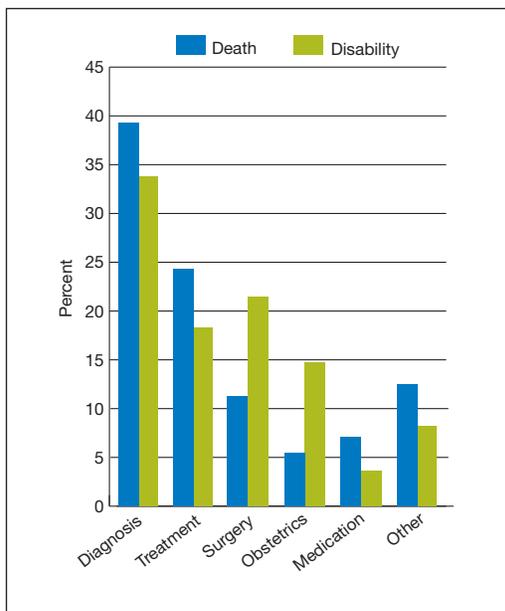
- ◆ An assessment of the patient safety culture in U.S. hospitals; and
- ◆ The critical actions of root cause analysis and risk mitigation to learn from and prevent mistakes in the future.

Outcome: Diagnosis-Related Errors

Diagnosis-related errors are among the most difficult errors to detect. Autopsies and malpractice claims can reveal these errors in retrospect. Autopsies, however, substantially declined in use over the last several decades; most are now conducted for forensic investigations rather than medical education.

New research, drawing on the National Practitioner Data Bank of malpractice payouts in the United States over a 25-year period, provides more insights regarding the types of error leading to serious harm. Of 351,000 malpractice settlements or judgments from 1986 to 2010, diagnosis-related error was the most frequent type of error (29% of paid malpractice claims). By contrast, medication errors, the focus of much patient safety activity, accounted for only 5% of paid malpractice claims.

Figure 4.15. Malpractice claims by type of error and harm, 2004-2010 combined

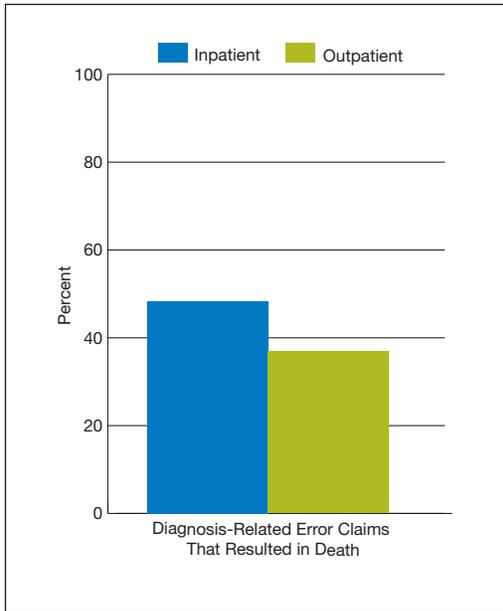


Source: 1986-2010 National Practitioner Data Bank analysis as reported in Saber Tehrani, et al., 2013.

- ◆ The harm documented in malpractice suits from diagnostic error exceeded the harm from other types of errors on average, across the filing period 2004-2010, when harm information was collected by the National Practitioner Data Bank (Figure 4.15).
- ◆ Nearly 40% of paid malpractice claims for diagnosis-related errors documented death of the patient, while the next highest death rate (24.3%) was for medical-treatment-related errors.
- ◆ Nearly 35% of the paid malpractice claims for diagnosis-related errors documented disability (mostly permanent disability), while the next highest disability rate (21.5%) was for surgery-related errors.

While the estimates and trends shown in the prior sections derive mainly from studies of hospitals, the National Practitioner Data Bank shows that diagnosis-related errors are more likely to occur in outpatient than inpatient settings of care.

Figure 4.16. Diagnosis-related-error claims: frequency and harm by setting of care, 2004-2010 combined



Source: 1986-2010 National Practitioner Data Bank analysis as reported in Saber Tehrani, et al., 2013

- ◆ Serious diagnostic errors that resulted in malpractice payouts originated more often in outpatient settings (68.8% of malpractice paid claims) than inpatient settings (31.2%) (data not shown).
- ◆ Serious diagnostic errors resulting in malpractice payments were more likely to result in death if they originated in inpatient settings than outpatient settings (48.4% vs. 36.9%; Figure 4.16).

Patient Safety Event Reporting in Pennsylvania

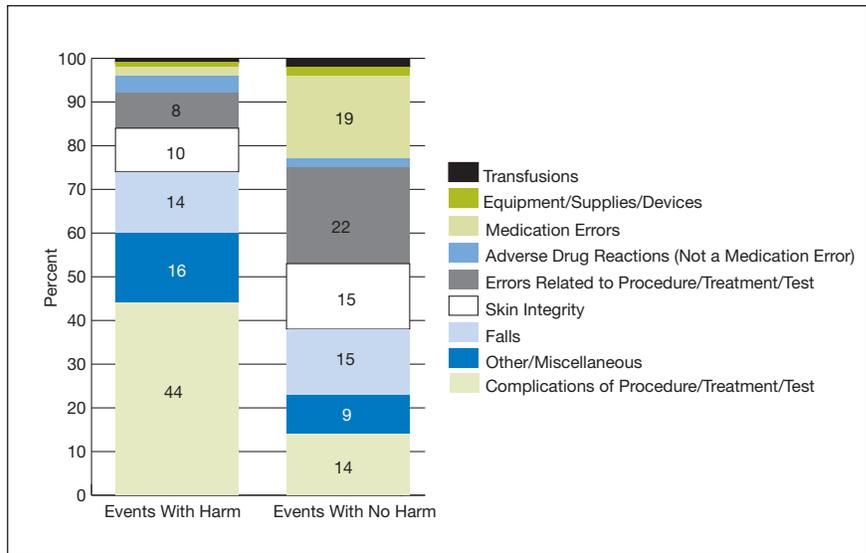
In June 2004, Pennsylvania began implementing a statewide mandatory reporting system for patient safety events. All hospitals, ambulatory surgical facilities, birthing centers, and abortion facilities licensed by the State report through the Pennsylvania Patient Safety Reporting System. Pennsylvania 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. Under the Pennsylvania reporting system, events with no patient harm that are still reported include the following:

- ◆ Unsafe conditions or circumstances that could cause adverse events (e.g., medications that look alike);
- ◆ Near misses or events that occurred but that the individual did not experience because of either chance alone or active recovery efforts by caregivers; and
- ◆ Events that reached the individual but did not cause harm.

Examples of patient events that did not result in harm could be a missed medication dose or prescribing of an incorrect dose where timely intervention prevented harm.

In 2012, more than 235,000 reports were made by hospitals and ambulatory surgical facilities; 96.5% of these reports did not involve patient harm. The Pennsylvania Patient Safety Authority’s collection and analysis of information reported about no-harm events is an essential component of learning how to minimize patient safety events that cause harm.

Figure 4.17. Pennsylvania patient safety reports by event type and harm, 2012



Source: Pennsylvania Patient Safety Reporting System, 2012.

Note: Only hospital and ambulatory surgical facility data are presented. Values for bar segments less than 5% are not shown.

- ◆ In 2012, of the 8,039 reports by hospitals and ambulatory surgical facilities of events that caused harm, the largest categories were “complications resulting from a procedure, treatment, or test” (44% of the total), “other/miscellaneous” (16%), and “falls” (14%) (Figure 4.17).
- ◆ A different mix of patient safety events is involved when harm does not occur. Of the 227,210 reports in 2012 of events that did not cause harm, the most common categories were “errors related to procedures, treatments, or tests” (22%); “medication errors” (19%); and “skin integrity” and “falls” (15% each).

Outcome: Patient Safety Culture

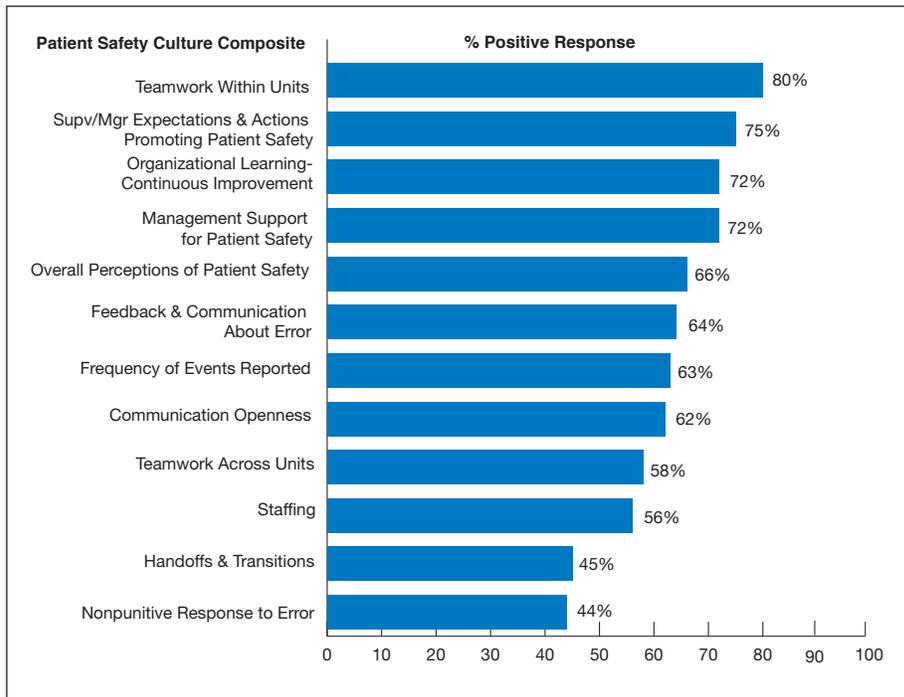
High-reliability organizations—those that perform high-risk work but achieve low rates of adverse events—establish “cultures of safety.” A culture of safety is characterized by shared dedication to making work safe, nonpunitive reporting and communication about error, collaboration and teamwork across 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 NHQR 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”).

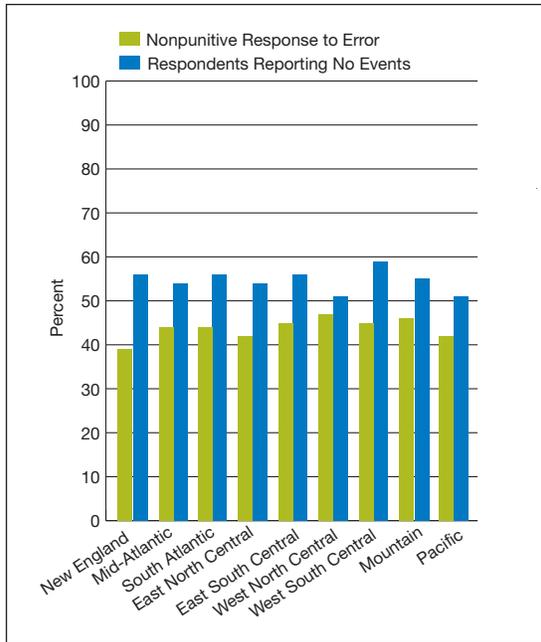
Figure 4.18. Average patient safety culture composite percent positive response, 2012



Source: Agency for Healthcare Research and Quality, *Hospital Survey on Patient Safety Culture User Comparative Database Report*, 2012.

- ◆ One area with potential for hospitals to improve is Nonpunitive Response to Error (Figure 4.18). Nonpunitive Response to Error is the extent to which staff feel that event reports and their own mistakes are not held against them and that mistakes are not kept in their personnel file.

Figure 4.19. Average percent positive for nonpunitive response to error and respondents reporting no events in the past 12 months, by geographic region, 2012



Source: Agency for Healthcare Research and Quality, *Hospital Survey on Patient Safety Culture User Comparative Database Report 2012*.

- ◆ Nonpunitive Response to Error is highlighted due to the consistently low percentage of positive response given by hospital staff. This topic area, as well as Handoffs and Transitions, had the lowest percent positive responses across all geographic regions. The New England (39%), Pacific (42%), and East North Central (42%) regions were the regions with the lowest percentages of positive response for Nonpunitive Response to Error (Figure 4.19).
- ◆ On average, more than half of respondents within hospitals (55%) reported no events in their hospital over the past 12 months (data not shown). This may represent underreporting of events or lack of communication about them in a facility and is, therefore, a potential area of improvement for most hospitals.
- ◆ At the geographic level, the relationship between cultures with nonpunitive response to error and event reporting does not appear to be statistically significant.

Root Cause Analysis and Risk Mitigation: Veterans Health Administration

Root Cause Analysis

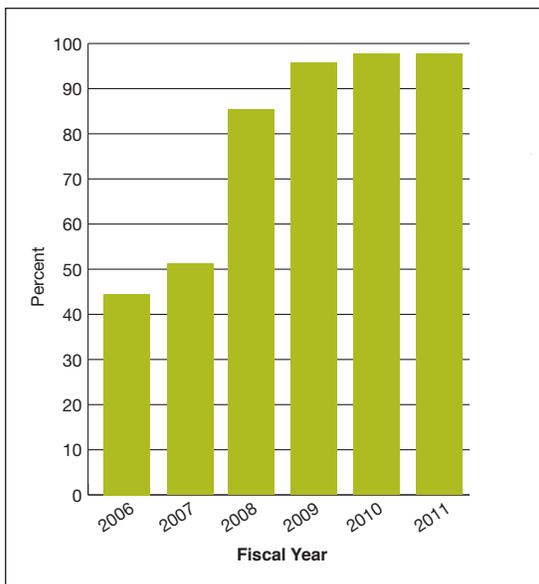
Root cause analyses (RCAs), used successfully in high-reliability fields such as aviation safety, have become a key learning tool for investigating adverse health care events. After an organization identifies causal factors through RCAs, followup steps must be taken to mitigate risk through changes in the health care system (to facilities, processes, or staffing). The Department of Veterans Affairs (VA) is a unique example of the use of RCAs and mitigating actions in a health system.

The VA’s Veterans Health Administration (VHA) is a consolidated health system in terms of finance, governance, patient safety reporting, accountability, and prevention of adverse health care events. In 1999, VHA established the National Center for Patient Safety (NCPS) to encourage and coordinate patient safety activities within the VHA. A patient safety manager based at each VHA facility is responsible for investigating all adverse events at the facility, including instituting an RCA program and recommending

action to mitigate safety events.

On average, VHA facilities conduct 1,258 RCAs per fiscal year. The annual number peaked in fiscal year 2008 at 1,472 (VHA, 2012). To encourage compliance, the VHA started a nonmonetary Cornerstone Award in 2008 to recognize facilities that conduct timely and high-quality RCAs and implement and evaluate corrective actions.

Figure 4.20. Root cause analyses completed within 45 days at VHA facilities, FY 2006-2011



Source: Department of Veterans Affairs, 2012 VHA Facility Quality and Safety Report.

- ◆ The speed of completing RCAs at VHA increased over time. The percentage of RCAs completed within 45 days increased from 44.5% in fiscal year 2006 to 97.7% in fiscal years 2010 and 2011 (Figure 4.20).

The VHA also has developed a system for categorizing actions resulting from an RCA to assess their potential impact on mitigating the risk of a future event. “Stronger” actions simplify the process and remove unnecessary steps (e.g., making architectural/physical plant changes, conducting usability testing of new devices before purchasing, forcing functions to reduce options to make mistakes, simplifying processes to remove unnecessary steps). “Intermediate” actions involve increasing staffing, decreasing workload, using checklist/cognitive aids, and building in redundancy. Finally, “weaker” actions involve using double checks, developing new procedures or policies, writing memoranda, or mandating training.

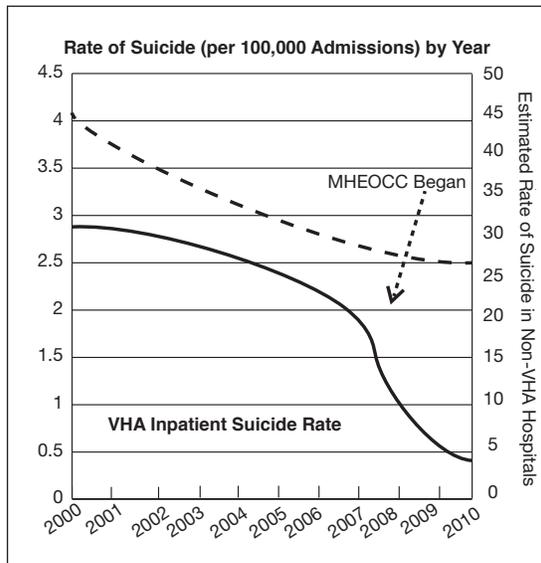
Risk Mitigation: Addressing Suicide as a Patient Safety Event

In a search of RCAs from 1999 to 2006, NCPS staff reviewed RCA reports of 143 inpatient suicide attempts and 42 completed suicides. They found that hanging was the most common method for completed suicides, with closets and room doors as the most common anchor points. A multidisciplinary committee of engineers, architects, patient safety experts, and mental health professionals was formed to develop actions to address architectural and other environmental hazards associated with inpatient suicide. The actions developed by the committee are considered “stronger” changes because they removed the physical supports that enabled suicidal patients to hang themselves.

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The Mental Health Environment of Care Checklist (MHEOCC) was completed in November 2007 and released to clinical staff. It consists of 114 items, including 39 general items meant to be applied to various parts of a mental health unit and 75 items for other parts of the health facility. Use of the MHEOCC, a VHA requirement of mental health units treating suicidal patients, led to the abatement of 8,298 hazards in its first 2 years of use.

Figure 4.21. Inpatient suicides before and after MHEOCC implementation, 2000-2010



Source: Watts BV, Young-Xu Y, Mills PD, et al. An examination of the effectiveness of a mental health environment of care checklist in reducing suicide on inpatient mental health units. *Arch Gen Psychiatr* 2012 June;69(6):588-92. Used with authors' permission.

- ◆ An evaluation of all completed suicides between January 1999 and March 2011 found that the proportion of quarters with any suicide decreased from 69% during the pre-MHEOCC period to 21% during the post-MHEOCC period (Watts, et al., 2012).
- ◆ Implementation of MHEOCC was associated with a roughly 87% decrease in odds of having a suicide occur in a quarter (OR: 0.13; 95% CI: 0.02 to 0.64; p-value=0.008).
- ◆ The rate of suicide in the VHA hospitals (roughly 3 per 100,000 discharges) was already much lower than in general non-Federal hospitals (roughly 45 per 100,000 discharges, as estimated using the HCUP Nationwide Inpatient Sample) (Figure 4.21).

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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 for patients (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:

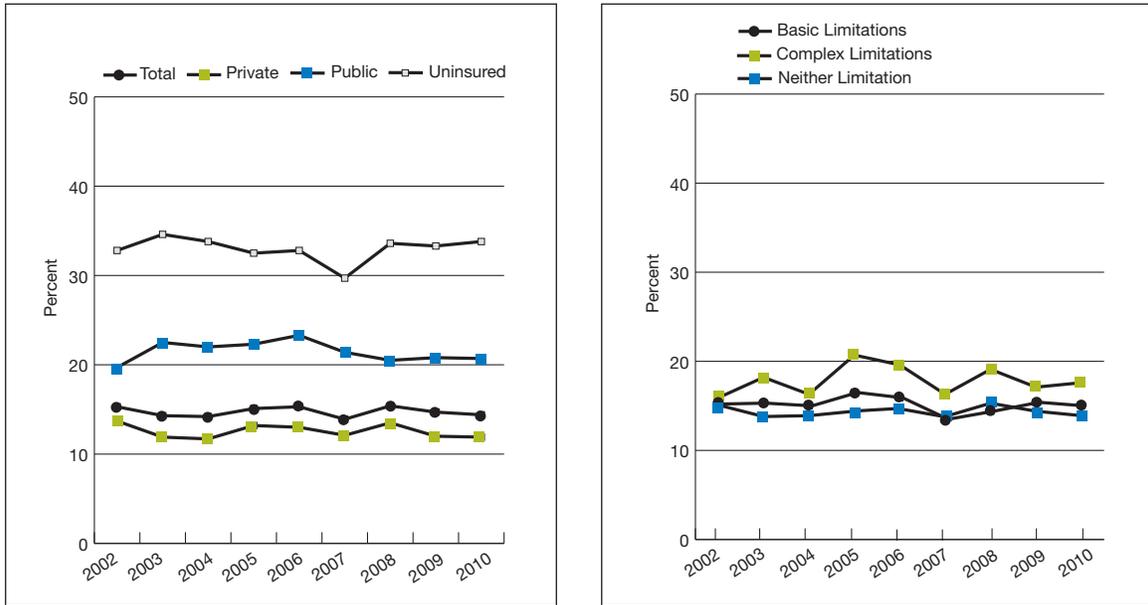
- ◆ Getting care for illness or injury as soon as wanted.
- ◆ ED waiting times.
- ◆ Timeliness of cardiac reperfusion for heart attack patients.

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 insurance (ages 18-64) and activity limitations, 2002-2010



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

Denominator: Civilian noninstitutionalized population age 18 and over.

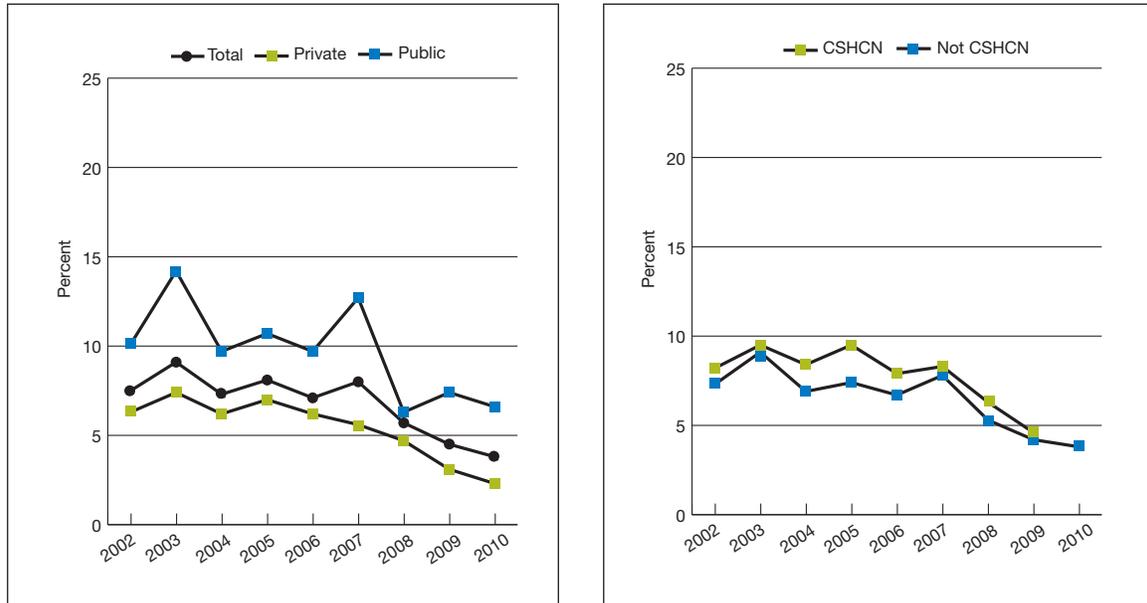
Note: For this measure, lower rates are better. Basic activity limitations include problems with mobility, self-care, domestic life, or activities that depend on sensory functioning. Complex activity limitations include limitations experienced in work or in community, social, and civic life.

- ◆ From 2002 to 2010, the percentage of adults ages 18-64 who did not receive care as soon as wanted was significantly lower for adults with private insurance than for adults with public insurance and uninsured adults (Figure 5.1).
- ◆ 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. Individuals with activity limitations tend to have more chronic and acute conditions than individuals without activity limitations and require more health care services to maintain optimal health.

Also, in the *National Healthcare Disparities Report* (NHDR):

- ◆ In all years, 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 5.2. 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 insurance and special health care needs status, 2002-2010



Key: CSHCN = children with special health care needs.

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. Children with special health care needs includes children who have activity limitations or who need or use more health care or other services than is usual for most children of the same age. Data for CSHCN status in 2010 did not meet criteria for statistical reliability, data quality, or confidentiality.

- ◆ In 8 of 9 years 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 was significantly lower for children with private insurance than for children with public insurance (Figure 5.2).
- ◆ 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. CSHCN have higher rates of physician visits and hospitalization than children without special health care needs since they rely more on medical care to maintain their quality of life.

Also, in the NHDR:

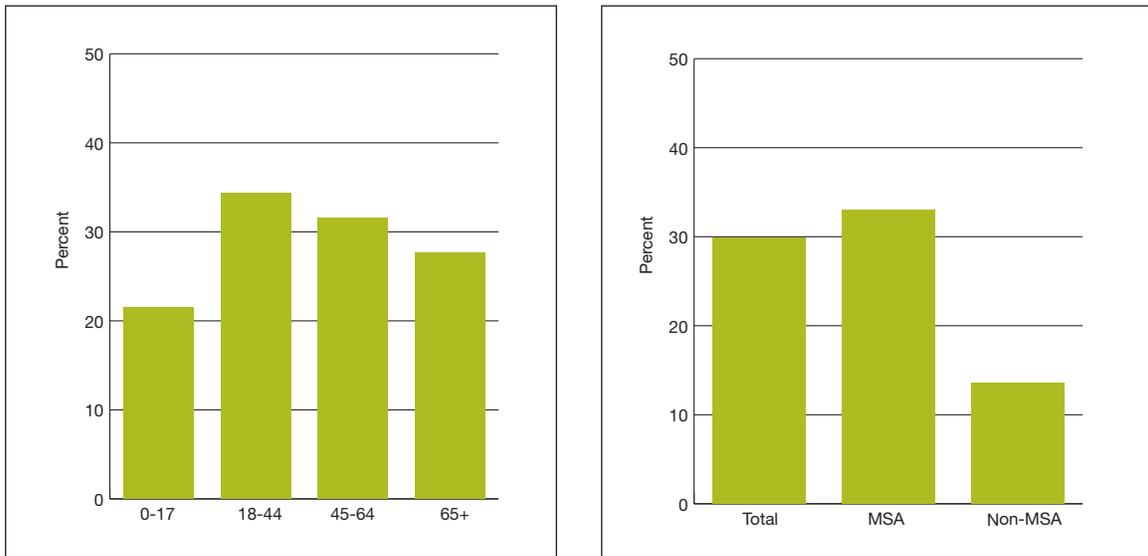
- ◆ From 2002 to 2010, the percentage of children who sometimes or never received care as soon as wanted decreased for Whites and Hispanics.

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). There was great variation in the percentage of ED visits by geographic location and hospital teaching status. Eighty-three percent of visits were in metropolitan areas compared with only 17% in nonmetropolitan areas. Also, 40.7% of visits were in the South compared with only 18.7% in the Northeast. In addition, nearly 85% of ED visits were to nonteaching hospitals.

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 age and geographic location, 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. 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, 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 (Figure 5.3).
- ◆ 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.

Also, in the NHDR:

- ◆ In 2010-2011, a higher percentage of patients with public insurance had to wait 6 hours or more compared with patients with private insurance.
- ◆ 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.

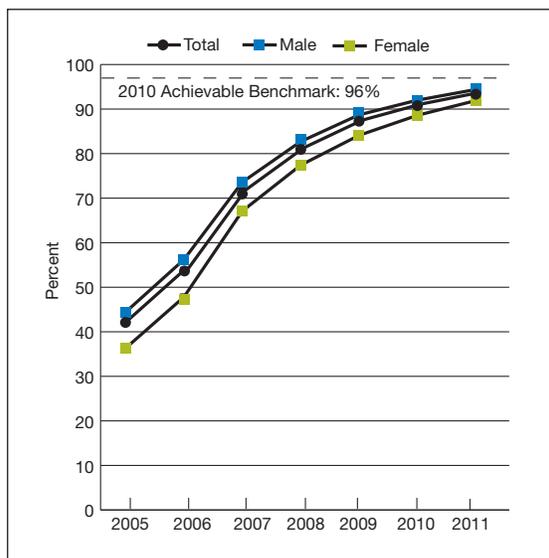
Timeliness of Cardiac Reperfusion for Heart Attack Patients

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 sex, 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 percutaneous transluminal angioplasty or stent placement during the hospital stay.

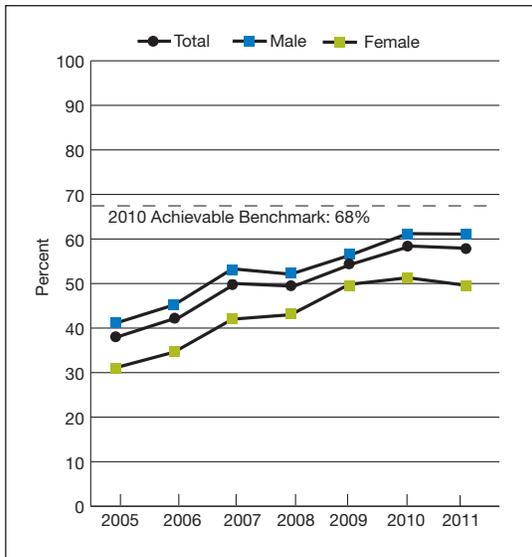
- ◆ From 2005 to 2011, among heart attack patients, the percentage of patients receiving PCI within 90 minutes improved from 42.1% to 93.7% (Figure 5.4).
- ◆ During this same period, the percentage of patients receiving PCI within 90 minutes improved significantly for both males and females.
- ◆ The 2010 top 5 State achievable benchmark was 96%.ⁱ At the current rates of improvement, the achievable benchmark could be attained overall and by both males and females in less than 1 year.

Also, in the NHDR:

- ◆ Among heart attack patients, the percentage of patients receiving timely PCI improved for all racial/ethnic groups from 2005 to 2011.
- ◆ In all years, Blacks and Hispanics were less likely than Whites to receive timely PCI.

ⁱ 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 sex, 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.

- ◆ From 2005 to 2011, the percentage of heart attack patients receiving fibrinolytic medication within 30 minutes improved from 37.9% to 57.9% (Figure 5.5).
- ◆ In all years, the percentage of patients who received fibrinolytic medication was significantly higher for males than for females.
- ◆ In 2010, the top 5 State achievable benchmark was 68%.ⁱⁱ At the current rate of improvement, the achievable benchmark could be attained overall in less than 3 years. Male heart attack patients should reach the achievable benchmark in 2 years and females in 5 years.

Also, in the NHDR:

- ◆ 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.

ⁱⁱ The top 5 States that contributed to the achievable benchmark are Arkansas, California, Georgia, Mississippi, and Texas.

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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.ⁱ The patient-centered approach includes viewing the patient as a unique person, rather than focusing strictly on the illness, building a therapeutic alliance based on the patient’s and the provider’s perspectives.

Patient-centered care is supported by good provider-patient communication so that patients’ needs and wants are understood and addressed and patients understand and participate in their own care (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).ⁱⁱ

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

ⁱⁱ This free online educational program (available at 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.

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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.ⁱⁱⁱ 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).

ⁱⁱⁱ 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).^{iv} 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 NHQR has tracked a growing number of patient centeredness measures. Organized around the National Quality Strategy, the 2013 NHQR 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.
- ◆ Provider's involvement of the patient in making treatment decisions.

The last measure also relates to the National Quality Strategy goal of patient engagement.

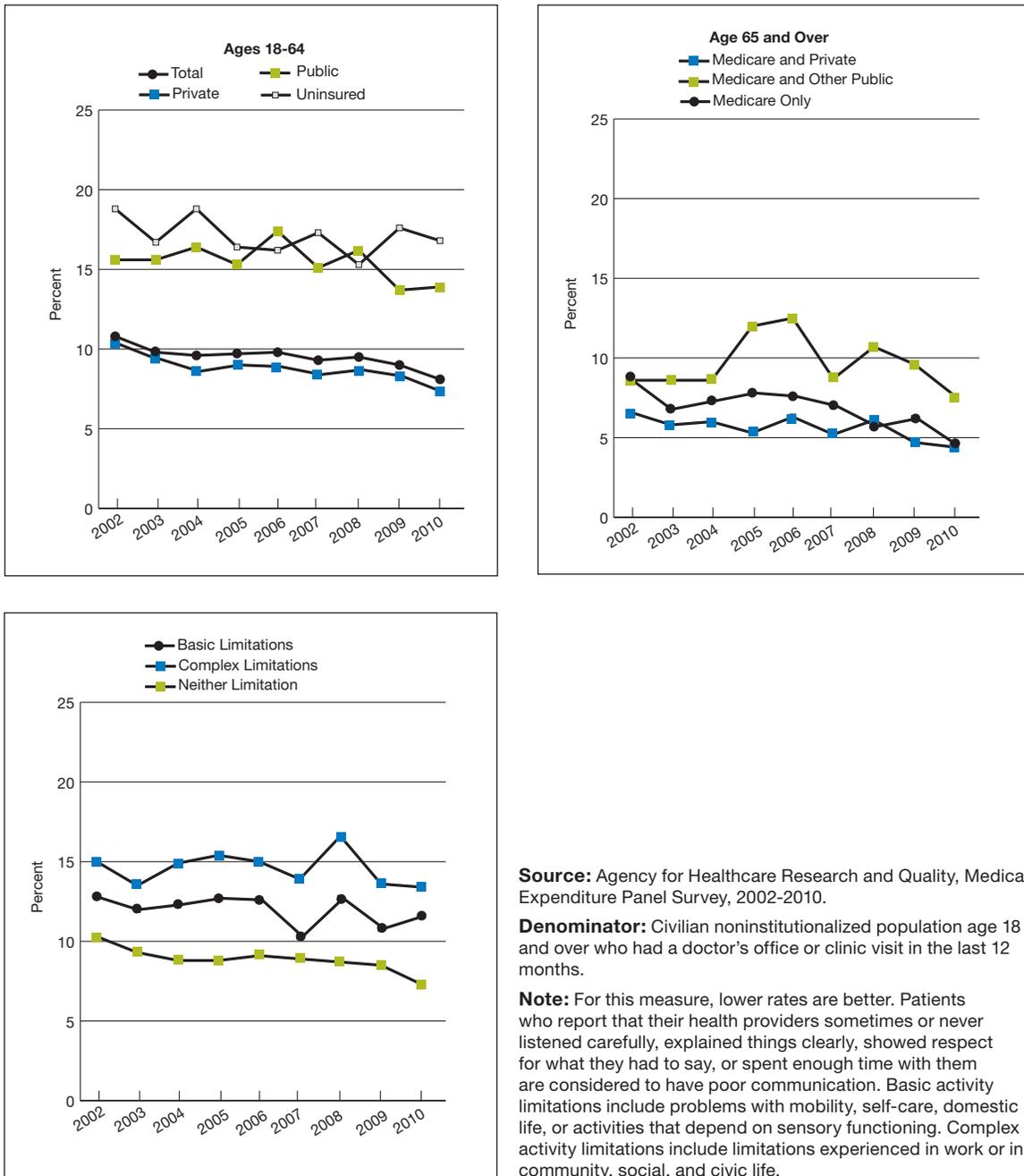
Findings

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.

^{iv} 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 insurance, ages 18-64 and age 65 and over, and activity limitations, 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. 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. Basic activity limitations include problems with mobility, self-care, domestic life, or activities that depend on sensory functioning. Complex activity limitations include limitations experienced in work or in community, social, and civic life.

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- ◆ From 2002 to 2010, for adults ages 18-64, there were no statistically significant changes in the percentage of adults with any private insurance, public insurance, or no insurance who had a doctor's office or clinic visit and reported poor communication (Figure 6.1).
- ◆ 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, 7.3% compared with 16.8% and 13.9%, respectively).
- ◆ 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 (7.6% compared with 4.5% and 4.4%, respectively).
- ◆ In 2010, adults with basic activity limitations (11.6%) and adults with complex activity limitations (13.4%) were more likely to report poor communication with health providers than adults with neither basic nor complex activity limitations (7.3%).

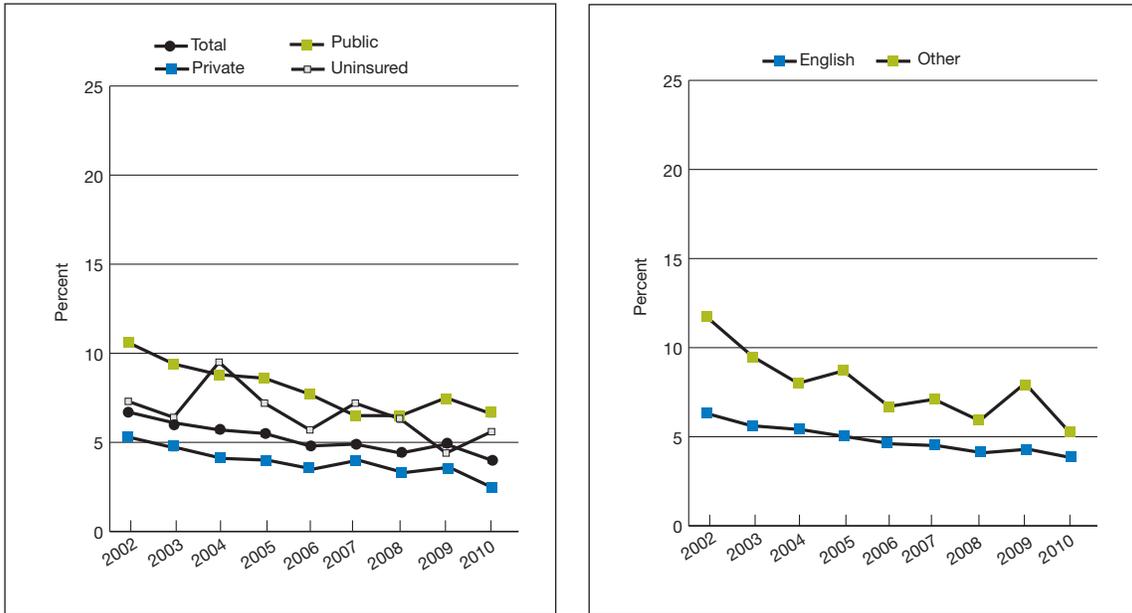
Also, in the NHDR:

- ◆ 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.
- ◆ In all years, poor and low-income adults were more likely than high-income adults to report poor communication with health providers.

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 6.2. 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 insurance and primary language, 2002-2010



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. Parents who report that their child’s health providers sometimes or never listened carefully, explained things clearly, showed respect for what they had to say, or spent enough time with them are considered to have poor communication.

- ◆ From 2002 to 2010, the percentage of children whose parents reported poor communication significantly decreased overall and for children with private insurance and children with public insurance (Figure 6.2). During the same period, the percentage significantly decreased for both primary language groups.
- ◆ In 2010, the percentage of children whose parents reported poor communication was higher for those with public insurance only (6.6%) and for those with no insurance (5.6%) than for those with any private insurance (2.4%).

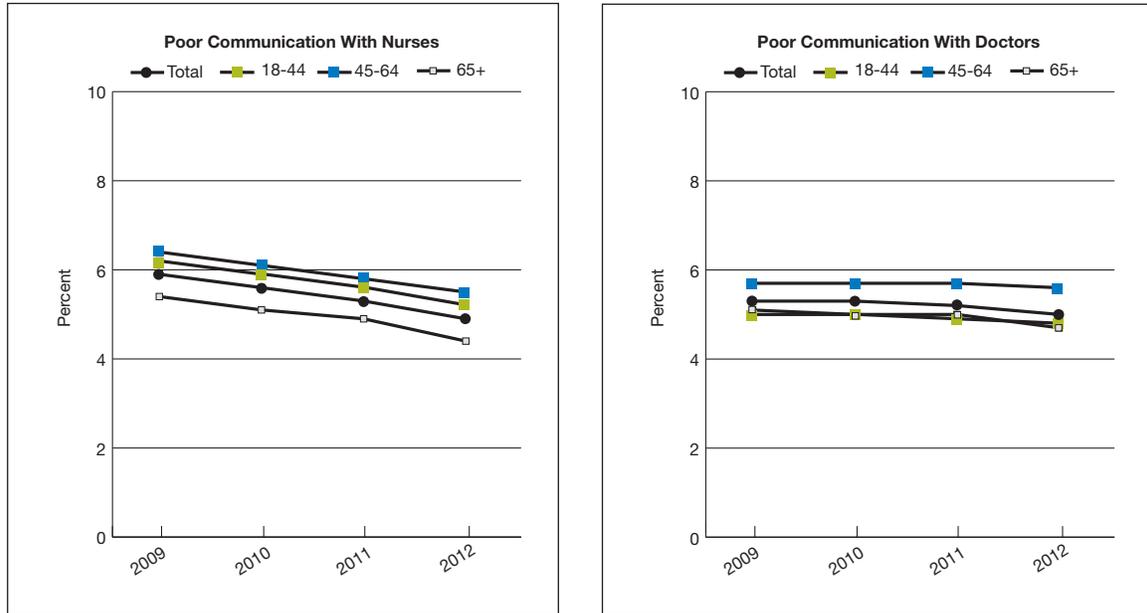
Also, in the NHDR:

- ◆ From 2002 to 2010, the percentage of children whose parents or guardians reported poor communication significantly decreased among Hispanics, Blacks, and Whites.

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 6.3. Adult hospital patients who reported poor communication with nurses and doctors, by age, 2009-2012



Source: Agency for Healthcare Research and Quality, Hospital CAHPS (Consumer Assessment of Healthcare Providers and Systems) Survey, 2009-2012.

Denominator: Adult hospital patients.

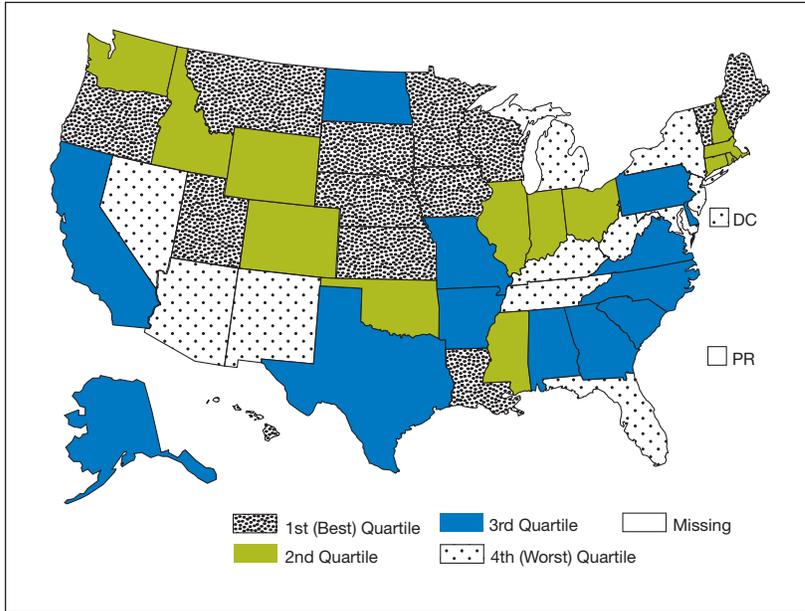
Note: For this measure, lower rates are better. Poor communication is defined as responded sometimes or never to the set of survey questions: “During this hospital stay, how often did doctors/nurses treat you with courtesy and respect?” “During this hospital stay, how often did doctors/nurses listen carefully to you?” and “During this hospital stay, how often did doctors/nurses explain things in a way you could understand?”

- ◆ In 2012, 4.9% of adult hospital patients reported poor communication with nurses during their hospital stay, and 5.0% reported poor communication with doctors (Figure 6.3).
- ◆ From 2009 to 2012, the percentage of adult hospital patients who reported poor communication with nurses decreased overall and for all age groups.
- ◆ 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 (4.4% compared with 5.2%).
- ◆ 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.
- ◆ In 2012, patients ages 45-64 were more likely to report poor communication with doctors compared with those ages 18-44 (5.6% compared with 4.8%).

Also, in the NHDR:

- ◆ In 2012, compared with Whites, all racial groups were more likely to report poor communication with nurses.
- ◆ Blacks, American Indians and Alaska Natives, and patients of more than one race were more likely than Whites to report poor communication with doctors.

Figure 6.4. State variation: Adult hospital patients who reported poor communication with doctors, 2012



Source: Agency for Healthcare Research and Quality, Hospital CAHPS (Consumer Assessment of Healthcare Providers and Systems) Survey, 2012.

Denominator: Adult hospital patients.

There was significant variation across the Nation in adult hospital patients who reported poor communication with doctors.

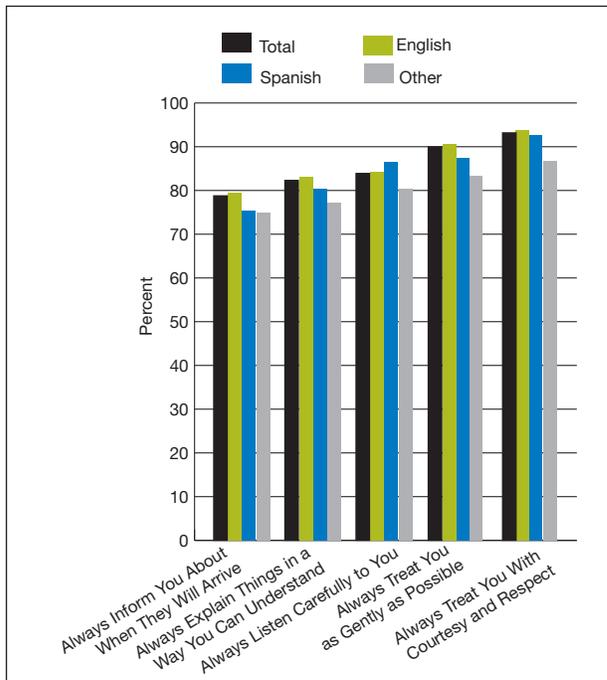
- ◆ First (best) quartile: 3.1%-4.1%.
- ◆ Second quartile: 4.2%-4.7%.
- ◆ Third quartile: 4.7%-5.5%.
- ◆ Fourth (worst) quartile: 5.5%-8.9%.

NEW 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 language spoken at home, 2011-2012



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, 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).
- ◆ 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.

Also, in the NHDR:

- ◆ Asian and American Indian/Alaska Native 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.

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

To effectively navigate the complicated health care system, health care providers need to give patients access to culturally and linguistically appropriate tools to support patient engagement. Culturally and linguistically appropriate services 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.

Health literacy is the capacity to obtain, process, and understand basic health information and services to make appropriate health decisions (HHS, 2000). Patients with limited health literacy are more likely to have difficulty understanding instructions and taking medication properly. In addition, communication barriers such as LEP are associated with lower quality of care and place patients at risk for poor clinical outcomes (Ngo-Metzger, et al., 2007).

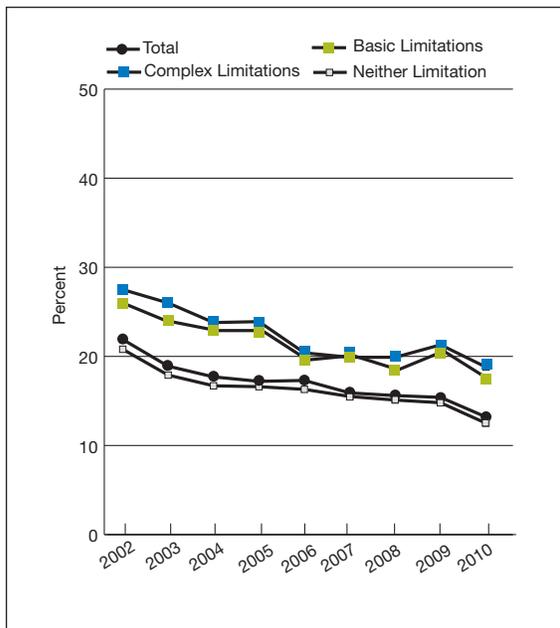
About one-third of Americans are not "health literate" (Gazmararian, et al., 2003; Parker, et al., 2003). Individuals with inadequate health literacy incur higher medical costs and are more likely to have an inefficient mix of service use compared with those with adequate health literacy (Howard, et al., 2005). They may experience many difficulties, including:

- ◆ Less frequent preventive care (Scott, et al., 2002).
- ◆ Poorer understanding of their conditions and care (Williams, Baker, Honig, et al., 1998; Williams, Baker, Parker, et al., 1998; Gazmararian, et al., 2003).
- ◆ Higher use of emergency and inpatient services and higher rates of rehospitalization (Baker, et al., 1998; Baker, et al., 2002).
- ◆ Lower adherence to medication schedules (Baker, et al., 1998).
- ◆ Less participation in medical decisionmaking (Berkman, et al., 2004).

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 6.6. People with a usual source of care whose health providers sometimes or never asked for the patient’s help to make treatment decisions, by activity limitations, 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. Activity limitation status applies only to adults age 18 and over. Basic activity limitations include problems with mobility, self-care, domestic life, or activities that depend on sensory functioning. Complex activity limitations include limitations experienced in work or in community, social, and civic life.

- ◆ From 2002 to 2010, the percentage of people with a usual source of care whose health providers sometimes or never asked for the patient’s help to make treatment decisions decreased overall (Figure 6.6).
- ◆ 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 (17.4%) and adults with complex activity limitations (18.8%) were more likely than adults with neither basic nor complex activity limitations (12.5%) to have a usual source of care who did not ask for their help in making treatment decisions.
- ◆ In all years, adults with basic or complex activity limitations were more likely than those with neither limitation to have a usual source of care who did not ask for their help in making treatment decisions.

Also, in the NHDR:

- ◆ 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.

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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 initiative "Enhancement & Evaluation of Existing Health Information Electronic Network Systems for PLWHA (People Living With HIV/AIDS) in Underserved Communities." Begun in 2007, the initiative funded six demonstration sites throughout the Nation for up to 4 years.ⁱ

Another more recent funding opportunity also offered by HRSA is "Systems Linkages and Care Initiative to High Risk Populations Evaluation and Technical Assistance Center." This initiative promotes the development of innovative strategies to successfully integrate different components of the public health system into quality HIV care for hard-to-reach populations who have never been in care.

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.

ⁱ For more information, see <http://hab.hrsa.gov/abouthab/special/underservedcommunities.html>.

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*ⁱⁱ 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.

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

Findings

Transitions of Care

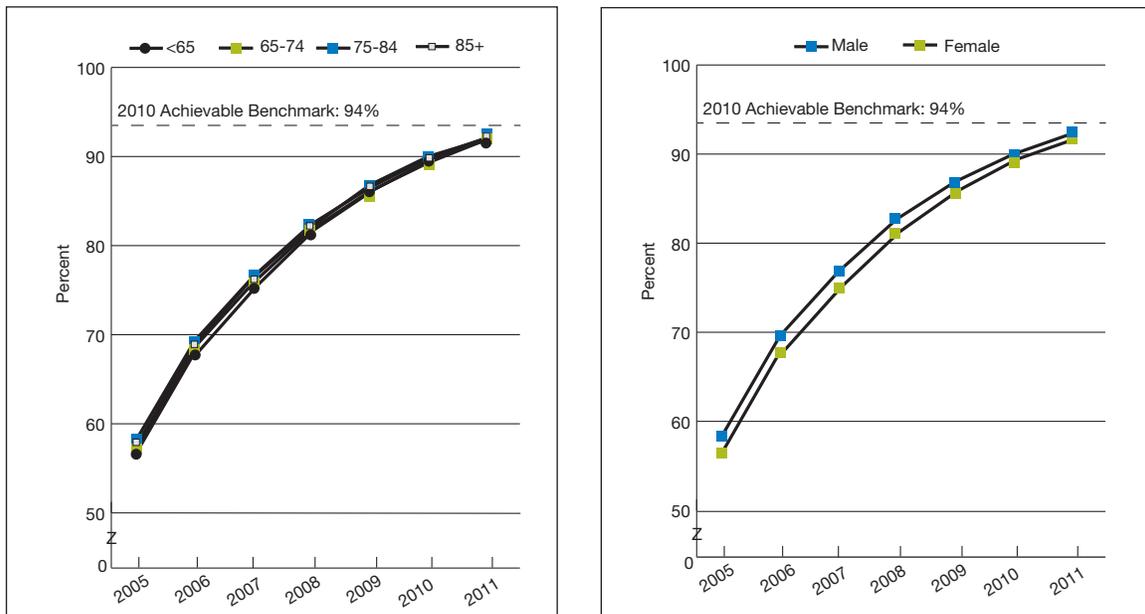
As health care conditions and needs change, patients often need to move from one setting to another. These transitions of care place patients at heightened risk of adverse events. Important information may be lost or miscommunicated as responsibility is delivered to new parties.

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 age and sex, 2005-2011



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 age groups and both sexes (Figure 7.1).
- ◆ There were no statistically significant differences by age or sex.
- ◆ The 2010 top 5 State achievable benchmark was 94%.ⁱⁱⁱ At the current 6% annual rate of increase, this benchmark could be attained overall and by all age groups and both sexes in less than a year.

Also, in the *National Healthcare Disparities Report* (NHDR):

- ◆ Improvements were observed among all racial and ethnic groups.

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 From Other Doctors

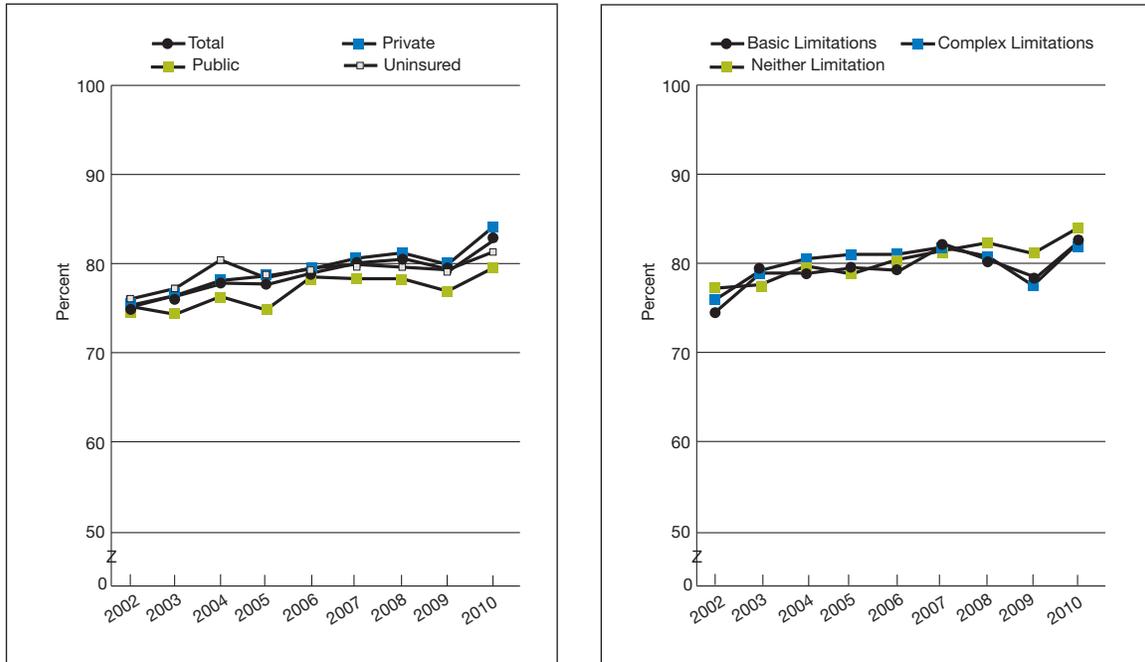
Different providers may prescribe medications for the same patient. Patients are responsible for keeping track of all their medications, but medication information can be confusing, especially for patients on multiple medications. When care is not well coordinated and some providers do not know about 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.

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

Figure 7.2. People under age 65 with a usual source of care whose health provider usually asks about prescription medications and treatments from other doctors, by insurance and activity limitations, 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: Basic activity limitations include problems with mobility, self-care, domestic life, or activities that depend on sensory functioning. Complex activity limitations include limitations experienced in work or in community, social, and civic life.

- ◆ 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).
- ◆ 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.
- ◆ In 2010, more than 80% of people with a usual source of care were asked about prescription medications and treatments from other doctors, regardless of activity limitation.

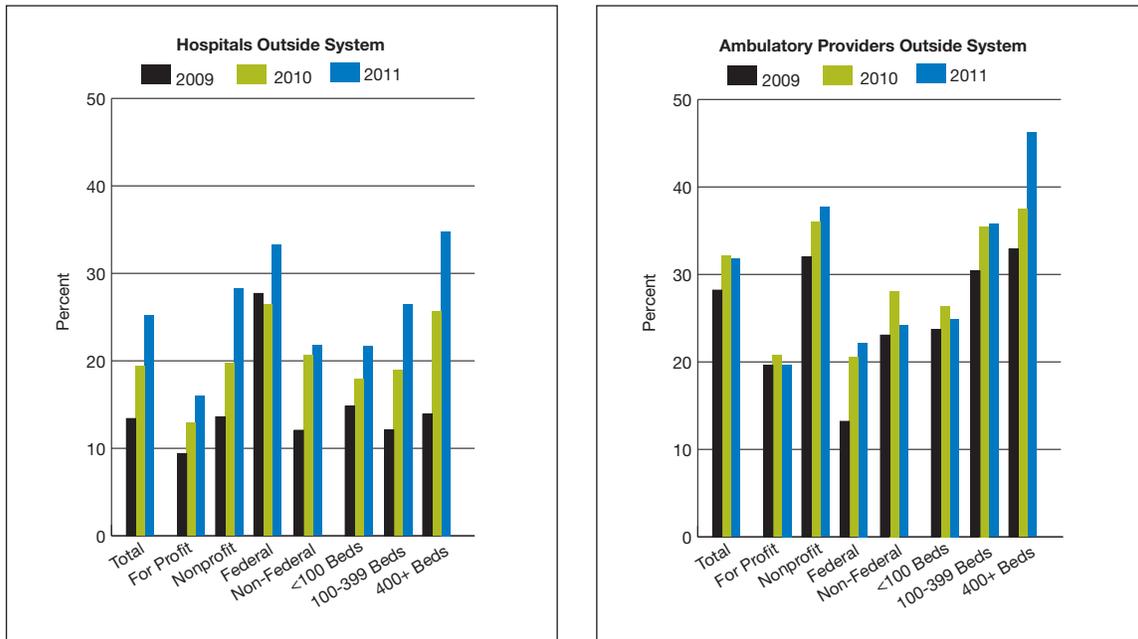
Also, in the NHDR:

- ◆ From 2008 to 2010, there were no statistically significant differences by perceived health status.

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.

Figure 7.3. Hospitals with electronic exchange of patient information on medication history, by ownership and bed size, 2009-2011, electronic exchange with hospitals outside their system and with ambulatory providers outside their system



Source: American Hospital Association Annual Survey Information Technology Supplement, 2009-2011.

- ◆ 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 (Figure 7.3).
- ◆ Federal hospitals were most likely to have electronic exchange with hospitals outside their system, followed by nonprofit, non-Federal, and for profit (investor owned) (33.3%, 28.3%, 21.8%, and 16%, respectively).
- ◆ Hospitals with <100 or 100-399 beds were less likely than large hospitals (400+ beds) to exchange information with hospitals outside their system. Large hospitals also were more likely than medium and small hospitals (46.2%, 35.8%, and 24.9%, respectively) to have electronic exchange with ambulatory providers outside their system.
- ◆ In 2011, nonprofit hospitals were most likely to have electronic exchange with ambulatory providers outside their system, followed by non-Federal, Federal, and for profit.

Also, in the NHDR:

- ◆ 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.

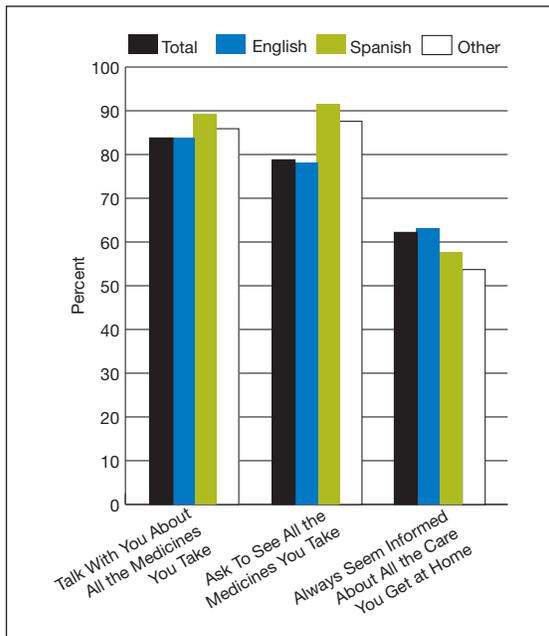


Management: Information Gathering by Home Health Care Providers

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 language spoken at home, 2011-2012



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).
- ◆ Adult home health care patients who spoke Spanish or 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.

Also, in the NHDR:

- ◆ 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, Native Hawaiian and Other Pacific Islander, 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.

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.

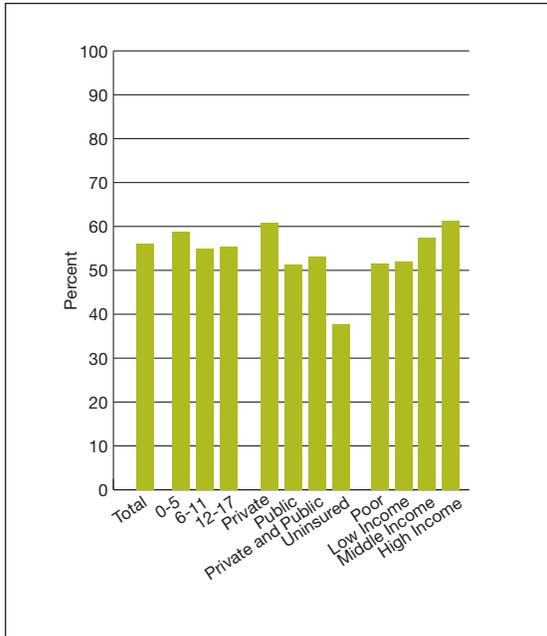
According to the 2009/10 National Survey of Children With Special Health Care Needs, approximately 11.2 million children, or 15.1% of the population ages 0-17, were identified as having a special health care need. The Maternal and Child Health Bureau defines CSHCN as those who have or are at increased 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 age, insurance status, and income, 2009-2010

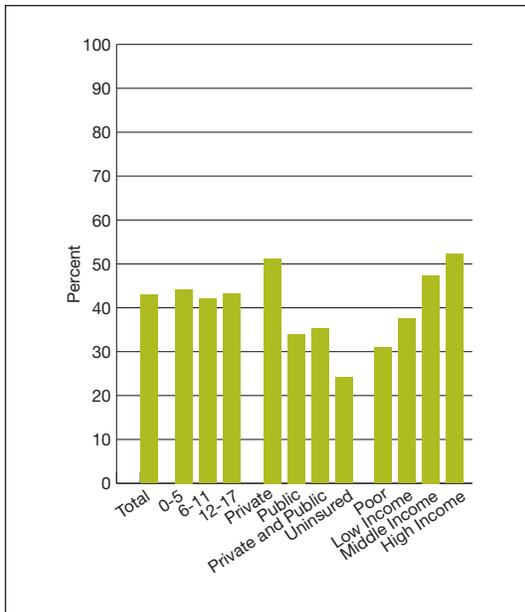


Source: Data query from the Child and Adolescent Health Measurement Initiative, Data Resource Center for Child and Adolescent Health Web site, using the 2005/06 and 2009/10 National Survey of Children With Special Health Care Needs.

Denominator: CSHCN who were reported to use more than one service during the survey period.

- ◆ In 2009-2010, the percentage of CSHCN who had effective care coordination was higher for children ages 0-5 than for children ages 6-11 and 12-17 (58.8% compared with 54.9% and 55.5%, respectively; Figure 7.5).
- ◆ In 2009-2010, the percentage of CSHCN who had effective care coordination was higher for children with private insurance compared with children with public insurance only, private and public insurance, and no insurance (60.8% compared with 51.4%, 53.1%, and 37.7%, respectively).
- ◆ Also in 2009-2010, the percentage of CSHCN with effective care coordination was higher for high-income children than for middle-income, low-income, and poor children (61.2%, 57.4%, 52.1%, and 51.6%, respectively).

Figure 7.6. Children with special health care needs with a medical home, by age, insurance, and income, 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. 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 2009-2010, the percentage of CSHCN who had a medical home was higher for children ages 0-5 compared with children ages 6-11 and 12-17 (44.2% compared with 42.1% and 43.1%, respectively; Figure 7.6).
- ◆ In 2009-2010, the percentage of CSHCN who had a medical home was higher for children with private insurance compared with children with public insurance only, private and public insurance, and no insurance (51.2% compared with 34%, 35.3%, and 24.2%, respectively).
- ◆ Also in 2009-2010, the percentage of CSHCN with a medical home was higher for high-income children than for middle-income, low-income, and poor children (52.2%, 47.4%, 37.5%, and 30.9%, respectively).

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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 Quality Report* is organized around the concepts of overuse and misuse. As noted in the *National Strategy for Quality Improvement in Health Care*,ⁱ “Achieving optimal results every time requires an unyielding focus on eliminating patient harms from health care, reducing waste, and applying creativity and innovation to how care is delivered.”

The measures this year are presented in the following layoutⁱⁱ:

- ◆ Preventable emergency department visits:
 - Potentially avoidable emergency department visit rates.
 - Emergency treatment for mental illness or substance abuse.
- ◆ Preventable hospitalizations:
 - Potentially avoidable hospitalization rates.
 - Potentially avoidable hospitalization costs.
- ◆ Perforated appendixes.

ⁱ Available at <http://www.ahrq.gov/workingforquality/nqs/nqs2011annlrpt.htm>.

ⁱⁱ Inappropriate medications measure is now in Chapter 4, Patient Safety.

Findings

Preventable Emergency Department Visits

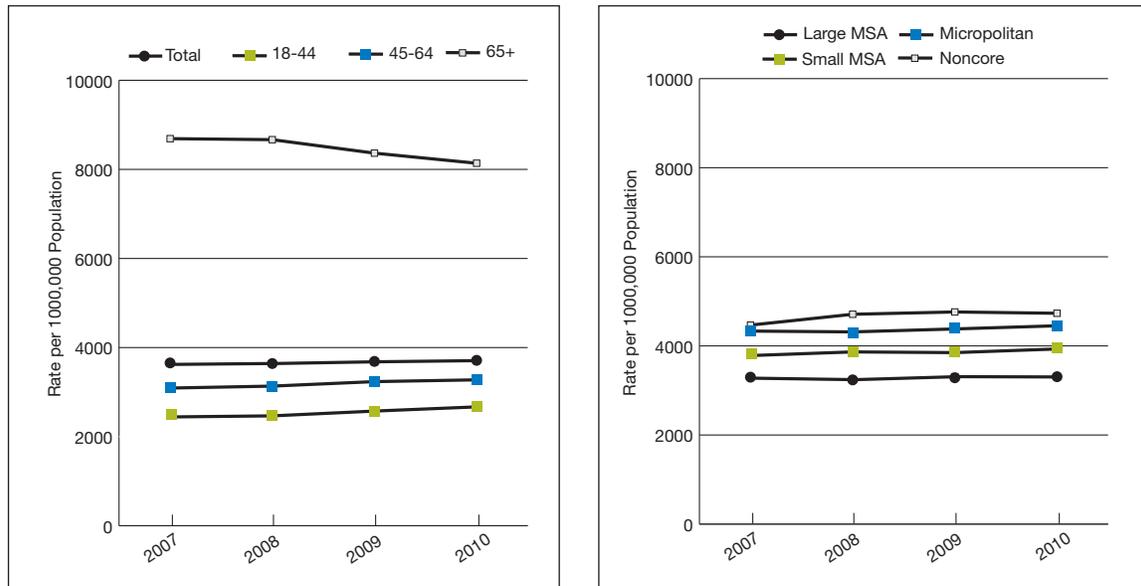
Potentially Avoidable Emergency Department Visit Rates for Adults

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

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

For this analysis, the AHRQ Prevention Quality Indicators software was applied to the Healthcare Cost and Utilization Project (HCUP) Nationwide Emergency Department Sample. The overall potentially avoidable ED visit rate includes visits for acute conditions, such as dehydration and pneumonia, and chronic conditions, such as diabetes and congestive heart failure.

Figure 8.1. Potentially avoidable emergency department visit rates, by age and residence location, 2007-2010



Key: MSA = metropolitan statistical area.

Source: Agency for Healthcare Research and Quality, Healthcare Cost and Utilization Project, Nationwide Emergency Department Sample, 2007-2010.

Denominator: Adults age 18 and over.

Note: For this measure, lower rates are better. Annual rates are adjusted for age and gender.

- ◆ In 2010, the rate of ED visits for potentially avoidable conditions was 3,707 per 100,000 adults (Figure 8.1).
- ◆ 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.
- ◆ In all years, residents of small metropolitan, micropolitan, and noncore areas had higher potentially avoidable ED visit rates compared with residents of large metropolitan areas.

Also, in the *National Healthcare Disparities Report* (NHDR):

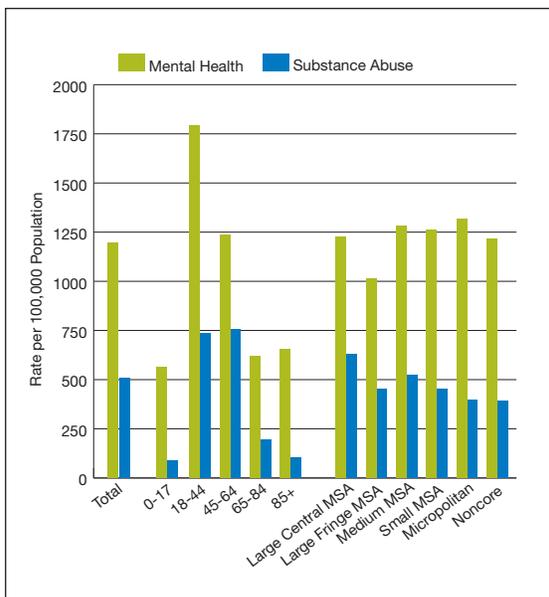
- ◆ In all years, rates of potentially avoidable hospitalizations were higher among Blacks than Whites and lower among Asians and Pacific Islanders than Whites. Except in 2001 and 2008, rates were also higher among Hispanics than Whites.
- ◆ In all years, rates of potentially avoidable hospitalizations were higher among residents of areas in the lowest and second income quartiles compared with residents of the highest income quartile.

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 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 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 8.2. Rate of emergency department visits with a principal diagnosis related to mental health and alcohol or substance abuse, per 100,000 population, by age and residence location, 2010



Key: MSA = metropolitan statistical area.

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 8.2).
- ◆ 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 is 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.

Also, in the NHDR:

- ◆ 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.

Preventable Hospitalizations

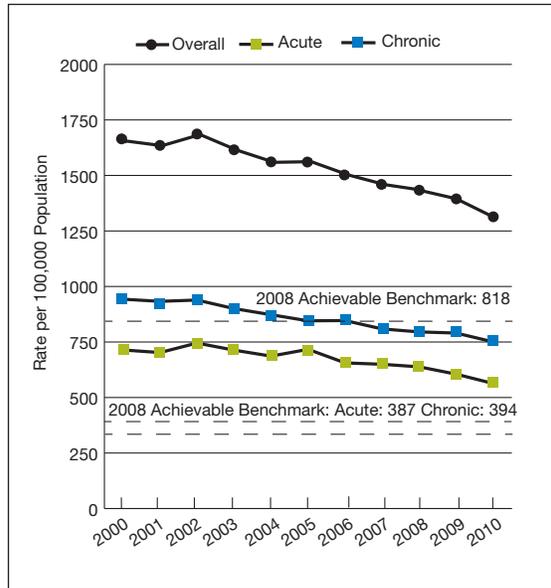
Potentially Avoidable Hospitalization Rates for Adults

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.

Figure 8.3. National trends in potentially avoidable hospitalization rates for adults, by type of hospitalization, 2000-2010



Source: Agency for Healthcare Research and Quality (AHRQ), Healthcare Cost and Utilization Project, Nationwide Inpatient Sample, and AHRQ Quality Indicators, modified version 4.1, 2000-2010.

Denominator: Civilian noninstitutionalized adults age 18 and over.

Note: For this measure, lower rates are better. Annual rates are adjusted for age and gender.

- ◆ From 2000 to 2010, the overall rate of avoidable hospitalizations fell from 1,657 to 1,313 per 100,000 population (Figure 8.3). Declines in avoidable hospitalizations were observed for both acute and chronic conditions.
- ◆ In 2008, the top 3 State achievable benchmark for all potentially avoidable hospitalizations was 818 per 100,000 populationⁱⁱⁱ. The overall achievable benchmark could not be attained for 14 years.
- ◆ The top 3 State achievable benchmark for acute potentially avoidable hospitalizations was 387 per 100,000 population.^{iv} The acute achievable benchmark could not be attained for 12 years.
- ◆ The top 3 State achievable benchmark for chronic potentially avoidable hospitalizations was 394 per 100,000 population.^v The chronic achievable benchmark could not be attained for 18 years.

Also, in the NHDR:

- ◆ In all years, rates of potentially avoidable hospitalizations were higher among Blacks than Whites and lower among Asians and Pacific Islanders than Whites.
- ◆ In all years, rates of potentially avoidable hospitalizations were higher among residents of areas in the lowest and second income quartile compared with residents of the highest income quartile.

ⁱⁱⁱ The top 3 States that contributed to the overall achievable benchmark are Hawaii, Utah, and Washington.

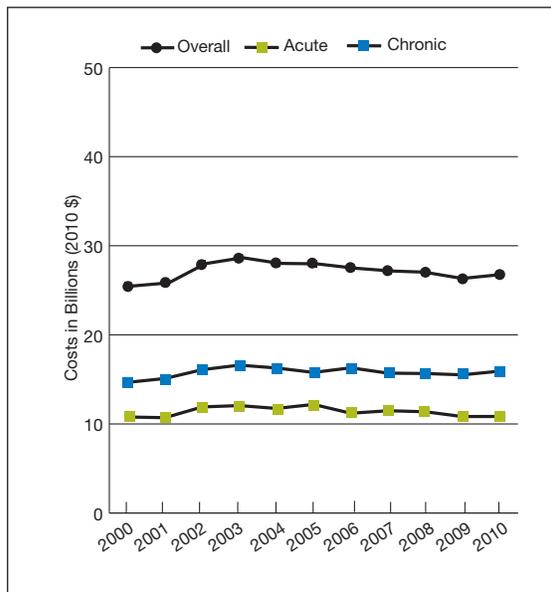
^{iv} The top 3 States that contributed to the acute achievable benchmark are Hawaii, Utah, and Washington.

^v The top 3 States that contributed to the chronic achievable benchmark are Utah, Vermont, and Washington.

Potentially Avoidable Hospitalization Costs

The costs associated with potentially avoidable hospitalizations can be calculated to estimate how much money could theoretically be saved by eliminating such services. For this analysis, total hospital charges were converted to costs using HCUP cost-to-charge ratios based on hospital accounting reports from the Centers for Medicare & Medicaid Services. Therefore, cost estimates in this section refer to hospital costs for providing care but do not include either payers' costs or costs for physician care that are billed separately.

Figure 8.4. Total national costs associated with potentially avoidable hospitalizations, 2000-2010



Source: Agency for Healthcare Research and Quality (AHRQ), Healthcare Cost and Utilization Project, Nationwide Inpatient Sample and AHRQ Quality Indicators, modified version 4.1, 2000-2010.

Denominator: Civilian noninstitutionalized adults age 18 and over.

Note: For this measure, lower rates are better. Annual rates are adjusted for age and gender. Costs are adjusted for inflation and are represented in 2010 dollars.

- ◆ From 2000 to 2003, total national hospital costs associated with potentially avoidable hospitalizations^{vi} increased from \$25.4 billion to \$28.7 billion. Since then, costs have been gradually declining, to \$26.8 billion in 2010 (Figure 8.4).
- ◆ These changes are largely attributable to avoidable hospitalizations for chronic conditions, with national hospital costs that increased from \$14.7 billion to \$16.6 billion between 2000 and 2003 and then declined to \$15.9 billion in 2010.
- ◆ Changes in avoidable hospitalizations for acute conditions also contributed, with national hospital costs that increased from \$10.8 billion to \$12.1 billion between 2000 and 2003 and then declined to \$10.8 billion in 2010.

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.

^{vi} Adjusted for inflation. The inflation adjustment was done using the gross domestic product implicit price deflator

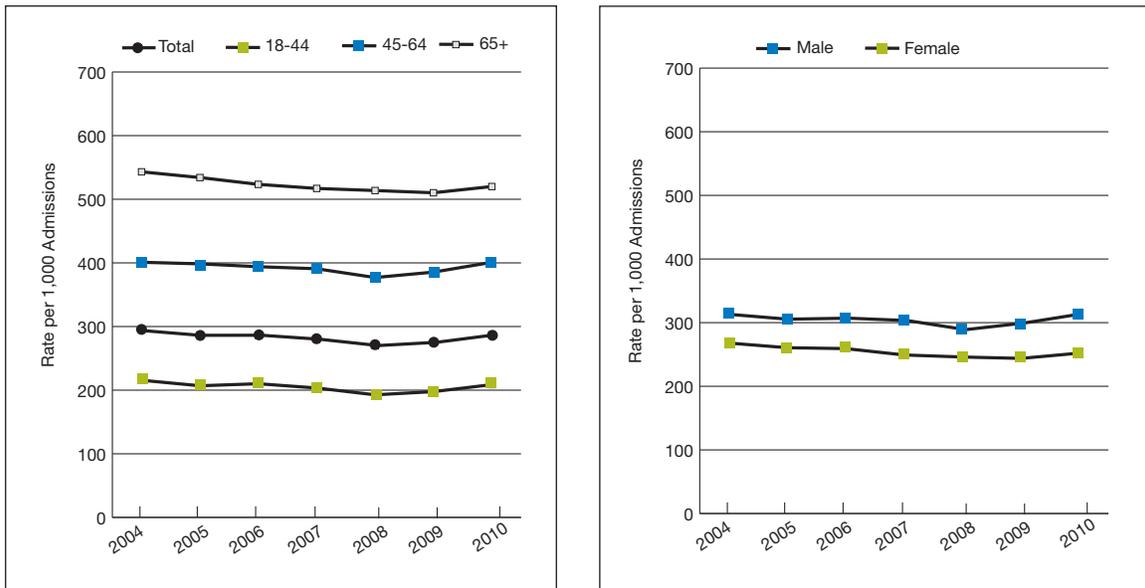


Figure 8.5. Perforated appendices per 1,000 admissions for appendicitis, by age and sex, 2004-2010

Source: Agency for Healthcare Research and Quality, Healthcare Cost and Utilization Project, Nationwide Inpatient Sample and AHRQ Quality Indicators, modified version 4.1, 2004-2010.

Note: For this measure, lower rates are better.

- ◆ In 2010, the rate of perforated appendices was higher for those age 65 and over and those ages 45-64 than for those ages 18-44 (520 and 400.9 per 1,000 admissions, respectively, compared with 208.7 per 1,000 admissions; Figure 8.5).
- ◆ Also in 2010, men had a higher rate of perforated appendices than women (314 per 1,000 admissions compared with 252.1 per 1,000 admissions). Men are more likely to delay seeking treatment and may experience more complications than women.

Also, in the NHDR:

- ◆ In 2011, for Indian Health Service (IHS) facilities, the rates of perforated appendices for those ages 45-64 and age 65 and over were higher than for those ages 18-44.
- ◆ Also in 2011, for IHS facilities, the rate of perforated appendices for males was higher than for females.

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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 distribution, 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*ⁱ 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.

ⁱ Available at http://cpehn.org/sites/default/files/resource_files/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, rural 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).

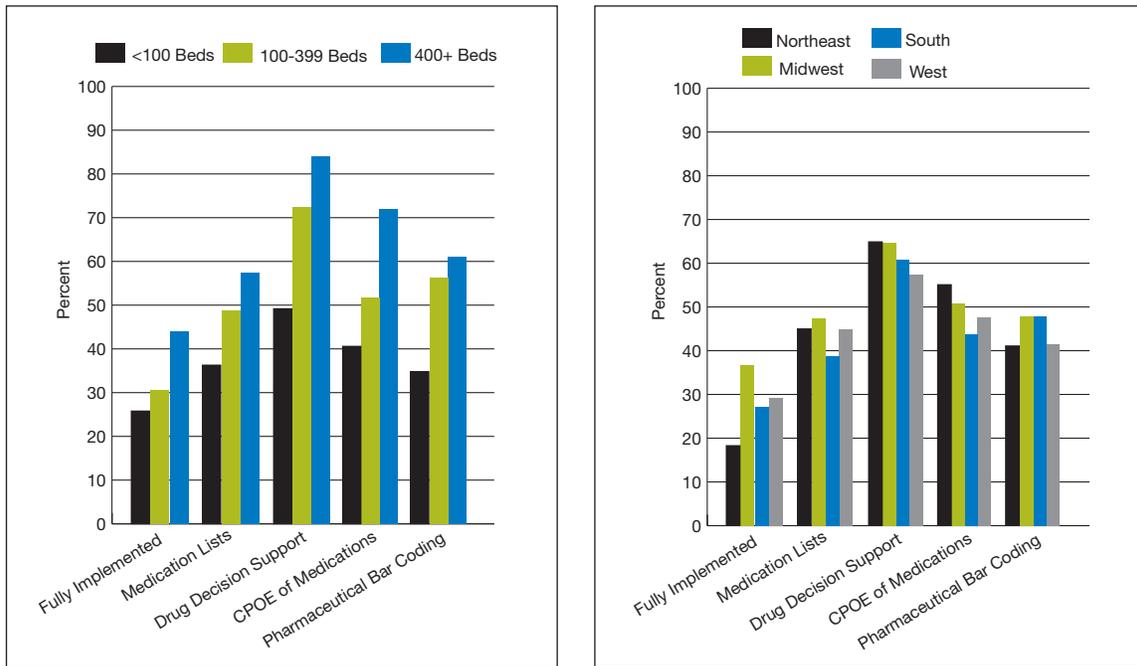
Poor adherence to medication therapy is a large and costly problem in the United States. The World Health Organization estimates that as many as 50% of patients do not adhere fully to their medication treatment, leading to 125,000 premature deaths and billions in preventable health care costs. Analysis 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).

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 NHQR 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.

Figure 9.1. Electronic health record use in hospitals, by bed size and geographic region, 2011



Key: CPOE = computerized provider order entry.

Source: American Hospital Association Annual Survey, 2011 Information Technology Supplement.

Note: Data were obtained from an average of 3,360 hospitals.

Fully Implemented EHR

- ◆ In 2011, 29.6% of hospitals had a fully implemented EHR system (data not shown). The percentage of hospitals with a fully implemented EHR system was higher for hospitals with 400 or more beds (44.0%) compared with hospitals with 100-399 beds (30.5%) and hospitals with fewer than 100 beds (25.8%; Figure 9.1).
- ◆ In 2011, hospitals in 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 (data not shown).

Medication Lists

- ◆ In 2011, 43.5% of hospitals had an EHR system that supports medication lists. The percentage of hospitals with an EHR system that supports medication lists was higher for hospitals with 400 beds or more (57.5%) compared with hospitals with 100-399 beds (48.7%) and hospitals with fewer than 100 beds (36.3%).
- ◆ Hospitals in the Midwest had the highest percentage of hospitals with an EHR system that supports medication lists (47.5%). In the Northeast and the West, 45.0% and 44.8% of hospitals, respectively, had an EHR system that supports medication lists. In the South, 38.8% of hospitals had an EHR system that supports medication lists.
- ◆ More than 46% of urban hospitals and 40.0% of rural hospitals had an EHR system that supports medication lists (data not shown).

Drug Decision Support

- ◆ In 2011, 62.0% of hospitals had an EHR system that had a component for drug decision support. The percentage of hospitals with an EHR system that had a component for drug decision support was higher for hospitals with 400 beds or more (84.0%) compared with hospitals with 100-399 beds (72.3%) and hospitals with fewer than 100 beds (49.2%; Figure 9.1).
- ◆ The Northeast had the highest percentage of hospitals with an EHR system that had a component for drug decision support (64.9%). In the Midwest and the South, 64.6% and 60.8% of hospitals, respectively, had an EHR system that had a component for drug decision support. In the West, 57.4% of hospitals had an EHR system that had a component for drug decision support.
- ◆ Nearly 68% of urban hospitals and 55.3% of rural hospitals had an EHR system that had a component for drug decision support (data not shown).

Computerized Provider Order Entry of Medications

- ◆ In 2011, 48.3% of hospitals had an EHR system that supports CPOE of medications. The percentage of hospitals with an EHR system that supports CPOE of medications was higher for hospitals with 400 beds or more (72.0%) compared with hospitals with 100-399 beds (51.8%) and hospitals with fewer than 100 beds (40.6%).
- ◆ The Northeast had the highest percentage of hospitals with an EHR system that supports CPOE of medications (55.1%). In the Midwest and the West, 50.7% and 47.7% of hospitals, respectively, had an EHR system that supports CPOE of medications. In the South, 43.8% of hospitals had an EHR system that supports CPOE of medications.
- ◆ Nearly 53% of urban hospitals and 43.0% of rural hospitals had an EHR system that supports CPOE of medications (data not shown).

Pharmaceutical Bar Coding

- ◆ In 2011, 45.9% of hospitals had an EHR system that supports pharmaceutical bar coding. The percentage of hospitals with an EHR system that supports pharmaceutical bar coding was higher for hospitals with 400 beds or more (61.0%) compared with hospitals with 100-399 beds (56.3%) and hospitals with fewer than 100 beds (34.8%; Figure 9.1).
- ◆ The Midwest and the South had the highest percentages of hospitals with an EHR system that supports pharmaceutical bar coding (47.9%). In the West and the Northeast, 41.5% and 41.1% of hospitals, respectively, had an EHR system that supports pharmaceutical bar coding.
- ◆ More than 50% of urban hospitals and 40.6% of rural hospitals had an EHR system that supports pharmaceutical bar coding (data not shown).

Also, in the NHDR:

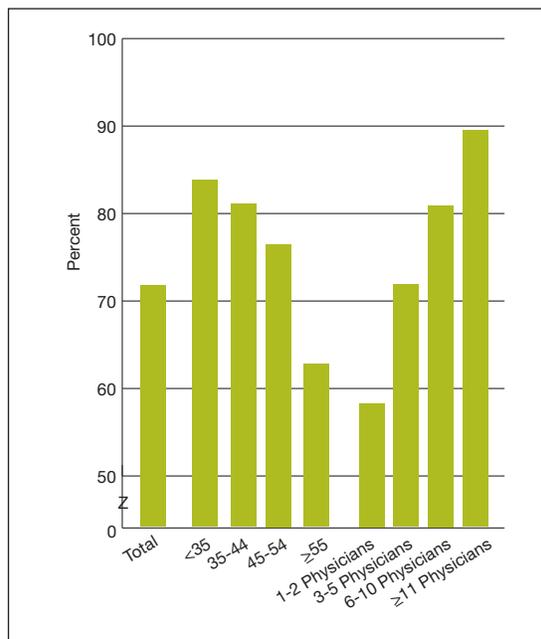
- ◆ In 2011, 80.3% of hospitals run by the Federal Government, 34.5% of not-for-profit, 23.7% of non-Federal, and 15.2% of investor-owned hospitals had a fully implemented EHR system.
- ◆ More than 47% of children's general hospitals, 31.4% of general medical and surgical hospitals, 20.2% of acute long-term 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.

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 reason cited for not adopting health IT is 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 physician age and practice size, 2012



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.

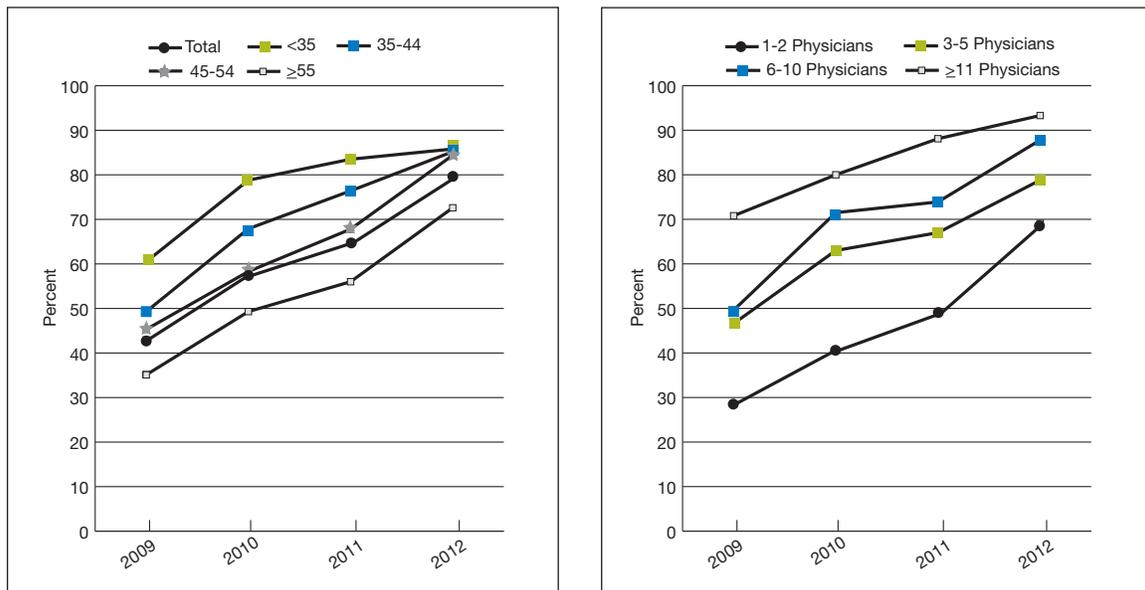
- ◆ In 2012, 71.8% of physicians had an EHR system (Figure 9.2).
- ◆ In 2012, nearly 84% of physicians under age 35 had an EHR system, which is significantly higher than the 62.8% of physicians age 55 and over who had an EHR system.
- ◆ In 2012, the percentage of physicians working in practices of 11 or more who had an EHR system was significantly higher than the percentage of physicians in practices with 1 or 2 physicians who had an EHR system (89.5% compared with 58.3%). Nearly 81% of practices with 6 to 10 physicians and 71.9% of practices with 3 to 5 physicians had an EHR system.

Also, in the NHDR:

- ◆ In 2012, 72% 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.

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 physician age and practice size, 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.

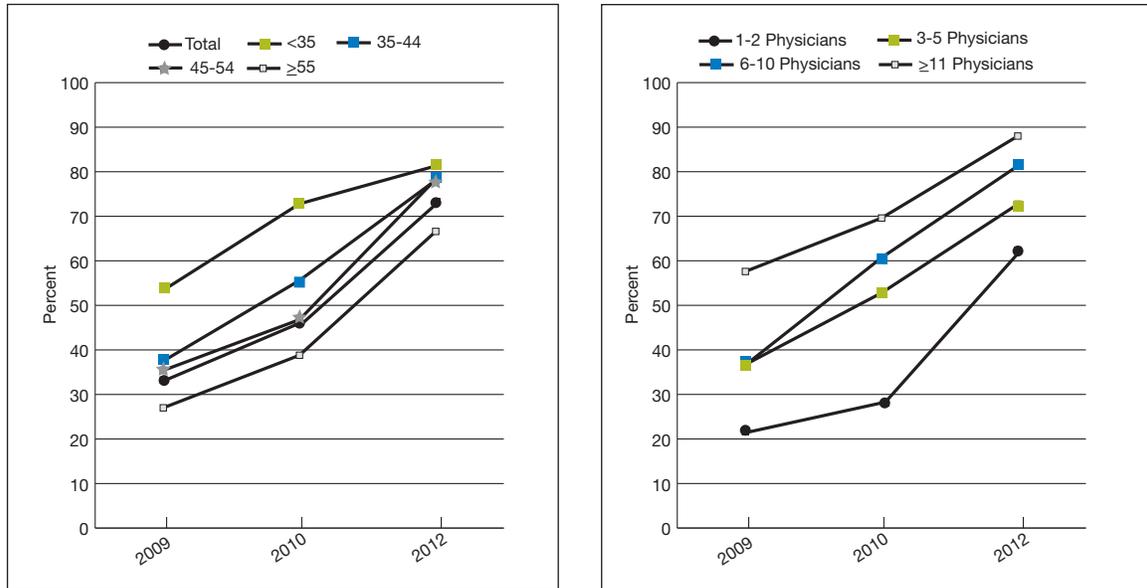
Denominator: Non-federally employed physicians who provide direct patient care in the 50 States and the District of Columbia, excluding radiologists, anesthesiologists, and pathologists.

- ◆ From 2009 to 2012, the overall adoption of computerized systems for ordering prescriptions showed significant improvement from 42.7% to 79.5%. All physician age groups and practice sizes showed improvement (Figure 9.3).
- ◆ In all years, the percentage of practices with an e-prescribing system was significantly higher for physicians under age 35 than for physicians age 55 and over.
- ◆ 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.

Also, in the NHDR:

- ◆ From 2009 to 2012, 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%.

Figure 9.4. Office-based physicians with a computerized system for sending prescriptions electronically to pharmacies, by physician age and practice size, 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.

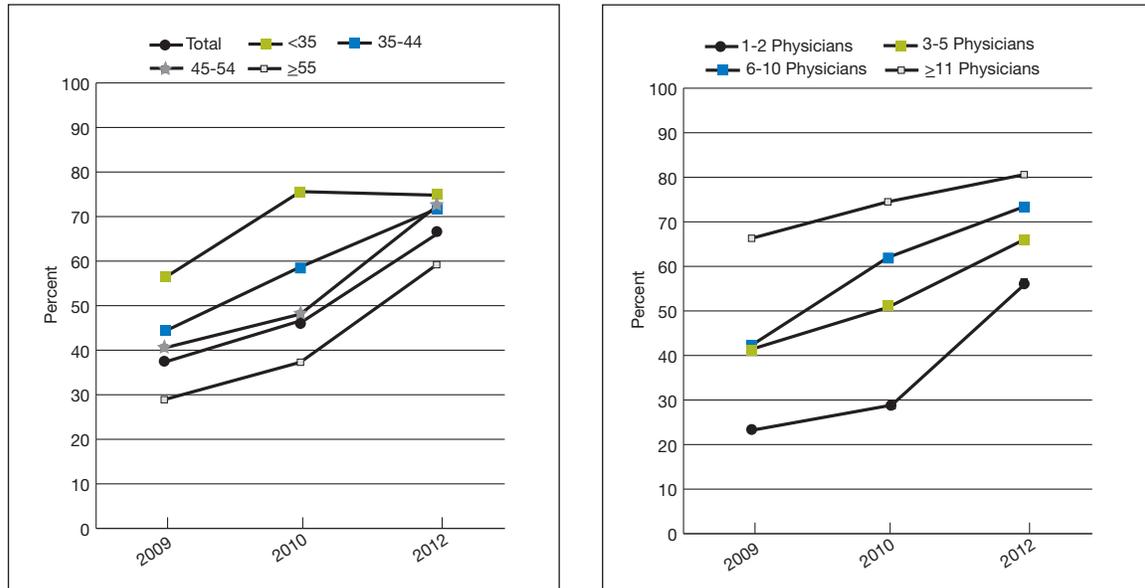
Note: The 2011 data were unavailable.

- ◆ 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 9.4).
- ◆ In all years, the percentage of practices with an e-prescribing system for sending prescriptions to pharmacies was significantly higher for physicians under age 35 than for physicians age 55 and over.
- ◆ In 2012, 88.0% of practices with 11 or more physicians used an e-prescribing system to send prescriptions to pharmacies. This was significantly higher than the percentage of physicians in practices with 1 or 2 physicians (62.4%) and practices with 3 to 5 physicians (72.7%).

Also, in the NHDR:

- ◆ 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 9.5. Office-based physicians with an e-prescribing system with a component for providing warnings of drug interactions or contraindications, by physician age and practice size, 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 overall adoption of e-prescribing systems with a component for providing warnings of drug interactions or contraindications showed significant improvement from 37.3% to 66.5%. All physician age groups and practice sizes showed improvement (Figure 9.5).
- ◆ 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.
- ◆ In 2012, 80.6% of practices with an e-prescribing system and 11 or more physicians had a component for providing warnings of drug interactions or contraindications. This was significantly higher than the percentage for physicians in practices with 1 or 2 physicians (56.5%) and practices with 3 to 5 physicians (66.0%).

Also, in the NHDR:

- ◆ 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.

Workforce Distribution

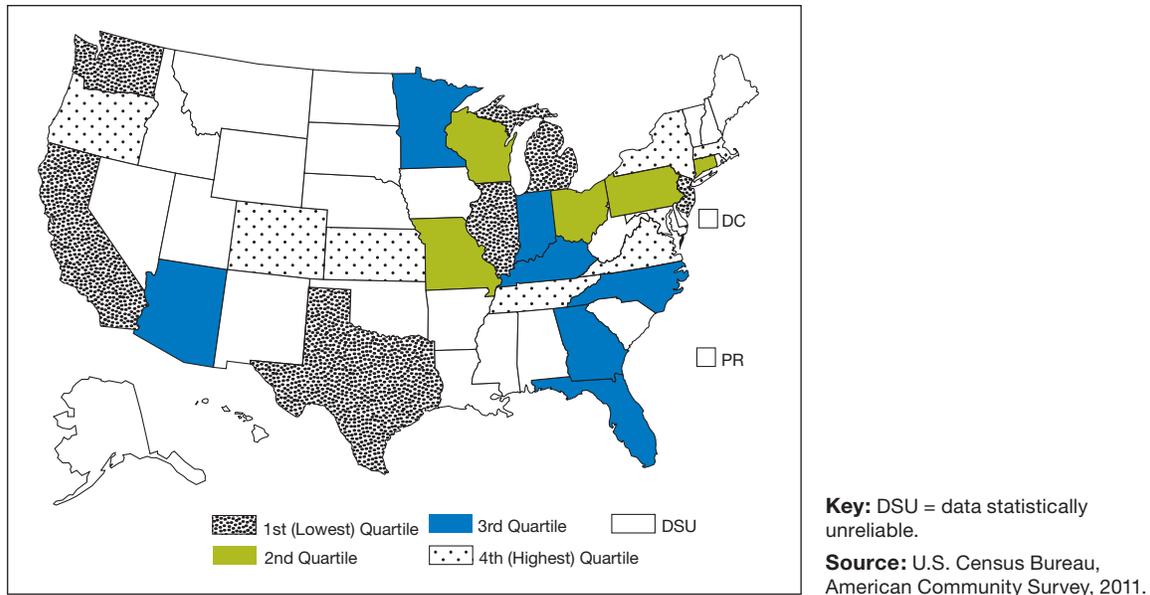
The IOM defines primary care as the provision of integrated, accessible health care services by clinicians who are accountable for addressing a large majority of personal health care needs, developing a sustained partnership with patients, and practicing in the context of family and community. The adequacy 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. Rates of active non-Federal nurse practitioners per 100,000 population, by State quartiles, 2011



- ◆ In 2011, there were 31.2 nurse practitioners per 100,000 population (data not shown).
- ◆ The Northeast (38.4 per 100,000) tended to have higher rates of nurse practitioners while the West (26.5 per 100,000) tended to have lower rates (Figure 9.6).
- ◆ There was considerable variation by State, ranging from 11.4 (New Jersey) to 82.8 per 100,000 (Massachusetts).
- ◆ Interquartile ranges were:
 - Lowest quartile: 11.4 to 24.9 per 100,000.
 - 2nd quartile: 26.4 to 29.1 per 100,000.
 - 3rd quartile: 33.2 to 35.9 per 100,000.
 - Highest quartile: 42.7 to 82.8 per 100,000.

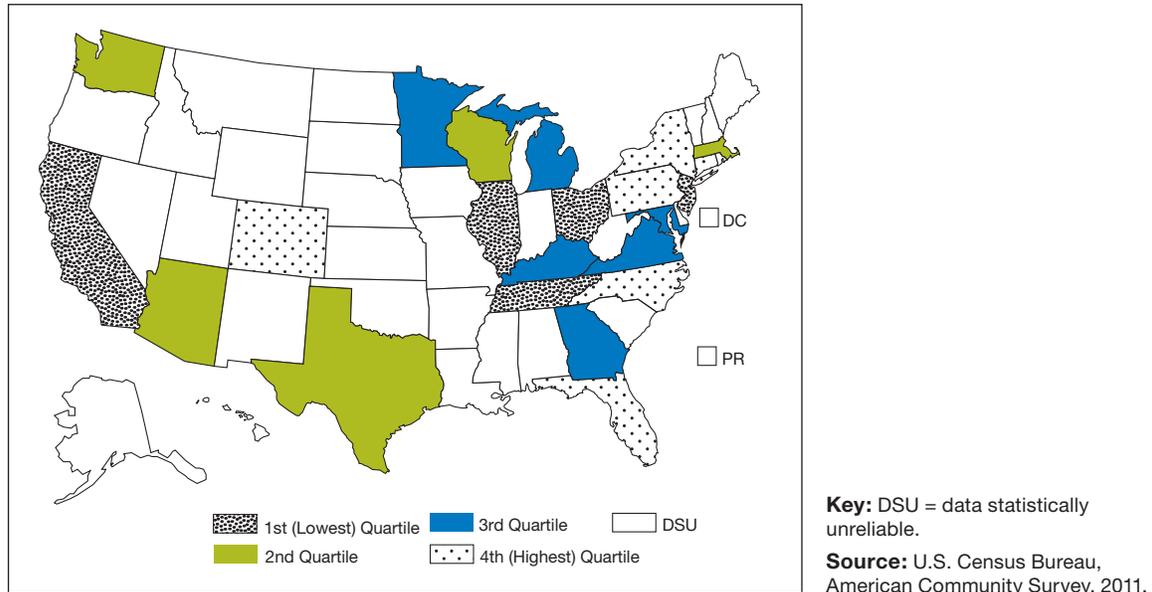
Also, in the NHDR:

- ◆ In 2010 and 2011, the rate of nurse practitioners was significantly higher for Whites than for other racial groups.
- ◆ The rate of nurse practitioners for non-Hispanic Whites was nearly six times the rate for Hispanics.

In the mid-1960s, the need for greater patient access to primary care was a principal motivator for establishing the physician assistant program (Coplan, et al., 2013). According to the American Academy of Physician Assistants, the duties of physician assistants include performing physical examinations, diagnosing and treating illnesses, ordering and interpreting lab tests, performing procedures, assisting in surgery, providing patient education and counseling, and making rounds in hospitals and nursing homes. All 50 States and the District of Columbia allow physician assistants to practice and prescribe medication to varying degrees depending on education, experience, State law, facility policy, and physician delegation.

A report from the National Center for Health Statistics found that in 2009, 49% of physicians worked in practices that employed nurse practitioners, certified nurse midwives, or physician assistants. Physician assistants were likely to provide care in facilities associated with non-teaching hospitals that had a high percentage of Medicaid, Children's Health Insurance Program (CHIP), and uninsured patients. Physician assistants are used more extensively in smaller facilities in nonurban areas and serve populations who might otherwise be medically underserved (Cawley, 2012).

Figure 9.7. Rates of active non-Federal physician assistants, by State quartiles, 2011



- ◆ In 2011, there were 42.7 physician assistants per 100,000 population (data not shown).
- ◆ The Northeast (53.0 per 100,000 population) tended to have higher rates of physician assistants while the Midwest (36.2 per 100,000 population) tended to have lower rates (Figure 9.7).
- ◆ There was considerable variation by State, ranging from 23.6 (Illinois) to 64.1 per 100,000 population (Colorado).
- ◆ Interquartile ranges per 100,000 population were:
 - Lowest quartile: 23.6 to 33.6.
 - 2nd quartile: 35.4 to 41.8.
 - 3rd quartile: 42.2 to 53.4.
 - Highest quartile: 55.7 to 64.1.

Also, in the NHDR:

- ◆ From 2006 to 2011, Whites had significantly higher rates of physician assistants than Blacks.
- ◆ 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.

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 a measure 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. This section also 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

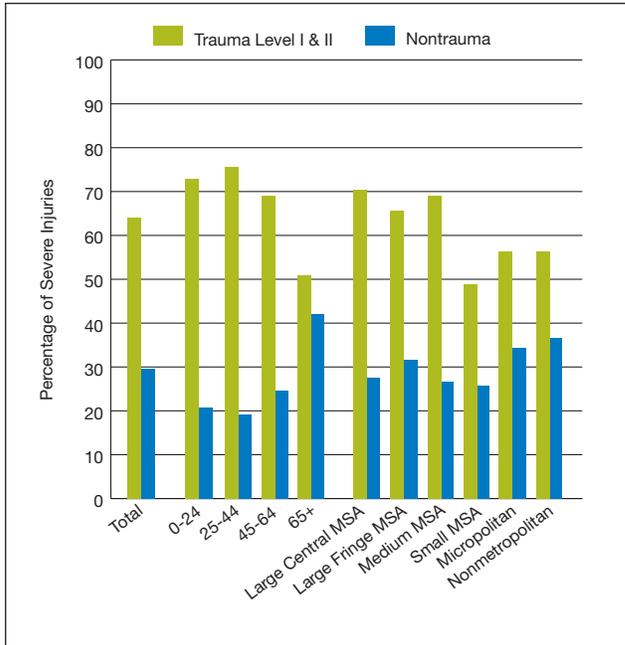
Trauma remains a considerable cause of mortality and morbidity worldwide, constituting a tangible public health burden with significant associated social and economic costs (Mansoor & DuBose, 2012). Trauma care systems, which were developed because it was recognized that trauma requires complex medical 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 age and geographic location, 2010



Key: MSA = metropolitan statistical area.
Source: Agency for Healthcare Research and Quality, Healthcare Cost and Utilization Project, Nationwide Emergency Department Sample, 2010.

- ◆ 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 (Figure 9.8).
- ◆ 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.

Also, in the NHDR:

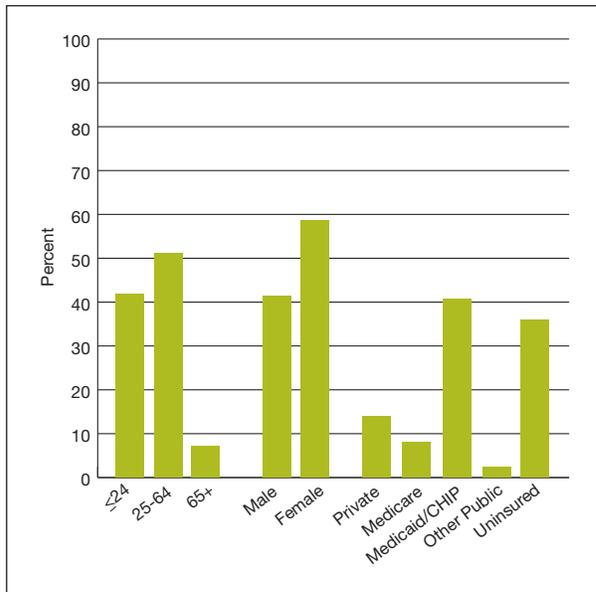
- ◆ In 2010, males were more likely to use level I and II trauma centers than females.
- ◆ In 2010, there were no statistically significant differences by area income in the percentage of injuries treated at level I and II trauma centers.

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, 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. Characteristics of HSHC patients, by age, sex, and insurance status, 2012



Key: CHIP = Children's Health Insurance Program.

Source: Health Resources and Services Administration, Bureau of Primary Health Care, Uniform Data System, 2012.

Note: Data were obtained from 1,128 Section 330 grantees.

- ◆ In 2012, the largest group of HSHC patients comprised adults ages 25-64 (51.1%; Figure 9.9), whereas adults age 65 and over made up only a small proportion of HSHC patients (7.2%).
- ◆ In 2012, a substantially larger percentage of females (58.7%) than males (41.3%) received treatment at an HSHC.
- ◆ In 2012, 36.0% of patients seen at an HSHC were uninsured and 40.8% had Medicaid/CHIP.

Also, in the NHDR:

- ◆ In 2012, approximately two-thirds of patients seen at an HSHC were White (Hispanic and non-Hispanic), and about one-quarter were Black.
- ◆ 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.

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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)ⁱ are disproportionately represented among those with access problems.

Previous findings from the *National Healthcare Quality Report* (NHQR) and NHDR showed that health insurance was the most significant contributing factor to poor quality of care for some of the core measures, and many 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).

ⁱ As described in Chapter 1, Introduction and Methods, income and educational attainment are used to measure SES in the NHDR. Unless specified, poor = below the Federal poverty level (FPL), low income = 100-199% of the FPL, middle income = 200-399% of the FPL, and high income = 400% or more of the FPL. The Measure Specifications and Data 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.

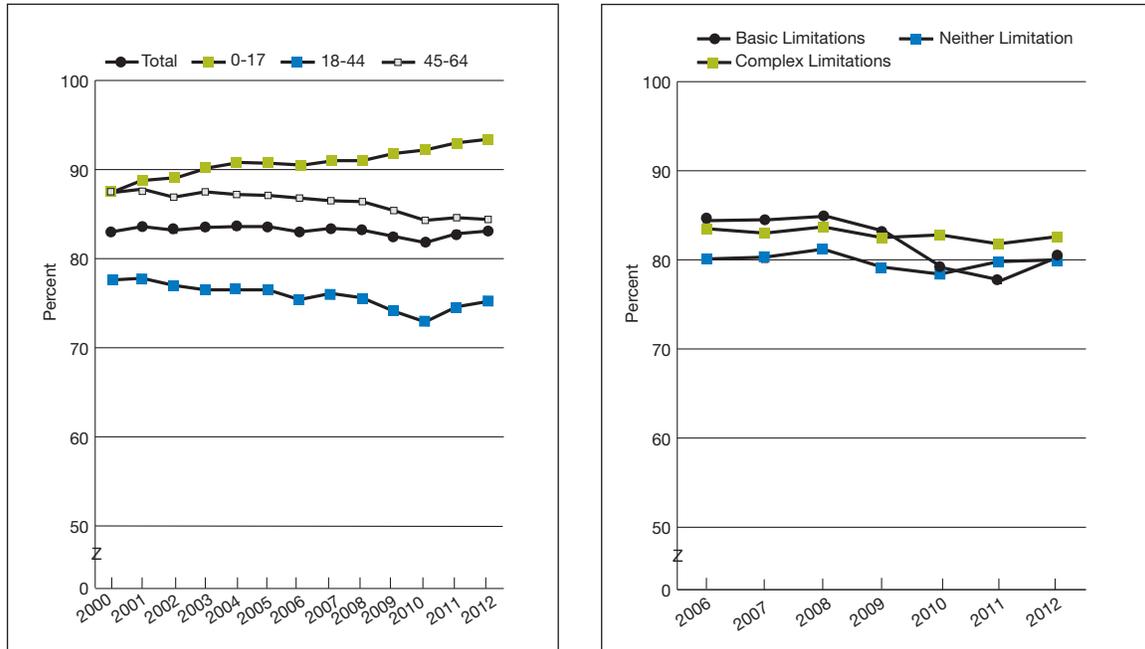
Findings

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 age, 2000-2012, and activity limitations, 2006-2012



Source: Centers for Disease Control and Prevention, National Center for Health Statistics, National Health Interview Survey (NHIS), 2000-2012. Data for activity limitations were not analyzed or collected before 2006.

Denominator: Civilian noninstitutionalized population under age 65.

Note: NHIS respondents are asked about health insurance coverage at the time of interview. Respondents are considered insured if they have private health insurance, Medicare, Medicaid, State Children's Health Insurance Program, a State-sponsored health plan, other government-sponsored health plan, or a military health plan. If their only coverage is through the Indian Health Service, they are not considered insured. Estimates are not age adjusted. Basic activity limitations include problems with mobility, self-care, domestic life, or activities that depend on sensory functioning. Complex activity limitations include limitations experienced in work or in community, social, and civic life.

- ◆ Overall, there was no statistically significant change from 2000 to 2010. 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).
- ◆ From 2000 to 2012, the percentage of children ages 0-17 who had health insurance increased (from 87.4% to 93.4%; Figure 10.1). However, for adults ages 18-44 and 45-64, the percentage decreased (for ages 18-44, from 77.6% to 75.2%; and for ages 45-64, from 87.4% to 84.4%).
- ◆ In all years, adults ages 18-44 were less likely than children ages 0-17 and adults ages 45-64 to have health insurance.
- ◆ In 2012, at least 80% of people with any type of activity limitation had health insurance.

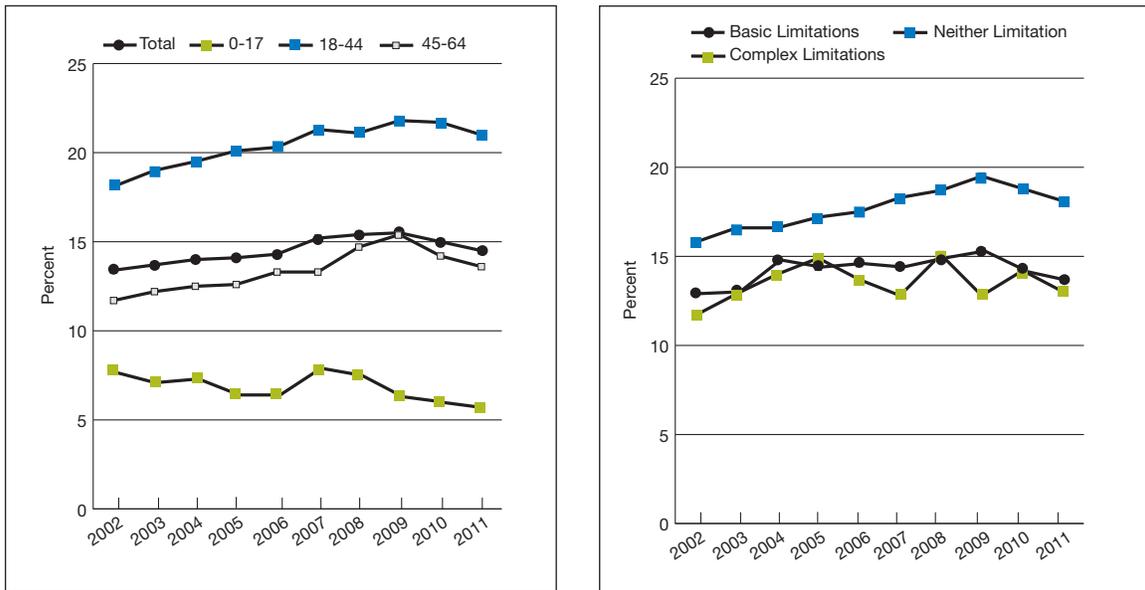
Also, in the NHDR:

- ◆ From 2000 to 2012, American Indians and Alaska Natives under age 65 were less likely than Whites to have health insurance in all years.

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 age and activity limitations (ages 18-64), 2002-2011



Source: Agency for Healthcare Research and Quality, Medical Expenditure Panel Survey, 2002-2011.

Denominator: Civilian noninstitutionalized population under age 65 for insurance and ages 18-64 for activity limitations.

Note: For this measure, lower rates are better. Basic activity limitations include problems with mobility, self-care, domestic life, or activities that depend on sensory functioning. Complex activity limitations include limitations experienced in work or in community, social, and civic life.

- ◆ Overall, from 2002 to 2010, the percentage of people under age 65 who were uninsured all year increased from 13.4% to 15.0%. The overall percentage in 2011 was 14.5% (Figure 10.2).
- ◆ 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 (in 2011, 5.7% for ages 0-17 and 21% for ages 18-44).
- ◆ In all years except 2004 for people with basic activity limitations and 2005 for people with complex activity limitations, adults ages 18-64 with basic or complex activity limitations were less likely to be uninsured all year than adults with neither basic nor complex activity limitations.

Also, in the NHDR:

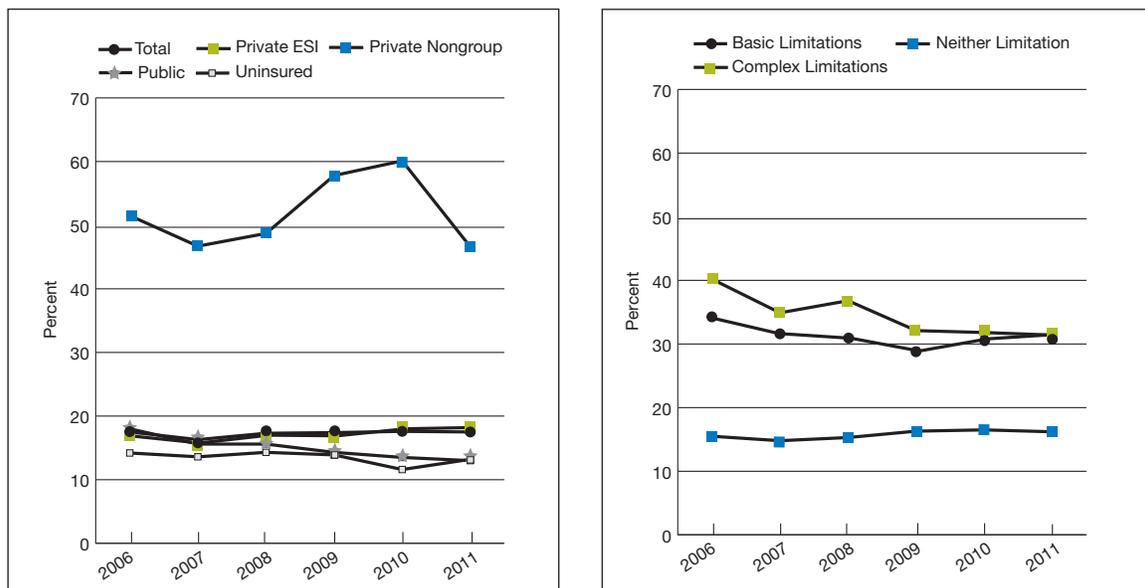
- ◆ In 2011, poor and low-income people were about four times as likely to be uninsured compared with high-income people, while middle-income people were more than twice as likely to be uninsured as high-income people.

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 10.3. 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 insurance and activity limitations (ages 18-64), 2006-2011



Key: ESI = employer-sponsored insurance.

Source: Agency for Healthcare Research and Quality, Medical Expenditure Panel Survey, 2006-2011.

Denominator: Civilian noninstitutionalized population under age 65 for insurance and ages 18-64 for activity limitations.

Note: For this measure, lower rates are better. Total financial burden includes premiums and out-of-pocket costs for health care services. Basic activity limitations include problems with mobility, self-care, domestic life, or activities that depend on sensory functioning. Complex activity limitations include limitations experienced in work or in community, social, and civic life.

- ◆ 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 10.3).
- ◆ 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.

Also, in the NHDR:

- ◆ 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 four times as high for poor individuals, more than three times as high for low-income individuals, and more than twice as high for middle-income individuals compared with high-income individuals.

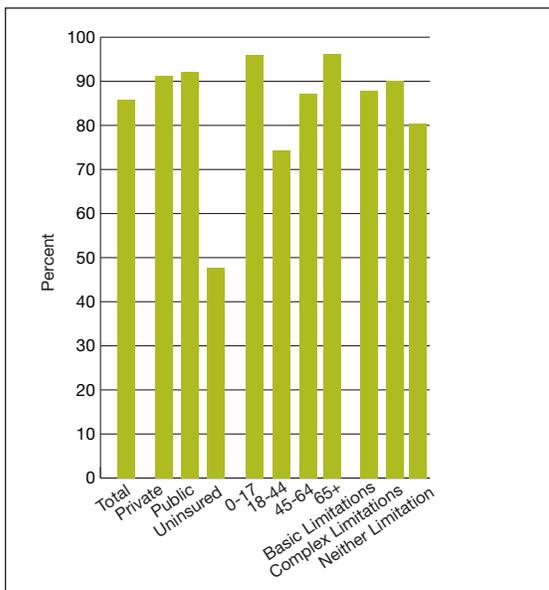
Usual Source of Care

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 10.4. People with a specific source of ongoing care, by insurance (under age 65), age, and activity limitations, 2012



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: Measure data are not age adjusted. A hospital emergency room is not included as a specific source of ongoing care. Basic activity limitations include problems with mobility, self-care, domestic life, or activities that depend on sensory functioning. Complex activity limitations include limitations experienced in work or in community, social, and civic life.

- ◆ In 2012, overall, 85.9% of people had a specific source of ongoing care (Figure 10.4).
- ◆ Regardless of age, more than 70% of people had a specific source of ongoing care. In 2012, people age 65 and over were most likely to have a specific source of ongoing care (96.3%), while people ages 18-44 were least likely to have a specific source of ongoing care (74.3%).
- ◆ In 2012, people with private insurance were nearly twice as likely to have a specific source of ongoing care as uninsured people (91.3% compared with 47.7%).
- ◆ More than 80% of people under age 65 regardless of activity limitation had a specific source of ongoing care. The percentage of people with a specific source of ongoing care was higher for people with basic or complex activity limitations than for those with neither basic nor complex activity limitations (87.8% and 90.0%, respectively, compared with 80.4%).

Also, in the NHDR:

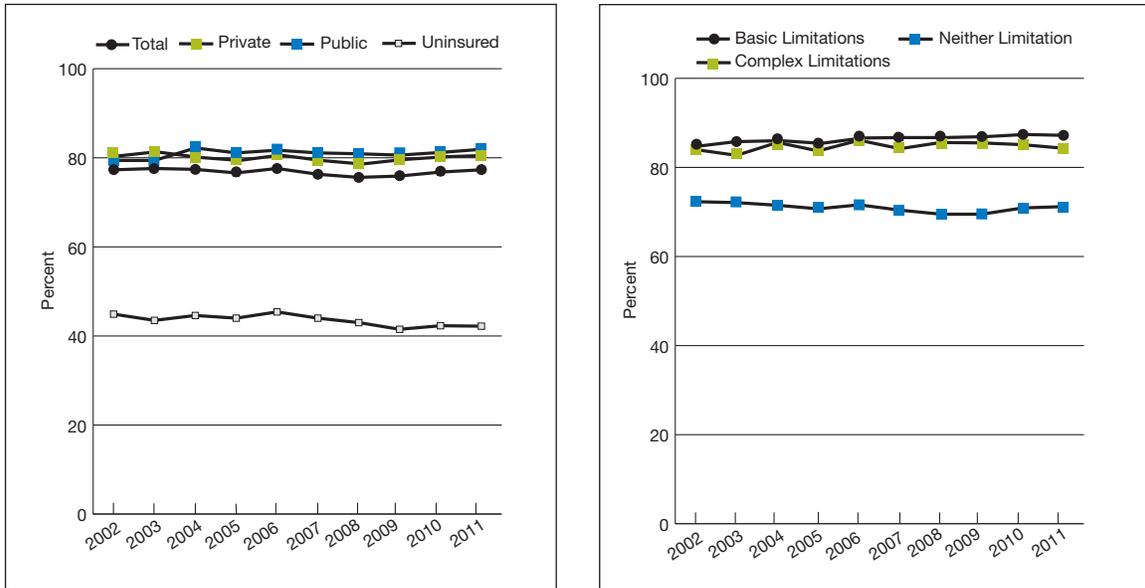
- ◆ The percentage of people with a specific source of ongoing care was significantly lower for poor and low-income people than for high-income people.

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 10.5. People under age 65 with a usual primary care provider, by insurance and activity limitations (ages 18-64), 2002-2011



Source: Agency for Healthcare Research and Quality, Medical Expenditure Panel Survey, 2002-2011.

Denominator: Civilian noninstitutionalized population under age 65 for insurance and ages 18-64 for activity limitations.

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. Basic activity limitations include problems with mobility, self-care, domestic life, or activities that depend on sensory functioning. Complex activity limitations include limitations experienced in work or in community, social, and civic life.

- ◆ Overall, in 2011, 77.3% of people had a usual primary care provider (Figure 10.5).
- ◆ In all years, uninsured people were less likely to have a usual primary care provider than those with private or public insurance.
- ◆ 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.

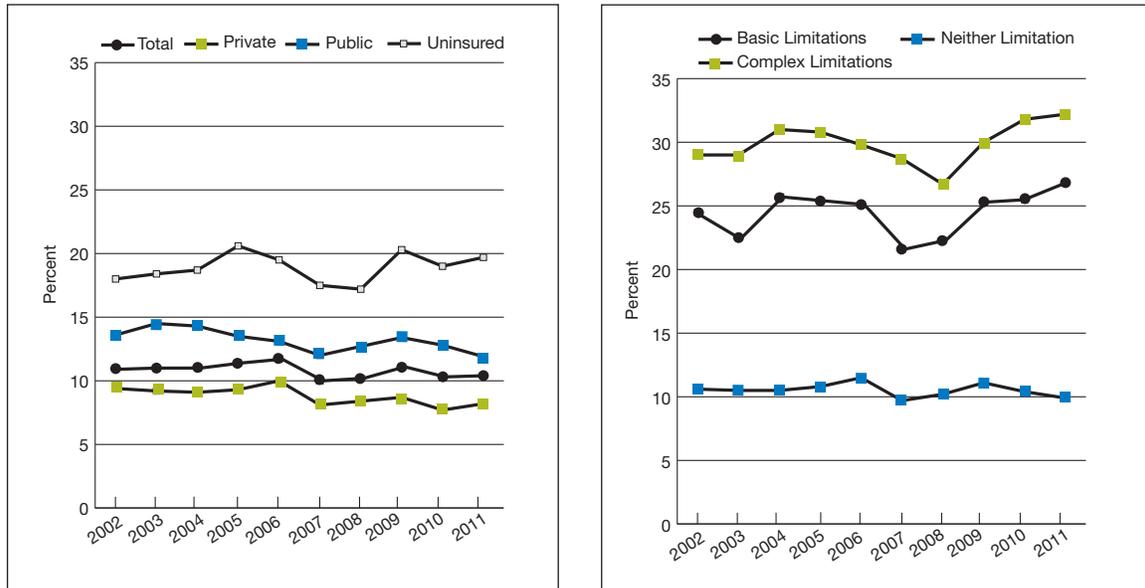
Also, in the NHDR:

- ◆ From 2002 to 2011, Blacks and Asians were less likely than Whites to have a usual primary care provider in all years except 2004.

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 10.6. People who were unable to get or delayed in getting needed medical care, dental care, or prescription medicines in the last 12 months, by insurance (under age 65) and activity limitations (age 18 and over), 2002-2011



Source: Agency for Healthcare Research and Quality, Medical Expenditure Panel Survey, 2002-2011.

Denominator: Civilian noninstitutionalized population under age 65 for insurance and age 18 and over for activity limitations.

Note: For this measure, lower rates are better. Basic activity limitations include problems with mobility, self-care, domestic life, or activities that depend on sensory functioning. Complex activity limitations include limitations experienced in work or in community, social, and civic life.

- ◆ In 2011, 10.4% of people were unable to get or delayed in getting needed medical care, dental care, or prescription medicines (Figure 10.6).
- ◆ In all years, 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. In 2011, the percentage of people who were unable to get or delayed in getting needed medical care, dental care, or prescription medicines was more than twice as high for people with no health insurance as for people with private insurance (19.7% compared with 8.2%).
- ◆ In 2011, people with basic or complex activity limitations were more likely to report delays in getting care than those with neither limitation.

Also, in the NHDR:

- ◆ In 2011, Asians were less likely than Whites 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.

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