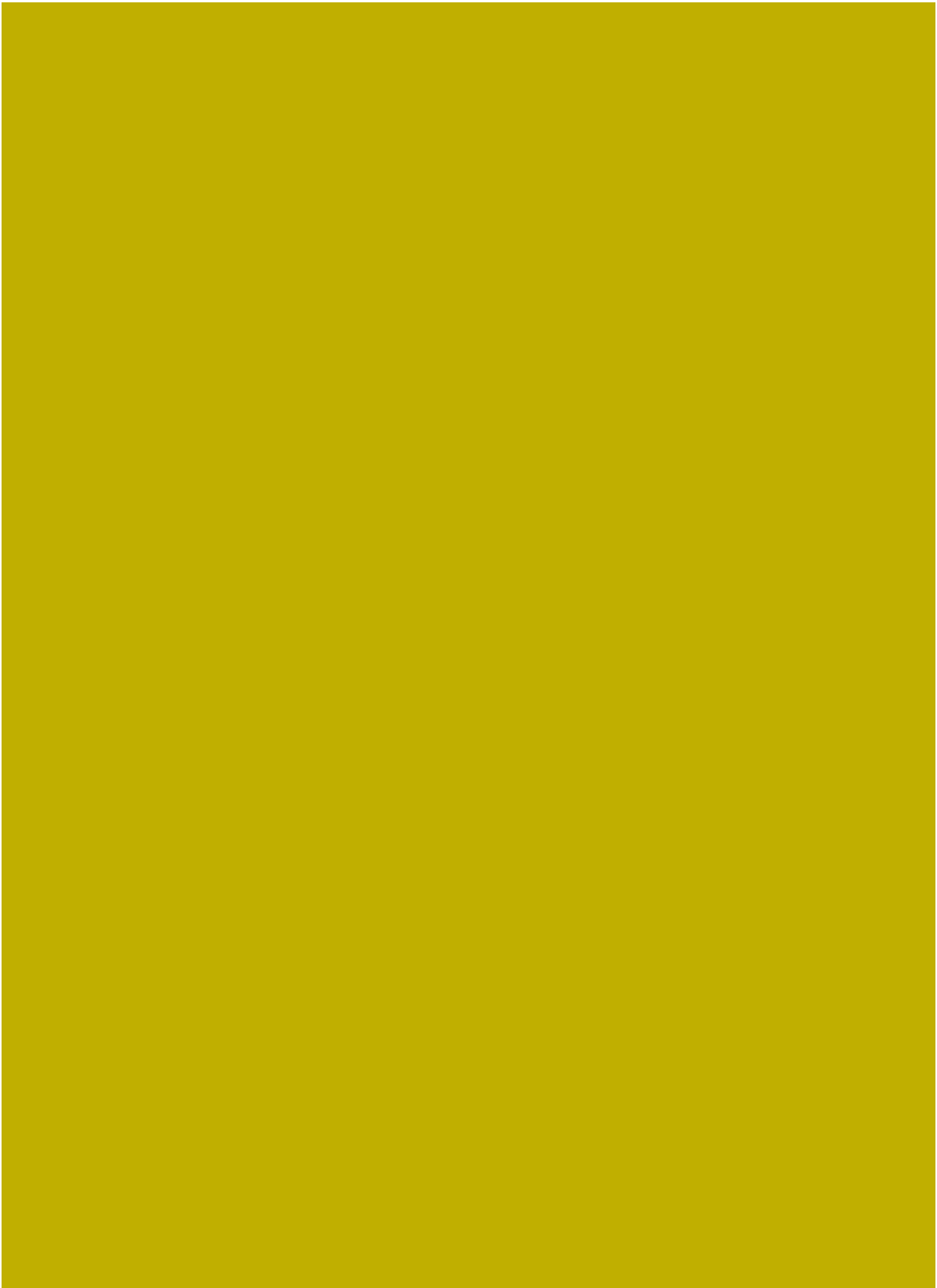


2006

National Healthcare Quality Report



Agency for Healthcare Research and Quality
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2006 National Healthcare Quality Report

**U.S. Department of
Health and Human Services**

Agency for Healthcare Research and Quality
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2006 National Healthcare Quality Report—At A Glance

Two-thirds of core quality measures that can be tracked over time show improvement while only 5% show deterioration. But the pace of quality improvement remains at 3.1% per year, on average, across the core measures.

Hospital quality measures are improving faster at 7.8% per year. In hospitals—

- Care for heart attack is improving at 15.0% per year.
- Care for pneumonia is improving at 11.7% per year.
- Care for heart failure is improving at 8.4% per year.
- Postoperative safety is improving at 7.3% per year.

Quality measures for treatment of acute illness are improving at 4.3% per year, on average, while improvements in preventive care and management of chronic disease are lagging.

Quality varies widely across States. Compared with the best performing State, the worst performing State had—

- Over 8 times as many nursing home residents in physical restraints.
- Over 6 times as many hemodialysis patients inadequately dialyzed.
- Over 5 times as many asthma hospitalizations among children.
- Over 4 times as many women without early prenatal care.

Key Themes and Highlights From the National Healthcare Quality Report

The Agency for Healthcare Research and Quality (AHRQ) is pleased to release the fourth annual National Healthcare Quality Report (NHQR) on behalf of the U.S. Department of Health and Human Services (HHS) and in collaboration with an HHS-wide Interagency Work Group. Like previous reports, the 2006 NHQR also received significant guidance from AHRQ leadership and AHRQ's National Advisory Committee. The NHQR examines and tracks the quality of health care in the United States, using the most scientifically credible measures and data sources available. Measures of health care quality address the extent to which providers and hospitals deliver evidence-based care for specific services as well as the outcomes of the care provided. The measures are organized around four dimensions of quality—effectiveness, patient safety, timeliness, and patient centeredness—and cover four stages of care—staying healthy, getting better, living with illness or disability, and coping with the end of life.

The NHQR is complemented by its companion report, the National Healthcare Disparities Report (NHDR), a comprehensive national overview of disparities in access to and quality of health care among racial, ethnic, and socioeconomic groups, as well as among subpopulations such as children and the elderly. Both reports measure health care quality and track changes over time but with different orientations. The NHQR addresses the current state of health care quality and the opportunities for improvement for all Americans as a whole. This perspective is useful for identifying where the Nation is doing well and where more work is needed. The NHDR addresses the distribution of improvements in health care quality and access across the different populations that make up America. This perspective is useful for ensuring that all Americans benefit from improvements in care. Both reports' perspectives are needed for a complete understanding of quality of health care, and both reports support HHS Secretary Mike Leavitt's 500-Day Plan to fulfill the President's vision of a healthier America, specifically in the areas of better transparency of health care quality information and eliminating inequities in health care.

The NHQR comprises 211 measures. This large measure set is distilled to 42 core measures which are the major focus of the 2006 report; of these, 40 have data for 2 or more years. The measures are balanced across the four dimensions of quality and provide a more readily understandable summary and explanation of the key results derived from the data.ⁱ

Major additions to the core measures have been made this year. Among them are three new measures on prevention, including advice from health care professionals on eating, exercise, and vision care, and two new composite measuresⁱⁱ for patient safety, including measures on postoperative complications and adverse events. Also, new measures were added to the overall measure set in the areas of asthma, hospice care, and patient centeredness in hospitals.

ⁱ Data on all NHQR measures are available in the Data Tables Appendix at www.ahrq.gov. A list of core measures, divided into process and outcome measures, can be found in Table 1.2 of this report.

ⁱⁱ Composite measures combine closely related individual component measures. For example, the NHQR composite measure for postoperative complications includes measures for persons who develop pneumonia, bladder infection, and blood clots in the legs following surgery.

Highlights

The Highlights section offers a concise overview of findings from the 2006 NHQR. Four themes emerge from the 2006 NHQR:

- Most measures of quality are improving, but the pace of change remains modest.
- Quality improvement varies by setting and phase of care.
- The rate of improvement accelerated for some measures while a few continued to show deterioration.
- Variation in health care quality remains high.

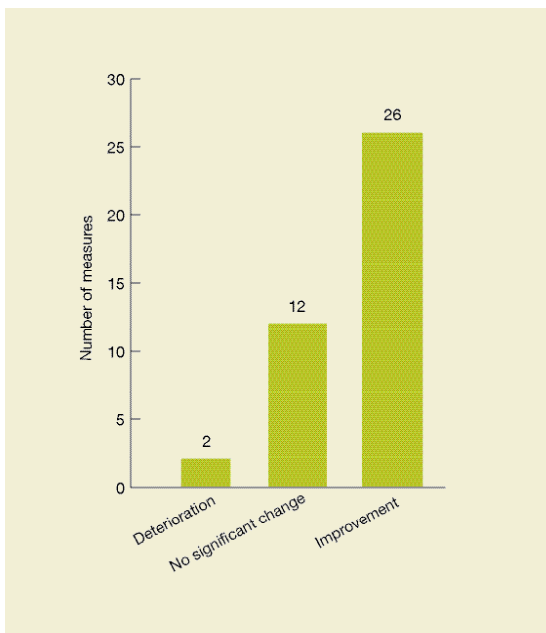
Most Measures of Quality Are Improving, But the Pace of Change Remains Modest

Most measures of health care quality continue to demonstrate improvement.ⁱⁱⁱ For example:

- Of the 40 core report measures with trend data, 26 showed significant improvement, 2 showed significant deterioration, and 12 showed no change (Figure H.1).
- Relative to last year's NHQR, a greater percentage of measures moved from the “no significant change” category into the “improvement” category.
- The median annual rate of change for the core measures is a 3.1% improvement.

It is noteworthy that for 3 consecutive report years, this rate of improvement has remained constant.^{iv}

Figure H.1. Number of NHQR core measures showing significant improvement, no significant change, or significant deterioration over 2 or more years (n=40)



ⁱⁱⁱ The terms “improvement” and “deterioration” are used when the rate of change achieves statistical significance with a p value of less than 0.05 and with an average change of 1% or more over 2 or more years.

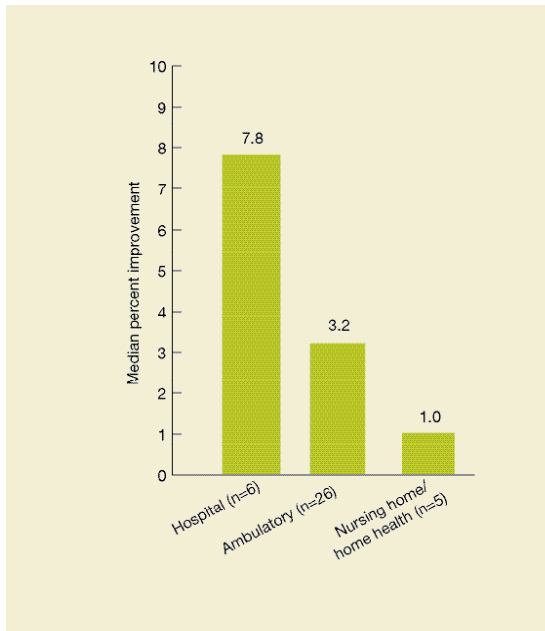
^{iv} The median rate of change reported in the previous two NHQRs was 2.8%. Readers should note that there were changes in the core measure set this year. When the same core measures are compared for the previous NHQRs, the median rate of change is the same at 3.1%.

Quality Improvement Varies by Setting and Phase of Care

Hospitals Demonstrate the Highest Rates of Improvement

- Hospital measures of quality, which include five composite measures and one individual measure, improved at a median annual rate of 7.8% (Figure H.2).
- The hospital measures improved at a much higher rate than did measures for other settings of care, including ambulatory care (3.2%) and nursing home and home health care (1.0%).

Figure H.2. Improvement rate by setting of care



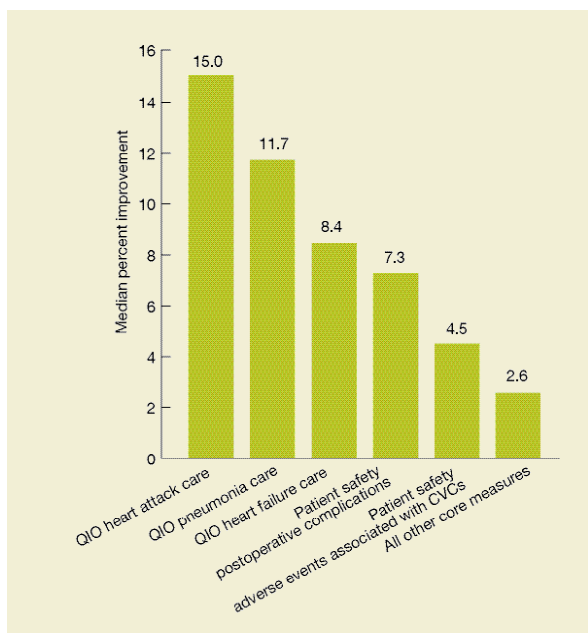
Note: Not all core report measures can be classified by setting of care.

Highlights

Improvements in hospital care may have resulted from public reporting of health care quality measures, focused quality improvement programs, and policies that support improvement initiatives. For example:

- The Centers for Medicare & Medicaid Services (CMS) Quality Improvement Organization (QIO) measures for good heart attack care showed the greatest improvement of all core measures at 15.0% per year. This rate of improvement is markedly better than the 9.2% rate reported last year and more than 5 times the 2.6% overall rate of improvement for all non-hospital core measures (Figure H.3).
- QIO measures of the quality of hospital care for pneumonia care and for heart failure also showed high rates of improvement compared with all other measures—11.7% and 8.4%, respectively.
- New core patient safety measures for postoperative complications from certain procedures and adverse events from central venous catheters (CVCs) improved 7.3% and 4.5%, respectively.

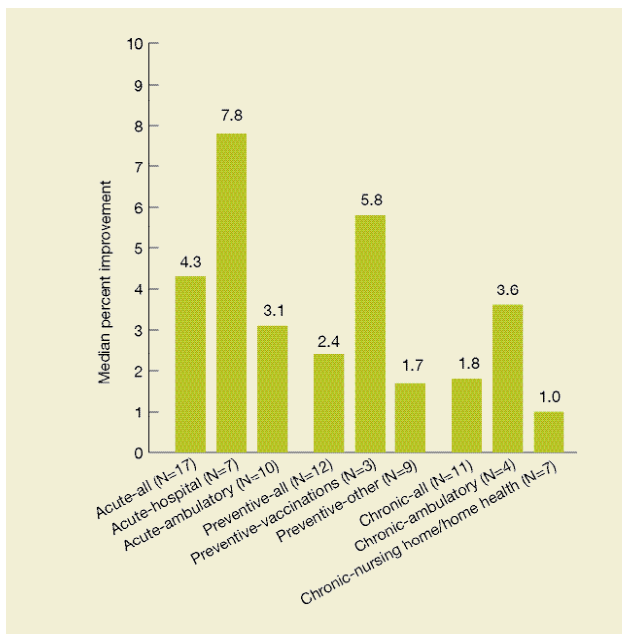
Figure H.3. Rates of improvement for five hospital composite measures and for all other core measures combined



Acute Care Measures Demonstrate Higher Improvement Rates Than Preventive and Chronic Care Measures

- The median rate of improvement for acute^v care measures of quality is 4.3%, about twice as fast as that for preventive^{vi} care and chronic^{vii} care—2.4% and 1.8%, respectively (Figure H.4).
- Improvements in the quality of acute care were more than twice as fast for hospital care (7.8%) as for ambulatory care (3.1%).
- Except for vaccinations for children, adolescents, and the elderly, which have demonstrated high rates of improvement overall (5.8%), the improvement rate for other preventive measures including screenings, advice, and prenatal care is relatively low (1.7%).
- Chronic care for ambulatory conditions such as diabetes, end stage renal disease (ESRD), and pediatric asthma improved over three times faster than chronic care for patients in nursing homes and home health care (3.6% vs. 1.0%).

Figure H.4. Improvement rate by phase of care



^vAcute care is short-term medical care. For example, the NHQR includes measures for heart disease, pneumonia, and patient safety.

^{vi} Preventive care includes counseling about healthy lifestyle behaviors and medical screenings to diagnose diseases at as early a stage as possible. For example, the NHQR includes measures for various screenings, counseling, maternal and child health care, and vaccinations.

^{vii} Chronic care is long-term medical care. For example, the NHQR includes measures for nursing home, home health, and hospice care and for chronic diseases such as diabetes, asthma, ESRD, and cancer.

The Rate of Improvement Accelerated for Some Measures While a Few Continued To Show Deterioration

Six core measures went from a flat trend in the 2005 report to a significantly improved trend this year:

- **Patient centeredness.** The composite measure of communication between adult patients and their providers measures when providers sometimes or never listened carefully, explained things clearly, respected what patients had to say, and spent enough time with patients. The proportion of patients reporting sometimes or never having good communication declined at an average annual rate of 9.3%.
- **Respiratory diseases.** Two measures showed a change in trend this year, from no change to improvement. The percentage of tuberculosis patients who did not complete a curative course of treatment within 12 months of initiation of treatment decreased at an average annual rate of 2.2%. The percentage of visits at which an antibiotic was prescribed for the diagnosis of a common cold for children decreased at an average annual rate of 7.0%.
- **Diabetes.** The percentage of adults with diabetes who did not receive three important screening tests for the management of diabetes decreased by an average annual rate of 3.9% per year. Also, hospital admissions for lower extremity amputation—which can result from suboptimal management of diabetes—decreased by an average annual rate of 7.5%.
- **Heart disease.** The percentage of smokers with a routine checkup who did not receive advice to quit smoking decreased at an average annual rate of 3.8%.

Two measures continued to show significant deterioration:

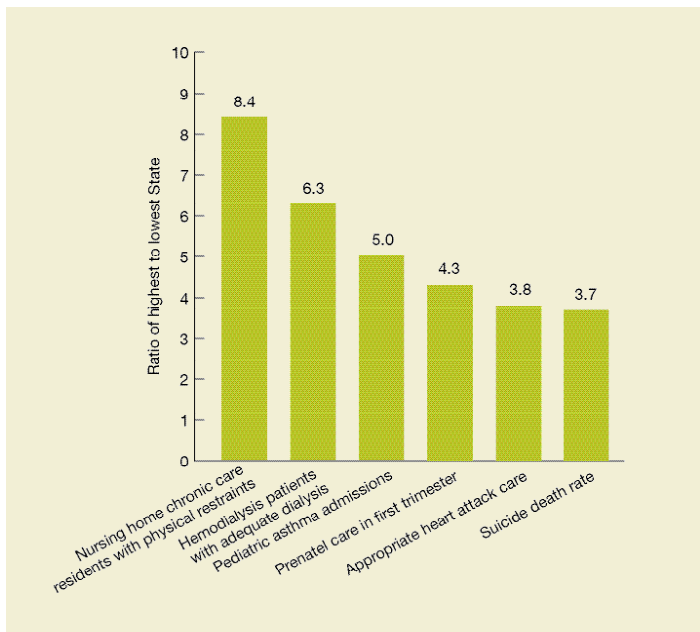
- **Timeliness.** The percentage of emergency room visits in which the patient left without being seen increased by 48% between 1997-1998 (1.21% of visits) and 2003-2004 (1.8% of visits).
- **Suicides.** The suicide death rate increased by an average of 1.3% per year between 2000 and 2003.

Variation in Health Care Quality Remains High

The NHQR collects data on health care quality for States and uses maps to present some of the data.^{viii} The State-level data provide an indication of the variation of the national measures. Core measures with the highest degree of variation among States, as computed by the ratio of the best performing State to the worst performing State, are presented in Figure H.5.

- The measure with the greatest amount of variation is the percentage of chronic nursing home patients who were physically restrained. It varies by a multiple of 8.4 across the States, ranging from 1.7% to 14.6%.
- Other core measures with at least a threefold variation across the States are hemodialysis patients with adequate dialysis, pediatric asthma admissions to hospital, prenatal care in the first trimester, appropriate heart attack hospital care, and the suicide death rate.

Figure H.5. Quality measures with at least a threefold difference between the State with the highest value and the State with the lowest value



Note: Only the 22 core report measures for which more than 30 States had data are included in this chart. All measure values are aligned in the same direction as a negative—e.g., not receiving prenatal care—in computing the ratio.

^{viii} In addition, AHRQ’s annual State Snapshots provide a detailed analysis of quality for each State on all available measures.

Moving Forward

The NHQR continues to be the broadest analysis of the quality of health care undertaken in the United States. Overall, quality continues to improve, as the NHQR has documented over the last 3 years. An acceleration in improvement is evident across a wide range of diseases, including heart disease, diabetes, respiratory diseases, and colorectal cancer. Communications between providers and patients show marked improvements. Hospital care has shown demonstrable improvements relative to other settings, especially on the CMS QIO measures. However, the pace of change is slow overall, there is a high degree of variation among States on many measures, and there is a long way to go to achieve the best quality possible across most measures.

What is clear from this report and others is that sustained focus, public reporting, and active and persistent interventions seem to make a significant difference in the quality of health care, especially in the areas of patient safety and in hospital measures, as highlighted in this report. Examples of programs that appear to be making an impact in these areas include the Institute for Healthcare Improvement's successful campaign to reduce over 100,000 preventable hospitalizations; the public and private endorsement of hospital measures for heart attack, heart failure, and pneumonia by CMS, the Joint Commission on Accreditation of Healthcare Organizations (JCAHO), and the National Quality Forum (NQF); implementation programs such as the voluntary public reporting of performance demonstration programs associated with the Medicare Modernization Act; and innovations in the private sector with aligning reimbursements to reward delivery of high quality care such as the Premier Hospital Quality Incentive (pay-for-performance) Demonstration.

To support quality improvement efforts, AHRQ has developed a variety of information products derived from data gathered for the annual production of the NHQR and NHDR. These products seek to translate information into practical applications for use by State and local health policymakers and include:

- **State Snapshots.** This interactive Web-based tool, produced by AHRQ annually using data from the NHQR and NHDR, is designed to help State officials and their public- and private-sector partners understand health care quality and disparities in their State, including strengths, weaknesses, and opportunities for improvements. The State Snapshots provide State-specific information on health care quality measures for each State using user-friendly graphs and customized tables.^{ix}
- **Diabetes Care Quality Improvement: A Resource Guide for State Action.** Designed in partnership with the Council of State Governments for State elected leaders, executive branch officials, and other nongovernmental State and local health care leaders, this *Resource Guide* provides background information on why States should consider diabetes as a priority for State action, presents analysis of State and national data and measures of diabetes quality and disparities, and gives guidance for developing a State quality improvement plan. A companion interactive *Workbook* presents review exercises for State leaders on the key skills and lessons from the *Resource Guide* to use in making the case for diabetes care quality improvement, learning from improvement efforts already underway, measuring diabetes quality and disparities, and implementing diabetes care quality improvement plans using a State-led quality improvement framework.^x

^{ix} Readers should consult the AHRQ Web site (www.ahrq.gov) for announcement of availability of the State Snapshots.

^x Available at: <http://ahrq.gov/qual/diabqualoc.htm>.

Highlights

- **Asthma Care Quality Improvement: A Resource Guide for State Action.** Like the diabetes resources, this *Resource Guide* and companion *Workbook* provide information about asthma quality and disparities and present exercises to hone skills useful for developing a State asthma quality improvement plan.^{xi}

Additionally, AHRQ supports dozens of State and community projects that engage public and private stakeholders to improve the quality of care for people with diabetes and asthma, to develop quality improvement action plans, and to evaluate innovative implementations of State and community efforts to improve quality and reduce disparities. These partnerships seek to go beyond collecting and reporting on quality measures to actively address problems with quality and disparities. They include:

- **National Health Plan Learning Collaborative to Reduce Disparities and Improve Quality.** This partnership with nine of America's foremost health plans (Aetna, CIGNA, Harvard Pilgrim Health Care, HealthPartners, Highmark, Inc., Kaiser Permanente, Molina Healthcare, UnitedHealth Group, and WellPoint, Inc.) is testing ways to improve the collection and analysis of data on race and ethnicity, matching these data to existing quality measures in the Health Plan Employer Data and Information Set (HEDIS[®]) and developing quality improvement interventions that close gaps in care. Lessons learned by plans in the collaborative will be shared with other health plans so that they too can improve the care they provide.
- **Aim setting and State plans for quality improvement.** This partnership with five States (Maine, Rhode Island, Massachusetts, West Virginia, and Arkansas) reviews the State Snapshots in the context of the needs of these States to develop new tools that help States use data for quality improvement.
- **Improving diabetes care in communities.** This partnership with three of the Nation's leading business coalitions (Greater Detroit Area Health Council, MidAtlantic Business Group on Health, and Memphis Business Group on Health) supports local communities in their efforts to reduce the rate of obesity and other risk factors that can lead to diabetes and its complications and work together to ensure that people with diabetes receive appropriate health care services. Each of the coalitions has convened stakeholders, including businesses, providers, health plans, insurers, consumers, and academics, to set priorities in their efforts to improve diabetes care, reduce disparities, and develop solutions that fit within the community's needs and capabilities.
- **Improving implementation of diabetes improvement programs through ongoing evaluation.** This partnership with the State of Vermont supports the State's Blueprint for Health to improve diabetes care by developing dashboards to continuously monitor activities and progress, by designing and conducting patient and provider satisfaction surveys of participants in the blueprint, by providing learning and collaborative opportunities to advance pay for performance, and by documenting knowledge learned so that it is available to other States.
- **Decreasing disparities in pediatric asthma.** This partnership with coalitions in six States (Arizona, Maryland, Michigan, New Jersey, Oregon, and Rhode Island) focuses on developing action plans to improve disparities in pediatric asthma by addressing racism and cultural competency; using data to target need, coordinate resources, and make the case for policy action; and increasing access and improving the quality of care for underserved populations.

AHRQ will continue to track information on the quality of health care for the Nation, provide tools for use in local- and State-level quality improvement activities, and facilitate an ongoing national discussion on improving health care for all Americans.

^{xi} Available at: <http://www.ahrq.gov/qual/asthmaqual.htm>.

Chapter 1. Introduction and Methods

In 1999, Congress directed the Agency for Healthcare Research and Quality (AHRQ) to produce an annual report, starting in 2003, on health care quality in the United States. The National Healthcare Quality Report (NHQR) was designed and produced by AHRQ, with support from the Department of Health and Human Services (HHS) and private-sector partners, to respond to this legislative mandate.

The first National Healthcare Quality Report (NHQR), released in 2003, was a comprehensive national overview of the quality of health care received by the general U.S. population. The 2004 NHQR initiated a second critical goal of the report series—tracking the Nation’s quality improvement progress. The 2005 NHQR introduced a set of core measures and a variety of new composite measures.

This 2006 NHQR continues the improvement of data, measures, and methods used to meet these goals. New databases and measures have been added to provide a more comprehensive assessment of quality in the Nation. Methods for quantifying changes in health care over time have been refined. The 2006 NHQR continues to focus on a subset of core measures that comprise the most important and scientifically supported measures in the full NHQR measure set. In addition, new composite measures are tracked that make information about quality easier to comprehend. Finally, as in previous NHQRs, references have been systematically updated (that is, annual reports and other regularly released publications have been updated as appropriate, and a wide breadth of peer-reviewed journals and electronically published articles have been searched for inclusion as references).

The NHQR supports HHS Secretary Mike Leavitt’s 500-Day Plan to fulfill the President’s vision of a healthier America, specifically in the areas of better transparency of health care quality information and eliminating inequalities in health care. As in previous years, the 2006 NHQR was planned and written by AHRQ staff with the support of AHRQ’s National Advisory Council and the Interagency Work Group for the NHQR. The work group includes representatives from every operating division of the Department of Health and Human Services. In addition, ad hoc groups were convened to address specific issues such as the creation of composite measures.

How This Report Is Organized

The basic structure of the report is unchanged from last year and consists of the following:

- **Highlights** summarizes key themes from the 2006 report.
- **Chapter 1: Introduction and Methods** documents the organization, data sources, and methods used in the 2006 report and describes major changes from previous reports.
- **Chapter 2: Effectiveness** examines the quality of health care in the general U.S. population, focusing on nine clinical conditions or care settings based largely on Healthy People 2010 (HP2010) condition areas. Measures of the quality of health care used in this chapter are identical to measures used in the National Healthcare Disparities Report (NHDR) except when data to examine disparities are unavailable for inclusion in the NHDR.
- **Chapter 3: Patient Safety** tracks measures of patient safety, including postoperative complications, other complications of hospital care, and complications of medications.
- **Chapter 4: Timeliness** examines the delivery of time-sensitive clinical care and patient perceptions of the timeliness and accessibility of their care.
- **Chapter 5: Patient Centeredness** tracks patients' experiences with care in an office or clinic and satisfaction with communication during a hospital stay in order to incorporate the patient's experience and perspective into the report.

Appendixes are available online (www.ahrq.gov) and include:

- **Measure Specifications Appendix** provides information about each database analyzed for the NHQR including data type, sample design, and primary content as well as information about how to generate each measure. Measures highlighted in the report are described, as well as other measures that were examined but not included in the text of the report.
- **Data Tables Appendix** provides detailed tables for most measures analyzed for the NHQR, including both measures highlighted in the report text and measures examined but not included in the text. A few measures cannot support detailed tables and are not included in the appendix.

New in This Report

Consistent with the goal of improving quality of and access to health care for all Americans, a number of improvements in the value and accessibility of the NHQR are made from year to year. Improvements include changes to report format, addition of new data sources, changes to the measure set, analysis of trends, and summary of quality.

Changes to Report Format

The 2006 NHQR and its companion, the NHDR, continue to be formatted as chartbooks. Although needed to assess health care in America comprehensively, the large number of measures tracked in the reports may sometimes be confusing and overwhelming for users. Hence, the 2006 reports continue to focus on a smaller subset of core measures. Other modifications have also been made to make the information in the reports easier to understand.

Core measures. For the 2005 reports, the Interagency Work Group was convened to select a group of measures from the full measure sets on which the reports would present findings each year. In 2006, the work group made additional changes to the core measure set.

Chapter 1. Introduction and Methods

For some topics, the group favored alternating sets of core measures. These measures relate to cancer prevention and childhood preventive services. Alternating measures are listed in Table 1.1, below.

Table 1.1. Alternating core measures

Reported in 2006 NHQR & NHDR	Reported in 2005 NHQR & NHDR ^a
Colorectal cancer screening	Breast cancer screening
Colorectal cancer mortality	Breast cancer mortality
Late stage colorectal cancers	Late stage breast cancers
Children who received advice about diet	Children who received advice about exercise
Children who had a vision check	Children who had dental care

^a The measures listed in this column will be reported again in the 2007 reports.

The core measures of patient safety also underwent modifications. Several measures included in last year's report were not available this year. New composite measures were developed to summarize information across several individual patient safety measures (described below). Other new measures became available that cover important aspects of patient safety. The combination of these changes yielded this year's patient safety core measures:

- Timing of antibiotics to prevent postoperative wound infection composite measure from the Centers for Medicare & Medicaid Services (CMS) Quality Improvement Organization (QIO) program.
- Postoperative complications composite measure from the Medicare Patient Safety Monitoring System (MPSMS).
- Complications of central venous catheter composite measure from the MPSMS.
- Deaths following complications of care from the Healthcare Cost and Utilization Project (HCUP) Nationwide Inpatient Sample (NIS).
- Inappropriate medication use among the elderly from the Medical Expenditure Panel Survey (MEPS).

All core measures fall into two categories: process measures, which track receipt of medical services, and outcome measures, which in part reflect the results of medical care. Both types of measures are not reported for all conditions due to data limitations. For example, data on HIV care are suboptimal; hence, no HIV process measures are included as core measures. In addition, not all core measures are included in trending analysis because 2 or more years of data were not available. A complete list of the 2006 NHQR core measure set is presented in Table 1.2.

Chapter 1. Introduction and Methods

Table 1.2. Core process and outcome measures (measures without trend data in *italics*)

Section	Process Measures	Outcome Measures
Effectiveness - Cancer	<ul style="list-style-type: none"> Persons age 50 and over who ever had a flexible colonoscopy, sigmoidoscopy, or proctoscopy or fecal occult blood test in past 2 years 	<ul style="list-style-type: none"> Colorectal cancers diagnosed as regional or distant staged cancers Cancer deaths per 100,000 persons per year for most common cancers, colorectal cancer
Effectiveness - Diabetes	<ul style="list-style-type: none"> Adults age 40 and over with diabetes who had hemoglobin A1c test, eye exam, and foot exam in past year 	<ul style="list-style-type: none"> Hospital admissions for lower extremity amputation in patients with diabetes
Effectiveness – End Stage Renal Disease	<ul style="list-style-type: none"> Dialysis patients registered on waiting list for transplantation 	<ul style="list-style-type: none"> Hemodialysis patients with adequate dialysis
Effectiveness – Heart Disease	<ul style="list-style-type: none"> Recommended hospital care received by Medicare patients with acute myocardial infarction Recommended hospital care received by Medicare patients with heart failure Smokers receiving advice to quit smoking Adults age 18 and over who were obese who were given advice about exercise 	<ul style="list-style-type: none"> Acute myocardial infarction mortality
Effectiveness – HIV and AIDS		<ul style="list-style-type: none"> New AIDS cases per 100,000 population (age 13 and over)
Effectiveness – Maternal and Child Health	<ul style="list-style-type: none"> Pregnant women receiving prenatal care in first trimester Children 19-35 months who received all recommended vaccines Adolescents (age 13-15) reported to have received 3 or more doses of hepatitis B vaccine Children whose parents or guardians ever received advice from doctor or the health professional about healthy eating Children ages 3-6 who ever received a vision check 	<ul style="list-style-type: none"> Infant mortality per 1,000 live births, birthweight <1,500 grams Hospital admissions for pediatric gastroenteritis per 100,000 population less than 18 years of age
Effectiveness – Mental Health and Substance Abuse	<ul style="list-style-type: none"> <i>Adults age 18 and over with past year major depressive episode who received treatment for the depression in the past year</i> Persons age 12 or older who needed treatment for any illicit drug use and who received such 	<ul style="list-style-type: none"> Deaths due to suicide per 100,000 population Patients receiving substance abuse treatment who complete treatment
Effectiveness – Respiratory Diseases	<ul style="list-style-type: none"> Persons age 65 and over who ever received pneumococcal vaccination Recommended hospital care received by Medicare patients with pneumonia Visits where antibiotic was prescribed for the diagnosis of a common cold, children 	<ul style="list-style-type: none"> TB patients that complete a curative course of treatment within 12 months of initiation Hospital admissions for pediatric asthma per 100,000 population under age 18

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Table 1.2. Core process and outcome measures (measures without trend data in *italics*) (continued)

Section	Process Measures	Outcome Measures
Effectiveness – Nursing Home, Home Health, and Hospice Care	<ul style="list-style-type: none"> Nursing home residents who were physically restrained 	<ul style="list-style-type: none"> High-risk nursing home residents who have pressure sores Short-stay nursing home residents with pressure sores Home health episodes showing ambulation/locomotion improvement Home health episodes with acute care hospitalization
Patient Safety	<ul style="list-style-type: none"> <i>Appropriate timing of surgical infection prophylaxis</i> Elderly who had at least one prescription that is potentially inappropriate. 	<ul style="list-style-type: none"> Postoperative pneumonia, urinary tract infection, and/or venous thromboembolic events Adverse events associated with central venous catheters
Timeliness		<ul style="list-style-type: none"> Adults who report that they can get care for illness/injury as soon as they wanted Patients who left emergency department without being seen
Patient Centeredness	<ul style="list-style-type: none"> Adults whose health providers listened carefully, explained things clearly, respected what they had to say, and spent enough time with them Children whose parents or guardians report that their child’s health providers listened carefully, explained things clearly, respected what they had to say, and spent enough time with them 	

Presentation. As in past reports, each section in the 2006 report begins with a description of the importance of the section’s topic in a standardized format. New this year is an assessment of the cost effectiveness of different clinical preventive services. These estimates come from a recent review by the National Commission on Prevention Priorities.¹ Cost effectiveness is measured as the average net cost of each quality adjusted life year (QALY)ⁱ that is saved by the provision of a particular health intervention. A lower cost per QALY saved indicates a greater degree of cost effectiveness while beneficial preventive services that fully cover their costs are labeled as cost saving.

After introductory text, chart figures and accompanying findings highlight a small number of measures relevant to the topic. Sometimes these charts show contrasts by age when age data are available and relevant. Age comparisons are always made to a reference group, which is the age group with the largest population (for most measures, adults ages 18-44).

Almost all core measures and composite measures have multiple years of data, so figures typically illustrate trends over time. Figures include a notation about the “reference population” for population-based measures and about the “denominator” for measures based on services or events from provider- or establishment-based data collection efforts.

ⁱ QALYs are a measure of survival adjusted for its value: 1 year in perfect health is equal to 1.0 QALY and a year in poor health would be something less than 1.0.

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As in last year's report, findings presented in the text meet report criteria for importance.ⁱⁱ Often, large differences between age groups did not meet criteria for statistical significance because of small sample sizes.

In addition, significance testing used in this report does not take into account multiple comparisons. To place findings in the context of other Federal reporting initiatives, this report indicates where NHQR measures are also included in Healthy People 2010.

Addition of New Data Sources

NHQR data sources include surveys of individuals and health care facilities and extract from surveillance, vital statistics, and health care organization data systems (Table 1.3). Standardized suppression criteria were applied to all databases to support reliable estimates.ⁱⁱⁱ New data added this year come from:

- **National Asthma Survey.** This survey, sponsored by the Centers for Disease Control and Prevention (CDC) National Center for Environmental Health and conducted by the National Center for Health Statistics (NCHS) in 2003, is the most comprehensive national data set on asthma prevalence and asthma care. It examines the health, socioeconomic, behavioral, and environmental predictors that relate to control of asthma. Because it is not an ongoing survey, findings are presented in this year's report only.
- **National Hospice and Palliative Care Organization's Family Evaluation of Hospice Care.** This survey examines the quality of hospice care for patients and their family members.² Family respondents report how well hospices respect patient wishes, communicate about illness, control symptoms, support dying on one's own terms, and provide family emotional support. The survey is administered by about 800 hospices each year, and about 120,000 completed surveys are returned each year for an overall response rate of about 40%. Participation is voluntary, although participating hospices span the Nation, they are not nationally representative. Demographic information is often incomplete. Despite these limitations, this survey is the most comprehensive source of information about hospice care.
- **CAHPS® Hospital Survey.** This survey, developed by CMS and AHRQ, captures information about patients' experiences of care when hospitalized.³ In 2005, 254 hospitals across the United States volunteered to use this survey. In total, completed surveys were received from 84,779 respondents with an average response rate of 44%. Although it is not nationally representative, the sample of hospitals and respondents is comparable to the national distribution of hospitals registered with the American Hospital Association.

Changes to the Measure Set

New measures. The measure sets used in the 2006 NHDR and NHQR have been improved in several ways. First, a handful of measures were modified to reflect more current standards of care or improved information. For example, this year's NHQR tracks a new measure on adults ages 18-64 with a history of a major depressive episode who received treatment for depression in the past year, which replaces last year's less specific measure related to serious psychological distress.

ⁱⁱCriteria for importance are that the difference is statistically significant at the alpha=0.05 level, two-tailed test and that the relative difference is at least 10% different from the reference group when framed positively as a favorable outcome or negatively as an adverse outcome.

ⁱⁱⁱ Estimates based on sample size fewer than 30 or with relative standard error greater than 30% are considered unreliable and suppressed. Databases with more conservative suppression criteria are allowed to retain them.

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Second, age adjustment^{iv} for a number of measures was updated. For example, to enhance the comparability of measures of diabetes care from MEPS, the Behavioral Risk Factor Surveillance System (BRFSS), and the National Health and Nutrition Examination Survey (NHANES), these measures now apply the same age adjustment methodology among persons age 40 and over with diabetes.^v Finally, a number of new measures were added to fill identified gaps, including:

- Four measures of care for obesity from MEPS and NHANES:
 - Obese adults age 20 and over who were told by their provider that they were overweight (NHANES).
 - Overweight children and teens ages 2-19 who were told by their provider that they were overweight (NHANES).
 - Obese adults who were given counseling from their provider about exercise (MEPS).^{vi}
 - Obese adults who were given counseling from their provider about diet (MEPS).
- Two measures of hospice care from the National Hospice and Palliative Care Organization’s Family Evaluation of Hospice Care survey:
 - Hospice patients who did not receive the right amount of medicine for pain.
 - Hospice patients who received care inconsistent with their stated end-of-life wishes.
- Two measures of patient safety from the CMS Quality Improvement Organization program and the Medicare Patient Safety Monitoring System:
 - Timing of antibiotics to prevent postoperative wound infection (QIO).^{vii}
 - Medication related adverse drug events (MPSMS).
- Four measures of patient centeredness of hospital care from the CAHPS[®] Hospital Survey:
 - Communication with doctors in the hospital (whether or not doctors listened carefully, explained things clearly, and treated the patient with respect).
 - Communication with nurses in the hospital (whether or not nurses listened carefully, explained things clearly, and treated the patient with respect).
 - Communication about medications in the hospital (combines patient responses on two questions: “Before giving you any new medicine, how often did hospital staff tell you what the medicine was for?” and “Before giving you any new medicine, how often did hospital staff describe possible side effects in a way you could understand?”).
 - Discharge information from the hospital (combines patient responses on two questions: “During your hospital stay, did hospital staff talk with you about whether you would have the help you needed when you left the hospital?” and “During your stay, did you get information in writing about what symptoms or health problems to look out for after you left the hospital?”).

^{iv} Age-adjusted measures are labeled as such. All other measures are not age adjusted.

^v Prior to 2006, these measures tracked persons age 18 and over.

^{vi} This is a new core measure.

^{vii} This is a new core measure.

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Table 1.3. Databases used in the 2006 reports (new databases are marked with an asterisk [*])

<p>Surveys collected from populations:</p> <ul style="list-style-type: none"> ● AHRQ, Medical Expenditure Panel Survey (MEPS), 1999-2003 ● CAHPS® Hospital Survey, 2005* ● CDC, Behavioral Risk Factor Surveillance System (BRFSS), 2001-2004 ● CDC-NCHS, National Asthma Survey, 2003* ● CDC-NCHS, National Health and Nutrition Examination Survey (NHANES), 1999-2002 ● CDC-NCHS, National Health Interview Survey (NHIS), 1998-2004 ● CDC-NCHS/National Immunization Program, National Immunization Survey (NIS), 1998-2004 ● CMS, Medicare Current Beneficiary Survey (MCBS), 1998-2002 ● Health Resources and Services Administration, Healthy Schools Healthy Communities User Visit Survey, 2003 ● National Hospice and Palliative Care Organization, Family Evaluation of Hospice Care, 2005* ● Substance Abuse and Mental Health Services Administration (SAMHSA), National Survey on Drug Use and Health (NSDUH), 2002-2004 ● U.S. Census Bureau, U.S. Census 2000*
<p>Data collected from samples of health care facilities and providers:</p> <ul style="list-style-type: none"> ● Center for Studying Health System Change, Community Tracking Study Physician Survey, 1998-2005* ● CDC-NCHS, National Ambulatory Medical Care Survey (NAMCS), 1997-2003 ● CDC-NCHS, National Hospital Ambulatory Medical Care Survey (NHAMCS), 1997-2003 ● CDC-NCHS, National Hospital Discharge Survey (NHDS), 1998-2004 ● CMS, End Stage Renal Disease Clinical Performance Measures Project (ESRD CPMP), 2001-2004
<p>Data extracted from data systems of health care organizations:</p> <ul style="list-style-type: none"> ● AHRQ, Healthcare Cost and Utilization Project,(HCUP) State Inpatient Databases,^a 2001-2003, and HCUP Nationwide Inpatient Sample, 1994-2003 ● CMS, Hospital Compare, 2005 ● CMS, Medicare Patient Safety Monitoring System, 2002-2004 ● CMS, Home Health Outcomes and Assessment Information Set (OASIS), 2002-2004 ● CMS, Nursing Home Minimum Data Set, 2002-2004 ● CMS, Quality Improvement Organization (QIO) program, 2000-2004 ● HIV Research Network data (HIVRN), 2001-2003 ● Indian Health Service, National Patient Information Reporting System (NPIRS), 2002-2004 ● National committee for Quality Assurance, Health Plan Employer Data and Information Set (HEDIS®), 2001-2005 ● National Institutes of Health (NIH), United States Renal Data System (USRDS), 1998-2003 ● SAMHSA, Treatment Episode Data Set (TEDS), 2002-2003

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Table 1.3. Databases used in the 2006 reports (new databases are marked with an asterisk [*])

Data from surveillance and vital statistics systems:
● CDC, National Program of Cancer Registries (NPCR), 2002-2003
● CDC-National Center for HIV, STD, and TB Prevention, HIV/AIDS Surveillance System, 2000-2004
● CDC-National Center for HIV, STD, and TB Prevention, TB Surveillance System, 1999-2002
● CDC-NCHS, National Vital Statistics System (NVSS), 1999-2003
● NIH, Surveillance, Epidemiology, and End Results (SEER) program, 1992-2003

^a Not all States participate in HCUP. For details, see the Data Sources section of the Measure Specifications Appendix.

As noted earlier, the 2006 reports also include measures of asthma care management for long-term control from the National Asthma Survey. However, because this is not a periodic survey, the four measures from this survey are not permanently added to the measure set. The measures include persons with current asthma who were:

- Taught to recognize early signs of an asthma attack.
- Told how to change their environment.
- Given an asthma controller medication.
- Given an asthma management plan.

Measure revisions were proposed and reviewed in meetings of the Interagency Work Group for the NHQR, which includes representation from across HHS.

Composite measures. Composite measures provide readers with a summarized picture of some aspect of health care by combining information from multiple component measures. Policymakers and others have voiced their support for composite measures because they can be used to facilitate understanding of information from many individual measures. The effort to develop new composites is ongoing; and this year, a number of new composite measures were added. Composite measures now make up about 20% of the core measures. New composite measures included in the 2006 reports and the individual component measures they aggregate are shown in Table 1.4. Future reports will include more composite measures.

When possible, an appropriateness model is used to create composite measures. In this model, the denominator is the number of patients who should receive the services included in the composite; the numerator is the number of patients who receive *all* of these services. The composite measure is presented as the percentage of patients who receive all services recommended to them. Because no partial credit is given for incomplete care, this model is sometimes referred to as an “all-or-none” approach. The appropriateness model is attractive to patients, who naturally desire to receive every appropriate service.⁴ One example of this model is the diabetes composite, in which a patient that receives only one or two of the three services would not be counted as having received the recommended care.

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Sometimes, insufficient data are available to apply an appropriateness model. In these instances, an opportunities model developed by Qualidigm⁵ and used in the CMS Premier Hospital Quality Incentive Demonstration⁶ and for public reporting by the Rhode Island Department of Health⁷ is used. The model assumes that each patient needs and has the opportunity to receive one or more processes of care but that not all patients need the same care. The denominator for an opportunities model composite is the sum of these opportunities to receive appropriate care across a panel of process measures. The numerator is the sum of the appropriate care that is actually delivered. The composite measure is typically presented as the proportion of appropriate care that is delivered.

For example, recommended hospital care for heart failure includes evaluation of left ventricular ejection fraction and ACE inhibitor for patients with left ventricular systolic dysfunction. This represents two opportunities for providing appropriate care. The number of patients who should have an evaluation of left ventricular ejection fraction is added to the number of patients who should receive an ACE inhibitor to calculate the total number of opportunities for providing appropriate care. The number of patients who actually receive an evaluation of left ventricular ejection fraction is added to the number of patients who actually receive an ACE inhibitor to calculate the number of opportunities for providing care for which appropriate care was actually delivered. The composite is created by dividing the number of opportunities for care for which appropriate care was actually delivered by the total number of opportunities for care.

Measures from the CAHPS[®] (Consumer Assessment of Healthcare Providers and Systems⁸) surveys have their own method for computing composite measures that has been in use for many years. These composite measures average individual components of patient experiences of care. These composite measures are typically presented as the proportion of respondents who reported that providers sometimes or never, usually, or always performed well.

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

Analysis of Trends

As in previous NHQRs, the 2006 report calculates the average annual rate of change between the earliest and the most recent NHQR data estimates for all core measures. Consistent with *Health, United States*, the geometric rate of change, which assumes the same rate each year between the two time periods, has been calculated for the 2005 NHQR and NHDR.^{viii}

^{viii}The geometric rate of change assumes that a measure increases or decreases at the same rate during each year between two time periods. It is calculated using the following formula: $[(V_y/V_z)^{1/N-1}] \times 100$, where V_y is the most recent year's value, V_z is the most distant year's value and N is the number of years in the interval.

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Table 1.4. Composite measures in the 2006 NHQR and NHDR (new measures in *italics*)

Composite measure	Individual measures forming composite	Model
Receipt of three recommended diabetic services ^a	<ul style="list-style-type: none"> Adults age 40 and older with diagnosed diabetes who received at least one HbA1c test Adults age 40 and older with diagnosed diabetes who received at least one retinal eye exam Adults age 40 and older with diagnosed diabetes who received at least one foot exam 	Appropriateness
Childhood immunization	<ul style="list-style-type: none"> Children age 19-35 months who received at least 4 doses of diphtheria-tetanus-acellular pertussis (DTaP) vaccine Children age 19-35 months who received at least 3 doses of polio vaccine Children age 19-35 months who received at least 1 dose of measles-mumps-rubella (MMR) vaccine Children age 19-35 months who received at least 3 doses of <i>Haemophilus influenza B</i> (Hib) vaccine Children age 19-35 months who received at least 3 doses of hepatitis B antigens 	Appropriateness
Recommended hospital care for heart attack	<ul style="list-style-type: none"> Receipt of aspirin within 24 hours of hospitalization Receipt of aspirin upon discharge Receipt of beta-blocker within 24 hours of hospitalization Receipt of beta-blocker upon discharge Receipt of ACE inhibitor for left ventricular systolic dysfunction Receipt of counseling about smoking cessation among smokers 	Opportunities
Recommended hospital care for heart failure	<ul style="list-style-type: none"> Receipt of evaluation of left ventricular ejection fraction Receipt of ACE inhibitor for left ventricular systolic dysfunction 	Opportunities
Recommended hospital care for pneumonia	<ul style="list-style-type: none"> Receipt of initial antibiotics within 4 hours Receipt of appropriate antibiotics Receipt of culture before antibiotics Receipt of influenza screening or vaccination Receipt of pneumococcal screening or vaccination 	Opportunities
<i>Timing of antibiotics to prevent postoperative wound infection</i>	<ul style="list-style-type: none"> Antibiotics started within 1 hour of surgery Antibiotics stopped 24 hours after surgery 	Opportunities
Patient-provider communication problems	<ul style="list-style-type: none"> Provider sometimes or never listened carefully to you Provider sometimes or never explained things clearly to you Provider sometimes or never showed respect for what you had to say Provider sometimes or never spent enough time with you 	CAHPS®
Communication with doctors in hospital	<ul style="list-style-type: none"> Doctors sometimes or never treated you with courtesy and respect Doctors sometimes or never listened carefully to you Doctors sometimes or never explained things in a way you could understand 	CAHPS®

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Table 1.4. Composite measures in the 2006 NHQR and NHDR (new measures)(continued)

Composite measure	Individual measures forming composite	Model
<i>Communication with nurses in the hospital</i>	<ul style="list-style-type: none"> Nurses sometimes or never treated you with courtesy and respect Nurses sometimes or never listened carefully to you Nurses sometimes or never explained things in a way you could understand 	CAHPS®
<i>Communication about medications in the hospital</i>	<ul style="list-style-type: none"> Hospital staff sometimes or never told you what a new medicine was for Hospital staff sometimes or never described possible side effects of a new medicine in a way you could understand 	CAHPS®
<i>Discharge information from the hospital</i>	<ul style="list-style-type: none"> Hospital staff talked with you about whether you would have the help you needed when you left the hospital Hospital staff provided information in writing about what symptoms or health problems to look out for after you left the hospital 	CAHPS®
<i>Postoperative complications</i>	<ul style="list-style-type: none"> Postoperative pneumonia Postoperative bladder infection Postoperative blood clot 	Additive
<i>Complications of central venous catheters</i>	<ul style="list-style-type: none"> Bloodstream infection due to central venous catheter Mechanical problem due to central venous catheter 	Additive

^a This composite measure was modified between the 2004 and 2005 reports. Starting with the 2005 composite, two tests, flu vaccination and lipid profile, were omitted due to differences in the manner in which they were collected. The current composite measure on diabetes care focuses on the receipt of three processes for which the best data are available: HbA1c testing, retinal eye examination, and foot examination in the past year. Starting in 2006, the target age group for this measure changed from age 18 and older to age 40 and older.

Two criteria are applied to determine whether a significant trend in quality exists:

- First, the difference between the earliest and most recent estimates must be statistically significant with $\alpha=0.05$.
- Second, the magnitude of average annual rate of change must be at least 1% per year, when framed as an adverse outcome.

Only changes over time that meet these two criteria are discussed in the 2006 reports.

Summary of Quality

In the 2006 NHQR, efforts to summarize quality have been further refined. There have been a number of changes in measure selection. The focus on the Nation's progress in health care quality improvement is evident throughout the report. In the Highlights, the annual rate of quality improvement across all core measures is summarized; and, in Chapters 2-5, trend data for the core measures are also examined in detail. As noted in Table 1.4, new composite measures are included for appropriate timing of antibiotics, postoperative complications, complications of central venous catheters, communication with doctors in the hospital, communication with nurses in the hospital, communication about medications in the hospital, and

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receipt of discharge information from the hospital. These measures provide a summary description of the present state of quality as well as progress over time; these are complemented by information on each of the measures which comprise the composite.

These and other changes have been made in response to requests from many constituencies who use the NHQR, including policymakers, clinicians, health system administrators, State and community leaders, and other users.

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Chapter 2. Effectiveness

As noted in Chapter 1, effectiveness of care is presented under nine clinical condition/care setting areas: cancer; diabetes; end stage renal disease (ESRD); heart disease; HIV and AIDS; maternal and child health; mental health and substance abuse; respiratory diseases; and nursing home, home health, and hospice care. The nine individual sections of this chapter highlight a small number of core measures; results for all core measures are found in the List of Core Report Measures at the end of this report.

In this chapter, measures are organized into several categories as related to the patient's need for preventive care, treatment of acute illness, and chronic disease management. There is sizable overlap among these categories, and some measures may be considered to belong in more than one category. Outcome measures are particularly difficult to categorize when prevention, treatment, and management all play important roles. Nevertheless, for the purposes of this report, measures are placed into categories that best fit the general descriptions below:

Prevention

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

Treatment

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

Management

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

The measures highlighted on the following pages are categorized as follows:

Section	Measure
Prevention:	
Cancer	Colorectal cancer screening
Cancer	Advanced stage colorectal cancer
Cancer	Colorectal cancer mortality
Diabetes	Lower extremity amputations
Heartdisease	Counseling smokers to quit smoking
Heartdisease	Counseling obese adults about overweight*
Heartdisease	Counseling obese adults about exercise
HIV and AIDS	New AIDS cases
HIV and AIDS	Eligible AIDS patients receiving PCP and MAC prophylaxis*

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Maternal and child health	Receipt of prenatal care in the first trimester
Maternal and child health	Receipt of all recommended immunizations by young children
Maternal and child health	Vision checks for children
Maternal and child health	Counseling parents about healthy eating in children
Maternal and child health	Children told by health provider they were overweight*
Mental health and substance abuse	Suicide deaths
Respiratory diseases	Pneumococcal vaccination
Treatment:	
Heartdisease	Receipt of recommended care for acute heart failure
Heartdisease	Receipt of recommended care for heart attack
Heartdisease	Inpatient mortality following heart attack
Maternal and child health	Hospital admissions for pediatric gastroenteritis
Mental health and substance abuse	Receipt of needed treatment for illicit drug use
Mental health and substance abuse	Receipt of treatment for depression
Respiratory diseases	Receipt of recommended care for pneumonia
Respiratory diseases	Receipt of antibiotics for the common cold
Respiratory diseases	Completion of tuberculosis therapy
Management:	
Diabetes	Receipt of three recommended diabetes services
Diabetes	Controlled hemoglobin, cholesterol, and blood pressure*
Diabetes	State variation in retinal eye exams*
End stage renal disease (ESRD)	Adequacy of hemodialysis
End stage renal disease (ESRD)	Registration for transplantation
Respiratory diseases	Hospital admissions for pediatric asthma
Respiratory diseases	Asthma management for long-term control ⁱ *
Nursing home, home health, and hospice care	Use of restraints among chronic care nursing home residents
Nursing home, home health, and hospice care	Presence of pressure ulcers among nursing home residents
Nursing home, home health, and hospice care	Improvement in ambulation in home health episodes
Nursing home, home health, and hospice care	Acute care hospitalization of home health patients
Nursing home, home health, and hospice care	Receipt of right amount of pain medicine by hospice patients*
Nursing home, home health, and hospice care	Receipt of care consistent with patient's stated end-of-life wishes*

* Supplemental measure

ⁱ Includes four supplemental measures: counseling persons with asthma about recognizing early signs of an attack, counseling persons with asthma about changing their environment, use of a controller medication, and receipt of an asthma management plan.

Cancer

Importance and Measures

Mortality

Number of deaths (2006 est.)	564,830 ¹
Cause of death rank (2004)	2nd ²

Prevalence

Number of Americans that have been diagnosed with cancer (2003 est.)	10,500,000 ³
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Incidence

New cases of cancer (2006 est.)	1,399,790 ¹
New cases of colorectal cancer (2006 est.)	148,610 ¹

Cost

Total cost ⁱⁱ (2006)	\$206.3 billion ⁴
Direct costs ⁱⁱⁱ (2006)	\$78.2 billion ⁴
Cost effectiveness ^{iv} of colorectal cancer screening	\$0-\$14,000/QALY ⁵
Cost effectiveness of breast cancer screening	\$35,000-\$165,000/QALY ⁵

Measures

Evidence-based consensus defining good quality care and how to measure it currently exists for only a few cancers and a few aspects of care. Breast and colorectal cancers have high incidence rates and are highlighted in alternate years of the report. The 2005 NHQR highlighted breast cancer; this year's focus is on colorectal cancer—specifically, prevention. The core report measures are:

- Colorectal cancer screening
- Colorectal cancer first diagnosed at an advanced stage
- Colorectal cancer mortality

ⁱⁱ 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.”⁴

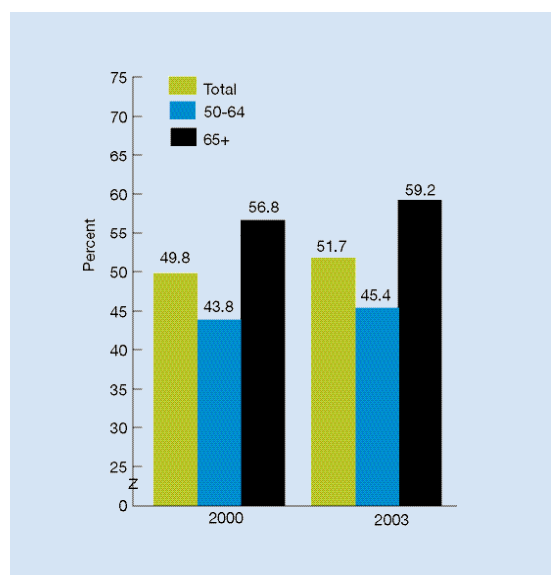
^{iv} Cost effectiveness is here measured by the average net cost of each quality adjusted life year (QALY) that is saved by the provision of a particular health intervention. QALYs are a measure of survival adjusted for its value: 1 year in perfect health is equal to 1.0 QALY, while a year in poor health would be something less than 1.0. A lower cost per QALY saved indicates a greater degree of cost effectiveness. For example, the net cost for colorectal cancer screening ranges from \$0 to \$14,000 for each QALY saved.

Findings

Prevention: Colorectal Cancer Screening

Prevention of colorectal cancer includes modifying risk factors, such as diet, weight, physical activity, smoking, and alcohol, and screening for early disease. Early detection of cancer increases treatment options and the chances for survival. Colorectal cancer screening is able to detect abnormal growths before they develop into cancer.⁶ The U.S. Preventive Services Task Force recommends colorectal cancer screening for men and women age 50 and older.⁷ Screening tests for colorectal cancer include fecal occult blood test (FOBT), flexible sigmoidoscopy, colonoscopy, proctoscopy, and barium enema.

Figure 2.1. Adults age 50 and older who report having ever received a sigmoidoscopy, colonoscopy, or proctoscopy or who report fecal occult blood test within the past 2 years, 2000 and 2003



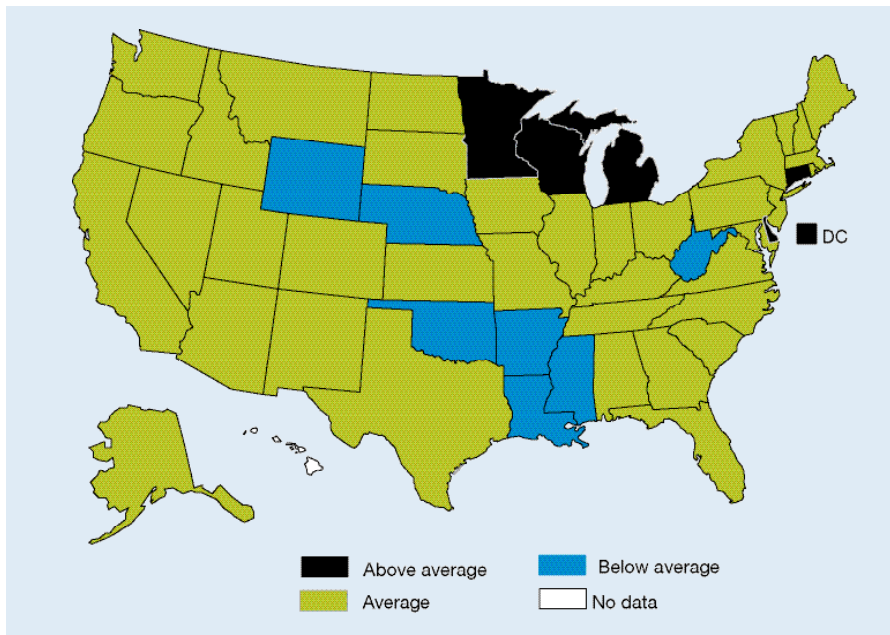
Source: Centers for Disease Control and Prevention, National Health Interview Survey, 2000 and 2003.

Reference population: Civilian noninstitutionalized population age 50 and older.

Note: Total rate is adjusted to the 2000 U.S. standard population.

- The proportion of adults who reported ever having received a sigmoidoscopy, colonoscopy, or proctoscopy or an FOBT within the past 2 years increased from 49.8% in 2000 to 51.7% in 2003 (Figure 2.1).
- From 2000 to 2003, the proportion of adults age 65 and over who report ever receiving a sigmoidoscopy, colonoscopy, or proctoscopy or an FOBT within the previous 2 years increased from 56.8% to 59.2%. The proportion did not change significantly for adults ages 50-64.
- In both data years, adults age 65 and over were more likely than adults ages 50-64 to report ever having received a sigmoidoscopy, colonoscopy or proctoscopy or an FOBT within the past 2 years.

Figure 2.2. Adults age 50 and older who report having ever received a sigmoidoscopy or colonoscopy, by State, 2002 and 2004



Source: Centers for Disease Control and Prevention, Behavioral Risk Factor Surveillance System, 2002 and 2004.

Key: Above average = rate is significantly above the reporting States' average in both 2002 and 2004. Below average = rate is significantly below the reporting States' average in both 2002 and 2004.

Reference population: Civilian noninstitutionalized adults age 50 and over.

Note: Age adjusted to the 2000 U.S. standard population. "Reporting States' average" is the weighted average of all reporting States (50 in this case, including the District of Columbia), which is a separate figure from the national average. The weighted average is the average of all States weighted by the State's population.

- Variation was seen among States in the rates of receipt of colorectal cancer screening. In 2002, the reporting States' average was 49.8%, ranging from 38.0% to 65.7%. In 2004 the all-States average improved to 54.6%, ranging from 46.0% to 66.7% (Figure 2.2).
- Six States^v were significantly above the reporting States' average in both 2002 and 2004, with a combined average rate of 62.9% in 2004.
- Seven States^{vi} were significantly below the reporting States' average in both 2002 and 2004, with a combined average rate of 47.2% in 2004.
- Twenty-nine States showed improvement on this measure from 2002 to 2004, while no State showed deterioration. Missouri, New Hampshire, Maine, and Virginia each improved by an average annual rate greater than 10%.

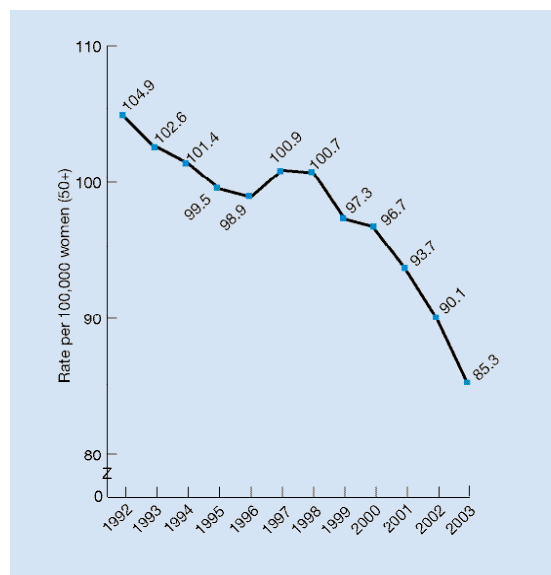
^v The States are Minnesota, Wisconsin, Michigan, Delaware, Connecticut, and the District of Columbia.

^{vi} The States are Wyoming, Nebraska, Oklahoma, Arkansas, Louisiana, Mississippi, and West Virginia.

Prevention: Advanced Stage Colorectal Cancer

Cancers can be diagnosed at different stages of development. Cancers diagnosed early before spread has occurred are generally more amenable to treatment and cure; cancers diagnosed late with extensive spread often have poor prognoses. The rate of cases of cancer that are diagnosed at late or advanced stages is a measure of the effectiveness of cancer screening efforts and of cancer diagnosis following a positive screening test.

Figure 2.3. Age-adjusted rate of late stage colorectal cancer per 100,000 population age 50 and older, 1992-2003



Source: Surveillance, Epidemiology, and End Results Program, 1992-2003.

Reference population: U.S. population age 50 and older.

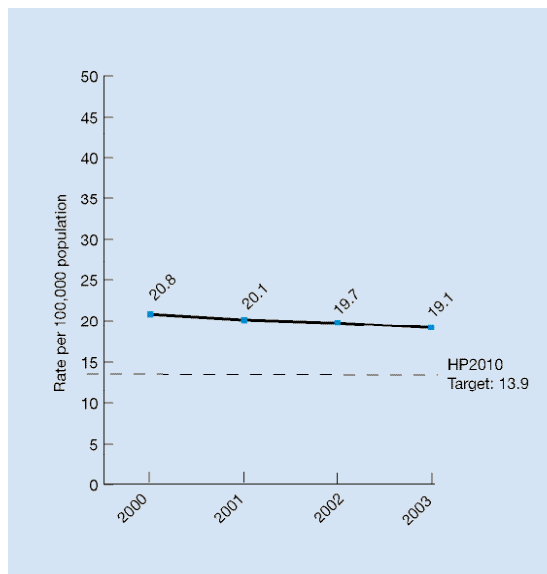
Note: Age adjusted to the 2000 U.S. standard population.

- Between 1992 and 2003, the overall rate of late stage colorectal cancer decreased from 104.9 to 85.3 per 100,000 population (Figure 2.3).

Prevention: Colorectal Cancer Mortality

The death rate from a disease is a function of many determinants including the causes of the disease, social forces, and how well the health care system performs in providing good prevention, treatment, and management of the disease. Colorectal cancer mortality reflects the impact of colorectal cancer screening, diagnosis, and treatment and is measured as the number of deaths per 100,000 population. Declines in colorectal cancer mortality can be attributed, in part, to improvements in early detection and treatment.

Figure 2.4. Age adjusted cancer deaths per 100,000 population per year for colorectal cancer, all ages, 2000-2003



Source: National Center for Health Statistics, National Vital Statistics System – Mortality, 2000-2003.

Reference population: U.S. population.

Note: Age adjusted to the 2000 standard population.

- Between 2000 and 2003, the rate of colorectal cancer deaths decreased from 20.8 to 19.1 per 100,000 population (Figure 2.4).
- At 19.1 deaths per 100,000 population, the overall colorectal cancer death rate in 2003 was higher than the Healthy People 2010 target of 13.9. At the present rate of change, this target will not be met by 2010.

Diabetes

Importance and Measures

Mortality

Number of deaths (2004)	72,815 ²
Cause of death rank (2004)	6th ²

Prevalence

Total number of Americans with diabetes (2005)	20,800,000 ⁸
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Incidence

New cases (age 20 and over, 2005)	1,500,000 ⁸
---	------------------------

Cost

Total cost (2002)	\$132 billion ⁹
Direct medical costs (2002)	\$92 billion ⁹

Measures

Effective management of diabetes includes appropriate receipt of recommended processes such as hemoglobin A1c tests, eye exams, and foot exams, as well outcome measures expected to correlate positively with these processes (such as control of cholesterol, blood pressure, and HbA1c^{vii} levels). In addition, hospital admission rates among patients with diabetes for amputations of a leg or foot can be an indicator of appropriate care for this condition.

The three core report measures highlighted in this section are:

- Lower extremity amputations
- Receipt of three recommended diabetic services
- Controlled hemoglobin, cholesterol, and blood pressure

In addition, a supplemental measure is also presented:

- State variation in retinal eye exams

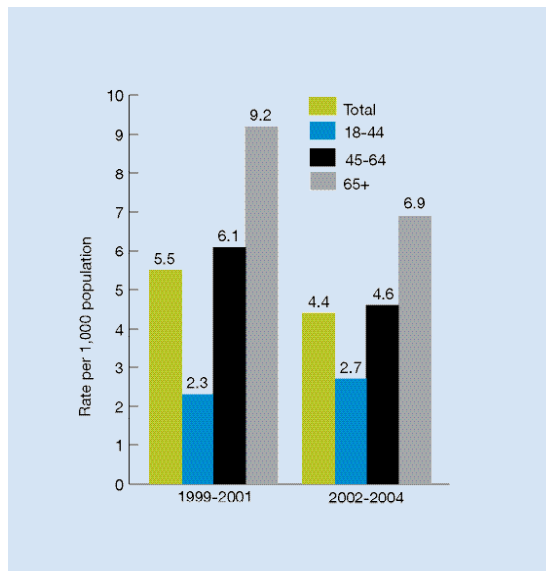
^{vii} HbA1c is glycosylated hemoglobin—the higher the level of glucose in the blood, the higher the HbA1c level.

Findings

Prevention: Lower Extremity Amputations

Although diabetes is the leading cause of lower extremity amputations, amputations can be avoided through proper care on the part of patients and providers. Hospital admissions for lower extremity amputations for patients with diagnosed diabetes reflect poorly controlled diabetes. Better management of diabetes would prevent the need for lower extremity amputations.

Figure 2.5. Hospital admissions for lower extremity amputations per 1,000 adult patients with diagnosed diabetes, United States



Source: Centers for Disease Control and Prevention, National Hospital Discharge Survey.

Reference population: Civilian noninstitutionalized adults age 18 and older with diagnosed diabetes, from the National Health Interview Survey, 1999-2001 and 2002-2004.

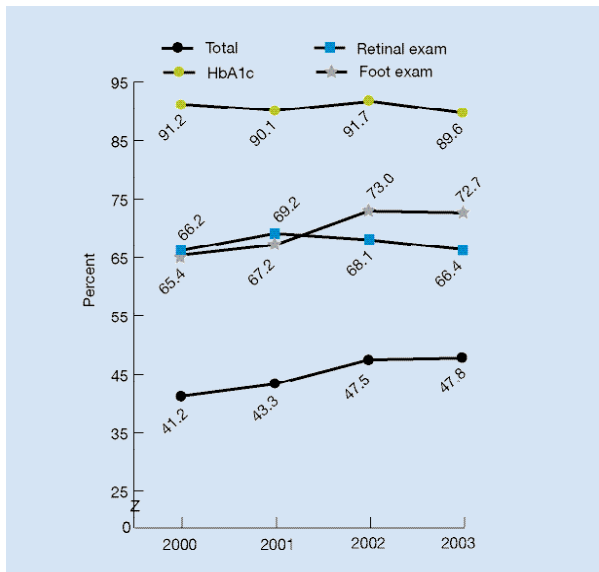
Note: Total rate is age adjusted to the 2000 standard population.

- From 1999-2001 to 2002-2004, the overall rate of lower extremity amputations in adults with diagnosed diabetes fell from 5.5 to 4.4 per 1,000 population (Figure 2.5).
- From 1999-2001 to 2002-2004, lower extremity amputation rates fell from 6.1 to 4.6 per 1,000 population and 9.2 to 6.9 per 1,000 population for adults with diagnosed diabetes ages 45-64 and 65 and older, respectively.
- The Healthy People 2010 target rate of 1.8 lower extremity amputations in adults with diagnosed diabetes per 1,000 population has not been met by any age group or by the total population age 18 and older.

Management: Receipt of Three Recommended Diabetes Services

The NHQR uses a composite measure to track the national rate of the receipt of all three recommended diabetes interventions.

Figure 2.6. Adults age 40 and older with diagnosed diabetes who received at least one HbA1c test, retinal exam, and foot exam in the past year, 2000-2003



Source: Agency for Healthcare Research and Quality, Medical Expenditure Panel Survey, 2000-2003.

Reference population: Civilian, noninstitutionalized population with diagnosed diabetes age 40 and older.

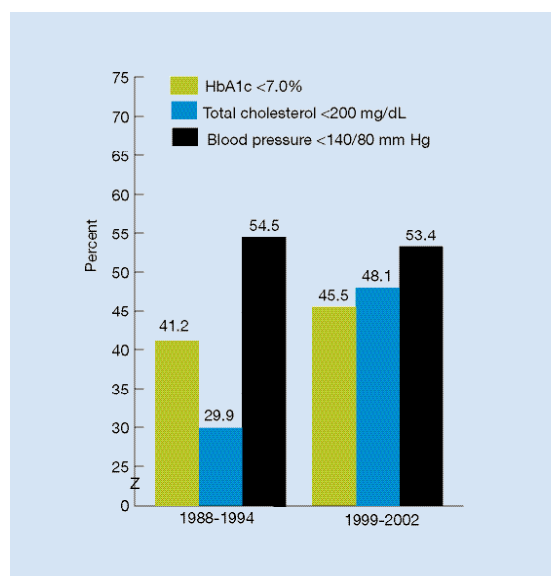
Note: Rates are age adjusted. Recommended services for diabetes are (1) HbA1c testing, (2) retinal eye examination, and (3) foot examination in past year. Data include persons with both type 1 and type 2 diabetes.

- From 2000 to 2003, the number of adults with diagnosed diabetes age 40 and older who received an HbA1c test, a retinal exam, and a foot exam increased from 41.2% to 47.8% (Figure 2.6).
- From 2000 to 2003, the rate of receipt for foot exams for adults age 40 and older with diagnosed diabetes increased from 65.4% to 72.7%, but the rates for HbA1c tests and retinal exams remained stable.

Management: Controlled Hemoglobin, Cholesterol, and Blood Pressure

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

Figure 2.7. Adults age 40 and older with diagnosed diabetes with HbA1c, total cholesterol, and blood pressure under control, 1988-1994, 1999-2002



Source: National Center for Health Statistics, National Health and Nutrition Examination Survey, 1988-1994, and 1999-2002.

Reference population: Civilian noninstitutionalized population with diagnosed diabetes age 40 and over.

Note: Age adjusted to the 2000 U.S. standard population.

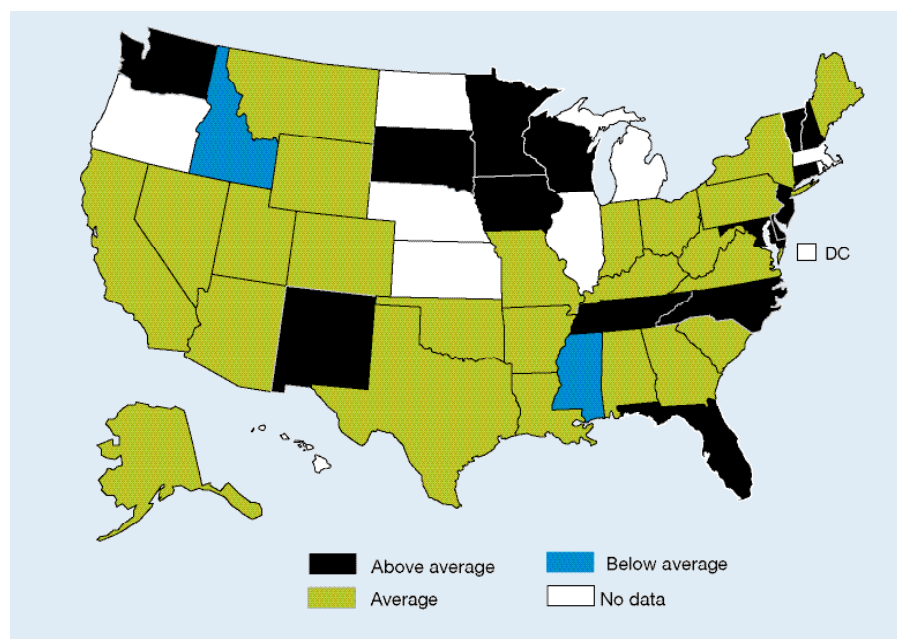
- In 1999-2002, 48.1% of those diagnosed with diabetes had their total cholesterol under control (<200 mg/dL). This is an improvement over the 1988-1994 rate of 29.9% for this measure (Figure 2.7).
- In 1999-2002, 45.5% of those diagnosed with diabetes had their HbA1c level under optimal control (i.e., <7.0%). This percentage is statistically unchanged from the 1988-1994 time period.
- In 1999-2002, 53.4% of those diagnosed with diabetes had their blood pressure under control (<140/80 mm Hg), which is not significantly different from the 1988-1994 time period.

^{viii} Blood pressure control guidelines were updated in 2005. Previously, having a blood pressure reading of <140/90 mm Hg was considered under control. For this measure, the new threshold of <140/80 mm Hg has been applied to historical data for the sake of consistency and comparability.

Management: State Variation in Retinal Eye Exams

Because persons with diagnosed diabetes are at an increased risk of vision loss due to complications such as diabetic retinopathy, cataracts, and glaucoma, effective management of diabetes includes yearly retinal eye exams.

Figure 2.8. State variation in rates of receipt of annual retinal eye exam among persons with diagnosed diabetes ages 40 and older, 2004



Source: Centers for Disease Control and Prevention, Behavioral Risk Factor Surveillance System, 2004.

Key: Above average = rate is significantly above the reporting States' average in 2004. Below average = rate is significantly below the reporting States' average in 2004.

Reference population: Civilian noninstitutionalized population age 40 and older.

Note: Age adjusted to the 2000 U.S. standard population. The "reporting States' average" is the weighted average of all reporting States (41 in this case, including the District of Columbia), which is a separate figure from the national average.

- In 2004, State rates of receipt of retinal eye exams ranged from 56.3% to 78.2%, with a reporting States' average of 67.4%.
- Fifteen States^{ix} were significantly above the reporting States' average in 2004, with a combined average rate of 75.0% in 2004 (Figure 2.8).
- Two States^x were significantly below the reporting States' average in 2004, with a combined average rate of 58.1%.

^{ix} The States are Connecticut, Delaware, Florida, Iowa, Maryland, Minnesota, New Hampshire, New Jersey, New Mexico, North Carolina, South Dakota, Tennessee, Vermont, Washington, and Wisconsin.

^x The States are Idaho and Mississippi.

End Stage Renal Disease (ESRD)

Importance and Measures

Mortality

Total ESRD deaths (2003) 82,588¹⁰

Prevalence

Total cases (2003) 452,957¹⁰

Incidence

New cases (2003) 102,567¹⁰

Cost

Total ESRD program expenditures (2003)..... \$27.3 billion¹⁰

Measures

The NHQR includes six measures of ESRD management to assess the quality of care provided to renal dialysis patients. The two core report measures highlighted here are:

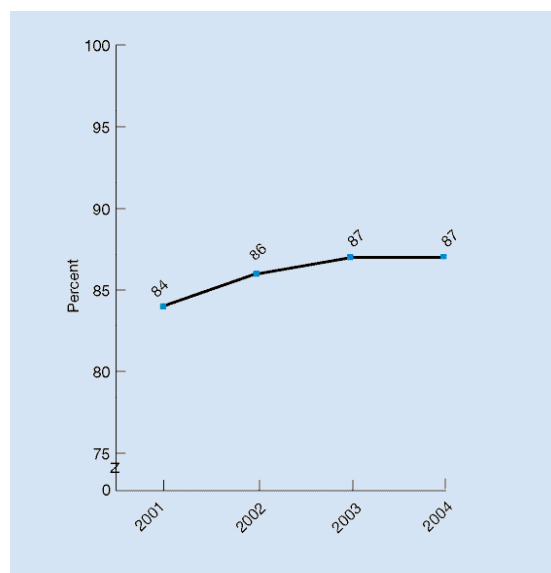
- Adequacy of hemodialysis
- Registration for transplantation

Findings

Management: Patients With Adequate Hemodialysis

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

Figure 2.9. Medicare hemodialysis patients age 18 and older with adequate dialysis (urea reduction ratio 65% or higher), 2001-2004

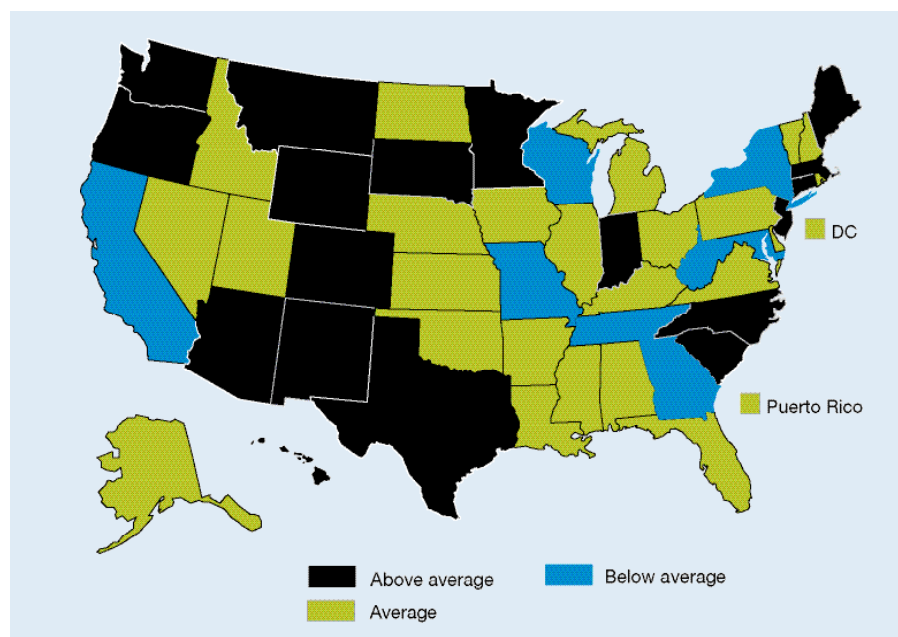


Source: Centers for Medicare & Medicaid Services ESRD Clinical Performance Measures Project, 2001-2004.

Reference population: ESRD hemodialysis patients age 18 and older.

- Between 2001 and 2004, the percentage of all hemodialysis patients with adequate dialysis improved, from 84% to 87% (Figure 2.9), as well as for all age groups (data not shown).

Figure 2.10. Medicare hemodialysis patients with adequate dialysis (urea reduction ratio 65% or higher), by State 2003 and 2004



Source: Centers for Medicare & Medicaid Services ESRD Clinical Performance Measures Project, 2003 and 2004.

Key: Above average = rate is significantly above the all-States average in both 2003 and 2004. Below average = rate is significantly below the all-States average in both 2003 and 2004.

Reference population: ESRD hemodialysis patients and peritoneal dialysis patients.

Note: The “all-States average” is the average of all reporting States (52 in this case, including the District of Columbia and Puerto Rico), which is a separate figure from the national average.

- In 2003, the all-States average was 91.4%, ranging from 87.5% (North Dakota) to 96.9% (New Mexico). In 2004, the all-States average rose to 92.4%, ranging from 86.5% (Utah) to 97.9% (Maine).
- Eighteen States^{xi} were significantly above the all-States average in both 2003 and 2004, with a combined average rate of 95.1% in 2004 (Figure 2.10).
- Eight States^{xii} were significantly below the all-States average in both 2003 and 2004, with a combined average rate of 90.3% in 2004.
- Twenty States showed improvement on this measure from 2003 to 2004, while one State declined.

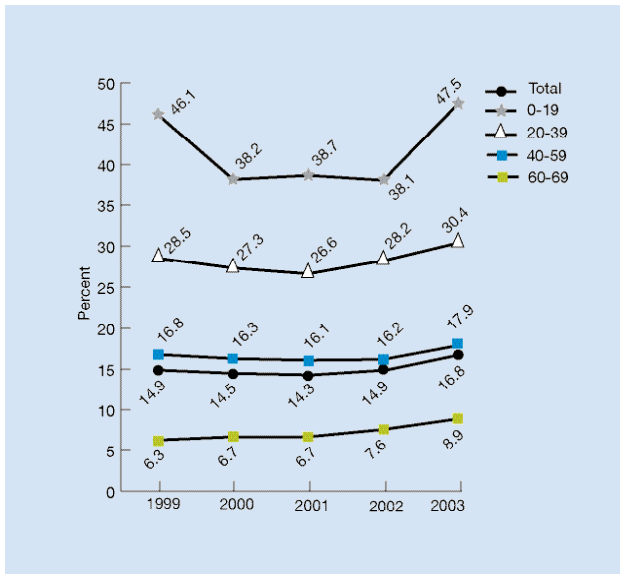
^{xi} The States are Hawaii, Washington, Oregon, Arizona, Montana, Wyoming, Colorado, New Mexico, Texas, South Dakota, Minnesota, Indiana, South Carolina, North Carolina, New Jersey, Connecticut, Massachusetts, and Maine.

^{xii} The States are California, Missouri, Wisconsin, Tennessee, Georgia, West Virginia, Maryland, and New York.

Management: Registration for Transplantation

Kidney transplantation is a procedure that replaces a failing kidney with a healthy kidney. If a patient is deemed a good candidate for transplant, he or she is placed on the transplant program’s waiting list. Dialysis patients wait for transplant centers to match them with the most suitable donor.

Figure 2.11. Medicare dialysis patients registered on waiting list for transplantation, 1999-2003



Source: Centers for Medicare & Medicaid Services, ESRD Clinical Performance Measures Project, 1999-2003.

Reference population: ESRD hemodialysis patients and peritoneal dialysis patients under age 70.

- In 2003, 16.8% of dialysis patients were registered on a waiting list for transplantation. This rate did not change significantly from 1999 for the total population or for any age group (Figure 2.11).
- In all 5 data years, likelihood of being on a transplantation waiting list decreased significantly with age.

Heart Disease

Importance and Measures

Mortality

Number of deaths (2004)	654,092 ²
Cause of death rank (2004)	1st ²

Prevalence

Number of cases of coronary heart disease each year (1999-2002).	13,200,000 ¹¹
Number of cases of heart failure each year (1999-2002)	5,000,000 ¹¹
Number of cases of high blood pressure each year (1999-2002).	65,000,000 ¹¹
Number of heart attacks each year (1999-2002).	7,200,000 ¹¹

Incidence

Number of new cases of congestive heart failure each year (1999-2002)	550,000 ¹¹
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Cost

Total cost of cardiovascular disease (2006 est.)	\$403.0 billion ⁴
Total cost of congestive heart failure (2006 est.)	\$29.6 billion ¹¹
Direct medical costs of cardiovascular disease (2005 est.)	\$257.6 billion ⁴
Cost effectiveness of hypertension screening	\$14,000-\$35,000/QALY ⁵
Cost effectiveness of aspirin chemoprophylaxis	cost saving ^{xiii,5}

Measures

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

- Counseling smokers to quit smoking
- Counseling obese adults about overweight
- Counseling obese adults about exercise
- Receipt of recommended care for acute heart failure
- Receipt of recommended care for heart attack (acute myocardial infarction, or AMI)
- Inpatient mortality following heart attack

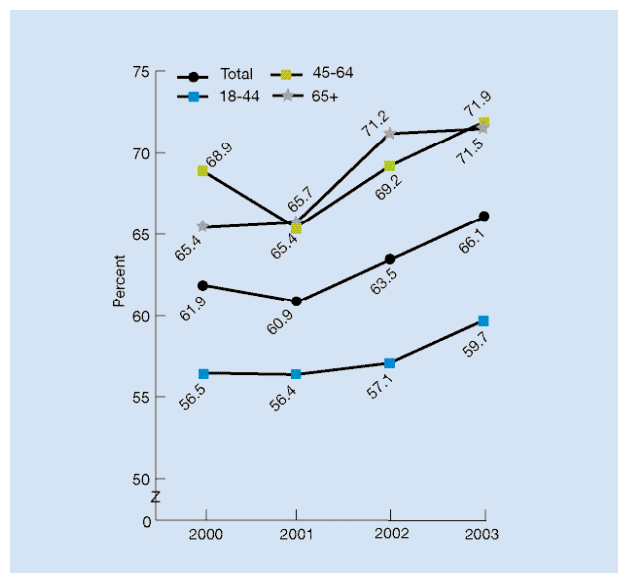
^{xiii} This intervention results in net cost savings to society as opposed to those interventions which may increase health benefit costs.

Findings

Prevention: Counseling Smokers To Quit Smoking

Smoking may be the single most important modifiable risk factor for heart disease, and providers can encourage patients to quit smoking.

Figure 2.12. Current smokers age 18 and older with a routine office visit who reported receiving advice to quit smoking 2000-2003



Source: Agency for Healthcare Research and Quality, Center for Financing, Access and Cost Trends, Medical Expenditure Panel Survey, 2000-2003.

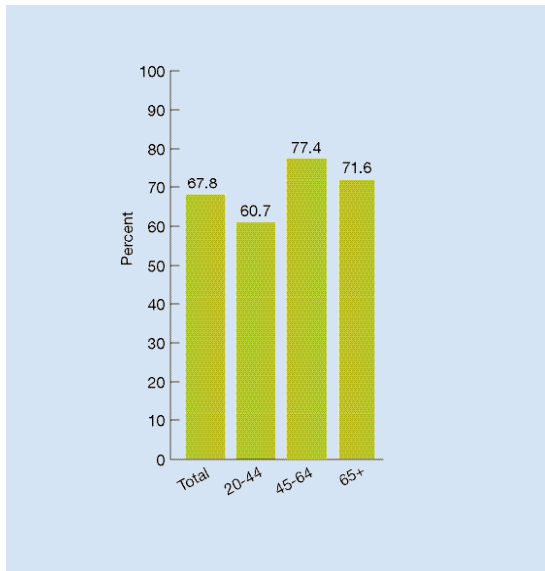
Reference population: Civilian noninstitutionalized population age 18 and older.

- In 2003, 66.1% of smokers with routine office visits during the preceding year reported that their providers had advised them to quit, an increase from 61.9% in 2000. This rate remained statistically unchanged for every age group during this time period (Figure 2.12).
- In all 4 data years, smokers age 18-44 were less likely than the other age groups to receive advice to quit smoking.

Prevention: Counseling Obese Adults About Overweight

Over 32 percent of adults age 20 and older in the United States are obese,^{12, xiv} putting them at increased risk for many chronic, often deadly conditions such as hypertension, cancer, diabetes, and coronary heart disease.¹³ Although physician guidelines recommend that health care providers screen all adult patients for obesity,¹⁴ obesity remains underdiagnosed among U.S. adults.¹⁵

Figure 2.13. Obese adults age 20 and older who were told by a doctor or health professional that they were overweight, 1999-2002



Source: Centers for Disease Control and Prevention, National Health and Nutrition Examination Survey (NHANES), 1999-2002.

Reference population: Civilian noninstitutionalized adults age 20 and older.

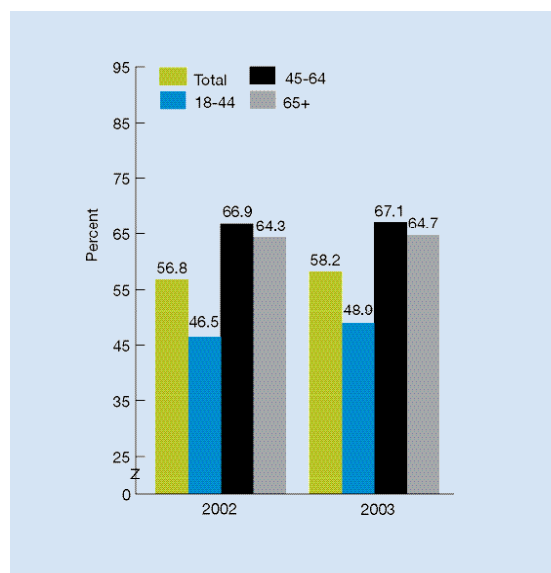
- In 1999-2002, 67.8% of obese adults were told they were overweight by a doctor or health professional (Figure 2.13).
- During the time period from 1999-2002, obese adults ages 45-64 (77.4%) and age 65 and older (71.6%) were more likely than those ages 20-44 (60.7%) to be told by a doctor or health professional that they were overweight.

^{xiv} Obesity is defined as having a body mass index of 30 or higher.

Prevention: Exercise Counseling for Obese Adults

Physician-based exercise counseling is an important component of effective weight loss interventions,¹⁴ and it has been shown to produce increased levels of physical activity among sedentary patients.¹⁶ Regular exercise aids in weight loss and blood pressure control efforts, reducing the risk of heart disease, stroke, diabetes, and other comorbidities of obesity.

Figure 2.14. Obese adults age 18 and older who were given advice about exercise, 2002 and 2003



Source: Agency for Healthcare Research and Quality, Center for Financing, Access and Cost Trends, Medical Expenditure Panel Survey, 2002 and 2003.

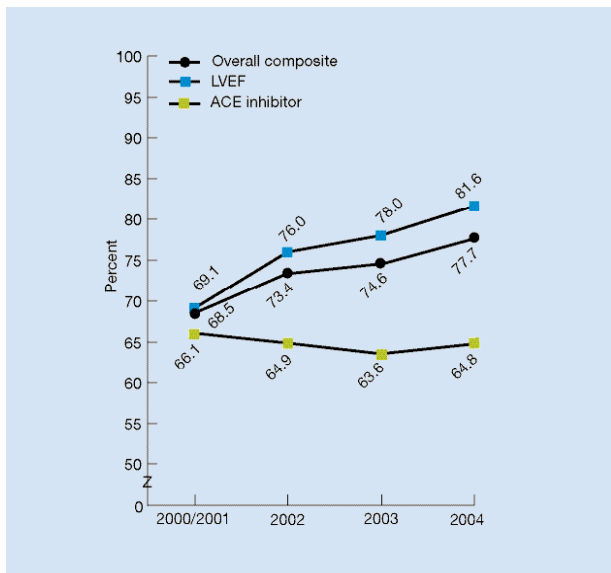
Reference population: Civilian noninstitutionalized adults age 18 and older.

- In 2003, 58.2% of obese adults were given advice about exercising. This figure did not change significantly from 2002, nor did it change for any population subgroup (Figure 2.14).
- In both 2002 and 2003, obese adults ages 45-64 and 65 and older were more likely to receive advice about exercise than were obese adults ages 18-44.

Treatment: Receipt of Recommended Care for Acute Heart Failure

The NHQR tracks the national rates of the receipt of a recommended test for heart functioning (heart failure patients having evaluation of left ventricular ejection fraction, or LVEF), for recommended medication treatment (patients with left ventricular dysfunction prescribed ACE inhibitor at discharge), and an overall composite measure based on the opportunities model which describes the proportion of all “opportunities” in which heart failure patients receive recommended care.

Figure 2.15. Receipt of recommended care for acute heart failure among Medicare patients: overall composite and two components, 2000-2001, 2002, 2003, and 2004



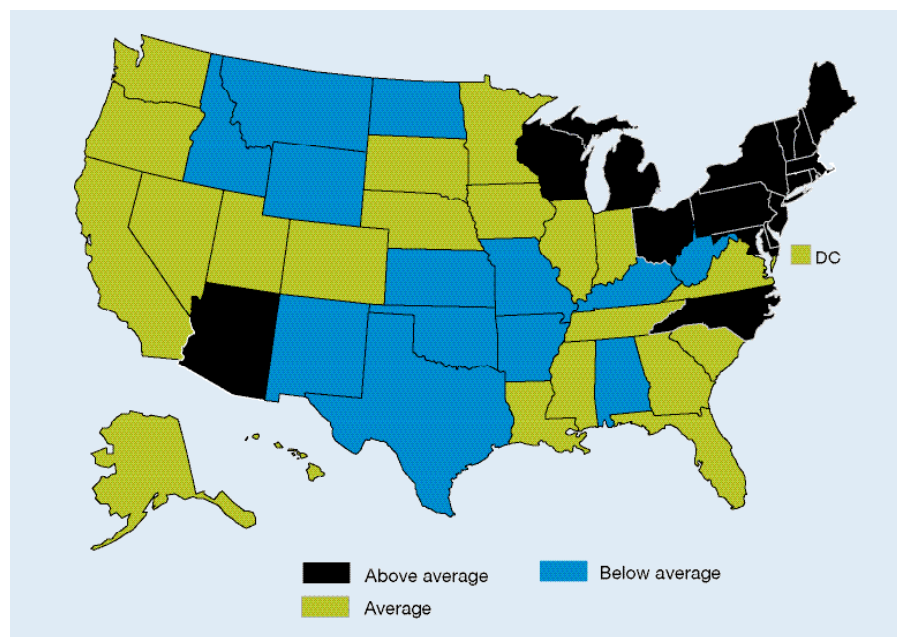
Key: LVEF=left ventricular ejection fraction; ACE=angiotensin-II converting enzyme.

Source: Centers for Medicare & Medicaid Services, Medicare Quality Improvement Organization Program, 2000-2001, 2002, 2003, and 2004.

Denominator: Medicare patients hospitalized with a principal diagnosis of acute heart failure.

- The overall heart failure composite showed improvement in the provision of recommended care for Medicare patients with heart failure from 68.5% of the opportunities to provide recommended care in 2000-2001 to 77.7% in 2004 (Figure 2.15).
- The LVEF measure showed improvement from 69.1% in 2000-2001 to 81.6% in 2004, but the ACE inhibitor measure showed no change.

Figure 2.16. Receipt of recommended care for acute heart failure among Medicare patients, by State, 2004



Source: Centers for Medicare & Medicaid Services, Medicare Quality Improvement Organization Program, 2004.

Key: Above average = rate is significantly above the all-States average in 2004. Below average = rate is significantly below the all-States average in 2004.

Denominator: Medicare patients hospitalized with a principal diagnosis of acute heart failure.

Note: The "all-States average" is the average of all reporting States (51 in this case, including the District of Columbia), which is a separate figure from the national average.

- In 2004, the all-States average was 77.7%, with States ranging from a low of 64.1% to a high of 86.8%.
- Sixteen States^{xv} were significantly above the all-States average in 2004 (Figure 2.16), with a combined average rate of 83.2%.
- Thirteen States^{xvi} were significantly below the all-States average in 2004, with a combined average rate of 71.0%.

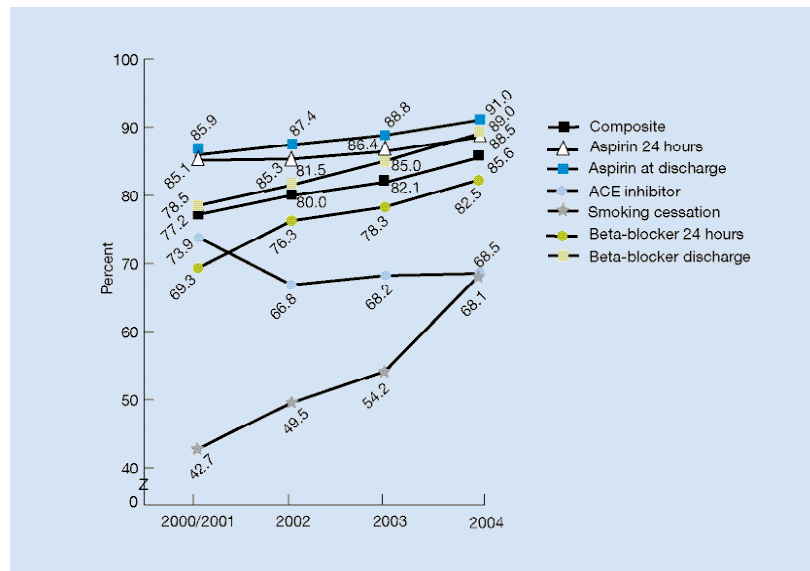
^{xv} The States are Arizona, Wisconsin, Michigan, Ohio, North Carolina, Maryland, Delaware, Pennsylvania, New Jersey, New York, Connecticut, Rhode Island, Massachusetts, Vermont, New Hampshire, and Maine.

^{xvi} The States are Idaho, Montana, Wyoming, North Dakota, New Mexico, Texas, Oklahoma, Kansas, Missouri, Arkansas, Kentucky, Alabama, and West Virginia.

Treatment: Receipt of Recommended Care for Heart Attack

There is consensus that recommended care for patients with a heart attack includes administration of aspirin within 24 hours of heart attack and at discharge, administration of beta-blocker within 24 hours of attack and at discharge, angiotensin-II converting enzyme (ACE) inhibitor treatment among patients with left ventricular systolic dysfunction, and counseling to quit smoking among smokers. The NHQR reports on these measures, as well as a composite of these measures which addresses the proportion of all opportunities in which heart attack patients receive recommended care.

Figure 2.17. Receipt of recommended care for heart attack among Medicare patients age 18 and older: overall composite and six components, 2000-2001, 2002, 2003, and 2004



Source: Centers for Medicare & Medicaid Services, Medicare Quality Improvement Organization Program, 2000-2001, 2002, 2003, and 2004.

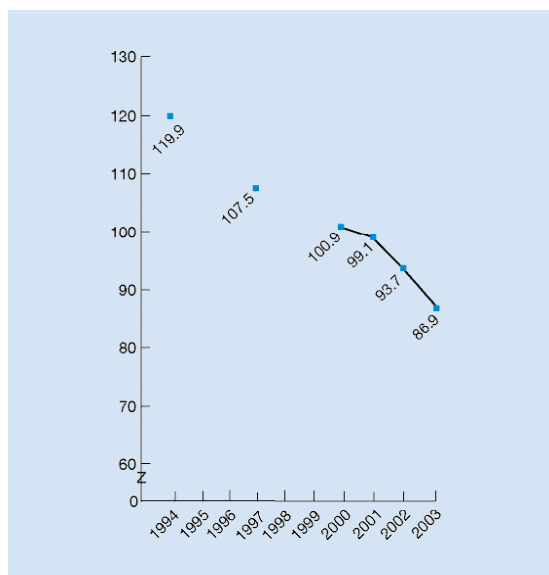
Denominator: Medicare beneficiaries hospitalized with a principal diagnosis of acute myocardial infarction.

- The overall heart attack composite shows improvement in the provision of recommended care for Medicare patients with heart attacks from 77.2% of the opportunities to provide recommended care in 2000-2001 to 85.6% in 2004 (Figure 2.17).
- Five of the component measures showed improvement, including aspirin within 24 hours of admission (from 85.1% to 88.5%), aspirin at discharge (from 85.9% to 91.0%), counseling for smoking cessation (from 42.7% to 68.1%), beta-blocker within 24 hours of admission (from 69.3% to 82.5%), and beta-blocker at discharge (from 78.5% to 89.0%).
- From 2000/2001 to 2004, ACE inhibitor use fell from 73.9% to 68.5%.

Treatment: Inpatient Mortality Following Heart Attack

Survival following admission for a 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 hospitals in order to receive services. It may also partly reflect receipt of appropriate health services.

Figure 2.18. Deaths per 1,000 admissions with a heart attack as principal diagnosis, age 18 and older, 2001-2003



Source: HCUP Nationwide Inpatient Sample, 1994, 1997, 2001-2003.

Denominator: Any person, age 18 and older, U.S. citizen or foreign, using non-Federal, community hospitals in the United States, with a heart attack as principal diagnosis.

Note: Rates are adjusted by age, gender, age-gender interactions, and APR-DRG scoring of risk of mortality.

- Between 1994 and 2003, the overall inpatient mortality rate for heart attacks declined from 119.9 to 86.9 deaths per 1,000 admissions with heart attack (Figure 2.18).

HIV and AIDS

Importance and Measures

Mortality

Number of AIDS deaths (2004)..... 15,798¹⁷

Prevalence

Number of persons in U.S. living with HIV (2003 est.) 1,039,000-1,185,000¹⁸

Number of persons in U.S. living with AIDS (2004)..... 415,193¹⁷

Incidence

New cases of HIV annually (2003 est.) approximately 40,000¹⁸

New AIDS cases (2004 est.)..... 42,514¹⁷

Cost

Federal spending on HIV/AIDS care (fiscal year 2004)..... \$11.6 billion¹⁹

Measures

This section highlights one core report measure focusing on quality of preventive care for HIV-infected individuals:

- New AIDS cases

In addition, a supplemental measure related to prevention of opportunistic infections among HIV patients with low CD4 cell counts is also presented:

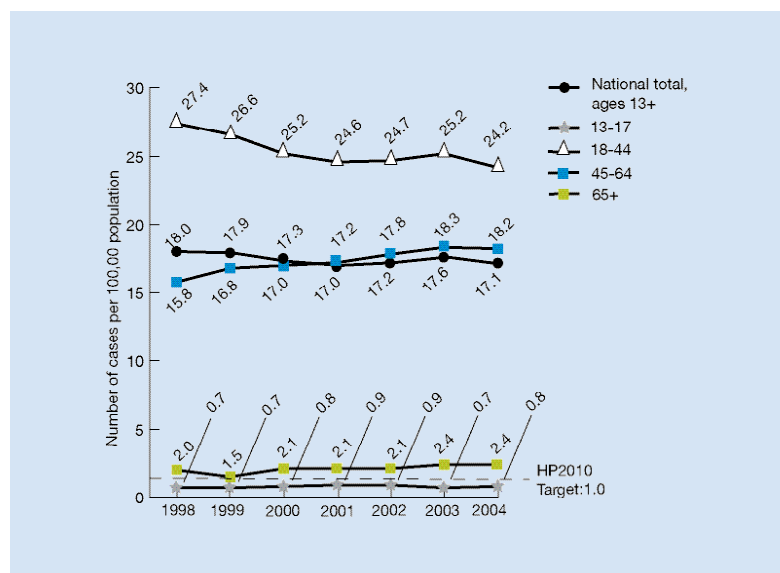
- Eligible AIDS patients receiving prophylaxis for *Pneumocystis pneumonia* (PCP) and *Mycobacterium avium* complex (MAC)

Findings

Prevention: 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 and by the availability of appropriate treatments for HIV-infected individuals. Improved treatments that extend life for those with the disease are reflected in the fact that the number of deaths due to AIDS fell from about 18,000 to 16,000 between 2003 and 2004 after showing no change for the previous 3 years.¹⁷

Figure 2.19. New AIDS cases per 100,000 population ages 13 and older, 1998-2004



Source: Centers for Disease Control and Prevention, National Center for HIV, STD, and TB Prevention, HIV/AIDS Reporting System, 1998-2004.

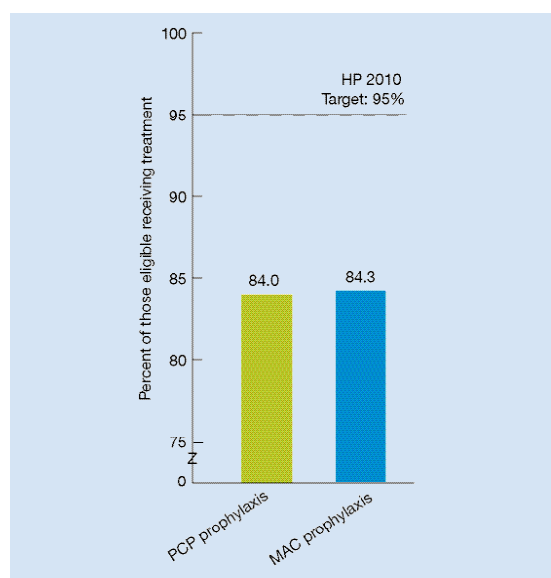
Reference population: U.S. population age 13 and older.

- The overall rate of new AIDS cases per 100,000 has not changed significantly between 1998 and 2004. However, during that same time span, the rate of new AIDS cases decreased for adults ages 18-44 while increasing for children ages 13-17, adults ages 45-64, and adults age 65 and older (Figure 2.19).
- The 2004 national rate of 17.1 new AIDS cases per 100,000 persons is well above the Healthy People 2010 target of 1.0 new case per 100,000 persons. If current trends continue, the target will not be met.

Prevention: PCP and MAC Prophylaxis

Management of chronic HIV disease includes outpatient and inpatient services. Because national data on HIV care are not routinely collected, HIV measures tracked in NHQR come from the HIV Research Network, which consists of 18 medical practices across the United States that treat large numbers of HIV patients. Although program data are collected from all Ryan White CARE Act grantees, the aggregate nature of the data makes it difficult to assess the quality of care provided by Ryan White CARE Act providers. Without adequate treatment, as HIV disease progresses, CD4 cell counts fall and patients become increasingly susceptible to opportunistic infections. When CD4 cell counts fall below 200, medicine to prevent development of *Pneumocystis pneumonia* (PCP) is routinely recommended; when CD4 cell counts fall below 50, medicine to prevent development of disseminated *Mycobacterium avium* complex (MAC) infection is routinely recommended.²⁰

Figure 2.20. Percentage of eligible AIDS patients age 18 and older receiving PCP and MAC prophylaxis, 2003



Source: HIV Research Network, 2003.

Reference population: Adult patients with AIDS with CD4 cell counts below 200 (PCP) or CD4 cell counts below 50 (MAC).

Note: Data from the HIV Research Network are not nationally representative of the level of care received by all Americans living with HIV. Participation in this network is voluntary, and network data only represent patients who are actually receiving care. Furthermore, data shown above are not representative of the HIV Research Network as a whole, because they represent only a subset of network sites that have the best quality data. (For more information on the HIV Research Network, see: www.ahrq.gov/data/hivnet.htm.)

- Of those patients eligible (3,094 AIDS patients with at least two CD4 cell counts below 200), 84.0% received PCP prophylaxis (Figure 2.20), which is below the Healthy People 2010 target of 95%.
- Of those patients eligible (957 AIDS patients with at least two CD4 cell counts below 50), 84.3% received MAC prophylaxis, which is below the Healthy People 2010 target of 95%.

Maternal and Child Health

Importance and Measures

Mortality

Number of maternal deaths (2003)	495 ²¹
Number of infant deaths (2004)	27,896 ²

Demographics

Number of children under 18 (2005)	73,469,984 ²²
Number of babies born in United States (2004)	4,115,590 ²³

Cost

Total cost of health care for children (2002)	\$79 billion ²⁴
Cost effectiveness of vision screening for children	\$0-\$14,000 ⁵
Cost effectiveness of childhood immunization series ^{xvii}	cost saving ⁵

Measures

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

- Receipt of prenatal care in the first trimester
- Receipt of all recommended immunizations by young children
- Vision checks for children
- Counseling parents about healthy eating in children
- Hospital admissions for pediatric gastroenteritis

In addition one supplemental measure is also presented:

- Weight monitoring of overweight^{xviii} children

^{xvii} The childhood immunization series includes vaccinations for diphtheria-tetanus-pertussis; measles-mumps-rubella; inactivated polio virus; *Haemophilus influenzae* type B; hepatitis B; and varicella.

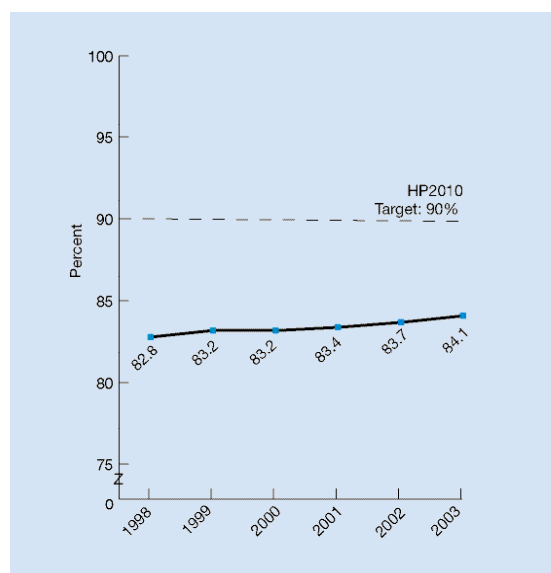
^{xviii} Overweight is defined as having a body mass index of 25 or higher.

Findings

Prevention: Prenatal Care in the First Trimester

Pregnant women are at risk for high blood pressure, gestational diabetes, and other disorders. Prenatal care is a preventive service intended to identify and manage risk factors in pregnant women and their unborn children in order to improve the chances of a healthy mother and child during pregnancy, birth, and early childhood. Prenatal care is recommended during the first trimester and throughout pregnancy.

Figure 2.21. Percent of women of all ages who delivered live births and who received prenatal care in the first trimester of pregnancy, 1998-2003



Source: National Vital Statistics System - Natality, 1998-2003.

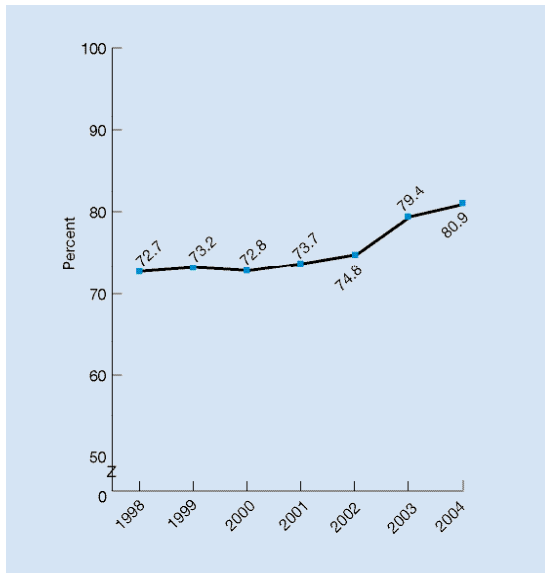
Reference population: Women with live births.

- The percentage of women who received prenatal care in the first trimester of pregnancy increased gradually from 82.8% in 1998 to 84.1% in 2003 (Figure 2.21).
- As of 2003, the percentage of women who received prenatal care in the first trimester of pregnancy had not yet achieved the Healthy People 2010 target of 90%. At the current average annual rate of change, this target is not projected to be met.

Prevention: Receipt of All Recommended Immunizations by Young Children

Immunizations are important for reducing mortality and morbidity. They protect recipients, as well as others in the community who cannot be vaccinated from illness and disability. Recommended vaccines for children ages 19-35 months include four doses of diphtheria-tetanus-pertussis (DTaP) vaccine, three doses of polio vaccine, one dose of measles-mumps-rubella (MMR) vaccine, three doses of *H. influenzae* type B vaccine, and three doses of hepatitis B vaccine.

Figure 2.22. Children ages 19-35 months who received all recommended vaccines, 1998-2004



Source: National Immunization Survey, 1998-2004.

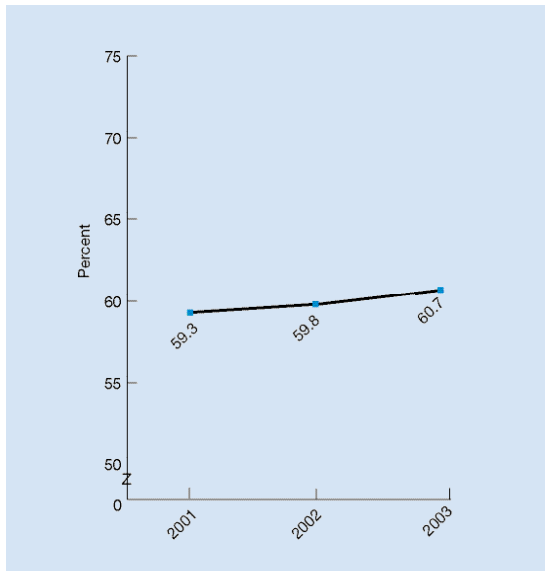
Reference population: U.S. civilian noninstitutionalized population: children, ages 19-35 months.

- From 1998 to 2004, the percentage of children ages 19-35 months who received all recommended vaccines increased from 72.7% to 80.9% (Figure 2.22).

Prevention: Vision Checks for Children

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

Figure 2.23. Children ages 3-6 who ever received a vision check, 2001-2003



Source: Agency for Healthcare Research and Quality, Medical Expenditure Panel Survey, 2001-2003.

Reference population: U.S. civilian noninstitutionalized population: children ages 3-6.

Note: Rates are age adjusted.

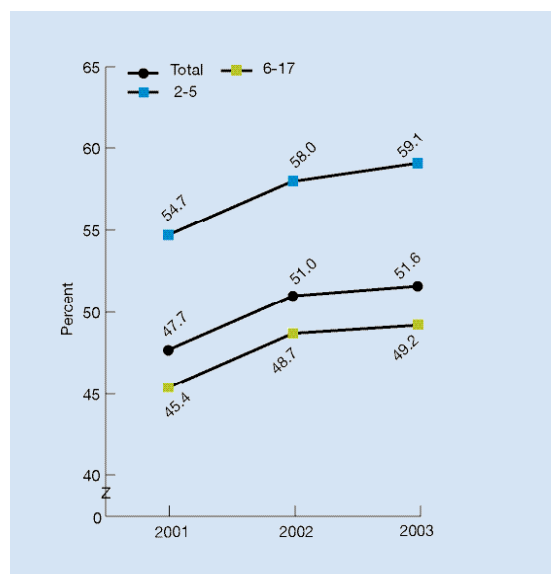
- The percentage of children ages 3-6 who ever received a vision check did not change significantly from 2001 to 2003 (Figure 2.23).

Prevention: Counseling Parents About Children Healthy Eating in Children

Childhood represents a unique period when healthy, life-long habits of diet and exercise can be formed, and physicians play an important role in encouraging these good behaviors in children. Overweight and obesity during childhood often persist into adulthood, with consequences that are numerous and costly. Unfortunately, the prevalence of overweight and obesity among children has risen dramatically in recent decades.²⁵

Children require healthy diets for proper growth and development. Those with unhealthy eating patterns are at a greater risk of obesity, type 2 diabetes, cardiovascular disease, impaired growth, and many other conditions. The American Academy of Pediatrics recommends that pediatricians discuss and promote healthy diets with their patients.²⁵

Figure 2.24. Children ages 2-17 whose parents or guardians reported advice from a doctor or other health provider about healthy eating, 2001-2003



Source: Agency for Healthcare Research and Quality, Medical Expenditure Panel Survey, 2001-2003.

Reference population: U.S. civilian noninstitutionalized population: children ages 2-17.

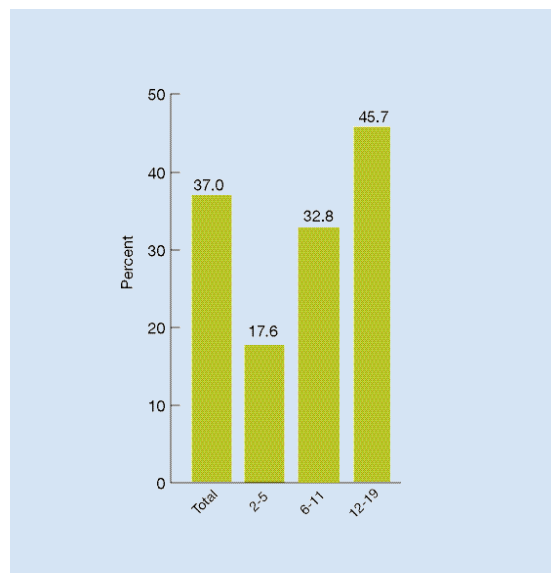
Note: Rates are age adjusted.

- From 2001 to 2003, the proportion of children whose parents or guardians reported advice from a health provider about healthy eating improved from 47.7% to 51.6% (Figure 2.24).
- While the proportion of children ages 6-17 who received counseling about healthy eating rose from 45.4% in 2001 to 49.2% in 2003, the rate remained stable for children ages 2-5 (i.e., the change for this age group from 2001 to 2003 was not statistically significant).
- In all 3 data years, parents of children ages 6-17 were less likely than parents of children ages 2-5 to report receiving advice from a doctor or health provider about healthy eating.

Prevention: Weight Monitoring of Overweight Children

Pediatricians are advised to monitor body mass index (BMI) and excessive weight gain in children in order to recognize and address cases of overweight and obesity.²⁵ When health care providers alert young patients and their parents about their overweight status, a new opportunity is created to develop healthy dietary and exercise habits that may be carried into adulthood.²⁶

Figure 2.25. Overweight children and adolescents ages 2-19 who were told by a doctor or health professional that they were overweight, 1999-2002



Source: Centers for Disease Control and Prevention, National Health and Nutrition Examination Survey (NHANES), 1999-2002.

Reference population: Civilian noninstitutionalized population ages 2-19.

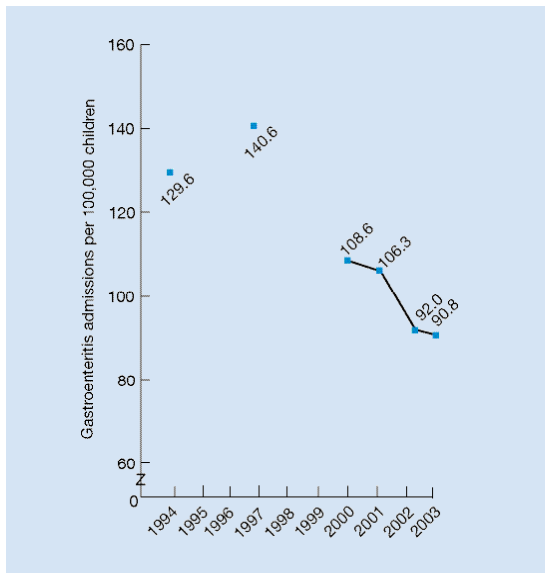
Note: Overweight children are identified using age- and sex-specific reference data from the 2000 CDC BMI-for-age growth charts. Children and youth can be categorized as acceptable, underweight, at risk of overweight, or overweight. Children with BMI values at or above the 95th percentile of the sex-specific BMI growth charts are categorized as overweight.

- During 1999-2002, 37.0% of overweight children and teens ages 2-19 were told by a doctor or health professional that they were overweight (Figure 2.25).
- During 1999-2002, overweight children ages 2-5 (17.6%) and 6-11 (32.8%) were less likely than overweight children ages 12-19 (45.7%) to be told by a provider that they were overweight.

Treatment: Hospital Admissions for Pediatric Gastroenteritis

Pediatric gastroenteritis can develop into a life-threatening condition due to dehydration, especially among infants. Proper outpatient treatment of gastroenteritis may prevent hospitalization, and lower hospitalization rates may reflect access to better quality care.

Figure 2.26. Hospital admissions for pediatric gastroenteritis per 100,000 population, 1994, 1997, and 2000-2003



Source: Healthcare Cost and Utilization Project, Nationwide Inpatient Sample, 1994, 1997, and 2000-2003.

Denominator: U.S. population under age 18.

Note: Adjusted by age and gender to the total U.S. population for 2000 as the standard population.

- From 1994 to 2003, admissions for pediatric gastroenteritis have fallen from 129.6 to 90.8 per 100,000 children (Figure 2.26).

Mental Health and Substance Abuse

Importance and Measures

Mortality

Cause of death rank – suicide (2004)	11th ²
Alcohol-related motor vehicle deaths (2004)	16,694 ²⁷
Students grades 9-12 who have seriously considered suicide (2005)	16.9% ²⁸

Prevalence

People 12 or older with alcohol and/or illicit drug dependence or abuse (2004)	22,506,000 ²⁹
People with a major depressive episode (MDE) during past year	17,100,000 (8.0%) ³⁰
Lifetime prevalence of major depressive disorder	9.5% ³¹
Lifetime prevalence of dysthymic disorder	6.1% ³¹
People with any mental disorder in past year, U.S. (2001-2003)	28.1% ³²
People with anxiety disorders, U.S. (2001-2003)	18.7% ³²
People with mood disorders, U.S. (2001-2003)	9.7% ³²
People with impulse-control disorders, U.S. (2001-2003)	10.4% ³²
People with substance abuse disorders, U.S. (2001-2003)	7.2% ³²

Cost

Direct medical expenditures for substance abuse and mental disorders (2001 est.)	\$104 billion ³³
Cost effectiveness of problem drinking screening and brief counseling	\$14,000-\$35,000/QALY ⁵

Measures

The NHQR tracks measures for the treatment of diagnosable mental disorders in general, of substance abuse, and specifically the treatment for major depression. The measures for major depression include any treatment, practitioner contact for medication management, and the receipt of antidepressant medication both during the first 3 months following initial diagnosis (i.e., the acute phase) and through the continuation treatment phase. Mental health treatment is defined as counseling, inpatient care, outpatient care, or prescription medications for problems with emotions or anxiety and does not include alcohol or drug treatment. Because improved outcomes are correlated with treatment completion and length of stay in substance abuse treatment, the measure of the quality of substance abuse treatment presented in this report is the rate of persons who complete all parts of their treatment plan. This section highlights three core measures of mental health and substance abuse treatment:

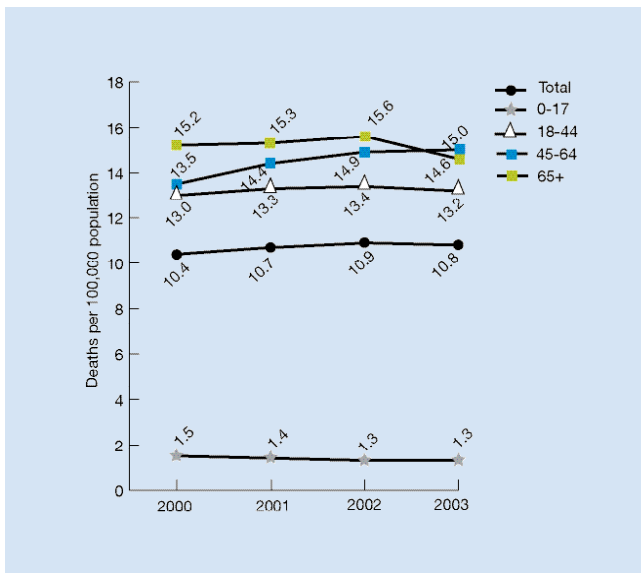
- Suicide death rate
- Receipt of treatment for illicit drug use
- Receipt of treatment for depression

Findings

Prevention: Suicide Deaths

Suicide is often the result of untreated depression, and may be prevented when its warning signs are detected and treated.³⁴

Figure 2.27. Suicide deaths per 100,000 population, 2000-2003



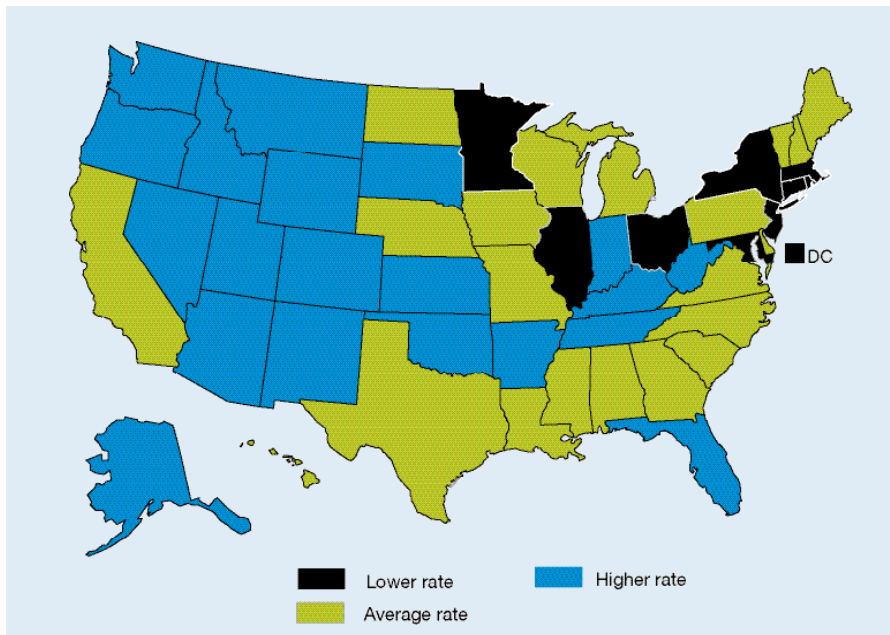
Source: National Center for Health Statistics, National Vital Statistics System – Mortality, 2000-2003.

Reference population: U.S. population, all ages.

Notes: Total rate is age adjusted to the 2000 standard population.

- From 2000 to 2003, the suicide death rate increased for the population as a whole (from 10.4 to 10.8 deaths per 100,000 population), moving further away from the Healthy People 2010 target of 5.0 suicide deaths per 100,000 population (Figure 2.27).
- From 2000 to 2003, the rate of suicide deaths per 100,000 population decreased for children ages 0-17 (from 1.5 to 1.3) and for adults age 65 and over (from 15.2 to 14.6). During the same period, the rate increased for adults ages 45-64 (from 13.5 to 15.0).
- In all 4 data years, the rate of suicide deaths was higher for adults age 65 and older than for adults ages 18-44, and lower for children ages 0-17 than for adults ages 18-44.

Figure 2.28. Suicide deaths per 100,000 population, by State, 2003



Source: National Center for Health Statistics, National Vital Statistics System – Mortality, 2003.

Key: Above average = rate is significantly above the national average in 2003. Below average = rate is significantly below the national average in 2003.

Reference population: U.S. population.

Note: Rates are age adjusted to the 2000 standard population.

- In 2003, 10 States^{xix} had rates of suicide deaths that were lower than the national average of 10.8 per 100,000 population, with a combined average rate of 7.6 per 100,000 population. No State reached the Healthy People 2010 goal of 5.0 per 100,000 population (Figure 2.28).
- In 2003, 20 States^{xx} had rates of suicide deaths that were higher than the national average, with a combined average rate of 15.6 per 100,000 population.
- Five States—Oregon, Colorado, Indiana, Kentucky, and Texas—showed increases in their rate of suicide deaths from 1999 to 2003. Louisiana and Maine demonstrated decreases in their rates of suicide deaths during the same time period.
- The State rates of suicide deaths per 100,000 population ranged from a low of 5.9 to a high of 21.8.

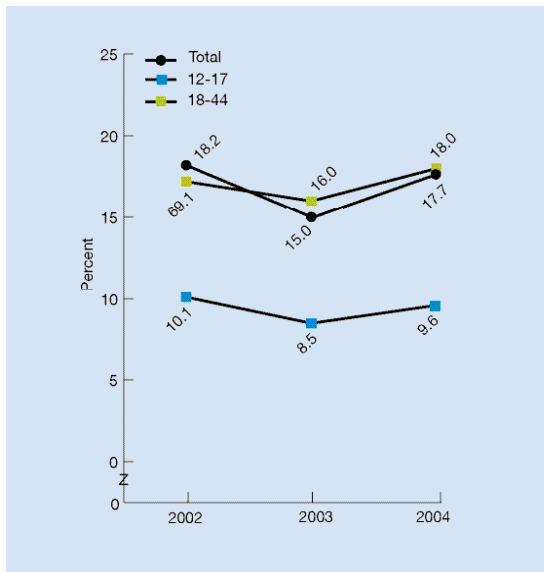
^{xix} The States are Minnesota, Illinois, Ohio, Maryland, New York, New Jersey, Connecticut, Rhode Island, Massachusetts, and the District of Columbia.

^{xx} The States are Alaska, Washington, Oregon, Nevada, Idaho, Montana, Utah, Arizona, Wyoming, Colorado, New Mexico, South Dakota, Kansas, Oklahoma, Arkansas, Indiana, Kentucky, Tennessee, Florida, and West Virginia.

Treatment: Receipt of Needed Treatment for Illicit Drug Use

Substance abuse is a medical problem that requires timely treatment not only because of its health effects but also because drug use is associated with other adverse effects such as physical and domestic violence. In addition, because overall health care costs may be reduced by effective substance abuse and mental health treatment,^{35, 36} appropriate receipt and completion of treatment have both clinical and economic implications.

Figure 2.29. People ages 12 and over who received needed treatment for illicit drug use, 2002-2004



Source: SAMHSA, National Survey on Drug Use and Health, 2002-2004.

Reference population: U.S. civilian noninstitutionalized population age 12 and older who needed treatment for any illicit drug use.

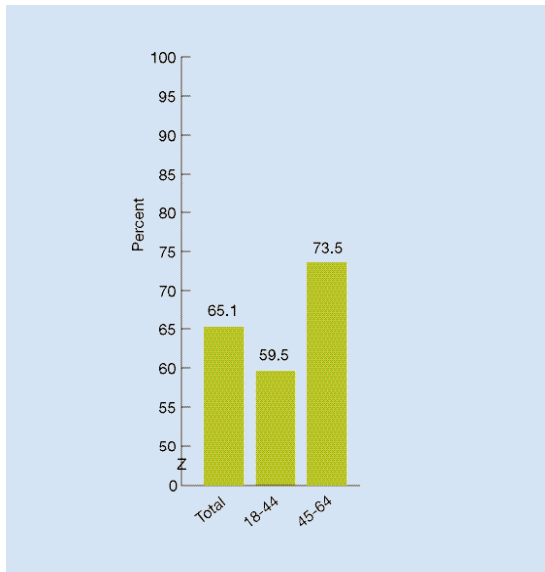
Note: Treatment refers to treatment at a specialty facility, such as a drug and alcohol inpatient and/or outpatient rehabilitation facility, inpatient hospital care, or a mental health center.

- Overall, 17.7% of those who met criteria for needing treatment for illicit drug use actually received it in 2004. This rate has not changed significantly since 2002 (Figure 2.29).
- Of people that needed treatment for illicit drug use in 2004, only 18.0% of adults ages 18-44 and 9.6% of children ages 12-17 received it. These rates remain statistically unchanged from 2002.
- In all 3 data years, children ages 12-17 who needed illicit drug treatment were less likely than adults ages 18-44 to receive such treatment.

Treatment: Receipt of Treatment for Depression

Almost 10% of the U.S. population will have a major depressive episode in their lifetime. Treatment can be very effective in reducing symptoms and associated illnesses and returning individuals to a productive lifestyle.

Figure 2.30. Adults age 18-64 with a history of major depressive episode who received treatment for depression in the past year, 2004



Source: SAMHSA, Office of Applied Studies, National Survey on Drug Use and Health, 2004.

Reference population: U.S. civilian noninstitutionalized population age 18 and older.

- In 2004, 65.1% of adults ages 18-64 with a major depressive episode received treatment for depression (Figure 2.30).
- Among adults who experienced a major depressive episode, those ages 45-64 (73.5%) were more likely than those ages 18-44 (59.5%) to receive treatment for depression.

Respiratory Diseases

Importance and Measures

Mortality

Number of deaths due to lung diseases (2001)	231,545 ³⁷
Number of deaths, influenza and pneumonia combined (2004)	61,472 ²
Cause of death rank, influenza and pneumonia combined (2004)	9th ²

Prevalence

People 18 and over who have asthma, U.S. (2003)	14,358,000 ³⁸
People under 18 with an asthma attack in past 12 months, U.S. (2003)	3,975,000 ³⁹

Incidence

Annual number of cases of the common cold in the U.S. (est)	>1 billion ⁴⁰
Annual number of pneumonia cases due to <i>Streptococcus pneumoniae</i>	500,000 ⁴¹

Cost

Total cost of lung diseases (2006 est.)	\$144.2 billion ⁴
Direct medical costs of lung diseases (2006 est.)	\$87.0 billion ⁴
Total approximate cost of upper respiratory infections (annual)	\$40 billion ⁴²
Total cost of asthma (2004)	\$27.6 billion ³⁷
Direct medical costs of asthma (2004)	\$11.5 billion ³⁷
Cost effectiveness of tobacco use screening and brief intervention.	cost saving ⁵
Cost effectiveness of influenza immunization	\$0-\$14,000/QALY ⁵
Cost effectiveness of pneumococcal immunization	cost saving ⁵

Measures

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

- Pneumococcal vaccination
- Receipt of recommended care for pneumonia
- Receipt of antibiotics for the common cold
- Completion of tuberculosis therapy
- Hospital admissions for pediatric asthma

In addition, this year's report includes four supplemental measures^{xxi} on asthma management from the National Asthma Survey:

- Asthma management for long-term control

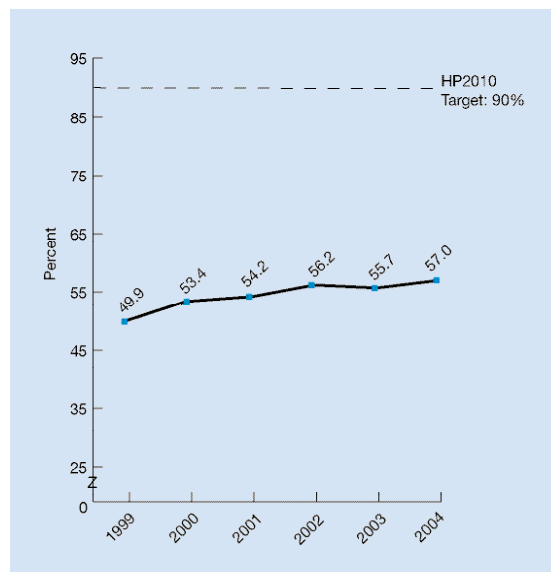
^{xxi} The supplemental measures are: counseling persons with asthma about recognizing early signs of an attack, counseling persons with asthma about changing their environment, use of a controller medication, and receipt of an asthma management plan.

Findings

Prevention: Pneumococcal Vaccination

Vaccination is a cost effective strategy for reducing illness and death associated with pneumococcal disease and influenza.

Figure 2.31. Noninstitutionalized adults age 65 and over who ever received pneumococcal vaccination, 1999-2004



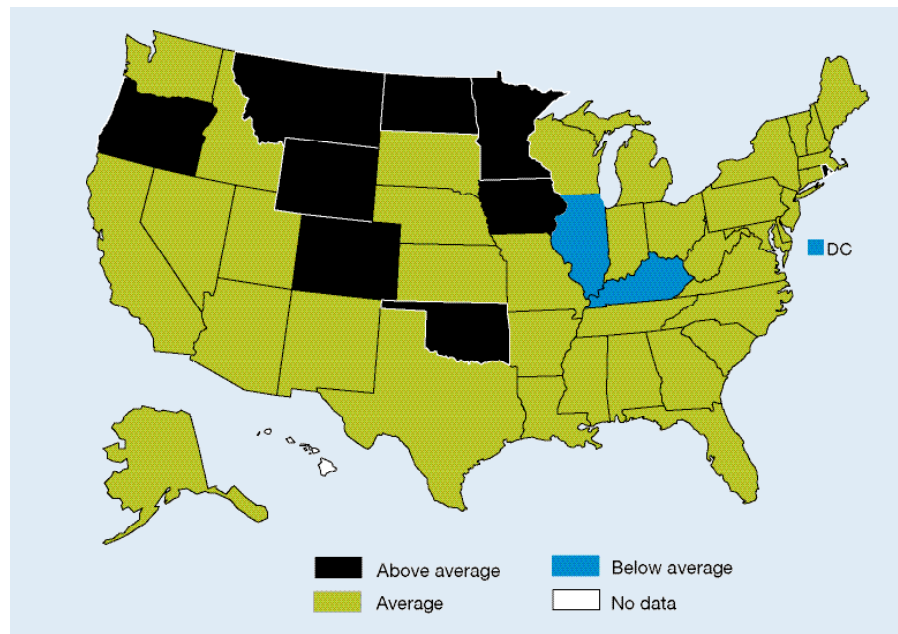
Source: National Center for Health Statistics, National Health Interview Survey, 1999-2004.

Reference population: Civilian noninstitutionalized population age 65 and older.

Note: Age adjusted to the 2000 standard population.

- The percentage of adults age 65 and over who ever received pneumococcal vaccination increased from 49.9% in 1999 to 57.0% in 2004. The Healthy People 2010 target is 90% and is unlikely to be met at this rate of change (Figure 2.31).

Figure 2.32. Adults age 65 and older who ever received pneumococcal vaccination, by State, 2003 and 2004



Source: Centers for Disease Control and Prevention, Behavioral Risk Factor Surveillance System, 2003 and 2004.

Reference population: Civilian noninstitutionalized population age 65 and older.

Key: Above average = Rate is significantly above the reporting States' average in both 2003 and 2004. Below average = State is significantly below reporting States' average in both 2003 and 2004.

Note: Age adjusted to the 2000 standard population. "Reporting States' average" is the weighted average of all reporting States (50 in this case, including the District of Columbia), which is a separate figure from the national average.

- In 2003, the all-States average was 64.1%, with a range from 49.9% to 72.2%. In 2004, the reporting States' average was 63.7%, with a range from 51.3% to 71.5%.
- Nine States^{xxii} were significantly above the reporting States' average in both 2003 and 2004, with a combined average rate of 69.5% in 2004 (Figure 2.32).
- Three States^{xxiii} were significantly below the reporting States' average in both 2003 and 2004, with a combined average rate of 56.0% in 2004.
- Three States—Washington, Minnesota, and Idaho—showed decreases between 2003 and 2004 in the number of adults age 65 and older who had ever received a pneumococcal vaccination. Only one State, Missouri, showed improvement on this measure over this time period.

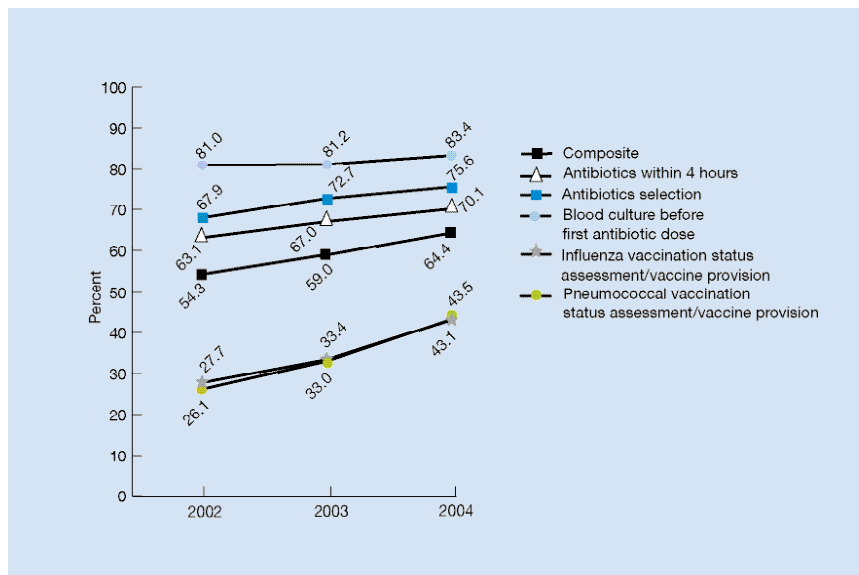
^{xxii} The States are Oregon, Montana, Wyoming, Colorado, North Dakota, Oklahoma, Minnesota, Iowa, and Rhode Island.

^{xxiii} The States are Illinois, Kentucky, and the District of Columbia.

Treatment: Receipt of Recommended Care for Pneumonia

Recommended care for patients with pneumonia includes receipt of: (1) initial antibiotics within 4 hours of hospital arrival; (2) antibiotics consistent with current recommendations; (3) blood culture before antibiotics are administered; (4) influenza vaccination status assessment/vaccine provision; and (5) pneumonia vaccination status assessment/vaccine provision. The NHQR tracks receipt of this care for each measure and as an overall composite.

Figure 2.33. Medicare patients with pneumonia who received recommended care for pneumonia: overall composite and five components, 2002-2004



Source: Centers for Medicare & Medicaid Services, Medicare Quality Improvement Organization Program, 2002-2004.

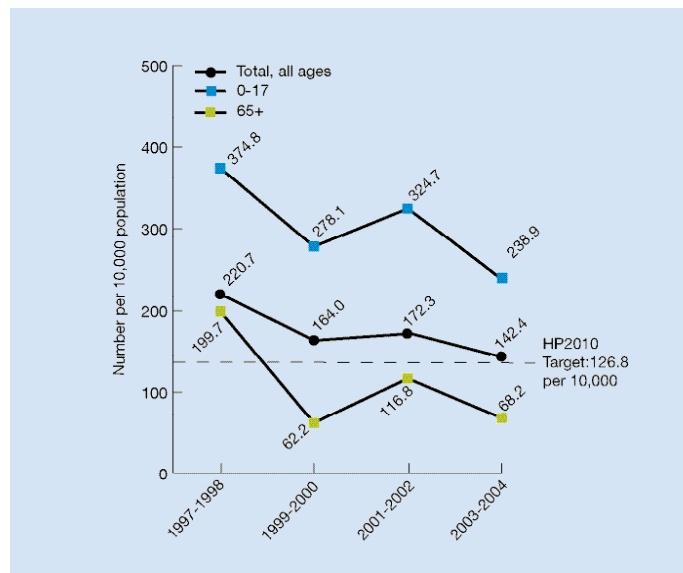
Denominator: Medicare patients hospitalized with a principal diagnosis of pneumonia or a principal diagnosis of either septicemia or respiratory failure and secondary diagnosis of pneumonia.

- The overall pneumonia composite measure shows improvement in the provision of recommended care for Medicare patients with pneumonia from 54.3% of the time in 2002 to 64.4% in 2004 (Figure 2.33).
- All component measures showed improvement: antibiotics within 4 hours rose from 63.1% to 70.1%; proper antibiotics selection rose from 67.9% to 75.6%; blood culture before first antibiotics dose rose from 81.0% to 83.4%; influenza vaccination status assessment/vaccine provision rose from 27.7% to 43.1%; and pneumococcal vaccination status assessment/vaccine provision rose from 26.1% to 43.5%.

Treatment: Receipt of Antibiotics for the Common Cold

Prescription of antibiotics does not treat or relieve symptoms of the common cold, and may lead to the development of antibiotic-resistant bacteria. Although physicians are slowly improving their antibiotic prescribing patterns, overuse of antibiotics is still a concern.⁴³ Children have the highest rates of antibiotic use and the highest rates of infection with antibiotic-resistant bacterial pathogens.⁴⁴

Figure 2.34. Rate of antibiotic drug utilization at ambulatory care visits with a diagnosis of common cold per 10,000 population, 1997-2004



Source: Centers for Disease Control and Prevention, National Center for Health Statistics, National Ambulatory Medical Care Survey and National Hospital Ambulatory Medical Care Survey, 1997-1998, 1999-2000, 2001-2002, and 2003-2004.

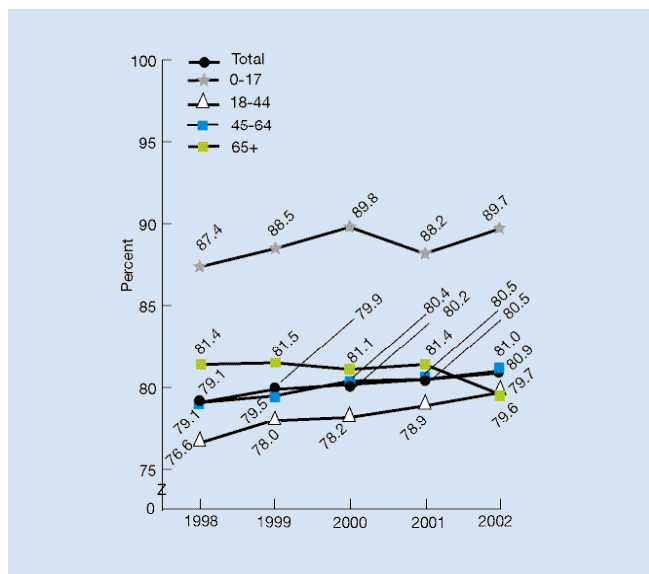
Denominator: U.S. noninstitutionalized population.

- In 2003-2004, the overall rate of antibiotics prescribed at visits with a diagnosis of the common cold stood at 142.4 per 10,000, above the Healthy People 2010 target of 126.8 per 10,000. However, if current trends continue, this target will be achieved before the year 2010 (Figure 2.34).
- From 1997-1998 to 2003-2004, the rate of antibiotics prescribed at visits with a diagnosis of common cold decreased overall for persons of all ages and for children ages 0-17. The rate did not change significantly for adults ages 18-44 (data not shown) or for adults ages 45-64 (data not shown).

Treatment: Completion of Tuberculosis Therapy

In order to be effective for individuals as well as the public, tuberculosis therapy must be taken to its completion. Failure to complete tuberculosis therapy puts patients at increased risk for treatment failure and for spreading the disease to others. Even worse, it may result in the development of drug-resistant strains of the disease.⁴⁵

Figure 2.35. Completion of tuberculosis therapy within 1 year, 1998-2002



Source: National TB Surveillance System.

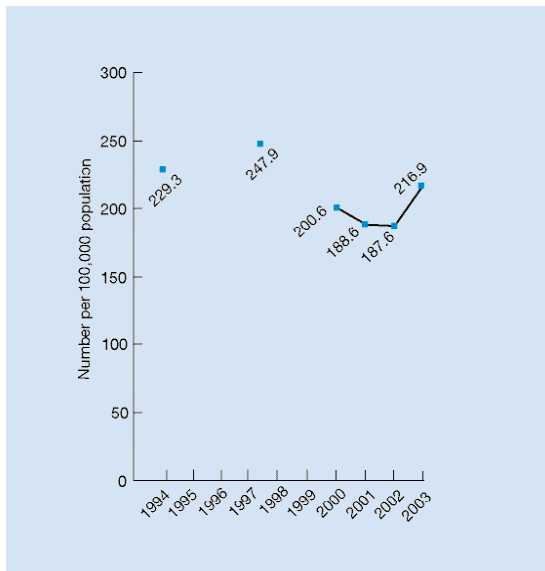
Reference population: U.S. civilian noninstitutionalized population.

- From 1998 to 2002, the rate of completion of tuberculosis therapy within 1 year rose from 79.1% to 80.9% (Figure 2.35).
- Only adults ages 18-44 showed a significant increase in completion of tuberculosis therapy. The percentage for this group rose from 76.6% in 1998 to 79.7% in 2002.
- In all 5 data years, children under age 18 were more likely than adults ages 18-44 to complete tuberculosis therapy within 1 year.
- From 1998 to 2001, adults 65 and older were more likely than adults ages 18-44 to complete tuberculosis therapy within 1 year.

Management: Hospital Admissions for Pediatric Asthma

Asthma can be effectively controlled over the long term with recommended medications, depending on severity of the disease, routine checkups, education of patients, and use of asthma management plans. Preventing hospital admissions for asthma is one measure of successful management of asthma at the population level.

Figure 2.36. Pediatric hospital admissions for asthma per 100,000 population ages 0-17, 1994, 1997, and 2000-2003



Source: Agency for Healthcare Research and Quality, HCUP Nationwide Inpatient Sample, 1994, 1997, and 2000-2003.

Denominator: Persons under 18.

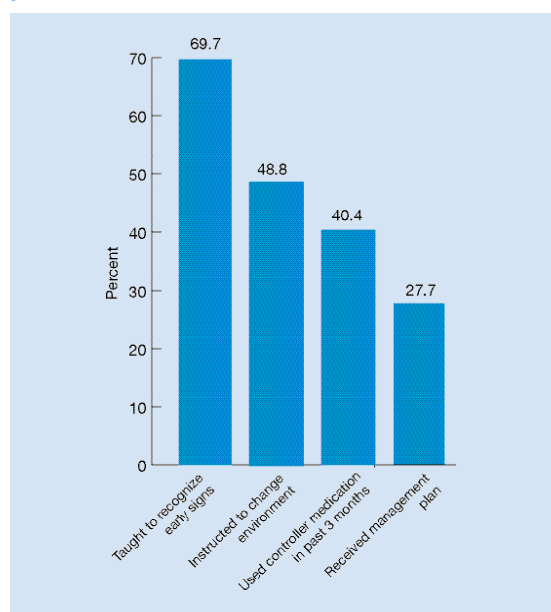
Note: Rates are adjusted by age and gender, using the total U.S. population for 2000 as the standard population.

- In 2003, there were 216.9 admissions for asthma per 100,000 children. This rate was not significantly different from the rate of 229.3 per 100,000 in 1994. (Figure 2.36).

Management: Asthma Management for Long-Term Control

The National Asthma Education and Prevention Program, coordinated by the National Heart, Lung, and Blood Institute, produces clinical guidelines built around four essential components of asthma management critical for effective long-term control of the disease—assessment and monitoring, controlling factors contributing to symptom exacerbation, pharmacotherapy, and education for partnership in care.⁴⁶ The National Asthma Survey, sponsored by CDC's National Center for Environmental Health, is the most comprehensive national data set on asthma prevalence and asthma care and collects information on the components of asthma management.

Figure 2.37. People with current asthma who reported they were taught to recognize early signs of an attack, who were instructed to change their environment to help control their asthma, who reported using a controller medication in the past 3 months, and who reported they received an asthma management plan, 2003



Source: Centers for Disease Control and Prevention, National Center for Health Statistics, and National Center for Environmental Health, National Asthma Survey, 2003.

Reference population: People with current asthma, all ages.

Note: Controller medications include inhalers, pills, syrups, and nebulizers.

- In 2003, the percentage of those with current asthma who reported they were taught to recognize the early signs of an attack was 69.7% (Figure 2.37).
- In 2003, 48.8% of people with current asthma reported they were told how to change their environment to help control their asthma.
- In 2003, 40.4% of those with current asthma reported using a controller medication in the past 3 months.
- In 2003, 27.7% of people with current asthma reported receiving an asthma management plan.

Nursing Home, Home Health, and Hospice Care

Importance and Measures

Demographics

Number of nursing home residents (1999)	1,600,000 ⁴⁷
Number of home health patients (2000)	1,460,800 ⁴⁸
Number of current hospice care patients	105,500 ⁴⁹
Discharges from nursing homes (1998-1999)	2,500,000 ⁴⁷
Discharges from home health agencies (2000)	7,800,100 ⁴⁸
Discharges from hospice care (2000)	621,100 ⁴⁹

Cost

Total cost of nursing home services (2004)	\$115.2 billion ⁵⁰
Total cost of home health services (2004)	\$43.2 billion ⁵⁰
Annual national expenditures for hospice care for decedents (1992-1996)	\$1.232 billion ⁵¹
Percent of health care expenditures for hospice care in last 6 months of life	74% ⁵¹

Measures

The NHQR tracks 14 measures of nursing home care. Care is tracked among both postacute and chronic care residents. Postacute care involves a short stay in a nursing home after a hospital stay and is, in turn, followed by the patient's return to their home. It is contrasted against chronic care, in which the patient is expected to stay in the nursing home for a longer period of time. The NHQR also tracks 12 measures for home health care that reflect improvement or deterioration during the course of care. Two core report measures in nursing home care and two core report measures in home health care are highlighted in this section:

- Use of restraints among chronic care nursing home residents
- Presence of pressure ulcers among nursing home residents
- Improvement in ambulation in home health episodes
- Acute care hospitalization of home health patients

This year for the first time, the NHQR also includes supplemental measures of quality of care for hospice patients. Hospice care is delivered at the end of life to patients with a terminal illness or condition requiring comprehensive medical care as well as psychosocial and spiritual support for the patient and family. The goal of end-of-life care is to achieve a "good death" defined by the Institute of Medicine as one that is "free from avoidable distress and suffering for patients, families, and caregivers; in general accord with the patient's and families' wishes; and reasonably consistent with clinical, cultural, and ethical standards."⁵²

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 patient wishes, communicate about illness, control symptoms, support dying on one's own terms, and provide family emotional support.^{xxiv, 53}

The two supplemental measures presented here from the National Hospice and Palliative Care Organization's Family Evaluation of Hospice Care survey are:

- Receipt of right amount of pain medicine
- Receipt of care consistent with patient's stated end-of-life wishes

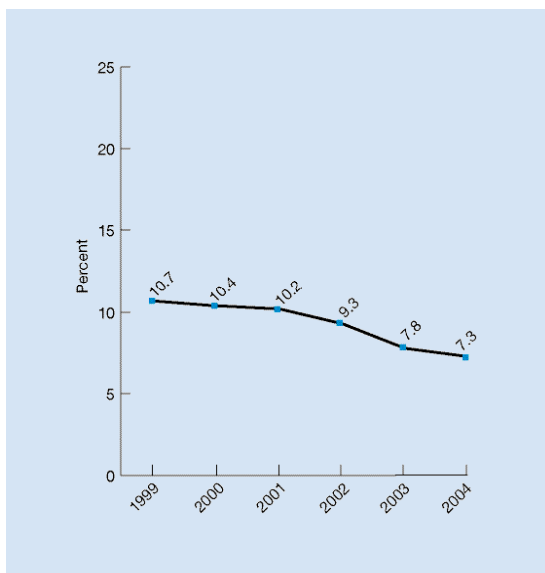
^{xxiv} This survey provides unique insight into end-of-life care and captures information about a large proportion of hospice patients but is limited by non-random data collection and a response rate of about 40%. Survey questions were answered by family members of patients who might not be fully aware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

Findings

Management: Use of Restraints Among Chronic Care Nursing Home Residents

A physical restraint is any device, material, or equipment that keeps a resident from moving freely. A resident who is restrained daily can become weak and develop other medical complications. The use of physical and pharmacological restraints can result in a variety of emotional, mental, and physical problems. According to regulations for the nursing home industry, restraints should be used only to ensure the physical safety of a nursing home resident. The Centers for Medicare & Medicaid Services encourage gradual restraint reduction because of the many negative outcomes associated with restraint use.

Figure 2.38. Chronic care nursing home residents with physical restraints, 1999-2004

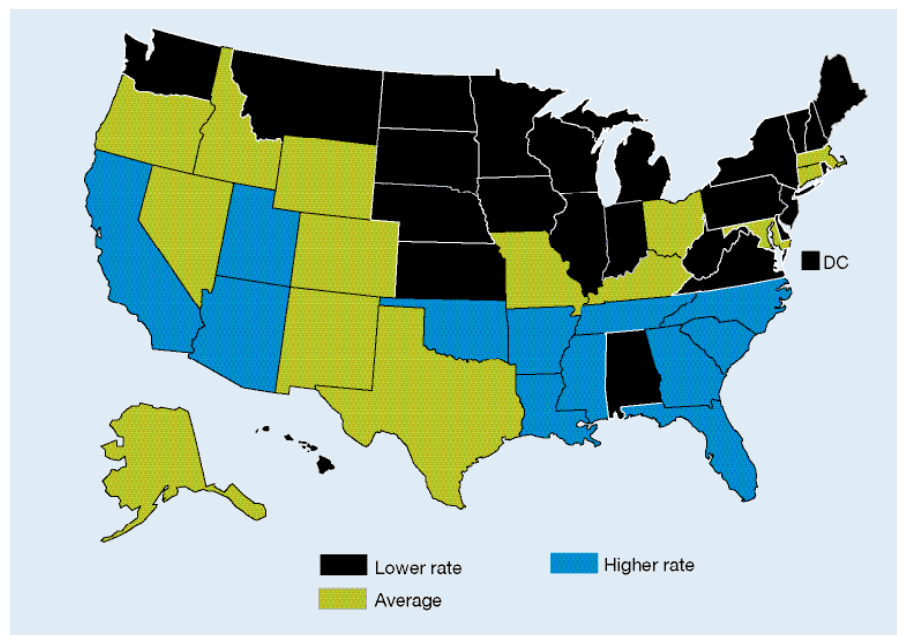


Source: Centers for Medicare & Medicaid Services, Minimum Data Set, 1999-2004. Data are from the third quarter of each calendar year.

Denominator: All chronic care residents in Medicare or Medicaid certified nursing and long-term care facilities.

- The overall proportion of chronic care nursing home residents who are physically restrained decreased from 10.7% in 1999 to 7.3% in 2004 (Figure 2.38).
- Decreases in the use of physical restraints were also observed for all age groups (data not shown).

Figure 2.39. Chronic care nursing home residents with physical restraints, by State, 2004 and 2005



Source: Centers for Medicare & Medicaid Services, Minimum Data Set, Nursing Home Compare, 2004 and 2005.

Denominator: All chronic care residents in Medicare or Medicaid certified nursing and long-term care facilities.

Key: Higher rate = State has rate in use of restraints higher than the all-States average in both 2004 and 2005. Lower rate = State has rate in use of restraints lower than the all-States average in both 2004 and 2005.

Note: The “All-States average” is the average of all reporting States (51 in this case, including the District of Columbia), which is a separate figure from the national average.

- The all-States average on this measure improved between 2004 and 2005, dropping from 7.4% to 6.8% during this time period. There was considerable variation in this measure among States during both years. States ranged from a low of 1.9% to a high of 15.9% in 2004 and from 1.7% to 14.6% in 2005 (Figure 2.39).
- Twenty-five States^{xxv} outperformed the all-States average (i.e., less use of physical restraints in chronic care nursing home residents in both 2004 and 2005), with a combined average rate of 3.7% in 2005.
- Twelve States^{xxvi} had rates higher than the all-States average (i.e., greater use of restraints in both years), with a combined average rate of 11.0% in 2005.
- From 2004 to 2005, 10 States^{xxvii} showed decreases in the use of physical restraints with chronic care nursing home residents. No State showed an increase.

^{xxv} The States are Hawaii, Washington, Montana, North Dakota, South Dakota, Nebraska, Kansas, Minnesota, Iowa, Wisconsin, Illinois, Michigan, Indiana, Alabama, Virginia, West Virginia, Delaware, Pennsylvania, New Jersey, New York, Vermont, New Hampshire, Rhode Island, Maine, and the District of Columbia.

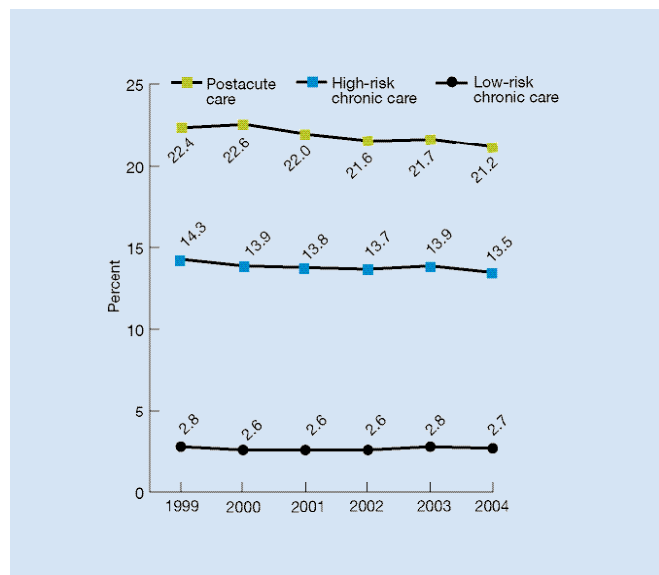
^{xxvi} The States are California, Utah, Arizona, Oklahoma, Arkansas, Louisiana, Tennessee, Mississippi, North Carolina, South Carolina, Georgia, and Florida.

^{xxvii} The States are Idaho, Texas, Kansas, Connecticut, Georgia, Virginia, Wisconsin, Minnesota, Louisiana, and Ohio.

Management: Presence of Pressure Ulcers Among Nursing Home Residents

A pressure ulcer, or pressure sore, is an area of broken down skin caused by sitting or lying in one position for an extended period of time. Pressure sores can be painful, take a long time to heal, and cause other complications such as skin or bone infections. Pressure sores are classified into four stages (stages 1 through 4, with stage 4 being the most severe) according to the depth or type of tissue damage. The measures presented here include all four stages.

Figure 2.40. Postacute and chronic care nursing home residents with pressure ulcers, by type of resident, 1999-2004



Source: Centers for Medicare & Medicaid Services, Minimum Data Set, 1999-2004.

Denominator: All residents in Medicare or Medicaid certified nursing and long-term care facilities.

- There were improvements in pressure sore measures for all three types of residents between 1999 and 2004.
- From 1999 to 2004, the rate of postacute care residents with pressure ulcers fell from 22.4% to 21.2% (Figure 2.40).^{xxviii} For high-risk chronic care residents, the rate fell from 14.3% to 13.5%, and for low-risk chronic care residents, the rate fell from 2.8% to 2.7%.^{xxix}
- High-risk chronic care residents have a fivefold greater risk of having pressure sores than low-risk chronic care residents.

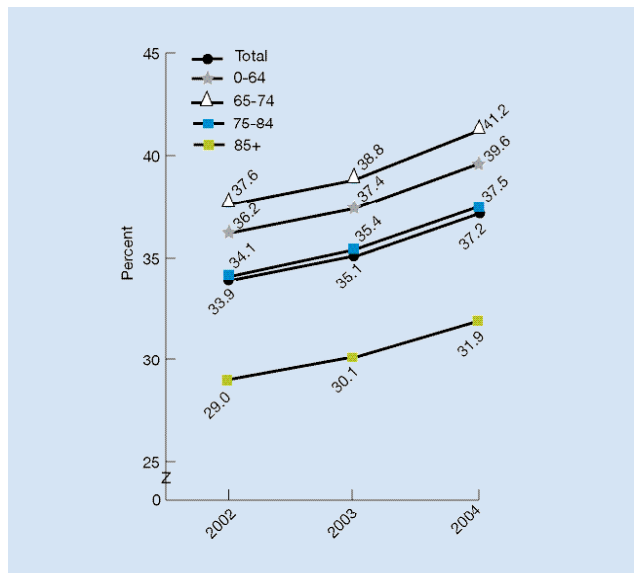
^{xxviii} *Postacute* refers to residents who are admitted to a facility and stay fewer than 30 days; these admissions typically follow an acute-care hospitalization and involve high-intensity rehabilitation or clinically complex care.

^{xxix} *Chronic* refers to residents who enter a nursing facility typically because they are no longer able to care for themselves at home; they tend to remain in the facility from several months to several years. *High-risk* residents are those who are in a coma, who do not get or absorb the nutrients they need, or who cannot move or change position on their own. Conversely, *low-risk* residents can be active, can change positions, and are getting and absorbing the nutrients they need.

Management: Improvement in Ambulation in Home Health Episodes

Improvement in ambulation/locomotion is demonstrated by an increase in the percentage of patients who improve walking or mobility with a wheelchair. Many patients receiving home health care may need help to walk safely. This assistance can come from another person or from equipment (such as a cane). Patients who use a wheelchair may have difficulty moving around safely; but if they can perform this activity with little assistance, they are more independent, self-confident, and active. In cases of patients with some neurological conditions, such as progressive multiple sclerosis or Parkinson's disease, ambulation may not improve even when the nursing home or home health service provides good care.

Figure 2.41. Home health episodes showing ambulation/locomotion improvement, 2002-2004



Source: Centers for Medicare & Medicaid Services, Outcome and Assessment Information Set (OASIS), 2002-2004.

Denominator: U.S. adult nonmaternity patients receiving home health care.

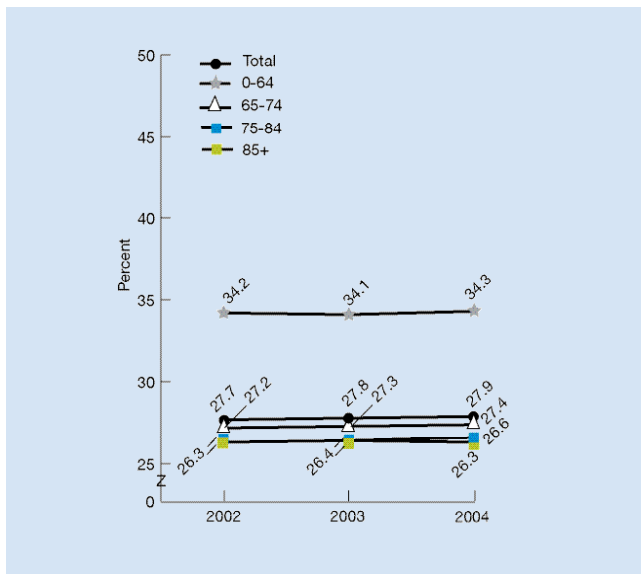
- From 2002 to 2004, the proportion of home health episodes^{xxx} showing improvement in ambulation/locomotion increased, from 33.9% to 37.2% (Figure 2.41).
- The proportion of home health episodes showing ambulation/locomotion improvement also increased for every age group.

^{xxx} An “episode” is the time during which a patient is under the direct care of a home health agency. It starts with the beginning/resumption of care and finishes when the patient is discharged or transferred to an inpatient facility. The same patient may be involved in multiple episodes.

Management: Acute Care Hospitalization of Home Health Patients

Improvement in acute care hospitalization is demonstrated by a decrease in the percentage of patients who had to be admitted to the hospital. Patients may need to go into the hospital while they are getting care. Depending on the severity of the patient's condition, this may not be avoidable even with good home health care.

Figure 2.42. Home health episodes with acute care hospitalization, 2002-2004



Source: Centers for Medicare & Medicaid Services, Outcome and Assessment Information Set (OASIS), 2002-2004.

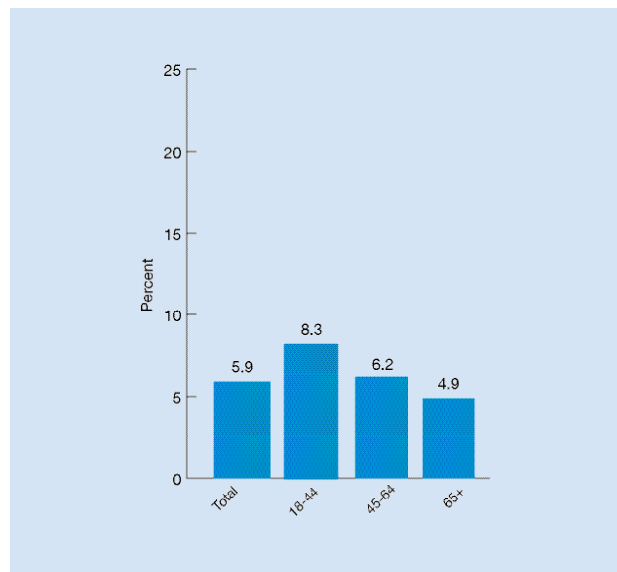
Denominator: U.S. adult nonmaternity patients receiving home health care.

- In 2004, 27.9% of home health episodes ended in hospitalization (Figure 2.42).
- Between 2002 and 2004, the rate remained stable for the entire population and for every age group.
- In all 3 data years, home health patients under 65 years of age were more likely than patients 65-74 to require hospitalization. This may be related to the fact that home health patients under the age of 65 tend to have different characteristics, such as greater degrees of disability and illness.

Management: Receipt of Right Amount of Pain Medicine by Hospice Patients

Addressing the comfort aspects of care, such as relief from pain, fatigue, and nausea, is an important component of hospice care. ^{xxxix}

Figure 2.43. Hospice patients age 18 and older who did not receive the right amount of medicine for pain, by age group, 2005



Source: National Hospice and Palliative Care Organization Family Evaluation of Hospice Care, 2005.

Denominator: Adult hospice patients.

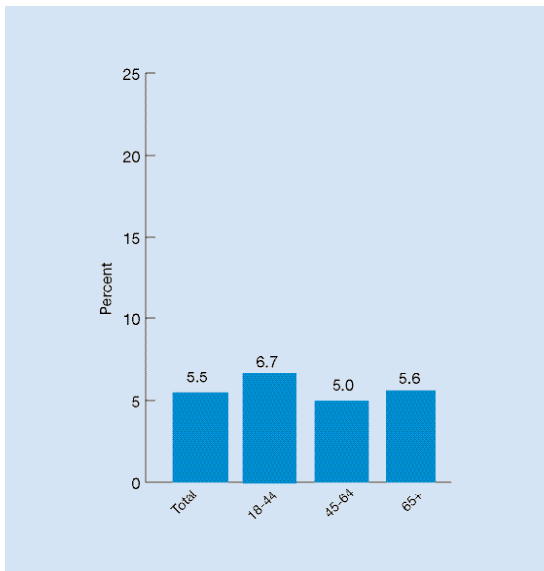
- The proportion of hospice patients whose families reported that they did not receive the right amount of medicine for pain was 5.9% in 2005 (Figure 2.43).
- Families of hospice patients ages 18-44 and ages 45-64 were more likely to report the patient did not receive the right amount of pain medicine (8.3% and 6.2%, respectively) compared with families of patients age 65 and older (4.9%).

^{xxxix} This measure is based on responses from a family member of the deceased. In interpreting it, it should be noted that family members may or may not be able to determine whether the right amount of medicine for pain was administered.

Management: Receipt of Care Consistent With Patient's Stated End-of-Life Wishes

End-of-life care should respect a patient's stated end-of-life wishes. This includes shared communication and decisionmaking between providers and hospice patients and their family members and respect of cultural beliefs.

Figure 2.44. Hospice patients age 18 and older who did not receive care consistent with their stated end-of-life wishes, by age group, 2005



Source: National Hospice and Palliative Care Organization Family Evaluation of Hospice Care, 2005.

Denominator: Adult hospice patients.

- The proportion of hospice patients whose families reported that they did not receive end-of-life care consistent with their stated wishes was 5.5% in 2005 (Figure 2.44).
- Families of hospice patients ages 18-44 were more likely and families of patients ages 45-64 were less likely than families of patients age 65 and older to report patients did not receive end-of-life care consistent with their stated wishes.

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Chapter 3. Patient Safety

The Institute of Medicine defined patient safety in its 1999 report, *To Err Is Human*, as freedom from accidental injury due to medical care or medical errors.¹

Importance and Measures

Mortality

Number of Americans that die each year from medical errors (1999 estimate) 44,000-98,000¹
Number of Americans that die in the hospital each year due to 18 types
of medical injuries (2000 estimate) at least 32,000²

Cost

Cost attributable to medical errors (in lost income, disability,
and health care costs) (1999 estimate) \$17 billion-\$29 billion¹

Measures

Much progress has been made in recent years in raising awareness, developing event reporting systems, and developing national standards for data collection. Data remain incomplete for a comprehensive national assessment of patient safety.³ Nevertheless, several measures are available to provide insight into the level of patient safety in the United States.

This year’s selection of patient safety core report measures has changed from previous years. Some measures were removed from the set due to a discontinuation of the measure, a lack of new data, or concerns about data quality. Other measures were added that cover new and important aspects of patient safety. This year’s chapter highlights six core measures relating to postoperative complications, other complications of hospital care, and complications of medications:

- Postoperative care composite: pneumonia, urinary tract infection, and/or venous thromboembolic event
- Appropriate timing of antibiotics among surgical patients
- Adverse events associated with central venous catheters
- Deaths following complications of care
- Adverse drug events in the hospital
- Inappropriate medication use among the elderly

Findings

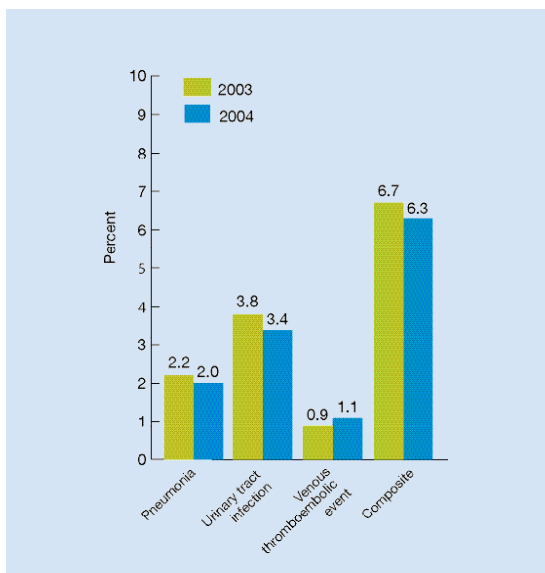
Postoperative Complications

Adverse health events can occur during episodes of care, especially during and right after surgery. Although some of the events may be related to a patient's underlying condition, many of them can be avoided if adequate care is provided.

Postoperative care composite: pneumonia, urinary tract infection, or venous thromboembolic event.

Complications after surgery may include but are not limited to pneumonia, bladder infection, and blood clots in the legs.

Figure 3.1. Surgical patients with postoperative pneumonia, urinary tract infection, and venous thromboembolic event and composite, 2003 and 2004



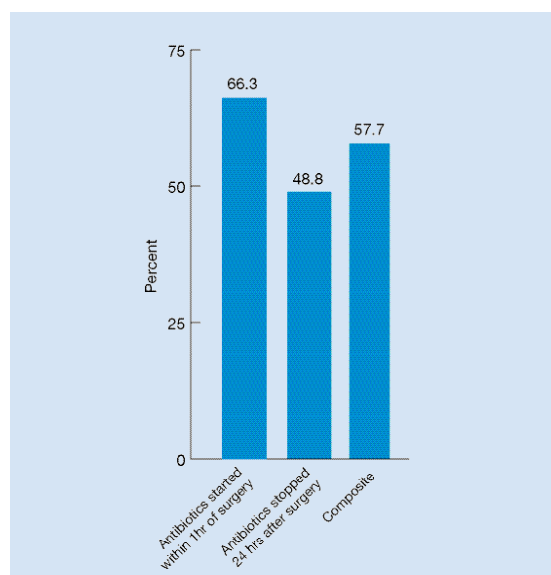
Source: Centers for Medicare & Medicaid Services, Medicare Patient Safety Monitoring System, 2003-2004.

Denominator: Hospitalized Medicare patients having surgery.

- From 2003 to 2004, the percentage of surgical patients with postoperative pneumonia, urinary tract infection, or venous thromboembolic event did not change significantly (Figure 3.1).

Appropriate timing of antibiotics among surgical patients. Infections acquired during hospital care (nosocomial infections) are one of the most serious safety concerns. A common hospital-acquired infection is a wound infection following surgery. Hospitals can reduce the risk of wound infection after surgery by making sure patients get the right antibiotics at the right time on the day of their surgery. Research shows that surgery patients who get antibiotics within the hour before their operation are less likely to get wound infections; getting an antibiotic earlier, or after surgery begins, is not as effective. However, taking these antibiotics for more than 24 hours after routine surgery is usually not necessary and can increase the risk of side effects such as stomach aches, serious types of diarrhea, and antibiotic resistance. Among adult Medicare patients having surgery, the NHQR tracks receipt of antibiotics within 1 hour prior to surgical incision, discontinuation of antibiotics within 24 hours after end of surgery, and a composite of these two measures.

Figure 3.2. Appropriate timing of antibiotics received by adult Medicare patients having surgery, overall composite and two components, 2004



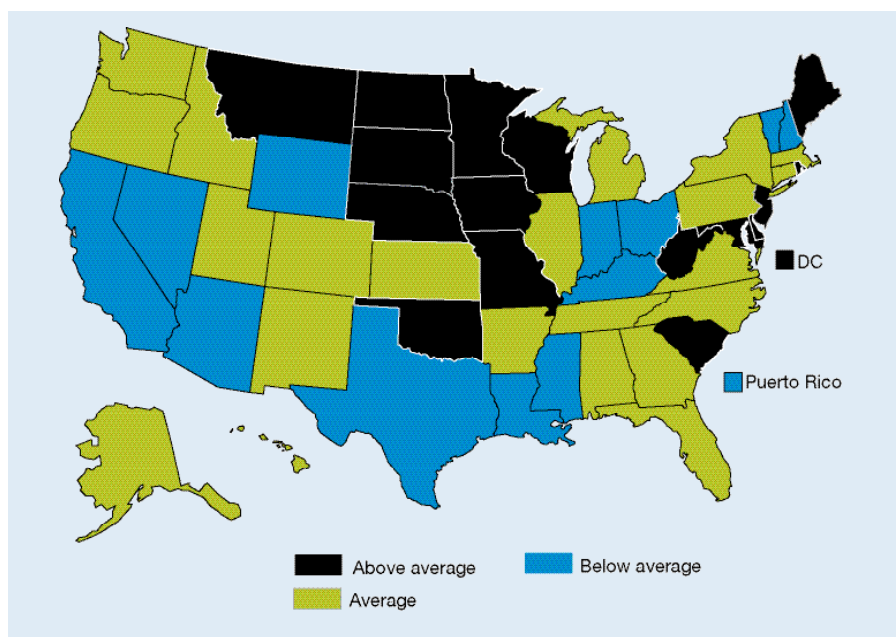
Source: Medicare Quality Improvement Organization Program, 2004.

Denominator: Hospitalized Medicare patients having surgery.

- In 2004, 66.3% of adult Medicare patients having surgery received antibiotics within 1 hour of surgery, and 48.8% had their antibiotics stopped within 24 hours of surgery. Overall timing of antibiotics was appropriate 57.7% of the time (Figure 3.2).

Chapter 3. Patient Safety

Figure 3.3. Appropriate timing of antibiotics received by adult Medicare patients having surgery, by State, 2004



Source: Medicare Quality Improvement Organization Program, 2004.

Key: Above average = appropriate timing of prophylactic antibiotics is significantly above the all-States average in 2004. Below average = appropriate timing of prophylactic antibiotics is significantly below the all-States average in 2004.

Denominator: Hospitalized Medicare patients having surgery.

Note: “All-States average” is the average of all responding States (52 in this case, including the District of Columbia and Puerto Rico), which is a separate figure from the national average.

- Variation was seen among States in the overall timing of prophylactic antibiotics. In 2004, the all-States average was 57.7% and ranged from 39.6% to 71.3%.
- Seventeen Statesⁱ were significantly above the all-States average in 2004 (Figure 3.3), with a combined average rate of 66.7%.
- Thirteen Statesⁱⁱ were significantly below the all-States average in 2004, with a combined average rate of 48.5%.

ⁱ The States were Montana, North Dakota, South Dakota, Nebraska, Oklahoma, Minnesota, Iowa, Missouri, Wisconsin, South Carolina, West Virginia, Maryland, Delaware, District of Columbia, New Jersey, Rhode Island, and Maine.

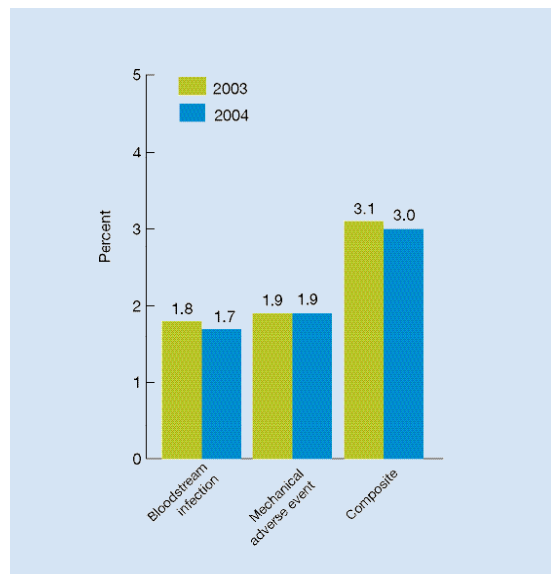
ⁱⁱ The States were California, Nevada, Wyoming, Arizona, Texas, Louisiana, Mississippi, Indiana, Ohio, Kentucky, Vermont, New Hampshire, and Puerto Rico.

Other Complications of Hospital Care

Besides surgery, other types of care delivered in hospitals can place patients at risk for injury or death.

Adverse events associated with central venous catheters. Patients who require a central venous catheter to be inserted into the great vessels of the heart tend to be severely ill. However, the procedure itself can result in infections and other complications.

Figure 3.4. Central venous catheter placements with bloodstream infection or associated mechanical adverse events and composite, 2003 and 2004



Source: Centers for Medicare & Medicaid Services, Medicare Patient Safety Monitoring System, 2003-2004.

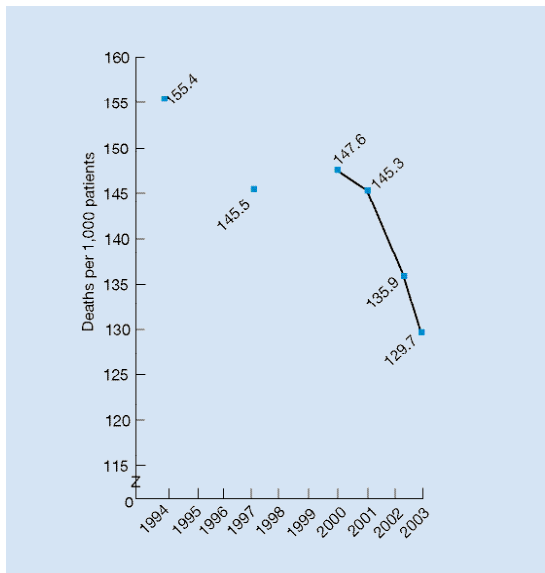
Denominator: Hospitalized Medicare patients with central venous catheter placement.

- From 2003 to 2004, the percentage of central venous catheter placements with associated complications did not change significantly (Figure 3.4) for bloodstream infections, mechanical adverse events, or the composite of both measures.

Chapter 3. Patient Safety

Deaths following complications of care. Many complications that arise during hospital stays cannot be prevented. However, rapid identification and aggressive treatment of complications may prevent these complications from leading to death. This indicator, also called “failure to rescue,” tracks deaths among patients whose hospitalizations are complicated by pneumonia, thromboembolic event, sepsis, acute renal failure, gastrointestinal bleeding or acute ulcer, shock, or cardiac arrest.

Figure 3.5. Deaths per 1,000 patients following complications of care, 1994-2003



Source: Healthcare Cost and Utilization Project, Nationwide Inpatient Sample, 1994-2003.

Denominator: Patients less than 75 years old from U.S. community hospitals whose hospitalizations are complicated by pneumonia, thromboembolic event, sepsis, acute renal failure, gastrointestinal bleeding or acute ulcer, shock, or cardiac arrest.

Note: Rates are adjusted for age, sex, diagnosis-related groups, and comorbidities.

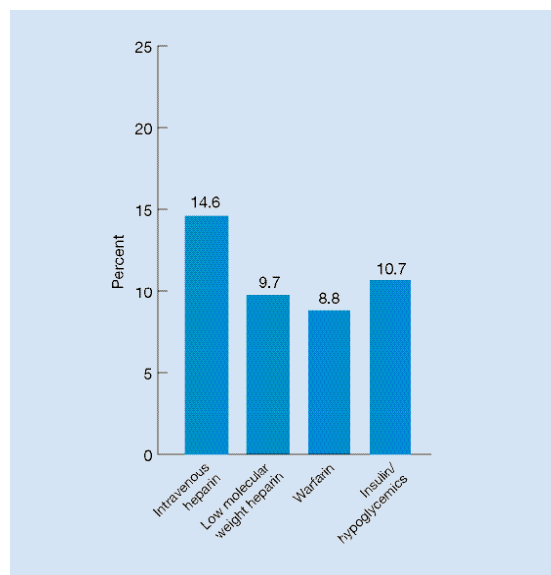
- From 1994 to 2003, the rate of deaths following complications of care declined from 155.4 to 129.7 per 1,000 patients (Figure 3.5).

Complications of Medications

Complications of medication are common safety problems. Some, but not all, adverse drug events may be related to misuse of medication. However, prescribing medications that are inappropriate for a specific population may increase the risk of adverse drug events.

Adverse drug events in the hospital. Some medications used in hospitals can cause serious complications. The Medicare Patient Safety Monitoring System tracks a number of adverse drug events including serious bleeding associated with intravenous heparin, low molecular weight heparin, or warfarin and hypoglycemia associated with insulin or oral hypoglycemics.

Figure 3.6. Medicare patients with adverse drug events, 2004



Source: Centers for Medicare & Medicaid Services, Medicare Patient Safety Monitoring System, 2004.

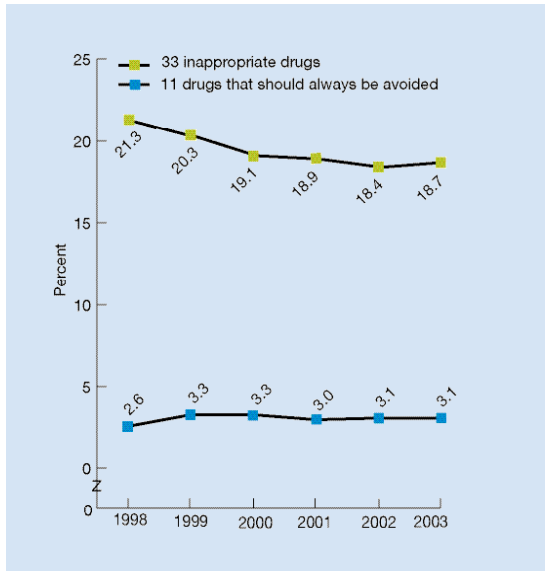
Denominator: Hospitalized Medicare patients receiving specified medication.

- In 2004, adverse drug events in the hospital related to some frequently used medications were relatively common, ranging from 8.8% of Medicare patients who received warfarin to 14.6% of Medicare patients who received intravenous heparin (Figure 3.6).

Chapter 3. Patient Safety

Inappropriate medication use among the elderly. Some drugs are considered potentially harmful for elderly patients but nevertheless were prescribed to them.^{iii, 4}

Figure 3.7. Inappropriate medication use by the elderly, 1996-2003



Source: Medical Expenditure Panel Survey, 1996-2003.

Reference population: Civilian noninstitutionalized population age 65 and over.

- From 1996 to 2003, the percentage of elderly Americans who reported using at least one inappropriate drug decreased from 21.3% to 18.7% (Figure 3.7).
- The use of drugs that should always be avoided remained relatively stable over the 1996-2003 time period at about 3%.

ⁱⁱⁱ Drugs that should always be avoided for elderly patients include barbiturates, flurazepam, meprobamate, chlorpropamide, meperidine, pentazocine, trimethobenzamide, belladonna alkaloids, dicyclomine, hyoscyamine, and propantheline. Drugs that should often be avoided for elderly patients 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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Chapter 4. Timeliness

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

Importance and Measures

Morbidity and Mortality

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

Cost

- Early care for comorbid conditions has been shown to reduce hospitalization rates and costs for Medicare beneficiaries.⁹
- Some research suggests that, over the course of 30 years, the costs of treating diabetic complications can approach \$50,000 per patient.¹⁰ Early care for complications in patients with diabetes can reduce overall costs of the disease.¹¹
- Timely outpatient care can reduce admissions for pediatric asthma, which in 2003 accounted for more than \$1.25 billion in total hospitalization charges.^{12, 13}

Measures

This report focuses on three core report measures related to timeliness of primary, emergency, and hospital care:

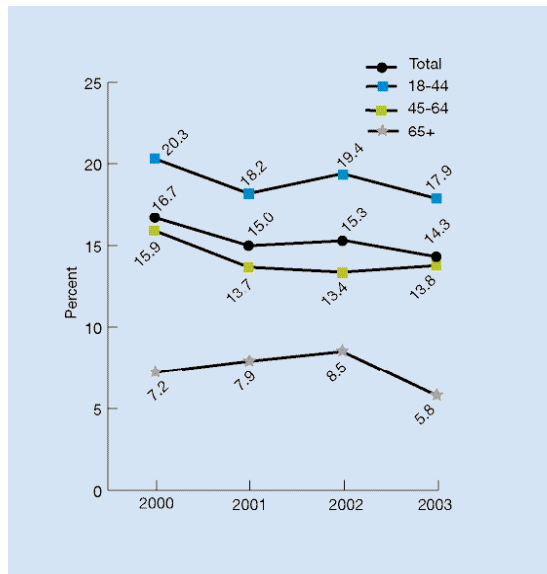
- Getting care for illness or injury as soon as wanted
- Emergency department visits in which the patient left without being seen
- Time to initiation of thrombolytic therapy for heart attack patients

Findings

Getting Care for Illness or Injury As Soon As Wanted

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

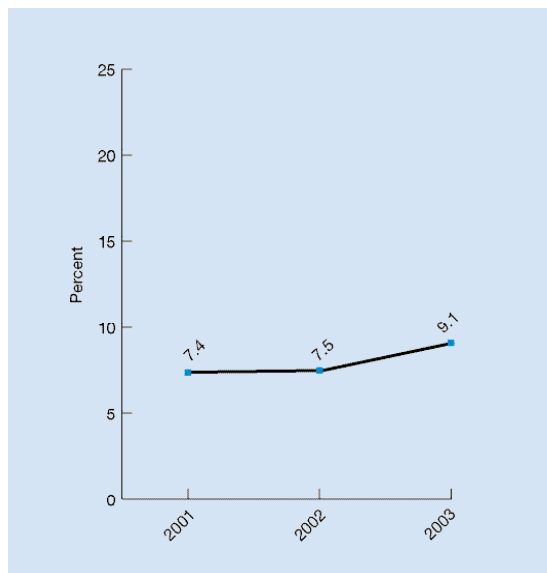
Figure 4.1. Adults age 18 and over who reported sometimes or never getting care for illness or injury as soon as wanted in the past year, by age group, 2000-2003



Source: Agency for Healthcare Research and Quality, Medical Expenditure Panel Survey, 2000-2003.

Reference population: U.S. civilian noninstitutionalized population age 18 and over.

Figure 4.2. Parents who reported that their children sometimes or never got care for illness or injury as soon as wanted in the past year, 2001-2003



Source: Agency for Healthcare Research and Quality, Medical Expenditure Panel Survey, 2001-2003.

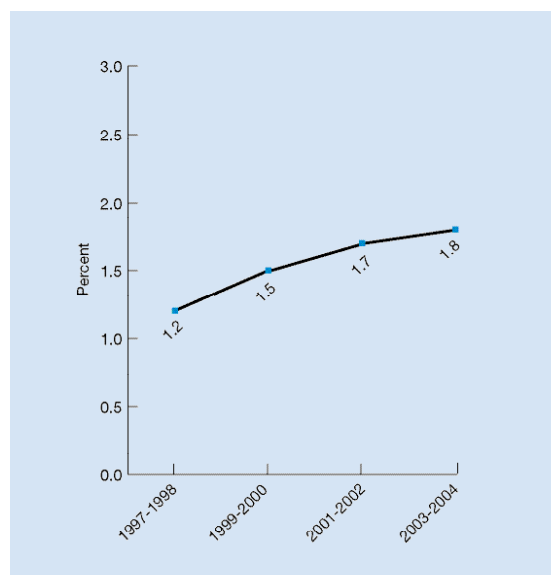
Reference population: U.S. civilian noninstitutionalized population under age 18.

- From 2000 to 2003, the percentage of adults who reported that they sometimes or never got care for illness or injury as soon as wanted during the previous 12 months did not change significantly overall or for any age group (Figure 4.1).
- In all 4 data years, the proportion of adults who reported that they sometimes or never got care for illness or injury as soon as wanted was lower among those ages 45 to 64 and age 65 and older compared with those ages 18 to 44.
- Among children who had appointments reported for illness or injury during the previous 12 months, 9.1% sometimes or never got care as soon as wanted in 2003 (Figure 4.2). This rate did not change significantly between 2001 and 2003.
- From 2001 to 2003, there was no significant difference on this measure between the children ages 0-5 and children ages 6-17 (data not shown).

Emergency Department Visits in Which the Patient Left Without Being Seen

In 2001, patients visiting emergency departments in the United States spent an average of 3.2 hours waiting to be seen. This may be a result of the 20% increase in ED visit volumes over a 10-year period as the number of ED facilities decreased by 15%.¹⁴ Although there are many reasons that may lead a patient seeking care in a hospital emergency department to leave without being seen, long waits tend to exacerbate this problem.

Figure 4.3. Emergency department visits in which the patient left without being seen, 1997-1998, 1999-2000, 2001-2002, and 2003-2004



Source: Centers for Disease Control and Prevention, National Center for Health Statistics, National Hospital Ambulatory Medical Care Survey, 1997-1998, 1999-2000, 2001-2002, and 2003-2004.

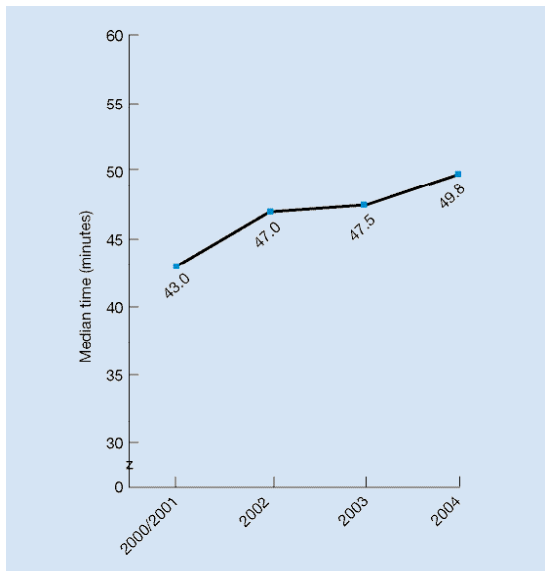
Denominator: Visits to emergency departments of general and short-stay hospitals.

- From 1997-1998 to 2003-2004, the overall percentage of emergency department visits in which the patient left before being seen increased from 1.2% to 1.8% (Figure 4.3).

Time to Initiation of Thrombolytic Therapy for Heart Attack Patients

The capacity to treat hospital patients in a timely fashion is especially important for emergency situations such as heart attacks. For patients suffering from a heart attack, early interventions—such as percutaneous coronary stenting and thrombolytic therapy—may reduce heart muscle damage and save lives.¹⁵

Figure 4.4. Median time (minutes) from arrival of Medicare heart attack patients to initiation of thrombolytic therapy, 2000-2004



Source: Centers for Medicare & Medicaid Services, Medicare Quality Improvement Organization Program, 2000-2004.

Denominator: Medicare beneficiaries meeting all of the following criteria: (1) principal diagnosis of acute myocardial infarction; (2) ST segment elevation or left bundle branch block on the electrocardiogram performed closest to hospital arrival; and (3) thrombolytic therapy during the hospital stay.

Note: This measure is assessed for patients with ST segment elevation or left bundle branch block on the electrocardiogram performed closest to the hospital arrival time.

- Among heart attack patients with Medicare, the median time from hospital arrival to the initiation of thrombolytic therapy was 49.8 minutes in 2004, compared with 43.0 minutes in 2000/2001, an increase of nearly 7 minutes (Figure 4.4).
- The median time to the initiation of therapy with thrombolytic agents remains well above the national target of 30 minutes.¹⁶

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Chapter 5. Patient Centeredness

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.”¹ An important dimension of quality, patient centeredness “encompasses qualities of compassion, empathy, and responsiveness to the needs, values, and expressed preferences of the individual patient.”²

Importance and Measures

Morbidity and Mortality

- Patient centered approaches to care that rely on building a provider-patient relationship, improving communication techniques, fostering a positive atmosphere, and promoting patients to actively participate in patient-provider interactions have been shown to improve the health status of patients.^{3, 4}
- A patient centered approach has been shown to lessen the symptom burden on patients.⁵
- Patient centered care encourages patients to comply with and adhere to treatment regimens.⁶
- Patient centered care can reduce the chance of misdiagnosis due to poor communication.⁷

Cost

- Patient centeredness has been shown to reduce both underuse and overuse of medical services.⁸
- Patient centeredness can reduce the strain on system resources or save money by reducing the number of diagnostic tests and referrals.⁵
- Although some studies have shown that being patient centered reduces costs and use of health service resources, others have shown that patient centeredness increases costs to providers, especially in the short run.⁹

Measures

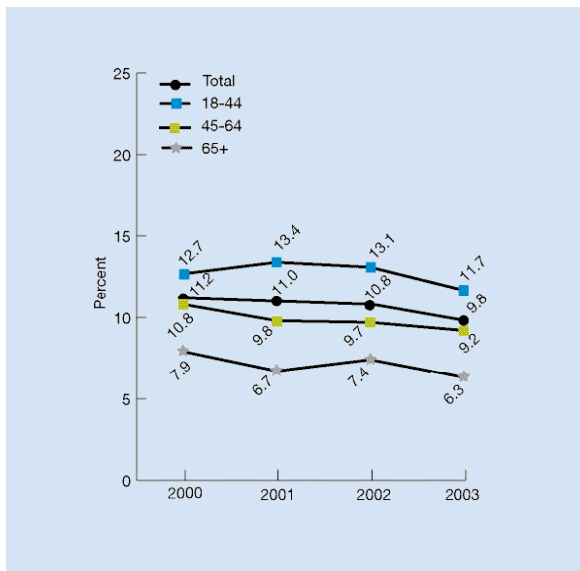
The NHQR tracks four measures of the patient experience of care. The core report measure is a composite of these measures which include patient assessments of how often their provider listened carefully to them, explained things clearly, respected what they had to say, *and* spent enough time with them. In addition, this year’s NHQR reports on a supplemental measure that focuses on a composite measure of satisfaction with communication during the hospital stay.

Findings

Patient Experience of Care—Adults

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

Figure 5.1. Adults whose health providers *sometimes or never* listened carefully, explained things clearly, respected what they had to say, and spent enough time with them, by age group, 2000-2003



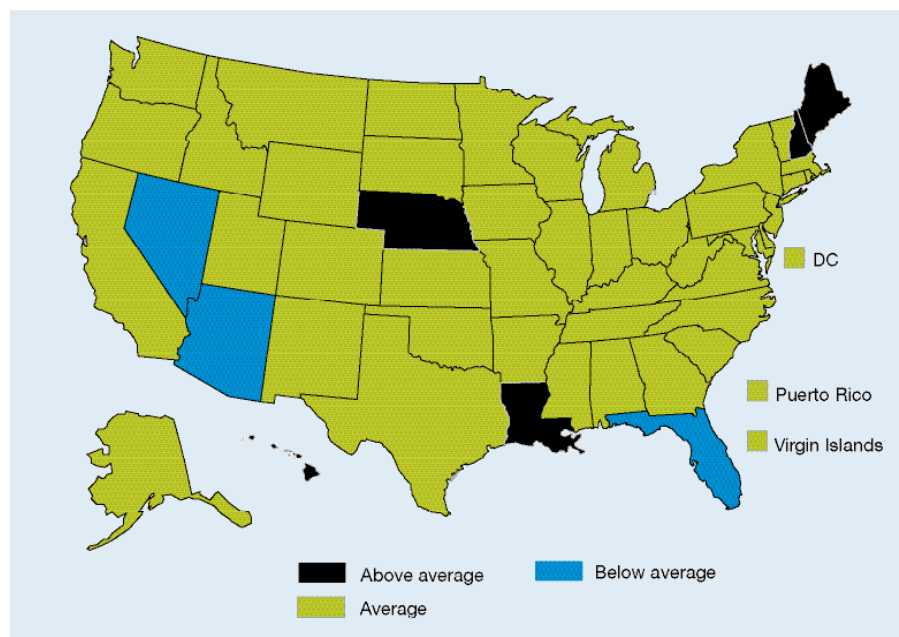
Source: Agency for Healthcare Research and Quality, Medical Expenditure Panel Survey, 2000-2003.

Denominator: Civilian noninstitutionalized population age 18 and older who visited a doctor's office or clinic to get health care in the past 12 months with valid answer to all four questions that comprise the composite measure.

- In 2003, 9.8% of adults reported that their health providers sometimes or never listened carefully, explained things clearly, respected what they had to say, and spent enough time with them (Figure 5.1).
- Between 2000 and 2003, the percentage decreased for the total population, indicating greater satisfaction. Most of this decrease occurred between 2002 and 2003.
- Decreases were also seen from 2000 to 2003 for adults ages 45 to 64 and 65 and over. There was no significant change in the percentage for adults ages 18 to 44.
- In all 4 data years, the proportion was lower among adults ages 45 to 64 and 65 and over compared with adults ages 18 to 44.

Chapter 5. Patient Centeredness

Figure 5.2. Adults age 18 and over whose health providers *always* listened carefully, explained things clearly, showed respect for what they had to say, and spent enough time with them, by State, 2004



Source: Agency for Healthcare Research and Quality, Center for Quality Improvement and Patient Safety, National CAHPS® Benchmarking Database.

Key: Above average = rate is significantly above the all-States average in 2004. Below average = rate is significantly below the all-States average in 2004.

Denominator: Adults with Medicare fee-for-service benefits who visited a doctor's office or clinic in the past 12 months.

Note: "All-States average" is the average of all responding States (53 in this case, including the District of Columbia, Puerto Rico, and the U.S. Virgin Islands), which is a separate figure from the national average.

- Individual State scores for this composite measureⁱ of patient centeredness ranged from a low of 60.8% to a high of 73.1% (Figure 5.2).
- In 2004, five Statesⁱⁱ were above the all-States average of 67.8% for this composite measure of patient centeredness.
- Three Statesⁱⁱⁱ were below the all-States average for this measure in 2003.

ⁱ Note that respondents were asked to choose between "sometimes," "never," "usually," or "always." In contrast to Figure 5.1, the map shown in Figure 5.2 displays results for respondents answering "always."

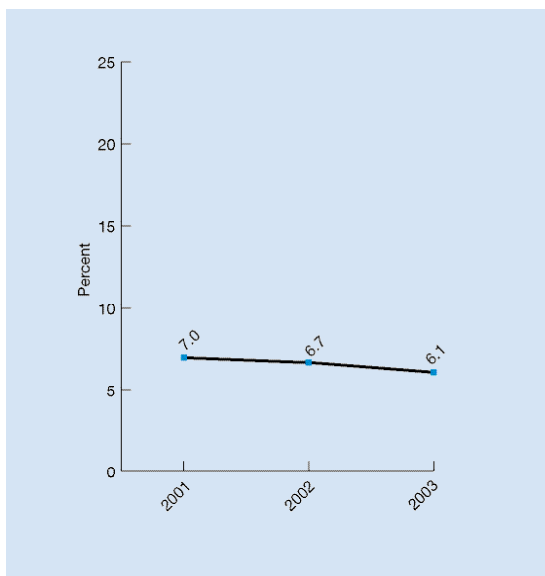
ⁱⁱ The States are Hawaii, Louisiana, Nebraska, New Hampshire, and Maine.

ⁱⁱⁱ The States are Arizona, Nevada, and Florida.

Patient Experience of Care—Children

Communication in children’s health care can pose a particular challenge as children are often less able to express their health care needs and preferences, and a third party (i.e., a parent or guardian) is involved in communication and decisionmaking. Optimal communication in children’s health care can therefore have a significant impact on receipt of high quality care and subsequent health status.

Figure 5.3. Children whose parents or guardians report that their child’s health providers sometimes or never listened carefully, explained things clearly, respected what they had to say, and spent enough time with them, 2001-2003



Source: Agency for Healthcare Research and Quality, Medical Expenditure Panel Survey, 2001-2003.

Denominator: Civilian noninstitutionalized population less than 18 years old.

- In 2003, 6.1% of parents and guardians reported that their child’s health providers sometimes or never listened carefully, explained things clearly, respected what they had to say, and spent enough time with them. This rate is statistically unchanged from 2001. (Figure 5.3).

Focus on Patient Centeredness in Hospitals

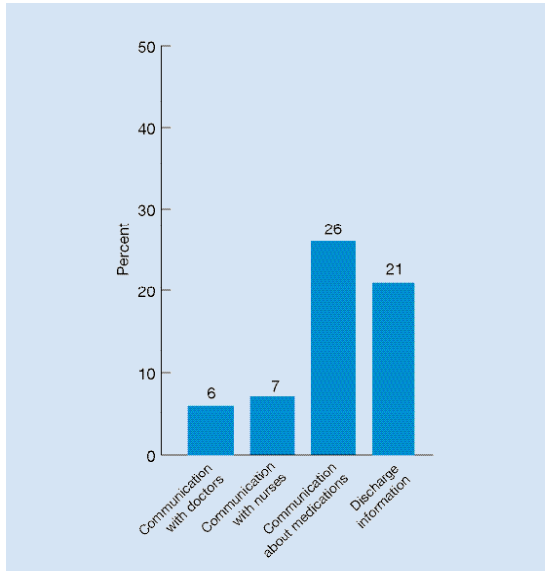
When patients are admitted to a hospital, they often lose control of many aspects of their lives. However, the need for effective patient-provider communication is great in order to ensure that medical decisions are consistent with the patient's needs and preferences. In addition, patients can help providers avoid problems with medications and problems that may arise after they are discharged from the hospital.

To begin to capture information about patient perceptions of care when they are hospitalized, the Centers for Medicare & Medicaid Services and the Agency for Healthcare Research and Quality partnered to develop a standardized instrument, the CAHPS[®] Hospital Survey (H-CAHPS). In 2005, 254 U.S. hospitals volunteered to use this survey. In total, completed surveys were received from 84,779 respondents with an average response rate of 44%. Although it is not nationally representative, the sample of hospitals and respondents is comparable to the national distribution of hospitals registered with the American Hospital Association.¹⁰

The 2006 NHQR presents four composite measures from H-CAHPS in order to summarize the quality of communication that hospital patients experience during their stay. "Communication with doctors" summarizes responses to three questions, examining how often patients were treated with courtesy and respect by their doctors, how often doctors listened carefully, and how often doctors explained things in a way that patients were able to understand. "Communication with nurses" combines the same three questions in relation to nurses. "Communication about medications" combines responses from two questions, including how often hospital staff told patients the purpose of a new medicine and how often hospital staff described possible side effects in a way that patients could understand. "Discharge information" combines responses from two questions, including whether or not hospital staff spoke with patients about whether they would have the help they needed after leaving the hospital and whether or not patients reported receiving written information on symptoms or health problems of which they should be aware after discharge.

Chapter 5. Patient Centeredness

Figure 5.4. Hospital patients who reported sometimes or never having good communication with doctors, good communication with nurses, communication about new medications, and discharge information, 2005



Source: Agency for Healthcare Research and Quality, Consumer Assessment of Health Plans Survey, 2005.

Denominator: Hospital patients.

- In 2005, 6% of hospital patients reported sometimes or never having had good communication with their doctors during their stay (Figure 5.4).
- In 2005, 7% of hospital patients reported sometimes or never having had good communication with their nurses during their stay.
- In 2005, 26% of hospital patients reported sometimes or never having had good communication about new medications during their stay.
- In 2005, 21% of hospital patients reported not receiving good discharge information.

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List of Core Measures

List of Core Report Measures

Measure	Measure number 2006	Year of most recent data	National average	National database	State database
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EFFECTIVENESS OF CARE

CANCER

Screening for colorectal cancer:

Composite measure: Percent of men and women age 50 and over who report having ever received a colonoscopy, sigmoidoscopy, or proctoscopy, or a fecal occult blood test in the past 2 years	1.5	2003	51.7	NHIS	BRFSS
Rate of colorectal cancer incidence per 100,000 men and women age 50 and over diagnosed at advanced stage (tumors diagnosed at regional or distant stage)	1.8	2003	85.3	SEER	NPCR

Cancer treatment:

Cancer deaths per 100,000 persons per year for most common cancers: colorectal cancer	1.13	2003	19.1	NVSS-M	NVSS-M
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DIABETES

Management of diabetes:

Composite measure: Percent of adults age 40 and over with diabetes who had all three exams in last year: hemoglobin A1c test, a retinal eye examination, and a foot examination	1.16	2003	47.8	MEPS	BRFSS
Hospital admissions for lower extremity amputations in patients with diabetes per 1,000 population	1.28	2002-2004	4.4	NHDS	HCUP SID

END STAGE RENAL DISEASE

Management of end stage renal disease:

Percent of dialysis patients registered on the waiting list for transplantation	1.29	2003	16.8	USRDS	USRDS
Percent of hemodialysis patients with urea reduction ratio 65% or higher	1.31	2004	87	ESRD Clinical Performance Measures Project	U.Michigan

List of Core Measures

Measure	Measure number 2006	Year of most recent data	National average	National database	State database
HEART DISEASE					
Counseling on risk factors:					
Percent of smokers receiving advice to quit smoking	1.37	2003	66.14	MEPS	BRFSS
Percent of obese adults age 18 and older who were given advice about exercise	1.59	2003	58.2	MEPS	n.a.
Treatment of acute myocardial infarction (AMI):					
Composite measure: Percent of recommended hospital care received by heart attack patients	1.38	2004	85.56	QIO	QIO+HC
Treatment of acute heart failure:					
Composite measure: Percent of recommended hospital care received by heart failure patients	1.47	2004	77.66	QIO	QIO+HC
Heart disease treatment:					
Deaths per 1,000 adult admissions with acute myocardial infarction	1.56	2003	86.88	HCUP NIS	n.a.
HIV and AIDS					
AIDS prevention:					
New AIDS cases per 100,000 population 13 and over	1.61	2004	17.1	CDC-AIDS	n.a.
MATERNAL AND CHILD HEALTH					
Maternity care:					
Percent of pregnant women receiving prenatal care in first trimester	1.65	2003	84.1	NVSS-N	NVSS-N
Infant mortality per 1,000 live births, birthweight <1,500 grams	1.67	2003	252	NVSS-I	NVSS-I
Immunization, childhood:					
Percent of children 19-35 months who received all recommended vaccines	1.69	2004	80.9	NIS	NIS

List of Core Measures

Measure	Measure number 2006	Year of most recent data	National average	National database	State database
Immunization, adolescent:					
Percent of adolescents age 13-15 reported to have received 3 or more doses of hepatitis B vaccine	1.70	2003	80.5	NHIS	n.a.
Treatment of pediatric gastroenteritis:					
Hospital admissions for pediatric gastroenteritis per 100,000 population less than 18 years of age	1.75	2003	90.82	HCUP NIS	HCUP SID
Childhood preventive care					
Percent of children age 2-17 for whom a doctor or other health provider gave advice about healthy eating	1.78	2003	51.60	MEPS	n.a.
Percent of children age 3-6 whose vision was checked by a doctor or other health provider	1.79	2003	60.70	MEPS	n.a.
MENTAL HEALTH AND SUBSTANCE ABUSE					
Treatment of depression:					
Deaths due to suicide per 100,000 population	1.87	2003	10.8	NVSS-M	NVSS-M
Percent of adults age 18 and over with past year major depressive episode who received treatment for the depression in the past year	1.88	2004	65.1	SAMHSA	n.a.
Treatment of substance abuse:					
Percent of persons age 12 or older who needed treatment for any illicit drug use and who received such treatment at a specialty facility in the past year	1.90	2004	17.7	SAMHSA	n.a.
Percent of persons age 12 or older who received substance abuse treatment who completed treatment course	1.91	2003	43.9	TEDS	n.a.
RESPIRATORY DISEASES					
Immunization, pneumonia:					
Percent of persons age 65 and over who ever received a pneumococcal vaccination	1.96	2004	57	NHIS	BRFSS

List of Core Measures

Measure	Measure number 2006	Year of most recent data	National average	National database	State database
Treatment of pneumonia:					
Composite measure: Percent of recommended hospital care received by pneumonia patients	1.97	2004	64.37	QIO	QIO
Treatment of upper respiratory infection (URI):					
Visit rates where antibiotics were prescribed for a diagnosis of common cold per 10,000 population	1.104	2003-2004	142.4	NAMCS-NHAMCS	n.a.
Management of asthma:					
Hospital admissions for pediatric asthma per 100,000 population (under age 18)	1.106	2003	216.92	HCUP NIS	HCUP SID
Treatment of TB:					
Percent of patients who complete a curative course of TB treatment within 12 months of initiation of treatment	1.109	2002	80.9	CDC-TB	n.a.
NURSING HOME, HOME HEALTH, AND HOSPICE CARE					
Nursing facility care:					
Percent of residents who were physically restrained	1.112	2004	7.25	CMS MDS	CMS MDS
Percent of high-risk residents who have pressure sores	1.117	2004	13.48	CMS MDS	CMS MDS
Percent of short-stay residents with pressure sores	1.123	2004	21.16	CMS MDS	CMS MDS
Home health care:					
Percent of home health care patients who get better at walking or moving around	1.128	2004	37.23	CMS OASIS	CMS OASIS
Percent of home health care patients who had to be admitted to the hospital	1.132	2004	27.9	CMS OASIS	CMS OASIS

List of Core Measures

Measure	Measure number 2006	Year of most recent data	National average	National database	State database
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PATIENT SAFETY

Postoperative complications

Composite measure: Percent of surgical patients with postoperative pneumonia, urinary tract infection, and venous thromboembolic event	2.1	2004	6.26	MPSMS	n.a.
Composite measure: Appropriate timing of antibiotics received by adult Medicare patients having surgery (percent)	2.5	2004	57.7	QIO	QIO+HC
Composite measure: Percent of central venous catheter placements with complications	2.18	2004	2.95	MPSMS	n.a.

Complications of medication:

Percent of community dwelling elderly who had at least 1 prescription (from a list of 11 medications and from a list of 33 medications) potentially inappropriate for the elderly	2.41	2003	18.7	MEPS	n.a.
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TIMELINESS

Getting appointments for care:

Percent of adults age 18 and over who reported sometimes or never getting care for illness or injury as soon as wanted	3.5	2003	14.3	MEPS	NCBD
Waiting time: Percent of emergency department (ED) visits in which the patient left before being seen	3.8	2003-2004	1.8	NAMCS-NHAMCS	n.a.

PATIENT CENTEREDNESS

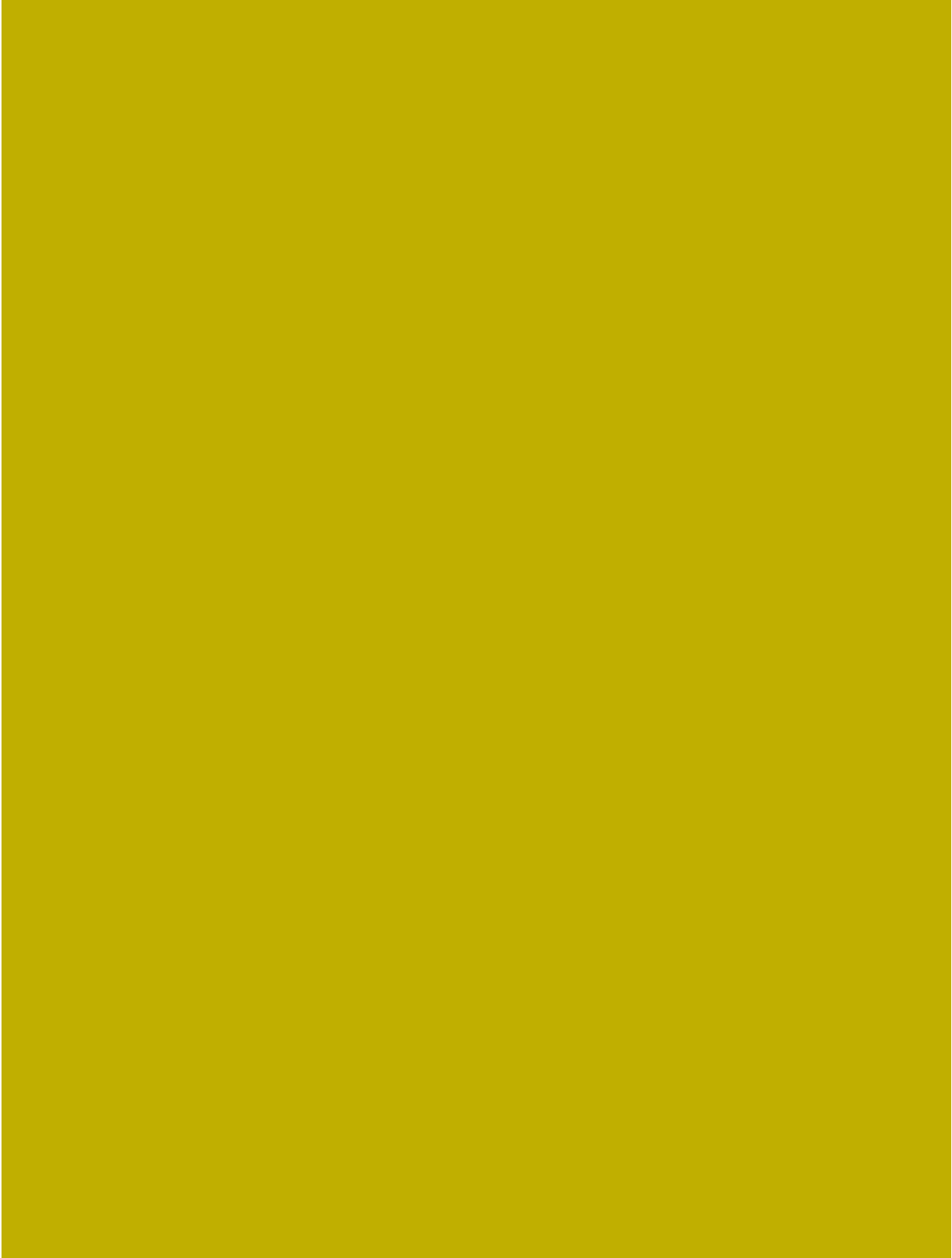
Patient experience of care:

Composite measure: Percent of adults whose health providers sometimes or never listened carefully, explained things, showed respect, and spent enough time with them	4.1	2003	9.8	MEPS	NCBD
Composite measure: Percent of children whose health providers sometimes or never listened carefully, explained things, showed respect, and spent enough time with them	4.2	2003	6.1	MEPS	NCBD

List of Core Measures

Key to databases:

BRFSS = Behavioral Risk Factor Surveillance System
CDC TB = Centers for Disease Control and Prevention National Tuberculosis Surveillance System
CDC AIDS = Centers for Disease Control and Prevention HIV/AIDS Surveillance System
CMS MDS = Centers for Medicare & Medicaid Services Minimum Data Set
CMS OASIS = Centers for Medicare & Medicaid Services Outcome and Assessment Information Set
HCUP NIS = Healthcare Cost and Utilization Project Nationwide Inpatient Sample
HCUP SID = Healthcare Cost and Utilization Project State Inpatient Databases
ESRD = End Stage Renal Disease
MEPS = Medical Expenditure Panel Survey
MPSMS = Medicare Patient Safety Monitoring System
NAMCS-NHAMCS = National Ambulatory Medical Care Survey-National Hospital Ambulatory Medical Care Survey
NCBD = National CAHPS® Benchmarking Database
NHIS = National Health Interview Survey
NHDS = National Hospital Discharge Survey
NIS = National Immunization Survey
NNIS = National Nosocomial Infections Surveillance
NPCR = National Program of Cancer Registries
NTBSS = National TB Surveillance System
NVSS-I = National Vital Statistics System —Linked Birth and Infant Death Data
NVSS-M = National Vital Statistics System, Mortality
NVSS-N = National Vital Statistics System, Natality
QIO = Quality Improvement Organization program
QIO+HC = Quality Improvement Organization program + Hospital Compare
SAMSHA = Substance Abuse and Mental Health Services Administration
SEER = Surveillance, Epidemiology, and End Results Program
TEDS = Treatment Episode Data Set
USRDS = United States Renal Data System
U.Michigan = University of Michigan Kidney Epidemiology and Cost Center
n.a. = Not applicable



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