

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, to track “prevailing disparities in health care delivery as it relates to racial factors and socioeconomic factors in priority populations.” Although the emphasis is on disparities related to race, ethnicity, and socioeconomic status (SES), this directive includes a charge to examine disparities in “priority populations”—groups with unique health care needs or issues that require special focus. The National Healthcare Disparities Report (NHDR) 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 Disparities Report (NHDR), released in 2003, was a comprehensive national overview of disparities in health care among racial, ethnic, and socioeconomicⁱ groups in the general U.S. population and within priority populations. The 2004 NHDR initiated a second critical goal of the report series—tracking the Nation’s progress toward the elimination of health care disparities. The 2005 NHDR introduced a set of core measures, a variety of new compositeⁱⁱ measures, and methods for tracking changes in disparities that allow for the identification of specific disparities that are shrinking and disparities that are widening.

This 2006 NHDR 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 and disparities in the Nation. Methods for quantifying changes in health care over time and changes in disparities have been refined. In addition, new composite measures are tracked that make information about quality and disparities easier to comprehend. The 2006 NHDR continues to focus on a subset of core measures that comprise the most important and scientifically supported measures in the full NHDR measure set. Finally, as in previous NHDRs, 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 NHDR supports HHS Secretary Mike Leavitt’s 500-Day Plan to fulfill the President’s vision of a healthier America, specifically in the areas of eliminating inequalities in health care and better transparency of health care quality information. As in previous years, the 2006 NHDR was planned and written by AHRQ staff with the support of AHRQ’s National Advisory Council and the Interagency Work Group for the NHDR, which 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 and the refinement of definitions of persons with disabilities.

ⁱ Socioeconomic disparities include differences in education and income levels.

ⁱⁱ Composite measures provide readers with a summarized picture of some aspect of health care by combining information from multiple component measures. For example, the NHDR composite measure for “complications following surgery” includes measures for persons who develop pneumonia, bladder infection, and blood clots in the legs following surgery.

How This Report Is Organized

The basic structure of the 2006 NHDR is unchanged from the 2005 NHDR 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: Quality of Health Care** examines disparities in quality of health care in the general U.S. population. Measures of quality of health care used in this chapter are identical to measures used in the National Healthcare Quality Report (NHQR) except when data to examine disparities are unavailable. Sections cover four components of health care quality: effectiveness, patient safety, timeliness, and patient centeredness.
- **Chapter 3: Access to Health Care** examines disparities in access to health care in the general U.S. population. Sections cover two components of health care access: barriers and facilitators to health care and health care utilization.
- **Chapter 4: Priority Populations** examines disparities in quality of and access to health care among AHRQ's priority populations including:
 - Racial and ethnic minorities
 - Elderly
 - Low income groups
 - Residents of rural areas
 - Women
 - Individuals with special health care needs
 - Children

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

- **Appendix A: Data Sources** provides information about each database analyzed for the NHDR including data type, sample design, and primary content.
- **Appendix B: Detailed Methods** provides detailed methods for select databases analyzed for the NHDR.
- **Appendix C: Measure Specifications** provides information about how to generate each measure analyzed for the NHDR. It includes both measures highlighted in the report text as well as other measures that were examined but not included in the text. It also includes information about the summary measures used in the report.
- **Appendix D: Data Tables** provides detailed tables for most measures analyzed for the NHDR, 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. When data are available:
 - Race tables and ethnicity tables are stratified by age, gender, residence location, and one or more socioeconomic variables (i.e., household income, education, insurance, and/or area income).
 - Socioeconomic tables are stratified by age, gender, residence location, race, and ethnicity.

Changes in the 2006 NHDR

Consistent with the goal of improving quality of and access to health care for all Americans, a number of improvements in the quality and accessibility of the NHDR are made each year. Improvements include changes to report format, changes to the measure set, addition of new data sources, expanded analyses to include Hispanic subpopulations and uninsurance, and a summary of disparities.

Refinements to Report Format

The 2006 NHDR and its companion NHQR 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. 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.

Table 1.1. Alternating core measures

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

*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 adopted by the Hospital Quality Alliance (HQA) 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) State Inpatient Databases disparities analysis file.
- Inappropriate medication use among the elderly from the Medical Expenditure Panel Survey (MEPS).

Chapter 1. Introduction and Methods

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 (Table 1.2). 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.

Presentation. 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)ⁱⁱⁱ that is saved by 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 this topic. When data are available, these charts typically show contrasts by:

- Race—Blacks, Asians,^{iv} Native Hawaiians or Other Pacific Islanders (NHOPIs), American Indians or Alaska Natives (AI/ANs), and people of more than one race compared with Whites.
- Ethnicity—Hispanics compared with non-Hispanic Whites.^v
- Income—Poor, near poor, and middle income people compared with high income people.^{vi}
- Education—People with less than a high school education and high school graduates compared with people with any college education.

Almost all core measures and composite measures have multiple years of data, so figures typically illustrate trends over time. When data support stratified analyses, a figure showing racial and ethnic differences stratified by SES is often included. For some measures with supporting data, regression models were run and used to help interpret bivariate and stratified results. In addition, figures showing odds ratios adjusted for age, gender, race, ethnicity, income, education, insurance, and residence location are presented for two measures.^{vii} Figures include a note about the reference group for population-based measures and the denominator for measures based on services or events.

ⁱⁱⁱ QALY is 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.

^{iv} “Asian” includes “Asian or Pacific Islander” (API) when information is not collected separately for each group.

^v Not all data sources used in the NHDR collect data by race and ethnicity separately (i.e., allowing for comparisons of Blacks with Whites and Hispanics with non-Hispanic Whites). When this is the case, comparisons are made by combined racial/ethnic categories (i.e., comparing non-Hispanic Blacks and Hispanics with non-Hispanic Whites).

^{vi} Throughout this report, “poor” is defined as having family incomes less than 100% of the Federal poverty level; “near poor,” between 100% and 199%; “middle income,” between 200% and 399%; and “high income,” 400% or more of the Federal poverty level.

^{vii} The measures are obese adults given advice about exercise and individuals having a usual primary care provider.

Chapter 1. Introduction and Methods

Table 1.2. Core process and outcome measures (measures that include data for all racial and ethnic groups and that are included in the summary analyses in the Highlights to this report are 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 had hemoglobin A1c test, eye 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 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 <1500 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"> Adults age 18 and over with past year major depressive episode who received treatment for the depression in the past year 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 	<ul style="list-style-type: none"> Deaths due to suicide per 100,000 population Patients receiving substance abuse treatment who complete treatment

Chapter 1. Introduction and Methods

Table 1.2. Core process and outcome measures (measures that include data for all racial and ethnic groups and that are included in the summary analyses in the Highlights to this report are in *italics*) (continued)

Section	Process Measures	Outcome Measures
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 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
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"> Appropriate timing of surgical infection prophylaxis 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 Deaths following complications of care
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 	

As in last year's report, findings presented in the text meet report criteria for importance^{viii}; comparisons not discussed in text do not meet these criteria. However, absence of differences that meet criteria for importance should not be interpreted as absence of disparities. Often, large differences between groups did not meet criteria for statistical significance because of small sample sizes and limited power. In addition, significance testing used in this report does not take into account multiple comparisons. To facilitate linkage to other Federal reporting initiatives, this report indicates where NHDR measures are also tracked in Healthy People 2010.

^{viii}Criteria 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.

Addition of New Data Sources

NHDR 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 lists all data sources and includes five new data sources. Standardized suppression criteria were applied to all databases to support reliable estimates.^{ix} 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; the average response rate was 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.
- **U.S. Census.** Data from the 2000 Census of Population are included this year to provide information about the physician workforce.
- **Center for Studying Health System Change Community Tracking Study Physician Survey.** Data from this periodic survey of physicians in direct patient care is used to assess trends in the physician workforce over time.

^{ix}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.

Chapter 1. Introduction and Methods

Table 1.3. Databases used in the 2006 reports (new databases in *italics*)

<p>Surveys collected from populations:</p> <ul style="list-style-type: none"> • AHRQ, Medical Expenditure Panel Survey (MEPS), 1999-2003 • <i>CAHPS® Hospital Survey, 2005</i> • CDC, Behavioral Risk Factor Surveillance System (BRFSS), 2001-2004 • <i>CDC-NCHS, National Asthma Survey, 2003</i> • 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 • <i>National Hospice and Palliative Care Organization, Family Evaluation of Hospice Care, 2005</i> • Substance Abuse and Mental Health Services Administration (SAMHSA), National Survey on Drug Use and Health (NSDUH), 2002-2004 • <i>U.S. Census Bureau, U.S. Census of Population, 2000</i>
<p>Data collected from samples of health care facilities and providers:</p> <ul style="list-style-type: none"> • <i>Center for Studying Health System Change, Community Tracking Study Physician Survey, 1998-2005</i> • CDC-NCHS, National Ambulatory Medical Care Survey (NAMCS), 1997-2003 • CDC-NCHS, National Hospital Ambulatory Medical Care Survey-Outpatient Department (NHAMCS-OPD), 1997-2003 • CDC-NCHS, National Hospital Ambulatory Medical Care Survey-Emergency Department (NHAMCS-ED), 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 disparities analysis file,* 2001-2003 • 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, Hospital Quality Alliance (HQA) measures, 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, United States Renal Data System (USRDS), 1998-2003 • SAMHSA, Treatment Episode Data Set (TEDS), 2002-2003
<p>Data from surveillance and vital statistics systems:</p> <ul style="list-style-type: none"> • 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

* This file is designed to provide national estimates of disparities in the AHRQ Quality Indicators using weighted records from a sample of hospitals from the following 22 States: AZ, CA, CO, CT, FL, GA, HI, KS, MD, MA, MI, MO, NJ, NY, PA, RI, SC, TN, TX, VA, VT, and WI.

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. Second, age adjustment^x 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.^{xi} 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).^{xii}
 - 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, one from the Medicare Patient Safety Monitoring System and one adopted by the Hospital Quality Alliance (HQA) from the CMS Quality Improvement Organization program:
 - Medication-related adverse drug events (MPSMS).
 - Timing of antibiotics to prevent postoperative wound infection (HQA).^{xii}
- Four measures of patient centeredness of hospital care from the CAHPS[®] Hospital Survey:
 - Communication with doctors in the hospital.
 - Communication with nurses in the hospital.
 - Communication about medications in the hospital.
 - Discharge information from the hospital.
- Two measure of workforce diversity from the U.S. Census 2000 and the Center for Studying Health System Change Community Tracking Study Physician Survey:
 - U.S. physicians and surgeons by race and ethnicity (U.S. Census 2000).
 - U.S. physicians in direct patient care by race and ethnicity (Community Tracking Study Physician Survey).

^x Age-adjusted measures are labeled as such. All other measures are not age adjusted.

^{xi} Prior to 2006, these measures tracked persons age 18 and over.

^{xii} This is a new core measure.

- One measure of language assistance from MEPS:
 - Adults with limited English proficiency with and without a usual source of care who offers language assistance (MEPS).
- As noted earlier, the 2006 reports also include measures of asthma care from the National Asthma Survey.^{xiii} The four 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 NHDR, 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, and 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 who receives only one or two of the three services would not be counted as having received the recommended care.

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.

^{xiii} Because this is not a periodic survey, the four measures from this survey will not be permanently added to the measure set.

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%.

Expanded Analyses

Trends in health care quality and access. As in previous NHDRs, the 2006 report uses the earliest and most recent available NHDR data estimates for each measure to calculate average annual rate of change for the general U.S. population and for each racial, ethnic, and socioeconomic group. 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 2006 NHDR and NHQR.^{xiv}

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

- First, the difference between the oldest 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 the measures are framed as a favorable outcome or as an adverse outcome.

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

^{xiv} 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.

Chapter 1. Introduction and Methods

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*	<ul style="list-style-type: none"> Adults aged 40 and older with diagnosed diabetes who received at least one HbA1c test Adults aged 40 and older with diagnosed diabetes who received at least one retinal eye exam Adults aged 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) Children age 19-35 months who received at least 3 doses of polio Children age 19-35 months who received at least 1 dose of measles-mumps-rubella (MMR) Children age 19-35 months who received at least 3 doses of Haemophilus influenza B (Hib) 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®
<i>Communication with doctors in the hospital</i>	<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®
<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®

Chapter 1. Introduction and Methods

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

Composite measure	Individual measures forming composite	Model
<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

* 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.

One additional constraint relates to trends among specific racial and ethnic groups. Some Federal databases completed transition by 2003 (as required) to the new Federal standards for racial and ethnic data during years covered by the NHDR. These new standards created two separate racial categories: “Asian” and “Native Hawaiian or Other Pacific Islander.” In addition, individuals could report more than one race, which significantly affected estimates for the “American Indian or Alaska Native” category. In contrast, effects on estimates for Whites, Blacks, and Hispanics were proportionately much smaller. Consequently, the 2006 NHDR shows shorter trends (i.e., fewer years of data) for groups directly or significantly affected by the new standards such as Asian, Native Hawaiian or Other Pacific Islander, American Indian or Alaska Native, and multiple race individuals.

Hispanic subpopulations. As with all U.S. populations, racial and ethnic minority groups that are the focus of the NHDR can be highly heterogeneous. Data are typically not available to examine different racial and ethnic groups in greater detail. One exception relates to Hispanic subpopulations for which increasing amounts of data are available. The 2006 NHDR shows information from MEPS related to health care differentiating Hispanics of Mexican, Central or South American, Puerto Rican, and Cuban descent. These analyses are presented in the section on racial and ethnic minorities in Chapter 4, Priority Populations.

Uninsurance. Lack of health insurance is widely recognized as a risk factor for poorer quality of health care and worse access to health care. Previous reports have included analyses of uninsured compared with privately insured individuals but did not bring these findings together into a specific section of the reports. This year, a focus on disparities related to insurance status is introduced. These analyses are presented in the section on low income groups in Chapter 4, Priority Populations.

Summary of Disparities

In the 2006 NHDR, efforts to summarize disparities have been further refined.

Quantifying disparities. In the Highlights and in Chapter 4, Priority Populations, the extent of disparities across the core measures is summarized for Blacks, Hispanics, Asians, NHOPIs, AI/ANs, and the poor. Racial, ethnic, and socioeconomic groups are compared with a designated reference group for each core measure; each group could receive care that is worse than, about the same as, or better than the reference group. For each group, the percentages of measures for which the group received worse care, similar care, or better care were calculated. Health care utilization measures are difficult to interpret and were excluded when summarizing disparities in access to care.^{xv} In Chapter 4, Priority Populations, which presents information on each population separately, all core measures are used when summarizing disparities for each group. However, in the Highlights, where multiple groups are presented side by side, only core measures with estimates for all racial and ethnic groups are used to facilitate comparisons across the groups. An exception is made for income comparisons of quality measures because much less information is available for these groups.

As in the 2005 NHDR, rates relative to standard reference groups are used to quantify the magnitude of disparities and to identify the largest disparities faced by specific groups. For each group, the group rate was divided by the reference group rate to calculate the relative rate for each core measure. The median relative rate across core measures is presented in Chapter 4 as another way of summarizing the magnitude of disparities in quality and access; the relative rates are also presented to identify potential areas for improvement.

Trends in disparities. The method for summarizing trends in disparities introduced in the 2005 NHDR is improved in the 2006 NHDR. For each core measure, racial, ethnic, and socioeconomic groups are compared with a designated reference group at different points in time. Consistent with Healthy People 2010, disparities are measures in relative terms as the percent difference between each group and a reference group; changes in disparity are measured by subtracting the percent difference from the reference group at the baseline year from the percent difference from the reference group at the most recent year. The change in each disparity is then divided by the number of years between the baseline and most recent estimate to calculate change in disparity per year. Thus, in determining change:

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

^{xv} Interpreting health care utilization data is more complex than analyzing data on patient perceptions of access to care. Along with access to care, health care utilization is strongly affected by health care need and patient preferences and values. In addition, greater use of services does not necessarily indicate better care. In fact, high use of some inpatient services may reflect impaired access to outpatient services. For these reasons, measures of health care utilization are excluded from summaries of access to health care.

Chapter 1. Introduction and Methods

In Chapter 4, Priority Populations, which presents information on each population separately, all core measures are used when summarizing trends in disparities for each group. However, in the Highlights where multiple groups are presented side by side, only core measures with estimates for all racial and ethnic groups over time are used to facilitate comparisons across the groups. As noted above, an exception is made for income comparisons of quality measures because much less information is available for these groups.

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Chapter 2. Quality of Health Care

As better understanding of health and sickness has led to superior ways of preventing, diagnosing, and treating diseases, the health of most Americans has improved dramatically. However, ample evidence indicates that some Americans do not receive the full benefits of high quality care. Specifically, extensive disparities in health care related to race, ethnicity, and socioeconomic status have been demonstrated by a substantial body of public health, social science, and health services research and confirmed by previous releases of the National Healthcare Disparities Report.

Components of Health Care Quality

Quality health care means doing the right thing, at the right time, in the right way, for the right people—and having the best possible results.¹ Quality health care is care that is:²

- **Effective**—Providing services based on scientific knowledge to all who could benefit and refraining from providing services to those not likely to benefit.
- **Safe**—Avoiding injuries to patients from the care that is intended to help them.
- **Timely**—Reducing waits and sometimes harmful delays for both those who receive and those who give care.
- **Patient centered**—Providing care that is respectful of and responsive to individual patient preferences, needs, and values and ensuring that patient values guide all clinical decisions.
- **Equitable**—Providing care that does not vary in quality because of personal characteristics such as gender, ethnicity, geographic location, and socioeconomic status.
- **Efficient**—Avoiding waste, including waste of equipment, supplies, ideas, and energy.

Health care quality is measured in several ways including:

- **Clinical performance** measures of how well providers deliver specific services needed by specific patients, such as whether children get the immunizations that they need.
- **Assessments by patients** of how well providers meet health care needs from the patient’s perspective, such as whether providers communicate clearly.
- **Outcome measures**—such as death rates from cancers preventable by screening—that may be affected by the quality of health care received.

How This Chapter Is Organized

This chapter presents new information about disparities in the quality of health care in America. The measures used here are the same as those used in the National Healthcare Quality Report (NHQR), and this chapter is constructed to mirror sections in the NHQR—effectiveness, patient safety, timeliness, and patient centeredness. Due to constraints on the length of this report, only a subset of the core measures is presented. Effectiveness of care is presented in Chapter 2 under eight clinical condition or care setting areas: cancer; diabetes; end stage renal disease (ESRD); heart disease; HIV and AIDS; mental health and substance abuse; respiratory diseases; and nursing home, home health, and hospice care. Maternal and child health is discussed in Chapter 4, Priority Populations.