NATIONAL HEALTHCARE QUALITY & DISPARITIES REPORT

2018

AHRQ
Agency for Healthcare
Research and Quality

2018 NATIONAL HEALTHCARE QUALITY AND DISPARITIES REPORT

U.S. DEPARTMENT OF
HEALTH AND HUMAN SERVICES
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ACKNOWLEDGMENTS

CONTENTS

NOTE: Due to its size, APPENDIX A. LIST OF MEASURES AND SUMMARY OF RESULTS FOR FIGURES, is a separate file.

EXECUTIVE SUMMARY

Key Findings

- **Access:** From 2000 to 2017, more than half of access measures showed improvement, 33% did not show improvement, and 14% showed worsening. For example, there were significant gains in the percentage of people who reported having health insurance.
- **Quality:** Quality of healthcare improved overall from 2000 through 2016-2017, but the pace of improvement varied by priority area:

  - **Person-Centered Care:** Almost 70% of person-centered care measures were improving overall.
  - **Patient Safety:** More than 60% of patient safety measures were improving overall.
  - **Healthy Living:** Almost 60% of healthy living measures were improving overall.
  - **Effective Treatment:** Almost half of effective treatment measures were improving overall.
  - **Care Coordination:** One-third of care coordination measures were improving overall.
  - **Care Affordability:** No care affordability measures changed overall.

- **Disparities:** Overall, some disparities were getting smaller from 2000 through 2016-2017, but disparities persist, especially for poor and uninsured populations in all priority areas.
- Racial and ethnic disparities vary by group:

  - Blacks, American Indians and Alaska Natives (AI/ANs), and Native Hawaiians/Pacific Islanders (NHPIs) received worse care than Whites for about 40% of quality measures. Disparities were improving for only 4 measures for Blacks, 2 measures for AI/ANs, and 1 measure for NHPIs.
  - Hispanics received worse care than Whites for about 35% of quality measures. From 2000 to 2017, disparities were improving for 5 measures for Hispanics.
  - Asians received worse care than Whites for 27% of quality measures but better care than Whites for 28% of quality measures. Disparities were improving for only 2 measures for Asians.

About the National Healthcare Quality and Disparities Report

For the 16th year in a row, AHRQ is reporting on healthcare quality and disparities. The annual *National Healthcare Quality and Disparities Report* (QDR) is mandated by Congress to provide a comprehensive overview of the quality of healthcare received by the general U.S. population and disparities in care experienced by different racial and socioeconomic groups.

The report assesses the performance of our healthcare system and identifies areas of strength and weakness, as well as disparities, for access to healthcare and quality of healthcare. Quality measures are grouped by priority areas, including person-centered care, patient safety, healthy living, effective treatment, care coordination, and affordable care.

More than 250 measures used in these reports span a wide range of structure, process, and outcome measures for which existing national data sources can be used. This report presents selected findings in each priority area and examples of large disparities, disparities worsening over time, and disparities showing improvement. A U.S. Department of Health and Human Services (HHS) Interagency Work Group (IWG)[i] that supports the reports selected the measures for tracking based on their importance, scientific soundness, and feasibility.

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[i] Federal participants on IWG: AHRQ, Administration for Children and Families, Administration for Community Living, Assistant Secretary for Planning and Evaluation, Centers for Disease Control and Prevention, Centers for Medicare & Medicaid Services, Health Resources and Services Administration, Indian Health Service, National Institutes of Health, and Veterans Health Administration.

OVERVIEW OF U.S. HEALTHCARE SYSTEM LANDSCAPE

The Institute of Medicine defines healthcare quality as "the degree to which health care services for individuals and populations increase the likelihood of desired health outcomes and are consistent with current professional knowledge." Many factors contribute to the quality of care in the United States, including access to timely care, affordability of care, and use of evidence-based guidelines to drive treatment.

This section of the report highlights utilization of healthcare services, healthcare workforce, healthcare expenditures, and major contributors to morbidity and mortality. These factors help to paint an overall picture of the U.S. healthcare system and particularly areas where improvements are needed. Quality measures show whether the healthcare system is adequately addressing risk factors, diseases, and conditions that place the greatest burden on the healthcare system and if change has occurred over time.

Overview of the U.S. Healthcare System infrastructure

Healthcare in the United States is complex. The healthcare industry employs millions of workers providing billions of services each year. In 2016, there were 626 health systems in the United States. About 12% of systems offer a Medicare Advantage plan (Figure 1). Nearly one-third of Medicare beneficiaries are covered by private insurers through the Medicare Advantage program.

Figure 1. Variation in systems offering a Medicare Advantage plan, by number of physicians in the system
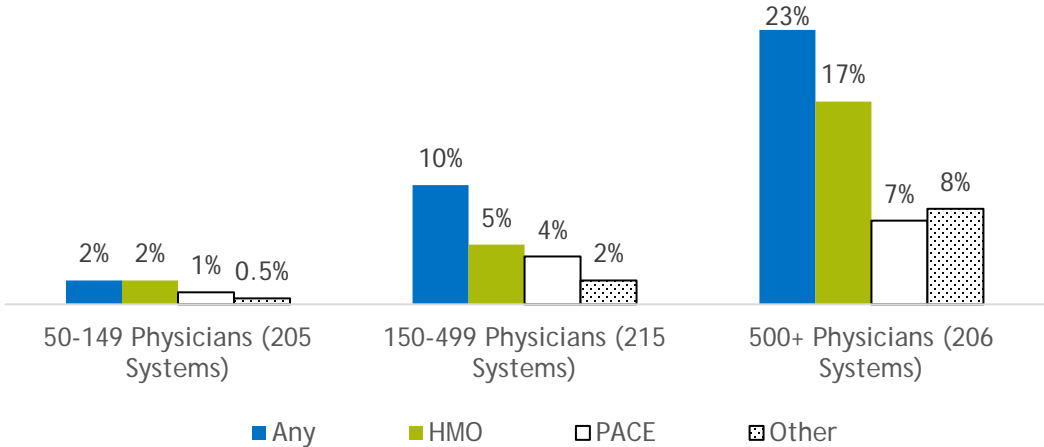
Key: HMO = health maintenance organization; PACE = Programs of All-Inclusive Care for the Elderly.
Source: Agency for Healthcare Research and Quality, Snapshot of U.S. Health Systems, 2016 Data Highlight No.1 (https://www.ahrq.gov/sites/default/files/wysiwyg/snapshot-of-us-health-systems-2016v2.pdf).
Note: The hospital figures represent all nonfederal general acute care hospitals in the United States. A health system is an organization that includes at least one hospital and at least one group of physicians that provides comprehensive care (including primary and specialty care) and is connected with each other and with the hospital through common ownership or joint management.

The QDR tracks care delivered by providers in many types of healthcare settings. The goal is to provide high-quality healthcare that is culturally and linguistically sensitive, patient centered, timely, affordable, well coordinated, and safe. The receipt of appropriate high-quality services and counseling about healthy lifestyles can facilitate the maintenance of well-being and functioning. In addition, social determinants of health, such as education, income, and residence location, can affect access to care and quality of care.

Improving care requires facility administrators and providers to work together to expand access, enhance quality, and reduce disparities. It also requires coordination between the healthcare sector and other sectors for social welfare, education, and economic development. For example, Healthy People 2020 includes 33 social determinants of health objectives for federal programs and interventions.[ii]

The numbers of health service encounters and people working in health occupations illustrate the large scale and inherent complexity of the U.S. healthcare system. The tracking of healthcare quality measures in this report, notably in the Trends in Quality section, attempts to quantify progress made in improving quality and reducing disparities in the delivery of healthcare to the American people.

Figure 2. Number of healthcare service encounters, United States, 2015, 2016, 2017
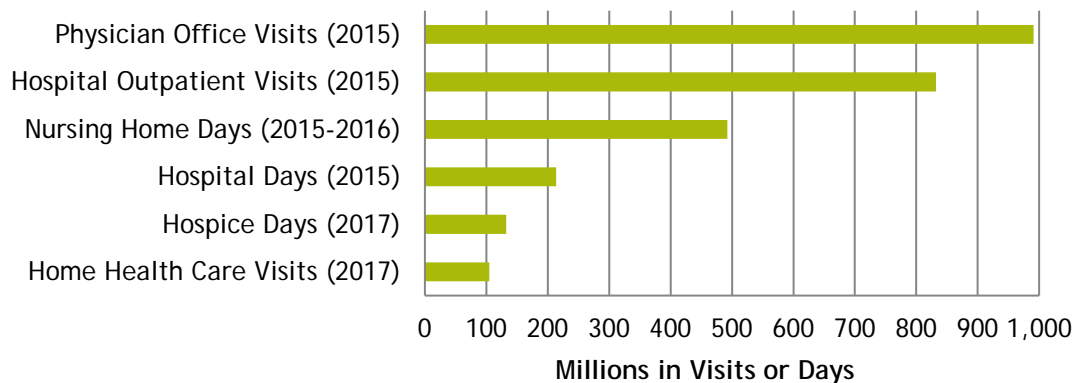
Source: National Center for Health Statistics (NCHS), *Health, United States, 2017* (physician [Table 76] and hospital visits [Table 82]) (https://www.cdc.gov/nchs/data/hus/hus17.pdf); NCHS, Long-term care providers and services users in the United States: data from the National Study of Long-Term Care Providers, 2015-2016 (https://www.cdc.gov/nchs/data/series/sr_03/sr03_43-508.pdf) (nursing home days); Medicare Payment Advisory Commission (MedPAC), Health care spending and the Medicare Program: a data book, March 2019 (http://medpac.gov/docs/default-source/reports/mar19_medpac_entirereport_sec.pdf?sfvrsn=0) (home health [Table 9-1]) and hospice data [Table 12-4]).

[ii] For more information, refer to Healthy People 2020 midcourse review. Chapter IV: Leading Health Indicators. Hyattsville, MD: National Center for Health Statistics; 2016. https://www.cdc.gov/nchs/data/hpdata2020/HP2020MCR-B04-LHI.pdf. Also refer to Chapter 39: Social Determinants of Health (SDOH). https://www.cdc.gov/nchs/data/hpdata2020/HP2020MCR-C39-SDOH.pdf.

- In 2015, there were 991 million physician office visits, including visits to physicians in health centers (Figure 2).
- In 2015, there were 832 million hospital outpatient visits.
- In 2016, residents spent 492 million days in nursing homes.
- In 2015, patients spent 214 million days in hospitals.
- In 2017, patients spent 132 million days in hospice.
- In 2017, there were 105 million home health visits.

Figure 3. Number of people working in health occupations, United States, 2017 (unless otherwise noted)
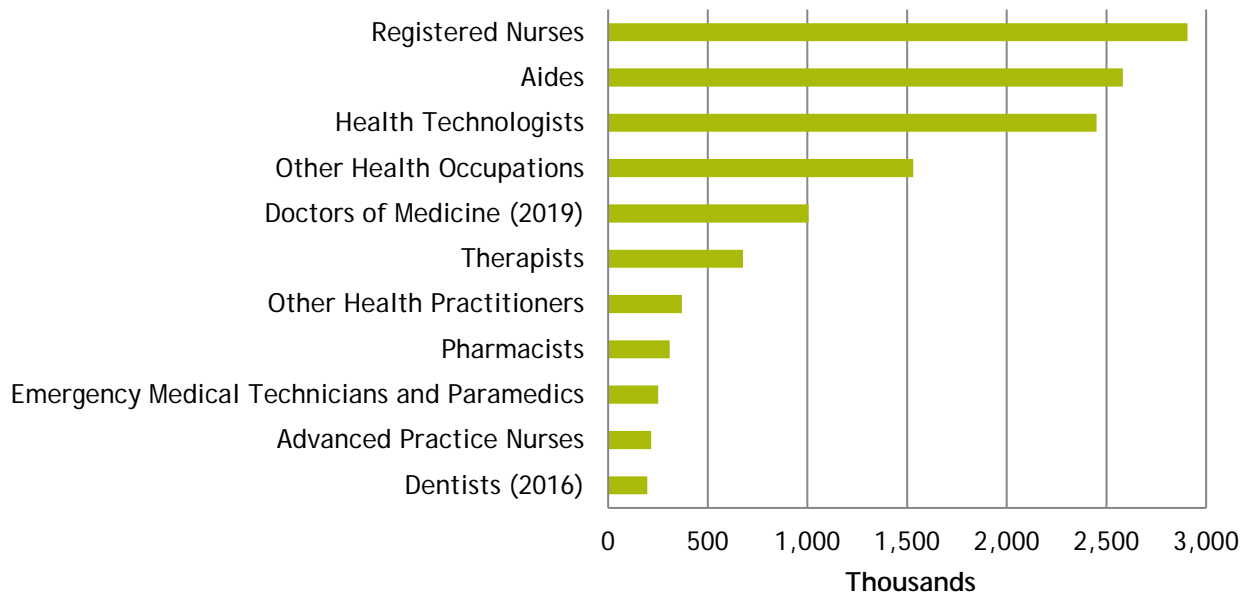
Source: National Center for Health Statistics, *Health, United States, 2017* (https://www.cdc.gov/nchs/hus/index.htm) (dentists); The Henry J. Kaiser Family Foundation, State Health Facts, Provider and Service Use, 2019 (https://www.kff.org/other/state-indicator/total-active-physicians/?currentTimeframe=0&sortModel=%7B%22colId%22:%22Location%22,%22sort%22:%22asc%22%7D) (doctors); and Bureau of Labor Statistics Occupational Employment Statistics (https://www.bls.gov/oes/), 2017 (all other occupations).
Note: Doctors of Medicine also include Doctors of Osteopathic Medicine. Other health practitioners include physician assistants, medical assistants, dental assistants, chiropractors, dietitians and nutritionists, optometrists, podiatrists, and audiologists, as well as massage therapists, medical equipment preparers, medical transcriptionists, pharmacy aides, veterinary assistants and laboratory animal caretakers, phlebotomists, and healthcare support workers. Aides include nursing, psychiatric, home health, occupational therapy, and physical therapy assistants and aides. Therapists include occupational therapists, physical therapists, radiation therapists, recreational therapists, respiratory therapists, speech-language pathologists, and exercise physiologists.

- In 2019, there were 1,005,000 active medical doctors in the United States, which include doctors of medicine and doctors of osteopathy (Figure 3).
- In 2016, there were 196,000 dentists.
- In 2017, there were 2.9 million registered nurses, 2.5 million health technologists, and 2.6 million nursing and other aides.
- In 2017, 370,000 other health practitioners provided care, including more than 109,000 physician assistants.

Overview of Disease Burden in the United States

The National Institutes of Health defines disease burden as the impact of a health problem, as measured by prevalence, incidence, mortality, morbidity, extent of disability, financial cost, or other indicators. The healthcare system aims to mitigate the effects of burden caused by the leading causes of morbidity and mortality.

This section of the report highlights three areas of disease burden that have major impact on the health system of the United States, and measures of quality for most of these conditions are tracked in the QDR .Variation in access to care and care delivery across communities contributes to disparities related to race, ethnicity, sex, and socioeconomic status.

The concept of years of potential life lost (YPLL) involves estimating the average time a person would have lived had he or she not died prematurely. This measure is used to help quantify social and economic loss owing to premature death, and it has been promoted to emphasize specific causes of death affecting younger age groups. YPLL inherently incorporates age at death, and its calculation mathematically weights the total deaths by applying values to death at each age.[1]

Figure 4. Years of potential life lost before age 65, United States, 2017
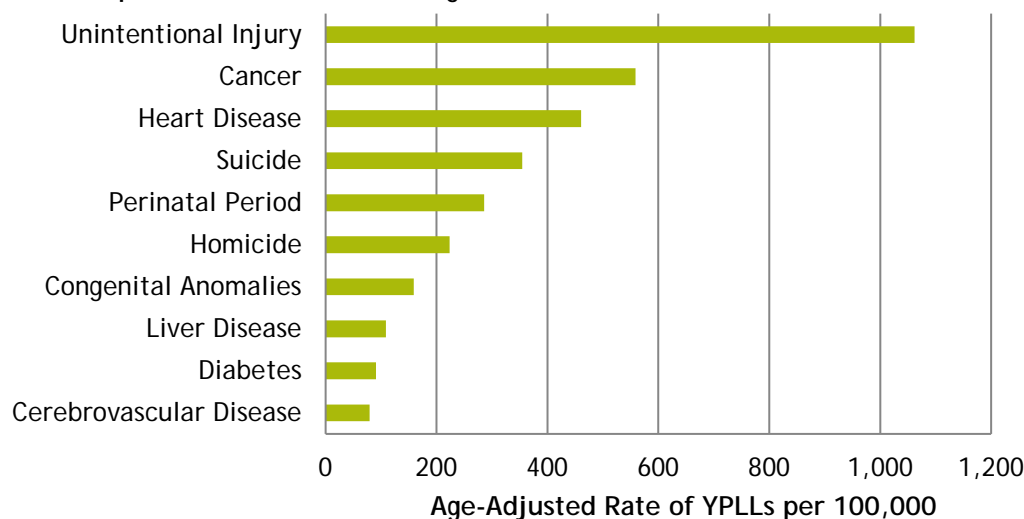
Key: YPLL = years of potential life lost.
Source: Centers for Disease Control and Prevention, National Center for Injury Prevention and Control, Years of Potential Life Lost (YPLL) Reports, 1999-2017. https://webappa.cdc.gov/sasweb/ncipc/ypll10.html.
Note: The perinatal period occurs from 22 completed weeks (154 days) of gestation and ends 7 completed days after birth.[iii]

[iii] World Health Organization, Maternal and Perinatal Health.
http://www.who.int/maternal_child_adolescent/topics/maternal/maternal_perinatal/en/.

- From 2016 to 2017, there were no changes in the ranking of the top 10 leading diseases and injuries contributing to YPLL (Figure 4).
- The top category contributing to YPLL, unintentional injury, increased from 1,020.8 per 100,000 population in 2016 to 1,062.1 per 100,000 population in 2017.
- In 2017, among females, unintentional injuries were the second leading contributing factor for YPLL, suicide the 5th, and homicide the 7th leading contributor. Among males, unintentional injuries were the second leading contributor to YPLL, suicide the 4th, and homicide the 5th leading contributor to YPLL (data not shown).

A disability-adjusted life year (DALY) is a measure of burden of disease that takes into account years of life lost due to premature death and years of productive life lost to poor health or disability. For a given population, DALYs are calculated by summing the years of life lost prematurely and weighted years lived with disability. Improvements in the United States' age-standardized DALY rate since 1995 have largely come from improvements in premature death (years of life lost), as opposed to improvements in the years lived with disability.

Figure 5. Age standardized disability-adjusted life year rate per 100,000 population, both sexes, by disease, 2017

Age-Standardized Rate of DALYs per 100,000 Population
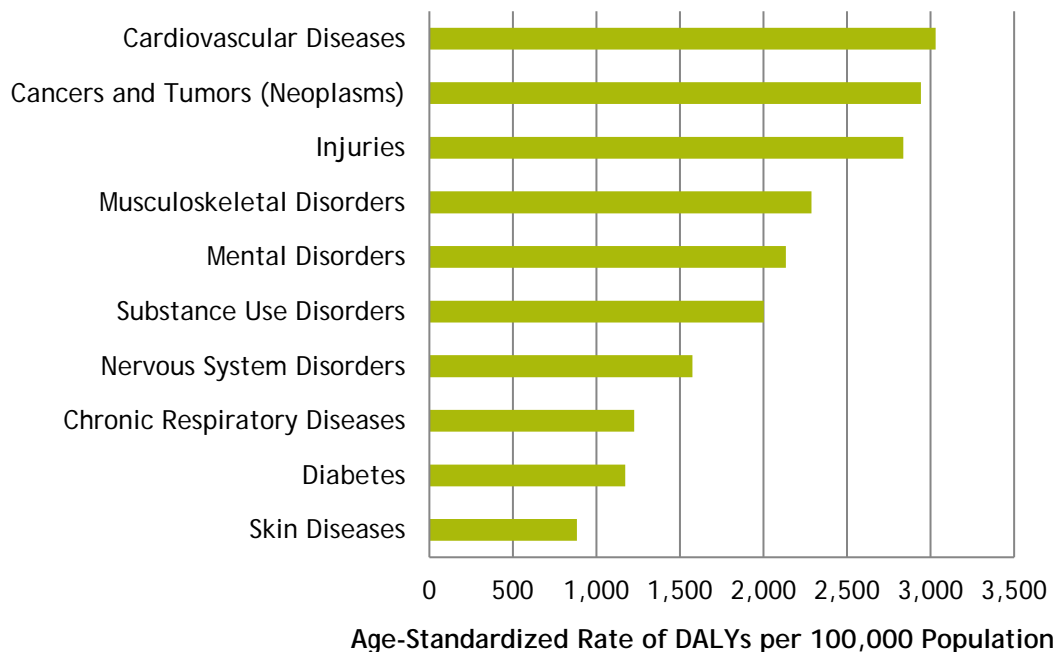
Source: Kaiser Family Foundation analysis of data from Institute for Health Metrics and Evaluation. Global Burden of Disease Study 2016 (GBD 2016) Data Downloads.

- In 2017, cardiovascular diseases (3,030 per 100,000 population) and cancer (2,942 per 100,000 population) accounted for most DALYs (Figure 5).

Figure 6. Leading causes of death for the total population, United States, 2017
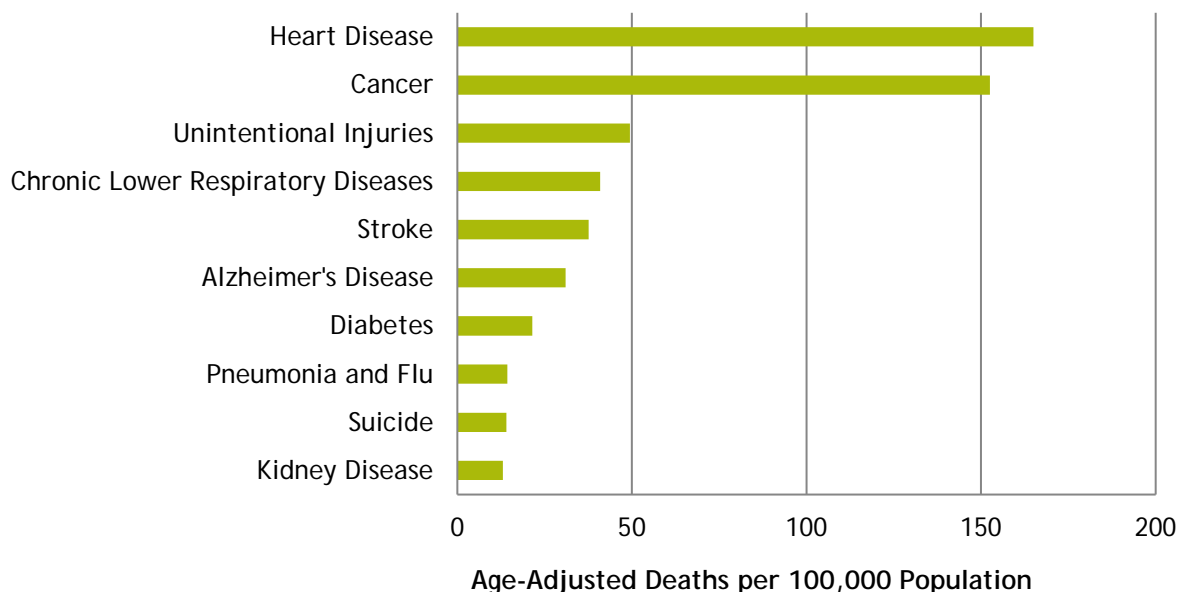
Age-Adjusted Deaths per 100,000 Population

Source: Centers for Disease Control and Prevention, National Center for Health Statistics, National Vital Statistics System - Mortality. Mortality in the United States, 2017. https://www.cdc.gov/nchs/data/databriefs/db328-h.pdf.

- In 2017, heart disease, cancer, unintentional injuries, chronic lower respiratory diseases, stroke, Alzheimer's disease, and diabetes were among the leading causes of death for the overall U.S. population (Figure 6).
- Overall, suicide was the 9th leading cause of death in 2017, the 8th leading cause among men, and the 14th among females (data by sex not shown).
- From 2016 to 2017, age-adjusted death rates increased for pneumonia and flu, suicide, stroke, chronic lower respiratory diseases, Alzheimer's disease, diabetes, and unintentional injuries (data not shown).
- From 2016 to 2017, cancer showed a significant decrease (data not shown).
- In 2017, unintentional injuries was the third leading cause of death among males and sixth among females (data not shown).

The years of potential life lost, years with disability, and leading causes of death illustrate the burden of disease experienced by the American people. Findings highlighted in the Trends in Quality section of this report attempt to quantify progress made in improving quality of care, reducing disparities in healthcare, and ultimately reducing disease burden.

Overview of Healthcare Costs in the United States

- In 2017, national health expenditures totaled about $3 trillion, excluding administrative and investment costs.[2]
- The rate of growth in hospital spending decreased in 2017. Spending rose 4.6 percent to $1.1 trillion compared with 5.6 percent growth in 2016. The slower growth for 2017 reflected slower growth in use and intensity of services. Growth in outpatient visits slowed while growth in inpatient days increased at about the same rate in both 2016 and 2017.
- Physician and clinical services spending increased 4.2 percent to $694.3 billion in 2017. This increase followed more rapid growth of 5.6 percent in 2016 and 6.0 percent in 2015. Less growth in total spending for physician and clinical services in 2017 was a result of slower growth in use and intensity of physician and clinical services.
- Retail prescription drug spending slowed in 2017, increasing 0.4 percent to $333.4 billion. This slower rate of growth followed 2.3 percent growth in 2016, which was much slower than in 2014, when spending grew 12.4 percent, and in 2015, when spending grew 8.9 percent. These higher rates of growth in 2014 and 2015 were primarily the result of the introduction of new, innovative medicines and faster growth in prices for existing brand-name drugs.

  Retail prescription drug spending growth slowed in 2017 primarily due to slower growth in the number of prescriptions dispensed, a continued shift to lower cost generic drugs, slower growth in the volume of some high-cost drugs, declines in generic drug prices, and lower price increases for existing brand-name drugs.[3]
- Expenditures from multiple sources channeled to both the public and private care sectors make it challenging to control growth in healthcare costs. New delivery system models such as the patient-centered medical home have been developed to coordinate fragmented care across public and private sectors and may promote more efficient healthcare spending.

Figure 7. Distribution of personal healthcare expenditures by type of expenditure, 2017

- **In 2017, hospital care expenditures were $1.1 trillion, nearly 40% of personal healthcare expenditures (Figure 7).**
- **Expenditures for physician and clinical services were $694.3 billion, almost one-fourth of personal healthcare expenditures**
- **Prescription drug expenditures were $333.4 billion, 12% of personal healthcare expenditures.**
- **Expenditures for dental services were $129.1 billion, 4% of personal healthcare expenditures.**
- **Nursing care facility expenditures were $166.3 billion and home health care expenditures were $97 billion, 6% and 3% of personal healthcare expenditures, respectively.**

Figure 8. Personal healthcare expenditures and prescription drug expenditures, by source of funds, 2017
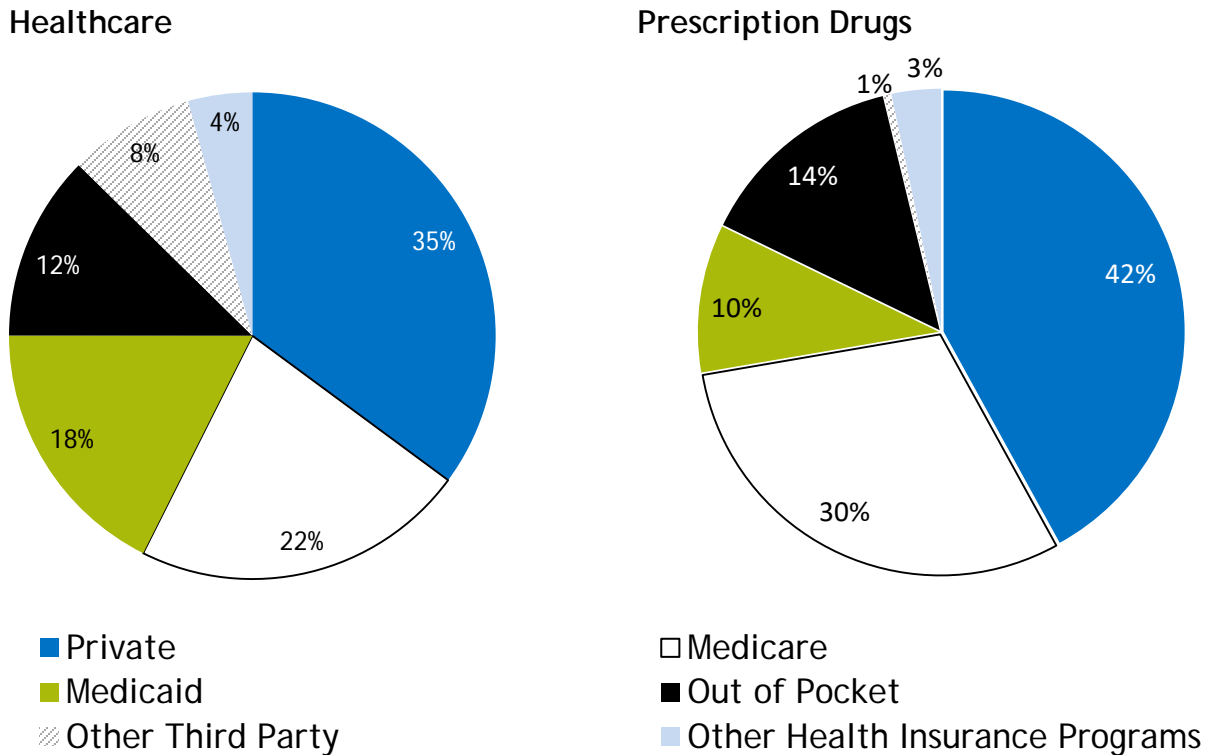
Healthcare

Prescription Drugs

■ Private   □ Medicare

■ Medicaid   ■ Out of Pocket

▨ Other Third Party   ■ Other Health Insurance Programs

Source: Centers for Medicare & Medicaid Services, National Health Expenditures by type of service and source of funds, CY 1960-2017; and NHE Tables 6, 7, 8, 12, 14, and 15.

Source: Centers for Medicare & Medicaid Services, NHE Table 16, Retail Prescription Drugs Expenditures; Levels, Percent Change, and Percent Distribution, by Source of Funds: Selected Calendar Years 1970-2017.

Note: Data for both figures are available at https://www.cms.gov/Research-Statistics-Data-and-Systems/Statistics-Trends-and-Reports/NationalHealthExpendData/NationalHealthAccountsHistorical.html. Percentages may not add to 100 due to rounding. Personal healthcare expenditures are outlays for goods and services related directly to patient care. These expenditures are total national health expenditures minus expenditures for investment, health insurance program administration and the net cost of insurance, and public health activities. Other health insurance programs include Children's Health Insurance Program (Titles XIX and XXI) and programs available through the Department of Defense and the Department of Veterans Affairs. Other third party payers may include worksite healthcare, other private venues, Indian Health Service, workers' compensation, general assistance, maternal and child health programs, vocational rehabilitation programs, other federal programs, Substance Abuse and Mental Health Services Administration, other state and local programs, and school health programs.

- In 2017, private insurance accounted for 35% of personal healthcare expenditures, followed by Medicare, Medicaid, and out of pocket (Figure 8).
- Sources of funds varied by type of expenditure (data not shown):

   - Private insurance accounted for 40% of hospital, 43% of physician, 11% of home health, 10% of nursing home, 45% of dental, and 42% of prescription drug expenditures.

- ■ Medicare accounted for 25% of hospital, 23% of physician, 40% of home health, 23% of nursing home, 0.7% of dental, and 30% of prescription drug expenditures.
- ■ Medicaid accounted for 17% of hospital, 11% of physician, 36% of home health, 30% of nursing home, 10% of dental, and 10% of prescription drug expenditures.
- ■ Out-of-pocket payments accounted for 3% of hospital, 9% of physician, 9% of home health, 27% of nursing home, 41% of dental, and 14% of prescription drug expenditures.

- In 2017, retail prescription drug expenditures were $333.4 billion. Patients paid 14% of these expenses out of pocket, totaling $46.7 billion. All other health insurance entities, including private health insurance, Medicare, Medicaid, and other health insurance programs accounted for 85.5% of the total costs ($285 billion).

  - ■ Private health insurance companies accounted for 42% of retail drug expenses ($140.1 billion in 2017).
  - ■ Medicare accounted for 30.3% of retail drug expenses ($100.9 billion).
  - ■ Medicaid accounted for 9.9% of retail drug expenses ($33 billion).
  - ■ Other health insurance programs consisted of the Children's Health Insurance Program (Titles XIX and XXI) and programs available through the Department of Defense and the Department of Veterans Affairs. These program accounted for 3.3% of retail drug expenses ($11 billion).
  - ■ Other third-party payers had the smallest percentage of costs (0.5%), which represented $1.8 billion in retail drug costs. These expenses were incurred by a variety of sources, including worksite healthcare, other private venues, Indian Health Service, workers' compensation, general assistance, maternal and child health programs, vocational rehabilitation programs, other federal programs, Substance Abuse and Mental Health Services Administration, other state and local programs, and school health programs.

Variation in Healthcare Quality and Disparities

State-level data show that healthcare quality and disparities vary widely depending on state and region. Although a state may perform well in overall quality, the same state may face significant disparities in healthcare access or disparities within specific areas of quality.

Figure 9. Overall quality of care, by state, 2015-2017
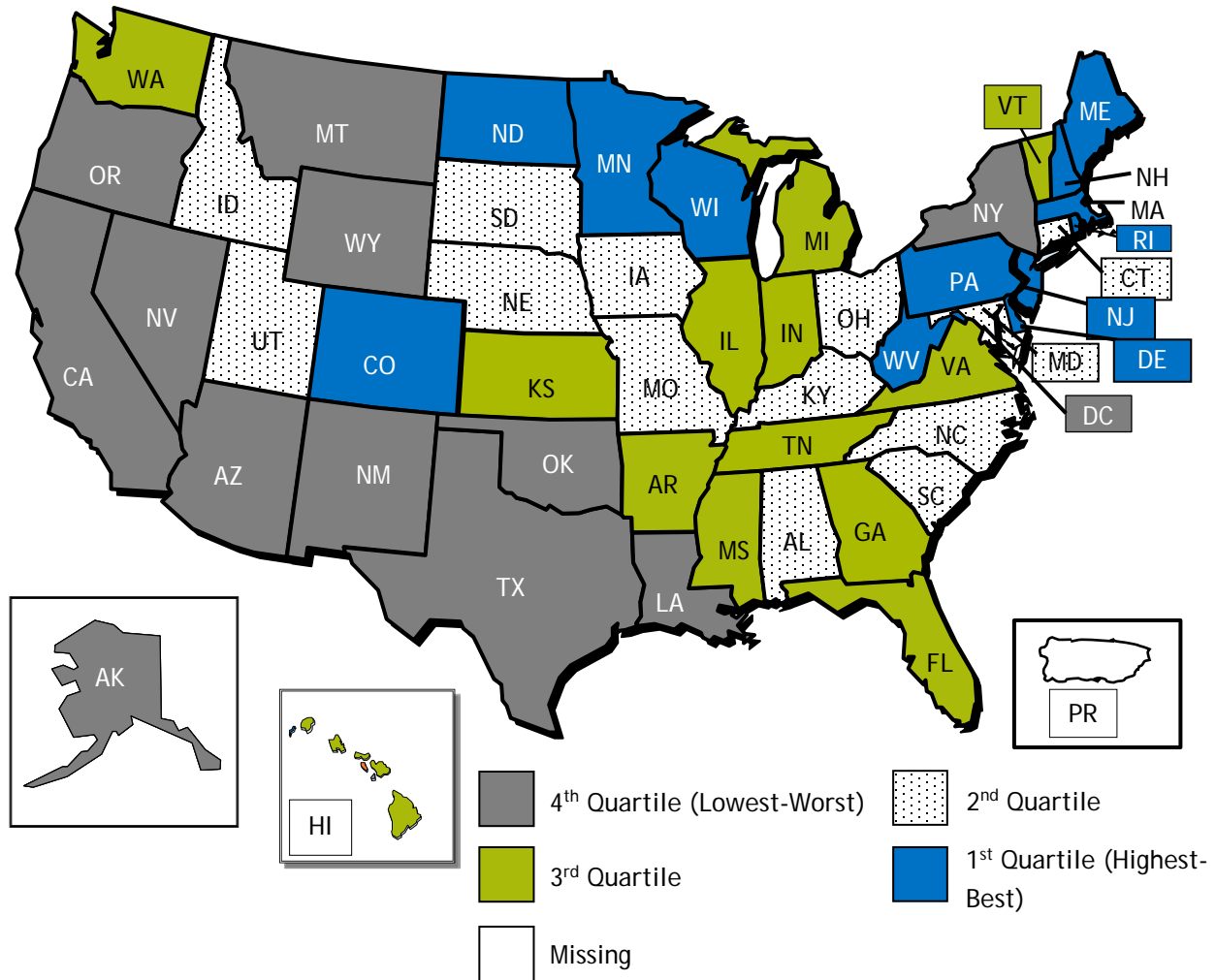
Note: All state-level measures with data are used to compute an overall quality score for each state based on the number of quality measures above, at, or below the average across all states. States were ranked and quartiles are shown on the map. The states with the worst quality score are in the fourth quartile, and states with the best quality score are in the first quartile. Historically, the QDR has included state-specific estimates for selected AHRQ Quality Indicators (QIs) based on Healthcare Cost and Utilization Project (HCUP) data. The 2018 QDR does not include state-specific QI estimates based on 2016 HCUP data because the International Classification of Diseases, Tenth Revision, Clinical Modification/Procedure Coding System version of the QI software used did not include risk adjustment. State-specific QIs will be reported in future QDRs when the estimates can be risk adjusted.

- **Overall quality of care varied across the United States (Figure 9):**

  - **Some states in the Northeast (Delaware, Maine, Massachusetts, New Hampshire, Pennsylvania, New Jersey and Rhode Island), some in the Midwest (Minnesota, North Dakota, and Wisconsin), and Colorado and West Virginia had the highest overall quality scores. Scores were based on the number of measures that were better, same, or worse than the national average for each measure.**

- Some Southern and Southwestern states (District of Columbia, Louisiana, New Mexico, Oklahoma, and Texas), several Western states (Arizona, California, and Nevada), some Northwestern states (Montana, Oregon, and Wyoming), and New York and Alaska had the lowest overall quality scores.

Figure 10. Average differences in quality of care for Blacks, Hispanics, and Asians compared with Whites, by state, 2015-2017
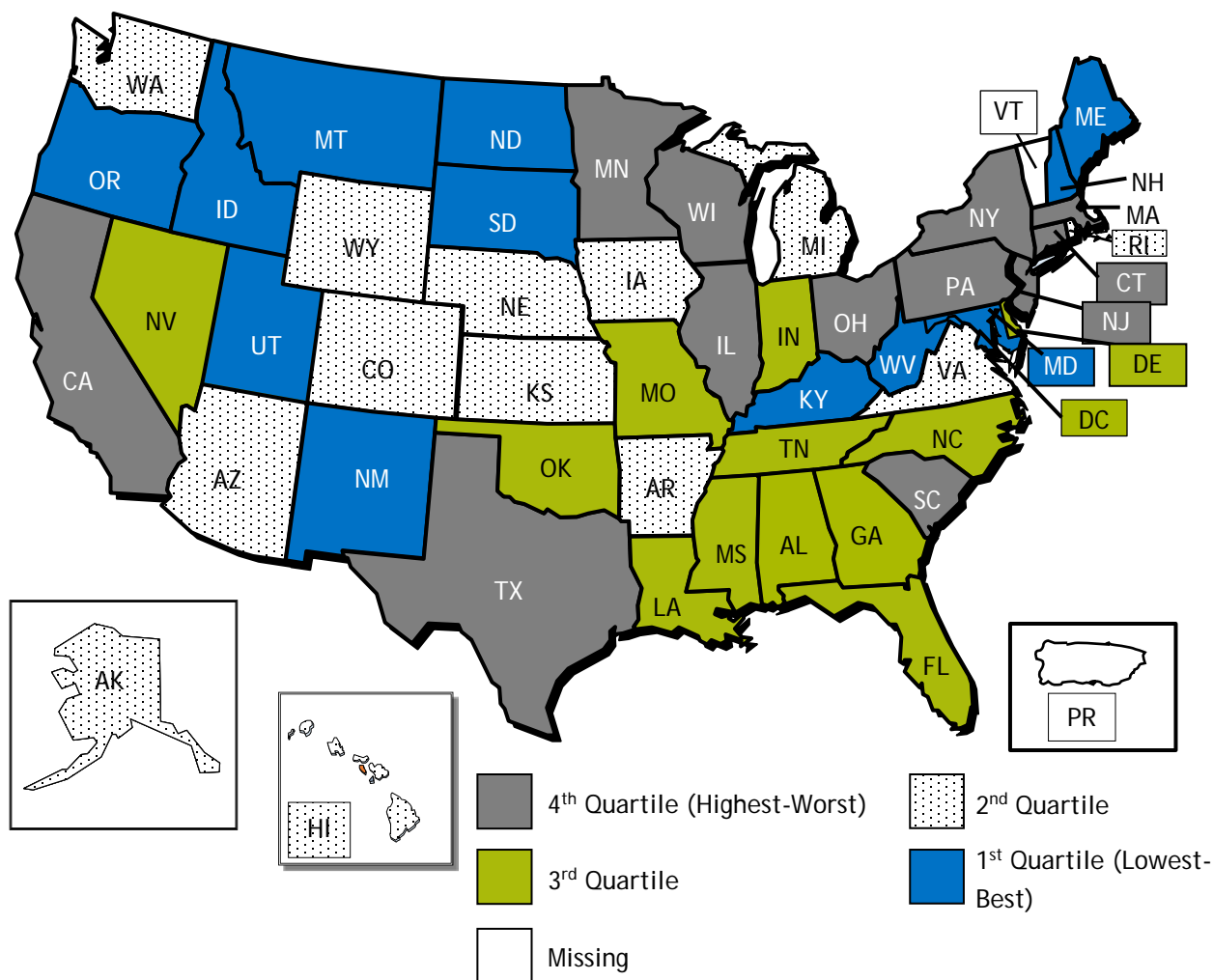
Note: All measures in this report that had state-level data to assess racial and ethnic disparities were used. Separate quality scores were computed for Whites, Blacks, Hispanics, and Asians. For each state, the average of the Black, Hispanic, and Asian scores was divided by the White score. State-level AI/AN data were not available for analysis. States were ranked on this ratio, and quartiles are shown on the map. The states with the worst disparity score are in the fourth quartile, and states with the best disparity score are in the first quartile. Disparity scores were not risk adjusted for population characteristics in each state, so these findings do not take into account population differences between states. Historically, the QDR has included state-specific estimates for selected AHRQ Quality Indicators (QIs) based on Healthcare Cost and Utilization Project (HCUP) data. The 2018 QDR does not include state-specific QI estimates based on 2016 HCUP data because the International Classification of Diseases, Tenth Revision, Clinical Modification/Procedure Coding System version of the QI software used did not include risk adjustment. State-specific QIs will be reported in future QDRs when the estimates can be risk adjusted.

- Racial and ethnic disparities varied across the United States (Figure 10):

  - Some Western and Midwestern states (Idaho, Montana, New Mexico, North Dakota, Oregon, South Dakota, and Utah), several Southern states (Kentucky, Maryland, and West Virginia), and Maine and New Hampshire had the fewest racial and ethnic disparities overall.
  - Several Northeastern states (Connecticut, Massachusetts, New Jersey, New York, and Pennsylvania), several Midwestern states (Illinois, Minnesota, Ohio, and Wisconsin), and California, South Carolina, and Texas had the most racial and ethnic disparities overall.

ACCESS TO HEALTHCARE AND DISPARITIES IN ACCESS

To obtain high-quality care, Americans must first gain entry into the healthcare system. Measures of access to care tracked in the QDR include having health insurance, having a usual source of care, encountering difficulties when seeking care, and receiving care as soon as wanted.

Historically, Americans have experienced variable access to care based on race, ethnicity, socioeconomic status, age, sex, disability status, sexual orientation, gender identity, and residential location. This report discusses findings that showed the largest statistically significant disparities related to some of these variables where data are available.

Overall Trends in Access

Figure 11. Number and percentage of access measures for which measures were improving, not changing, or worsening, 2000 through 2016 or 2017
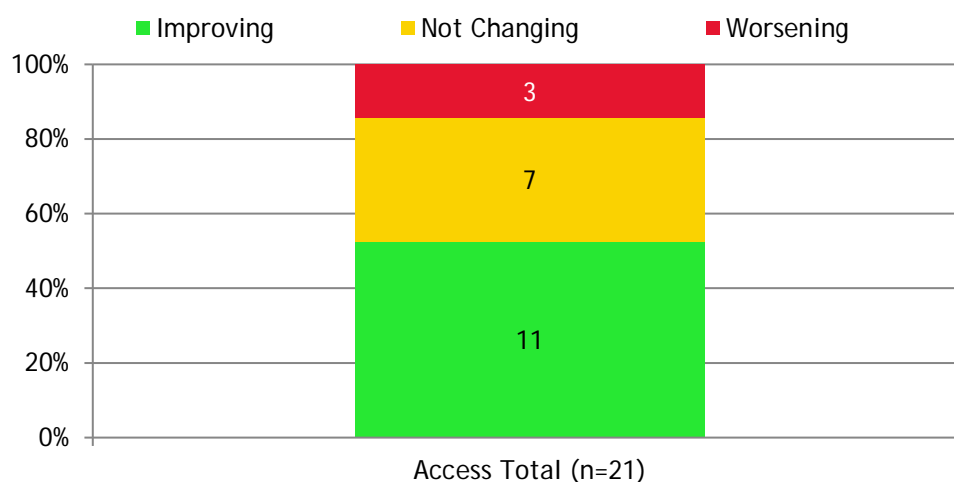
Key: n = number of measures.
Note: The measures represented in this chart are available in Appendix A.

Overall, 11 access measures were improving (Figure 11). Some of the largest improvements in access include:

- Children who had any appointments for routine healthcare in the last 12 months who sometimes or never[iv] got an appointment for routine care as soon as needed.
- People who were in fair or poor health with a specific source of ongoing care.
- People with a specific source of ongoing care.

[iv] The wording reflects a Likert-type scale with the following options: Always, Usually, Sometimes, Never. Sometimes and Never are combined into a single category that is the opposite of Always.

Three measures were worsening, including:

- **Children who had a doctor's office or clinic visit in the last 12 months and needed care, tests, or treatment who sometimes or never found it easy to get the care, tests, or treatment.**

Figure 12. Children who had any appointments for routine healthcare in the last 12 months who sometimes or never got an appointment for routine care as soon as needed, 2002-2016
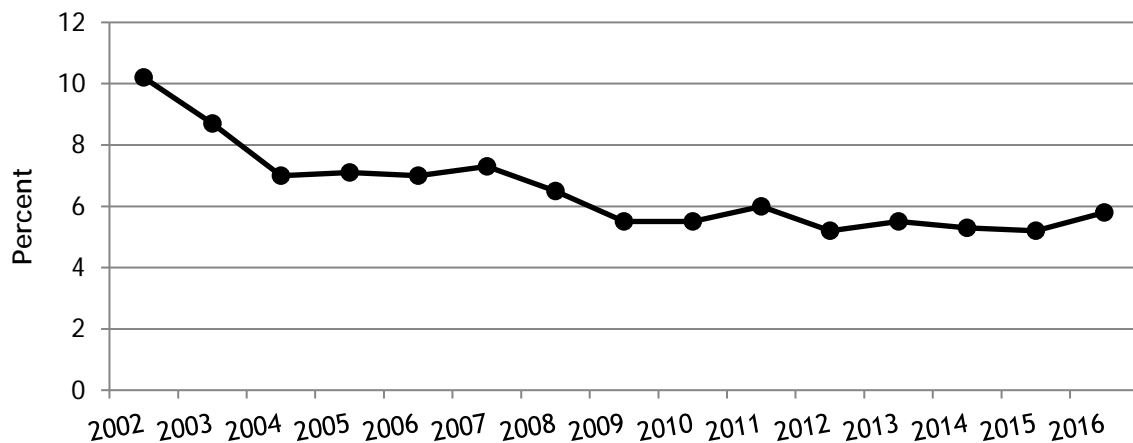
Source: Agency for Healthcare Research and Quality, Medical Expenditure Panel Survey, 2002-2016.
Note: For this measure, lower rates are better.

- **From 2002 to 2016, the percentage of children who had any appointments for routine healthcare in the last 12 months who sometimes or never got an appointment for routine care as soon as needed decreased from 10.2% to 5.8% (Figure 12).**

Figure 13. People who were in fair or poor health with a specific source of ongoing care, 2009-2017
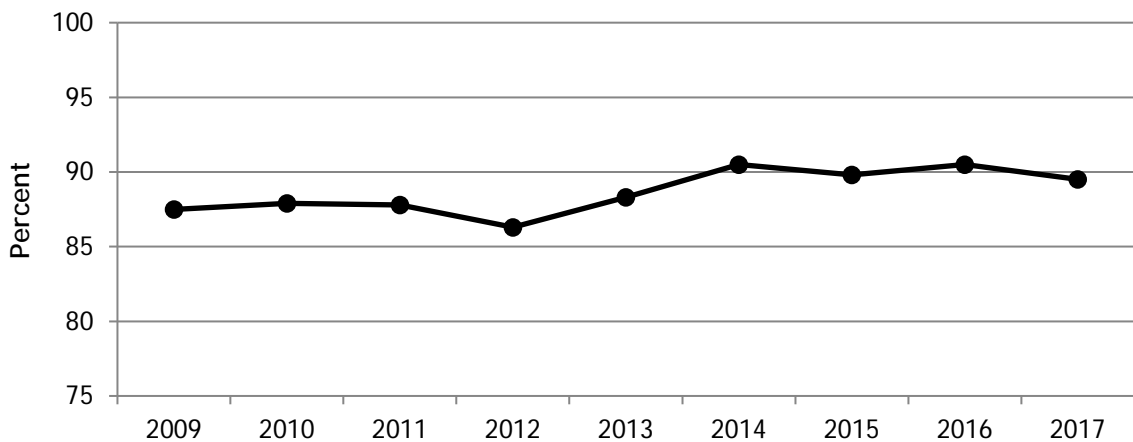
Source: Centers for Disease Control and Prevention, National Center for Health Statistics, National Health Interview Survey, 2009-2017.

- **From 2009 to 2017, the percentage of people in fair or poor health with a specific source of ongoing care increased from 87.5% to 89.5% (Figure 13).**

Figure 14. People with a specific source of ongoing care, 2009-2017
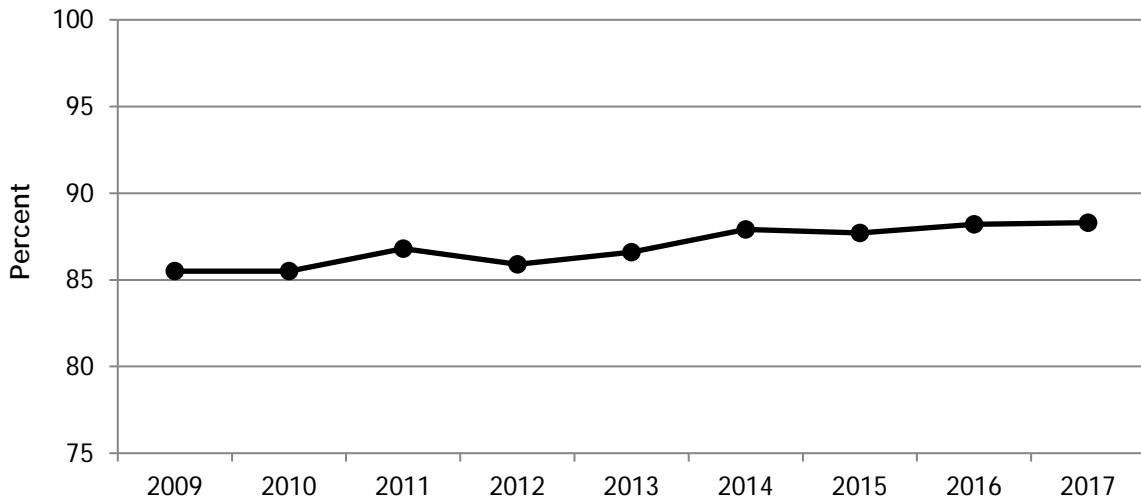
Source: Centers for Disease Control and Prevention, National Center for Health Statistics, National Health Interview Survey, 2009-2017.

● **From 2009 to 2017, the percentage of people with a specific source of ongoing care increased from 85.5% to 88.3% (Figure 14).**

Figure 15. Children who had a doctor's office or clinic visit in the last 12 months and needed care, tests, or treatment who sometimes or never found it easy to get the care, tests, or treatment, 2008-2016
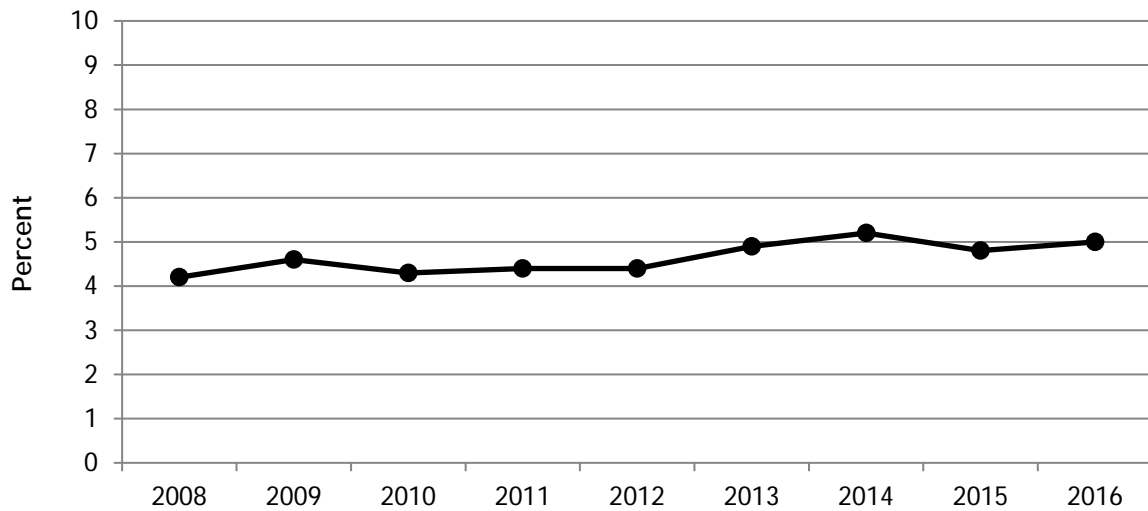
Source: Agency for Healthcare Research and Quality, Medical Expenditure Panel Survey, 2008-2016.
Note: For this measure, lower rates are better.

● **The percentage of children who had a doctor's office or clinic visit in the last 12 months and needed care, tests, or treatment who sometimes or never found it easy to get the care, tests, or treatment increased from 4.2% in 2008 to 5.0% in 2016 (Figure 15).**

Trends in Access Disparities

Most disparities in access to care showed no statistically significant changes, with a few exceptions. The following access measures showed that disparities over time narrowed (the difference between the comparison group and reference group decreased) from the baseline data year to the most recent data year.[v]

Figure 16. Adults who had a doctor's office or clinic visit in the last 12 months and needed care, tests, or treatment who sometimes or never found it easy to get the care, tests, or treatment, 2008-2016
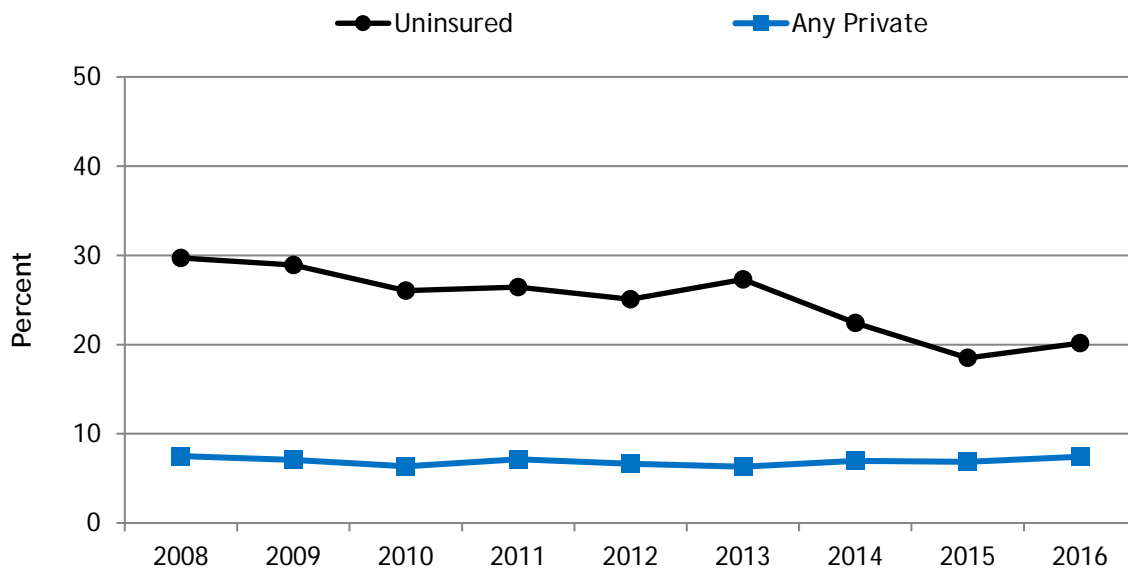
Source: Agency for Healthcare Research and Quality, Medical Expenditure Panel Survey, 2008-2016.
Note: For this measure, lower rates are better.

- From 2008 to 2016, the gap between uninsured adults and adults with private insurance in the percentage of adults who had a doctor's office or clinic visit in the last 12 months and needed care, tests, or treatment who sometimes or never found it easy to get the care, tests, or treatment decreased (Figure 16).
- In 2008, 7.5% of adults with private insurance and 29.7% of uninsured adults sometimes or never found it easy to get care, tests, or treatment. In 2016, 7.4% of adults with private insurance and 20.2% of uninsured adults sometimes or never found it easy to get care, tests, or treatment.

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[v] Trends in disparities are defined as a change in the difference between a comparison group and reference group from the baseline data year to the most recent data year. The change in disparities is the absolute difference in annual percentage of change between the comparison group and reference group. The annual percentage of change is estimated using unweighted linear regression. For more information, see Introduction and Methods.

Trends in Health Insurance Coverage

The Early Release Program of the National Health Interview Survey (NHIS) provides timely data on health insurance coverage in the United States. Since these are the latest data published, these data are not included in the summary analyses conducted for this report. However, it is important to note the status of health insurance coverage with the most recent data available at the time this report was released.

Below are findings from *Health Insurance Coverage: Early Release of Estimates From the National Health Interview Survey, 2018 Report.* More information about the estimates are available on the NHIS website at https://www.cdc.gov/nchs/nhis.htm.

Figure 17. Adults ages 18-64 who were uninsured or had private or public coverage at the time of interview, 1997-2018
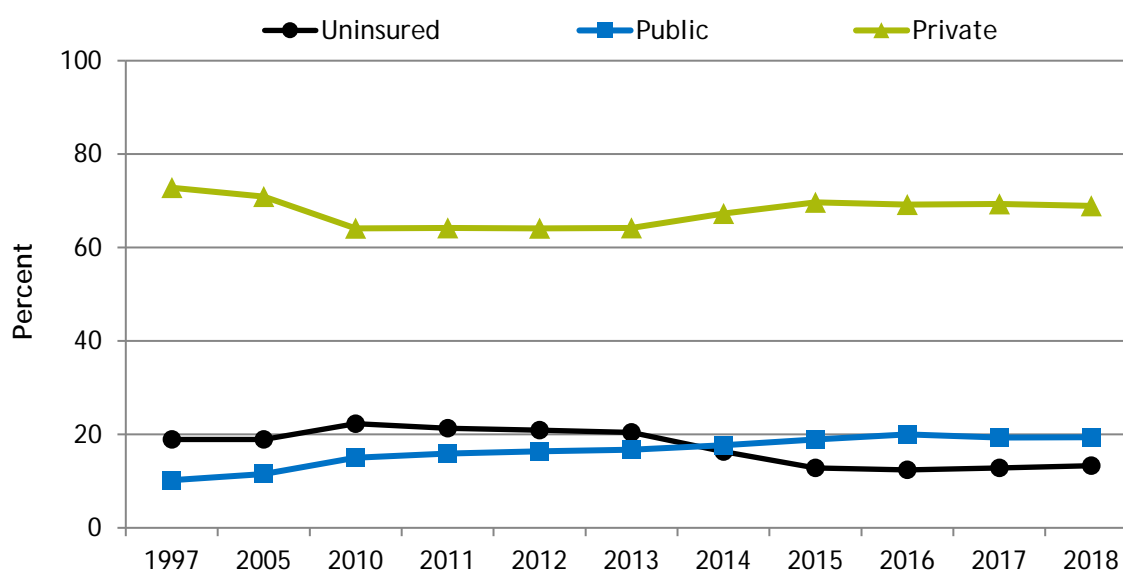
Source: National Center for Health Statistics, National Health Interview Survey Early Release Program, May 2019. https://www.cdc.gov/nchs/data/nhis/earlyrelease/insur201905.pdf.
Note: A small number of people were covered by both public and private plans and were included in both categories.

- In 2018, among adults ages 18-64, 68.9% (136.6 million) had private health insurance, 19.4% (39 million) had public coverage, and 13.3% (26.3 million) were uninsured at the time of interview (Figure 17).
- After generally increasing, more recently, the percentage of adults ages 18-64 who were uninsured at the time of interview decreased and then leveled off. Between 2015 and 2018, the increase among uninsured adults ages 18-64 (from 12.8% to 13.3%) was not statistically significant.
- The percentage of adults ages 18-64 with private or public coverage generally increased. However, more recently the percentages with private or public coverage have leveled off.

Figure 18. Children ages 0-17 years who were uninsured or had private or public coverage at the time of interview, 1997-2018

Source: National Center for Health Statistics, National Health Interview Survey Early Release Program, May 2019. https://www.cdc.gov/nchs/data/nhis/earlyrelease/insur201905.pdf
Note: A small number of people were covered by both public and private plans and were included in both categories.

- In 2018, among children ages 0-17 years, 54.7% had private health insurance, 41.8% had public coverage, and 5.2% were uninsured (Figure 18).
- The percentage of children who were uninsured generally decreased over time. However, more recently, the percentage of children who were uninsured has leveled off.
- While the percentage of children with private health insurance coverage has decreased and public coverage has increased over time, more recently, the percentage of children with public or private coverage has leveled off.

Figure 19. Adults ages 18-64 who were uninsured at the time of interview, by poverty status, 1997-2018

Source: National Center for Health Statistics, National Health Interview Survey Early Release Program, May 2019. https://www.cdc.gov/nchs/data/nhis/earlyrelease/insur201905.pdf.
Note: For this measure, lower rates are better. Poverty categories are based on the ratio of the family's income in the previous calendar year to the appropriate poverty threshold (given the family's size and number of children), as defined by the U.S. Census Bureau for that year. People categorized as "poor" have a ratio less than 1.0 (i.e., their family income is below the poverty threshold); "near poor" people have incomes of 100% to less than 200% of the poverty threshold; and "not poor" people have incomes that are 200% of the poverty threshold or greater.

- In 2018, among adults ages 18-64, 27.4% of those who were poor, 25.1% of those who were near poor, and 8.3% of those who were not poor lacked health insurance coverage at the time of interview (Figure 19).
- The percentage of uninsured adults decreased between 2010 and 2018 among all three poverty status groups. However, the greatest decreases in the uninsured rate since 2013 were among adults who were poor or near poor.
- More recently, among adults ages 18-64 who were not poor, the percentage who were uninsured increased between 2015 and 2018. However, the observed increases between 2015 and 2018 in the percentage uninsured among those who were poor and near poor were not statistically significant.

Figure 20. Children ages 0-17 years who were uninsured at the time of interview, by poverty status, 1997-2018

Source: National Center for Health Statistics, National Health Interview Survey Early Release Program, May 2019. https://www.cdc.gov/nchs/data/nhis/earlyrelease/insur201905.pdf.
Note: For this measure, lower rates are better. Poverty categories are based on the ratio of the family's income in the previous calendar year to the appropriate poverty threshold (given the family's size and number of children), as defined by the U.S. Census Bureau for that year. People categorized as "poor" have a ratio less than 1.0 (i.e., their family income is below the poverty threshold); "near poor" people have incomes of 100% to less than 200% of the poverty threshold; and "not poor" people have incomes that are 200% of the poverty threshold or greater.

- In 2018, among children ages 0-17 years, 6.4% of those who were poor, 6.3% of those who were near poor, and 4.2% of those who were not poor lacked health insurance coverage at the time of interview (Figure 20).
- The percentage of uninsured children decreased among all three groups between 2010 and 2015.
- Among children who were not poor, the percentage who were uninsured increased from 3.3% in 2015 to 4.2% in 2018.

- From 2015 through 2018, among children who were near poor, there were no statistically significant changes in the percentage who were uninsured.
- Among poor children, the percentage who were uninsured increased from 4.4% in 2015 to 6.5% in 2016 and has stayed relatively stable between 2016 and 2018.

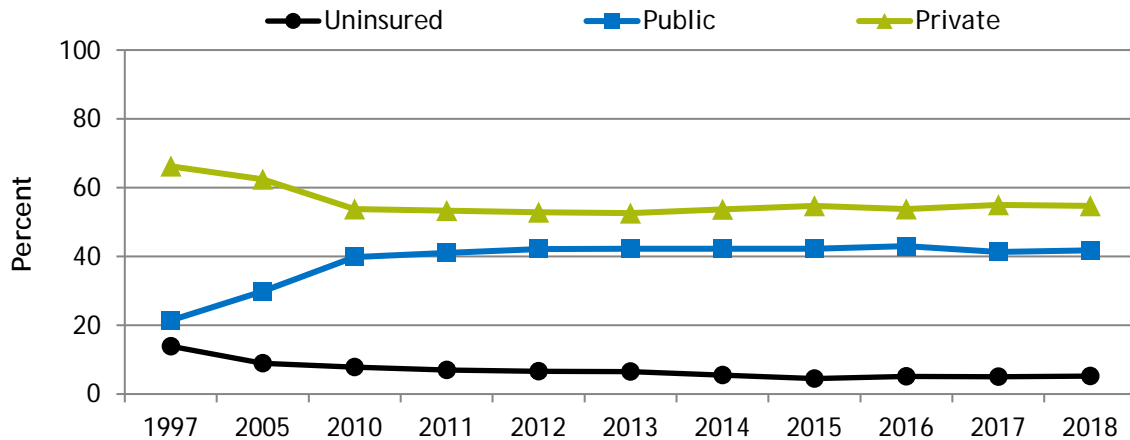**Figure 21. Adults ages 18-64 who were uninsured at the time of interview, by race/ethnicity, 2010-2018**
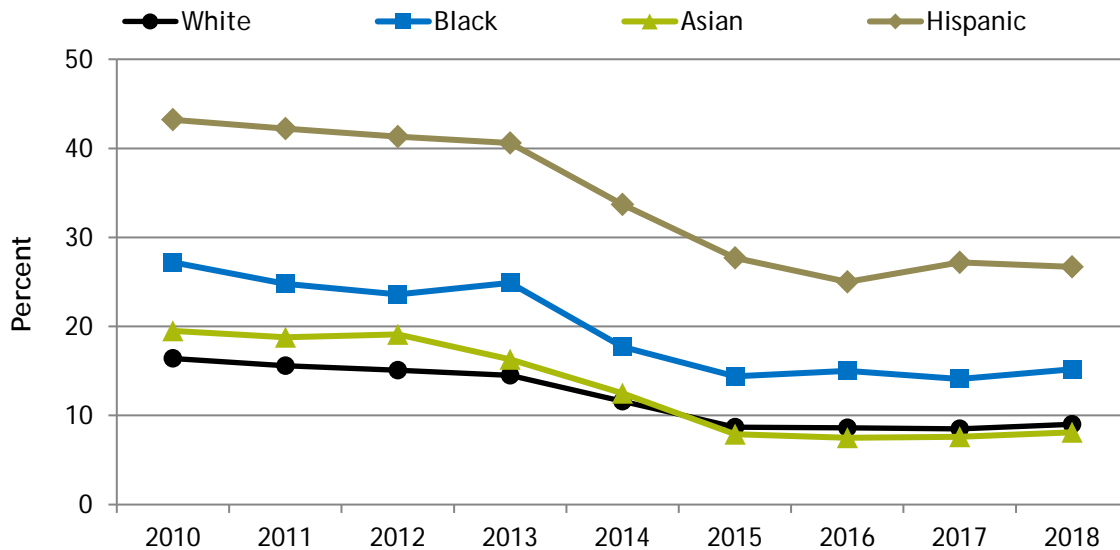
Source: National Center for Health Statistics, National Health Interview Survey Early Release Program, May 2019. https://www.cdc.gov/nchs/data/nhis/earlyrelease/insur201905.pdf.
Note: For this measure, lower rates are better. White, Black, and Asian are non-Hispanic. Hispanic includes all races. Data for Native Hawaiians/Pacific Islanders and American Indians and Alaska Natives are not available for this measure.

- In 2018, among adults ages 18-64, 9.0% of Whites, 15.2% of Blacks, 8.1% of Asians, and 26.7% of Hispanics lacked health insurance coverage at the time of interview (Figure 21).
- Significant decreases in the percentage of uninsured adults were observed from 2013 through 2018 for all four racial/ethnic groups.
- Hispanic adults had the greatest percentage point decrease in the uninsured rate from 2013 (40.6%) through 2018 (26.7%).

Snapshot of Disparities in Access

Figure 22. Number and percentage of access measures for which members of selected groups experienced better, same, or worse access to care compared with reference group, 2016 or 2017
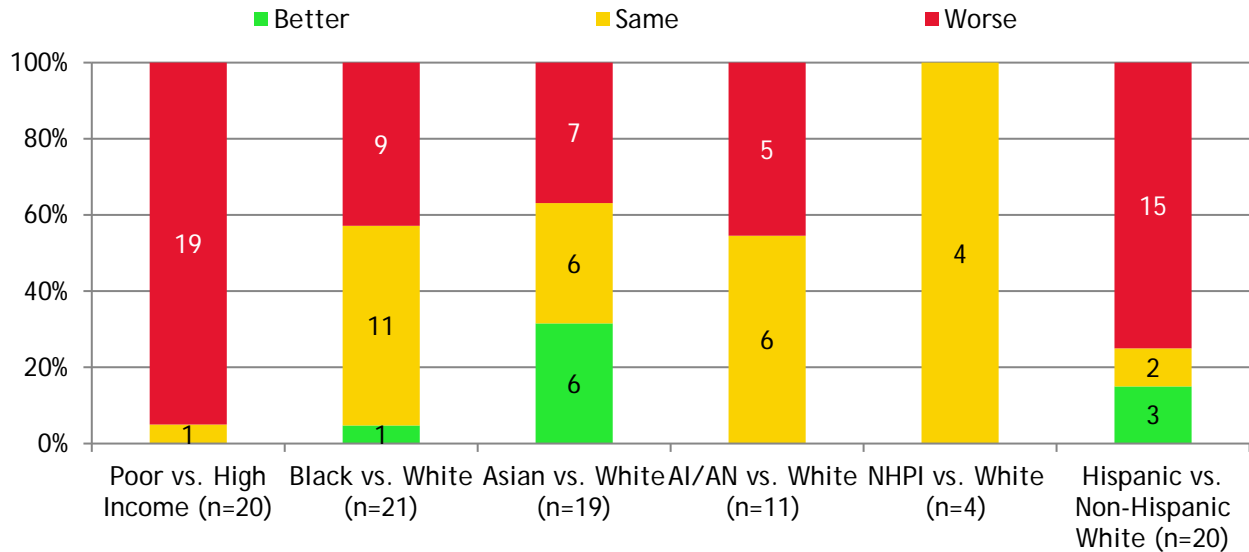
Key: n = number of measures; AI/AN = American Indian or Alaska Native; NHPI = Native Hawaiian/Pacific Islander.
Note: The measures represented in this chart are available in Appendix A. The number of measures is based on the measures that have data for each population group.

For the most recent data year (2016 or 2017), findings show that many disparities persist in access to care. Selected findings below show the largest disparities for each population group.

Poor People

Poor people (at or below 100% of the Federal Poverty Level [FPL) experienced worse access to care compared with high-income people (400% or more of FPL) for 19 of 20 access measures (Figure 22; see Appendix A). **Across the QDR measure set for the most recent data year, health insurance measures showed the largest disparities between poor people and high-income people.**

Figure 23. People under age 65 with health insurance, 2017
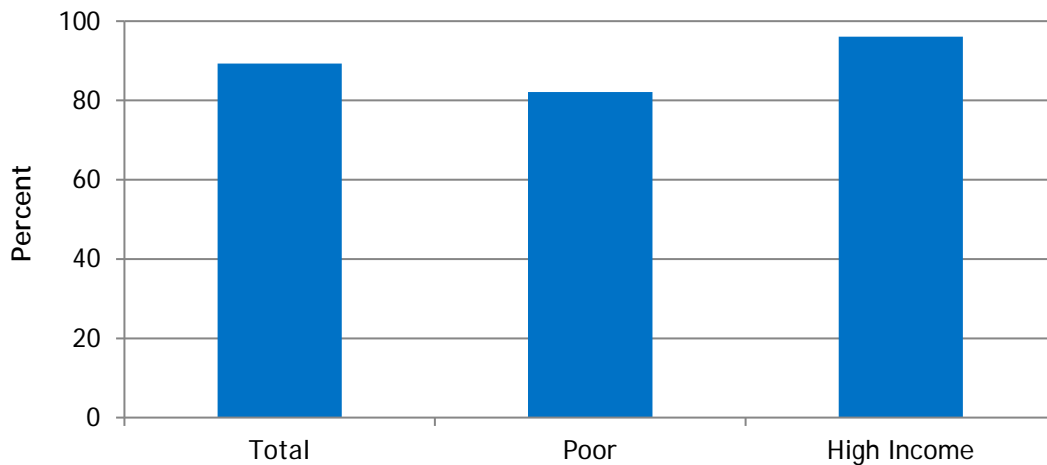
Source: Centers for Disease Control and Prevention, National Center for Health Statistics, National Health Interview Survey, 2017.

- In 2017, 82.1% of poor individuals under age 65 had health insurance compared with 96.1% of high-income individuals (Figure 23).

Figure 24. People under age 65 with any private health insurance, 2017

Source: Centers for Disease Control and Prevention, National Center for Health Statistics, National Health Interview Survey, 2017.

- In 2017, 20.8% of poor individuals under age 65 had private health insurance compared with 91.0% of high-income individuals (Figure 24).

Blacks

Blacks experienced worse access to care compared with Whites for 43% of the measures and the same access to care for 52% of the measures (Figure 22; see Appendix A). **Access measures related to timely access to care showed the largest disparities between Blacks and Whites.**

Figure 25. Children who had any appointments for routine healthcare in the last 12 months who sometimes or never got an appointment for routine care as soon as needed, 2016
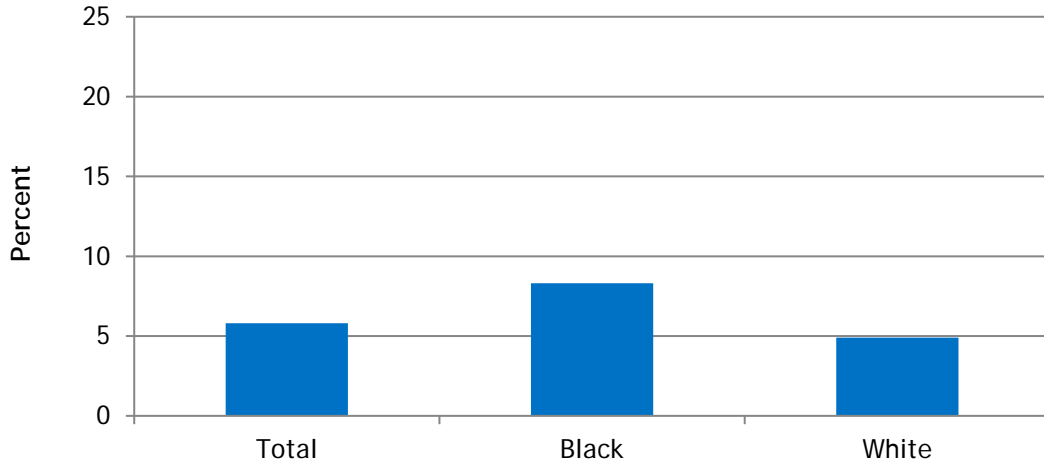
Source: Agency for Healthcare Research and Quality, Medical Expenditure Panel Survey, 2016.
Note: For this measure, lower rates are better. Routine care includes healthcare at a doctor's office or clinic when care is not needed right away

- In 2016, 8.3% of Black children who had any appointments for routine healthcare in the last 12 months sometimes or never got an appointment for routine care as soon as needed compared with 4.9% of White children (Figure 25).

Figure 26. Adults who had a doctor's office or clinic visit in the last 12 months and needed care, tests, or treatment who sometimes or never found it easy to get the care, tests, or treatment, 2016
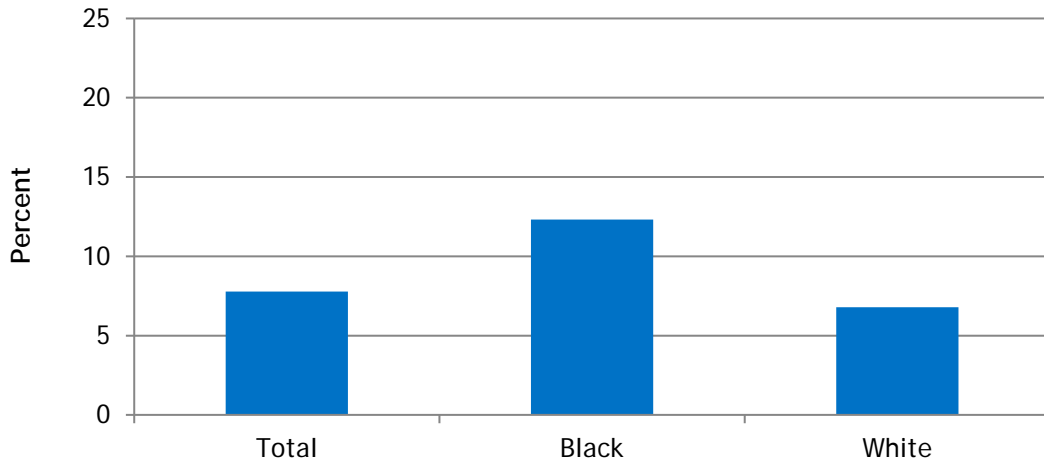
Source: Agency for Healthcare Research and Quality, Medical Expenditure Panel Survey, 2016.
Note: For this measure, lower rates are better.

- In 2016, 12.3% of Black adults who had a doctor's office or clinic visit in the last 12 months and needed care, tests, or treatment sometimes or never found it easy to get the care, tests, or treatment compared with 6.8% of White adults (Figure 26).

Asians

Asians experienced worse access to care compared with Whites for 37% of the measures, the same access for 32% of the measures, and better access for 32% of the measures (Figure 22; see Appendix A). **Access measures that showed the largest disparities between Asians and Whites include measures related to timely access to care.**

Figure 27. Children who had any appointments for routine healthcare in the last 12 months who sometimes or never got an appointment for routine care as soon as needed, 2016
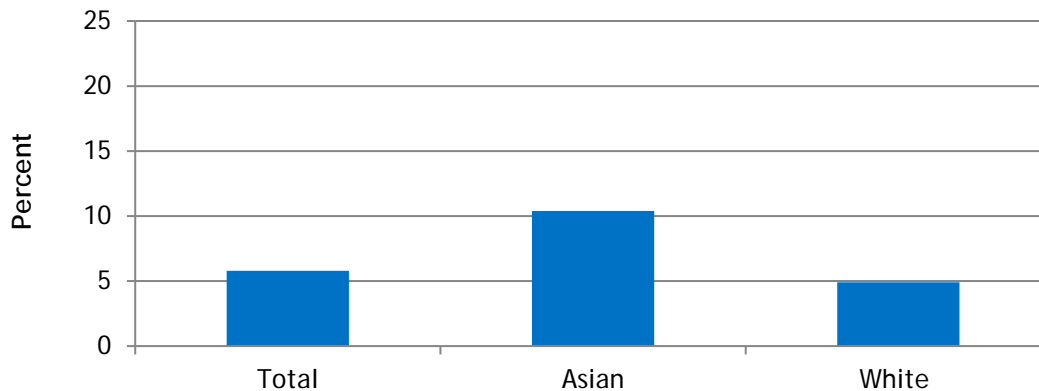
Source: Agency for Healthcare Research and Quality, Medical Expenditure Panel Survey, 2016.
Note: For this measure, lower rates are better.

- In 2016, 10.4% of Asian children who had any appointments for routine healthcare in the last 12 months sometimes or never got an appointment for routine care as soon as needed compared with 4.9% of White children (Figure 27).

Figure 28. Adults who had any appointments for routine healthcare in the last 12 months who sometimes or never got an appointment for routine care as soon as needed, 2016
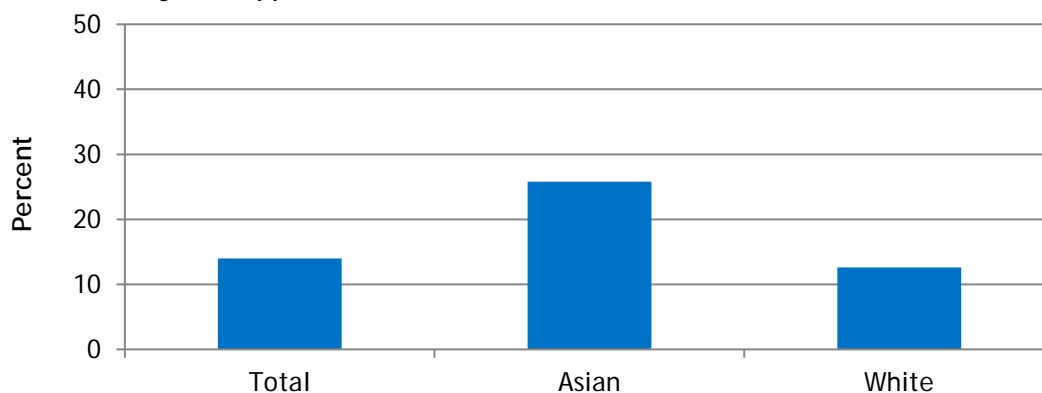
Source: Agency for Healthcare Research and Quality, Medical Expenditure Panel Survey, 2016.
Note: For this measure, lower rates are better.

- In 2016, 25.8% of Asian adults who had any appointments for routine healthcare in the last 12 months sometimes or never got an appointment for routine care as soon as needed compared with 12.6% of White adults (Figure 28).

American Indians/Alaska Natives

Among the 11 measures in the QDR measure set that had data for AI/ANs for the most recent data year, 5 showed worse care for AI/ANs compared with Whites, and 6 showed the same access to care for AI/ANs (Figure 22; see Appendix A). **Access measures that showed the largest disparities between AI/ANs and Whites include health insurance measures.[vi]**

Figure 29. People under age 65 who were uninsured all year, 2016
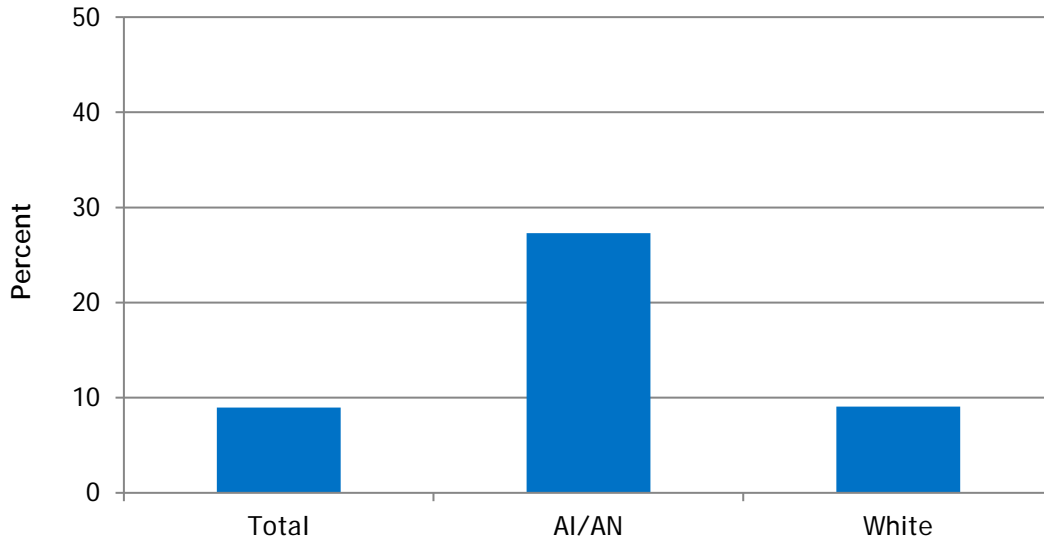
Source: Agency for Healthcare Research and Quality, Medical Expenditure Panel Survey, 2016.
Note: For this measure, lower rates are better.

- In 2016, 27.3% of AI/ANs under age 65 were uninsured all year compared with 9.1% of Whites (Figure 29).

[vi] The Indian Health Service (IHS) offers public coverage to and is considered a comprehensive healthcare delivery system for AI/ANs. Currently, IHS serves 2.6 million AI/ANs who belong to 573 federally recognized tribes in 37 states. IHS is not described as a health plan in this report.

Figure 30. People under age 65 with health insurance, 2017
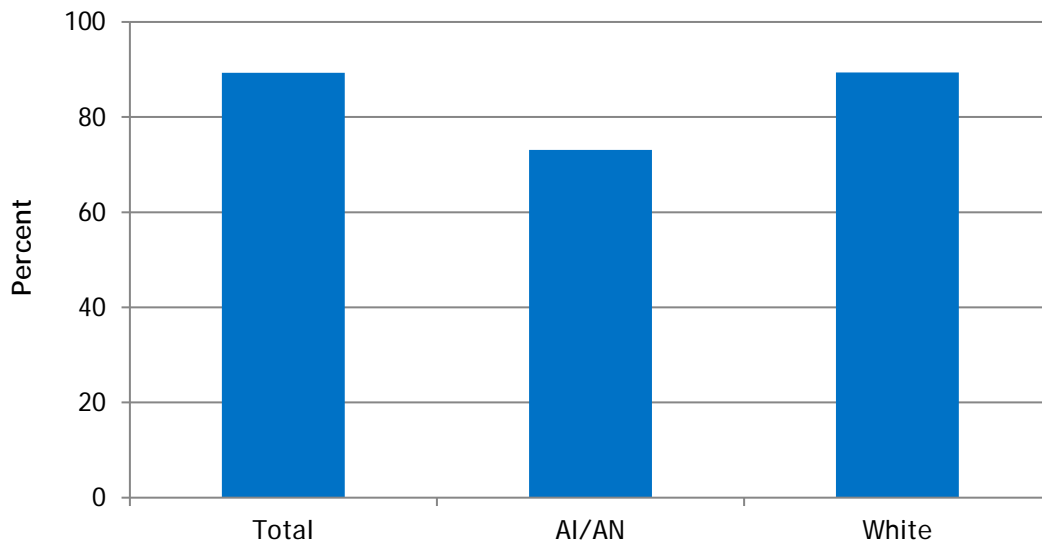
● In 2017, 73.1% of AI/ANs under age 65 had health insurance compared with 89.4% of Whites (Figure 30).

Native Hawaiians/Pacific Islanders

Among the 4 measures in the QDR measure set that had data for NHPIs for the most recent data year, all 4 showed the same access to care for NHPIs compared with Whites ((Figure 22; see Appendix A). **Access measures include 2 health insurance measures, 1 measure for usual source of care, and 1 measure of patient's perception of getting needed care.**

Hispanics

Hispanics experienced worse access to care compared with non-Hispanic Whites for 75% of the measures for the most recent data year, the same access for 10% of the measures, and better access for 15% of the measures (Figure 22; see Appendix A). **Access measures that showed the largest disparities between Hispanics and non-Hispanic Whites include health insurance measures.**

Figure 31. People under age 65 who were uninsured all year, 2016
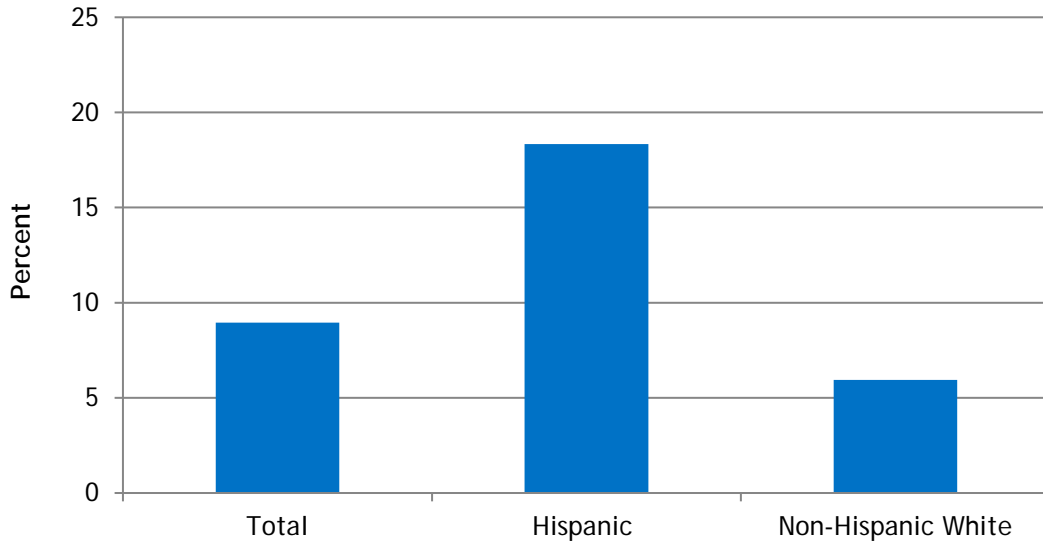
Source: Agency for Healthcare Research and Quality, Medical Expenditure Panel Survey, 2016.
Note: For this measure, lower rates are better.

- In 2016, 18.3% of Hispanics under age 65 were uninsured all year compared with 6.0% of Whites (Figure 31).
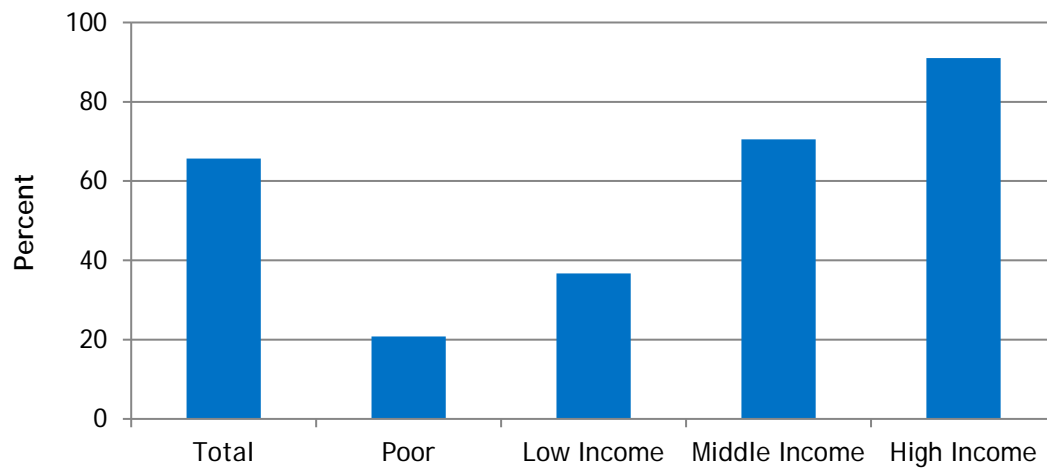
Figure 32. People under age 65 with health insurance, 2017
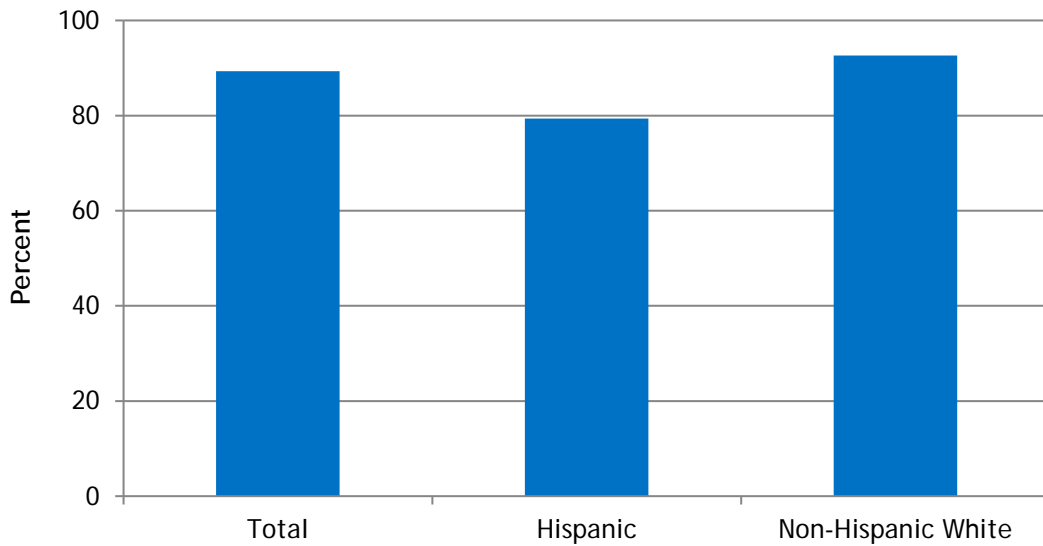
Source: Centers for Disease Control and Prevention, National Center for Health Statistics, National Health Interview Survey, 2017.

- In 2017, 79.4% of Hispanics under age 65 had health insurance compared with 92.6% of non-Hispanic Whites (Figure 32).

QUALITY AND QUALITY DISPARITIES

Measures of healthcare quality tracked in the QDR encompass a broad array of services (prevention, acute treatment, and chronic disease management) and settings (doctors' offices, emergency departments, dialysis centers, hospitals, nursing homes, hospices, and home health). Most QDR quality measures quantify processes that make up high-quality healthcare or outcomes related to receipt of high-quality healthcare. A few structural measures are included, such as the availability of health information technologies and workforce diversity.

Data used to generate QDR measures include results from more than three dozen datasets that provide estimates for various population subgroups and data years. Sources used to assess healthcare quality in the report include:

- Surveys of patients, patients' families, and providers;
- Administrative data from healthcare facilities;
- Abstracts of clinical charts;
- Registry data; and
- Vital statistics.

Most data are reported annually and are generally available through 2016 or 2017.

Historically, quality of healthcare has varied based on race, ethnicity, socioeconomic status, age, sex, disability status, sexual orientation, and residence location. As specified in the Healthcare Research and Quality Act, this summary focuses on disparities related to race and socioeconomic status.

TRENDS IN QUALITY

Quality of healthcare improved generally through 2017, but the pace of improvement varied by priority area.

Figure 33. Number and percentage of all quality measures that were improving, not changing, or worsening, total and by priority area, from 2000 through 2017
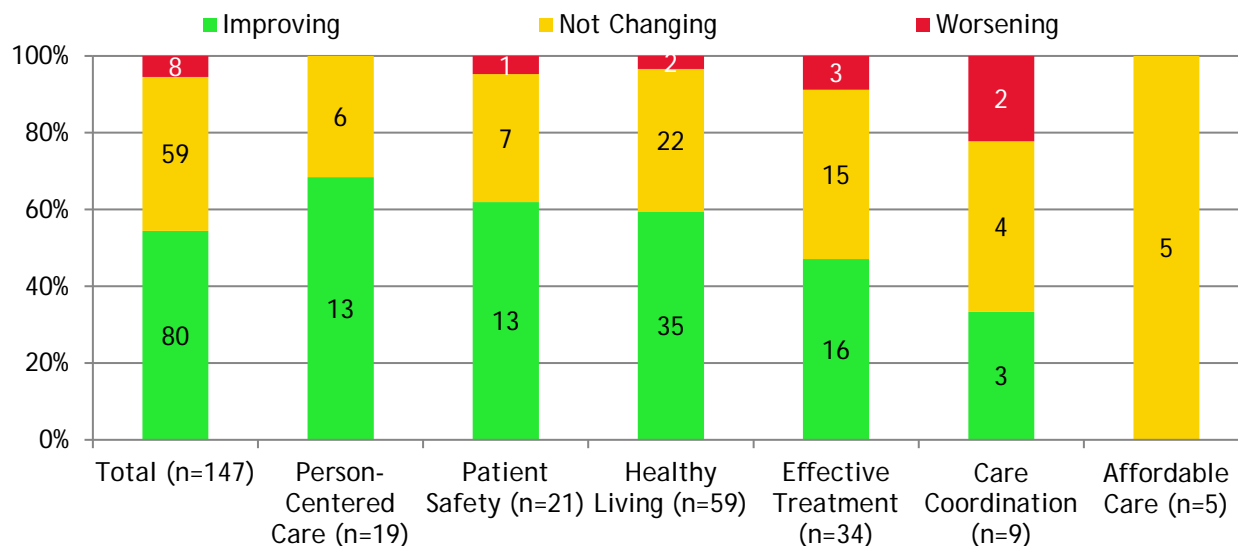
Key: n = number of measures.

Note: For most measures, trend data are available from 2001-2002 to 2017. For each measure with at least four estimates over time, weighted log-linear regression is used to calculate average annual percentage change and to assess statistical significance. Measures are aligned so that positive change indicates improved quality of care.

- **Improving** = Rates of change are positive at 1% per year or greater and statistically significant.
- **No Change** = Rate of change is less than 1% per year or not statistically significant.
- **Worsening** = Rates of change are negative at -1% per year or greater and statistically significant.

- **Through 2017, across a broad spectrum of measures of healthcare quality, 54% showed improvement (Figure 33).**
- **Almost 70% of measures of Person-Centered Care improved.**
- **About 60% of measures of Patient Safety and Healthy Living improved.**
- **Almost half of measures of Effective Treatment improved.**
- **One-third of measures of Care Coordination improved.**
- **No Affordable Care measures changed overall.**

Due to the nationwide conversion from the International Classification of Diseases, Ninth Revision (ICD-9) to the Tenth Revision (ICD-10) codes in the last quarter of 2015, at this time, we cannot trend the data for some AHRQ Quality Indicators that are based on nationwide **Healthcare Cost and Utilization Project (HCUP) data**. Measures that have been included in past reports are not always represented in this year's report. Wherever this situation applies, **this report includes a footnote.**

Trends in Person-Centered Care

The QDR addresses six priority areas, including person-centered care, defined as ensuring that each person and family is engaged as partners in their care. The rationale is that "[h]ealth care should give each individual patient and family an active role in their care. Care should adapt readily to individual and family circumstances, as well as differing cultures, languages, disabilities, health literacy levels, and social backgrounds." Examples of person-centered care could be ensuring that patients' feedback on their preferences, desired outcomes, and experiences of care is integrated into care delivery and enabling patients to effectively manage their care.

The Institute of Medicine identifies patient centeredness as a core component of quality healthcare.[4] 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.[5]

Patient centeredness "encompasses qualities of compassion, empathy, and responsiveness to the needs, values, and expressed preferences of the individual patient."[4] In addition, translation and interpretation services, as well as auxiliary aids and services, facilitate communication between the provider and the patient and are often a legal requirement.[vii] The patient-centered approach includes viewing the patient as a unique person, rather than focusing strictly on the illness, building a therapeutic alliance based on the patient's and the provider's perspectives.

Patient-centered care is supported by good provider-patient communication so that patients' needs and wants are understood and addressed and patients understand and participate in their own care.[5] This approach to care has been shown to improve patients' health and healthcare.[6,7,8,9,10]

[vii] For example, Section 1557 of the Affordable Care Act (ACA), 42 U.S.C. 18116, and Title VI of the Civil Rights Act of 1964, 42 U.S.C. 2000d, require the practitioner or hospital to take reasonable steps to ensure meaningful access to individuals with limited English proficiency, such as providing language interpreters and translating vital documents. Section 1557 of the ACA and Section 504 of the Rehabilitation Act of 1973, 29 U.S.C. 794, require the practitioner or hospital to take appropriate steps to ensure effective communication with individuals with disabilities, such as by providing sign language interpreters, materials in Braille, and/or accessible electronic formats.

Unfortunately, many barriers exist to good communication. Providers differ in communication proficiency, including varied listening skills and different views from their patients of symptoms and treatment effectiveness.[11] Additional factors influencing patient centeredness and provider-patient communication include:

- Language barriers.
- Racial and ethnic concordance between the patient and provider.
- Effects of disabilities on patients' healthcare experiences.
- Providers' cultural competency.

Importance of Person-Centered Care

Morbidity and Mortality

- Patient-centered decision making (when physicians take into account the needs and circumstances of a patient) for planning a patient's care has been shown to improve healthcare outcomes.[12]
- Patient-centered approaches to care have been shown to improve patients' health status. These approaches rely on building a provider-patient relationship, improving communication, fostering a positive atmosphere, and encouraging patients to actively participate in provider-patient interactions).[13]
- Patient-centered care can reduce the chance of misdiagnosis due to poor communication.[14]

Cost

- Poor communication, lack of collaboration, and lack of support for self-care are associated with suffering and waste in healthcare.[15]
- Patient centeredness has been shown to reduce overuse of medical care.[16]
- Patient centeredness can reduce the strain on system resources and save money by reducing the number of diagnostic tests and referrals.[17]
- Improving patient-provider communication during medical decision making can reduce costs.[18]

Findings on Person-Centered Care

The Person-Centered Care priority area includes measures of:

- Patient Experience of Care.
- Hospital Communication.
- Home Health Communication.
- Hospice Care.

Data for these measures can be found at https://nhqrnet.ahrq.gov/inhqrdr/data/query.

Person-Centered Care improved quickly, but disparities were common,
especially for uninsured and poor people.
No Person-Centered Care measure worsened.

Measures of patient-provider communication showed the greatest improvement:

- Adults who had a doctor's office or clinic visit in the last 12 months whose health providers sometimes or never explained things in a way they could understand
- Adults who had a doctor's office or clinic visit in the last 12 months whose health providers sometimes or never spent enough time with them
- Adults who had a doctor's office or clinic visit in the last 12 months whose health providers sometimes or never showed respect for what they had to say

Overall, effective communication leads to increased patient and clinician satisfaction, increased trust with the clinician, and functional and psychological well-being. Effective communication also leads to improved outcomes in specific diseases, including:

- A small but significant absolute risk reduction of mortality from coronary artery disease,
- Improved control of diabetes and hyperlipidemia,
- Better adherence to antihypertensives,
- Bereavement adjustment in caregivers of cancer patients, and
- Higher self-efficacy of adherence to HIV medications.[19]

Adequate Doctor's Explanation

Figure 34. Adults who had a doctor's office or clinic visit in the last 12 months whose health providers sometimes or never explained things in a way they could understand, 2002-2016
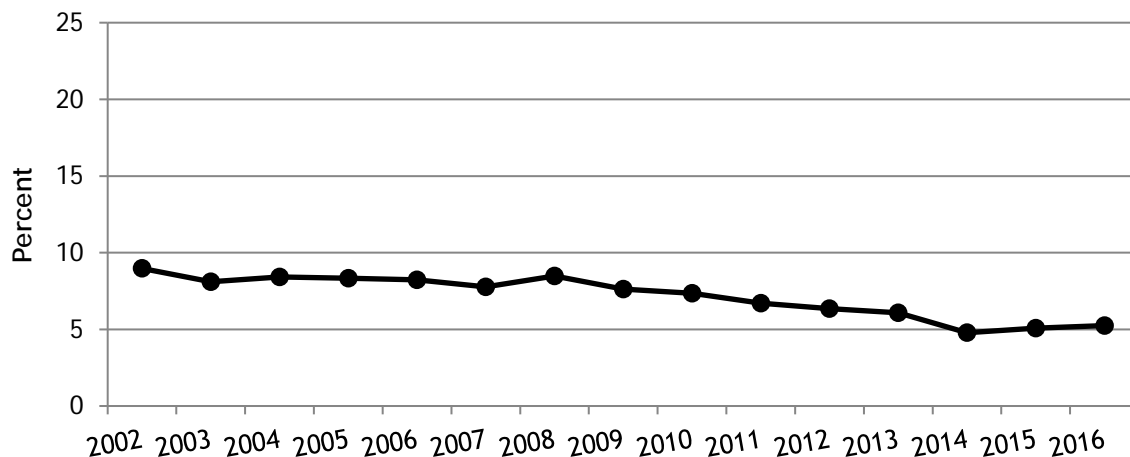
Source: Agency for Healthcare Research and Quality, Medical Expenditure Panel Survey, 2002-2016.
Note: For this measure, lower rates are better.

- From 2002 to 2016, overall, the percentage of adults who had a doctor's office or clinic visit in the last 12 months whose health providers sometimes or never explained things in a way they could understand decreased from 9.0% to 5.2% (Figure 34).

Adequate Time With the Patient

Figure 35. Adults who had a doctor's office or clinic visit in the last 12 months whose health providers sometimes or never spent enough time with them, 2002-2016
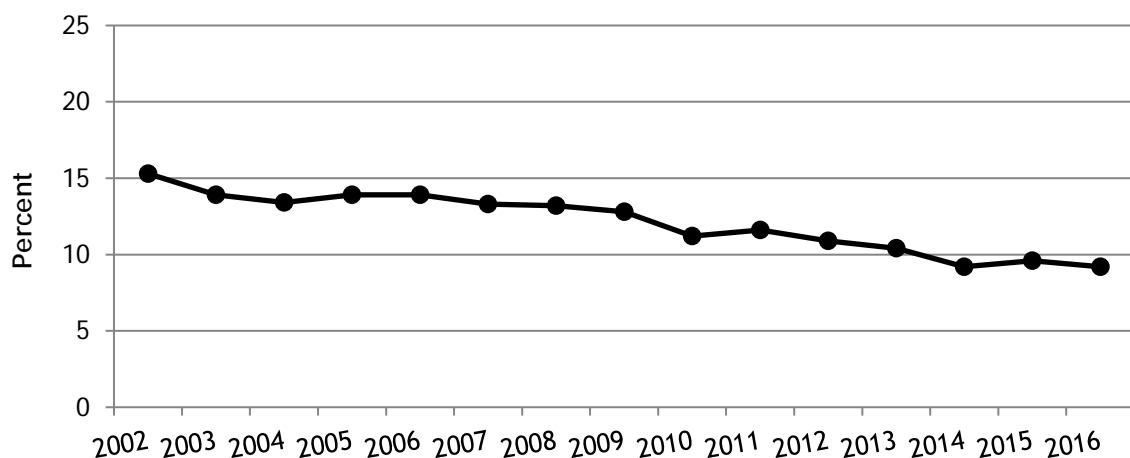
Source: Agency for Healthcare Research and Quality, Medical Expenditure Panel Survey, 2002-2016.
Note: For this measure, lower rates are better.

- From 2002 to 2016, overall, the percentage of adults who had a doctor's office or clinic visit in the last 12 months whose health providers sometimes or never spent enough time with them decreased from 15.3% to 9.2% (Figure 35).

Respect From the Doctor

Figure 36. Adults who had a doctor's office or clinic visit in the last 12 months whose health providers sometimes or never showed respect for what they had to say, 2002-2016
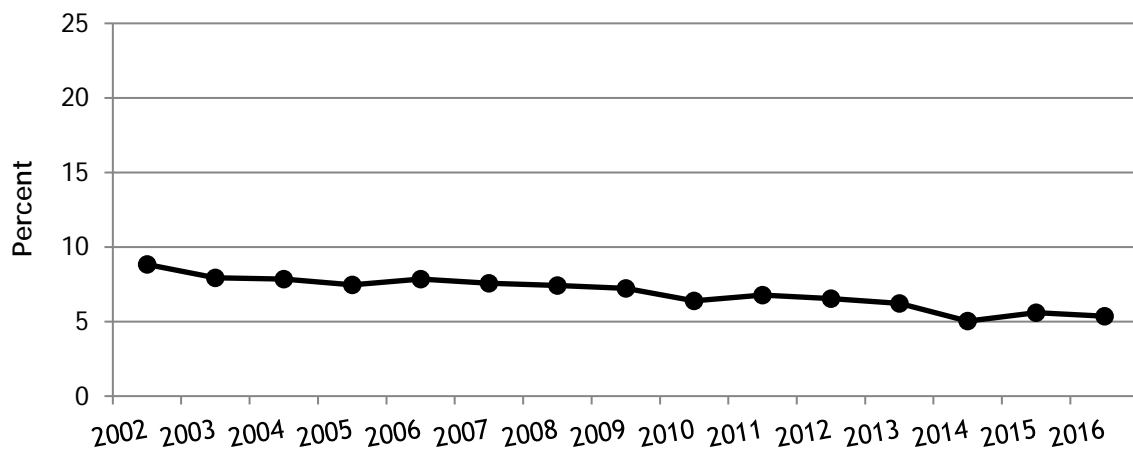
Source: Agency for Healthcare Research and Quality, Medical Expenditure Panel Survey, 2002-2016.
Note: For this measure, lower rates are better.

- From 2002 to 2016, overall, the percentage of adults who had a doctor's office or clinic visit in the last 12 months whose health providers sometimes or never showed respect for what they had to say decreased from 8.8% to 5.4% (Figure 36).

Efforts to promote person-centered care are underway within the Department of Health and Human Services (HHS). For example:

- The Office of Minority Health has developed Think Cultural Health, a set of cultural competency curriculum modules for providers.
- The HHS Office for Civil Rights' (OCR) Medical School Curriculum Initiative promotes a scenario-based curriculum on health disparities and cultural competency to educate student physicians, medical educators, and other healthcare providers on their civil rights obligations under Title VI of the Civil Rights Act of 1964. In 2019, OCR piloted a new presentation on effective communication requirements for individuals who are deaf or hard of hearing, per Section 504 of the Rehabilitation Act of 1973, Title II of the Americans With Disabilities Act, and Section 1557 of the Affordable Care Act.
- The 2013 Language Access Plan (LAP) ensures access to HHS programs and activities for people with limited English proficiency. The covered programs and activities include Medicare, civil rights enforcement, and other HHS programs that provide benefits or services. The 2013 HHS LAP was developed by the HHS Language Access Steering Committee, which is led by the Director of the OCR on behalf of the Secretary.

Trends in Patient Safety

The Institute of Medicine (IOM) defines patient safety as "freedom from accidental injury due to medical care or medical errors."[20] In 1999, the IOM published *To Err Is Human: Building a Safer Health System*,[viii] which called for a national effort to reduce medical errors and improve patient safety.

Importance of Patient Safety

Mortality

Number of Americans who die in hospitals each year from medical errors (1999 est.) .... 44,000-98,000[20]

Age-standardized mortality rate due to adverse effects of medical treatment .... 1.15 per 100,000 population[21]

Prevalence

Number of hospital-acquired conditions in U.S. hospitals (2017) .... 2,550,000[22]

All-payer 30-day readmission rate (2016) .... 13.9% of admissions[23]

Cost

Additional hospital inpatient cost due to hospital-acquired conditions[22]:

- Central line-associated bloodstream infection $48,108
- Ventilator-associated pneumonia $47,238
- Surgical site infection $28,219
- Venous thromboembolism $17,367

[viii] *To Err Is Human: Building a Safer Health System* is a landmark report on patient safety, and AHRQ still considers it the gold standard for medical error research.

Findings on Patient Safety

The Patient Safety priority area includes measures of:

- Healthcare-Associated Infections.
- Surgical Care.
- Other Complications of Hospital Care.
- Complications of Medication.
- Birth-Related Complications.
- Inappropriate Treatment.
- Supportive and Palliative Care.
- Home Health Communication.

Data for these measures can be found at https://nhqrnet.ahrq.gov/inhqrdr/data/query.

Measures of Patient Safety improved, led by care that took place
in a hospital setting, which represented nearly 70% of the
measures that showed improvement.

The following three measures showed the most improvement:

- Inpatient adverse events in adults receiving knee replacement
- Inpatient adverse events in adults receiving hip joint replacement due to fracture or degenerative conditions
- Hospital patients with an anticoagulant-related adverse drug event to low-molecular-weight heparin (LMWH) and factor Xa

One measure was worsening:

- Adults who reported a home health provider asking to see all the prescription and over-the-counter medicines they were taking when they first started getting home health care

Adverse Events With Knee Replacement

Total knee arthroplasty is the most common inpatient surgery performed annually in the United States. At least 700,000 knee replacements are performed each year in the United States.[24] While these procedures are generally successful, approximately 8% of patients develop infections, mechanical loosening, or implant failure postoperatively and require revision surgery.

Figure 37. Inpatient adverse events in adults receiving knee replacement, 2009-2016
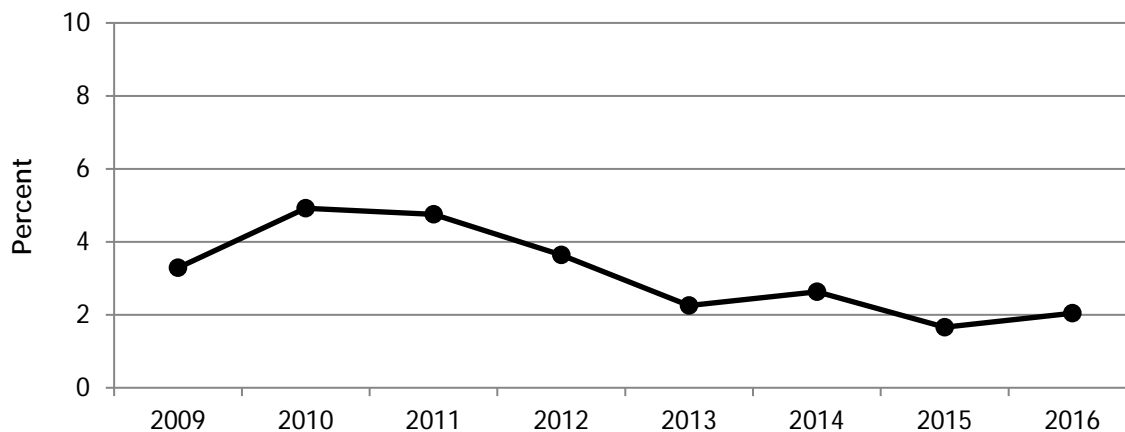
Source: Agency for Healthcare Research and Quality and Centers for Medicare & Medicaid Services, Medicare Patient Safety Monitoring System, 2009-2016.
Note: For this measure, lower rates are better.

- **From 2009 to 2016, overall, the percentage of inpatient adverse events in adults receiving knee replacement decreased from 3.3% to 2.0% (Figure 37).**

Adverse Events With Hip Replacement

More than 300,000 total hip arthroplasty (THA) surgeries are performed annually, making it one of the most common surgeries in the United States. THA predictably results in tremendous improvements in quality of life for patients with osteoarthritis and other hip pathologies, such as osteonecrosis, rheumatoid arthritis, and posttraumatic arthritis. Unfortunately, complications are not infrequent after THA, inflicting considerable physical, mental, and financial burden on patients and their families and caregivers, as well as on the healthcare system.

Figure 38. Inpatient adverse events in adults receiving hip joint replacement due to fracture or degenerative conditions, 2009-2016
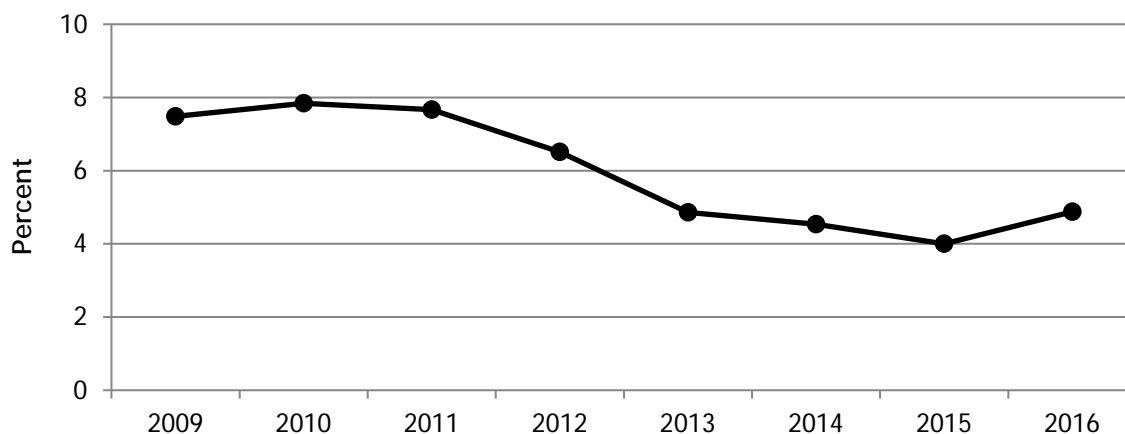
Source: Agency for Healthcare Research and Quality and Centers for Medicare & Medicaid Services, Medicare Patient Safety Monitoring System, 2009-2016.
Note: For this measure, lower rates are better.

- From 2009 to 2016, overall, the percentage of inpatient adverse events in adults receiving hip joint replacement due to fracture or degenerative conditions decreased from 7.5% to 4.9% (Figure 38).

Adverse Drug Events With Heparin and Factor Xa

Adverse drug events (ADEs) include medication errors and adverse drug reactions, representing a major source of harm among hospitalized patients. Anticoagulant drugs, including warfarin, unfractionated heparin, and low-molecular-weight heparin, are among the most commonly implicated medications that cause ADEs in hospitalized patients. Low-molecular-weight heparin is used to prevent venous thromboembolic disease on acute or elective admission to the hospital and to treat deep vein thrombosis and pulmonary embolism.[25]

Figure 39. Adult inpatients with an anticoagulant-related adverse drug event to low-molecular-weight heparin (LMWH) and factor Xa, United States, 2009-2016
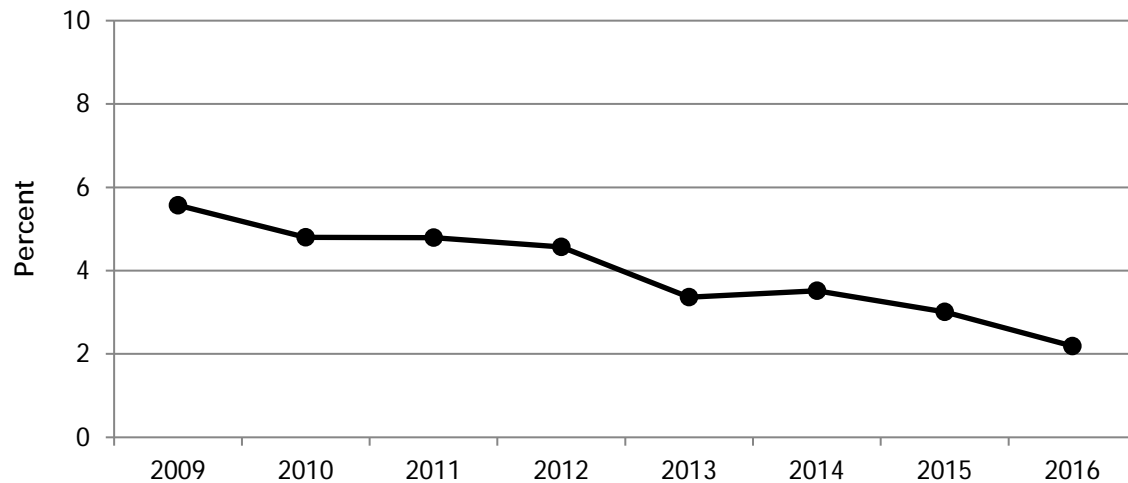
Source: Agency for Healthcare Research and Quality and Centers for Medicare & Medicaid Services, Medicare Patient Safety Monitoring System, 2009-2016.
Note: For this measure, lower rates are better.

- From 2009 to 2016, overall, the percentage of adult inpatients with an anticoagulant-related adverse drug event to low-molecular-weight heparin (LMWH) and factor Xa decreased from 5.6% to 2.2% (Figure 39).

Home Health Provider Checking Medication

Figure 40. Adults who reported a home health provider asking to see all the prescription and over-the-counter medicines they were taking when they first started getting home health care, 2012-2017
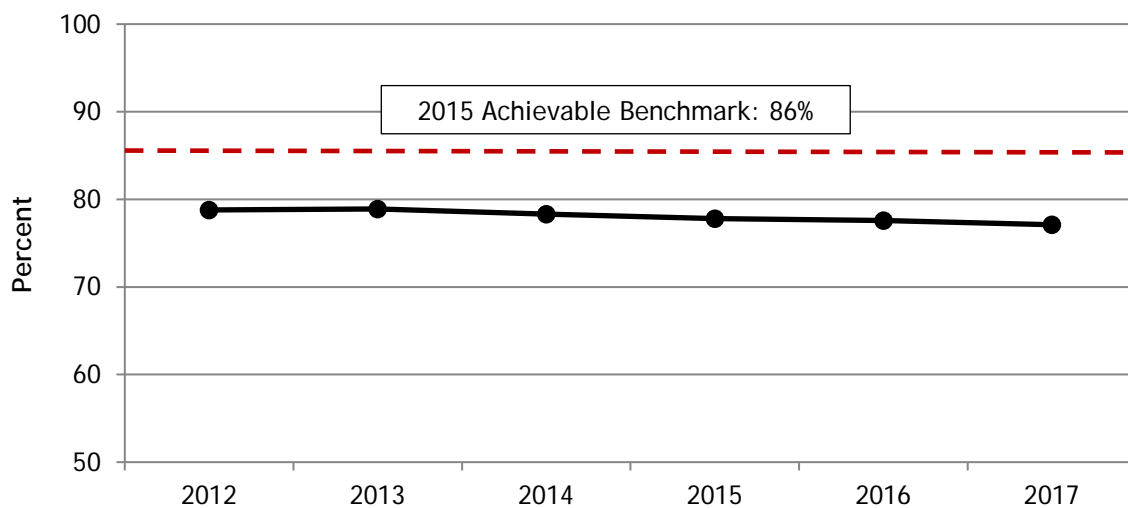
Source: Centers for Medicare & Medicaid Services, Home Health Consumer Assessment of Healthcare Providers and Systems, 2012-2017.
Note: Benchmarks can include data from both states and territories.

- From 2012 to 2017, overall, the percentage of adults who reported a home health provider asking to see all the prescription and over-the-counter medicines they were taking when they first started getting home health care decreased from 78.8% to 77.1% (Figure 40).
- The 2015 top 5 state achievable benchmark was 86%. There is no evidence of progress toward the benchmark.
- The top 5 states and territories that contributed to the achievable benchmark are Louisiana, Mississippi, Northern Mariana Islands, Puerto Rico, and Virgin Islands.

Efforts to promote patient safety are underway within HHS. For example:

- The Comprehensive Unit-based Safety Program is a patient safety model that includes training tools to make care safer by improving the foundation for how physicians, nurses, and other clinical team members work together. It builds the capacity to address safety issues by combining clinical best practices and the science of safety.
- Team Strategies and Tools To Enhance Performance and Patient Safety (TeamSTEPPS) is an evidence-based set of teamwork tools aimed at optimizing patient outcomes by improving communication and teamwork skills among healthcare professionals.

Trends in Care Coordination

Healthcare in the United States is often fragmented. Clinical services are frequently organized around small groups of providers who function autonomously and specialize in specific symptoms or organ systems. Therefore, many patients receive attention only for individual health conditions rather than receiving coordinated care. For example, the typical Medicare beneficiary sees two primary care providers and five specialists each year.[26] Communication of important information among providers and between providers and patients may entail delays or inaccuracies or may fail to occur.

Care coordination is a conscious effort to ensure that all key information needed to make care decisions is available to patients and providers. It is defined as the deliberate organization of patient care activities between two or more participants involved in a patient's care to facilitate appropriate delivery of healthcare services.[27] Care coordination is multidimensional and essential to preventing adverse events, ensuring efficiency, and making care patient centered.[28]

Patients in greatest need of care coordination include those with multiple chronic medical conditions, concurrent care from several health professionals, many medications, extensive diagnostic workups, or transitions from one care setting to another. Effective care coordination requires well-defined multidisciplinary teamwork based on the principle that all who interact with a patient must work together to ensure the delivery of safe, high-quality care.

The National Quality Strategy says the goal of care coordination is to enable healthcare providers, patients, and caregivers to all work together to "ensure that the patient gets the care and support he needs and wants, when and how he needs and wants it." While measurement of care coordination is at an early stage of development, key goals include coordinating transitions of care, reducing hospital readmissions, communicating medication information, and reducing preventable emergency department visits.

Importance of Care Coordination

Morbidity and Mortality

Care coordination interventions have been shown to:

- Reduce mortality among patients with heart failure;
- Reduce mortality and dependency among patients with stroke;
- Reduce symptoms among patients with depression and at the end of life; and
- Improve glycemic control among patients with diabetes.[27]

Cost

Care coordination interventions have been shown to:

- Reduce hospitalizations among patients with heart failure;
- Reduce readmissions among patients with mental health conditions; and
- Be cost-effective when applied to treatment of depression.[27]

Findings on Care Coordination

The Care Coordination priority area includes measures of:

- Transitions of Care.
- Medication Information.
- Preventable Emergency Department Visits.
- Preventable Hospitalizations.
- Preventable Hospitalizations Among Home Health Patients.
- Potentially Harmful Services Without Benefit.
- Supportive and Palliative Care.
- Potentially Avoidable Admissions.

Data for these measures can be found at https://nhqrnet.ahrq.gov/inhqrdr/data/query.

Progress in Care Coordination has been slow, with little improvement and two measures getting worse.

Only three measures showed improvement overall:

- Home health patients who had timely initiation of care
- Adult hospital patients who did not receive good communication about discharge information
- People with a usual source of care who usually asks about prescription medications and treatments from other doctors

Two measures were worsening:

- Home health care patients who had an emergency department visit and were then hospitalized
- Home health care patients who had an emergency department visit without a hospitalization

Initiation of Home Health Care

The demand for home health care services is increasing due to the growing aging population, rising rates of chronic conditions, and advances in the provision of health-related services in patients' homes. In 2017, 11,844 home health agencies served 3.4 million Medicare beneficiaries at a cost of $17.7 billion.[29]

Figure 41. Home health patients who had timely initiation of care, 2013-2016
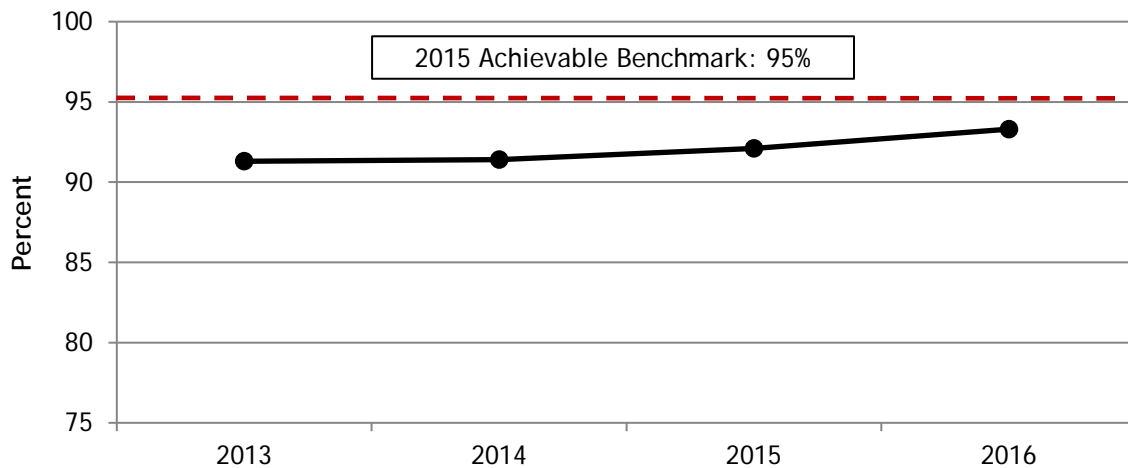
Source: Centers for Medicare & Medicaid Services, Outcome and Assessment Information Set, 2013-2016.

- From 2013 to 2016, overall, the percentage of home health patients who had timely initiation of care increased from 91.3% to 93.3% (Figure 41).
- The 2015 top 5 state achievable benchmark was 95%. There is no evidence of progress toward the benchmark.
- The top 5 states that contributed to the achievable benchmark are Alabama, Louisiana, Nebraska, South Dakota, and West Virginia.

Communication About Discharge Information

Effective care coordination begins with ensuring that accurate clinical information is available to support medical decisions by patients and providers. A common transition of care is discharge from the hospital. Giving patients and caregivers self-management support after discharge has been shown to reduce readmissions to the hospital and lower costs.[30]

Figure 42. Adult hospital patients who did not receive good communication about discharge information, 2009-2017
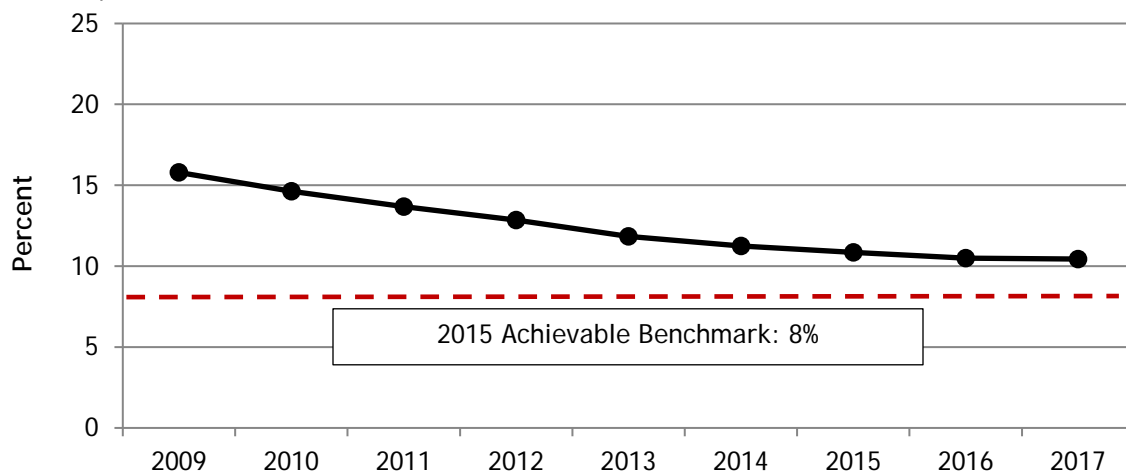
Source: Centers for Medicare & Medicaid Services, Hospital Consumer Assessment of Healthcare Providers and Systems, 2009-2017.
Note: For this measure, lower rates are better.

- From 2009 to 2017, overall, the percentage of hospital patients who did not receive good communication about discharge information decreased from 15.8% to 10.4% (Figure 42).
- The 2015 top 5 state achievable benchmark was 8%. At the current rate of decrease, overall, the benchmark could be achieved in 4 years.
- The top 5 states that contributed to the achievable benchmark are Colorado, Nebraska, New Hampshire, South Dakota, and Utah.

Communication About Treatment From Other Doctors

Different providers may prescribe medications for the same patient. Patients are responsible for keeping track of all their medications, but medication information can be confusing, especially for patients on multiple medications. When care is not well coordinated and some providers do not know about all of a patient's medications, patients are at greater risk for adverse events related to drug interactions, overdosing, or underdosing.

In addition, providers need to periodically review all of a patient's medications to ensure that they are taking what is needed and only what is needed. Medication reconciliation has been shown to reduce both medication errors and adverse drug events.[31]

Figure 43. People with a usual source of care who usually asks about prescription medications and treatments from other doctors, 2002-2016
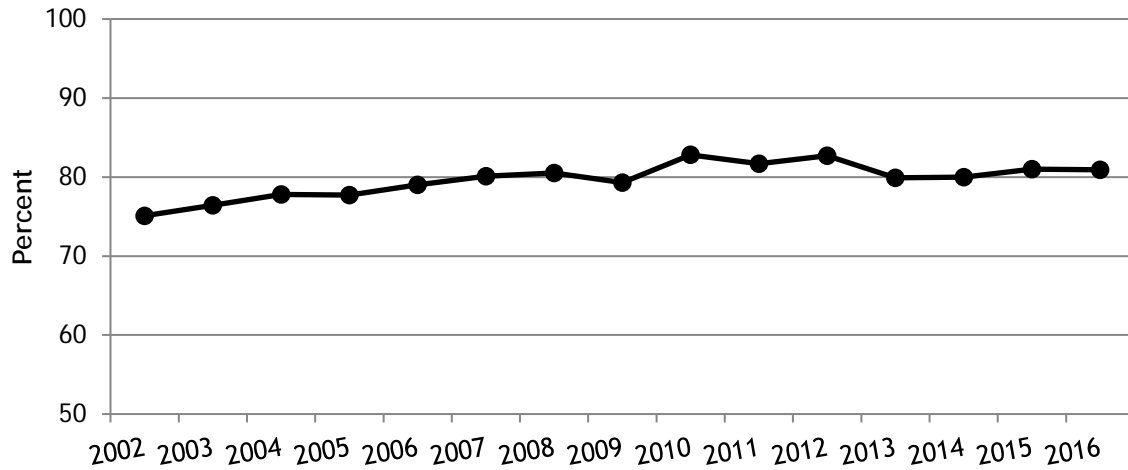
Source: Agency for Healthcare Research and Quality, Medical Expenditure Panel Survey, 2002-2016.

- From 2002 to 2016, overall, the percentage of people with a usual source of care who usually asks about prescription medications and treatments from other doctors increased from 75.1% to 80.9% ((Figure 43).

Hospitalization of Home Health Patients

Acute care hospitalization is the hospital admission rate for Medicare beneficiaries receiving skilled home health benefits, and its reduction is seen as a way to improve quality and reduce healthcare costs. Nearly 20% of all Medicare beneficiaries discharged from hospitals are rehospitalized within 30 days and 34% are rehospitalized within 90 days.[32]

Figure 44. Home health care patients who had an emergency department visit and were then hospitalized, 2013-2016
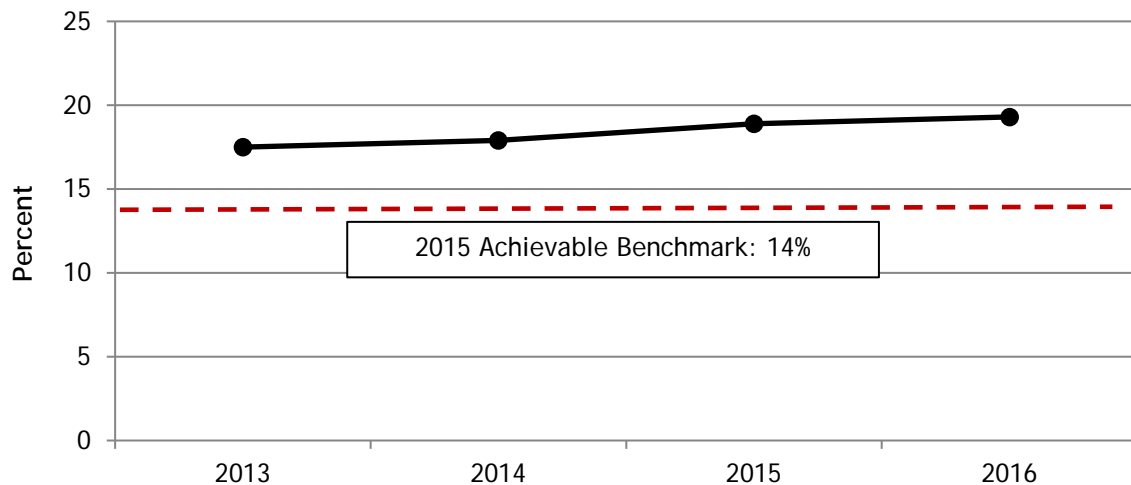
2015 Achievable Benchmark: 14%

Source: Centers for Medicare & Medicaid Services, Outcome and Assessment Information Set, 2013-2016.
Note: For this measure, lower rates are better. Benchmarks can include data from both states and territories.

- From 2013 to 2016, overall, the percentage of home health care patients who had an emergency department visit and were then hospitalized increased from 17.5% to 19.3% (Figure 44).
- The 2015 top 5 state achievable benchmark was 14%. There is no evidence of progress toward the benchmark.
- The top 5 states and territories that contributed to the achievable benchmark are Colorado, Montana, South Dakota, Utah, and Virgin Islands.

Emergency Department Visits of Home Health Patients

Figure 45. Home health care patients who had an emergency department visit without a hospitalization, 2013-2016
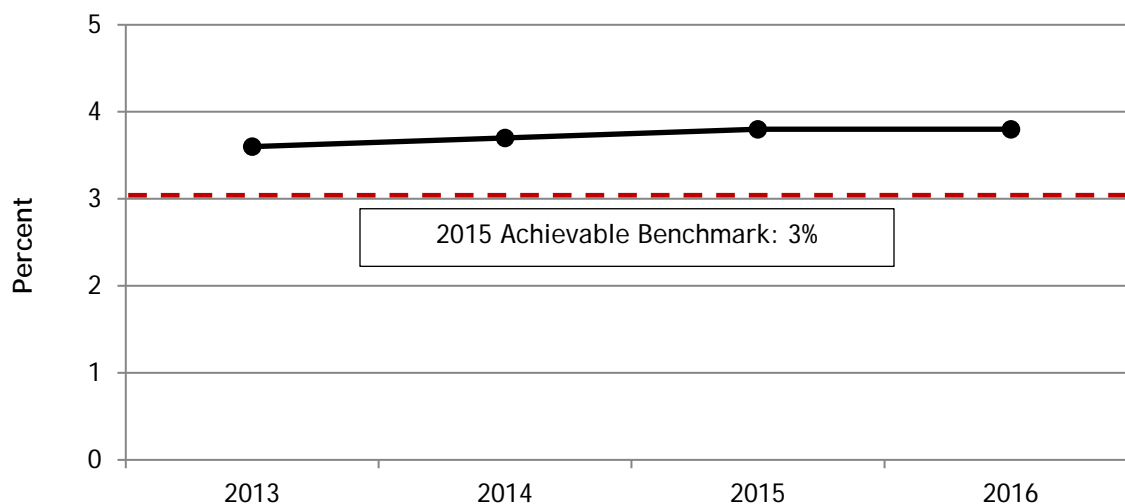
Source: Centers for Medicare & Medicaid Services, Outcome and Assessment Information Set, 2013-2016.
Note: For this measure, lower rates are better. Benchmarks can include data from both states and territories.

- From 2013 to 2016, overall, the percentage of home health care patients who had an emergency department visit without a hospitalization increased from 3.6% to 3.8% (Figure 45).
- The 2015 top 5 state achievable benchmark was 3%. There is no evidence of progress toward the benchmark.
- The top 5 states and territories that contributed to the achievable benchmark are District of Columbia, Florida, New Jersey, Puerto Rico, and Texas.

Efforts to promote care coordination are underway within HHS. For example:

- The Care Coordination Measures Atlas Update expands on the atlas first published in 2011. The updated compendium of care coordination measures offers new measures with a focus on those that reflect coordination efforts within the primary care setting and includes a section on emerging trends in care coordination measurement.
- Care Coordination Accountability Measures for Primary Care Practice presents measures selected systematically from the Care Coordination Measures Atlas that are well suited for use by health plans and insurers to assess the quality of coordination in primary care practices and by primary care practices themselves to assess their own performance.
- The Care Coordination Quality Measure for Primary Care (CCQM-PC) is a survey of adult patients' experiences with care coordination in primary care settings. It was developed to comprehensively assess patient perceptions of the quality of their care coordination experiences. The CCQM-PC is designed to be used in primary care research and evaluation, with potential applications to primary care quality improvement. Guidance regarding the fielding of the survey is provided in addition to the full survey, which is in the public domain and may be used without additional permission.
- The Clinical-Community Relationships Measures Atlas was developed to identify ways to further define, measure, and evaluate programs based on clinical-community relationships for the delivery of clinical preventive services. This atlas provides a measurement framework and lists existing measures of clinical-community relationships and is intended to support research and evaluation in the field.
- The Clinical-Community Relationships Evaluation Roadmap addresses clinical-community resource relationships for selected clinical preventive services, but the principles and questions offered may also apply to other clinical and nonclinical services. The roadmap also may apply to those interested in effective relationships and coordination between clinics and community organizations, such as schools or social service providers.

Trends in Effective Treatment

As better understanding of health and sickness has led to superior ways of preventing, diagnosing, and treating diseases, the health of most Americans has improved dramatically. However, many Americans do not receive the full benefits of high-quality care.

Findings on Effective Treatment

The Effective Treatment priority area includes measures of the following:

- Cancer

    - Breast Cancer
    - Colorectal Cancer
    - Other Cancers

- Cardiovascular Disease

    - Prevention of Heart Disease
    - Treatment of Heart Attack
    - Treatment of Heart Failure
    - Surgery for Heart and Vascular Disease
    - Stroke

- Chronic Kidney Disease

    - Care of End Stage Renal Disease

- Diabetes

    - Management of Diabetes
    - Control of Diabetes
    - Hospitalizations for Diabetes

- HIV/AIDS

    - Management of HIV/AIDS

- Mental Health and Substance Abuse

    - Treatment of Depression
    - Treatment of Substance Abuse

- Musculoskeletal Disease

- Respiratory Diseases

  - Treatment of Respiratory Infections
  - Management of Asthma

Measures cover preventive care, treatment of illness, chronic disease management, and outcomes of care. Data for these measures can be found at https://nhqrnet.ahrq.gov/inhqrdr/data/query.

Almost half of measures of Effective Treatment improved, nearly half did not change, and three got worse.

The three measures of Effective Treatment that showed the greatest improvement were measures related to the treatment of illness:

- Acute stroke patients for whom IV thrombolytic therapy was initiated at the hospital within 3 hours of time last known well
- Doctor's office, emergency department, and outpatient department visits where antibiotics were prescribed for a diagnosis of common cold per 10,000 population
- Patients with colon cancer who received surgical resection of colon cancer that included at least 12 lymph nodes pathologically examined

The measures that worsened over time were related to mental health and substance abuse:

- Emergency department visits involving opioid-related diagnoses per 100,000 population
- Hospital inpatient stays involving opioid-related diagnoses per 100,000 population
- Suicide deaths among people age 12 and over per 100,000 population

Initiation of Thrombolytic Therapy for Stroke

Stroke is one of the most costly health problems affecting Americans and a leading cause of serious long-term disability in the United States.[33] Multiple analyses have shown that treatment with tissue plasminogen activator (tPA) is cost-effective when administered within the first 3 hours after symptom onset.[34] It is estimated that tPA treatment within 3 hours of symptom onset adds 0.75 quality-adjusted life years and saves $6,000 per patient treated.[35]

Figure 46. Acute stroke patients for whom IV thrombolytic therapy was initiated at the hospital within 3 hours of time last known well, 2013-2016
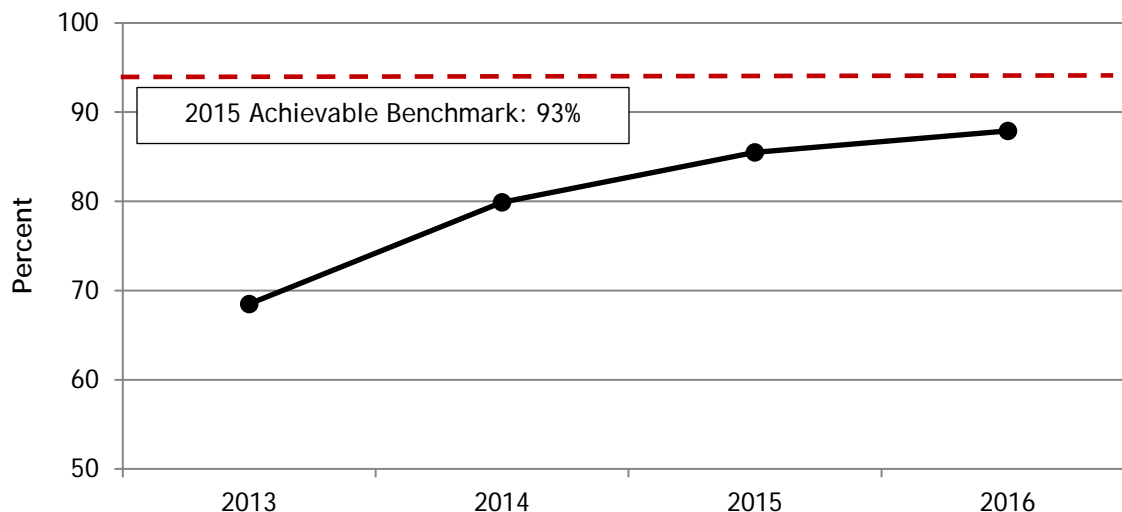
Source: Centers for Medicare & Medicaid Services Clinical Data Warehouse, 2013-2016.

- From 2013 to 2016, overall, the percentage of acute stroke patients for whom IV thrombolytic therapy was initiated at the hospital within 3 hours (less than or equal to 180 minutes) of time last known well increased from 68.5% to 87.9% (Figure 46).
- The 2015 top 5 state achievable benchmark was 93%. At the current rate of increase, overall, the benchmark could be achieved in 1 year.
- The top 5 states that contributed to the achievable benchmark are Colorado, Florida, Hawaii, Minnesota, and North Dakota.

Antibiotics for Common Cold

Most people around the world will have one or more common cold episodes every year. Except in low-income countries, the common cold is one of the most cited reasons for people to use antibiotics, even more so if the mucus from their nose is colored (acute purulent rhinitis). However, common colds are caused by viruses, which do not respond to antibiotics, and antibiotics can cause side effects, especially diarrhea. Overuse of antibiotics leads to bacteria becoming resistant to antibiotics.[36]

Figure 47. Doctor's office, emergency department, and outpatient department visits where antibiotics were prescribed for a diagnosis of common cold per 10,000 population, 2010-2014
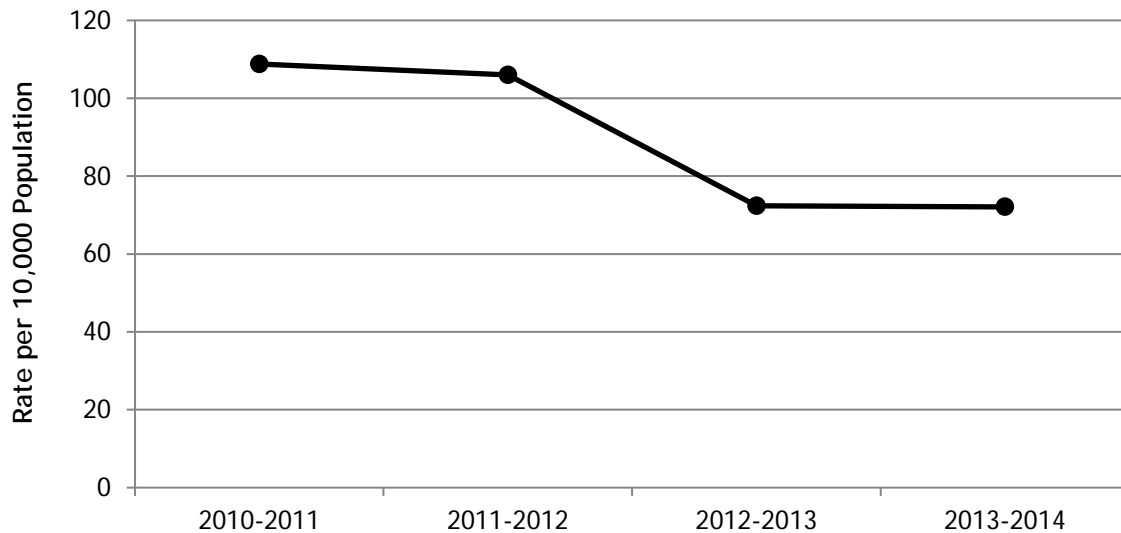
Source: Centers for Disease Control and Prevention, National Center for Health Statistics, National Ambulatory Medical Care Survey and National Hospital Ambulatory Medical Care Survey, 2010-2014.
Note: For this measure, lower rates are better.

● From 2010 to 2014, overall, the rate of doctor's office and emergency department visits where antibiotics were prescribed for a diagnosis of common cold per 10,000 population decreased from 108.8 to 72.1 per 10,000 population (Figure 47).

Surgical Resection of Colon Cancer

Approximately 75% of patients with colorectal cancer will present with potentially curable disease by surgical resection. In the absence of a distant metastasis, the regional lymph node (LN) status is the most important pathologic predictor of long-term survival in patients with colon cancer.

The number of LNs retrieved from a patient with colon cancer has been identified as a potentially important measure of the quality of cancer care by many organizations, including the American College of Surgeons, the American Society of Clinical Oncology, the National Comprehensive Cancer Network, and various health insurance providers. A minimum of 12 examined LNs at curative resection is now advocated as a quality measure and is recommended for proper staging.[37]

Figure 48. Patients with colon cancer who received surgical resection of colon cancer that included at least 12 lymph nodes pathologically examined, 2005-2015
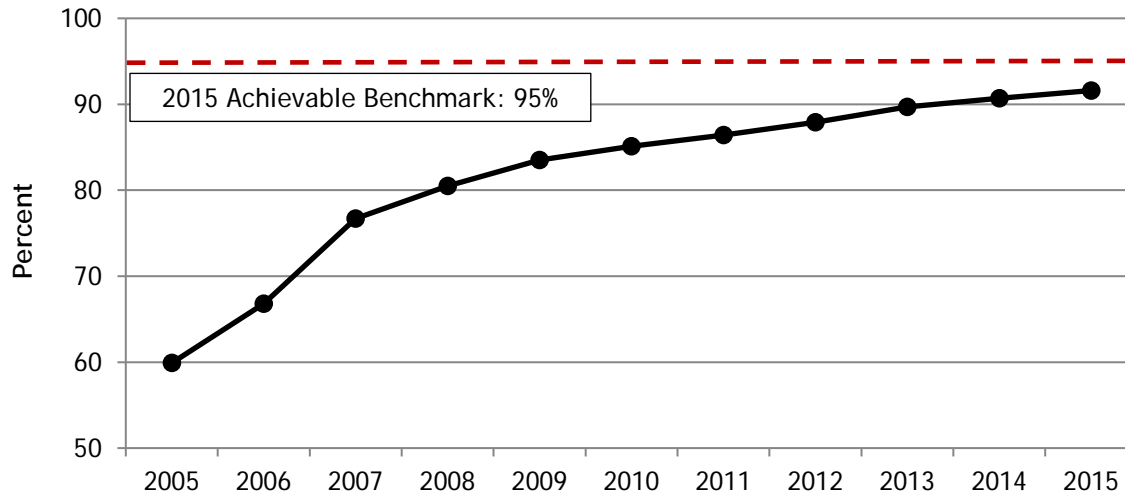
Source: Commission on Cancer, American College of Surgeons and American Cancer Society, National Cancer Data Base, 2005-2015.

- From 2005 to 2015, overall, the percentage of patients with colon cancer who received surgical resection of colon cancer that included at least 12 lymph nodes pathologically examined increased from 59.9% to 91.6% (Figure 48).
- The 2015 top 5 state achievable benchmark was 95%. At the current rate of increase, overall, the benchmark could be achieved in 1 year.
- The top 5 states that contributed to the achievable benchmark are Iowa, Maine, Massachusetts, New York, and Wisconsin.

Emergency Department Visits Involving Opioids

The U.S. opioid overdose epidemic continues to evolve. In 2016, 66.4% of the 63,632 drug overdose deaths involved an opioid. In 2017, among 70,237 drug overdose deaths, 47,600 (67.8%) involved opioids, with increases across age groups, racial/ethnic groups, county urbanization levels, and multiple states. From 2013 to 2017, synthetic opioids contributed to increases in drug overdose death rates in several states. From 2016 to 2017, synthetic opioid-involved overdose death rates increased 45.2%.[38]

Figure 49. Emergency department visits involving opioid-related diagnoses per 100,000 population, 2005-2016
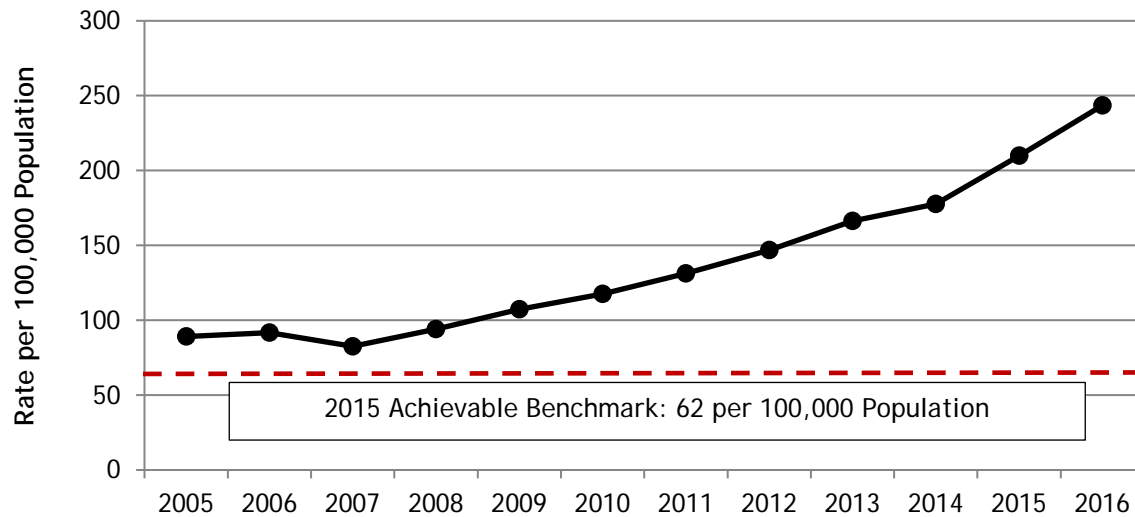
Source: Agency for Healthcare Research and Quality, Healthcare Cost and Utilization Project, Nationwide Inpatient Sample and Nationwide Emergency Department Sample, 2005-2016.
Note: For this measure, lower rates are better.

- From 2005 to 2016, overall, the rate of emergency department visits related to opioid use per 100,000 population increased from 89.1 to 243.5 per 100,000 population (Figure 49).
- The 2015 top 3 state achievable benchmark was 62 per 100,000 population. There is no evidence of progress toward the benchmark.
- The top 3 states that contributed to the achievable benchmark are Iowa, Nebraska, and South Dakota.

Hospital Stays Involving Opioids

The National Survey on Drug Use and Health shows that in 2016, nearly 12 million people age 12 and over misused opioids in the past year.[39]

Figure 50. Hospital inpatient stays involving opioid-related diagnoses per 100,000 population
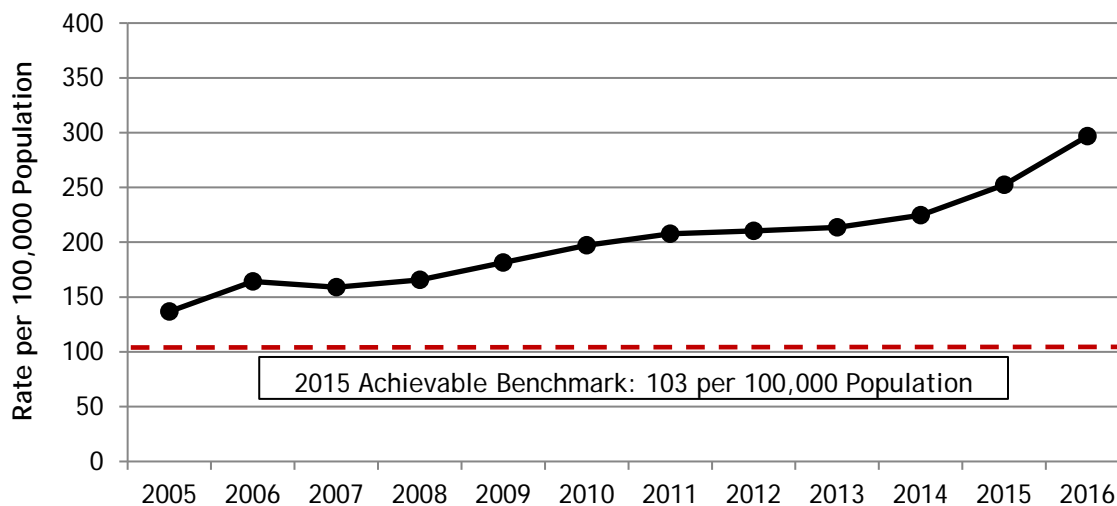
Source: Agency for Healthcare Research and Quality, Healthcare Cost and Utilization Project, Nationwide Inpatient Sample and Nationwide Emergency Department Sample, 2005-2016.
Note: For this measure, lower rates are better.

- From 2005 to 2016, overall, the rate of hospital inpatient stays related to opioid use increased from 136.8 to 296.9 per 100,000 population (Figure 50).
- The 2015 top 5 state achievable benchmark was 103 per 100,000 population. There is no evidence of progress toward the benchmark.
- The top 5 states that contributed to the achievable benchmark are Georgia, Iowa, Nebraska, Texas, and Wyoming.

Suicide Deaths

Preventing suicide is a leading public health and research priority, but despite policy and clinical initiatives aimed at reducing suicide, the rate of suicide in the United States has increased.[40] From 1999 to 2016, suicide rates increased significantly in 44 states, and 25 states experienced increases above 30%.[41]

Figure 51. Suicide deaths among people age 12 and over per 100,000 population, 2000-2016
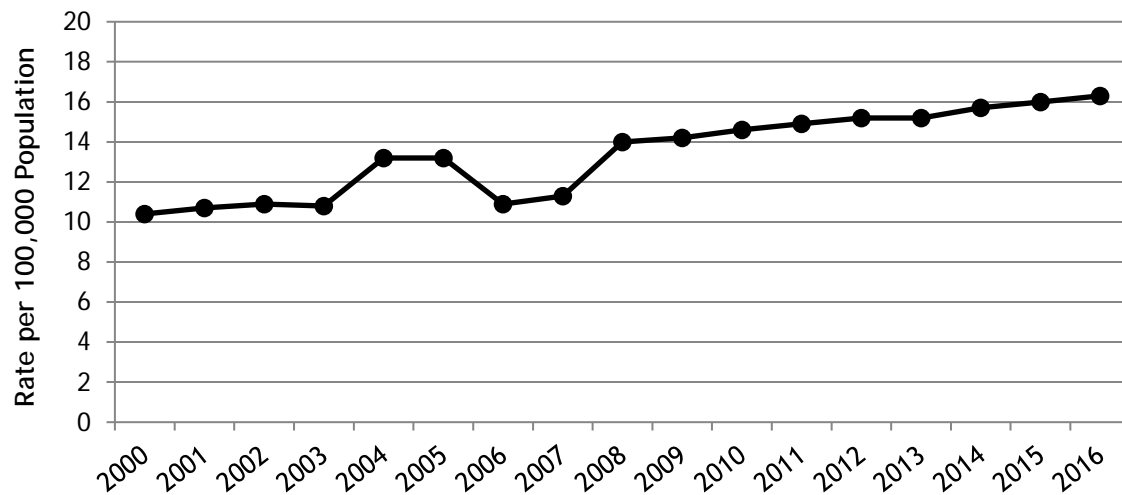
Source: Centers for Disease Control and Prevention, National Center for Health Statistics, National Vital Statistics System – Mortality, 2000-2016.

- **From 2000 to 2016, overall, the rate of suicide increased from 10.4 per 100,000 population to 16.3 per 100,000 population (Figure 51).**

Efforts to promote effective treatment are underway within HHS. For example:

- Six Building Blocks: A Team-Based Approach to Improving Opioid Management in Primary Care. An AHRQ grantee developed a structured systems-based approach for primary care providers and their staff members to improve management of patients on chronic opioid therapy.
- The Academy: Integrating Behavioral Health and Primary Care. The Academy works to expand the integration of behavioral healthcare and primary care. It also supports those who are implementing medication-assisted treatment (MAT) in primary care settings by:

  - Providing technical assistance and support to the grantees funded by AHRQ's Increasing Access to Medication-Assisted Treatment in Rural Primary Care Practices initiative.
  - Developing and disseminating resources and information to the broader audience of providers implementing MAT in rural primary care practices.

The Academy site compiles links to websites, videos, and webinars that address opioids, including:

  - Search and Rescue , a website from the Partnership for Drug-Free Kids with tools and resources about prescription drug misuse to support healthcare providers and their patients.

- ■ [Remaining Optimistic When Treating OUD Can Be Challenging](#) ⧉, a video from the Providers Clinical Support System that discusses the importance of provider optimism when providing substance use treatment.
- ■ [Addressing Clinicians' Concerns About Adding OUD Treatment](#), a video from the Providers Clinical Support System that addresses providers' concerns and hesitation to offer MAT for opioid use disorder.
- ■ [The Opioid Crisis: Treating Addiction and Saving Lives](#) ⧉, a webinar from the National Institute for Health Care Management Foundation that examines ways to expand access to evidence-based treatment for opioid use disorder.
- ■ [The Opioid Crisis: Understanding Pain and Preventing Opioid Misuse](#) ⧉, a webinar from the National Institute for Health Care Management Foundation that describes strategies to prevent opioid use disorder, including prescribing guidelines, collaborative partnerships, pain management alternatives, and education.

- ● [Civil Rights and the Opioid Crisis](#), a public education campaign implemented by the HHS OCR to improve access to evidence-based opioid use disorder treatment and recovery services, such as MAT, by ensuring that covered entities know their obligations under federal nondiscrimination laws, including laws prohibiting discrimination on the basis of disability or limited English proficiency. The campaign includes a video by OCR Director Roger Severino, fact sheets, digital postcards, and a newsletter.
- ● [How To Help Someone Thinking of Suicide](#), a one-page handout available in 10 languages that teaches people how to help someone thinking of suicide. It identifies signs, symptoms, and behaviors of someone who may be thinking of suicide. It also provides a list of actions people can take to assist a person in crisis. Finally, the handout provides the phone number and web link for the Suicide Prevention Lifeline.
- ● [Preventing Suicide: A Technical Package of Policy, Programs, and Practices](#), a select group of strategies based on the best available evidence to help communities and states sharpen their focus on prevention activities with the greatest potential to prevent suicide. These strategies include strengthening economic supports; strengthening access and delivery of suicide care; creating protective environments; promoting connectedness; teaching coping and problem-solving skills; identifying and supporting people at risk; and lessening harms and preventing future risk.

Trends in Healthy Living

Many illnesses associated with chronic conditions are related to unhealthy behaviors, environmental hazards, and poor social supports and can be prevented by increasing access to effective clinical preventive services and promoting community interventions that advance public and population health. Working with communities is critical to ensure that immunizations and early detection and prevention services reach everyone who needs them and to build healthy neighborhoods and support networks.

Promoting healthy lifestyles that prevent disease and disability is better for people and more efficient than treating conditions after organ damage has been done.

Importance of Healthy Living

Morbidity and Mortality

Advances in medical science protect children against more diseases than ever before. Some diseases that once injured or killed thousands of children have been eliminated completely and others are close to eradication, primarily due to safe and effective vaccines. Polio is one example of the great impact that vaccines have had in the United States. Polio was once America's most feared disease, causing death and paralysis across the country, but today, thanks to vaccination, there are no reports of polio in the United States.

Measles vaccination has prevented an estimated 21 million deaths worldwide since 2000. Despite these substantial gains, global elimination goals have not been met, and previous strides are now threatened by a 31% increase in the number of measles cases reported globally between 2016 and 2017.[42] According to the Centers for Disease Control and Prevention (CDC), from January 1 to July 3, 2019, 1,109 individual cases of measles were confirmed in 28 states.[ix] This is the greatest number of cases reported in the United States since 1994 and since measles was declared eliminated in 2000.

Cost

It is much cheaper to prevent a disease using immunization than to treat it. In a 2005 study on the economic impact of routine childhood immunization in the United States, researchers estimated that for every dollar spent, the vaccination program saved more than $5 in direct costs and approximately $11 in additional costs to society.[43]

[ix] Data on measles cases are available on CDC's website at https://www.cdc.gov/measles/cases-outbreaks.html.

Findings on Healthy Living

The Healthy Living priority area includes measures of:

- Maternal and Child Health.
- Lifestyle Modification.
- Functional Status Preservation and Rehabilitation.
- Supportive and Palliative Care.
- Clinical Preventive Services.

Data for these measures can be found at https://nhqrnet.ahrq.gov/inhqrdr/data/query.

Most Healthy Living measures improved, and
only two were getting worse.

The top Healthy Living measures that showed improvement over time were vaccination measures:

- Adolescents ages 13-15 who received 1 or more doses of tetanus toxoid, reduced diphtheria toxoid, and acellular pertussis (Tdap) since the age of 10 years
- Adolescents ages 16-17 who received 1 or more doses of tetanus toxoid, reduced diphtheria toxoid, and acellular pertussis (Tdap) since the age of 10 years
- Adolescents ages 16-17 who received 1 or more doses of meningococcal conjugate vaccine
- Hospital patients who received influenza vaccination

Two Healthy Living measures worsened over time and both were cancer screening measures:

- Women ages 21-65 who received a Pap test in the last 3 years
- Women ages 50-74 who received a mammogram in the last 2 years

Adolescent Tdap Vaccination

CDC's Advisory Committee on Immunization Practices (ACIP) recommends routine vaccination for tetanus, diphtheria, and pertussis. Infants and young children are recommended to receive a 5-dose series of diphtheria and tetanus toxoids and acellular pertussis (DTaP) vaccines, with one adolescent booster dose of tetanus toxoid, reduced diphtheria toxoid, and acellular pertussis (Tdap) vaccine. CDC found that the cost per quality-adjusted life-year saved ranged from $30,946 to $62,716 and cost per case averted ranged from $1,966 to $3,263.[44]

Figure 52A. Adolescents ages 13-15 who received 1 or more doses of tetanus toxoid, reduced diphtheria toxoid, and acellular pertussis (Tdap) since the age of 10 years, 2008-2016
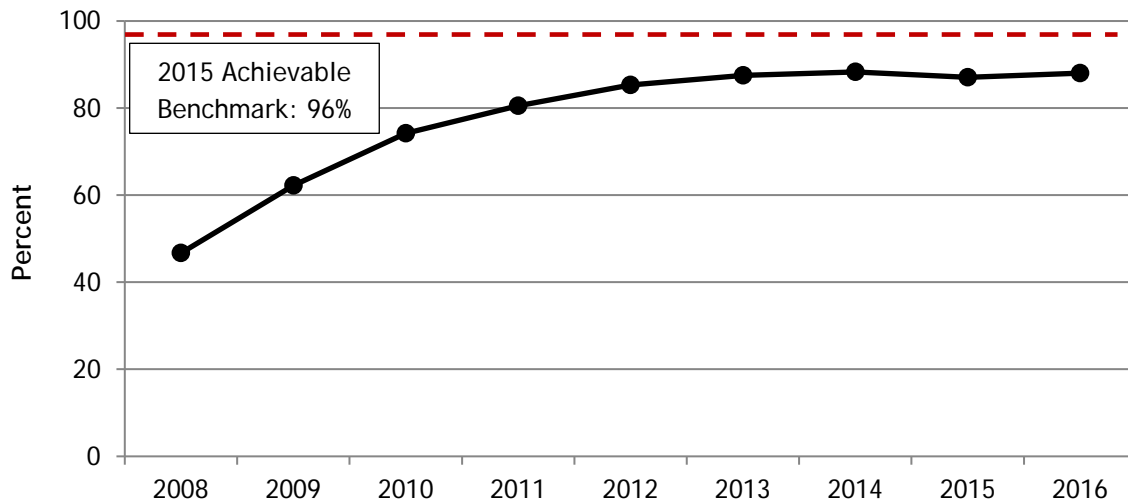
Source: Centers for Disease Control and Prevention, National Center for Immunizations and Respiratory Diseases and National Center for Health Statistics, National Immunization Survey – Teen, 2008-2016.

Figure 52B. Adolescents ages 16-17 who received 1 or more doses of tetanus toxoid, reduced diphtheria toxoid, and acellular pertussis (Tdap) since the age of 10 years, 2008-2016
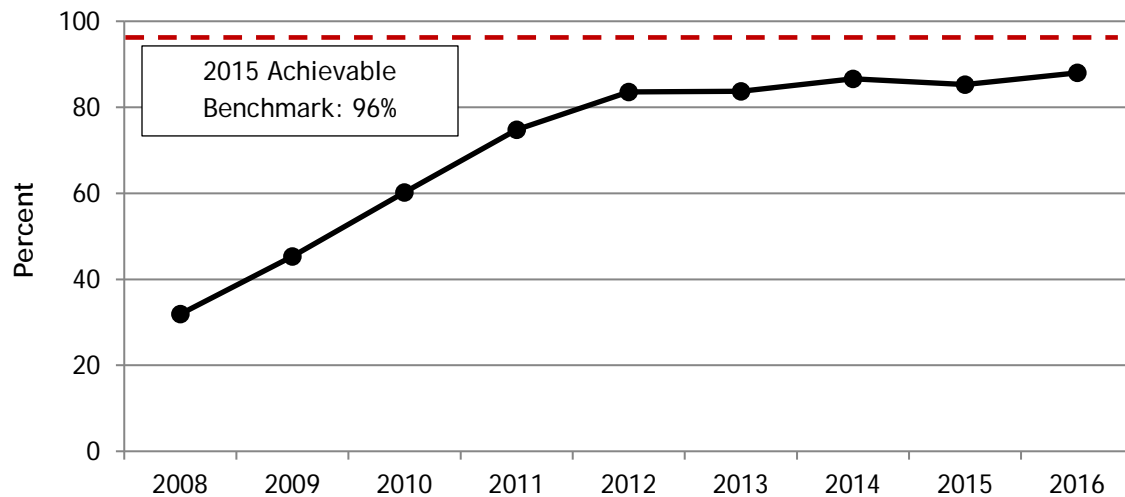
Source: Centers for Disease Control and Prevention, National Center for Immunizations and Respiratory Diseases and National Center for Health Statistics, National Immunization Survey – Teen, 2008-2016.

- From 2008 to 2016, overall, the percentage of adolescents ages 13-15 years who received 1 or more doses of Tdap vaccine increased from 46.7% to 88.0% (Figure 52A).
- From 2008 to 2016, overall, the percentage of adolescents ages 16-17 years who received 1 or more doses of Tdap vaccine increased from 31.9% to 88.0% (Figure 52B).
- The 2015 top 5 state achievable benchmark was 96%. At the current rate of increase, overall, the benchmark could be achieved in 1 year.
- The top 5 states that contributed to the achievable benchmark are Alabama, Georgia, Missouri, Rhode Island, and Vermont.

Adolescent Meningococcal Vaccine

ACIP recommends that adolescents and young adults ages 16-23 years be vaccinated with a serogroup B meningococcal (MenB) vaccine to provide short-term protection against most strains of this disease.[45]

Figure 53. Adolescents ages 16-17 years who received 1 or more doses of meningococcal conjugate vaccine, 2008-2016
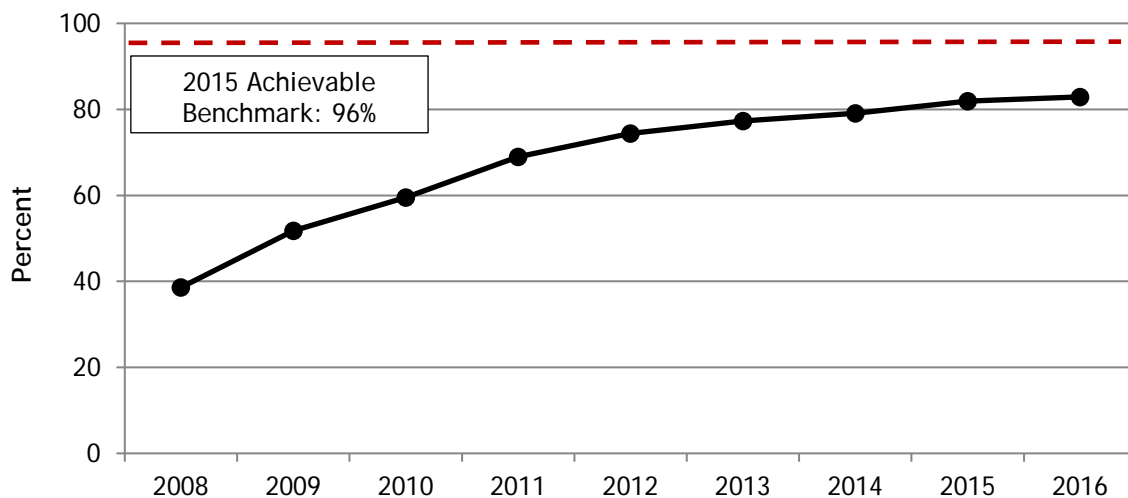
Source: Centers for Disease Control and Prevention, National Center for Immunizations and Respiratory Diseases and National Center for Health Statistics, National Immunization Survey – Teen, 2008-2016.

- From 2008 to 2016, overall, the percentage of adolescents ages 16-17 years who received 1 or more doses of meningococcal conjugate vaccine increased from 38.6% to 82.9% (Figure 53).
- The 2015 top 5 state achievable benchmark was 96%. At the current rate of increase, overall, the benchmark could be achieved in 3 years.
- The top 5 states that contributed to the achievable benchmark are Indiana, Michigan, New Jersey, Pennsylvania, and Rhode Island.

Influenza Vaccination

Influenza vaccination is the primary method for preventing the illness and its severe complications, and annual vaccination is recommended for everyone age 6 months and over.[46] All healthcare contacts, including hospitalizations, provide excellent opportunities for vaccination, particularly for people at the highest risk for complications and death from influenza.

ACIP recommends that eligible hospitalized patients receive the influenza vaccine before discharge.[46] This preventive strategy is measured in quality metrics of inpatient immunization by the Joint Commission and the Centers for Medicare & Medicaid Services.

Figure 54. Hospital patients who received influenza vaccination, 2012-2016
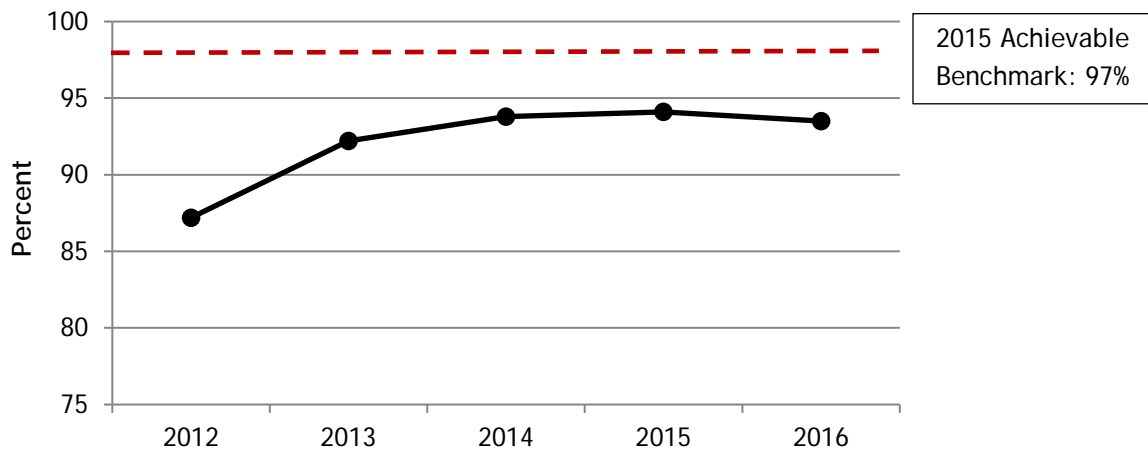
Source: Centers for Medicare & Medicaid Services Clinical Data Warehouse, 2012-2016.

- From 2012 to 2016, overall, the percentage of hospital patients who received influenza vaccination increased from 87.2% to 93.5% (Figure 54).
- The 2015 top 5 state achievable benchmark was 97%. There is no significant progress toward the benchmark.
- The top 5 states that contributed to the achievable benchmark are Florida, Indiana, Maryland, North Carolina, and South Carolina.

Receipt of Pap Test

The United States Preventive Services Task Force recommends cervical cancer screening as part of routine health maintenance for women ages 21 through 65. Cervical cancer incidence and mortality rates have declined since the introduction of the Pap test in the mid-20th century, and rates continue to decline to this day.[47]

Figure 55. Women ages 21-65 who received a Pap test in the last 3 years, 2000-2015
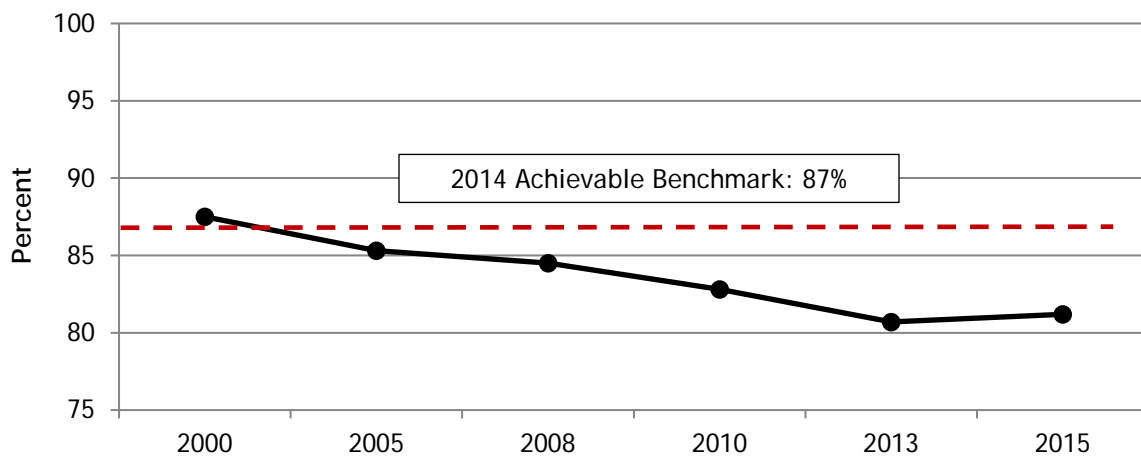
Source: Centers for Disease Control and Prevention, National Center for Health Statistics, National Health Interview Survey, 2000-2015.
Note: NHIS cancer supplement is not administered annually.

- From 2000 to 2015, overall, the percentage of women ages 21-65 who received a Pap test in the last 3 years decreased from 87.5% to 81.2% (Figure 55).
- The 2014 top 5 state achievable benchmark was 87%. There is no evidence of progress toward the benchmark.
- The top 5 states that contributed to the achievable benchmark are Connecticut, Delaware, Maryland, Massachusetts, and Wisconsin.

Receipt of Mammogram

Breast cancer screening is used to identify women with asymptomatic cancer with the goal of enabling women to undergo less invasive treatments that lead to better outcomes, ideally at earlier stages and before the cancer progresses.

Figure 56. Women ages 50-74 who received a mammogram in the last 2 years, 2000-2015
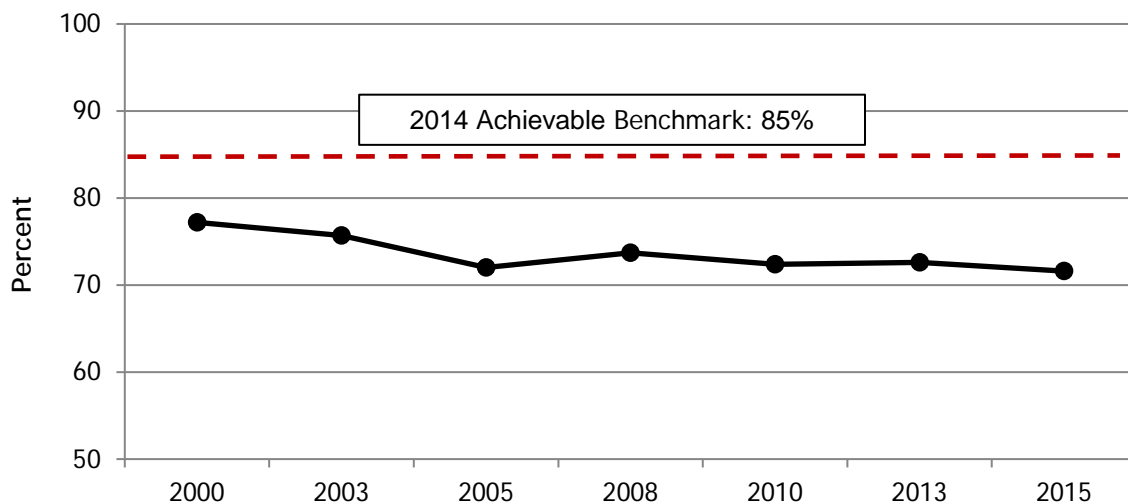
Source: Centers for Disease Control and Prevention, National Center for Health Statistics, National Health Interview Survey, 2000-2015.
Note: NHIS cancer supplement is not administered annually.

- From 2000 to 2015, overall, the percentage of women ages 50-74 who received a mammogram in the last 2 years decreased from 77.2% to 71.6% (Figure 56).
- The 2014 top 5 state achievable benchmark was 85%. There is no evidence of progress toward the benchmark.
- The top 5 states that contributed to the achievable benchmark are Connecticut, Delaware, Maryland, Massachusetts, and Rhode Island.

Efforts to promote healthy living treatment are underway within HHS. For example:

- Strategy 6R: Reminder Systems for Immunizations and Preventive Services includes reminder systems for patients and reminder systems for clinicians.

DISPARITIES IN HEALTHCARE

Healthcare is not experienced equitably by all populations. A healthcare disparity is a difference between population groups in the way they access, experience, and receive healthcare. Factors that influence healthcare disparities include social, economic, environmental, and other disadvantages,[48,49] some of which are explored in this report.

In 2001, the National Academies of Medicine identified disparities in its publication *Crossing the Quality Chasm: A New Health System for the 21st Century*.[4] As depicted in the exhibit below, in addition to a quality chasm, a disparities chasm exists and this gap widens for many specific populations. To improve healthcare delivery, access, and overall quality, a holistic and person-centered understanding of the barriers and limitations for each population is needed.

Exhibit. Linking the Disparities and Quality Chasms
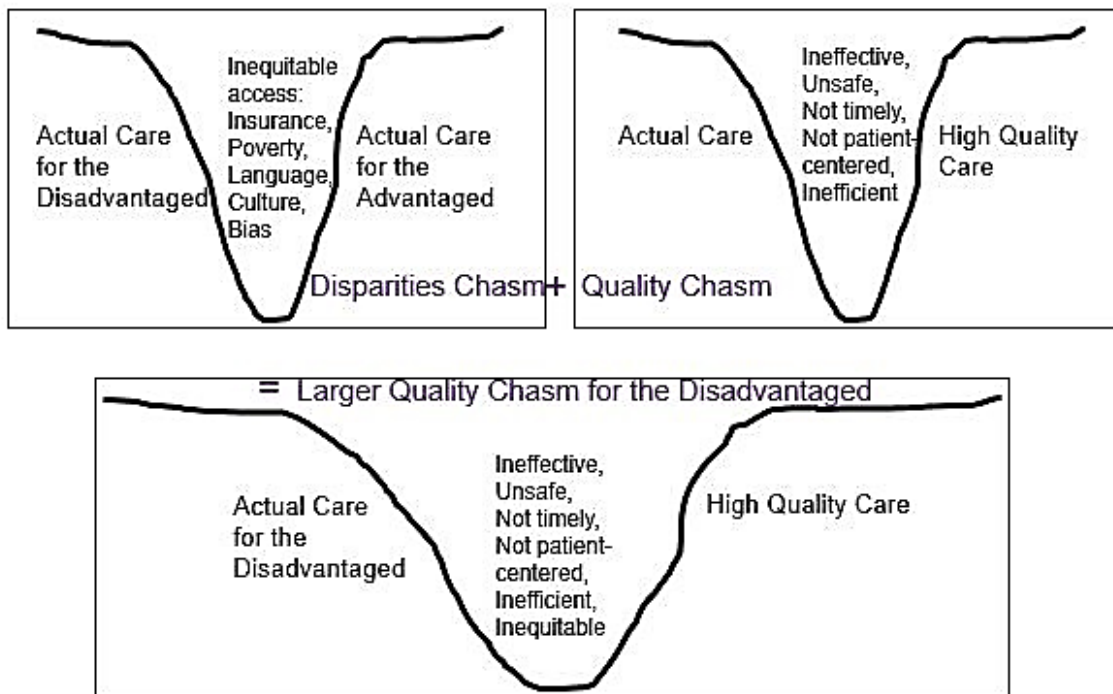
Source: Based on Institute of Medicine. Crossing the Quality Chasm: A New Health System for the 21st Century. Washington, DC: The National Academies Press; 2001. https://doi.org/10.17226/10027.

The Disparities in Healthcare section of the 2018 QDR examines the best and worst performing quality measures among the measures used in the report. These quality measures are analyzed in this section of the report by race and ethnicity, income, insurance status, and residence location. While these categories are broad, each section begins with key definitions to orient readers and includes analyses showing quality measure performance in the latest data year and analyses showing whether disparities were widening or narrowing over time.

To learn more about the measures included in this section of the report, refer to Appendix A. Readers interested in stratifying QDR data by other variables such as education, sex, age, and more may use the QDR Data Query Tool to access the data directly (https://nhqrnet.ahrq.gov/inhqrdr/data/query).

Racial and Ethnic Disparities

Researchers, patients, providers, and policymakers have worked to identify, understand, and eliminate the disparities experienced by different racial and ethnic groups across the healthcare system. In 1985, the Department of Health and Human Services published the Report of the Secretary's Task Force on Black and Minority Health (Heckler Report), which marked the first comprehensive study of racial and minority health by the U.S. government.[50] Since then, the Department, along with other stakeholders, has continued this work, including throughout the QDR. The growing evidence base shows that patients of different racial and ethnic groups experience quality of care inequitably and disparately.[51,52]

Racial and ethnic groups are defined according to Standards for the Classification of Federal Data on Race and Ethnicity, issued by the Office of Management and Budget (available at https://www.gpo.gov/fdsys/granule/FR-1997-10-30/97-28653).

The basic racial and ethnic categories for federal statistics and program administrative reporting are defined as follows:

1. **American Indian or Alaska Native (AI/AN).** A person having origins in any of the original peoples of North and South America (including Central America) and who maintains tribal affiliation or community attachment.
2. **Asian.** A person having origins in any of the original peoples of the Far East, Southeast Asia, or the Indian subcontinent, including, for example, Cambodia, China, India, Japan, Korea, Malaysia, Pakistan, the Philippine Islands, Thailand, and Vietnam.
3. **Black or African American.** A person having origins in any of the black racial groups of Africa. Terms such as "Haitian" can be used in addition to "Black or African American."
4. **Hispanic or Latino.** A person of Cuban, Mexican, Puerto Rican, Central or South American, or other Spanish culture or origin, regardless of race. The term "Spanish origin" can be used in addition to "Hispanic or Latino."
5. **Native Hawaiian/Pacific Islander (NHPI).** A person having origins in any of the original peoples of Hawaii, Guam, Samoa, or other Pacific Islands.
6. **White.** A person having origins in any of the original peoples of Europe, the Middle East, or North Africa.

This section presents three types of findings related to disparities for each population:

1. Largest disparities for a single data year, focusing on the most recent data year.
2. Trends in quality of care (number of measures improving, not changing, and worsening) for the population group.
3. Comparison with the reference group, focusing on the change in the gap between the two groups.

Overview of Racial and Ethnic Disparities

Figure 57. Number and percentage of quality measures for which members of selected groups experienced better, same, or worse quality of care compared with reference group (White), 2013, 2015, 2016, or 2017
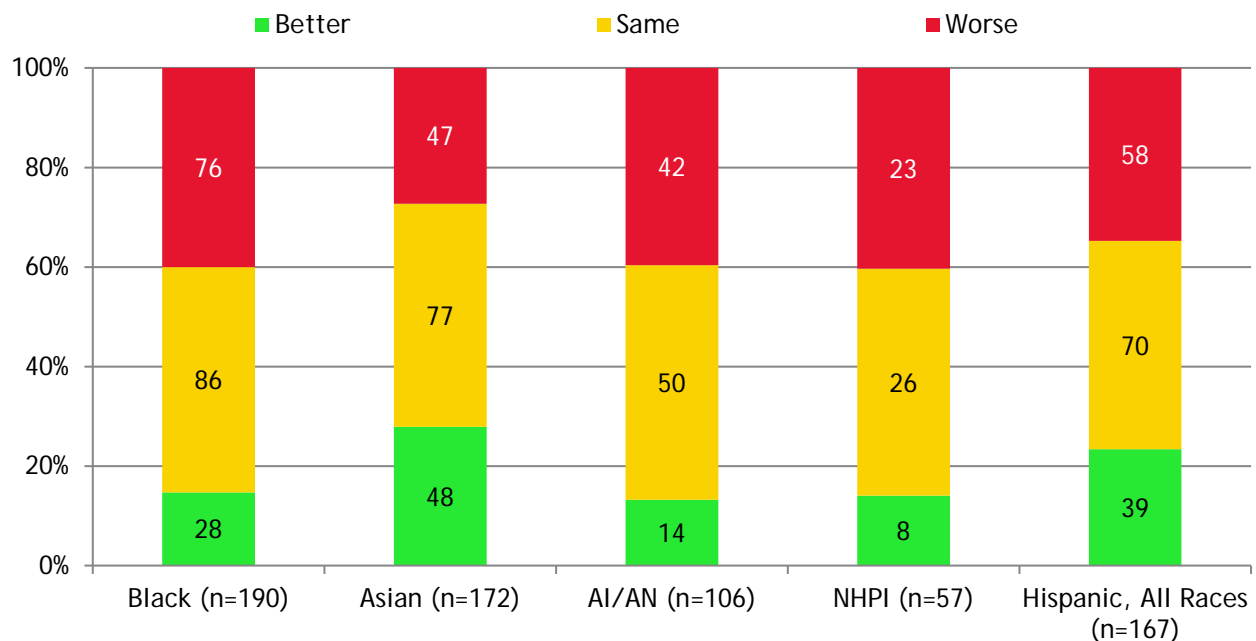
Key: n = number of measures; NHPI = Native Hawaiian/Pacific Islander; AI/AN = American Indian or Alaska Native.
Note: The most recent data years are used for this analysis. Different data sources have different data years for most recent data year. For example, the most recent data year from NIDDK USRDS is 2013 and from AHRQ HCUP is 2016.

- Figure 57 features quality measures that show whether Black, Asian, AI/AN, NHPI, and Hispanic populations were performing better, same, or worse than White populations in the latest data year.
- Data for the most recent year show that quality measures were worse for Blacks than Whites for 40% of quality measures. Whites also performed better on quality measures compared with Asians (27%), AI/ANs (40%), NHPIs (40%), and Hispanics (35%).
- Asians performed better than Whites on 28% of quality measures; however, most populations had lower percentages. Blacks, AI/ANs, and NHPIs performed better on less than 15% of all measures. Hispanics performed better than Whites on 23% of all reported quality measures.

Figure 58. Number and percentage of quality measures with disparity at baseline for which disparities related to race and ethnicity were improving, not changing, or worsening, 2000 through 2013, 2014, 2015, 2016, or 2017
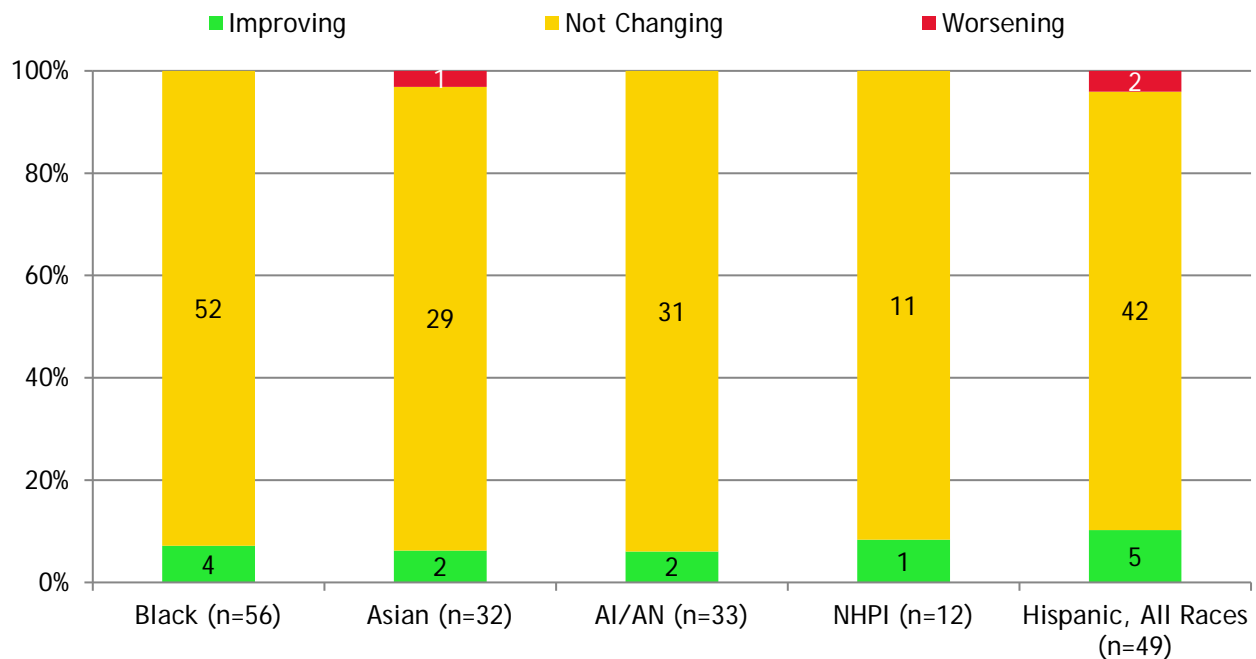
Key: n = number of measures; AI/AN = American Indian or Alaska Native; NHPI = Native Hawaiian/Pacific Islander.
Note: There were no worsening disparities over time observed for Blacks, AI/ANs, and NHPIs in this year's analysis.

Quality measures with disparities at baseline were analyzed to see if disparities related to race and ethnicity were narrowing (improving), widening (worsening), or not changing:

- In this year's analyses, only one quality measure for Asians ("Home health care patients whose management of oral medications improved") and two quality measures for Hispanics showed a worsening disparity over time ("Home health patients who had improvement in upper body dressing" and "Home health care patients whose ability to walk or move around improved") (Figure 58).
- Fewer quality measures are available for select subpopulations, overall. The percentage of quality measures with disparities at baseline that improved over time was 10% for Hispanics, 8% for NHPIs, 7% for Blacks, 6% for Asians, and 6% for AI/ANs.

Due to the nationwide conversion from the International Classification of Diseases, Ninth Revision (ICD-9) to the Tenth Revision (ICD-10) codes in the last quarter of 2015, at this time, we cannot trend the data for some AHRQ Quality Indicators that are based on nationwide Healthcare Cost and Utilization Project (HCUP) data. Measures that have been included in past reports are not always represented in this year's report. Wherever this situation applies, this report includes a footnote.

Disparities for Blacks

In 2016, Blacks were more than seven times as likely as Whites to die from an HIV infection.

Figure 59. Number and percentage of quality measures for which Blacks experienced better, same, or worse quality of care compared with reference group (White), 2013, 2015, 2016, or 2017
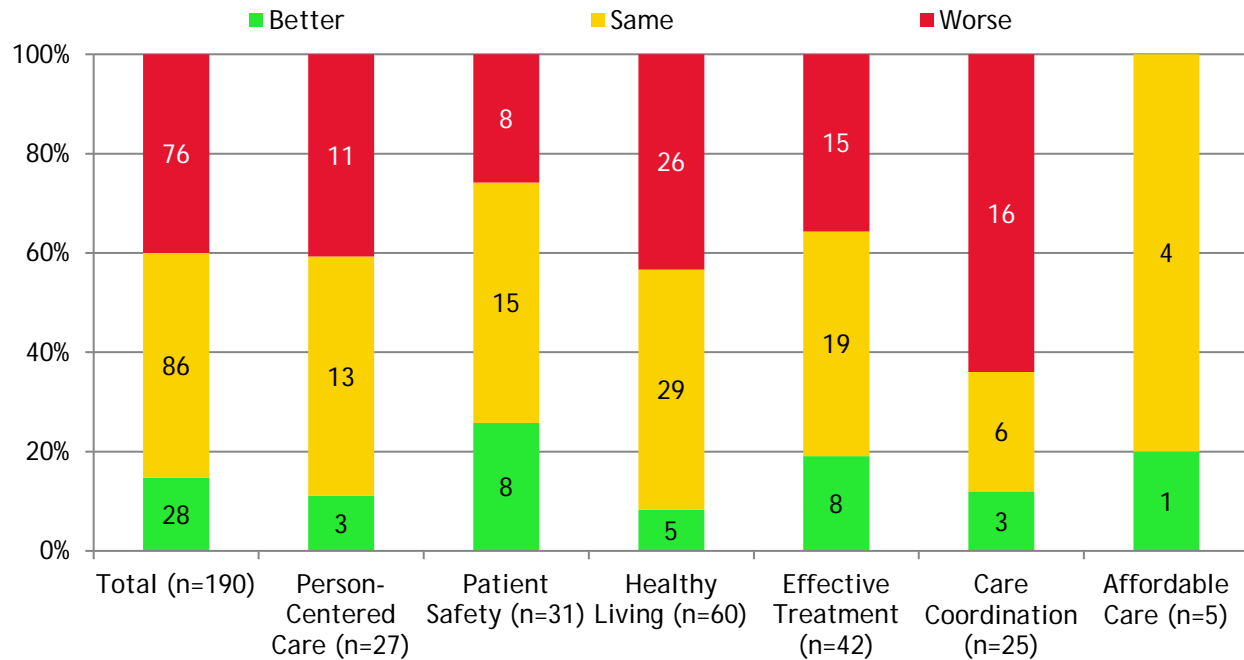
Key: n = number of measures.

Note: The most recent data years are used for this analysis. Different data sources have different data years for most recent data year. For example, the most recent data year from NIDDK USRDS is 2013 and from AHRQ HCUP is 2016.

- **Data for the most recent year show that quality was better for Whites than for Blacks on 40% of all quality measures and that quality was better for Blacks than for Whites on 15% of all quality measures (Figure 59).**

Largest Disparities

The measures with the largest disparities for Blacks include:

- New HIV cases per 100,000 population age 13 and over.
- HIV infection deaths per 100,000 population.
- Hospital admissions for asthma per 100,000 population, children ages 2-17.

New HIV Cases

According to CDC research, in 2017, Blacks accounted for 13% of the nation's population and represented 43% of all new HIV cases. Most of these cases affect Black male adolescents and adults.[53] The Office of Minority Health reports that in 2016, for every one White male, an estimated 7.8 African American males received a new HIV diagnosis.[54]

Figure 60. New HIV cases per 100,000 population age 13 and over, 2015
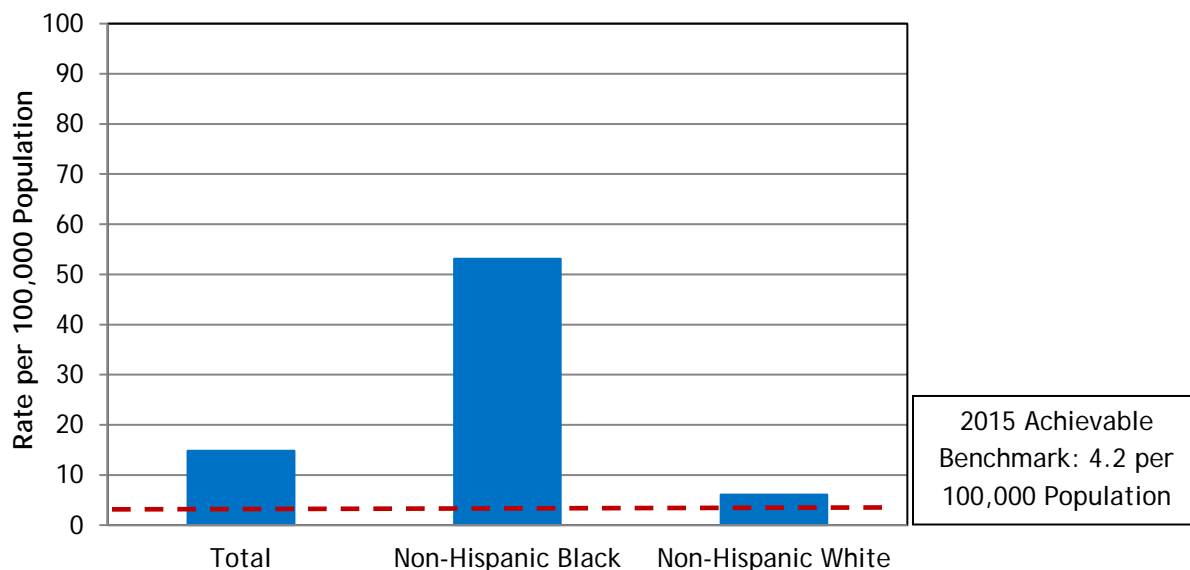
Source: Centers for Disease Control and Prevention, HIV AIDS Surveillance System, 2015.
Note: For this measure, lower rates are better.

- In 2015, non-Hispanic Blacks reported 53.1 new HIV cases per 100,000 population for people age 13 and over compared with 6.1 per 100,000 cases for non-Hispanic Whites (Figure 60).
- The 2015 top 5 state achievable benchmark was 4.2 per 100,000 population. There is no evidence of progress toward the benchmark.
- The top 5 states that contributed to the achievable benchmark are Idaho, Iowa, Maine, West Virginia, and Wisconsin.

In 2019, the administration announced a Presidential initiative to end the HIV epidemic in the United States. The Department of Health and Human Services has committed to "reducing new infections by 75 percent in the next five years and by 90 percent in the next ten years."[55] The Department's website www.hiv.gov also outlines key resources for patients, provides data, and details programs supporting a federal response to the epidemic.

HIV Infection Deaths

HIV mortality disproportionately affects some racial and ethnic groups more than others. According to CDC data, in 2016, HIV was the sixth leading cause of death for Black men ages 25-34 and fifth for Black women ages 35-44.[56]

Figure 61. HIV infection deaths per 100,000 population, 2016

Source: Centers for Disease Control and Prevention, National7 Vital Statistics System-Mortality, 2016.
Note: For this measure, lower rates are better.

● In 2016, Blacks had 7.2 HIV infection deaths per 100,000 population compared with 1.0 per 100,000 cases for Whites (Figure 61). These cases represent mortality for which HIV was the leading cause of death.

● The 2016 top 5 state achievable benchmark was 0.75 per 100,000 population. There is no evidence of progress toward the benchmark.

● The states that contributed to the achievable benchmark are Colorado, Massachusetts, Michigan, Minnesota, Missouri, Oregon, Washington, and Wisconsin (more than 5 states contributed to the benchmark due to ties).

Federal efforts to reduce mortality include the promotion of treatment therapies, such as antiretroviral therapy, pre-exposure prophylaxis, and postexposure prophylaxis.[57] Several HHS agencies provide a federal response to the HIV epidemic, including HRSA's HIV/AIDS Bureau, which administers the Ryan White HIV/AIDS Program (RWHAP). This is the largest federal program focused exclusively on providing HIV care and treatment to patients with inadequate or no insurance. Through RWHAP's partnerships, more than 512,000 people receive care annually.[58]

Hospital Admissions for Asthma

Asthma is the most common chronic lung condition among children under 17 years in the United States. Asthma has no cure and without treatment, patients can die.[59] CDC research shows that from 2001 to 2016, 8% fewer children experienced one or more asthma attacks. Nonetheless, in 2016, one in 12 children ages 0-17 had asthma and among them, asthma disproportionately affected males, non-Hispanic Black children, and children from low-income households.[60]

Figure 62. Hospital admissions for asthma per 100,000 population, children ages 2-17, 2016
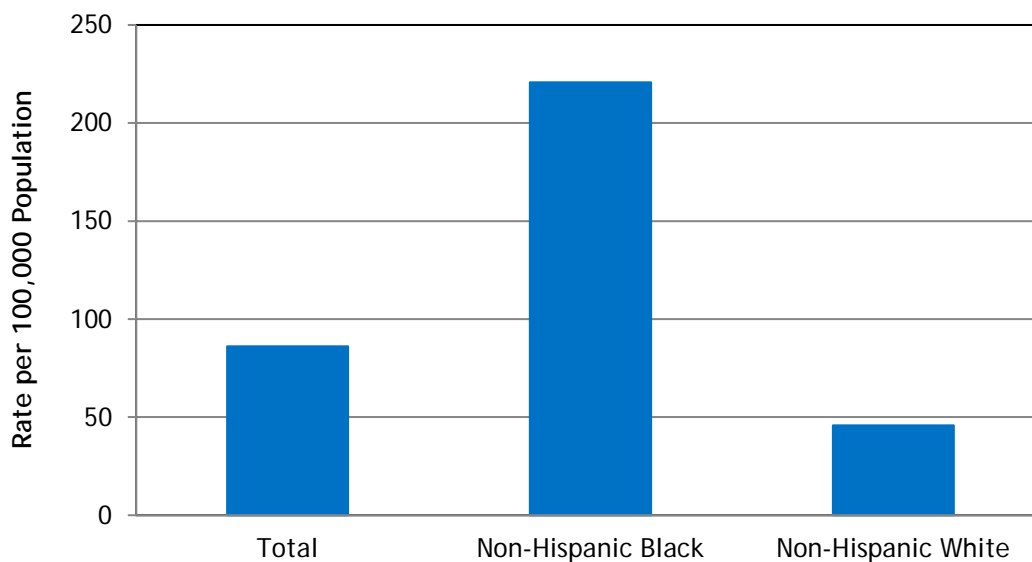
Source: Agency for Healthcare Research and Quality, Healthcare Cost and Utilization Project, 2016.
Note: For this measure, lower rates are better.

● In 2016, non-Hispanic Blacks reported 220.8 children (ages 2-17) per 100,000 population were admitted to the hospital for asthma compared with 45.9 per 100,000 cases for non-Hispanic Whites (Figure 62).

Federal resources to reduce asthma prevalence include CDC's National Asthma Control Program. This program funds states, schools, and nonprofits to support improved asthma surveillance, training, and education activities.[61] In 1989, the National Heart, Lung, and Blood Institute of the National Institutes of Health established the National Asthma Education and Prevention Program (NAEPP). NAEPP oversees the development of asthma guidelines, creates tools and materials to put guidelines into practice, coordinates federal asthma-related activities, and builds partnerships.

Trends in Quality of Care for Blacks

Figure 63. Number and percentage of all quality measures that were improving, not changing, or worsening, total for Blacks and by priority area, 2000 through 2013, 2015, 2016, or 2017
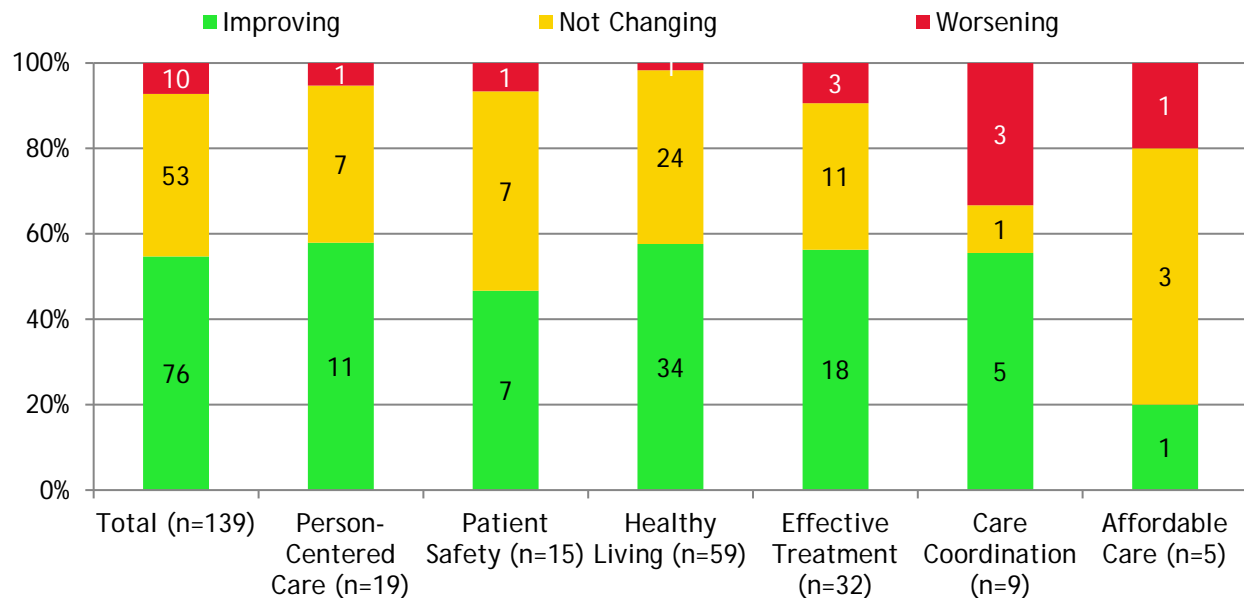
Key: n = number of measures.

- **Improving** = Quality is going in a positive direction at an average annual rate greater than 1% per year.
- **Not changing** = Quality is not changing or is changing at an average annual rate of 1% or less per year.
- **Worsening** = Quality is going in a negative direction at an average annual rate greater than 1% per year.

- **Across the 139 measures of healthcare quality tracked in the report for Blacks, 55% showed improvement, 38% remained unchanged, and 7% were getting worse from 2000 to 2017 (Figure 63).[x]**
- **Affordable Care showed the least improvement (20% of measures).**

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[x] Due to the nationwide conversion from the International Classification of Diseases, Ninth Revision (ICD-9) to the Tenth Revision (ICD-10) codes in the last quarter of 2015, at this time, we cannot trend the data for some AHRQ Quality Indicators that are based on nationwide Healthcare Cost and Utilization Project (HCUP) data. Measures that have been included in past reports are not always represented in this year's report. Wherever this situation applies, this report includes a footnote.

Changes in Disparities for Blacks

Figure 64. Number and percentage of quality measures with disparity at baseline for which disparities related to race and ethnicity were improving, not changing, or worsening, total for Blacks and by priority area, 2000 through 2013, 2014, 2015, 2016, or 2017
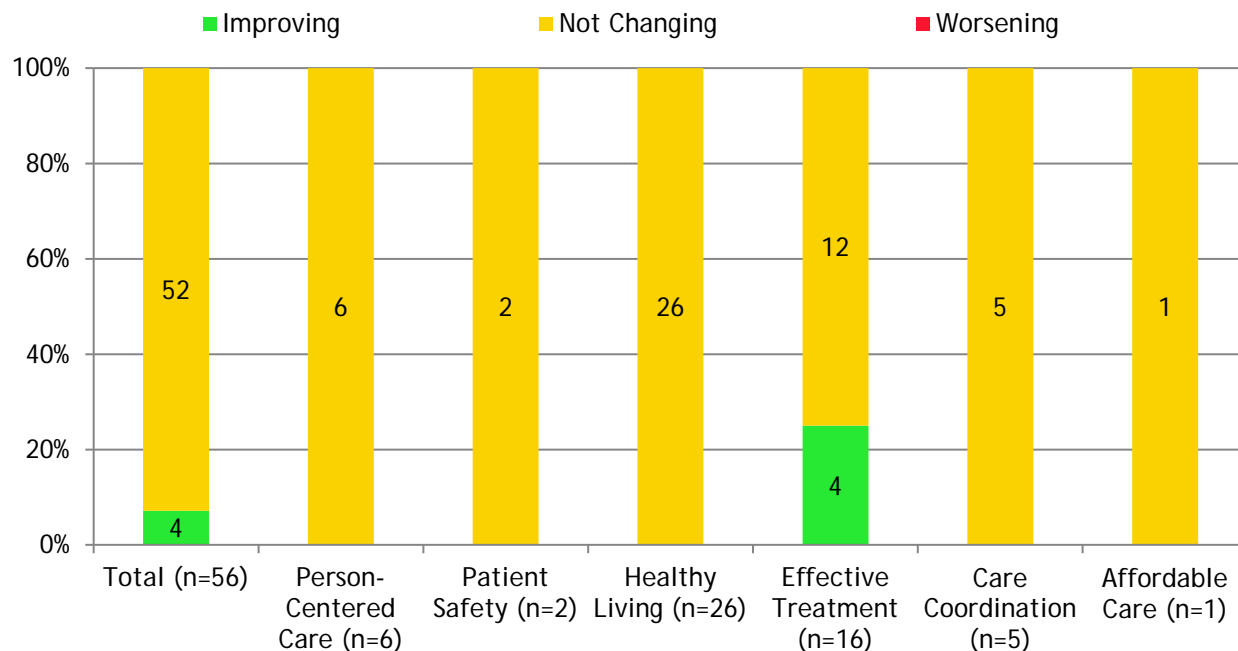
Key: n = number of measures.

- From 2000 to 2017, few disparities in quality of care faced by Blacks were getting smaller (Figure 64). Of 56 quality measures for which a disparity existed at baseline, only 4 showed a narrowing disparity:

  - New HIV cases per 100,000 population age 13 and over.
  - HIV infection deaths per 100,000 population.
  - Hospital patients with heart attack given fibrinolytic medication within 30 minutes of arrival.
  - Adjusted incident rates of end stage renal disease (ESRD) due to diabetes per million population.

- Most disparities were not changing, and none were widening.

New HIV Cases

Figure 65. New HIV cases per 100,000 population age 13 and over, 2008-2015
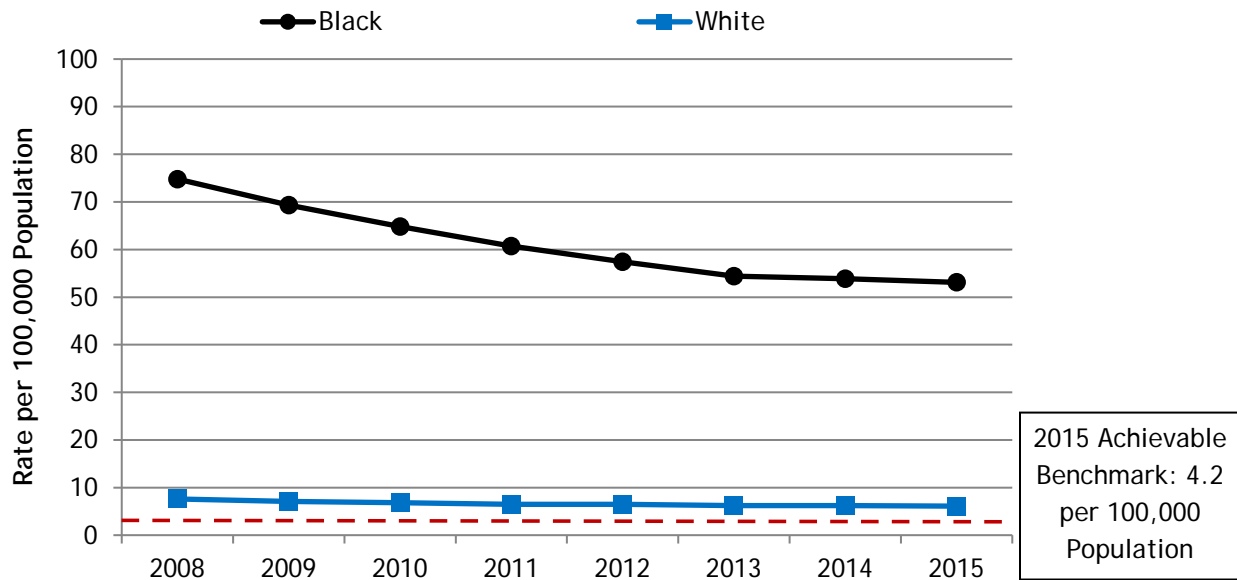
Source: Centers for Disease Control and Prevention, HIV-AIDS Surveillance System, 2008-2015.
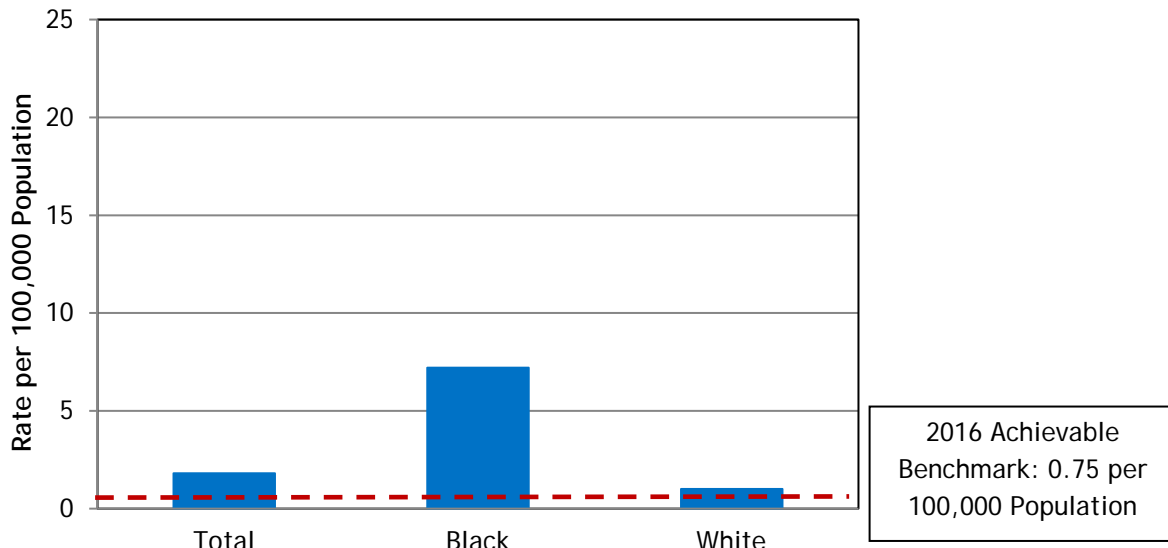**Note:** For this measure, lower rates are better.

- Data from 2008 to 2015 show that the disparity between Blacks and Whites is narrowing, but Blacks are still experiencing a much higher rate of new HIV cases (53.1 per 100,000 population in 2015) compared with Whites (6.1 per 100,000 population in 2015; Figure 65) and other racial and ethnic groups (data not shown).
- The 2015 top 5 state achievable benchmark was 4.2 per 100,000 population. At the current rate of increase, overall, the benchmark could be achieved in 16 years.
- The top 5 states that contributed to the achievable benchmark are Idaho, Iowa, Maine, West Virginia, and Wisconsin.

HIV Infection Deaths

Figure 66. HIV infection deaths per 100,000 population, 2000-2016
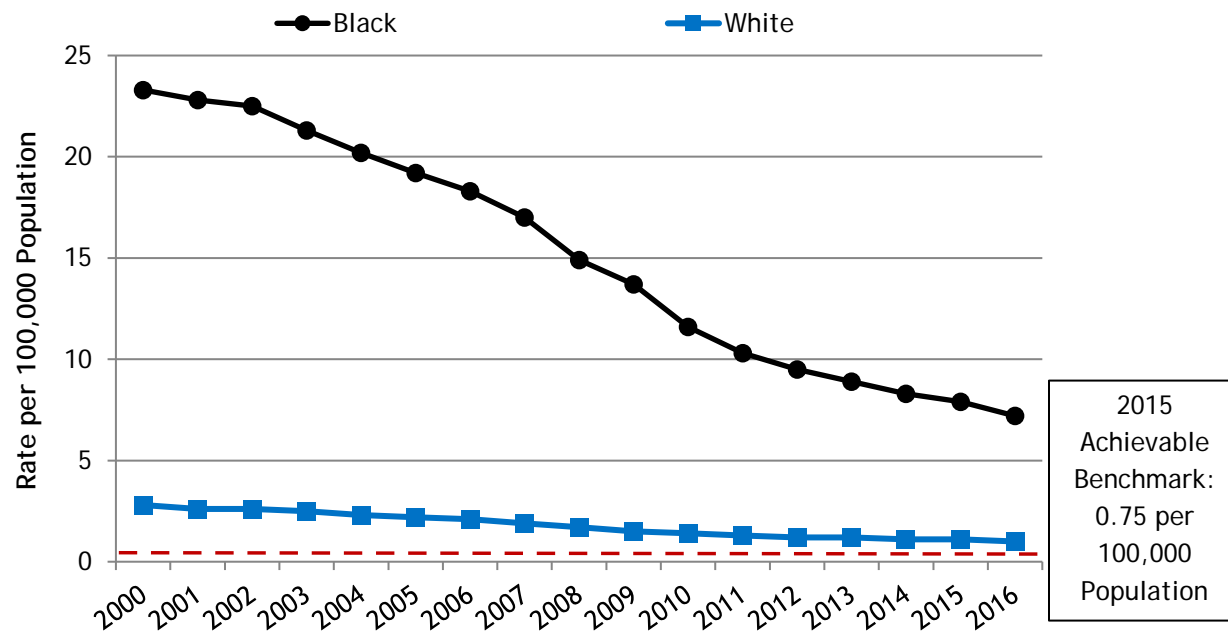
Source: Centers for Disease Control and Prevention, National Center for Health Statistics, National Vital Statistics System – Mortality, 2000-2016.
Note: For this measure, lower rates are better.

- Data from 2000 to 2016 show that the disparity between Blacks and Whites is narrowing, but Blacks are still experiencing a much higher rate of HIV infection deaths (7.2 per 100,000 population in 2016) compared with Whites (1.0 per 100,000 population in 2016; Figure 66) and other racial and ethnic groups (data not shown).
- The 2015 top 5 state achievable benchmark was 0.75 per 100,000 population. At current rates of improvement, Whites could reach the benchmark in 2 years and Blacks in 6 years.
- The top 5 states that contributed to the achievable benchmark are Colorado, Minnesota, Oregon, Washington, and Wisconsin.

Fibrinolytic Medication for Heart Attack

Figure 67. Hospital patients with heart attack given fibrinolytic medication within 30 minutes of arrival, 2005-2015
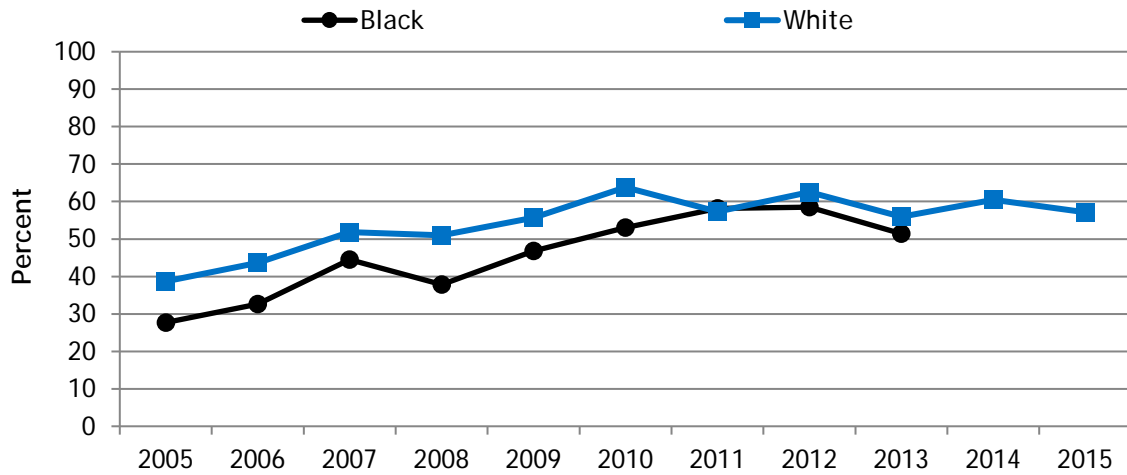
Source: Centers for Medicare & Medicaid Services Clinical Data Warehouse for Hospital Inpatient Quality Reporting Program, 2005-2015.
Note: Data for Blacks in 2014 and 2015 do not meet the criteria for statistical reliability, data quality, or confidentiality.

- **Data from 2005 to 2013 show that the disparity between Blacks and Whites is narrowing, but Blacks are still experiencing a lower percentage of patients with heart attack getting timely fibrinolytic medication (Figure 67).**

Figure 68. Adjusted incident rates of end stage renal disease (ESRD) due to diabetes per million population, 2001-2016
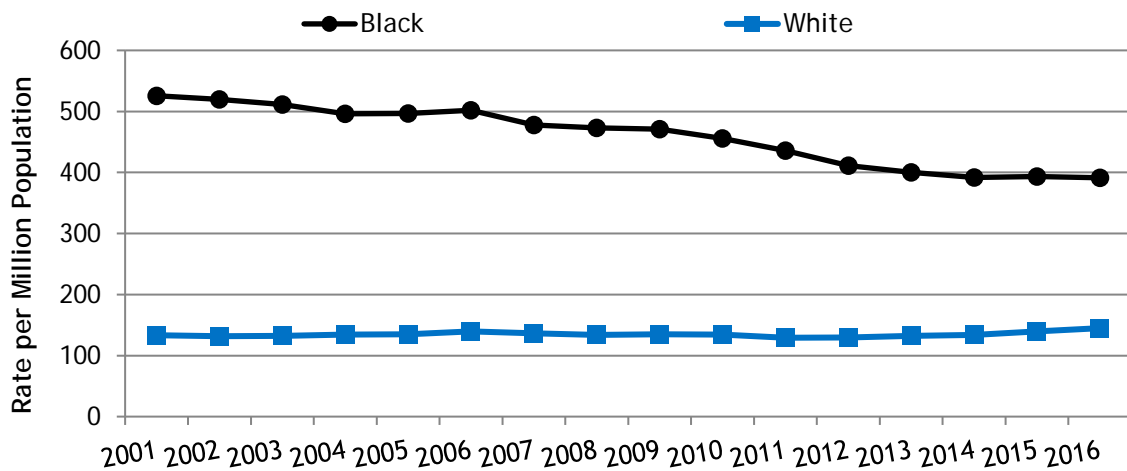
Source: National Institutes of Health, National Institute of Diabetes and Digestive and Kidney Diseases, U.S. Renal Data System, 2001-2016.
Note: For this measure, lower rates are better.

- **Data from 2001 to 2016 show that the disparity between Blacks and Whites is narrowing, but Blacks are still experiencing a higher rate of ESRD due to diabetes (Figure 68).**

Disparities for Asians

From 2000 to 2015, more Asians became aware of
their HIV serostatus (70.5% to 80.4%).

Figure 69. Number and percentage of quality measures for which Asians experienced better, same, or worse quality of care compared with reference group (White) in 2013, 2015, 2016, or 2017
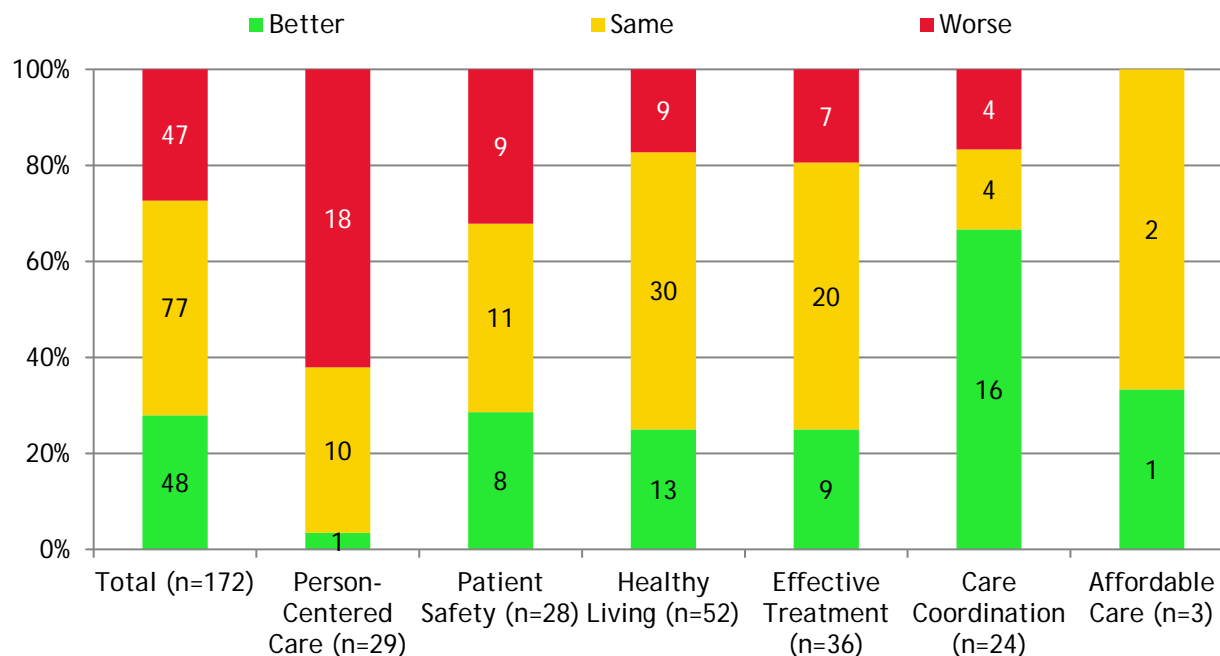
Key: n = number of measures.
Note: The most recent data years are used for this analysis. Different data sources have different data years for most recent data year. For example, the most recent data year from NIDDK USRDS is 2013 and from AHRQ HCUP is 2016.

- Data for the most recent year show that quality was better for Whites than for Asians on 27% of all quality measures and that quality was better for Asians than for Whites on 28% of all quality measures (Figure 69). This sample includes the latest data year for all HCUP measures.

Largest Disparities

The measures with the largest disparities for Asians include:

- Hospital patients with an anticoagulant-related adverse drug event to low-molecular-weight heparin (LMWH) and factor Xa.
- Adults who reported that home health providers always treated them with courtesy and respect in the last 2 months of care.
- Adults with limited English proficiency and a usual source of care (USC) whose USC had language assistance.

Anticoagulant-Related Adverse Drug Events

Thromboembolic disorders such as venous thromboembolism, deep vein thrombosis, and pulmonary embolism are examples of preventable adverse events that hospital patients may experience during the course of their inpatient care. Medications such as LMWH thrombosis inhibitors and factor Xa inhibitors help patients treat and prevent these disorders. Nonetheless, sometimes adverse events related to these medications may occur. Heparin is among the highest risk medications and incorrect prescribing or administration of this medicine may result in an adverse event.[62]

Figure 70. Hospital patients with an anticoagulant-related adverse drug event to low-molecular-weight heparin (LMWH) and factor Xa, 2015
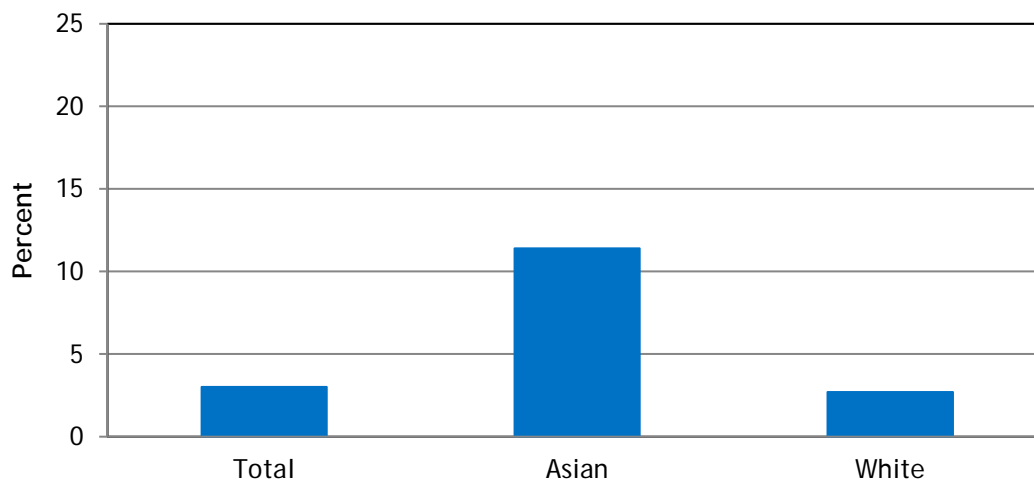
Source: Centers for Medicare & Medicaid Services and Agency for Healthcare Research and Quality, Medicare Patient Safety Monitoring System, 2015.
Note: For this measure, lower rates are better.

- In 2015, 11.4% of Asian hospital patients experienced an adverse drug event related to LMWH and factor Xa compared with 2.7% of White patients (Figure 70).

The HHS National Action Plan for Adverse Drug Event Prevention outlines specific strategies to reduce ADEs associated with anticoagulant drugs and therapies.[63]

Treatment by Home Health Providers

Home health providers are committed to delivering high-quality and compassionate care and services to patients in a manner that supports each patient's respect and dignity. Home health performance is examined through several types of quality measures that look at areas such as efficiency, patient safety, and patient-centered care. Evaluation of patient experience of care is conducted with the Consumer Assessment of Healthcare Providers and Systems Home Health Care Survey.[64]

Figure 71. Adults who reported that home health providers always treated them with courtesy and respect in the last 2 months of care, 2017

Source: Agency for Healthcare Research and Quality, Home Health Consumer Assessment of Healthcare Providers and Systems, 2017.

- In 2017, fewer Asian adults (84.3%) reported that home health providers always treated them with courtesy and respect in the last 2 months compared with 94.2% of White adults (Figure 71).
- The 2017 top 5 state achievable benchmark was 95%. There is no evidence of progress toward the benchmark.
- The top states that contributed to the achievable benchmark are Alabama, Kentucky, Louisiana, Mississippi, South Carolina, and West Virginia (more than 5 states contributed to the benchmark due to ties).

Providers With Language Assistance

Current research shows that Asians continue to experience health disparities in several quality areas, including patient-centered care and satisfaction.[65] Adults who have limited English proficiency may experience disparities in their care and gaps in communication with their healthcare team.[66]

According to the Migration Policy Institute, in 2013, an estimated 25.1 million individuals living in the United States reported having limited English proficiency.[67] "More than one in four people aged 5 and over with LEP are born in the U.S."[68] Language assistance such as access to translation services, health education materials written in a known language, and other resources are required by law, but not all patients have access to these services at their usual source of care.[69]

Figure 72. Adults with limited English proficiency and usual source of care (USC) whose USC had language assistance, 2016
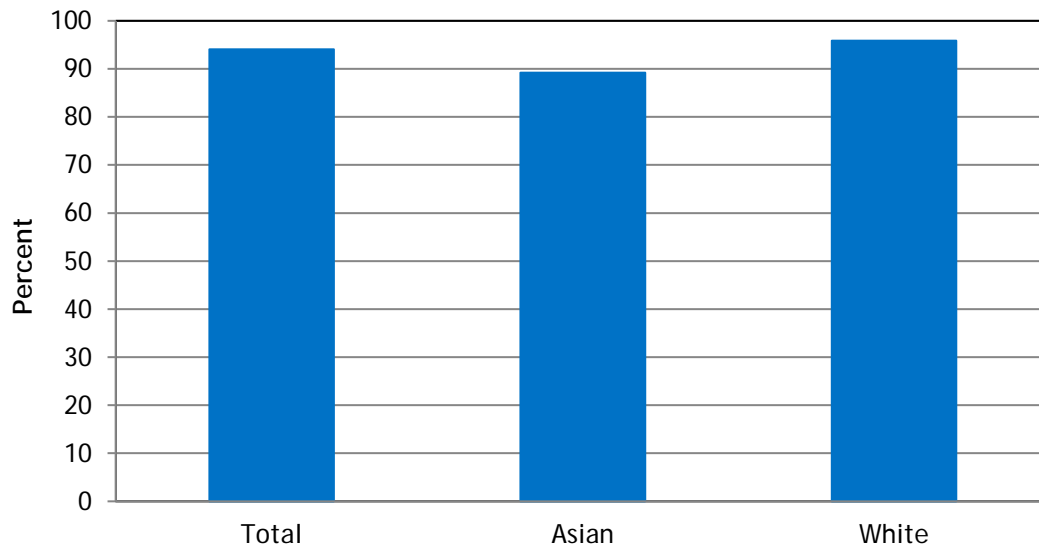
Source: Agency for Healthcare Research and Quality, Medical Expenditure Panel Survey, 2016.

- In 2016, 89.2% of Asian adults with limited English proficiency had a usual source of care that offered language assistance compared with 95.9% of White adults (Figure 72).

The Limited English Proficiency website[69] offers a repository of resources collated by the Department of Justice to support improved communication with patients. AHRQ has also established a Limited English Proficiency module as part of its TeamSTEPPS® training that shows the importance of language assistance services in keeping patients safe and avoiding adverse events.[70]

Trends in Quality of Care for Asians

Figure 73. Number and percentage of all quality measures that were improving, not changing, or worsening, total for Asians and by priority area, from 2000 through 2011, 2013, 2014, 2015, 2016, or 2017
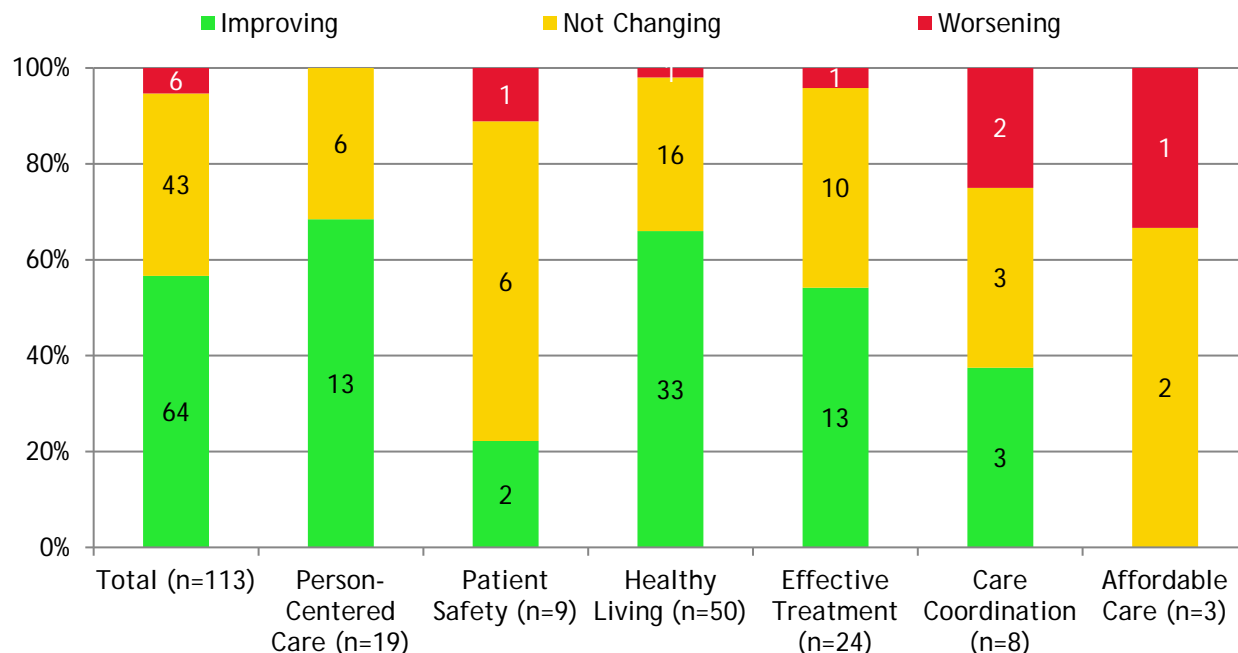
Key: n = number of measures.

- **Improving** = Quality is going in a positive direction at an average annual rate greater than 1% per year.
- **Not changing** = Quality is not changing or is changing at an average annual rate of 1% or less per year.
- **Worsening** = Quality is going in a negative direction at an average annual rate greater than 1% per year.

● **Across the 113 measures of healthcare quality tracked in the report for Asians, 57% were improving, 38% were not changing, and 5% were getting worse from 2000 to 2017 (Figure 73).[xi]**

● **Affordable Care (no measures) and Patient Safety (22% of measures) showed the least improvement.**

[xi] Due to the nationwide conversion from the International Classification of Diseases, Ninth Revision (ICD-9) to the Tenth Revision (ICD-10) codes in the last quarter of 2015, at this time, we cannot trend the data for some AHRQ Quality Indicators that are based on nationwide Healthcare Cost and Utilization Project (HCUP) data. Measures that have been included in past reports are not always represented in this year's report. Wherever this situation applies, this report includes a footnote.

Changes in Disparities for Asians

Figure 74. Number and percentage of quality measures with disparity at baseline for which disparities related to race and ethnicity were improving, not changing, or worsening, total for Asians and by priority area, 2000 through 2013, 2015, 2016, or 2017
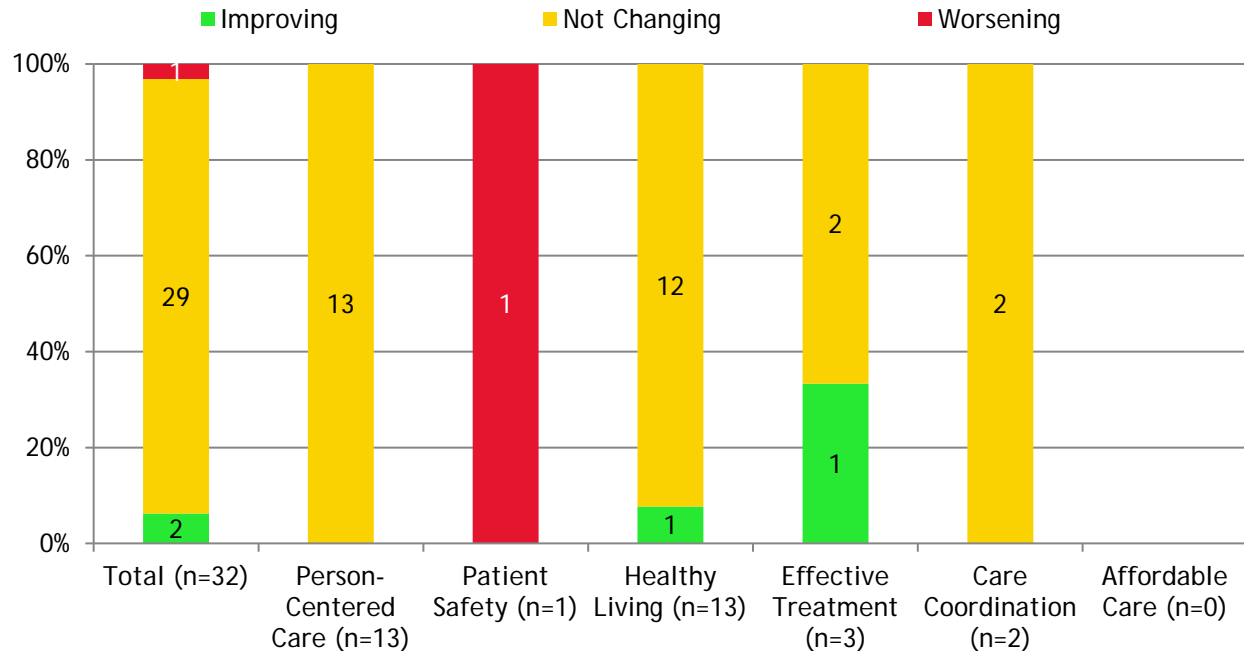
Key: n = number of measures.

- From 2000 through 2017, disparities in quality of care between Asians and Whites remained the same for most measures. Of 32 quality measures with a disparity at baseline, disparities were not changing for 29 (91%) (Figure 74).
- Two measures showed narrowing disparities: Hospital patients who received pneumococcal immunization and People age 13 and over living with HIV who know their serostatus.
- One measure showed a widening disparity: Home health patients whose management of oral medications improved.

Pneumococcal Immunization

Two kinds of pneumococcal vaccines are available in the United States:

- Pneumococcal conjugate vaccine (for children under 2 years, adults over 65 years of age, and adults with certain health conditions) and
- Pneumococcal polysaccharide vaccine (for people ages 2-64 with certain medical conditions, adults ages 19-64 who smoke cigarettes, and adults age 65 years and over).[71]

Providers can help determine if vaccination is right for their patients, especially during a hospital visit. The impact of doing so can prevent patients from acquiring pneumonia. States have varying laws for pneumococcal immunization in hospitals and administration will vary based on a patient's demographics and medical history.[72]

Figure 75. Hospital patients who received pneumococcal immunization, 2012-2015
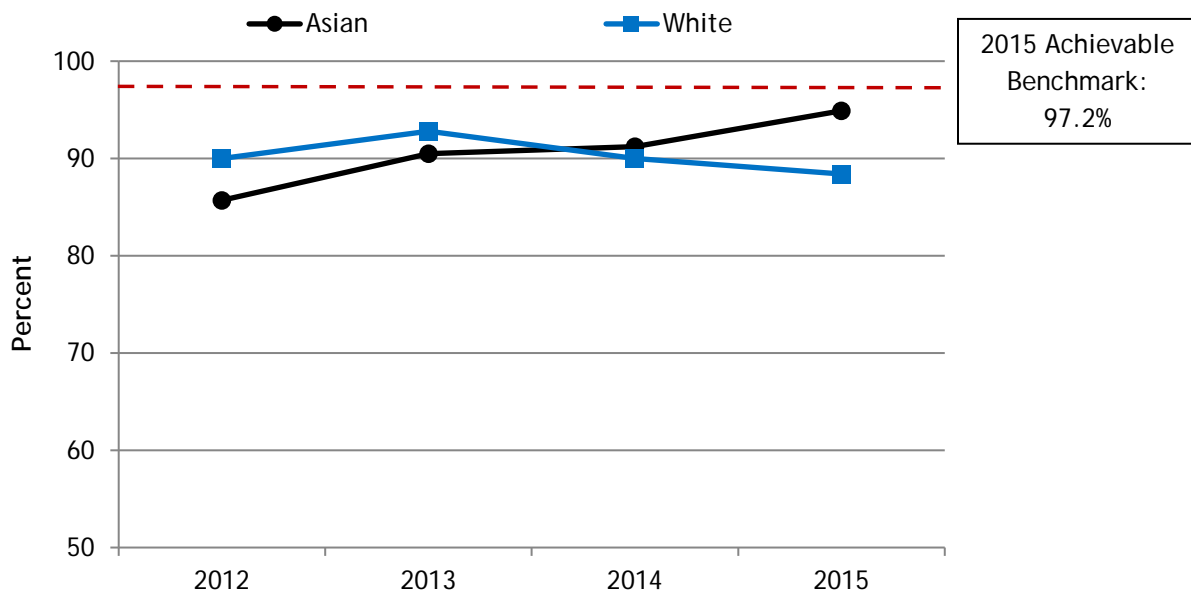
Source: Centers for Medicare & Medicaid Services, Quality Improvement Organization Program, 2012-2015.

- Data from 2012 to 2015 show that the disparity between Asians and Whites is narrowing due to an increase in Asian hospital patients receiving pneumococcal immunizations (85.7% to 94.9%) while Whites showed no statistically significant change in this measure (90.0% to 88.4%) (Figure 75). The trend was changing in 2015 with Asians performing better than Whites for this measure.
- The 2015 top 5 state achievable benchmark was 97.2%. At the current rate of increase, overall, the benchmark could be achieved in 1 year.
- The top 5 states that contributed to the achievable benchmark are Hawaii, Maine, New Hampshire, South Carolina, and Wisconsin.

CDC has produced several patient and provider educational resources to inform patients about the importance of vaccination, the impact of pneumonia, and who is best suited for the vaccine.[73] Among these resources is CDC's PneumoRecs VaxAdvisor mobile app, which helps providers determine their patient's vaccination needs based on current clinical guidelines.[74]

Knowledge of HIV Serostatus

Stigmatization of HIV hinders patients from seeking testing, which may delay treatment and affect a patient's health and quality of life.[75] According to CDC, people ages 13-24 are less likely to know their HIV serostatus.[76] Accurate estimates of new HIV infection rates are crucial for preventing the spread of the disease.

Figure 76. People age 13 and over living with HIV who know their serostatus, 2010-2015
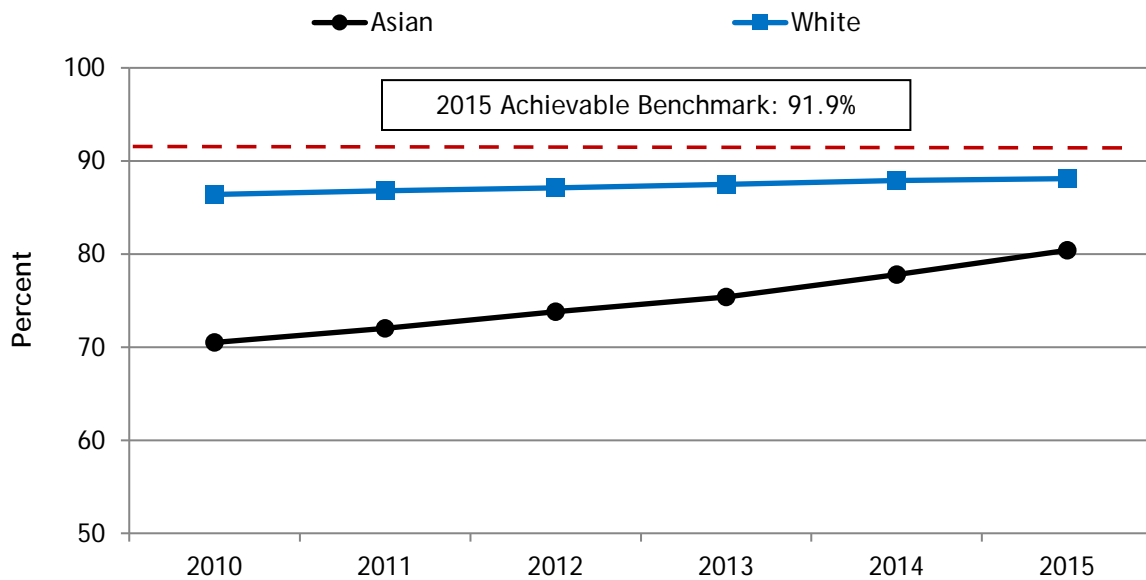
Source: Centers for Disease Control and Prevention, HIV-AIDS Surveillance System, 2010-2015.

- Data from 2000 to 2015 show that the disparity between Asians and Whites is narrowing due to an increase in the percentage of Asians (70.5% to 80.4%) and Whites (86.4% to 88.1%) who are living with HIV and aware of their serostatus (Figure 76).
- The 2015 top 5 state achievable benchmark was 91.9%. At the current rate of increase, overall, the benchmark could be achieved in 6 years.
- The top 5 states that contributed to the achievable benchmark are Idaho, New Jersey, Pennsylvania, South Dakota, and Vermont.

Disparities for American Indians and Alaska Natives

American Indians and Alaska Natives performed worse on almost 55% of Person-Centered Care quality measures.

Figure 77. Number and percentage of quality measures for which American Indians and Alaska Natives experienced better, same, or worse quality of care compared with reference group (White), 2013, 2015, 2016, or 2017
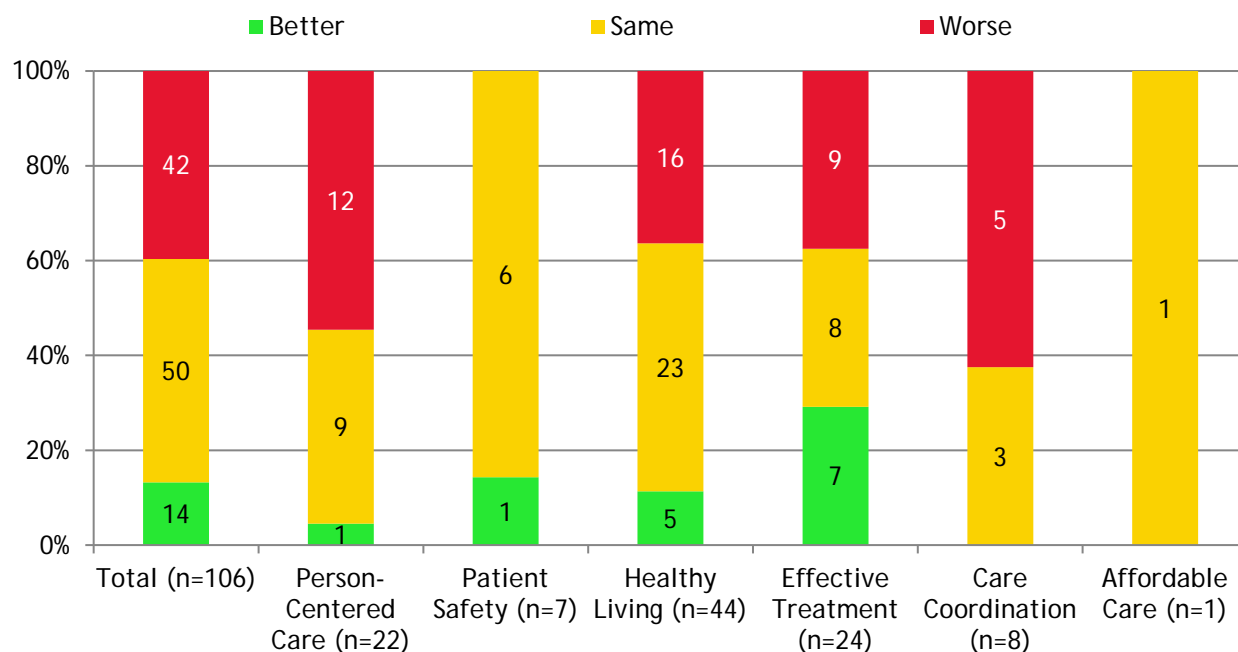
Key: n = number of measures.
Note: The most recent data years are used for this analysis. Different data sources have different data years for most recent data year. For example, the most recent data year from NIDDK USRDS is 2013 and from AHRQ HCUP is 2016.

- Data for the most recent year show that quality was better for Whites than for AI/ANs on about 40% of all quality measures and that quality was better for AI/ANs than for Whites on 13% of all quality measures (Figure 77). This sample includes the latest data year for all HCUP measures.

Largest Disparities

The measures with the largest disparities for AI/ANs include:

- Adults who had a doctor's office or clinic visit in the last 12 months whose health providers sometimes or never explained things in a way they could understand.
- Adults who had a doctor's office or clinic visit in the last 12 months whose health providers sometimes or never spent enough time with them.
- Hospital patients who received influenza vaccination.

Adequate Doctor's Explanation

Many patients leave their healthcare visit unsure of what their provider asked them to do or what was discussed. Nationwide, only 12% of adults have proficient health literacy.[77] That means almost 9 out of 10 Americans find it challenging "to obtain, process, and understand basic health information and services needed to make appropriate health decisions."[78]

Figure 78. Adults who had a doctor's office or clinic visit in the last 12 months whose health providers sometimes or never explained things in a way they could understand, 2016
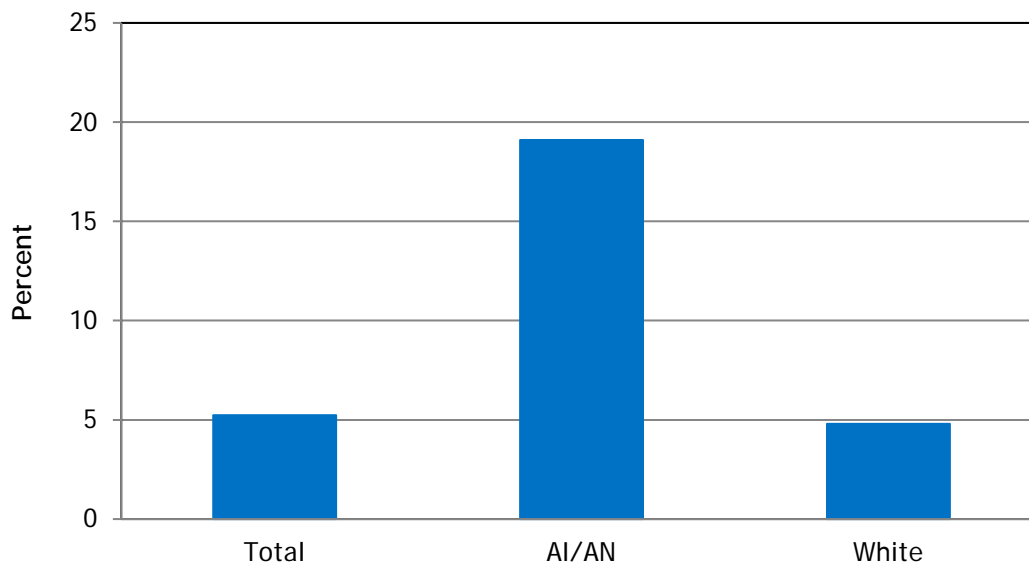
Source: Agency for Healthcare Research and Quality, Medical Expenditure Panel Survey, 2016.
Note: For this measure, lower rates are better.

- In 2016, 19.1% of AI/AN adults who had a doctor's office or clinic visit in the past 12 months reported that their health providers sometimes or never explained their health information in a way they could understand, compared with 4.8% of Whites (Figure 78).

AHRQ has developed several resources to improve provider-patient communication and to support improved understanding of a patient's care plan. These resources include the Guide to Improving Patient Safety in Primary Care Settings by Engaging Patients and Families, which features a teach-back intervention. This intervention focuses on primary care providers discussing the patients' care plan with them and having patients explain it back to them in their own words to ensure their understanding.[79]

Another resource is the AHRQ Health Literacy Universal Precautions Toolkit (www.ahrq.gov/literacy),[80] which helps primary care practices promote greater understanding for all patients by using strategies such as teach-back.

Adequate Time With Doctor

Both providers and patients report not having enough time during patient appointments and this challenge continues to affect the quality of healthcare services. Research by Foo, et. al., demonstrates that patient and provider race both have an impact on how long discussions regarding mental/behavioral health concerns are discussed vs. other biomedical concerns.[81]

Figure 79. Adults who had a doctor's office or clinic visit in the last 12 months whose health providers sometimes or never spent enough time with them, 2016
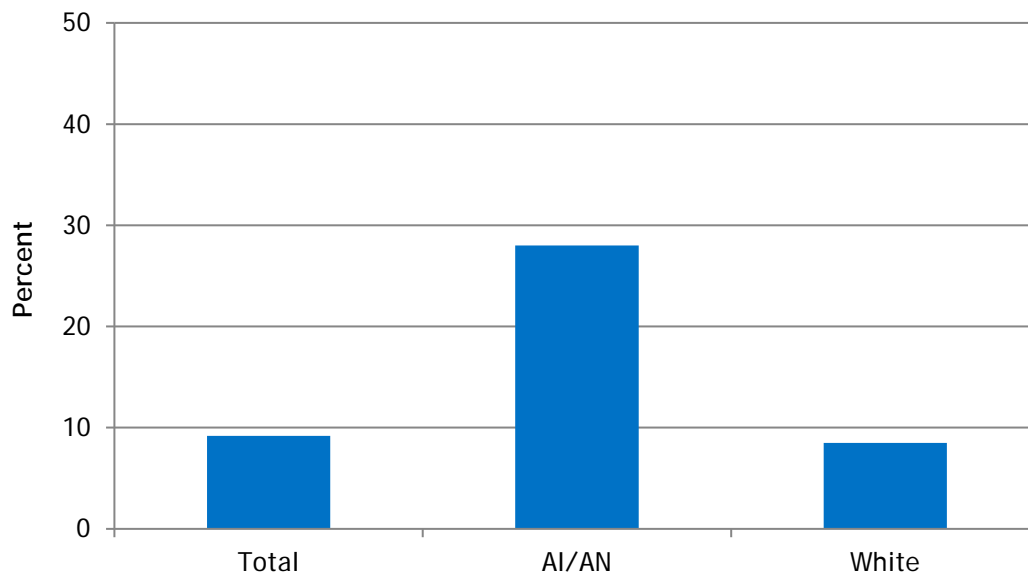
Source: Agency for Healthcare Research and Quality, Medical Expenditure Panel Survey, 2016.
Note: For this measure, lower rates are better.

- In 2016, 28% of AI/AN adults who had a doctor's office or clinic visit in the past 12 months reported that their health providers sometimes or never spent enough time with them, compared with 8.5% of Whites (Figure 79).

Influenza Vaccination

CDC estimates that there were 21,500 to 35,500 flu-related deaths from October 1, 2018, through March 9, 2019.[82] In 2017, approximately 92% of hospital employees reported receiving an influenza vaccination in the 2017-2018 season according to CDC and the American Hospital Association.[83] While long-debated as an issue of personal choice, influenza vaccination among healthcare providers can efficiently limit the spread of disease. Moreover, current research shows that influenza vaccination provided to hospital patients also limits the spread of the flu and is even effective in patients with COPD.[84]

Figure 80. Hospital patients who received influenza vaccination, 2016
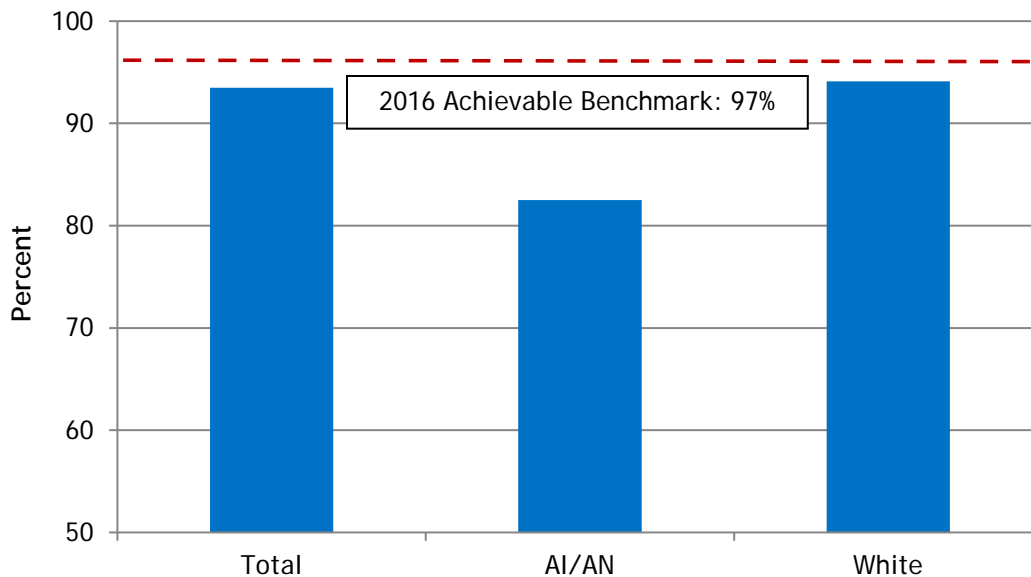
Source: Centers for Medicare & Medicaid Services, Quality Improvement Organization Program, 2016.

- In 2016, the percentage of hospital patients who received the influenza vaccination was lower for AI/ANs (82.5%) compared with Whites (94.1%; Figure 80).
- The 2016 top 5 state achievable benchmark was 97%. Overall, there was no progress toward the benchmark.
- The top states that contributed to the achievable benchmark are Florida, Indiana, Maine, Massachusetts, New Jersey, Tennessee, Virginia, and Utah (more than 5 states contributed to the benchmark due to ties).

While current clinical guidelines show that people who are 6 months or older should receive an annual flu vaccine, not all patients can access vaccines or treatment if they become ill. CDC details preventive strategies (https://www.cdc.gov/flu/prevent/index.html) to protect against the flu.

Trends in Quality of Care for American Indians and Alaska Natives

Figure 81. Number and percentage of all quality measures that were improving, not changing, or worsening, total for American Indians and Alaska Natives and by priority area, from 2000 through 2013, 2014, 2015, 2016, or 2017
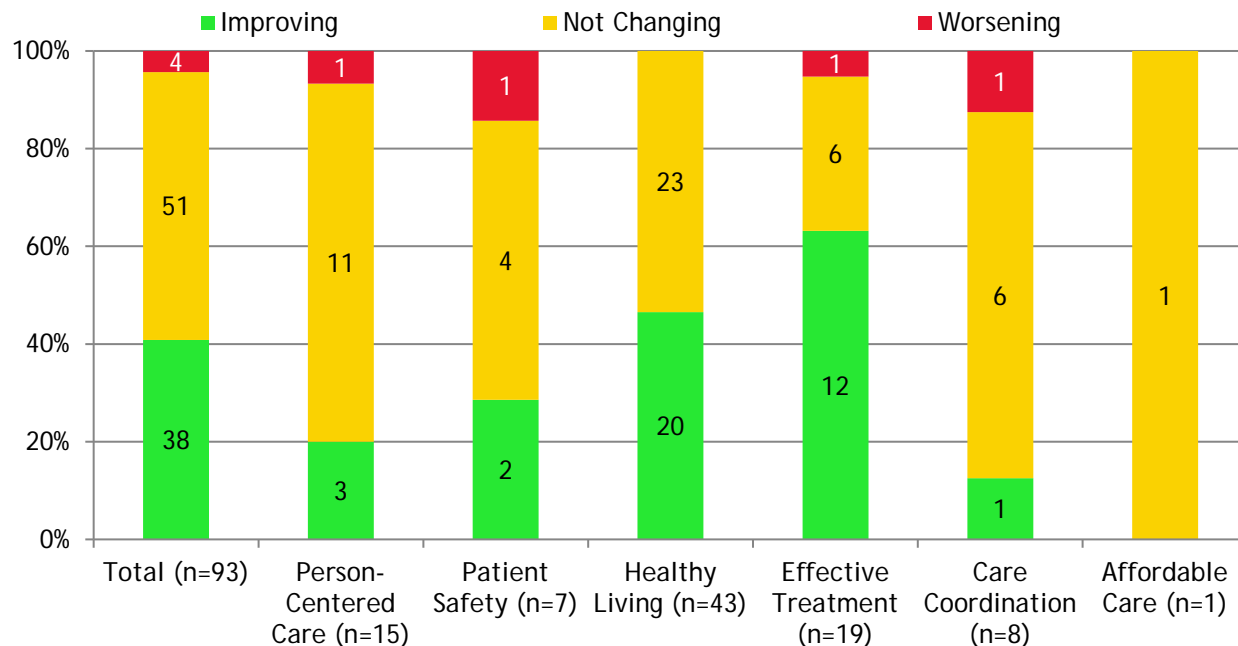
Key: n = number of measures.

- **Improving** = Quality is going in a positive direction at an average annual rate greater than 1% per year.
- **Not changing** = Quality is not changing or is changing at an average annual rate of 1% or less per year.
- **Worsening** = Quality is going in a negative direction at an average annual rate greater than 1% per year.

- Among the 93 quality measures with data for AI/ANs, 38 (41%) were improving, 51 (55%) were not changing, and 4 (4%) were getting worse from 2000 through 2017 (Figure 81).
- Effective Treatment showed the most improvement (63% of measures) and Affordable Care, Care Coordination, and Person-Centered Care showed less improvement.[xii]

[xii] Due to the nationwide conversion from the International Classification of Diseases, Ninth Revision (ICD-9) to the Tenth Revision (ICD-10) codes in the last quarter of 2015, at this time, we cannot trend the data for some AHRQ Quality Indicators that are based on nationwide Healthcare Cost and Utilization Project (HCUP) data. Measures that have been included in past reports are not always represented in this year's report. Wherever this situation applies, this report includes a footnote.

Changes in Disparities for American Indians and Alaska Natives

Figure 82. Number and percentage of quality measures with disparity at baseline for which disparities related to race and ethnicity were improving, not changing, or worsening, total for American Indians and Alaska Natives and by priority area, from 2000 through 2013, 2015, 2016, or 2017
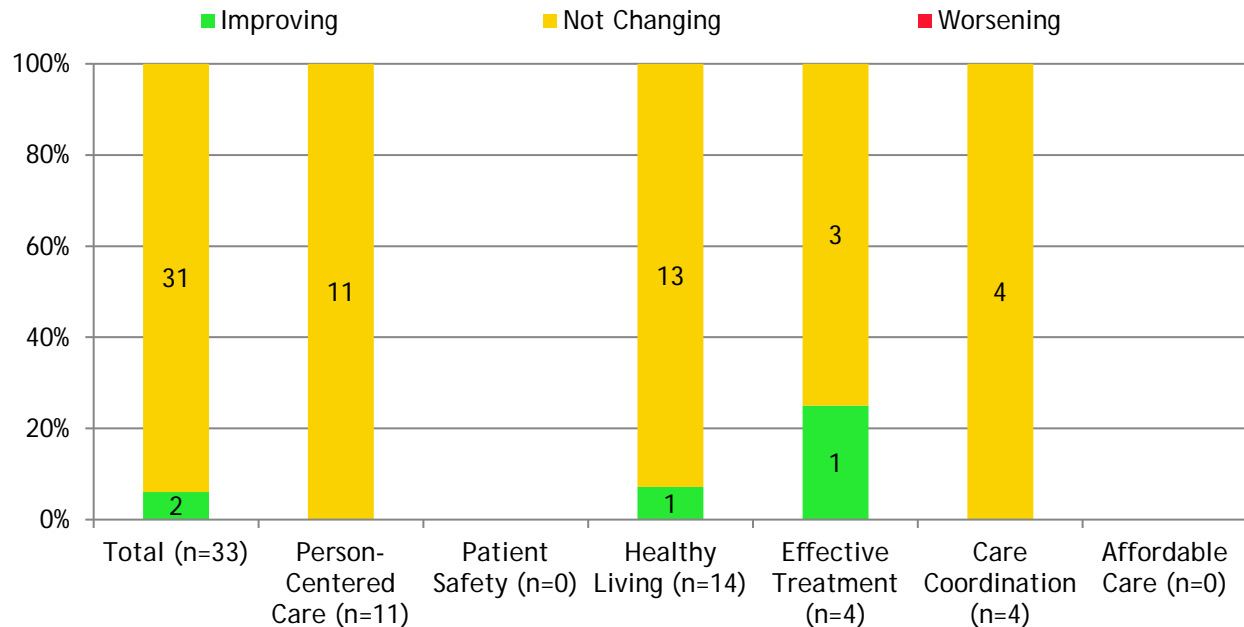
Key: n = number of measures.

- Disparities between AI/ANs and Whites did not change for most of the quality measures from 2000 through 2017. Of 33 quality measures with a disparity at baseline, 31 (94%) were not changing (Figure 82).
- Only two measures showed narrowing disparities, and one of these was also the most improving measure in 2017: Adjusted incident rates of end stage renal disease (ESRD) due to diabetes per million population.

End Stage Renal Disease Due to Diabetes

Diabetes is the leading cause of kidney disease in the United States. According to the National Institute of Diabetes and Digestive and Kidney Diseases, Whites experience diabetes and kidney disease at a lower rate than other racial and ethnic groups.[85]

Figure 83. Adjusted incident rates of end stage renal disease (ESRD) due to diabetes per million population, 2001-2016
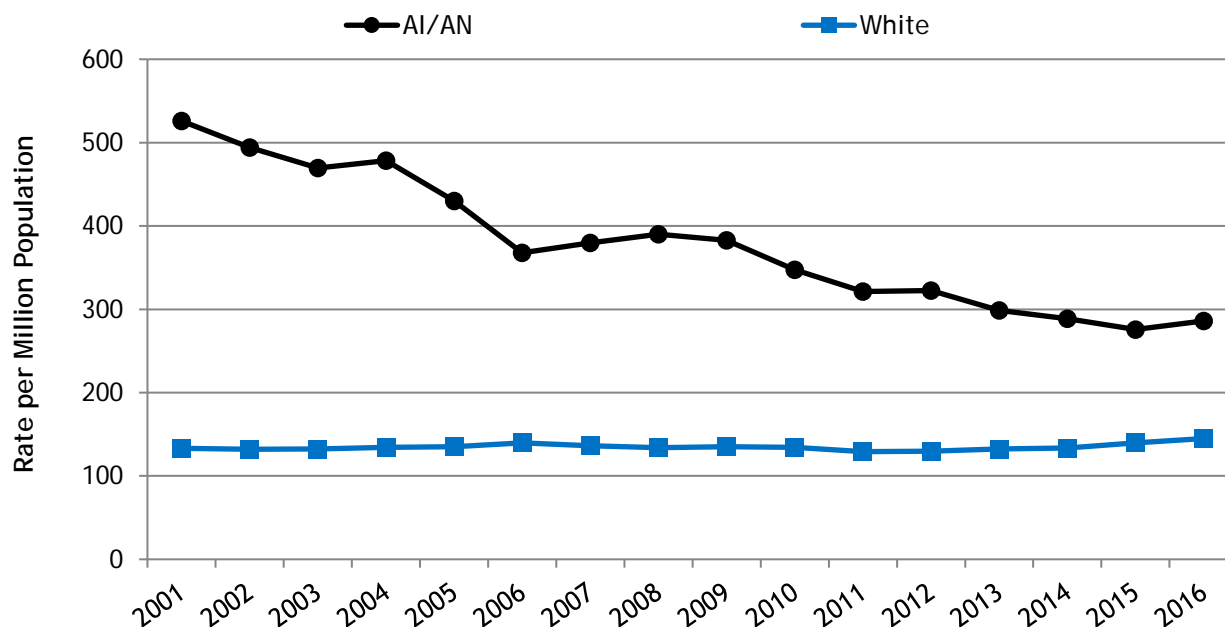
Source: National Institute of Diabetes and Digestive and Kidney Diseases, United States Renal Data System, 2001-2016.
Note: For this measure, lower rates are better.

- From 2001 to 2016, the disparity between AI/ANs and Whites decreased for the adjusted incident rate of end stage renal disease due to diabetes. For AI/ANs, the rate decreased from 526 per million population to 285.9 per million, and for Whites, there were no statistically significant changes (from 133.3 per million to 144.9 per million; Figure 83).

Disparities for Native Hawaiians and Pacific Islanders

Ninety-two percent of all quality measures for Native Hawaiians and Pacific Islanders did not change over time.

Figure 84. Number and percentage of quality measures for which Native Hawaiians/Pacific Islanders experienced better, same, or worse quality of care compared with reference group (White), 2015, 2016, or 2017
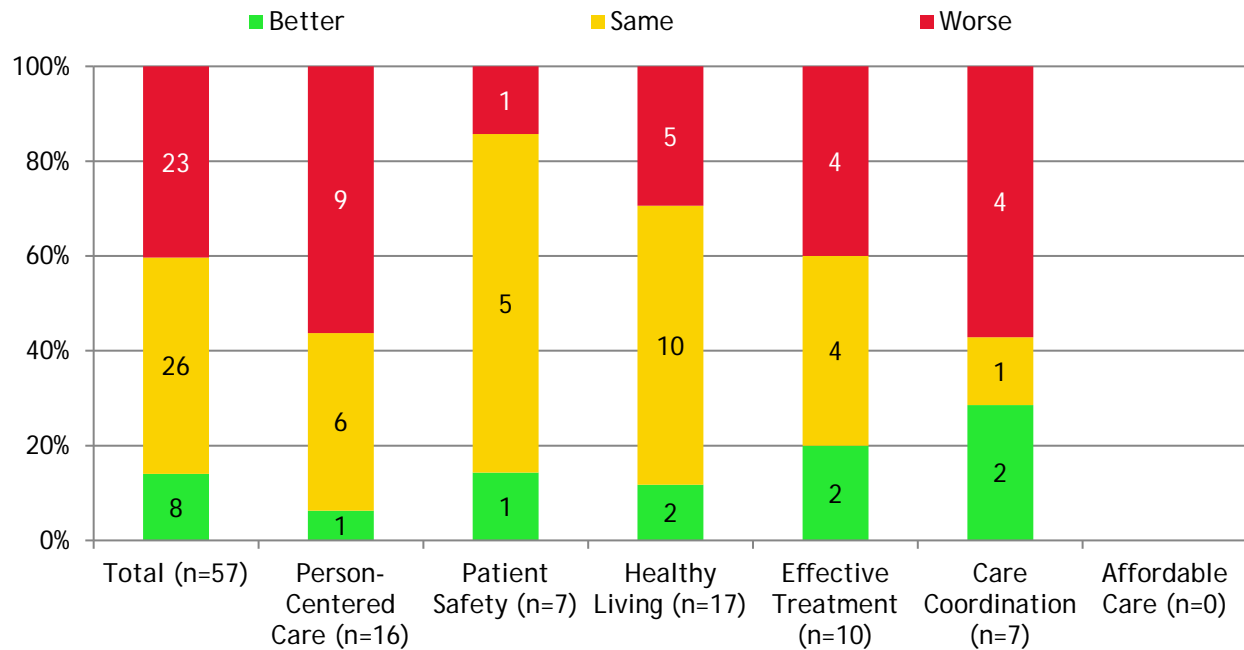
Key: n = number of measures.
Note: The most recent data years are used for this analysis. Different data sources have different data years for most recent data year. For example, the most recent data year from NIDDK USRDS is 2013 and from AHRQ HCUP is 2016.

- **Data for the most recent year show that quality was better for Whites than for NHPIs on 40% of all quality measures and quality was better for NHPIs than for Whites on 14% of all quality measures (Figure 84). This sample includes the latest data year for all HCUP measures.**

Largest Disparities

The measures with the largest disparities for NHPIs include:

- **Adults who received a blood pressure measurement in the last 2 years and can state whether their blood pressure was normal or high.**
- **New HIV cases per 100,000 population age 13 and over.**
- **Adults who reported that home health providers always treated them with courtesy and respect in the last 2 months of care.**

Blood Pressure Measurement

Patients with hypertension or high blood pressure may also experience other chronic diseases such as heart disease or stroke, and they may have difficulty managing their care. According to CDC, one-third of adults in the United States have hypertension, but about 20% of adults with hypertension do not know they have it.[86]

Figure 85. Adults who received a blood pressure measurement in the last 2 years and can state whether their blood pressure was normal or high, 2017
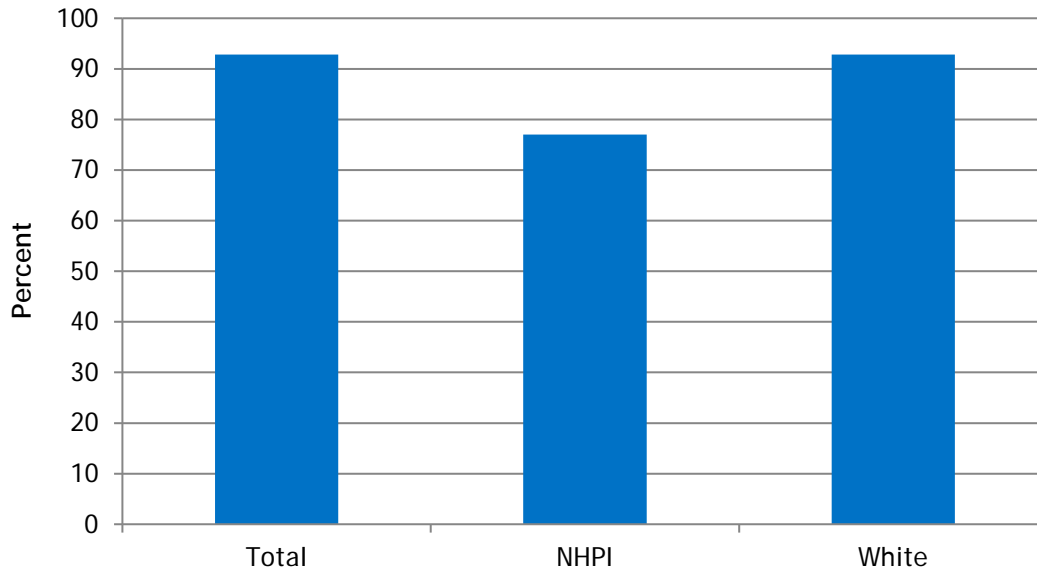
Source: Centers for Disease Control and Prevention, National Health Interview Survey, 2017.

- In 2017, the percentage of adults who received a blood pressure measurement in the last 2 years and could state whether their blood pressure was normal or high was lower for NHPIs (77%) than for Whites (92.8%; Figure 85).

CDC offers several educational resources for patients, providers, and communications professionals to learn more about high blood pressure and its treatment.[87]

New HIV Cases

Figure 86. New HIV cases per 100,000 population age 13 and over, 2015
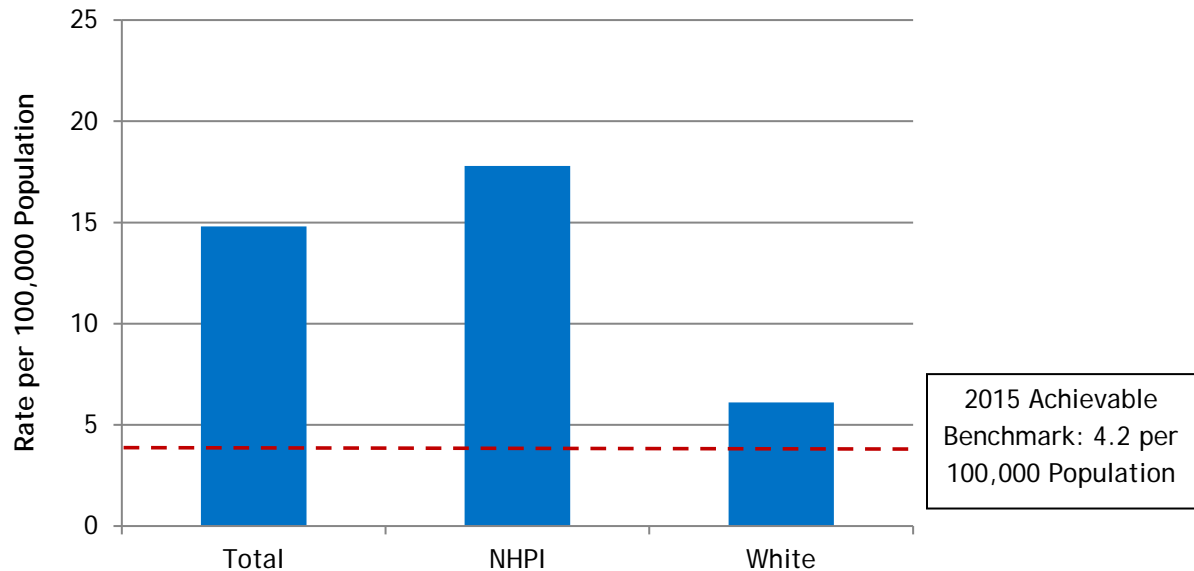
Source: Centers for Disease Control and Prevention, HIV-AIDS Surveillance System, 2015.
Note: For this measure, lower rates are better.

- NHPIs age 13 and over had 17.8 new HIV cases per 100,000 population compared with Whites (6.1 per 100,000 population; Figure 86).
- The 2015 top 5 state achievable benchmark was 4.2 per 100,000 population.
- The top 5 states that contributed to the achievable benchmark are Idaho, Iowa, Maine, West Virginia, and Wisconsin.

Treatment by Home Health Providers

Figure 87. **Adults who reported that home health providers always treated them with courtesy and respect in the last 2 months of care**, 2017
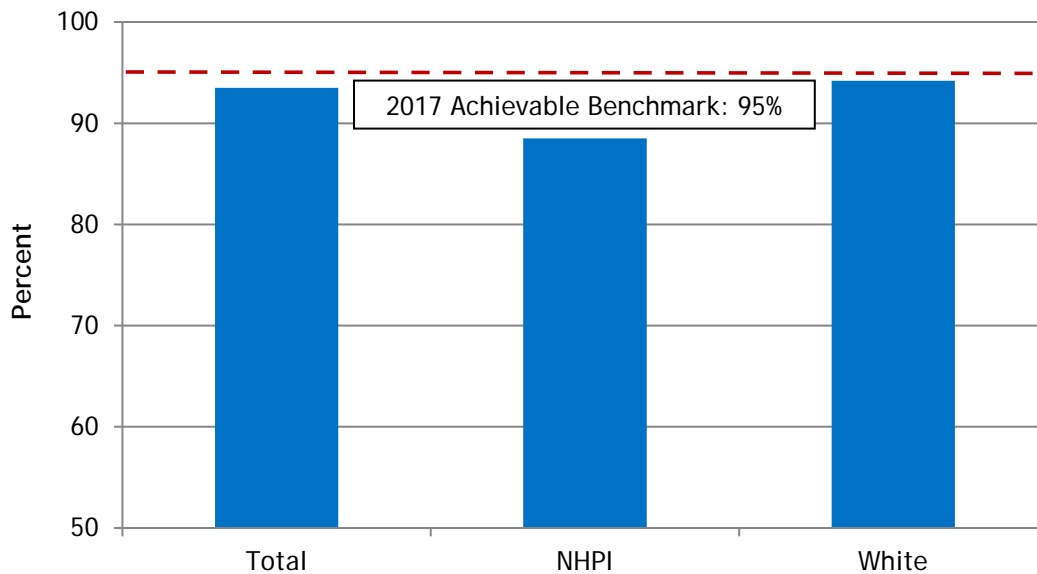
Source: Agency for Healthcare Research and Quality, Home Health Consumer Assessment of Healthcare Providers and Systems, 2017.

- In 2017, the percentage of adults who reported that home health providers always treated them with courtesy and respect in the last 2 months was lower for NHPIs (88.5%) compared with Whites (94.2%; Figure 87).
- The 2017 top 5 state achievable benchmark was 95%. Overall, there was no progress toward the benchmark.
- The top states that contributed to the achievable benchmark are Alabama, Kentucky, Louisiana, Mississippi, South Carolina, and West Virginia (more than 5 states contributed to the benchmark due to ties).

Trends in Quality of Care for Native Hawaiians/Pacific Islanders

Most quality measures for NHPIs showed no statistically significant changes from 2008 to 2015, 2016, or 2017.

Figure 88. Number and percentage of all quality measures that were improving, not changing, or worsening, total for Native Hawaiians/Pacific Islanders and by priority area, from 2008 through 2012, 2013, 2014, 2015, 2016, or 2017
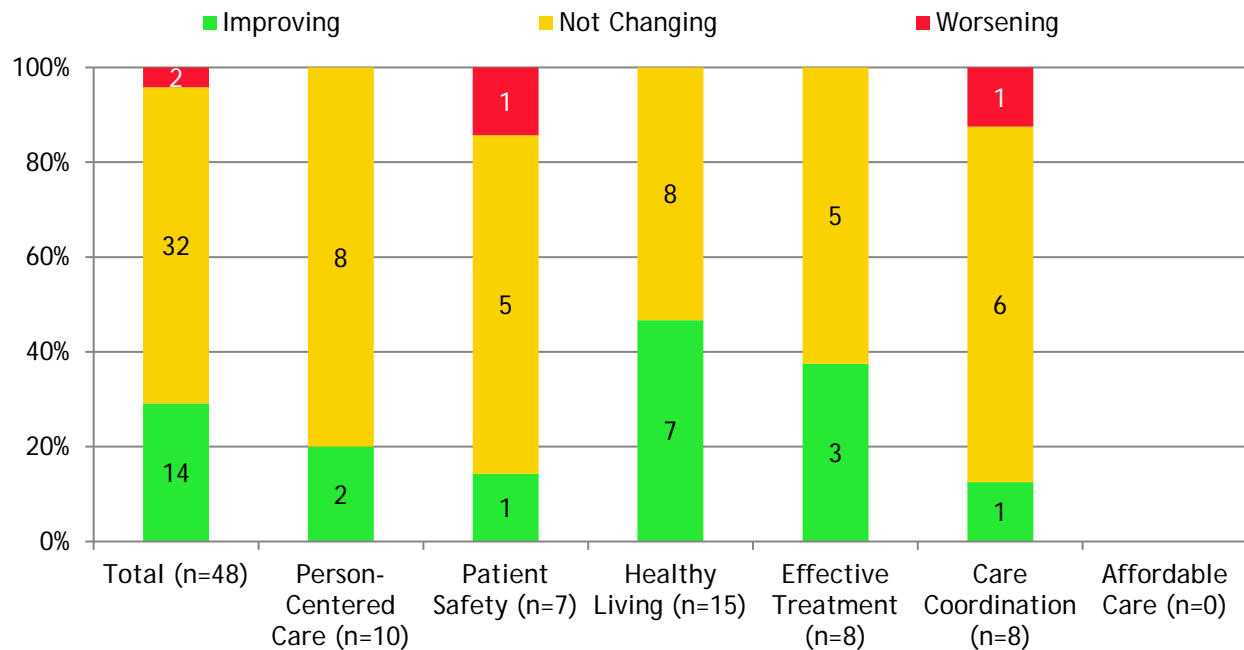
Key: n = number of measures.

- **Improving** = Quality is going in a positive direction at an average annual rate greater than 1% per year.
- **Not changing** = Quality is not changing or is changing at an average annual rate of 1% or less per year.
- **Worsening** = Quality is going in a negative direction at an average annual rate greater than 1% per year.

● **Among the 48 quality measures with data for NHPIs, 14 (29%) were improving, 32 (67%) were not changing, and 2 (4%) were getting worse from 2008 through 2017 (Figure 88).[xiii]**

[xiii] Due to the nationwide conversion from the International Classification of Diseases, Ninth Revision (ICD-9) to the Tenth Revision (ICD-10) codes in the last quarter of 2015, at this time, we cannot trend the data for some AHRQ Quality Indicators that are based on nationwide Healthcare Cost and Utilization Project (HCUP) data. Measures that have been included in past reports are not always represented in this year's report. Wherever this situation applies, this report includes a footnote.

Changes in Disparities for Native Hawaiians/Pacific Islanders

Figure 89. Number and percentage of all quality measures with disparity at baseline for which disparities related to race and ethnicity were improving, not changing, or worsening, total for Native Hawaiians/Pacific Islanders and by priority area, from 2008 through 2015, 2016, or 2017

Key: n = number of measures.

- **Disparities between NHPIs and Whites did not change for most of the quality measures from 2008 through 2017. Of the 12 quality measures with a disparity at baseline, disparities were not changing for 11 measures (92%) (Figure 89).**
- **No measures showed widening disparities, and only one measure showed a narrowing disparity: People age 13 and over living with HIV who know their serostatus.**

Knowledge of HIV Serostatus

Figure 90. People age 13 and over living with HIV who know their serostatus, 2010-2015
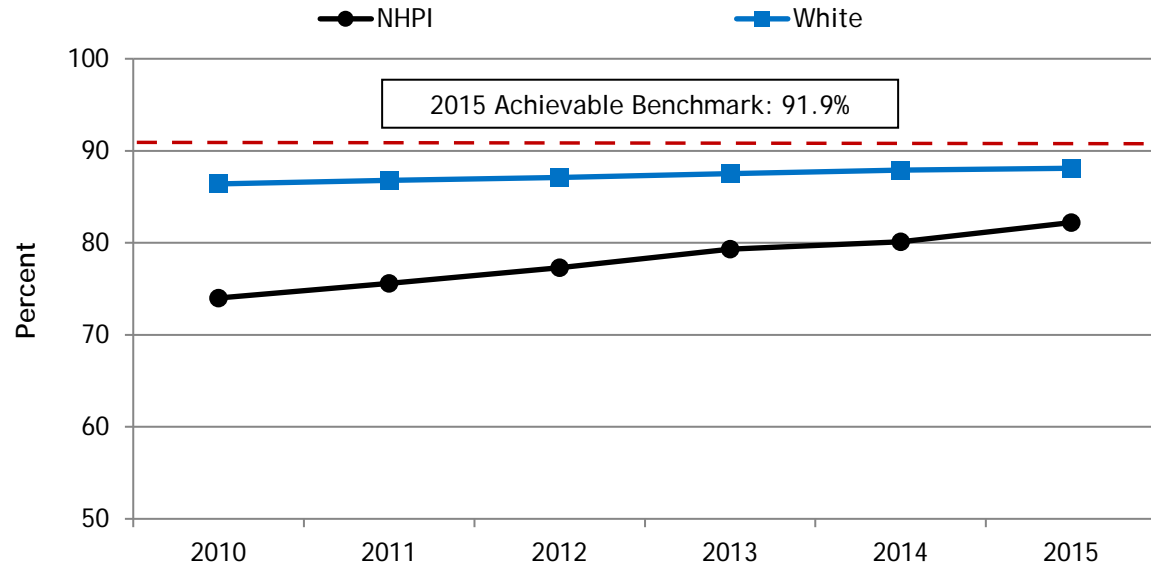
Source: Centers for Disease Control and Prevention, HIV AIDS Surveillance System, 2010-2015.

- Data from 2010 to 2015 show that the disparity between NHPIs and Whites was narrowing due to a larger increase in the percentage of NHPIs (74% to 82.2%) than Whites (86.4% to 88.1%) who are living with HIV and aware of their serostatus (Figure 90).
- The 2015 top 5 state achievable benchmark was 91.9%. At the current rate of increase, overall, the benchmark could be achieved in 6 years.
- The top 5 states that contributed to the achievable benchmark are Idaho, New Jersey, Pennsylvania, South Dakota, and Vermont.

Disparities for Hispanics

Hispanics performed worse than non-Hispanic Whites on almost
59% of Person-Centered Care quality measures
and 37% of Healthy Living measures.

Figure 91. Number and percentage of quality measures for which Hispanics experienced better, same, or worse quality of care compared with reference group (non-Hispanic White), 2013, 2015, 2016, or 2017
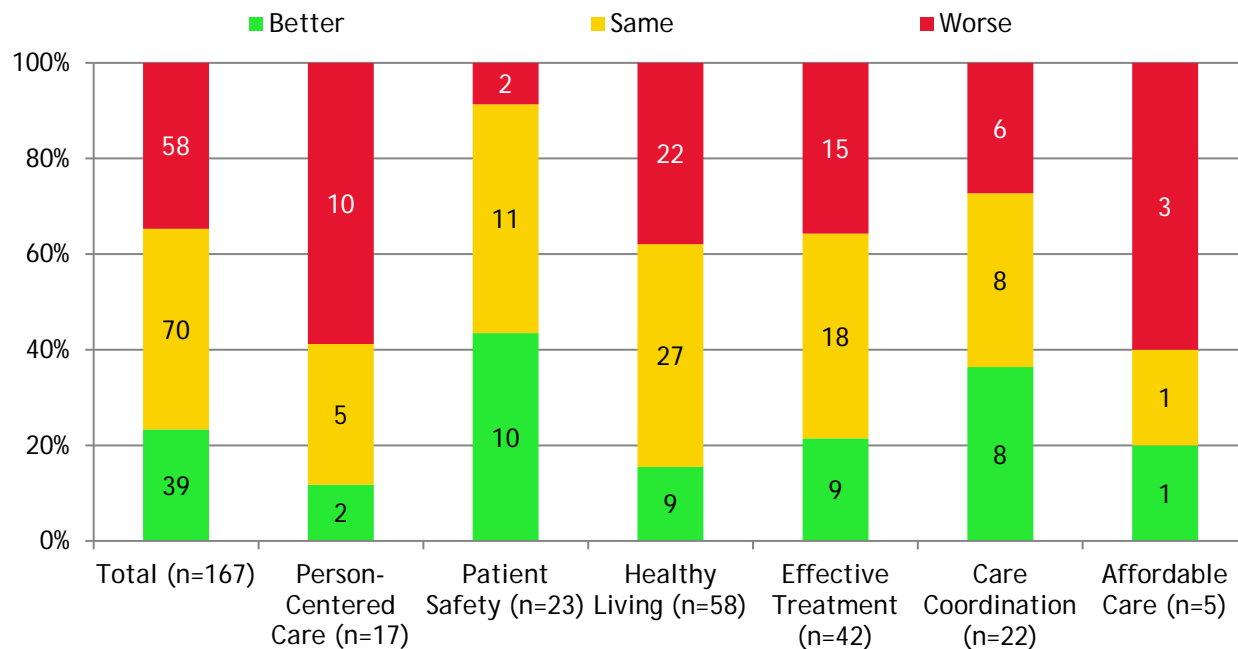
Key: n = number of measures.
Note: The most recent data years are used for this analysis. Different data sources have different data years for most recent data year. For example, the most recent data year from NIDDK USRDS is 2013 and from AHRQ HCUP is 2016.

- **Data for the most recent year show that quality was better for non-Hispanic Whites than for Hispanics on 35% of all quality measures and quality was better for Hispanics than for non-Hispanic Whites on 23% of all quality measures (Figure 91). This sample includes the latest data year for all HCUP measures.**

Largest Disparities

The measures with some of the largest disparities for Hispanics include:

- New HIV cases per 100,000 population age 13 and over.
- Adjusted incident rates of end stage renal disease (ESRD) due to diabetes per million population.
- People without a usual source of care who indicated a financial or insurance reason for not having a source of care.

New HIV Cases

Figure 92. New HIV cases per 100,000 population age 13 and over, 2015
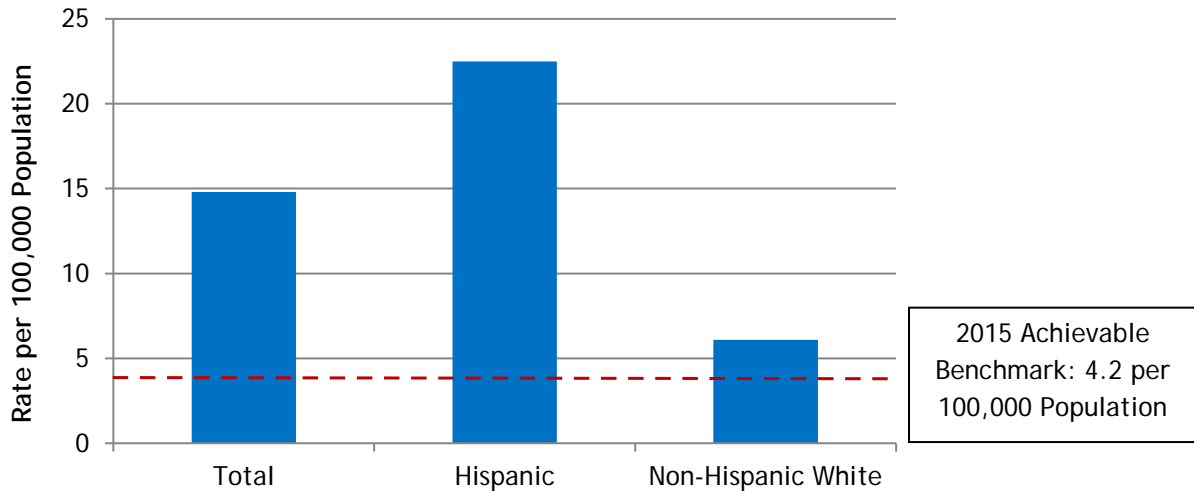

2015 Achievable Benchmark: 4.2 per 100,000 Population

Source: Centers for Disease Control and Prevention, HIV-AIDS Surveillance System, 2015.
Note: For this measure, lower rates are better.

- In 2015, the rate of new HIV cases per 100,000 population age 13 and over was higher for Hispanics (22.5) compared with non-Hispanic Whites (6.1; Figure 92).
- The 2015 top 5 state achievable benchmark was 4.2 per 100,000 population. At the current rate of increase, overall, the benchmark could not be achieved for 20 years.
- The top 5 states that contributed to the achievable benchmark are Idaho, Iowa, Maine, West Virginia, and Wisconsin.

End Stage Renal Disease Due to Diabetes

Figure 93. Adjusted incident rates of end stage renal disease (ESRD) due to diabetes per million population, 2016
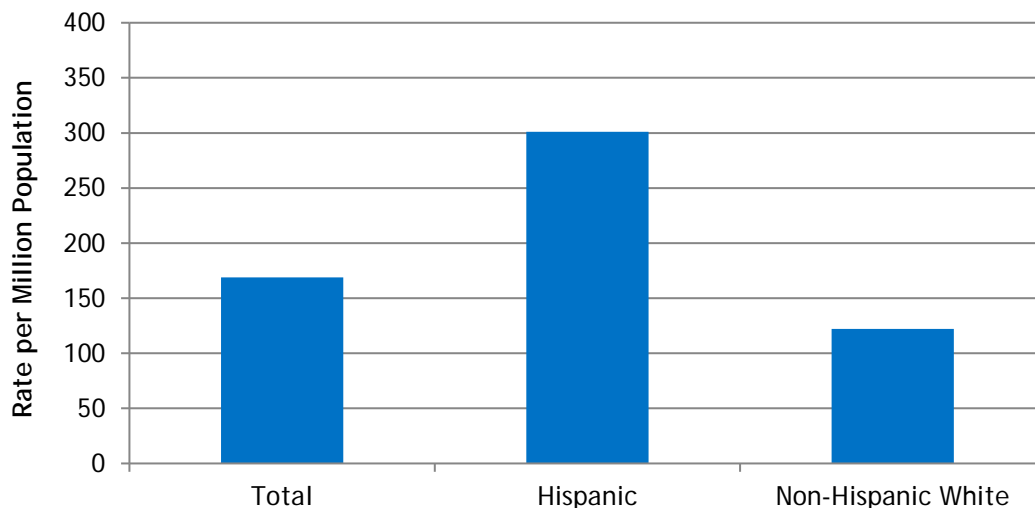
Source: National Institute of Diabetes and Digestive and Kidney Diseases, United States Renal Data System, 2016.
Note: For this measure, lower rates are better.

● In 2016, the rate of end stage renal disease due to diabetes was higher for Hispanics (300.9 per million population) compared with non-Hispanic Whites (122 per million population; Figure 93).

Financial or Insurance Barriers to Usual Sources of Care

Figure 94. People without a usual source of care who indicated a financial or insurance reason for not having a source of care, 2016
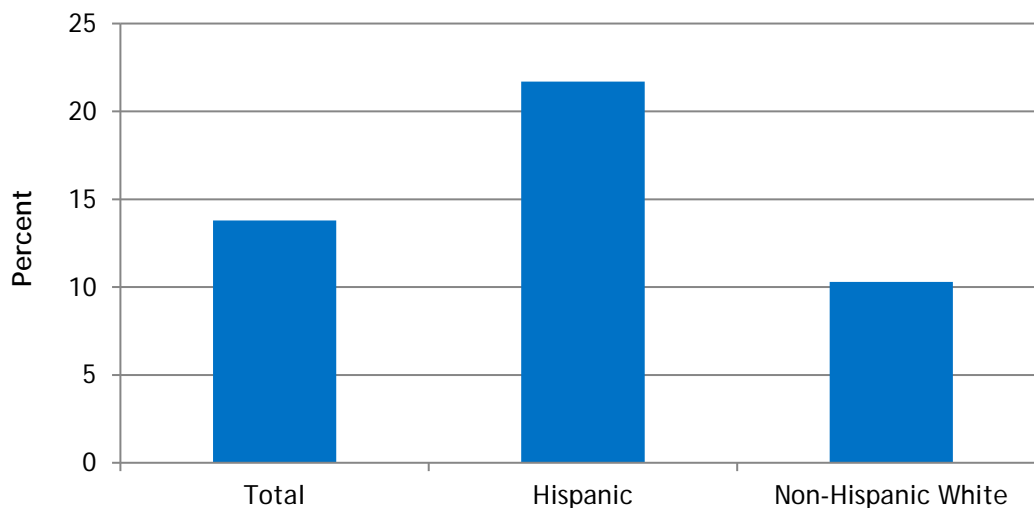
Source: Agency for Healthcare Research and Quality, Medical Expenditure Panel Survey, 2016.
Note: For this measure, lower rates are better.

● In 2016, the percentage of people without a usual source of care who indicated a financial or insurance reason for not having a source of care was lower for non-Hispanic Whites (10.3%) than for Hispanics (21.7%; Figure 94).

Changes in Quality of Care for Hispanics

Figure 95. Number and percentage of all quality measures that were improving, not changing, or worsening, total for Hispanics and by priority area, from 2000 through 2013, 2014, 2015, 2016, or 2017
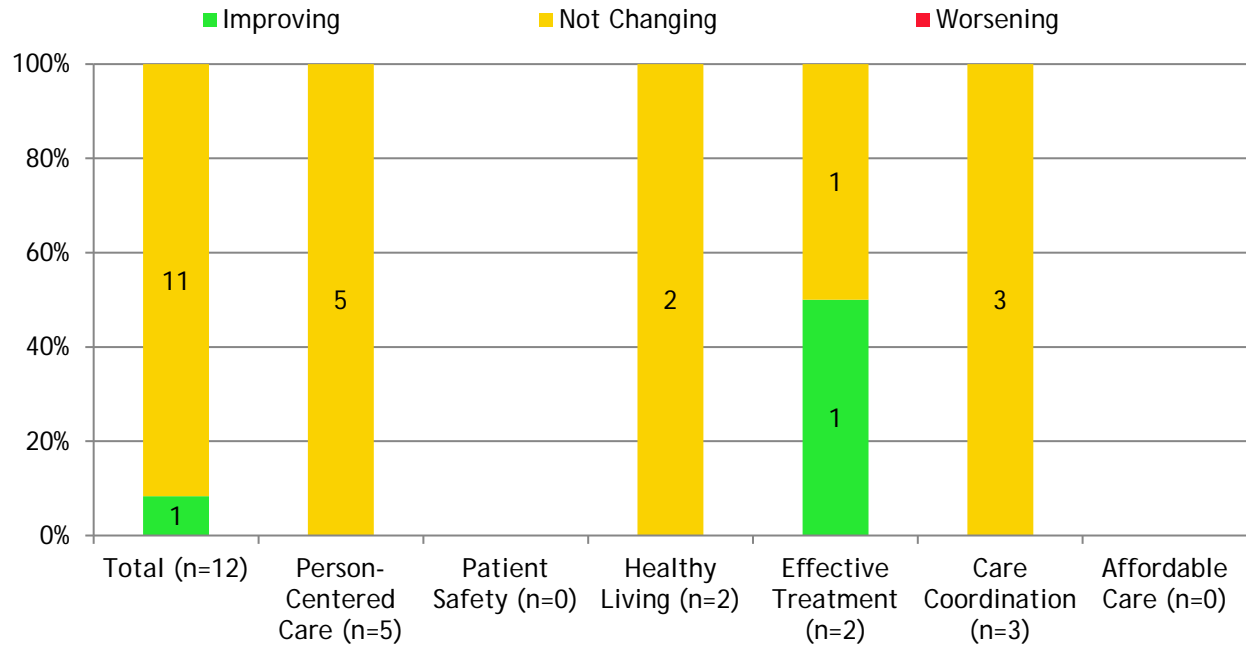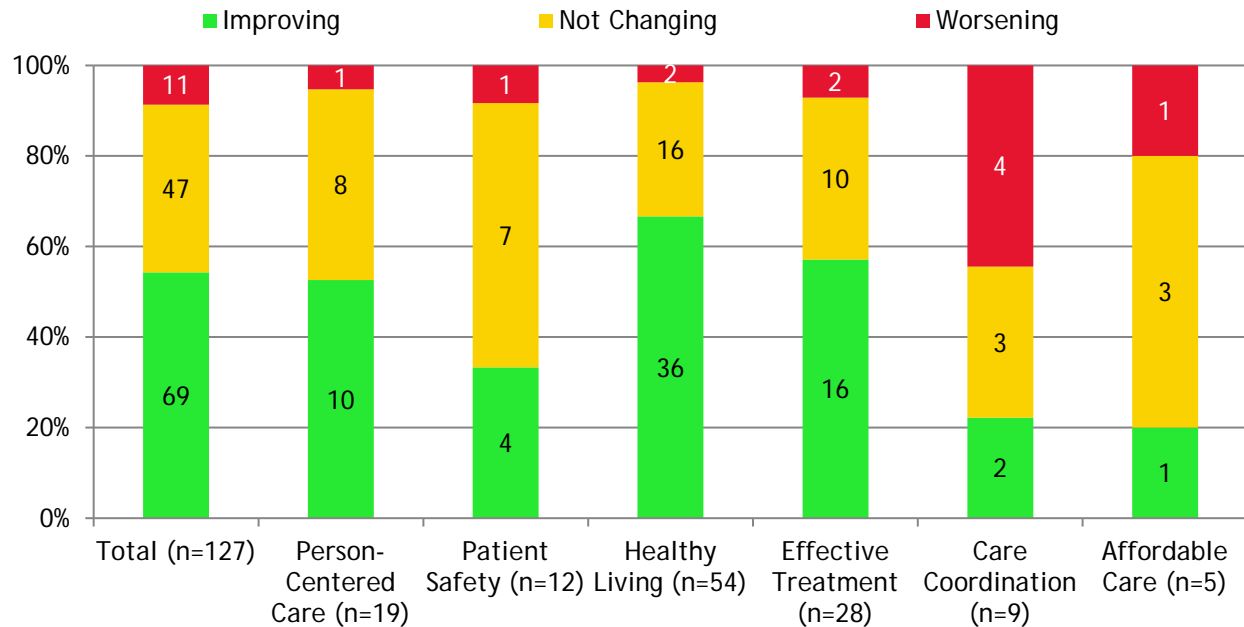

Key: n = number of measures.

- **Improving** = Quality is going in a positive direction at an average annual rate greater than 1% per year.
- **Not changing** = Quality is not changing or is changing at an average annual rate of 1% or less per year.
- **Worsening** = Quality is going in a negative direction at an average annual rate greater than 1% per year.

- Of the 127 quality measures with data for Hispanics, 54% were improving, 37% were not changing, and 9% were getting worse from 2000 through 2017 (Figure 95).[xiv]
- Hispanics are improving in Healthy Living and Effective Treatment and worsening or not changing on Care Coordination and Affordable Care.

[xiv] Due to the nationwide conversion from the International Classification of Diseases, Ninth Revision (ICD-9) to the Tenth Revision (ICD-10) codes in the last quarter of 2015, at this time, we cannot trend the data for some AHRQ Quality Indicators that are based on nationwide Healthcare Cost and Utilization Project (HCUP) data. Measures that have been included in past reports are not always represented in this year's report. Wherever this situation applies, this report includes a footnote.

Changes in Disparities for Hispanics

Figure 96. Number and percentage of all quality measures with disparity at baseline for which disparities related to race and ethnicity were improving, not changing, or worsening, total for Hispanics and by priority area, from 2000 through 2013, 2014, 2015, 2016, or 2017

Legend: ■ Improving ■ Not Changing ■ Worsening

- Total (n=49): Worsening 2, Not Changing 42, Improving 5
- Person-Centered Care (n=7): Not Changing 7
- Patient Safety (n=3): Not Changing 3
- Healthy Living (n=24): Worsening 2, Not Changing 18, Improving 4
- Effective Treatment (n=12): Not Changing 11, Improving 1
- Care Coordination (n=0)
- Affordable Care (n=3): Not Changing 3
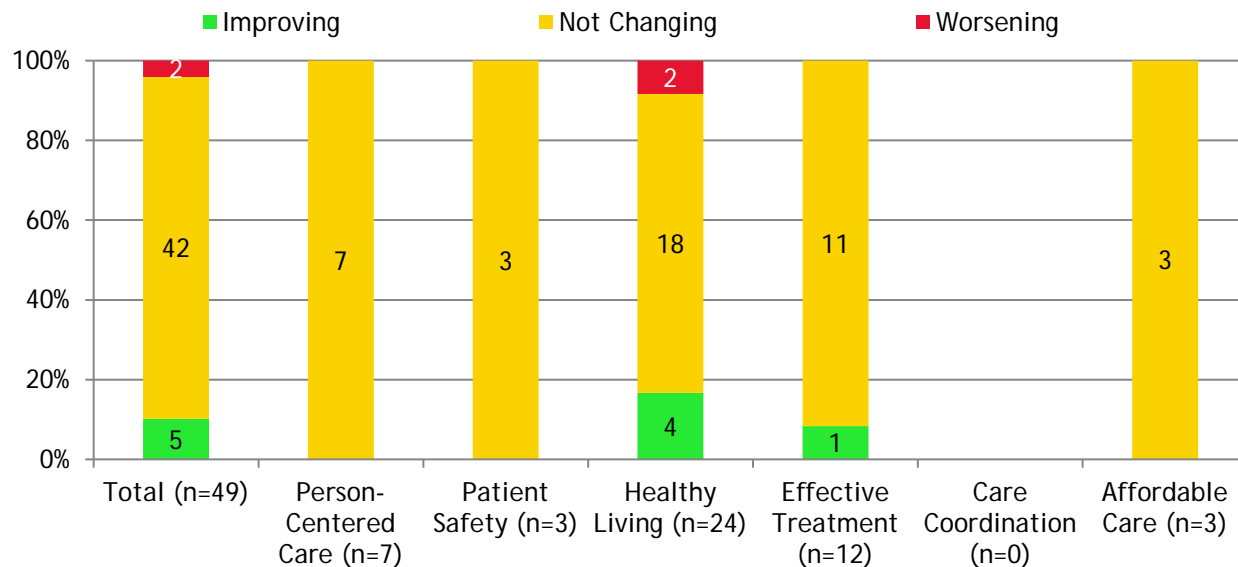
Key: n = number of measures.

- Of the 49 quality measures with a disparity at baseline, disparities between Hispanics and non-Hispanic Whites did not change for 42 (86%) from 2000 through 2017 (Figure 96).
- Five measures showed narrowing disparities—one Effective Treatment measure and four Healthy Living measures.
- The measure that showed the most improvement is an Effective Treatment measure: Adjusted incident rates of end stage renal disease (ESRD) due to diabetes per million population. The other four measures are in Healthy Living.
- The second most improving measure is Home health care patients whose shortness of breath decreased.
- The other improving measures are:

  - Children ages 2-17 who had a preventive dental service in the calendar year,
  - Children ages 2-17 who had a dental visit in the calendar year, and
  - Adults with obesity who ever received advice from a health professional about eating fewer high-fat or high-cholesterol foods.

- Two measures showed widening disparities: Home health patients who had improvement in upper body dressing and Home health patients whose ability to walk or move around improved.

End Stage Renal Disease

Diabetes is the leading cause of kidney disease in the United States. According to the National Institute of Diabetes and Digestive and Kidney Diseases, non-Hispanic Whites experience diabetes and kidney disease at a lower rate than other racial and ethnic groups.[85]

Figure 97. Adjusted incident rates of end stage renal disease (ESRD) due to diabetes per million population, 2001-2016
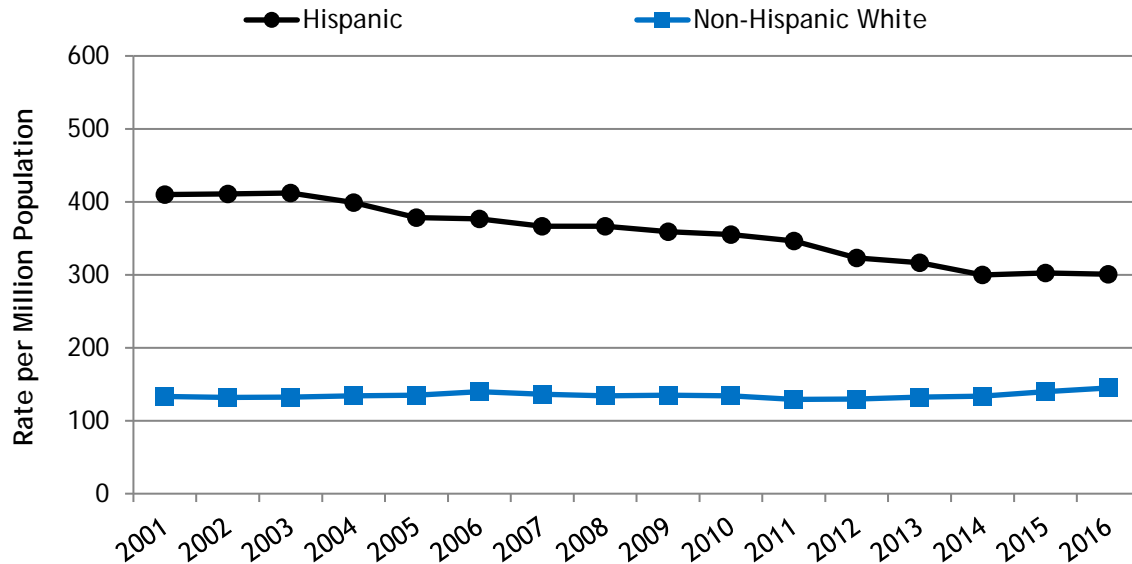
Source: National Institute of Diabetes and Digestive and Kidney Diseases, United States Renal Data System, 2001-2016.
Note: For this measure, lower rates are better.

- Data from 2001 to 2016 show that the disparity between Hispanics and non-Hispanic Whites was narrowing; however, the narrowing disparity was due to the rate for Whites increasing over time (Figure 97).
- Hispanics showed a decreasing rate of ESRD (410 to 300.9 per million population) but still had higher rates than non-Hispanic Whites (133.3 to 144.9 per million population).

Pediatric Preventive Dental Care

Children in the United States can access dental insurance coverage through Medicaid or the Children's Health Insurance Program, which enables affordable access for most children ages 2-17.[88]

Figure 98. Children ages 2-17 who had a preventive dental service in the calendar year, 2002-2016
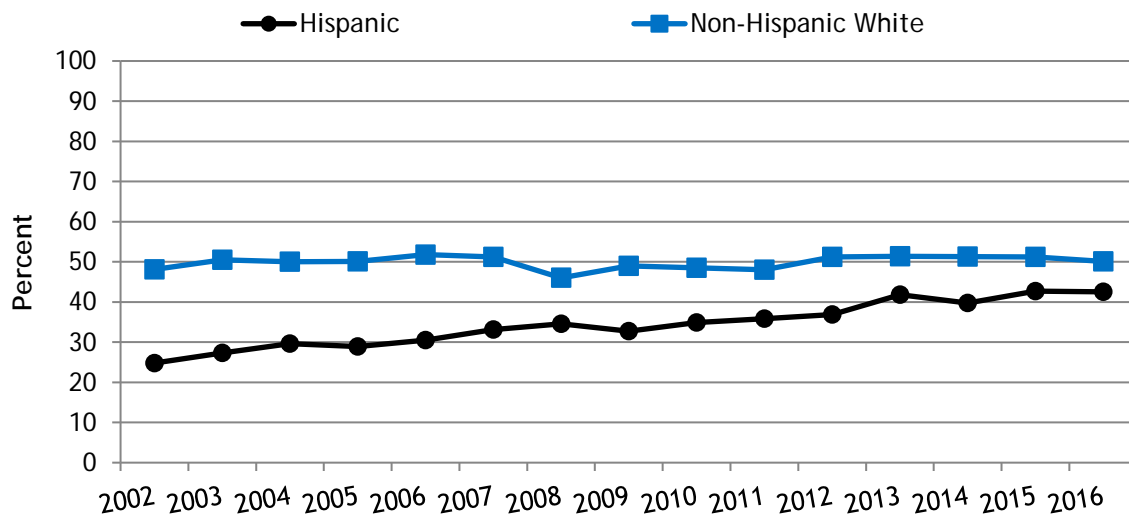
Source: Agency for Healthcare Research and Quality, Medical Expenditure Panel Survey, 2002-2016.

- **Data from 2002 to 2016 show that the disparity between Hispanics and Whites was narrowing over time. Hispanics showed an improvement (24.8% to 42.5%) but Whites still have higher rates of performance for this measure and have not shown statistically significant differences over time (48.1% to 50.1%) (Figure 98).**

Figure 99. Children ages 2-17 who had a dental visit in the calendar year, 2002-2016
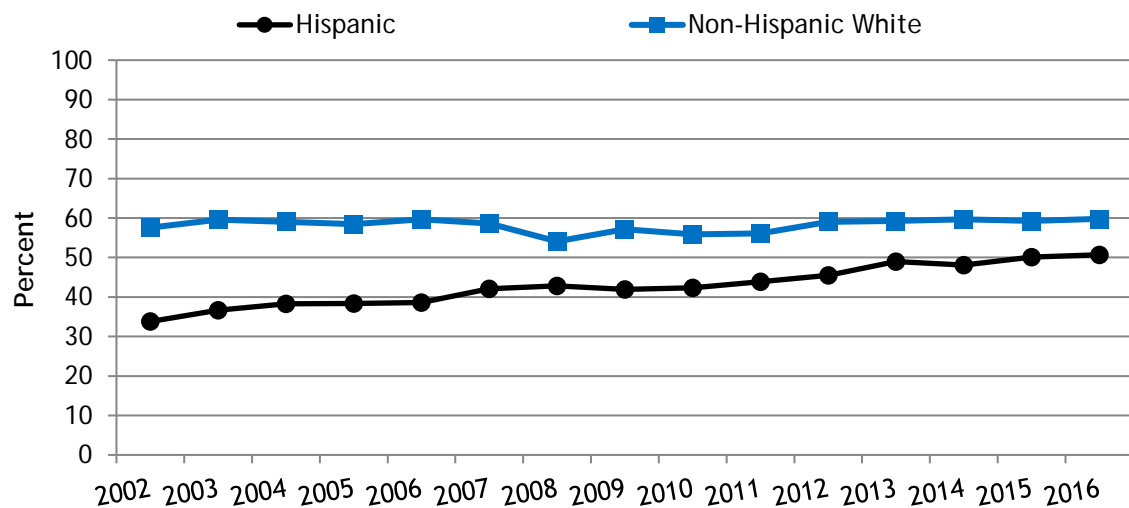
Source: Agency for Healthcare Research and Quality, Medical Expenditure Panel Survey, 2002-2016.

- **Data from 2002 to 2016 show that the disparity between Hispanics and Whites was narrowing. Hispanics showed improvement (33.8% to 50.7%) but Whites still have higher rates of performance for this measure and have not shown statistically significant differences over time (50.7% to 59.8%) (Figure 99).**

Obesity

The prevalence of obesity is continuing to rise in the United States. More than one-third of adults are overweight or affected by obesity.[89]

Figure 100. Adults with obesity who ever received advice from a health professional about eating fewer high-fat or high-cholesterol foods, 2002-2016
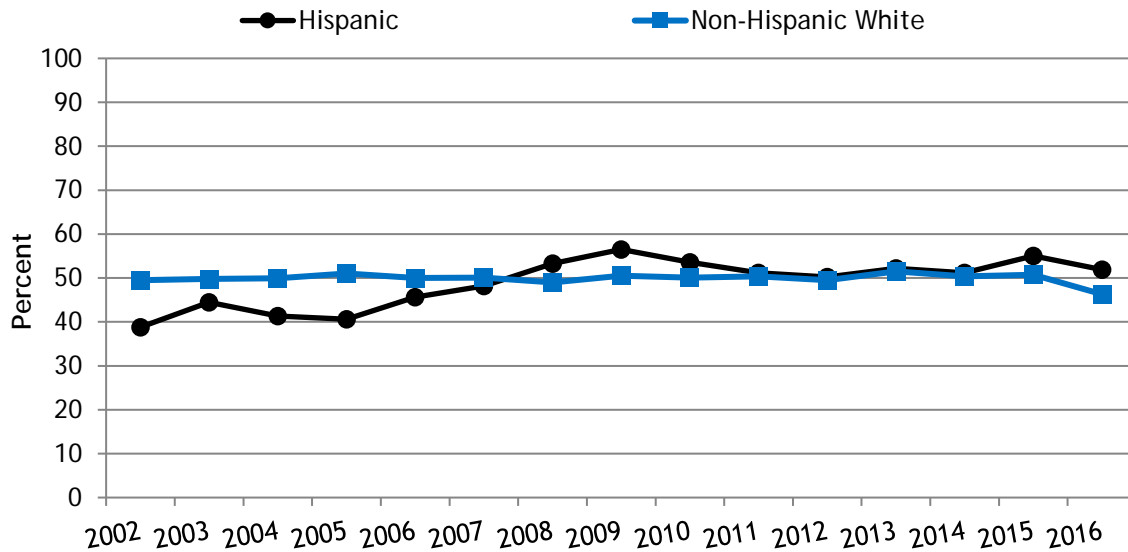
Source: Agency for Healthcare Research and Quality, Medical Expenditure Panel Survey, 2002-2016.

- Data from 2002 to 2016 show that the disparity between Hispanics and non-Hispanic Whites was narrowing; however, Hispanics showed improvement (38.8% to 51.9%), while Whites showed declining rates of performance for this measure (49.5% to 46.3%) (Figure 100).

The National Institutes of Diabetes and Digestive and Kidney Diseases (NIDDK) has outlined several strategies for healthcare providers to use to speak with their patients in a respectful manner about healthy eating habits.[90]

Disparities by Income

The QDR tracks disparities data for income and insurance categories. Income groups are based on the Federal Poverty Level (FPL) for a family of four:

- Poor: Less than 100% of FPL
- Low income: 100% to less than 200% of FPL
- Middle income: 200% to less than 400% of FPL
- High income: 400% or more of FPL

The poverty guidelines are issued annually in the *Federal Register* by the Department of Health and Human Services, Assistant Secretary for Planning and Evaluation. The guidelines vary by family size and there are different family income criteria for the contiguous 48 states, Alaska, and Hawaii. Criteria for U.S. territories are unavailable.[91]

The relationship between income and healthcare outcomes has been studied for many years, and researchers have shown the positive relationship between more income and better health outcomes.[92,93,94,95] Income is not the same as wealth, which can include assets other than income. Wealth is disproportionately dispersed among higher income categories, and research also shows a positive association between greater wealth and better health outcomes.[92]

This section shows quality measures with the largest income disparities and trends in disparities.

High-income groups performed better than other income groups on more than half of all quality measures.

Figure 101. Number and percentage of quality measures for which income groups experienced better, same, or worse quality of care compared with reference group (high income), 2015, 2016, or 2017
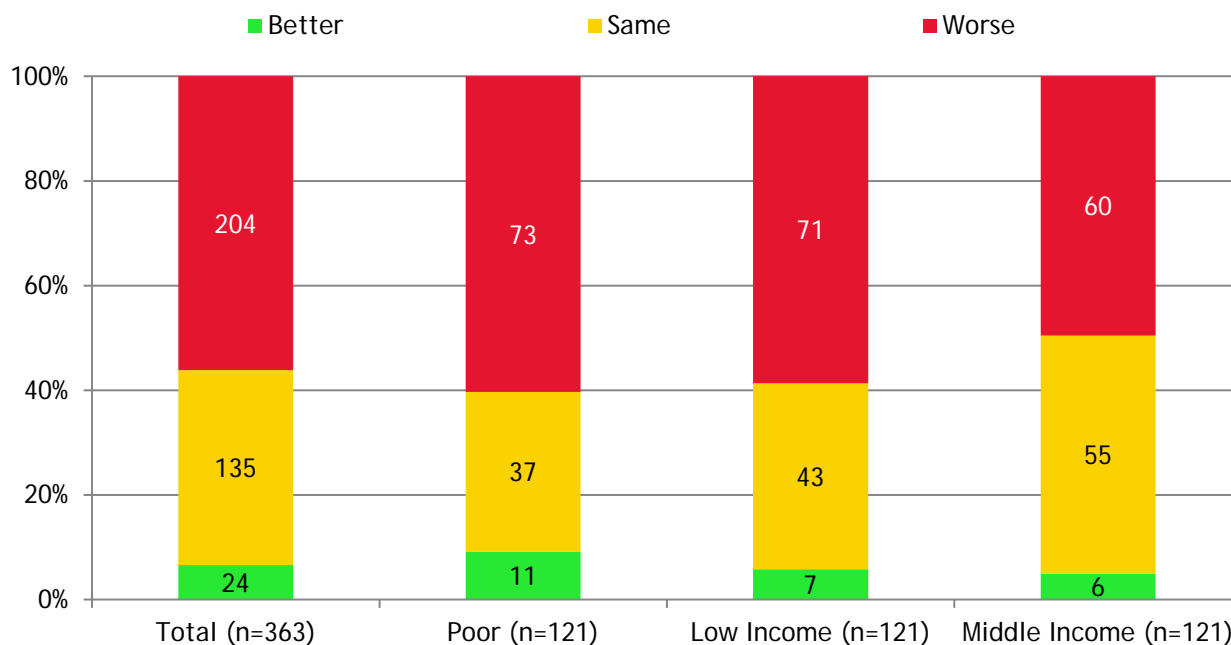
Key: n = number of measures.
Note: The most recent data years are used for this analysis. Different data sources have different data years for most recent data year. For example, the most recent data year from AHRQ HCUP is 2016.

- Data for the most recent year show that high-income groups performed better than other income groups on almost 60% of all quality measures (Figure 101).
- Performance was better for high-income groups than for low-income groups on almost 60% of the measures. Compared with middle-income groups, high-income groups performed better on about half the measures.

This sample includes the latest data year for all Healthcare Cost and Utilization Project (HCUP) measures.

Largest Disparities

The measure with the largest income disparities is "People without a usual source of care who indicated a financial or insurance reason for not having a source of care."

Measures with the largest income disparities include:

- People without a usual source of care who indicated a financial or insurance reason for not having a source of care (all income groups).
- Women ages 21-65 who received a Pap smear in the last 3 years (middle income, low income).
- People under age 65 whose family's health insurance premium and out-of-pocket medical expenditures were more than 10% of total family income (middle income).
- Adults who had a doctor's office or clinic visit in the last 12 months whose health providers sometimes or never explained things in a way they could understand (low income).
- Hospital admissions for chronic obstructive pulmonary disease or asthma per 100,000 population age 40 and over (poor).
- Hospital admissions for short-term complications of diabetes per 100,000 population, adults (poor).

Difficulty Accessing a Usual Source of Care

People with lower incomes may experience difficulty accessing affordable care and are less likely to have a usual source of care that is readily accessible.[94] People who are unwell and have low incomes are also more likely to experience poverty.[92]

Figure 102. People without a usual source of care who indicated a financial or insurance reason for not having a source of care, 2016
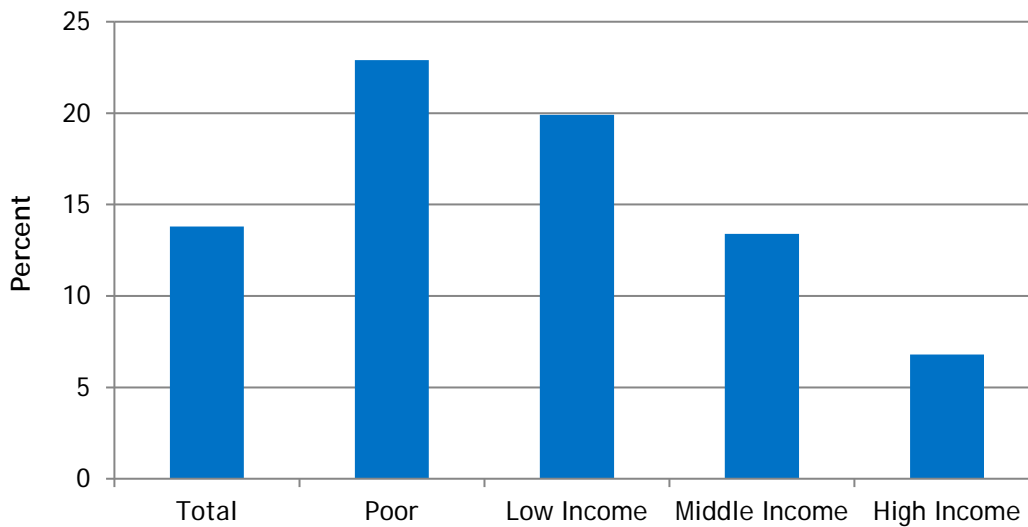
Source: Agency for Healthcare Research and Quality, Medical Expenditure Panel Survey, 2016.
Note: For this measure, lower rates are better.

- In 2016, the measure with the largest income disparities was people without a usual source of care who indicated a financial or insurance reason for not having a source of care. The percentages were 22.9% for poor people, 19.9% for low-income people, 13.4% for middle-income people, and 6.8% for high-income people (Figure 102).

Receipt of Pap Test

A Pap test is a cervical screening test to detect potentially cancerous or precancerous abnormalities in females.[96] In 2018, the United States Preventive Services Task Force (USPSTF) recommended all women ages 21-65 receive screening every 3 years and specified screening tests for different age brackets. Women ages 21-29 years are recommended to receive a cervical cytology test only, and women ages 30-65 are recommended to receive cytology tests every 3 years, high-risk HPV (hrHPV) testing every 5 years, or a combination of cytology and hrHPV testing every 5 years.[97]

The 2018 guidelines are different than the guidelines available in 2015. The 2015 USPSTF guidelines indicated that clinical considerations for alternative screening strategies are considered for women 30 years and over.[98] The latest guidelines from 2018 include women 21 years and over. In addition, the latest criteria for women ages 30-65 years are more specific than earlier recommendations.[97]

Figure 103. Women ages 21-65 who received a Pap smear in the last 3 years, 2015
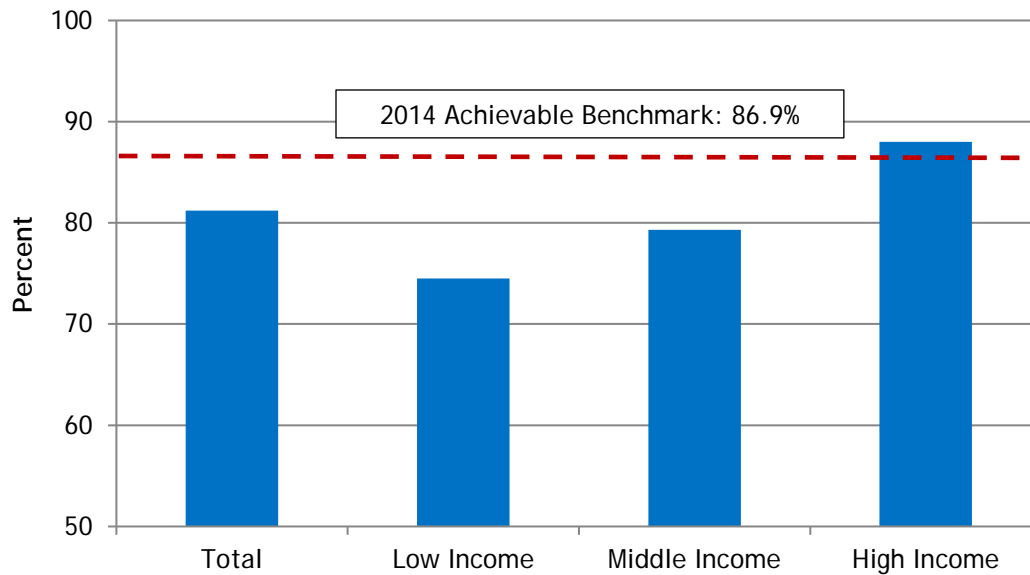
Source: Centers for Disease Control and Prevention, National Health Interview Survey, 2015.

- In 2015, the percentage of women ages 21-65 years who received a Pap Test in the last 3 years was lower for low-income women (74.5%) and middle-income women (79.3%) compared with high-income women (88.0%; Figure 103).
- The 2014 top 5 state achievable benchmark was 86.9%. Women in low-income and middle-income households made no progress toward the benchmark. Women in high-income households met the benchmark.
- The top 5 states that contributed to the achievable benchmark are Connecticut, Delaware, Maryland, Massachusetts, and Wisconsin.

High Family Medical Expenditures

The most prominent barriers to health coverage include affordability, eligibility for public coverage in a person's state, immigration status, and lack of familiarity with signup procedures.[99] Poor health may require a family to spend more on healthcare, resulting in less income. Costs will vary based on each person or family's needs and may inhibit a family's ability to reach other goals.[92]

Figure 104. People under age 65 whose family's health insurance premium and out-of-pocket medical expenditures were more than 10% of total family income, 2016
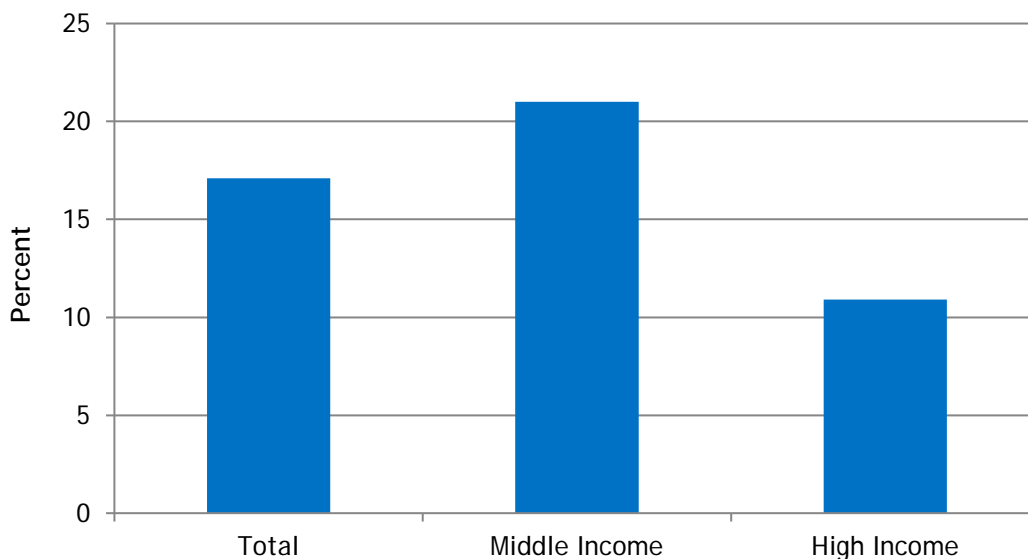
Source: Agency for Healthcare Research and Quality, Medical Expenditure Panel Survey, 2016.
Note: For this measure, lower rates are better.

● In 2016, the percentage of people under age 65 whose family' health insurance premium and out-of-pocket medical expenditures were more than 10% of total family income was higher for middle-income people (21%) than high-income people (10.9%; Figure 104).

Adequate Explanation by Doctor

Many patients leave their healthcare visit unsure of what their provider asked them to do or what was discussed. Nationwide, only 12% of adults have proficient health literacy.[77] That means almost 9 out of 10 Americans find it challenging "to obtain, process, and understand basic health information and services needed to make appropriate health decisions."[77]

Figure 105. Adults who had a doctor's office or clinic visit in the last 12 months whose health providers sometimes or never explained things in a way they could understand, 2016
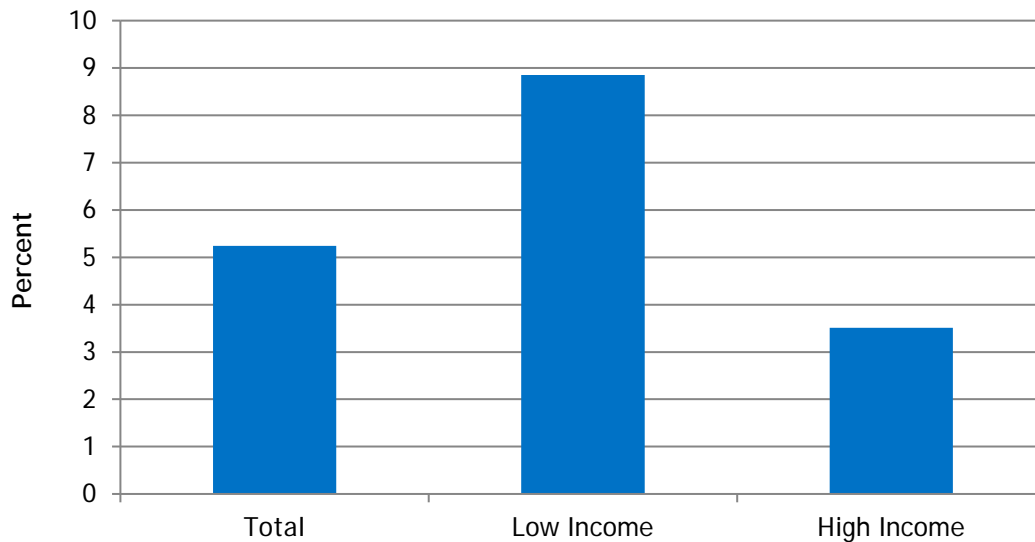
Source: Agency for Healthcare Research and Quality, Medical Expenditure Panel Survey, 2016.
Note: For this measure, lower rates are better.

- In 2016, the percentage of adults who had a doctor's office or clinic visit in the last 12 months whose health providers sometimes or never explained things in a way they could understand was higher for low-income adults (8.9%) than for high-income adults (3.5%; Figure 105).

Efforts are underway within HHS to improve provider-patient communication. Examples include:

- AHRQ's Guide to Improving Patient Safety in Primary Care Settings by Engaging Patients and Families, which features a teach-back intervention. This intervention focuses on primary care providers discussing patients' care plans with them and having patients explain the plan back in their own words to ensure their understanding.[79]
- AHRQ's Health Literacy Universal Precautions Toolkit (www.ahrq.gov/literacy),[80] which helps primary care practices promote greater understanding for all patients by using various strategies, including teach-back.

Hospital Admissions for Chronic Obstructive Pulmonary Disease or Asthma

Asthma and chronic obstructive pulmonary disease (COPD) are severe respiratory conditions that may co-occur in some patients.[100] COPD is the third leading cause of death in the United States and may present in the form of respiratory disease such as bronchitis. COPD develops slowly over years, so most people are at least 40 years old when symptoms begin.[101]

Figure 106. Hospital admissions for chronic obstructive pulmonary disease or asthma per 100,000 population, adults age 40 and over, 2016
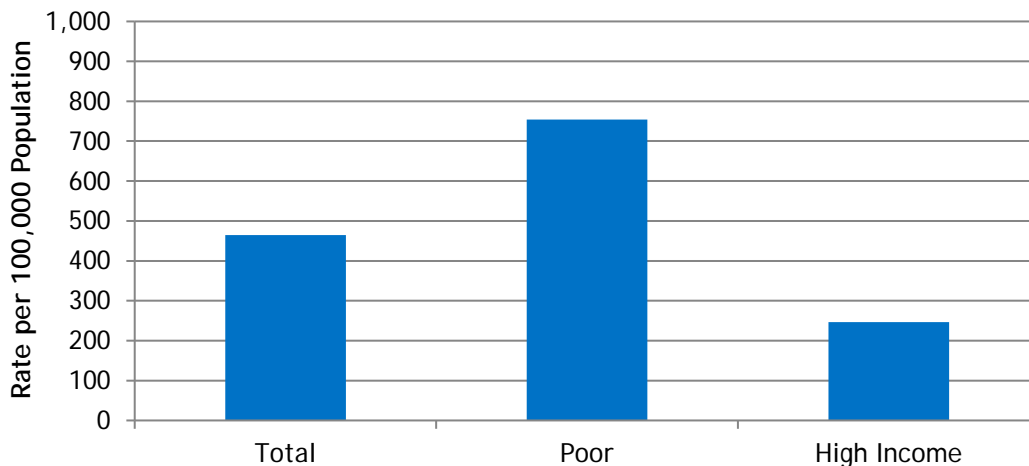
Source: Agency for Healthcare Research and Quality, Healthcare Cost and Utilization Project, 2016.
Note: For this measure, lower rates are better.

- In 2016, the rate of hospital admissions for COPD or asthma among adults age 40 years and over was three times as high for poor people (754.3 per 100,000 population) compared with high-income people (246.1 per 100,000 population; Figure 106).

Hospital Admissions for Diabetes Complications

More than 100 million people living in the United States have diabetes or are at risk for diabetes.[102] Compared with other countries, the rate of hospital admissions for short-term complications of diabetes is higher in the United States.[103] Such complications may be related to kidney disease, hypertension, vision problems, pain, or other problems.

Figure 107. Hospital admissions for short-term complications of diabetes per 100,000 population, adults, 2016
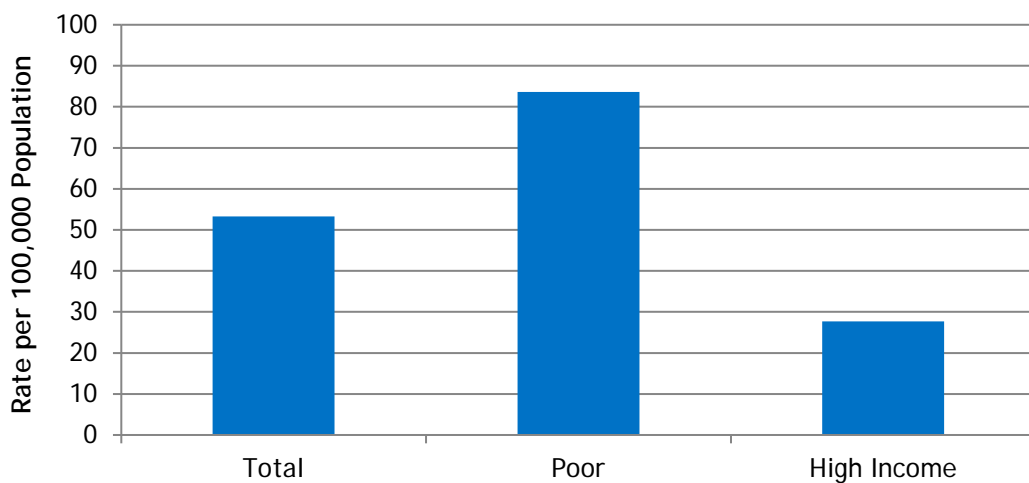
Source: Agency for Healthcare Research and Quality, Healthcare Cost and Utilization Project, 2016.
Note: For this measure, lower rates are better.

- In 2016, the rate of hospital admissions for short-term complications of diabetes was three times as high for poor adults (83.6 per 100,000 population) compared with high-income adults (27.7 per 100,000 population; Figure 107).

Trends in Quality of Care for Income Groups

Figure 108. Number and percentage of all quality measures that were improving, not changing, or worsening, total and by income group, from 2000 through 2014, 2015, 2016, or 2017
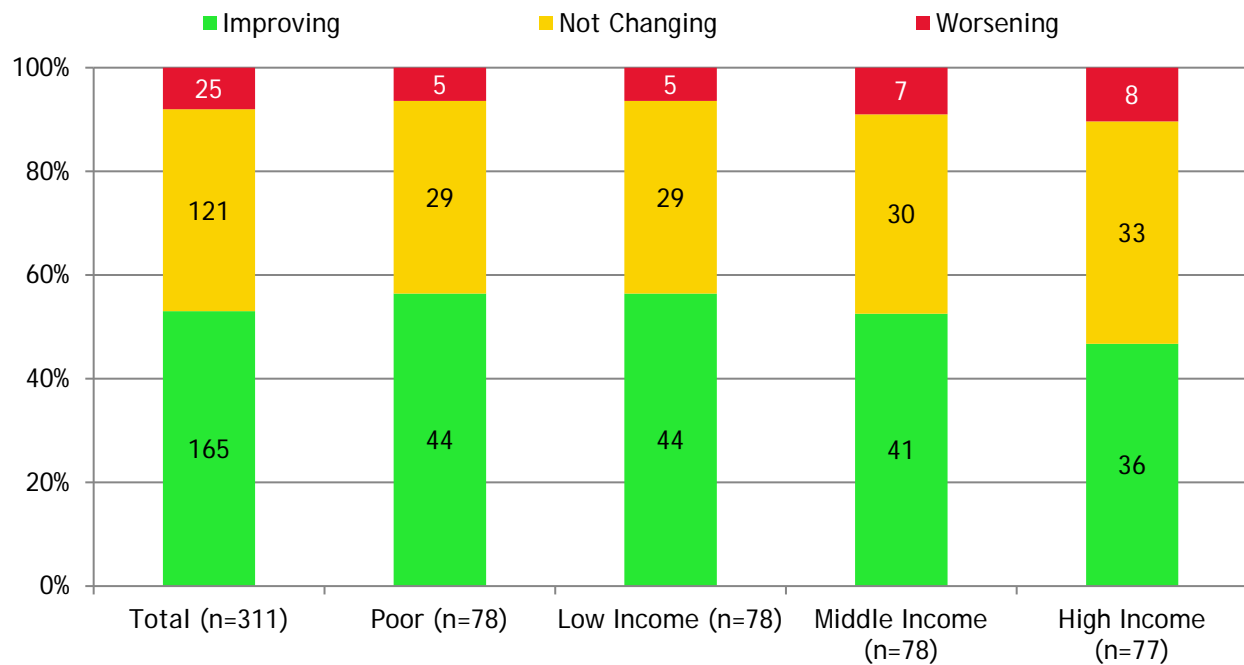
Key: n = number of measures.

- **Improving** = Quality is going in a positive direction at an average annual rate greater than 1% per year.
- **Not changing** = Quality is not changing or is changing at an average annual rate of 1% or less per year.
- **Worsening** = Quality is going in a negative direction at an average annual rate greater than 1% per year.

- Across all 311 measures of healthcare quality tracked in the report, poor people and low-income people had a higher percentage of improving measures and a lower percentage of worsening measures compared with high-income and middle-income groups (Figure 108).

Changes in Income Disparities

Most disparities by income show no statistically significant changes over time.

Figure 109. Number and percentage of quality measures with disparity at baseline for which disparities related to income were improving, not changing, or worsening, 2000 through 2014, 2015, 2016, or 2017
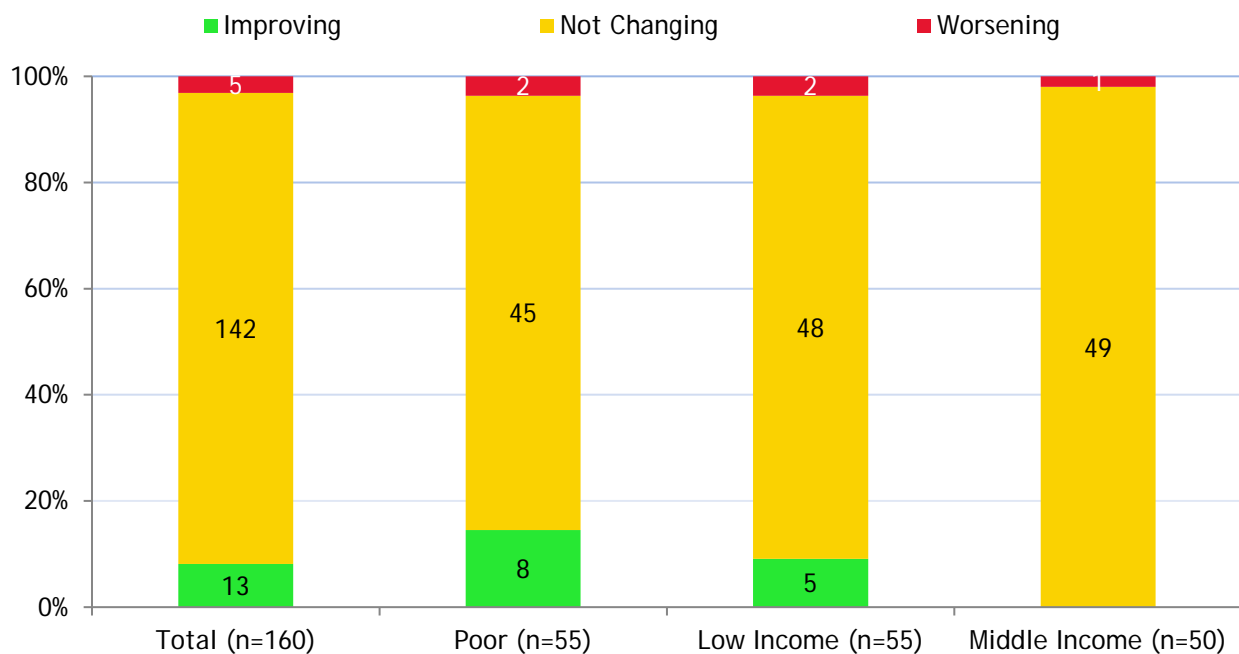
Key: n = number of measures.

- Disparities by income remain unchanged for almost 90% of quality measures (Figure 109).
- Only 13 measures showed narrowing disparities and 5 measures showed widening disparities.
- Among the largest improvements observed in this report's analysis, four unique measures were also tracked and reported in the 2017 report. They are:

  - Children ages 2-17 who had a preventive dental service in the calendar year.
  - People unable to get or delayed in getting needed dental care due to financial or insurance reasons.
  - People unable to get or delayed in getting needed medical care due to financial or insurance reasons.
  - Adolescents females ages 13-15 who received 3 or more doses of human papillomavirus vaccine.

Among the largest improvements observed, two measures were new to this report:

- Emergency department visits involving opioid-related diagnoses per 100,000 population.
- Hospital inpatient stays involving opioid-related diagnoses per 100,000 population.

Children Who Had a Preventive Dental Service

Children in the United States can access dental insurance coverage through Medicaid or CHIP, which enables affordable access for most children ages 2-17.[88]

Figure 110. Children ages 2-17 who had a preventive dental service in the calendar year, 2002-2016
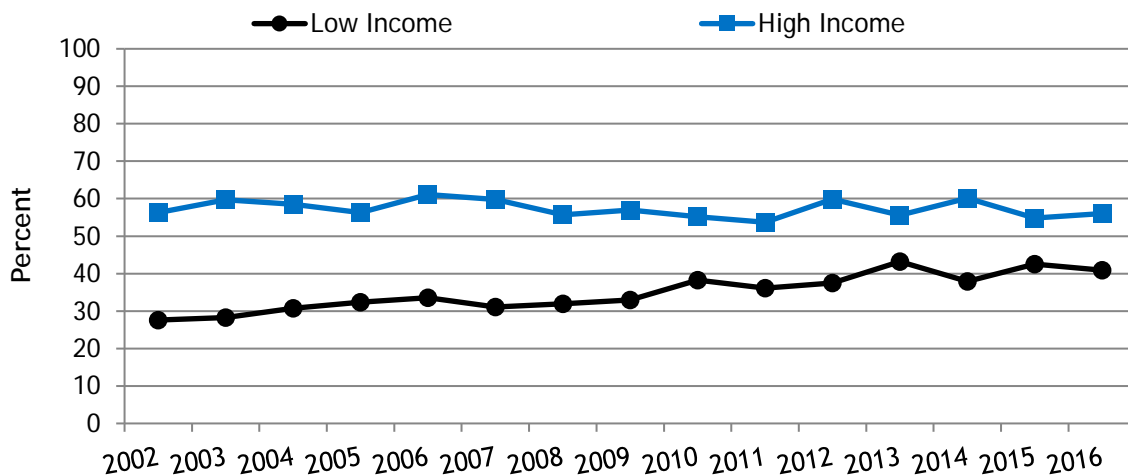
Source: Agency for Healthcare Research and Quality, Medical Expenditure Panel Survey, 2002-2016.

- In 2002, 27.6% of children in low-income households had preventive dental appointments and the percentage increased to 40.9% in 2016 (Figure 110).
- Data from 2002 to 2016 show that the disparities between high-income and low-income people were narrowing over time.

Efforts are underway within HHS to improve children's access to dental care, including the Health Resources and Services Administration (HRSA) initiative Integration of Oral Health and Primary Care Practice. HRSA published a report on the initiative that summarized recommendations for improving preventive oral healthcare (https://www.hrsa.gov/sites/default/files/hrsa/oralhealth/integrationoforalhealth.pdf).

Financial Barriers to Dental Care

The most prominent barriers to health coverage include affordability, eligibility for public coverage in a person's state, immigration status, and lack of familiarity with signup procedures.[99] Research shows that lack of access to oral healthcare also worsens physical and mental health.[104]

Figure 111. People unable to get or delayed in getting needed dental care due to financial or insurance reasons, 2002-2016
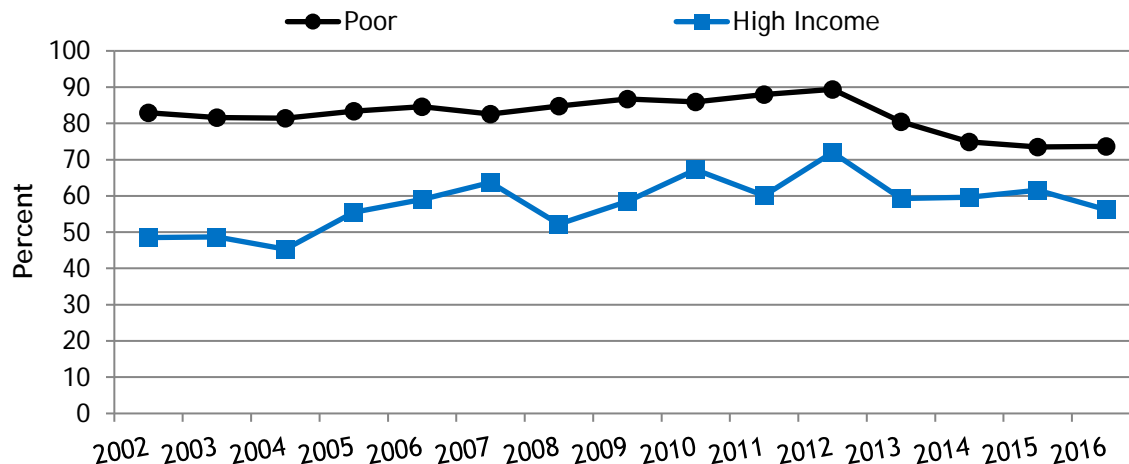
Source: Agency for Healthcare Research and Quality, Medical Expenditure Panel Survey, 2002-2016.

- In 2002, 82.9% of poor people were unable to get or delayed in getting needed dental care due to financial or insurance reasons. The percentage decreased to 73.7% in 2016 (Figure 111).
- Data from 2002 to 2016 show that disparities between high-income and poor people were narrowing over time.

Financial Barriers to Medical Care

The most prominent barriers to health coverage include affordability, eligibility for public coverage in a person's state, immigration status, and lack of familiarity with signup procedures.[99] Uninsured patients may delay visiting a provider until their health concern becomes unbearable or skip preventive visits if they feel healthy.[99]

Figure 112. People unable to get or delayed in getting needed medical care due to financial or insurance reasons, 2002-2016
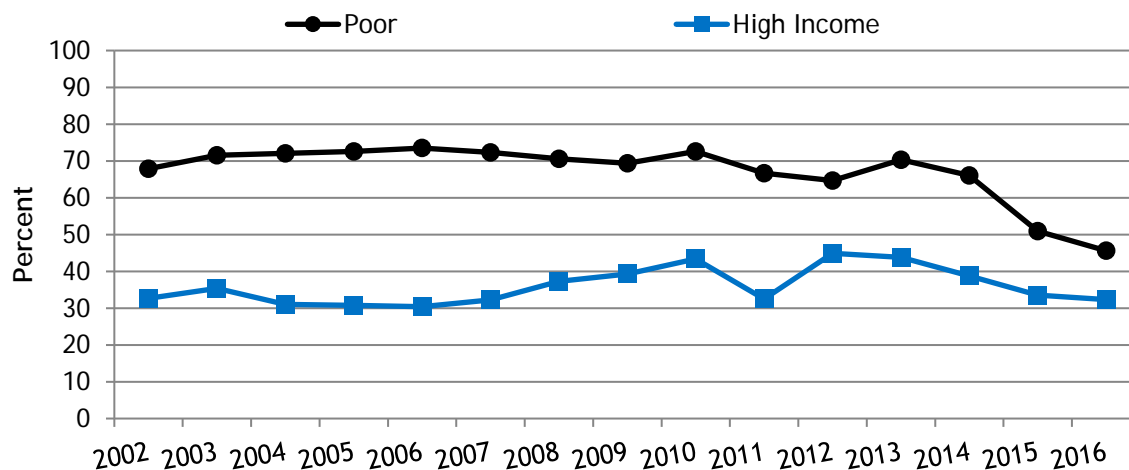
Source: Agency for Healthcare Research and Quality, Medical Expenditure Panel Survey, 2002-2016.

- In 2002, 67.9% of poor people were unable to get or delayed in getting needed medical care due to financial or insurance reasons (Figure 112). In 2016, the percentage had dropped to 45.6%.
- The percentage of high-income people who were unable to get or delayed in getting medical care due to financial or insurance reasons changed little from 2002 to 2016 (32.7% to 32.3%). Thus, the gap between poor people and high-income people was narrowing, indicating considerable improvement in access to medical care for poor people.

Adolescent Vaccination

According to CDC, 33,700 women and men are diagnosed with a cancer caused by human papillomavirus (HPV) infection annually and HPV vaccination could prevent more than 90% of these cancers.[105] Children should begin receiving the HPV vaccine at ages 11-12 years.[106]

Figure 113. Adolescent females ages 13-15 who received 3 or more doses of human papillomavirus vaccine, 2008-2016
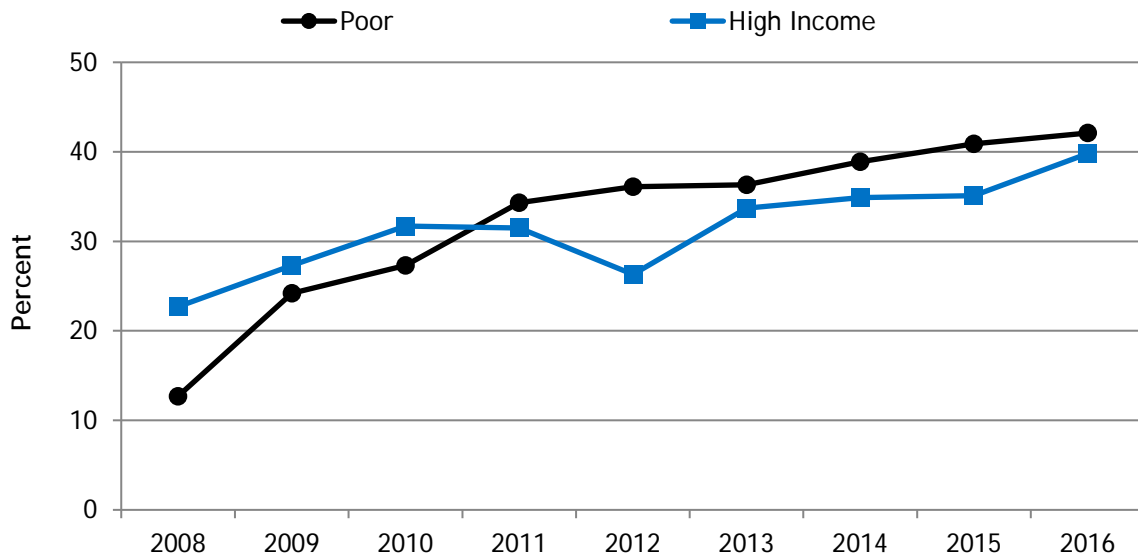
Source: Centers for Disease Control and Prevention, National Immunization Survey-Teen, 2008-2016.

- In 2008, 12.7% of poor adolescent females ages 13-15 received 3 or more doses of HPV vaccine, and by 2016, the percentage had increased to 42.1% (Figure 113). From 2008 to 2016, the percentage of high-income adolescent females who received 3 or more doses of HPV vaccine increased from 22.7% to 39.8%.
- Data from 2008 to 2016 show that disparities between high-income and poor adolescents were narrowing over time and both populations are improving.

Emergency Department Visits Involving Opioids

Increased availability and overuse of opioid medications (both prescription and nonprescription drugs) have contributed to adverse outcomes for patients, including increased risk of opioid use disorder, misuse of medications, and overdoses.[107] Overdoses involving opioids killed more than 47,600 people in 2017.[108]

Prescription and nonprescription opioid access and use vary by state, age group, sex, and race/ethnicity, and research to understand and manage disparities continues to grow.[109] Current research shows differences in care delivery for patients who are prescribed opioid medications. People who live in areas with lower socioeconomic resources are less likely to receive opioids for pain management in emergency departments than people with higher incomes and resources.[110]

Figure 114. Emergency department visits involving opioid-related diagnoses per 100,000 population, 2005-2016
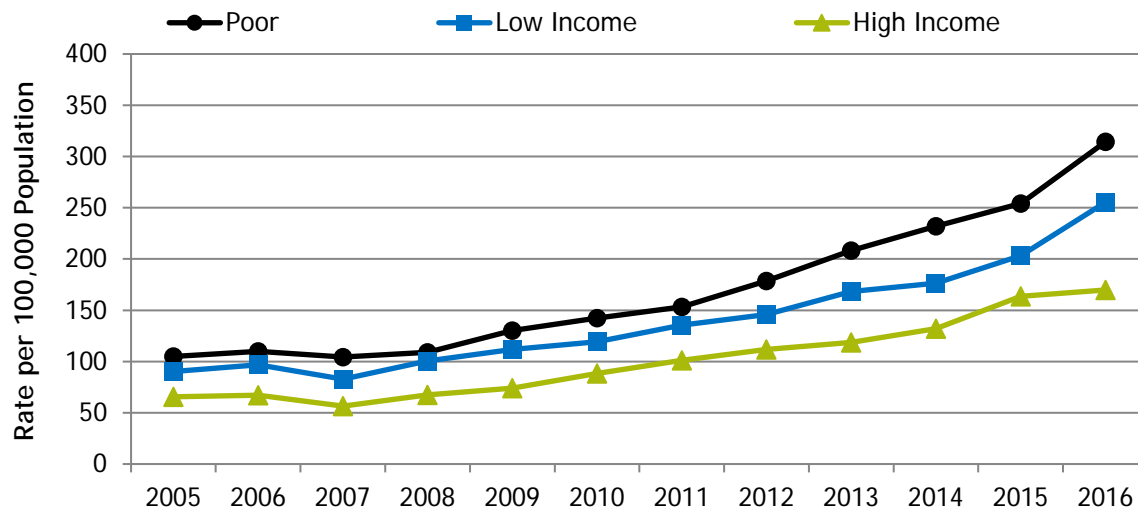
Source: Agency for Healthcare Research and Quality, Healthcare Cost and Utilization Project, 2005-2016.
Note: For this measure, lower rates are better.

- In 2005, the rate of emergency department visits involving opioid-related diagnoses was 104.9 per 100,000 population for poor people, and in 2016, the rate increased to 314.3 per 100,000 population (Figure 114).
- From 2005 to 2016, the rate of emergency visits involving opioid-related diagnoses increased from 90.2 per 100,000 population to 255.3 per 100,000 population for low-income people.
- From 2005 to 2016, the rate of emergency visits involving opioid-related diagnoses increased from 65.5 per 100,000 population to 169.8 per 100,000 population for high-income people.
- Data from 2005 to 2016 show that disparities were widening over time between high-income and low-income people and high income and poor people.

Hospital Inpatient Stays Involving Opioids

Figure 115. Hospital inpatient stays involving opioid-related diagnoses per 100,000 population, 2005-2016
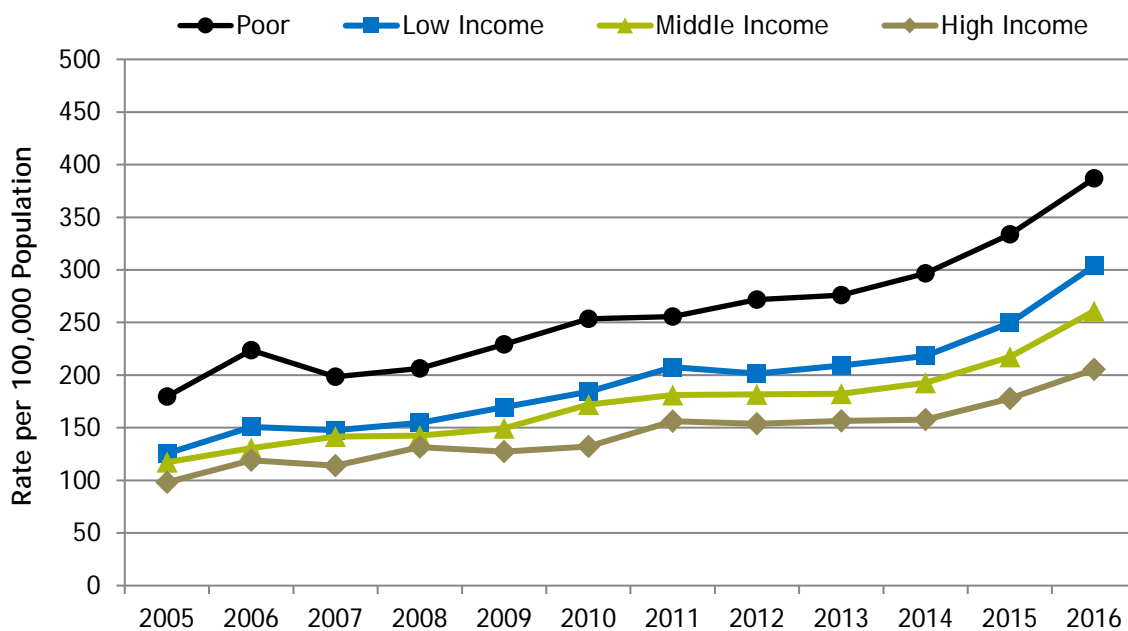
Source: Agency for Healthcare Research and Quality, Healthcare Cost and Utilization Project, 2005-2016.
Note: For this measure, lower rates are better.

- In 2005, the rate of inpatient hospital stays involving opioid-related diagnoses was 179.6 per 100,000 population for poor people, and in 2016, the rate increased to 386.9 per 100,000 population (Figure 115).
- From 2005 to 2016, the rate of inpatient hospital stays involving opioid-related diagnoses increased from 125.5 per 100,000 population to 303.8 per 100,000 population for low-income people.
- From 2005 to 2016, the rate of emergency visits involving opioid-related diagnoses increased from 117.2 per 100,000 population to 260.9 per 100,000 population for middle-income people.
- From 2005 to 2016, the rate of emergency visits involving opioid-related diagnoses increased from 98.1 per 100,000 population to 205.4 per 100,000 population for high-income people.
- Data from 2005 to 2016 show that disparities between high-income and middle-income people were widening over time. The gap was greater between high-income and low-income people and widest between high-income and poor people.

In 2017, HHS launched a departmentwide initiative with a five-point strategy to combat the opioid epidemic. Many agencies supported this initiative by establishing specific research opportunities, resources, and data to support providers, patients, and researchers.[111] More information is available at https://www.hhs.gov/opioids/.

Disparities by Insurance Status

This section examines trends and disparities among quality measures by insurance status. Insurance categories differ for ages 0-64 years and for adults' age 65 years and over. Insurance categories for people ages 0-64 years follow:

- Private Insurance: Person has access to insurance from a private insurer.
- Public Insurance: Person receives insurance from one or more government-sponsored sources, including Medicaid, State Children's Health Insurance Program, state-sponsored or other government-sponsored health plans, Medicare, and military plans.
- Uninsured: Person does not have any health insurance.

Quality measures that examine health insurance status for adults age 65 and over include a distinction for access to Medicare:

- Private Insurance: Person has access to insurance from a private insurer and Medicare.
- Public Insurance: Person receives insurance from Medicare only. Person may also receive insurance from Medicare and other government-sponsored sources, including Medicaid, state-sponsored or other government-sponsored health plans, and military plans.

Adults 65 years or over usually have Medicare coverage at a minimum.[112] In addition, the Indian Health Service (IHS) offers public coverage to and is considered a comprehensive healthcare delivery system for AI/ANs. Currently, IHS serves 2.6 million AI/ANs who belong to 573 federally recognized tribes in 37 states. IHS is not described as a health plan in this report. Non-IHS data sources, including CDC's National Center for Health Statistics, also track disparities for AI/AN populations.

The bar chart below summarizes 142 quality measures, including 73 measures with data for people with public insurance and 69 measures with data for people who are uninsured. All measures compared these groups with adults with private insurance.

Figure 116. Number and percentage of quality measures for which insurance groups experienced better, same, or worse quality of care compared with reference group (privately insured), 2015, 2016, or 2017
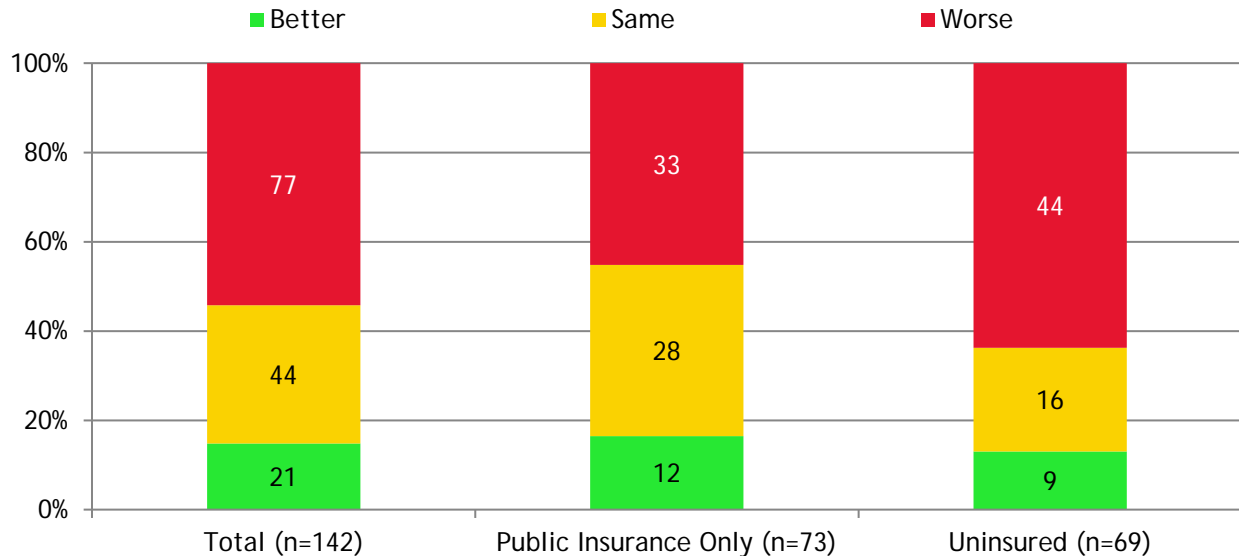
Key: n = number of measures.
Note: The most recent data years are used for this analysis. Different data sources have different data years for most recent data year. For example, the most recent data year from AHRQ HCUP is 2016.

- Data for the most recent year show that compared with people with private insurance, people with public insurance experienced better quality for 16% of measures and uninsured people performed better on 13% of quality measures (Figure 116).

- Uninsured people performed worse on 64% of quality measures, and people with public insurance performed worse on 45% of quality measures.

This sample includes the latest data year for all HCUP measures.

Largest Disparities for People With Public Insurance

The three quality measures with the largest disparities between people with public insurance and people with private insurance are person- and family-centered care measures. Person- and family-centered care focuses on improving the patient and family's experience of care through clear, easy-to-understand communication.

Delivering care that is person and family centered empowers patients and families to navigate, coordinate, and manage their care appropriately and effectively. Person-centered care means defining success not just by the resolution of clinical symptoms but also by whether a patient has achieved his or her desired outcomes and goals.

Examples of person-centered care include ensuring that patients' preferences, desired outcomes, and experiences of care are integrated into care delivery; integrating patient-generated data in electronic health records; and finding additional ways to involve patients and families in managing their care effectively.[113] Gaps in care can yield adverse events, improper management of care, poor health outcomes, and lower quality of life.[114,115,116]

The person- and family-centered care measures with the largest disparities are:

- Adults who had a doctor's office or clinic visit in the last 12 months whose health providers sometimes or never explained things in a way they could understand.
- Rating of health care 0-6 on a scale from 0 to 10 (best grade) by adults who had a doctor´s office or clinic visit in the last 12 months.
- Adults who had a doctor's office or clinic visit in the last 12 months whose health providers sometimes or never listened carefully to them.

Adequate Explanation by Health Providers

Figure 117. Adults who had a doctor's office or clinic visit in the last 12 months whose health providers sometimes or never explained things in a way they could understand, 2016
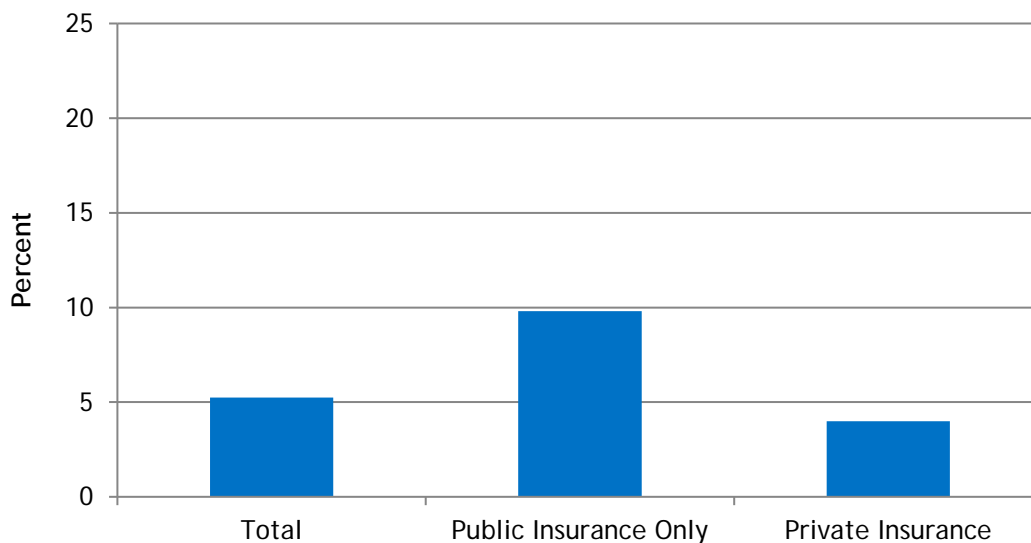
Source: Agency for Healthcare Research and Quality, Medical Expenditure Panel Survey, 2016.
Note: For this measure, lower rates are better.

- In 2016, the percentage of adults who had a doctor's office or clinic visit in the last 12 months whose health providers sometimes or never explained things in a way they could understand was more than twice as high for adults with public insurance (9.8%) compared with adults with private insurance (4.0%; Figure 117).

Rating of Healthcare

Figure 118. Rating of healthcare 0-6 on a scale from 0 to 10 (best grade) by adults who had a doctor´s office or clinic visit in the last 12 months, 2016
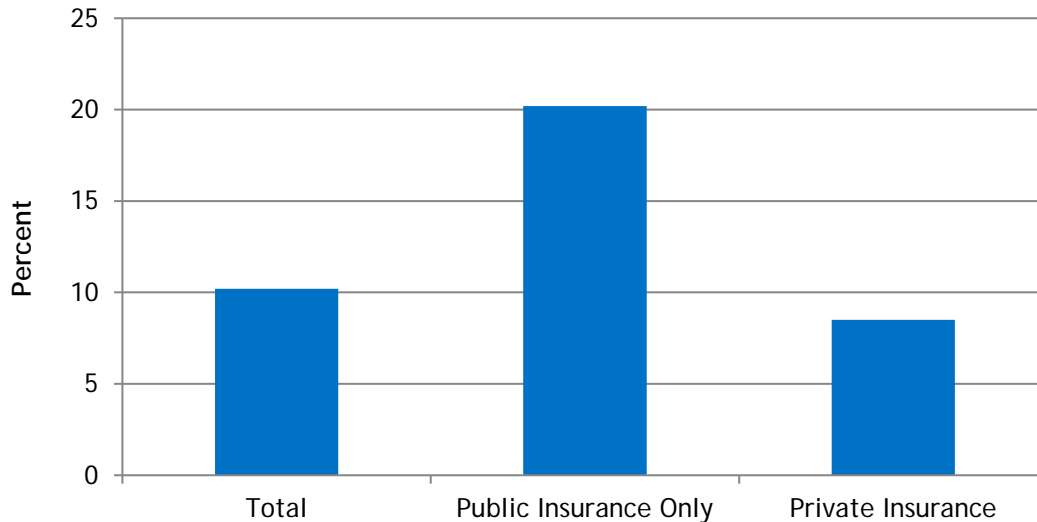
Source: Agency for Healthcare Research and Quality, Medical Expenditure Panel Survey, 2016.
Note: For this measure, lower rates are better.

- In 2016, the percentage of adults who had a doctor's office or clinic visit in the last 12 months and gave their healthcare a rating of 0-6 on a scale of 0 to 10 was more than twice as high for people with public insurance (20.2%) compared with people with private insurance (8.5%; Figure 118). Ratings of 0 indicate the worst healthcare possible and 10 indicates the best healthcare possible.

Providers Who Listened to Patients

Figure 119. Adults who had a doctor's office or clinic visit in the last 12 months whose health providers sometimes or never listened carefully to them, 2016
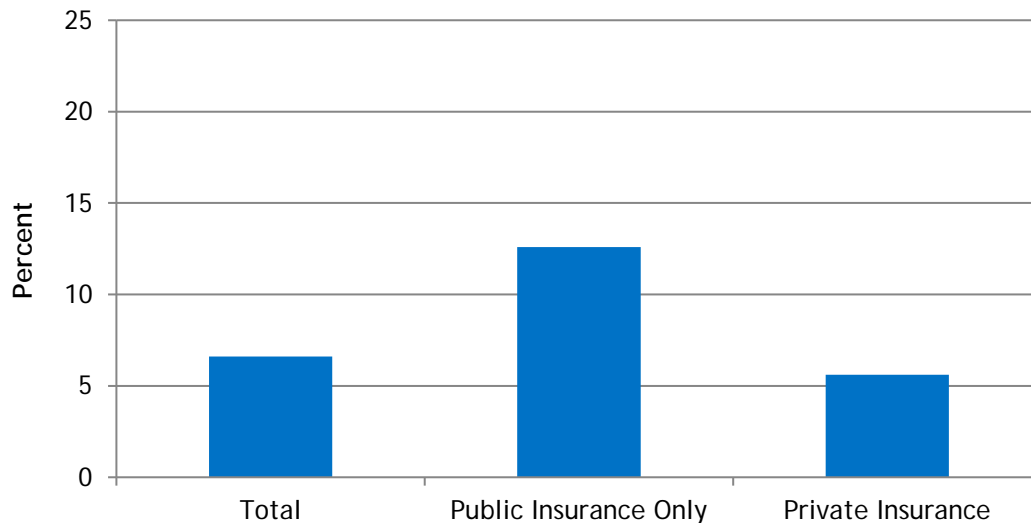
Source: Agency for Healthcare Research and Quality, Medical Expenditure Panel Survey, 2016.
Note: For this measure, lower rates are better.

- In 2016, the percentage of adults who had a doctor's office or clinic visit in the last 12 months whose health providers sometimes or never listened carefully to them was more than twice as high for people with public insurance (12.6%) compared with people with private insurance (5.6%; Figure 119).

AHRQ has developed several resources to improve provider-patient communication and to support improved understanding of a patient's care plan, including:

- [Guide to Improving Patient Safety in Primary Care Settings by Engaging Patients and Families](#), which features a teach-back intervention. This intervention focuses on primary care providers discussing the patients' care plan with them and having patients explain it back to them in their own words to ensure their understanding.[79]
- Health Literacy Universal Precautions Toolkit (www.ahrq.gov/literacy),[80] which helps primary care practices promote greater understanding for all patients by using strategies such as teach-back.
- TeamSTEPPS® Limited English Proficiency module that shows the importance of language assistance services in keeping patients safe and avoiding adverse events.[70]

Largest Disparities for Uninsured People

The three quality measures with the largest disparities between uninsured people and people with private insurance are person- and family-centered care measures:

- People without a usual source of care who indicated a financial or insurance reason for not having a source of care
- Deaths per 1,000 adult hospital admissions with abdominal aortic aneurysm repair
- Adults who received a blood pressure measurement in the last 2 years and can state whether their blood pressure was normal or high

Difficulty Accessing a Usual Source of Care

People with lower incomes may experience difficulty accessing affordable care and are less likely to have a usual source of care that is readily accessible.[94] In addition, poor health contributes to low income, creating a cycle sometimes referred to as the health-poverty trap.[92]

Figure 120. People without a usual source of care who indicated a financial or insurance reason for not having a source of care, 2016
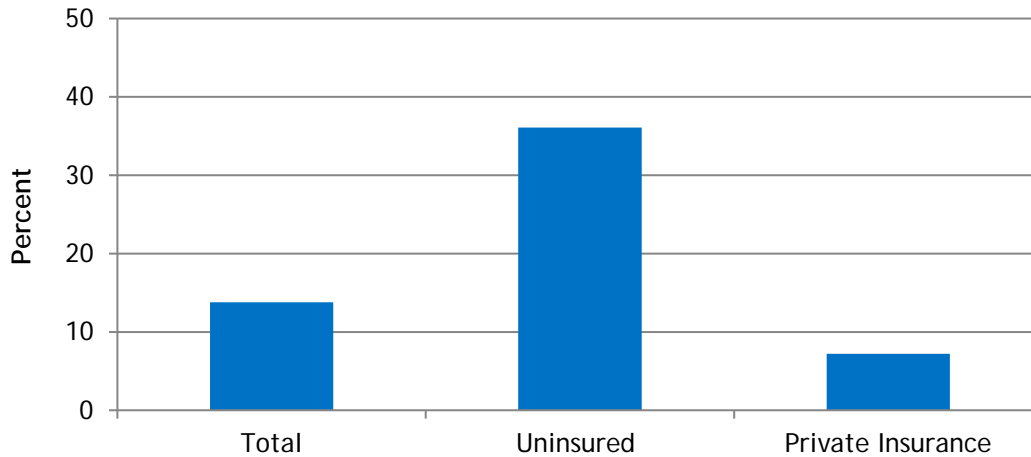
Source: Agency for Healthcare Research and Quality, Medical Expenditure Panel Survey, 2016.
Note: For this measure, lower rates are better.

- In 2016, the percentage of adults without a usual source of care who indicated a financial or insurance reason for not having a source of care was five times as high for uninsured people (36.1%) compared with people with private insurance (7.2%; Figure 120).

Abdominal Aortic Aneurysm Mortality

Abdominal aortic aneurysm (AAA, or triple A) occurs mostly in adults over 60 years of age. The aorta can rupture due to an aneurysm (a weakened section of an artery wall). This type of aneurysm occurs more frequently in the part of the aorta that is within the abdomen. Several risk factors may contribute to this disease, including hypertension, diabetes, obesity, smoking, and high cholesterol.[117]

Figure 121. Deaths per 1,000 adult hospital admissions with abdominal aortic aneurysm repair, 2016
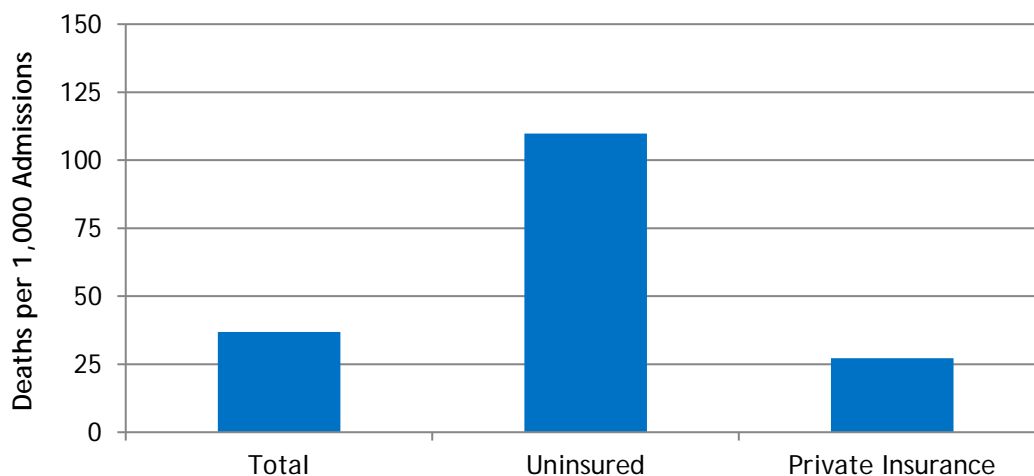
Source: Agency for Healthcare Research and Quality, Healthcare Cost and Utilization Project, 2016.
Note: For this measure, lower rates are better.

● In 2016, the AAA mortality rate was four times as high for uninsured adults (109.8 per 1,000 hospital admissions) compared with adults with private insurance (27.2 per 1,000 hospital admissions; Figure 121).

Blood Pressure Management

High blood pressure is a risk factor for heart disease and stroke. Maintaining healthy blood pressure requires patients to take prescription medication, consume healthier diets, and incorporate exercise into their routine. One-third of Americans have high blood pressure and another third are considered prehypertensive.[118]

Figure 122. Adults who received a blood pressure measurement in the last 2 years and can state whether their blood pressure was normal or high, 2017
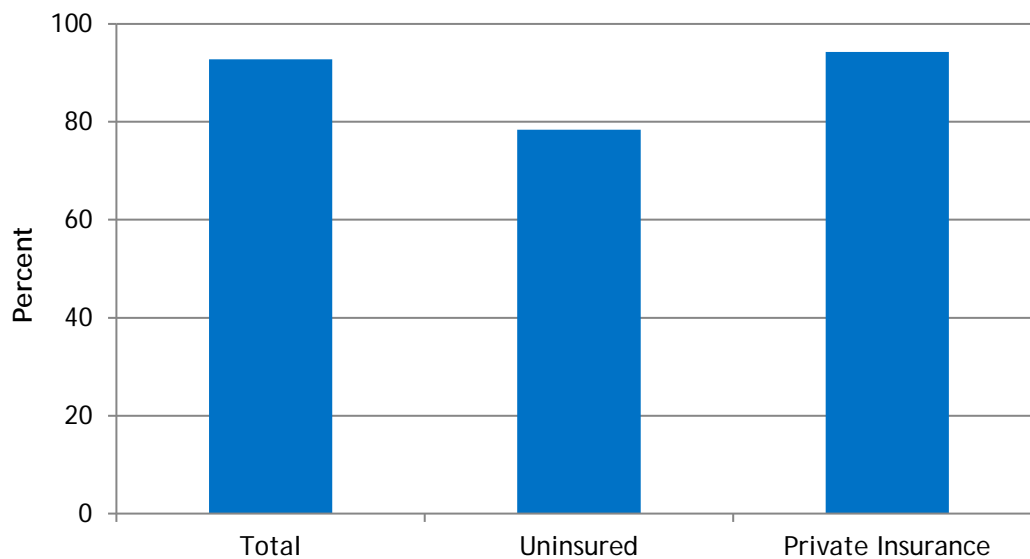
Source: Centers for Disease Control and Prevention, National Health Interview Survey, 2017.

● In 2017, the percentage of adults who received a blood pressure measurement in the last 2 years and could state whether their blood pressure was normal or high was higher for people with private insurance (94.3%) compared with uninsured people (78.4%; Figure 122).

Changes in Quality of Care by Insurance Status

Figure 123. Number and percentage of all quality measures that were improving, not changing, or worsening, total and by insurance status, from 2000 through 2013, 2014, 2015, 2016, or 2017
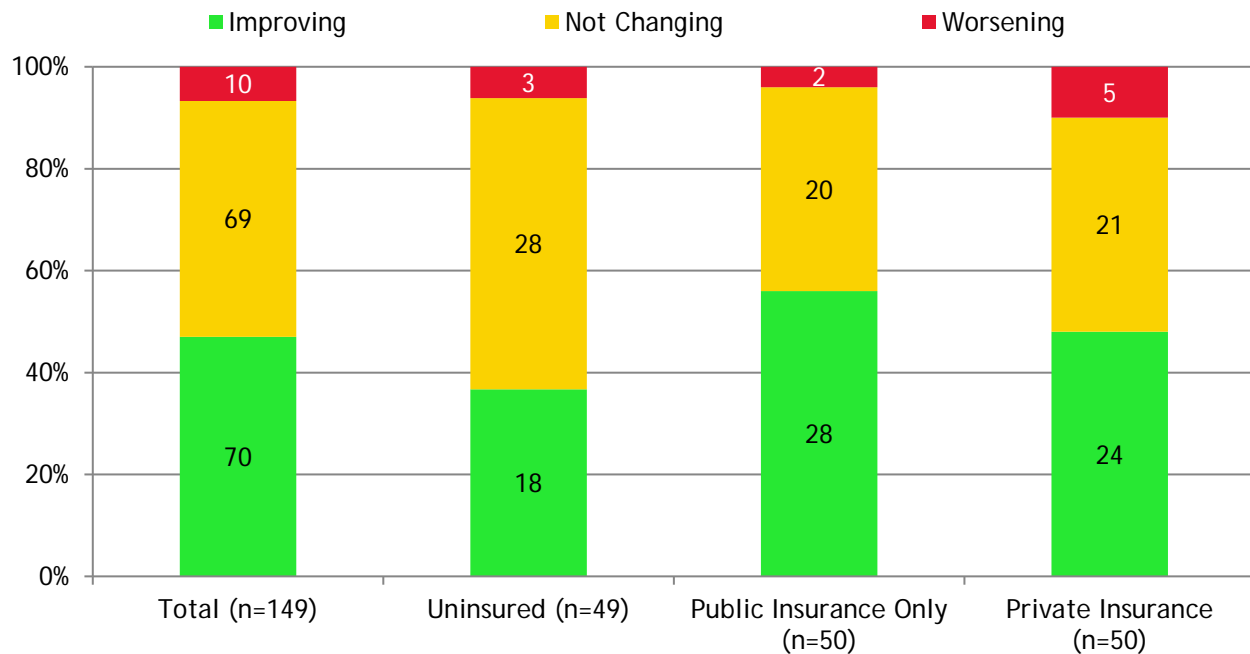
Key: n = number of measures.

- **Improving** = Quality is going in a positive direction at an average annual rate greater than 1% per year.
- **Not changing** = Quality is not changing or is changing at an average annual rate of 1% or less per year.
- **Worsening** = Quality is going in a negative direction at an average annual rate greater than 1% per year.

● From 2000 through 2017, across 149 measures of healthcare quality with data by insurance status, a higher percentage of measures was improving for people with public insurance (56%) compared with uninsured people (37%) and people with private insurance (48%) (Figure 123).

● The percentage of worsening measures was lower for people with public insurance (4%) compared with uninsured people (6%) and people with private insurance (10%).

Changes in Disparities by Insurance

Figure 124. Number and percentage of quality measures with disparity at baseline for which disparities related to insurance were improving, not changing, or worsening, 2000 through 2014, 2015, 2016, or 2017
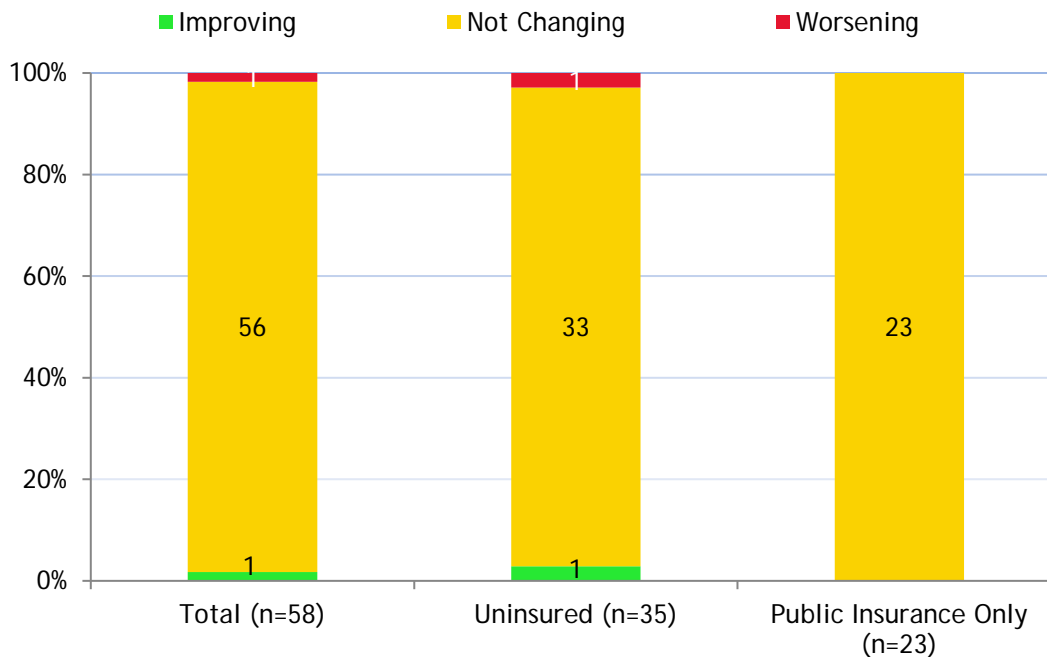
Key: n = number of measures.

- Disparities by insurance status were not changing for most quality measures. These measures encompass Person-Centered Care, Affordable Care, Healthy Living, and Effective Treatment (Figure 124).
- One measure showed improvement over time in disparities between uninsured people and people with private insurance: Adults age 40 and over with diagnosed diabetes who received a flu vaccination in the calendar year.
- One measure showed a widening disparity between uninsured people and people with private insurance: People without a usual source of care who indicated a financial or insurance reason for not having a source of care.

Receipt of Flu Vaccine by Patients with Diabetes

Some patients are at higher risk of contracting the flu. These include children, older adults, and people with diabetes. The flu also has a greater likelihood of exacerbating diabetes in affected patients.[119]

Figure 125. Adults age 40 and over with diagnosed diabetes who received a flu vaccination in the calendar year, 2008-2016
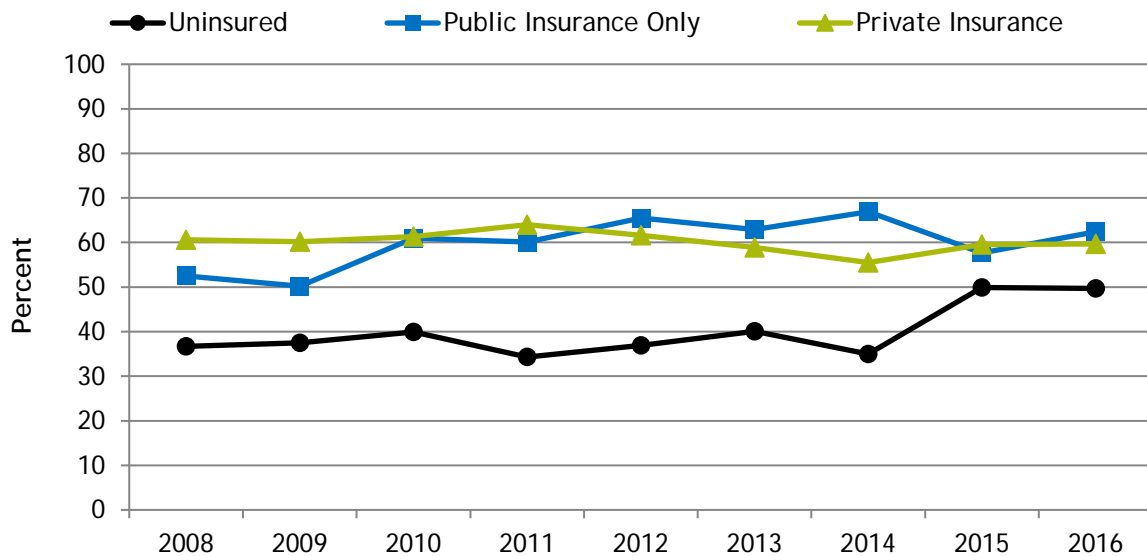
Source: Agency for Healthcare Research and Quality, Medical Expenditure Panel Survey, 2008-2016.

● From 2008 to 2016, the disparity between adults with private insurance and uninsured adults narrowed in the percentage of adults age 40 and over with diabetes who received a flu vaccine. This percentage increased from 36.7% in 2008 to 49.7% in 2016 for uninsured adults. There were no statistically significant changes over time for people with private insurance in the percentage with diabetes who got a flu vaccine (Figure 125).

CDC has prepared several patient and provider resources, including fact sheets for adults about diabetes and adult vaccines.[120]

Financial or Insurance Barriers to Care

As noted earlier, people with lower incomes may have difficulty accessing a usual source of care.[94]

Figure 126. People without a usual source of care who indicated a financial or insurance reason for not having a source of care, 2002-2016
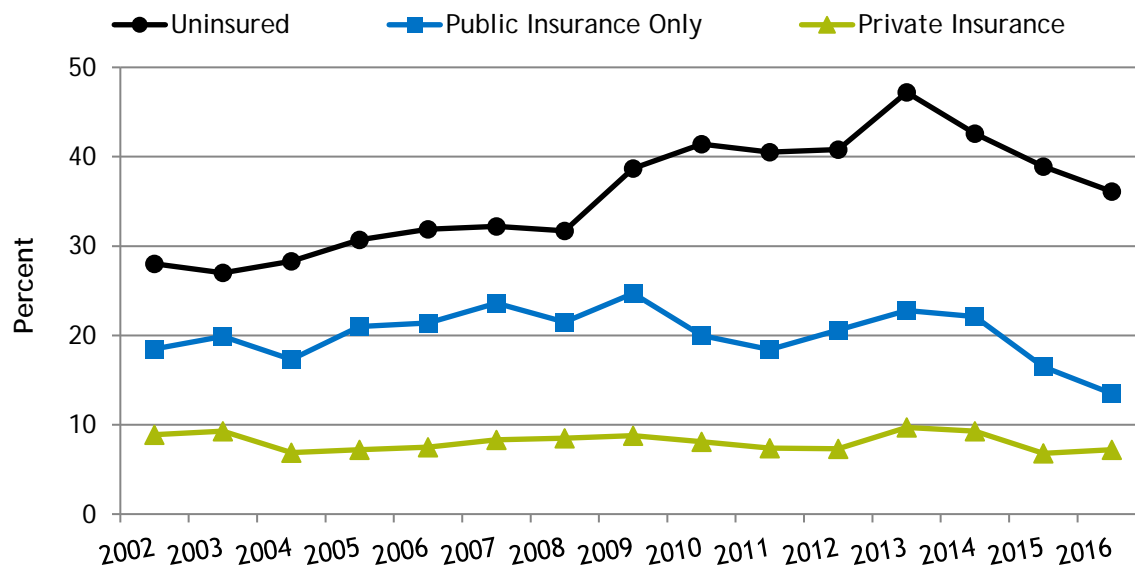
Source: Agency for Healthcare Research and Quality, Medical Expenditure Panel Survey, 2002-2016.

- From 2002 to 2016, the disparity between adults with private insurance and uninsured adults widened in the percentage of people without a usual source of care who indicated a financial or insurance reason for not having a source of care. The estimate for uninsured people without a usual source of care increased from 28% in 2002 to 36.1% in 2016, and there were no statistically significant changes for people with private insurance (Figure 126).

Disparities by Residence Location

Where people live affects their access to healthcare and the quality of their healthcare. Current research shows that disparities by residence location affect both adults and children.[121,122,123,124,125,126]

Residence Location Groups

This report uses the 2013 National Center for Health Statistics (NCHS) classification for analyzing healthcare quality and disparities by residence location, replacing the previously used 2006 classification scheme.

The 2013 scheme includes six urbanization categories, including:

- Four metropolitan county designations:

  - Large Central Metropolitan: Large central metropolitan counties in a metropolitan statistical area (MSA) of 1 million or more population:

    1. That contain the entire population of the largest principal city of the MSA, or
    2. Whose entire population is contained within the largest principal city of the MSA, or
    3. That contain at least 250,000 residents of any principal city in the MSA.

  - Large Fringe Metropolitan: Counties in MSAs of 1 million or more population that do not qualify as large central.[xv] Large Fringe Metropolitan areas are also described as suburban areas. This category is the reference group that all other residence locations are compared with in this report.
  - Medium Metropolitan: Counties in MSAs of 250,000 to 999,999 population.
  - Small Metropolitan: Counties in MSAs of less than 250,000 population.

- Two nonmetropolitan county designations:

  - Micropolitan: Counties in a micropolitan statistical area.
  - Noncore: Nonmetropolitan counties that are not in a micropolitan statistical area.

The key differences between the 2006 and the 2013 NCHS Urban-Rural Classification schemes are noted in the description of small metropolitan, micropolitan, and noncore areas. The 2013 classification broadens the inclusion criteria for each residence location. All other definitions are unchanged (Table 1).[127]

Table 1. NCHS Urban-Rural Classification Scheme, 2006 vs. 2013

Areas	2006 Classification	2013 Classification
Small Metropolitan	Counties in MSAs of 50,000 to 249,999 population	Counties in MSAs of less than 250,000 population.
Micropolitan	Urban cluster population of 10,000-49,999 individuals.	Counties in a micropolitan statistical area.
Noncore	Nonmetropolitan counties that did not qualify as micropolitan.	Nonmetropolitan counties that are not in a micropolitan statistical area.

[xv] For comparisons across residence locations, large fringe MSAs (large city suburbs) are used as the reference group since these counties have the lowest levels of poverty and typically have the best quality and access to healthcare.

Figure 127 shows a map of U.S. county classifications according to the 2013 NCHS Urban-Rural Classification system. Counties across the United States are listed below the map to show examples of the corresponding areas.

Figure 127. Map showing 2013 NCHS Urban-Rural County Classifications in the United States
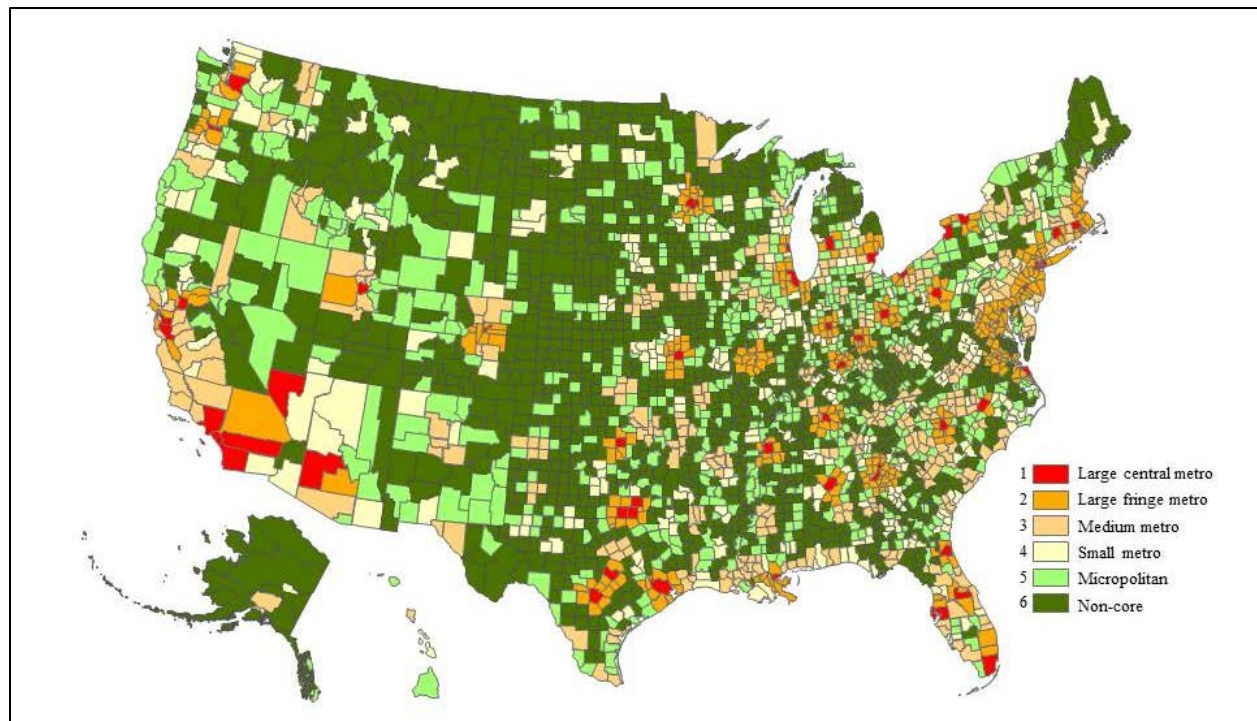
- Metropolitan Areas:

    - Large Central Metropolitan Areas: Denver County, Colorado; Washington, DC; Cook County, Illinois.
    - Large Fringe Metropolitan Areas: San Bernardino County, California; Broward County, Florida; Bergen County, New Jersey.
    - Medium Metropolitan Areas: Scott County, Kentucky; York County, Maine; Douglas County, Nebraska.
    - Small Metropolitan Areas: Baldwin County, Alabama; Wayne County, North Carolina; Allen County, Ohio.

- Nonmetropolitan Areas:

    - Micropolitan Areas: Woodward County, Oklahoma; Cherokee County, South Carolina; Harrison County, West Virginia.
    - Noncore Areas: Wallowa County, Oregon; Bedford County, Pennsylvania; Crane County, Texas.

The QDR uses the NCHS classification to analyze performance of quality measures that have data available by residence location. In addition to the annual report, data on state-based performance metrics are available through the QDR State Snapshots.[128]

With the State Snapshots tool, users can explore the quality of their state's healthcare and compare their state's data with national data or data from the best performing states. Users can access a state dashboard showing performance compared with benchmarks for more than 80 measures. Some of these measures are also stratified by subpopulations to show disparities.

Overview of Disparities by Residence Location

Nonmetropolitan areas had worse performance on one-third of all quality measures compared with suburban areas in the latest data year.

Figure 128. Number and percentage of quality measures for which members of selected groups experienced better, same, or worse quality of care compared with reference group (large fringe metropolitan) in 2015, 2016, or 2017, by residence location
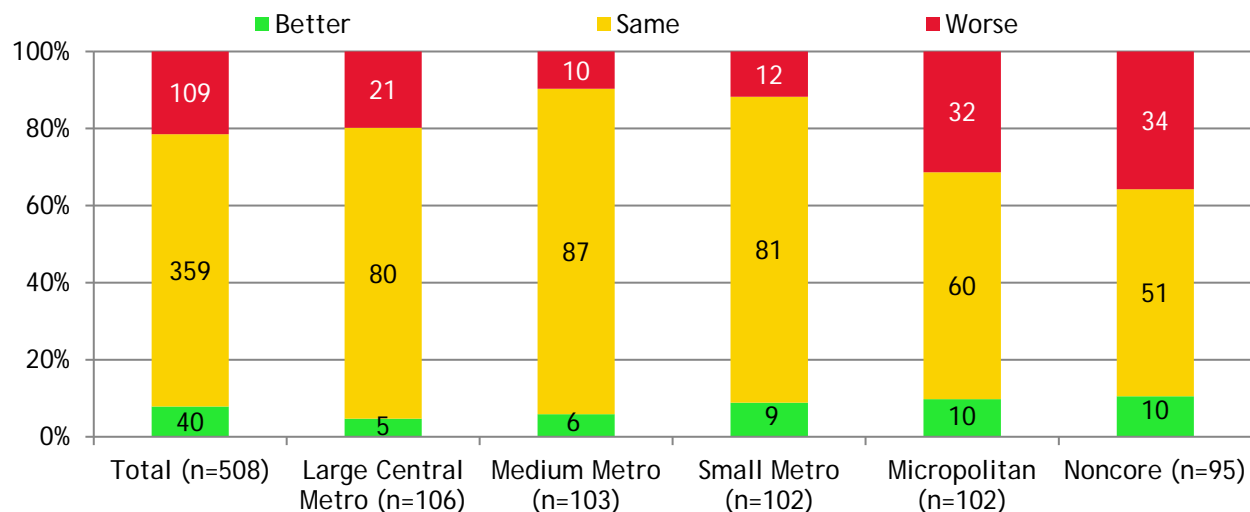
Key: n = number of measures.
Note: The measures represented in this chart are available in Appendix A. Definitions of residence locations are available at https://www.cdc.gov/nchs/data_access/urban_rural.htm (refer to Appendix B). The most recent data years are used for this analysis. Different data sources have different data years for most recent data year. For example, the most recent data year from AHRQ HCUP is 2016.

- Both nonmetropolitan areas, noncore (10.5%) and micropolitan (9.8%) had the highest percentage of quality measures for which performance was better than in large fringe metropolitan areas (Figure 128).
- Nonmetropolitan areas also had the highest percentage of measures for which performance was worse than in large fringe metropolitan areas: Noncore, 35.8%; Micropolitan, 31.4%; Large Central Metropolitan, 19.8%; Small Metropolitan, 11.8%; and Medium Metropolitan, 9.7%.

Largest Disparities

Measures with the largest disparities for residence location can be grouped into four categories:

- Mortality measures:

  - HIV infection deaths per 100,000 population (large central metropolitan, medium metropolitan)
  - Deaths per 1,000 hospital admissions with expected low-mortality (noncore)
  - Infant mortality per 1,000 live births, birth weight 2,500 grams or more (small metropolitan)

- Pediatric measures:

  - Children ages 0-17 with a wellness checkup in the past 12 months (medium metropolitan, small metropolitan, micropolitan)
  - Children who had their height and weight measured by a health provider within the past 2 years (micropolitan)
  - Emergency department encounters for asthma, children ages 2-17 (large central metropolitan)
  - Hospital admissions for asthma per 100,000 population, children ages 2-17 (large central metropolitan)

- Care Coordination measures:

  - Emergency department visits with a principal diagnosis related to dental conditions (micropolitan)
  - Hospital admissions for community-acquired pneumonia per 100,000 population, adults age 18 and over (noncore)

- Patient Safety measures:

  - Reclosure of postoperative abdominal wound dehiscence per 1,000 abdominopelvic surgery admissions of length 2 or more days, adults (medium metropolitan, small metropolitan, noncore)

Mortality Measure: HIV Infection Deaths

HIV mortality disproportionately affects some racial and ethnic groups more than others. According to CDC data, in 2016, HIV was the sixth leading cause of death for Black men ages 25-34 and fifth for Black women ages 35-44.[56]

Figure 129. HIV infection deaths per 100,000 population, 2016
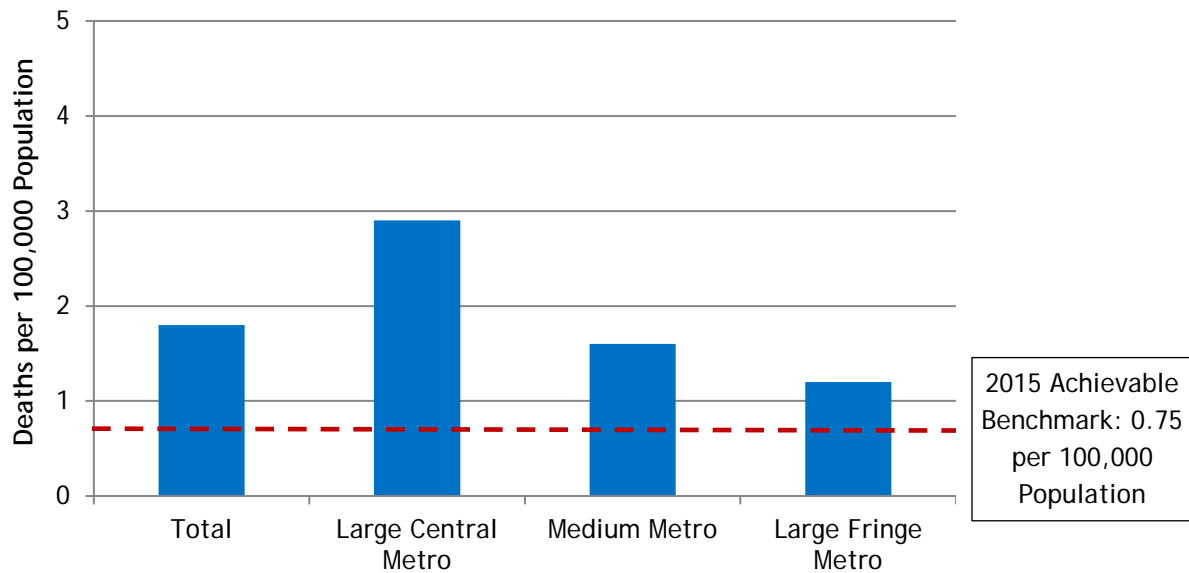
Source: Centers for Disease Control and Prevention, National Vital Statistics Survey - Mortality, 2016.
Note: For this measure, lower rates are better.

- In 2016, the death rate from HIV infections was higher in large central metro areas (2.9 per 100,000 population) and medium metro areas (1.6 per 100,000 population) compared with the rate in large fringe metro areas (1.2 per 100,000 population; Figure 129).

- The 2015 top 5 state achievable benchmark was 0.75 per 100,000 population. At the current rate of increase, overall, the benchmark could be achieved in 5 years for large central metropolitan and medium metropolitan areas and in 3 years for large fringe metropolitan areas.

- The top 5 states that contributed to the achievable benchmark are Kansas, Kentucky, Minnesota, Missouri, and Washington. In 2016, Colorado, Minnesota, Oregon, Washington, and Wisconsin reached the benchmark.

An HHS initiative to eliminate new HIV infections is underway. The goal is "to reduce new HIV infections in the United States by 75 percent in five years and by 90 percent by 2030."[129] Federal efforts to reduce HIV-related mortality include the promotion of treatment therapies such as antiretroviral therapy, as well as pre-exposure prophylaxis and postexposure prophylaxis.[130]

Several HHS agencies provide a federal response to the HIV epidemic, including HRSA's HIV/AIDS Bureau, which administers the Ryan White HIV/AIDS Program (RWHAP). RWHAP is the largest federal program focused exclusively on providing HIV care and treatment to patients with inadequate or no insurance. Through RWHAP's partnerships, more than 512,000 people receive care annually.[58]

Mortality Measure: Unexpected Deaths After Hospital Admission

Death within 30 days of a hospital discharge may indicate that patients did not receive appropriate care during their hospital admission.[131] Factors contributing to death include noncontinuous care or treatment and inadequate communication with the care team.[132]

Figure 130. Deaths per 1,000 hospital admissions with expected low mortality, 2016
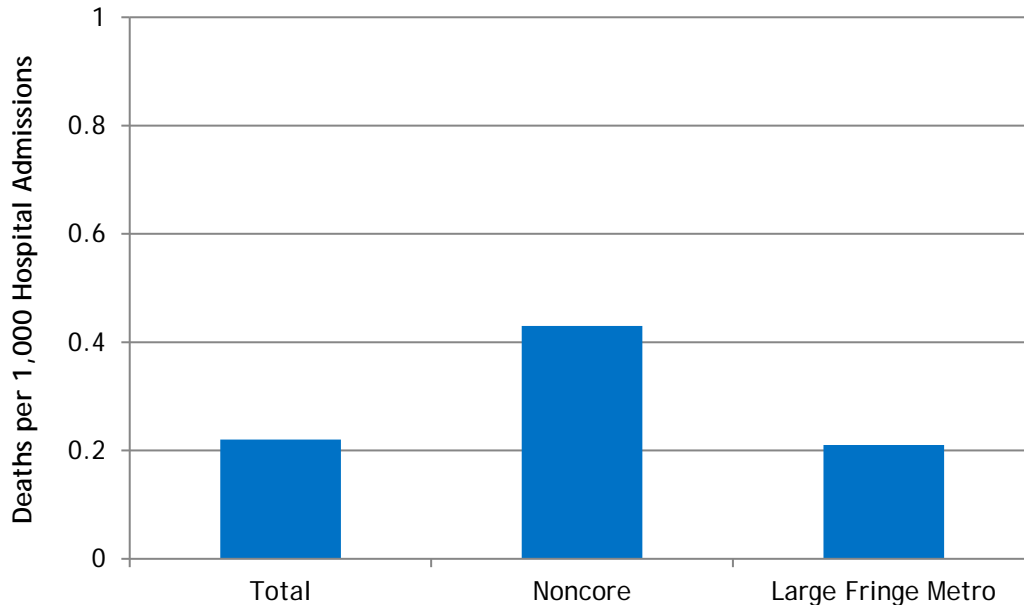
Source: Agency for Healthcare Research and Quality, Healthcare Cost and Utilization Project, 2016.
Note: For this measure, lower rates are better.

- In 2016, the death rate for conditions with expected low mortality was higher in noncore areas (0.43 per 100,000 population) than in large fringe metro areas (0.21 per 100,000 population; Figure 130).

Mortality Measure: Infant Mortality

Low birth weight can be a predictor of developmental delays and mortality among infants.[133] Infant mortality and low birth weight can decline when pregnant women receive adequate prenatal care.[134]

Figure 131. Infant mortality per 1,000 live births, birth weight 2,500 grams or more, 2016
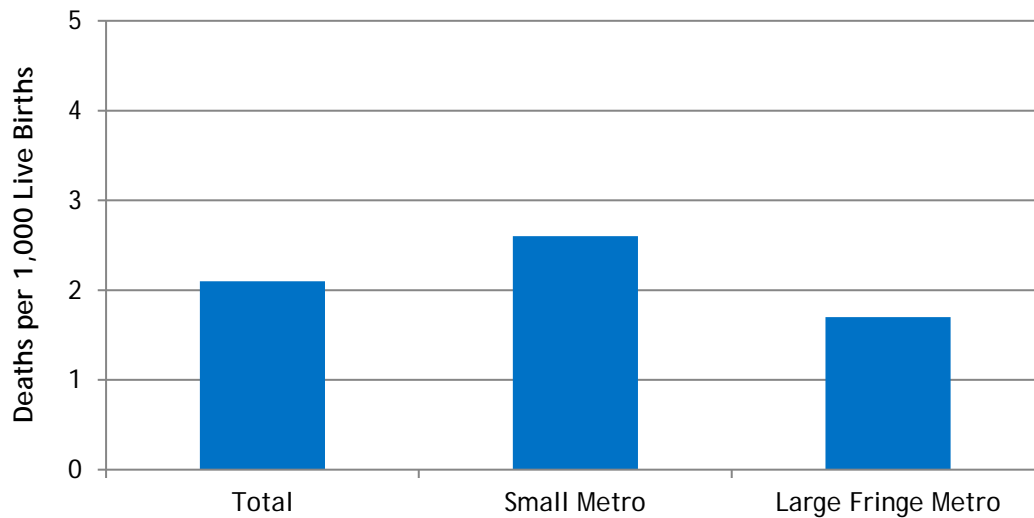
Source: Centers for Disease Control and Prevention, National Vital Statistics Survey – Linked Birth and Infant Death Data, 2016.
Note: For this measure, lower rates are better.

- In 2016, the mortality rate among infants with a birth weight of 2,500 grams or more was higher in small metro areas (2.6 per 1,000 live births) compared with large fringe metro areas (1.7 per 1,000 live births; Figure 131).

Pediatric Measure: Wellness Visits

Wellness visits for children offer preventive care, allow tracking of growth and development, identify concerns, and establish a team-based model of care for the provider, the child, and his or her parents or caregivers. The American Academy of Pediatrics has provided an online schedule for wellness visits.[135]

Figure 132. Children ages 0-17 with a wellness checkup in the past 12 months, 2017
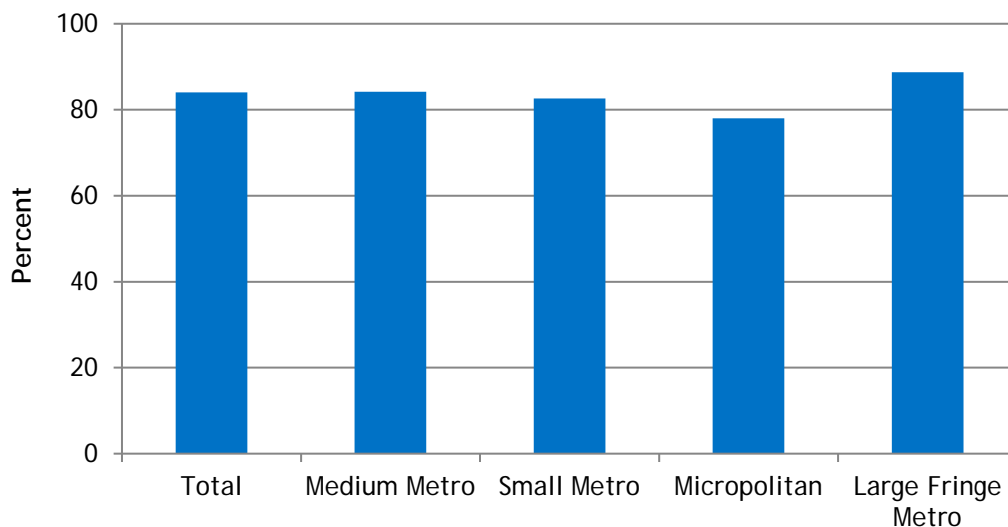
Source: Centers for Disease Control and Prevention, National Health Interview Survey, 2017.

- In 2017, the percentage of children ages 0-17 who had a wellness checkup in the past year was lower in medium metro (84.2%), small metro (82.6%), and micropolitan areas (78.0%) than in large fringe metro areas (88.7%; Figure 132).

Pediatric Measure: Height and Weight Measurement

During children's wellness visits, it is standard practice to measure their height and weight. This practice allows providers to assess children's body mass index (BMI) and development to see if there is any cause for concern. The Centers for Disease Control and Prevention has created a BMI calculator for children ages 2-19 years old.[136]

Although it is standard practice to measure height and weight, findings in this report show variation does exist by residence location.

Figure 133. Children who had their height and weight measured by a health provider within the past 2 years, 2016
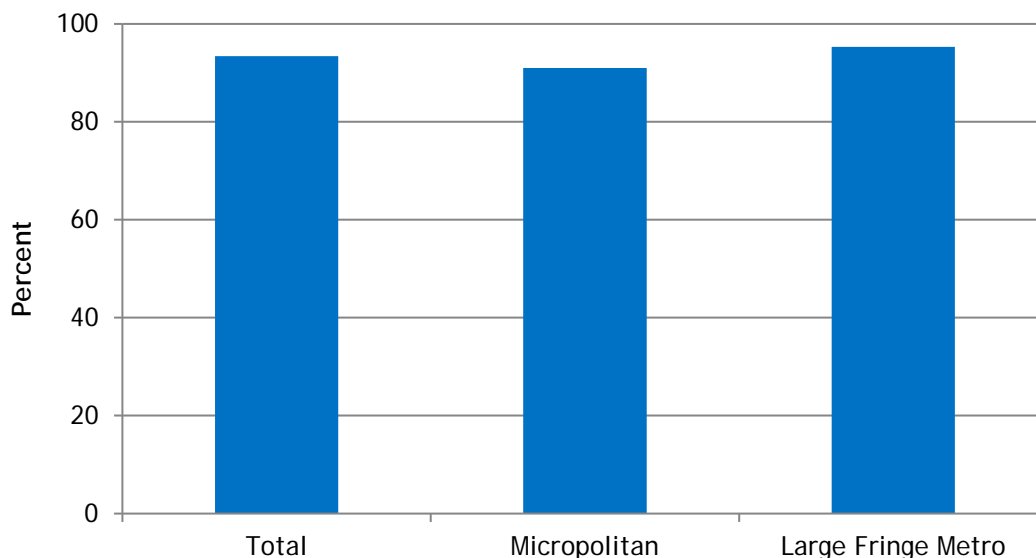
Source: Agency for Healthcare Research and Quality, Medical Expenditure Panel Survey, 2016.

- In 2016, the percentage of children who had their height and weight measured by a health provider within the past 2 years was lower in micropolitan areas (91.0%) than in large fringe metro areas (95.3%; Figure 133).

Pediatric Measure: Emergency Department Visits for Asthma

Asthma is one of the most common chronic pediatric diseases, and acute asthma exacerbation is a leading cause of emergency department (ED) visits for children.[137] Given the severity of asthma, timely treatment is crucial. Current research shows that ED overcrowding, acuity, and age affect treatment time for children visiting the ED.[138,139]

Figure 134. Emergency department encounters for asthma, children ages 2-17, 2016
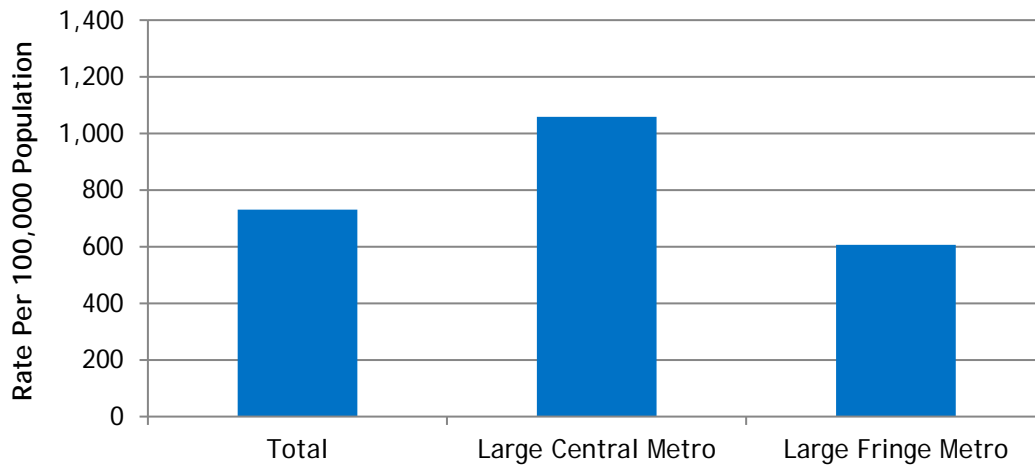
Source: Agency for Healthcare Research and Quality, Healthcare Cost and Utilization Project, Nationwide Emergency Department Sample, 2016.
Note: For this measure, lower rates are better.

- In 2016, the rate of children ages 2-17 who with ED visits for asthma was almost twice as high in large central metro areas (1,058.8 per 100,000 population) as it was in large fringe metro areas (606.9 per 100,000 population; Figure 134).

Pediatric Measure: Hospital Admissions for Asthma

Asthma is the most common chronic lung condition among children under 17 years in the United States.[140] Asthma has no cure and without treatment, patients can die. CDC research shows that from 2001 to 2016, 8% fewer children experienced one or more asthma attacks. Nonetheless, in 2017, about 1 in 12 children ages 0-17 had asthma and among them, asthma disproportionately affected males, non-Hispanic Black children, and children from low-income households.[60]

Figure 135. Hospital admissions for asthma per 100,000 population, children ages 2-17, 2016
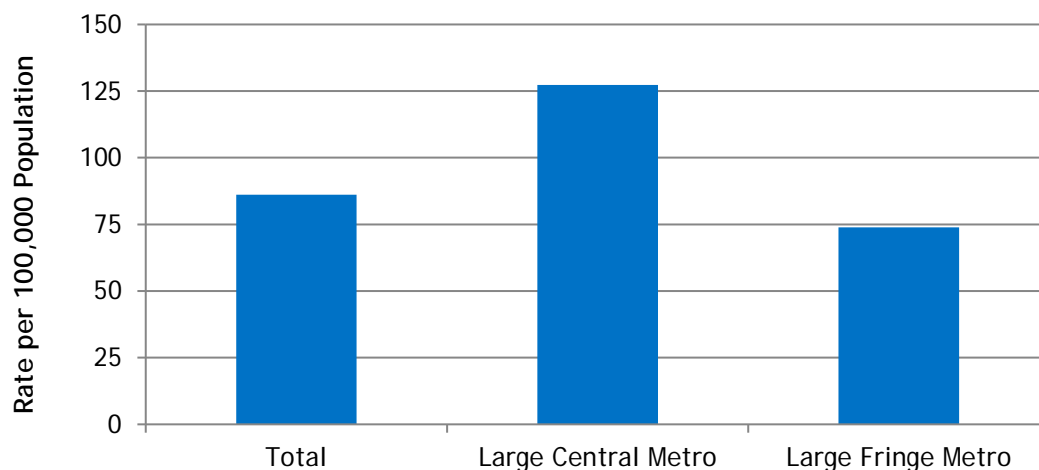
Source: Agency for Healthcare Research and Quality, Healthcare Cost and Utilization Project, 2016.
Note: For this measure, lower rates are better.

- In 2016, the rate of hospital admissions for children ages 2-17 with asthma was almost twice as high in large central metro areas (127.3 per 100,000 population) as in large fringe metro areas (73.9 per 100,000 population; Figure 135).

Care Coordination Measure: Emergency Department Visits for Dental Conditions

More people across the United States are using the ED for dental complaints.[141] In 2016, the rate of ED visits for dental complaints was 45.8 visits per 100 people.[142] Research shows that many of these visits could be prevented through appropriate preventive care.[141]

Figure 136. Emergency department visits with a principal diagnosis related to dental conditions, 2016

Source: Agency for Healthcare Research and Quality, Healthcare Cost and Utilization Project, Nationwide Emergency Department Sample, 2016.
Note: For this measure, lower rates are better.

- In 2016, the rate of ED visits related to dental conditions in micropolitan areas (482.9 per 1,000 encounters) was more than twice the rate in large fringe metro areas (221.6 per 1,000 encounters; Figure 136).

Care Coordination Measure: Hospital Admissions for Pneumonia

Pneumonia is a devastating and life-threatening condition that can strike anyone, but older adults have increased susceptibility for community-acquired pneumonia (CAP).[143,144] The costs associated with CAP can be mitigated by preventive efforts, including vaccinations.[144] CDC recommends pneumococcal vaccination for all adults 65 years and over, as well as adults ages 19-64 years who have certain medical conditions (e.g., HIV, leukemia) or who smoke.[145]

Figure 137. Hospital admissions for community-acquired pneumonia per 100,000 population, adults age 18 and over, 2016
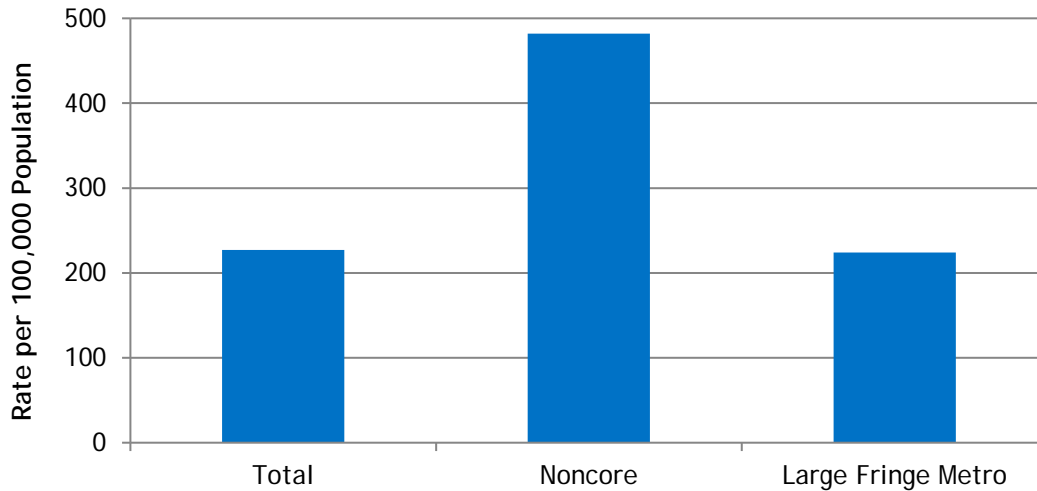
- In 2016, the rate of hospital admissions for CAP was more than twice as high in noncore areas (481.9 per 100,000 population) compared with large fringe metro areas (223.9 per 100,000 population; Figure 137).

Patient Safety Measure: Surgical Complications

Wound dehiscence is when an incision breaks open and does not heal properly after surgery, often within 10 days.[146] This postoperative complication can result in increased morbidity and mortality for patients who have had abdominopelvic surgeries.[147]

Figure 138. Reclosure of postoperative abdominal wound dehiscence per 1,000 abdominopelvic surgery admissions of length 2 or more days, adults, 2016
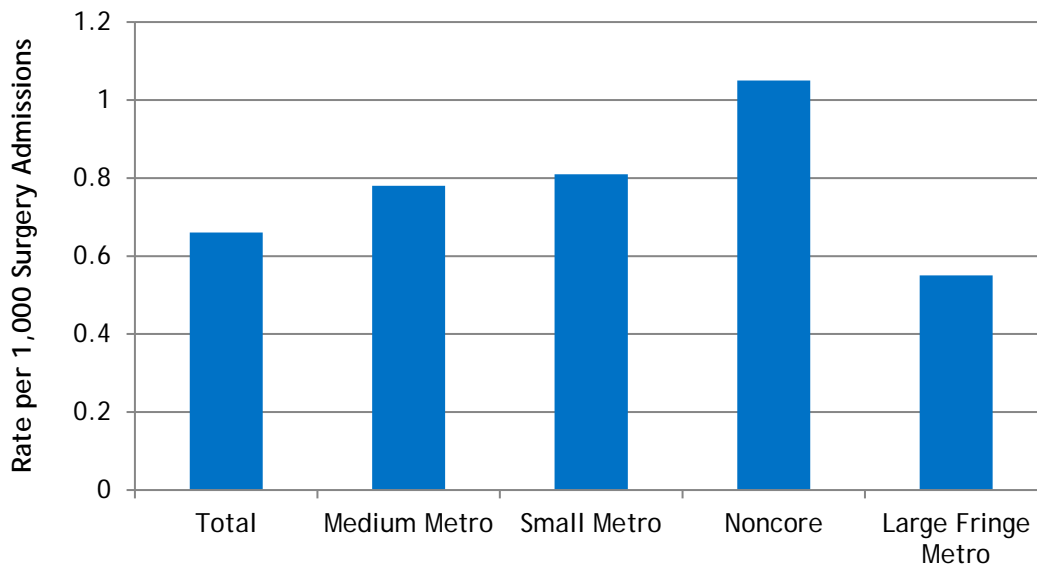
● **In 2016, the rate of adults who had a wound reclosed after abdominopelvic surgery was worse in three metro areas compared with large fringe metro areas (0.55 per 100,000 surgery admissions; Figure 138). Noncore areas had the worst rate (1.05 per 100,000 surgery admissions), followed by small metro (0.81 per 100,000 surgery admissions) and medium metro areas (0.78 per 100,000 surgery admissions).**

Changes in Quality of Care by Residence Location

Figure 139. Number and percentage of all quality measures that were improving, not changing, or worsening, total and by residence location, from 2002 through 2011, 2015, 2016, or 2017
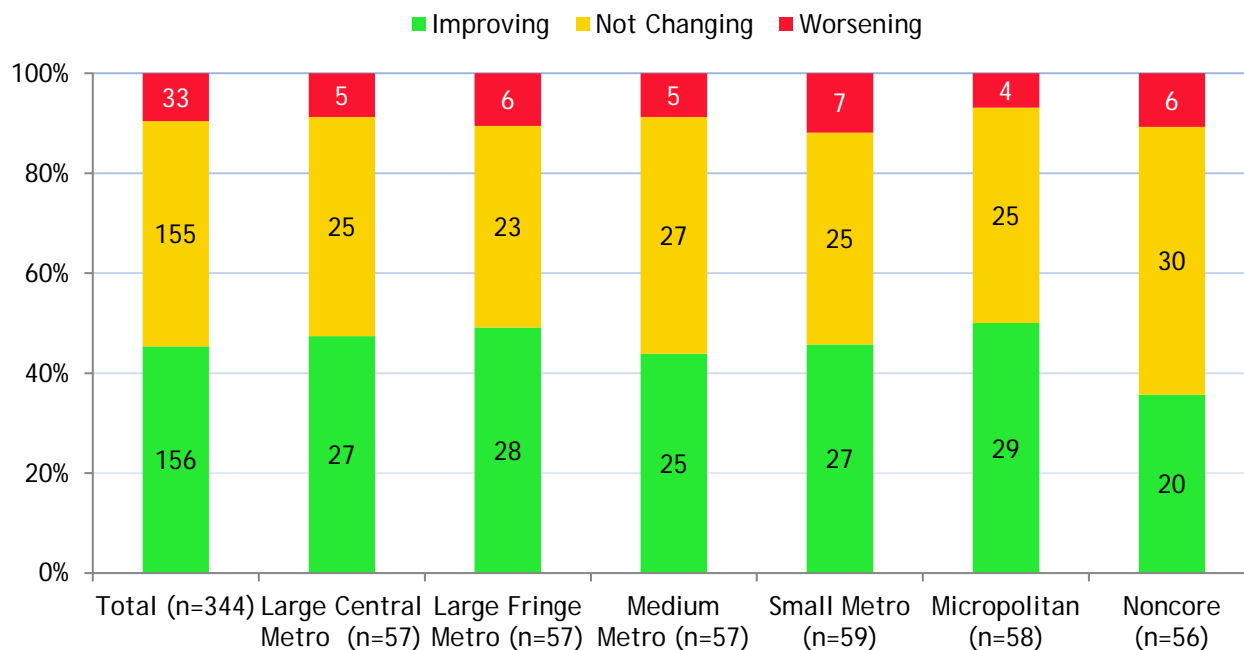
Key: n = number of measures.

- **Improving** = Quality is going in a positive direction at an average annual rate greater than 1% per year.
- **Not changing** = Quality is not changing or is changing at an average annual rate of 1% or less per year.
- **Worsening** = Quality is going in a negative direction at an average annual rate greater than 1% per year.

● **Across 344 quality measures, 45% are improving, 45% are not changing, and 10% are worsening (Figure 139).**

● **Noncore areas have fewer improving measures and more measures not changing compared with other areas.**

Changes in Disparities by Residence Location

Figure 140. Number and percentage of quality measures with disparity at baseline for which disparities related to residence location were improving or not changing, 2002 through 2011, 2014, 2015, 2016, or 2017
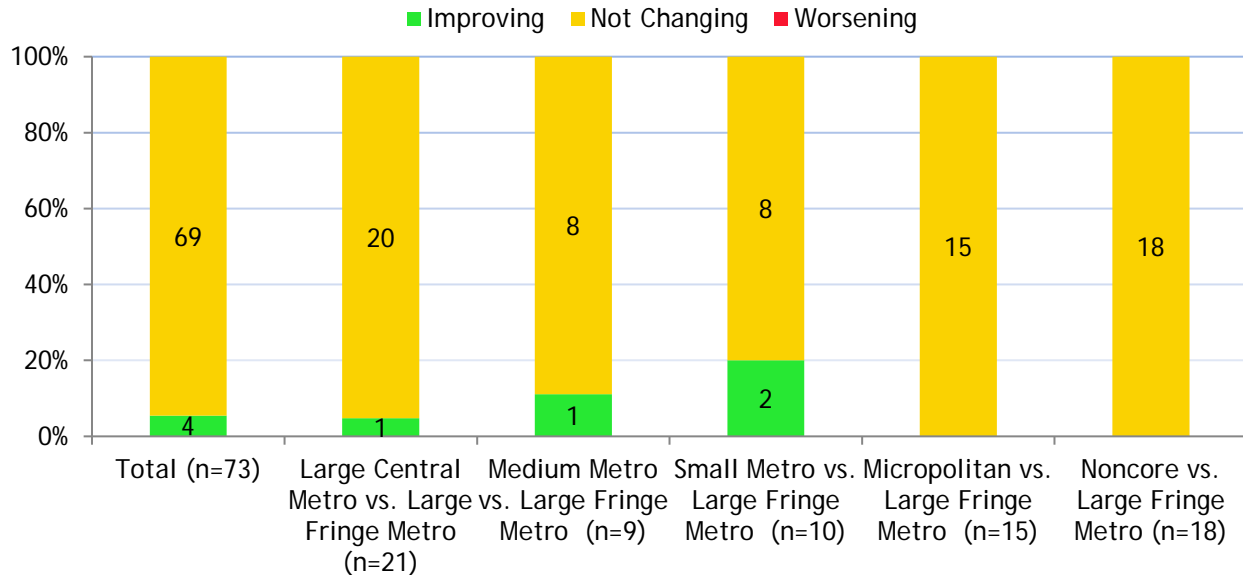
Key: n = number of measures.

- Disparities by residence location remained unchanged for most quality measures (Figure 140). These measures encompass Person- and Family-Centered Care, Care Affordability, Healthy Living, and Effective Treatment.
- The 2017 report did not show widening or narrowing disparities by residence location.[xvi] This year's report also shows no widening disparities. Of the four measures that showed narrowing disparities, the largest improvement over time was for Hospital inpatient stays involving opioid-related diagnoses per 100,000 population (large central metro).
- Both nonmetropolitan areas (noncore and micropolitan) showed no statistically significant differences over time for any measures.

Inpatient Stays Due to Opioid Use

Increased availability and overuse of opioid medications (both prescription and nonprescription drugs) have contributed to adverse outcomes for patients, including increased risk of opioid use disorder, misuse of medications, and potential overdoses.[107]

[xvi] Due to the nationwide conversion from the International Classification of Diseases, Ninth Revision (ICD-9) to the Tenth Revision (ICD-10) codes in the last quarter of 2015, at this time, we cannot trend the data for some AHRQ Quality Indicators that are based on nationwide Healthcare Cost and Utilization Project (HCUP) data. Measures that have been included in past reports are not always represented in this year's report. Wherever this situation applies, this report includes a footnote.

The rapid and ongoing rise in both numbers of hospitalizations and their costs suggests that the burden of prescription opioid overdoses may threaten the infrastructure and finances of U.S. hospitals.[148]

Figure 141. Hospital inpatient stays involving opioid-related diagnoses per 100,000 population, 2005-2016

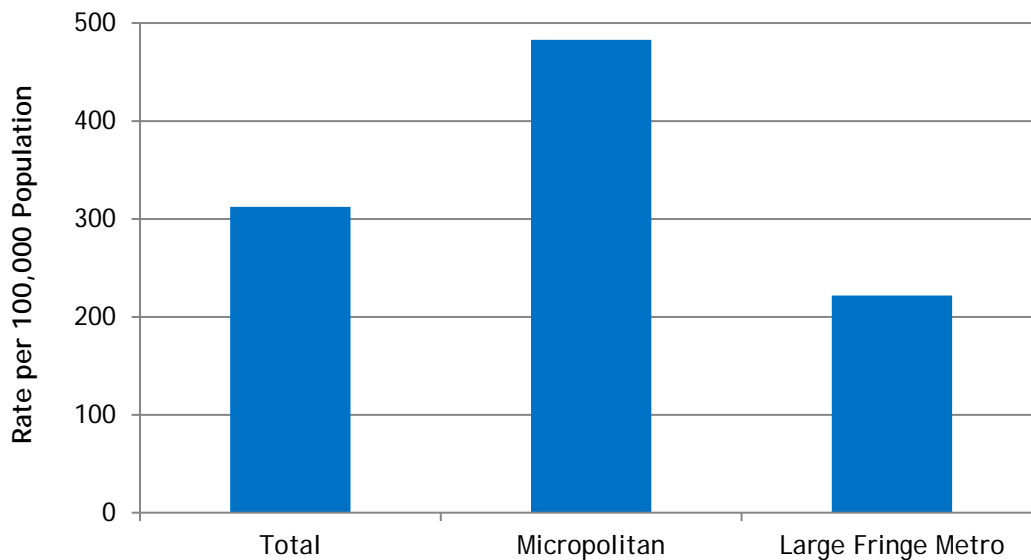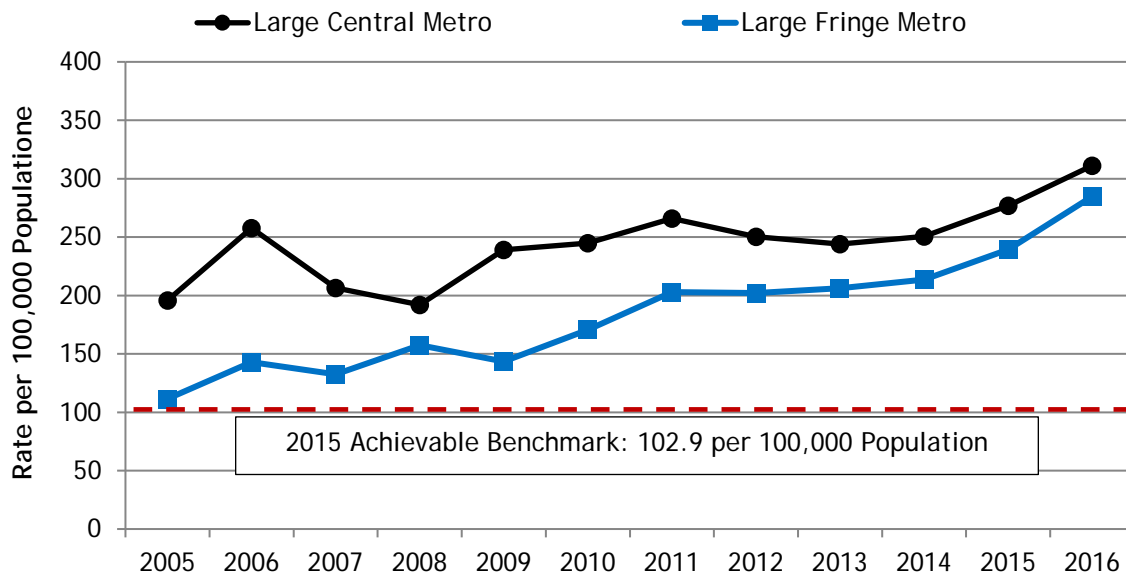**Source:** Agency for Healthcare Research and Quality, Healthcare Cost and Utilization Project, 2005-2016.
Note: For this measure, lower rates are better.

- From 2005 to 2016, the gap between people in large fringe metro areas and those in large central metro areas in opioid-related hospital stays has narrowed. In 2005, the rate was 111.5 per 100,000 population in large fringe metro areas vs. 195.8 per 100,000 population in large central metro areas. In 2016, both rates had risen, to 284.8 in large fringe metro areas and 311.2 in large central metro areas (Figure 141).
- Although the gap has narrowed over time, a disparity still exists and the rates for both populations are worsening.
- The 2015 top 5 state achievable benchmark was 102.9 per 100,000 population. Neither the large central metropolitan population nor the large fringe metro population has made progress toward the benchmark.
- The top 5 states that contributed to the achievable benchmark are Georgia, Iowa, Nebraska, Texas, and Wyoming. In 2016, Georgia, Iowa, Nebraska, South Carolina, South Dakota, Texas, and Wyoming reached the benchmark.

In 2017, HHS launched a departmentwide initiative with a five-point strategy to combat the opioid epidemic. Many agencies supported this initiative by establishing specific research opportunities, resources, and data to support providers, patients and researchers.[111]

NEW MEASURES IN THE 2018 QDR DATABASE

The 2018 QDR includes new measures in four topic areas: cancer care, dementia, opioid use, and maternal morbidity and mortality. These topics were based on a review of current literature and availability of quality measures and data as recommended by subject matter experts from the QDR Interagency Work Group and alignment with HHS priority areas.

These measures help fill in gaps in the care continuum and align with the priorities of effective treatment and care coordination. Measures in these topic areas are also categorized under prevention, treatment, management, or outcome categories.

This section presents the context for each topic area, its framework (where applicable), and how new measures may complement existing measures in these categories. All new measures are marked with an asterisk in the following sections and are not otherwise found in the summary analyses in the 2018 QDR. Disparities analyses for select measures are included. In future QDR publications, the measures described here will be considered for inclusion in the QDR annual analyses.

Cancer Care

The continuum of cancer care includes risk assessment, primary prevention, screening, detection, diagnosis, treatment, survivorship, and end-of-life care. Movement across the stages of the cancer care continuum involves several *types* of needed care, as well as *transitions* between the types of care.

Type refers to the care delivered to accomplish a specific medical goal, such as detection, diagnosis, or treatment. *Transition* refers to the set of interactions needed to go from one type of care to another, such as from detection to diagnosis, which has implications for coordination of cancer care and patient navigation within the healthcare system. Each type and transition of care is subject to influences at multiple levels that can facilitate or impede appropriateness and quality of care, thus affecting successful achievement of medical goals and desired patient outcomes.

The exhibit below shows how types and transitions of care fit into the cancer care continuum and how new measures may complement existing measures for each stage of the cancer care continuum. The domains in the "Processes of Care Across the Cancer Care Continuum" align well with two *priorities of the QDR* (i.e., Effective Treatment and Care Coordination) and the *categories* (Prevention, Diagnosis and Treatment, Clinical Management, and Outcomes).

Mapping the measures to the stages in the cancer care continuum helps in assessing appropriateness and quality of care received by cancer patients by providing a framework to assess compliance with guidelines issued by reputable professional organizations such as the American Cancer Society, American Society of Clinical Oncology, and the US Preventive Services Task Force.

Exhibit 1. Opportunities to optimize cancer care

In earlier data cycles, the QDR featured measures for breast, cervical, colorectal, and lung cancers, along with select measures spanning these areas (from prevention to diagnosis and treatment, as well as outcomes, including mortality). The 2018 QDR database features six new treatment measures for breast, cervical, and colorectal cancers. Select measures are shown here and all measures can be accessed via the QDR's Data Query Tool at https://nhqrnet.ahrq.gov/inhqrdr/data/query.

Breast Cancer Measures

Prevention Measures
- Women ages 50-74 who received a mammogram in the last 2 years

Treatment Measures
- Tamoxifen or third generation aromatase inhibitor was recommended or administered within 1 year of diagnosis for women with AJCC T1cN0M0 or stage IB-III hormone receptor-positive breast cancer[*]
- Combination chemotherapy was recommended or administered within 4 months of diagnosis for women under 70 with AJCC T1cN0MO or Stage IB-III hormone receptor-negative breast cancer[*]
- Radiation therapy was recommended or administered following any mastectomy within 1 year of diagnosis of breast cancer for women with 4 positive regional lymph nodes[*]
- Women with clinical Stage I-IIb breast cancer who received axillary node dissection or sentinel lymph node biopsy (SLNB) at the time of surgery (lumpectomy or mastectomy)
- Women under age 70 treated for breast cancer with breast-conserving surgery who received radiation therapy to the breast within 1 year of diagnosis

Management Measures
- Breast cancer diagnosed at advanced stage (regional, distant stage, or local stage with tumor greater than 2 cm) per 100,000 women age 40 and over

Outcome Measures
- Female breast cancer deaths per 100,000 population

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[*] The measures that are noted with an asterisk (*) are newly added to this year's report.

Cervical Cancer Measures

Prevention Measures
- Women ages 21-65 who received a Pap smear in the last 3 years
- Adolescent females ages 13-15 who received 3 or more doses of human papillomavirus (HPV) vaccine
- Adolescent females ages 16-17 who received 3 or more doses of HPV vaccine
- Adolescent males ages 13-15 who received 3 or more doses of HPV vaccine
- Adolescent males ages 16-17 who received 3 or more doses of HPV vaccine
- Adolescents ages 13-15 years who received 3 or more doses of HPV vaccine
- Adolescents ages 16-17 years who received 3 or more doses of HPV vaccine

Treatment Measures
- Use of brachytherapy in patients treated with primary radiation with curative intent in any stage of cervical cancer[*]
- Radiation therapy was completed within 60 days of initiation of radiation among women diagnosed with any stage of cervical cancer[*]

Management Measures
- Cervical cancer diagnosed at advanced stage (all invasive tumors) per 100,000 women age 20 and over

Outcome Measures
- No outcome measures are represented in available QDR data.

Colorectal Cancer Measures

Prevention Measures
- Composite measure: Adults ages 50-75 who received any type of colorectal cancer screening

Treatment Measures
- Adjuvant chemotherapy was recommended or administered within 4 months of diagnosis for patients under the age of 80 with AJCC Stage III lymph node-positive colon cancer[*]
- Patients with colon cancer who received surgical resection of colon cancer that included at least 12 lymph nodes pathologically examined
- Adults treated at a HRSA-supported health center with appropriate screening for colorectal cancer

Management Measures

- Colorectal cancer diagnosed at advanced stage (tumors diagnosed at regional or distant stage) per 100,000 population age 50 and over

Outcome Measures

- Colorectal cancer deaths per 100,000 population

Lung Cancer Measures

Prevention, Treatment, and Management Measures

- No measures are represented in available QDR data.

Outcome Measures

- Lung cancer deaths per 100,000 population

Other Cancer Measures

Prevention, Treatment, and Management Measures

- No measures are represented in available QDR data.

Outcome Measures

- Composite measure: Cancer deaths per 100,000 population per year for all cancers

Breast Cancer

In 2016, the incidence rate of female breast cancer was 126.4 per 100,000 women per year and the death rate was 20.0 per 100,000 women per year.[149] Among women, hormone receptor-positive (HR+) breast cancer is the most common type of breast cancer worldwide. About 60% to 75% of women with breast cancer have estrogen receptor-positive (ER+) breast cancer and 65% of these cancers are also progesterone receptor-positive (PgR+).[150]

Women diagnosed with HR+ breast cancer who are pre/peri menopausal should be offered adjuvant endocrine therapy with tamoxifen for 5 years, after which they should receive additional therapy based on menopausal status.[151] Adjuvant endocrine therapy is highly effective and appropriate for nearly all women with ER+ or PgR+ tumors.

Aromatase inhibitors stop the production of estrogen in postmenopausal women. Aromatase inhibitors work by blocking the enzyme aromatase, which turns the hormone androgen into small amounts of estrogen in the body. Thus, less estrogen is available to stimulate the growth of HR+ breast cancer cells.

Tamoxifen is a selective estrogen receptor modulator (SERM), which binds to estrogen receptors, preventing estrogen from binding. This process slows or stops the growth of hormone-sensitive tumors by blocking the body's ability to produce hormones or by interfering with effects of hormones on breast cancer cells. Tumors that are hormone insensitive do not have hormone receptors and do not respond to hormone therapy.[152,153]

Use of Tamoxifen or Aromatase Inhibitor for Breast Cancer

Figure 142. Treatment: Tamoxifen or third-generation aromatase inhibitor was recommended or administered within 1 year of diagnosis for women with AJCC T1cN0M0 or stage IB-III hormone receptor-positive breast cancer, by race/ethnicity, 2005-2015
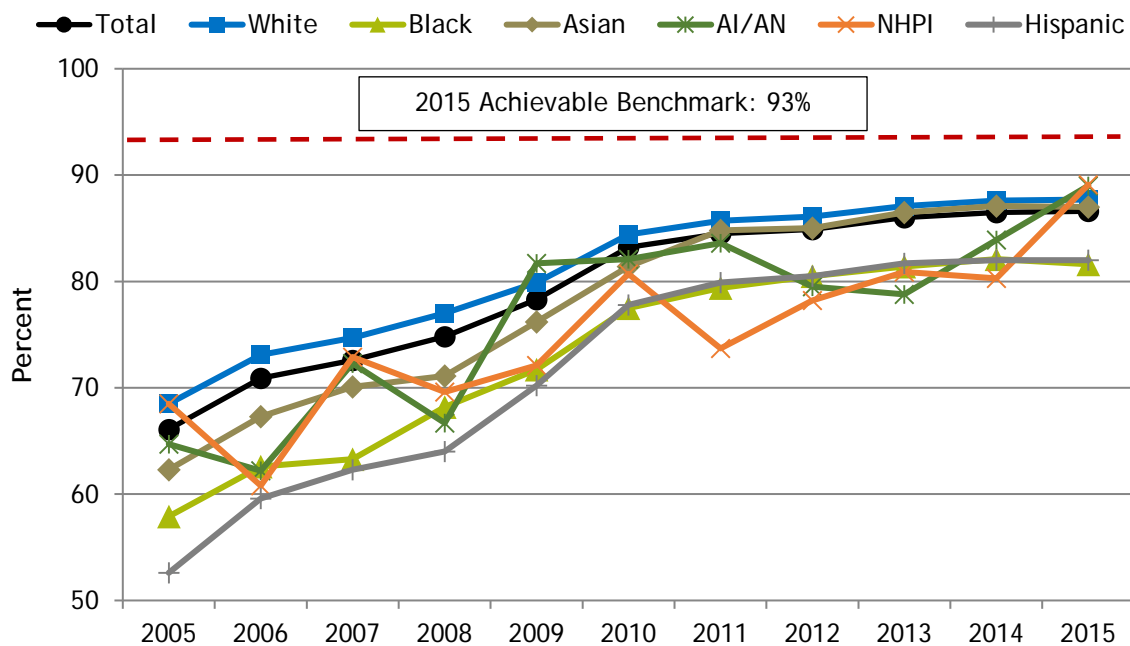
Key: AI/AN = American Indian or Alaska Native; NHPI = Native Hawaiian/Pacific Islander. AJCC T1cN0M0 – American Joint Committee on Cancer staging designation (https://www.cancer.org/cancer/breast-cancer/understanding-a-breast-cancer-diagnosis/stages-of-breast-cancer.html.
Source: Commission on Cancer, American College of Surgeons and American Cancer Society, National Cancer Data Base, 2005-2015.
Note: White, Black, Asian, AI/AN, and NHPI are non-Hispanic. Hispanic includes all races.

- From 2005 to 2015, the total percentage of women with AJCC T1cN0M0 or stage IB-III HR+ breast cancer for whom tamoxifen or third-generation aromatase inhibitor was recommended or administered within 1 year of diagnosis increased from 66.1% to 86.6% (Figure 142).
- The 2015 top 5 State achievable benchmark was 93%. Overall, the benchmark could be achieved in 3 years. AI/ANs, Asians, and NHPIs could achieve the benchmark in 2 years, Whites in 3 years, and Blacks and Hispanics in 4 years.
- The top 5 States that contributed to the achievable benchmark are Idaho, Iowa, Kentucky, Maine, and South Dakota.

Chemotherapy for Breast Cancer

Hormone receptor-negative breast cancer refers to the prognostic factors of breast cancers whose cells have tested negative for hormone epidermal growth factor receptor 2 (HER-2), estrogen receptors, and progesterone receptors. This type of cancer does not respond to hormonal therapy, such as tamoxifen or aromatase inhibitors, or other therapies that target HER-2.[154]

Chemotherapy is the use of drugs to destroy cancer cells. It works by keeping cancer cells from growing and dividing to make more cells. Because cancer cells usually grow and divide faster than normal cells, chemotherapy has a greater effect on cancer cells. However, the drugs used for chemotherapy are powerful and can damage healthy cells.

Chemotherapy can be used:

- Before surgery or radiation therapy to shrink tumors (neoadjuvant chemotherapy);
- After surgery or radiation therapy to kill any remaining cancer cells (adjuvant chemotherapy);
- As the only treatment for cancers of the blood or lymphatic system, such as leukemia and lymphoma; and
- For cancer that comes back after treatment (recurrent cancer).

Despite the associated short- and long-term risks, chemotherapy remains an essential treatment for preventing recurrence in many patients with stage I-III breast cancer.[155]

Figure 143. Combination chemotherapy was recommended or administered within 4 months of diagnosis for women under 70 with AJCC T1cN0M0 or Stage IB-III hormone receptor negative-breast cancer, by income, 2005-2015
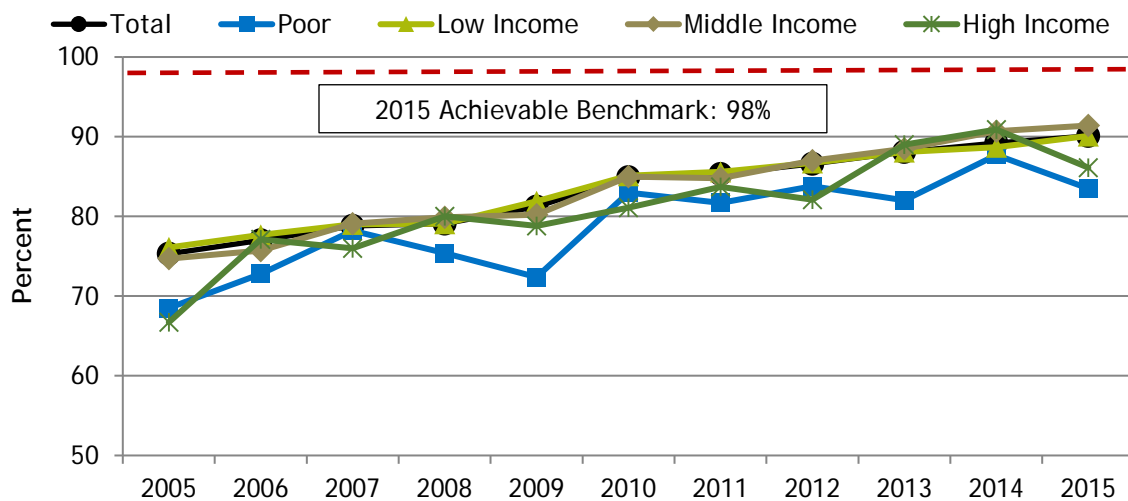
Key: AJCC T1cN0M0 – American Joint Committee on Cancer staging designation (https://www.cancer.org/cancer/breast-cancer/understanding-a-breast-cancer-diagnosis/stages-of-breast-cancer.html).
Source: Commission on Cancer, American College of Surgeons and American Cancer Society, National Cancer Data Base, 2005-2015.

- From 2005 to 2015, the total percentage of women under age 70 with AJCC T1cN0M0 or Stage IB-III hormone receptor-negative breast cancer for whom combination chemotherapy was recommended or administered within 4 months of diagnosis increased from 75.3% to 90.1% (Figure 143).In 2005, 2012, and 2015, middle-income women with AJCC T1cN0M0 or Stage IB-III hormone receptor-negative breast cancer were more likely to be recommended or administered combination chemotherapy within 4 months of diagnosis than high-income women.
- The 2015 top 4 State achievable benchmark was 98%. Overall, the benchmark could be achieved in 5 years. Middle-income women could achieve the benchmark in 4 years, low-income women in 6 years, and high-income women in 7 years.
- The top 4 States that contributed to the achievable benchmark are Delaware, Massachusetts, Minnesota, and Oregon.

Radiation Therapy for Breast Cancer

The National Comprehensive Cancer Network recommends postmastectomy radiation therapy for patients with tumors >5 cm or 4 or more positive lymph nodes.[156] Radiation therapy is the use of high-energy x rays or other particles to destroy cancer cells and slow tumor growth without harming nearby healthy tissue. It may be used along with other cancer treatments or as the main treatment. Sometimes radiation therapy is used to relieve symptoms, called palliative radiation therapy. More than half of all people with cancer receive some type of radiation therapy.[157]

Figure 144. Radiation therapy was recommended or administered following any mastectomy within 1 year of diagnosis of breast cancer for women with 4 positive regional lymph nodes, by insurance status, 2005-2015

Source: Commission on Cancer, American College of Surgeons and American Cancer Society, National Cancer Data Base, 2005-2015.

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- From 2005 to 2015, the total percentage of women with 4 positive regional lymph nodes for whom radiation therapy was recommended or administered following any mastectomy within 1 year of diagnosis of breast cancer increased from 67.8% to 86.1% (Figure 144).
- From 2005 to 2015, the percentage of women for whom radiation therapy was recommended or administered increased from 72.6% to 87.8% for women with private insurance, from 66.0% to 80.9% for women with public insurance, and from 70.6% to 82.5% for uninsured women.
- In all years, women with public insurance were less likely than women with private insurance to be recommended or administered radiation therapy following any mastectomy within 1 year of diagnosis of breast cancer.
- In all years except 2005, uninsured women were less likely than privately insured women to be recommended or administered radiation therapy following any mastectomy within 1 year of diagnosis of breast cancer.
- The 2015 top 3 State achievable benchmark was 97%. Overall, the benchmark could be achieved in 5 years. Women with private insurance could achieve the benchmark in 4 years, publicly insured in 8 years, and uninsured in 10 years.
- The top 3 States that contributed to the achievable benchmark are Colorado, Kansas, and Massachusetts.

Cervical Cancer

For 2018, the American Cancer Society estimated about 13,240 new cases of invasive cervical cancer in the United States.[158] It is recommended that combinations of surgery, chemotherapy, and radiation therapy (including brachytherapy) be used for women with stage IB-IVA disease.[159]

While the research base is evolving, radiation oncologists are using intensity-modulated radiation therapy (IMRT) as a "replacement" for brachytherapy. Experts in cervical cancer routinely state that intracavitary brachytherapy for the treatment of locally advanced cervical cancer is perhaps the most important component of treatment and local disease control. Substituting IMRT for brachytherapy puts the patient at a higher risk of death.[160]

Brachytherapy for Cervical Cancer

Brachytherapy is a critical component of definitive therapy for all patients with primary cervical cancer who are not candidates for surgery.[161] Brachytherapy is a type of internal radiation therapy in which seeds, ribbons, or capsules that contain a radiation source are placed in the body, in or near the tumor. Brachytherapy is a local treatment and treats only a specific part of the body. It is often used to treat cancers of the cervix.[162]

Figure 145. Treatment: Use of brachytherapy in patients treated with primary radiation with curative intent in any stage of cervical cancer, by insurance status, 2005-2015
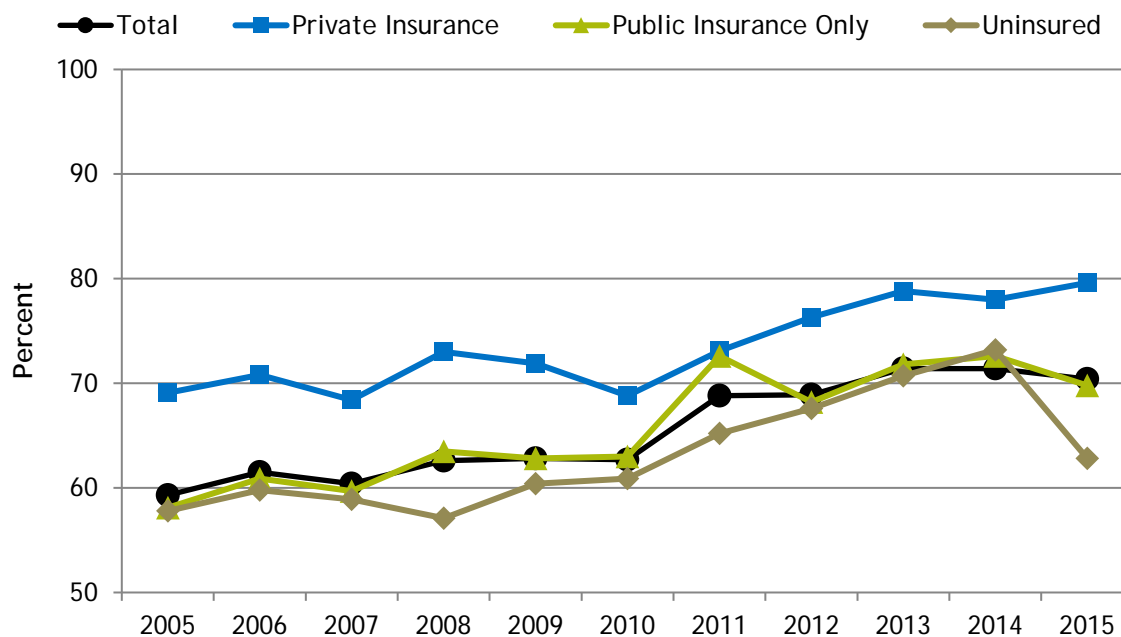
Source: Commission on Cancer, American College of Surgeons and American Cancer Society, National Cancer Data Base.

- From 2005 to 2015, the total percentage of patients treated with primary radiation with curative intent in any stage of cervical cancer and brachytherapy increased from 59.3% to 70.4% (Figure 145).
- From 2005 to 2015, the percentage of patients treated with primary radiation with curative intent in any stage of cervical cancer and brachytherapy increased from 69.1% to 79.6% for women with private insurance and from 58.1% to 69.8% for women with public insurance. The percentage of uninsured women receiving this treatment increased from 2005 to 2014 (57.8% to 73.2%) and then decreased in 2015 to 62.8%.

Radiation Therapy for Cervical Cancer

Radiation therapy, or radiotherapy, is a common way to treat cervical cancer. During radiation therapy, high-energy x rays are used to kill cancer cells. Radiation therapy can be administered by a machine that aims x rays at the body (external beam radiation) or by placing small capsules of radioactive material directly into the cervix (internal or implant radiation or brachytherapy). Many patients receive both kinds of radiation therapy.

In stage I cervical cancer, radiation therapy may be used instead of surgery, or it may be used after surgery to destroy remaining cancer cells. In stage IB-IVA cervical cancer, radiation therapy is administered concurrently with chemotherapy.[163]

Figure 146. Radiation therapy was completed within 60 days of initiation of radiation among women diagnosed with any stage of cervical cancer, by geographic location, 2005-2015
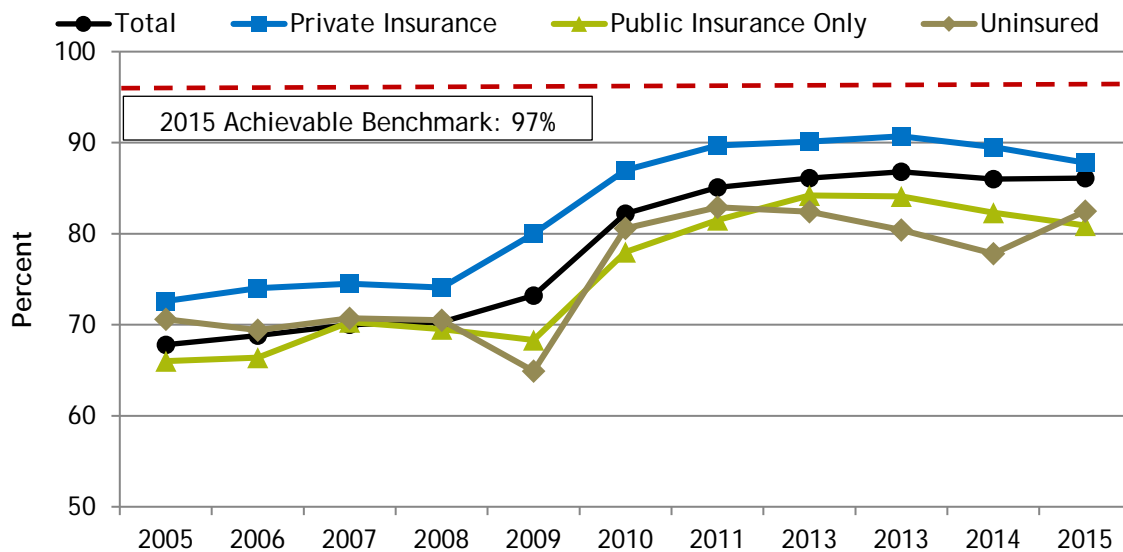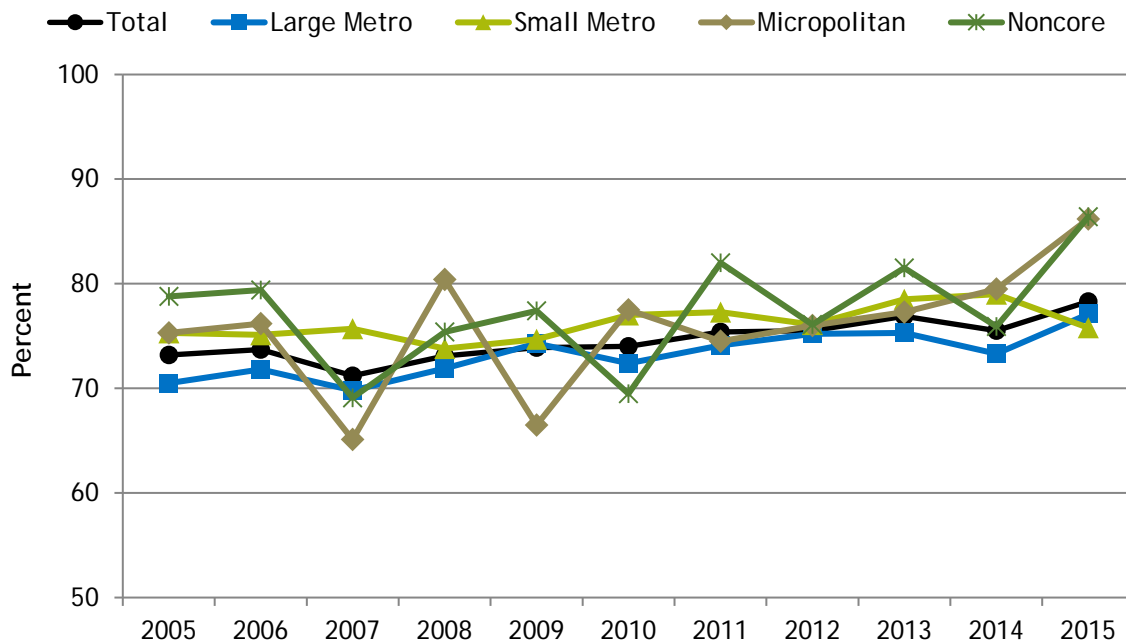

Source: Commission on Cancer, American College of Surgeons and American Cancer Society, National Cancer Data Base, 2005-2015.

- From 2005 to 2015, the total percentage of women diagnosed with any stage of cervical cancer for whom radiation therapy was completed within 60 days increased from 73.2% to 78.3% (Figure 146).
- The percentage of women who received this treatment increased from 70.5% to 77.1% in large metropolitan areas, from 75.3% to 86.2% in micropolitan areas, and from 78.8% to 86.4% in noncore areas.
- In 2005, 2006, 2011, and 2015, women in noncore areas were more likely to complete radiation therapy within 60 days of initiation than women in large metropolitan areas.

Colorectal Cancer

Colorectal cancer is the third leading cause of cancer-related deaths in men and women in the United States. It is expected to cause about 51,000 deaths during 2019.[164] Substantial data are available regarding underuse and wide variation in the use of chemotherapy with Stage III colon cancer.[165]

A diagnosis of stage III colon cancer means that the cancer has spread to nearby lymph nodes and the primary tumor has protruded into the bowel wall. When cancer cells are found in more than 3 lymph nodes, studies have shown a high risk of the disease returning, and intensive postsurgical therapy is standard in such cases.

For more than a decade, the standard of care for stage III cancer has been 6 months of postsurgical, or adjuvant, chemotherapy. Studies have shown that patients with resected colon cancer treated with adjuvant therapy have a survival advantage over those not treated with adjuvant therapy.[166]

Chemotherapy is the use of drugs to destroy cancer cells. It works by keeping the cancer cells from growing and dividing to make more cells. Because cancer cells usually grow and divide faster than normal cells, chemotherapy has a greater effect on cancer cells.[167]

Chemotherapy for Colon Cancer

Figure 147. Treatment: Adjuvant chemotherapy was recommended or administered within 4 months of diagnosis for patients under the age of 80 with AJCC Stage III lymph node-positive colon cancer, by income, 2005-2015
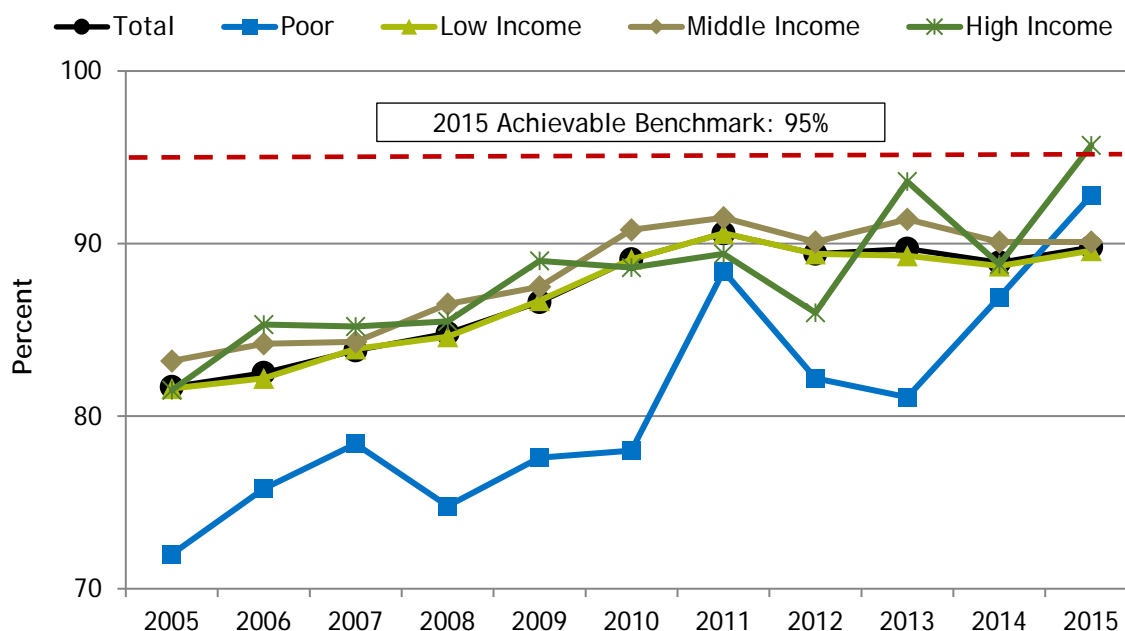
Source: Commission on Cancer, American College of Surgeons and American Cancer Society, National Cancer Data Base, 2005-2015.

- From 2005 to 2015, the total percentage of patients under the age of 80 with AJCC Stage III lymph node-positive colon cancer for whom adjuvant chemotherapy was recommended or administered within 4 months of diagnosis increased from 81.7% to 89.8% (Figure 147).
- The 2015 top 5 state achievable benchmark was 95%. Overall, the benchmark could be achieved in 6 years. High-income patients have already achieved the benchmark. Poor patients could achieve the benchmark in 2 years and low- and middle-income patients could achieve the benchmark in 7 years.
- The top 5 States that contributed to the achievable benchmark are Kentucky, Maryland, Mississippi, Missouri, and Virginia.

Dementia Among Older Adults

The population of older Americans is growing, and people are living longer. Aging tends to increase the prevalence of chronic diseases, including dementia. Dementia is the deterioration and eventual loss of memory and other cognitive and behavioral functions due to an abnormal and rapid loss of neurons, primarily in older adults (65 years and over).[168]

Dementia has multiple forms and some forms can progress into other conditions, most commonly, Alzheimer's disease. In 2016, Alzheimer's was the sixth leading cause of death in the United States and fifth leading cause among those 65 and over.[56] In 2019, Medicare and Medicaid are expected to cover "$195 billion, or 67 percent of the total health care and long-term care payments for people with Alzheimer's or other dementias."[169]

Dementia has no cure or specific treatment plan. Patients with severe dementia often depend on others to provide care. Patients may go to the emergency department or be admitted to the hospital due to dementia or reasons related to dementia. During the course of their care, patients may also experience adverse events such as falls or pressure ulcers, thereby worsening their health.

Dementia and dementia care are difficult to measure, but several measure sets are available, such as the dementia management measure set from the American Medical Association, American Academy of Neurology, and American Psychiatric Association, updated in 2016.[170] This measure set addresses areas such as diagnosis and safety (e.g., Disclosure of Dementia Diagnosis, Education and Support of Caregivers for Patients With Dementia, Safety Concern Screening and Follow-Up for Patients With Dementia). The Medicare Merit-based Incentive Payment System also includes dementia-related measures, such as screening for safety concerns. The National Quality Forum has also worked to identify measures of dementia care and outcomes.[171]

As dementia is a new focus for the QDR and measures are still being considered, the QDR team had limited data. Thus, two measures are presented here, one on management of dementia and the other on deaths from dementia. Measures may be added over time as understanding grows of how best to assess dementia care.

Dementia Measures

Management Measures:
- Adults age 65 and over with and without dementia who had an emergency department visit[*]

Outcome Measures:
- Age-adjusted death rates for dementia[*]

Emergency Department Visits With Dementia

People with dementia might be brought to the emergency department (ED) for a variety of reasons and the course of their care can lead to additional behavioral, cognitive, and physical health problems, including the increased likelihood of an adverse event.[172]

ED visits resulting from dementia can be challenging and costly for patients who may otherwise require a caregiver to support them. Furthermore, national data about people who experience dementia and Alzheimer's disease remain limited. Providers, researchers, and policymakers have limited information to understand why patients with dementia come to the ED and how their care can be supported in the community to minimize their visits.[173]

Although ED visit rates are lower for older adults with dementia than for those without dementia, the consequences can be worse. Older adults with dementia have greater comorbidity, incur higher charges, are admitted to the hospital at higher rates, return to the ED at higher rates, and have higher mortality after an ED visit than patients without dementia.[174]

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[*] The measures that are noted with an asterisk (*) are newly added to this year's report.

Figure 148. Management: Emergency department visits involving dementia among adults age 65 and over, 2016
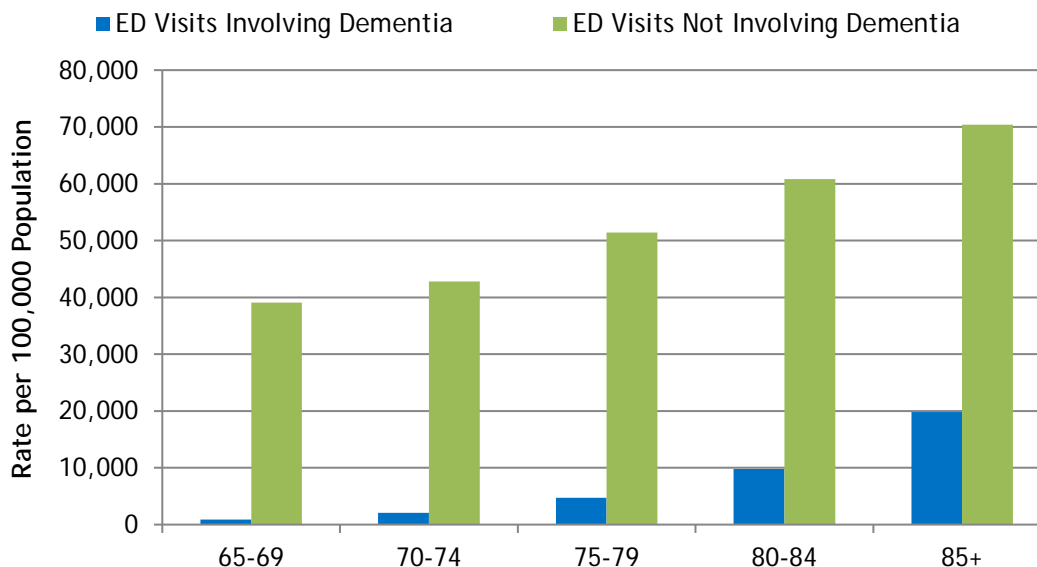
Source: Agency for Healthcare Research and Quality, Healthcare Cost and Utilization Project, Nationwide Inpatient Sample and Nationwide Emergency Department Sample, 2016.

- In 2016, the rate of emergency department visits involving dementia among adults was:

  - 889.5 per 100,000 for adults ages 65-69,
  - 2,068.5 per 100,000 for adults ages 70-74,
  - 4,710.8 per 100,000 for adults ages 75-79,
  - 9,784 per 100,000 for adults ages 80-84, and
  - 19,817 per 100,000 for adults ages 85 and over (Figure 148).

Dementia Mortality

Alzheimer's disease (AD) is currently ranked as the sixth leading cause of death in the United States, but recent estimates indicate that the disorder may rank third, just behind heart disease and cancer, as a cause of death for older people. Alzheimer's is the most common cause of dementia among older adults.[175]

It is estimated that well over half a million deaths per year in the United States occur among older adults with AD. About two and a half times as many AD deaths will occur in 2050, absent a broadly applied intervention that prevents or delays AD onset.[176]

Two factors contribute to the substantial number of deaths. First, no one recovers from AD; it lasts until death. Second, most deaths in the United States occur in adults age 65 and over, the age of greatest risk for AD.[176]

AD may cause even more deaths than official sources recognize. It is difficult to determine how many deaths are caused by AD each year because of the way causes of death are recorded. The Centers for Disease Control and Prevention considers a person to have died from Alzheimer's if the death certificate lists Alzheimer's as the underlying cause of death, defined as "the disease or injury which initiated the train of events leading directly to death." Therefore, conditions related to AD may be listed as the cause of death rather than AD itself.

For example, AD may damage areas of the brain that control swallowing, making it difficult to eat and drink. Individuals may swallow food into the windpipe instead of the esophagus, causing food particles to lodge in the lungs and cause infection. This type of infection is called aspiration pneumonia, a contributing cause of death among many people with AD.[169]

Consistent disparities remain among Blacks and Hispanics compared with non-Hispanic Whites in the:

- Prevalence and incidence of AD,
- Participation in clinical trials,
- Use of medications and other interventions,
- Use of long-term services and supports,
- Healthcare expenditures,
- Quality of care, and
- Caregiving.[177]

Problems related to scarce resources can affect brain health over the long term and may contribute to racial inequities in rates of dementia; however, education can help mitigate the risk.[178]

Figure 149. Outcome: Age-adjusted death rates for dementia per 100,000 population, by race/ethnicity, 2000-2017
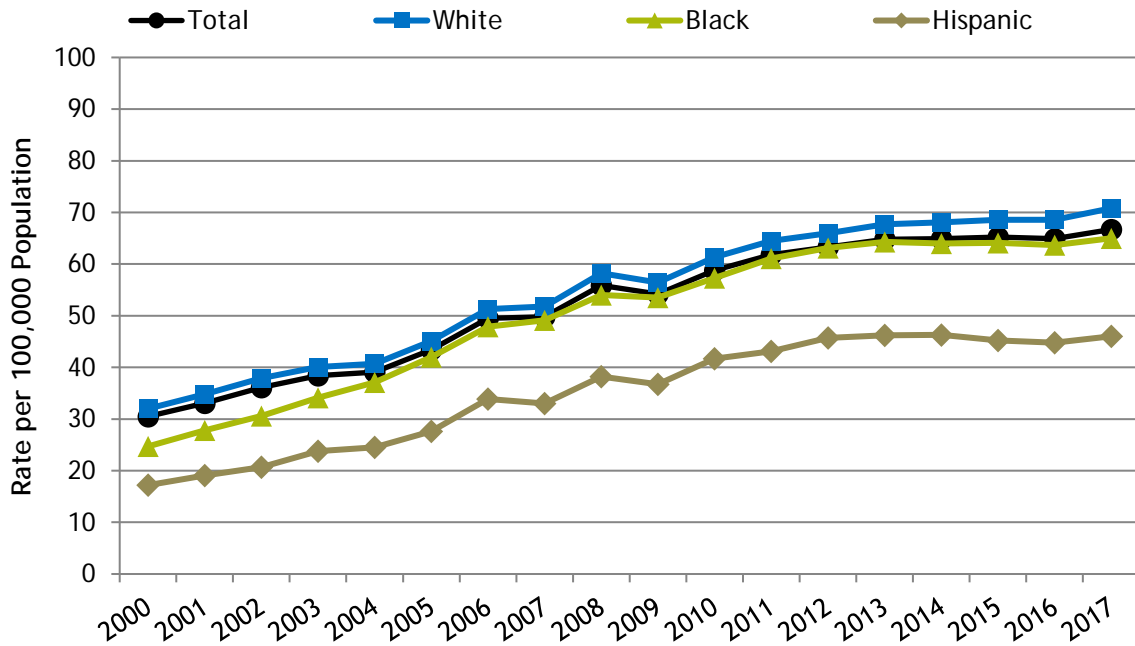
Source: Centers for Disease Control and Prevention, National Center for Health Statistics, National Vital Statistics System - Mortality, 2000-2017.
Note: Age-adjusted rates are per 100,000 U.S. standard population. Rates are based on populations enumerated as of April 1 for census years and estimated as of July 1 for all other years. Race and Hispanic-origin categories are consistent with 1977 Office of Management and Budget standards. White and Black are non-Hispanic. Hispanic includes all races.

- From 2000 to 2017, the age-adjusted death rate for dementia increased overall from 30.5 per 100,000 population to 66.7 per 100,000 population (Figure 149).
- From 2000 to 2017, the age-adjusted death rate for dementia increased from 32.0 per 100,000 population to 70.8 per 100,000 population for Whites, from 24.7 per 100,000 population to 65.0 per 100,000 population for Blacks, and from 17.2 per 100,000 population to 46.0 per 100,000 population for Hispanics.

Figure 150. Outcome: Age-adjusted death rates for dementia per 100,000 population, by sex, 2017
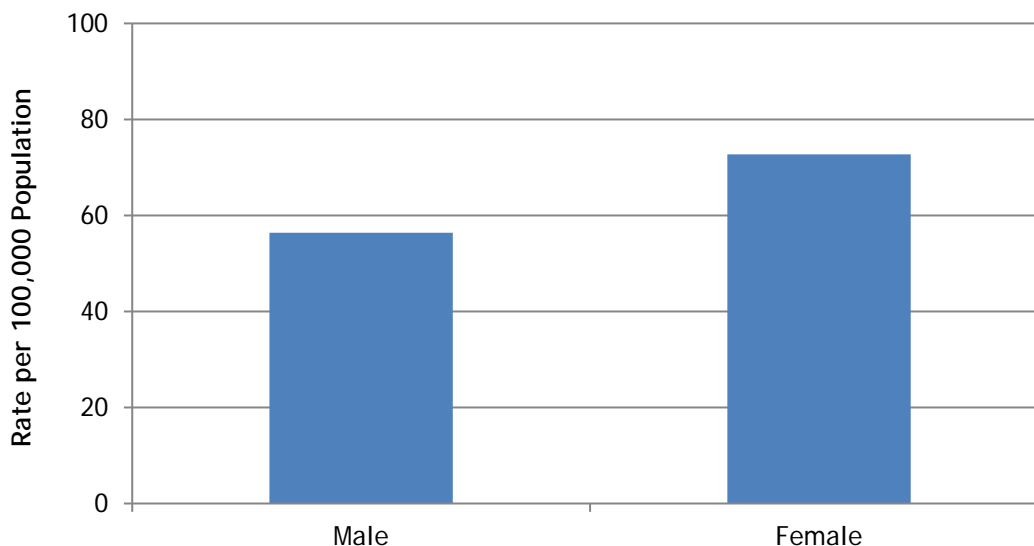
Source: Centers for Disease Control and Prevention, National Center for Health Statistics, National Vital Statistics System - Mortality, 2017.
Note: Age-adjusted rates are per 100,000 U.S. standard population. Rates are based on populations enumerated as of April 1 for census years and estimated as of July 1 for all other years. Rates are age adjusted for all ages, under 65, and 65 and over.

- In 2017, the age adjusted death rate for dementia was 56.4 per 100,000 population for males and 72.7 per 100,000 for females (Figure 150).

Opioid Use

The opioid crisis is a national and HHS priority. Many Departmental efforts are underway to better track the opioid crisis and understand the data, which are part of the HHS five-point opioid strategy.[111] The QDR Interagency Work Group's opioid subgroup considered the Department's work to date when assessing which opioid measures would be best to track nationally.

Among the data gathered, most concerning is the increasing number of opioid overdose deaths in recent years. A record number of drug overdose deaths occurred in 2017: 70,237 deaths due to drug overdose, for an age-adjusted rate of 21.7 per 100,000 population.[108]

The QDR continues to track data on healthcare quality and disparities related to opioids. Select measures are shown here and all measures can be accessed via the QDR's Data Query Tool at https://nhqrnet.ahrq.gov/inhqrdr/data/query.

Inclusion of these measures will provide the foundation to understanding the number of drug overdose deaths involving opioids in the United States, in support of efforts to target specific subpopulations who most need healthcare services.

Opioid Measures

Utilization Measures

- Adults ages 18-64 with four or more opioid prescriptions in the calendar year*
- Adults ages 18-64 with any opioid prescriptions in the calendar year*

Treatment Measures
- Hospital inpatient stays related to opioid use per 100,000 population
- Emergency department visits involving opioid-related diagnoses per 100,000 population

Prevalence Measures
- Adults age 18 and over with past-year opioid (either prescription opioid or heroin) use disorder*

Outcome Measures
- Drug overdose deaths involving any opioid per 100,000 resident population per year*
- Drug overdose deaths involving natural and semisynthetic opioids per 100,000 resident population per year*
- Drug overdose deaths involving synthetic opioids other than methadone per 100,000 resident population per year*

Opioid Prescriptions

Increased availability and overuse of opioid medications (both prescription and nonprescription drugs) have contributed to adverse outcomes for patients, including increased risk of opioid use disorder, misuse of medication, and overdoses.[107] The two measures on opioid prescriptions do not indicate healthcare quality; they show utilization instead. But awareness of prescription volume can inform efforts to prevent opioid misuse and abuse, such as diversion (selling one's opioids) and overdose.

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* The measures that are noted with an asterisk (*) are newly added to this year's report.

Figure 151. Utilization: Adults ages 18-64 who filled four or more outpatient opioid prescriptions in the calendar year, by insurance, 2013-2016
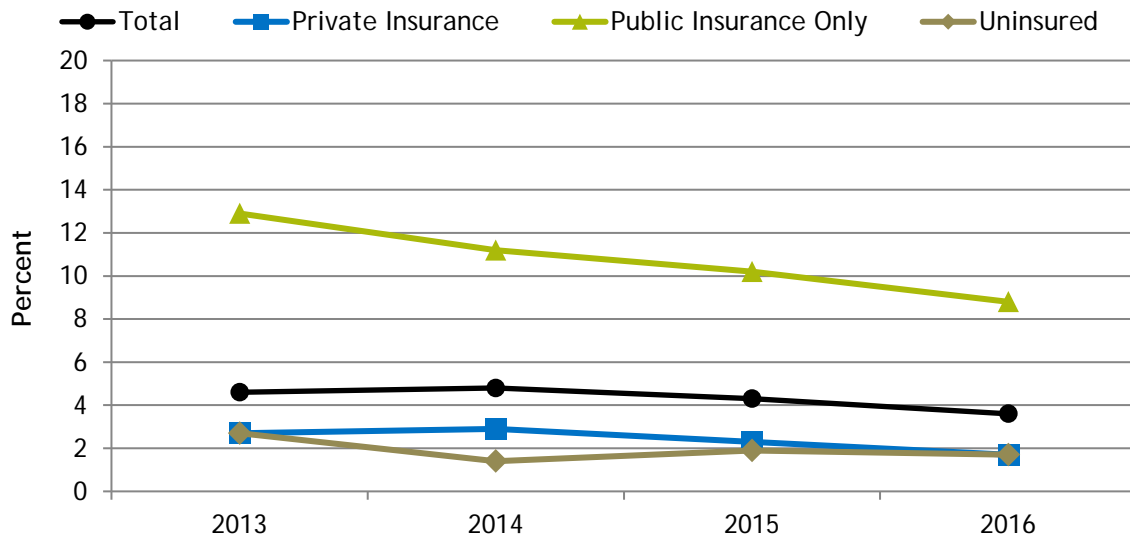
Source: Agency for Healthcare Research and Quality, Medical Expenditure Panel Survey, 2013-2016.

- From 2013 to 2016, overall, the percentage of adults under age 65 who filled four or more outpatient opioid prescriptions in the calendar year decreased from 4.6% to 3.6% (Figure 151).

- From 2013 to 2016, the percentage of adults with private insurance and those who were uninsured who filled four or more outpatient opioid prescriptions decreased from 2.7% to 1.7%. The percentage of publicly insured adults who filled four or more outpatient opioid prescriptions decreased from 12.9% to 8.8%.

Figure 152. Utilization: Adults ages 18-64 with any opioid prescriptions in the calendar year, by insurance, 2013-2016
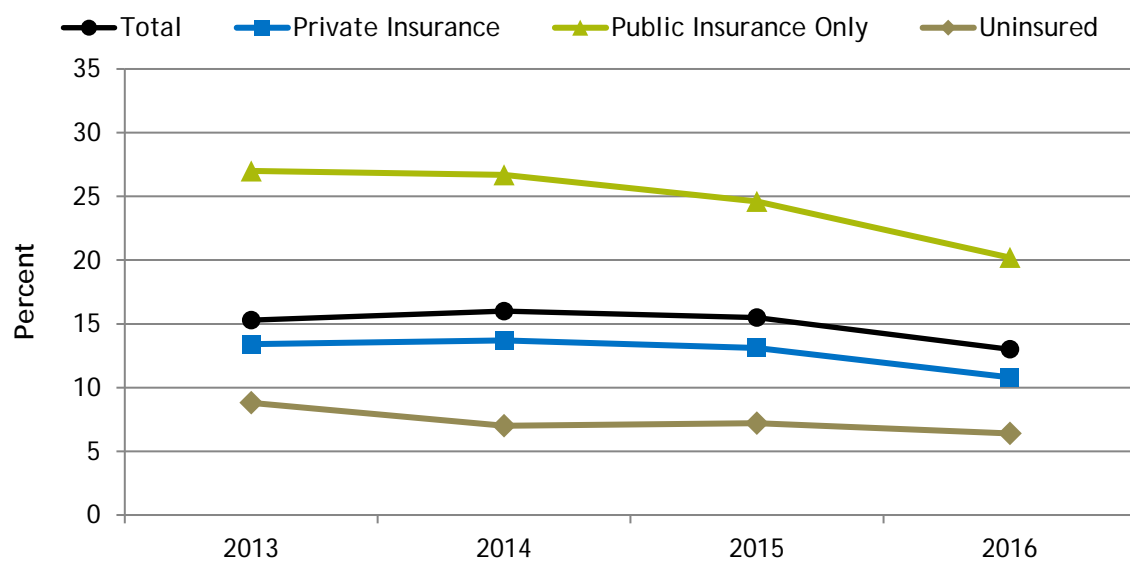
Source: Agency for Healthcare Research and Quality, Medical Expenditure Panel Survey, 2013-2016.

- From 2013 to 2016, overall, the percentage of adults under age 65 who filled any outpatient opioid prescriptions in the calendar year decreased from 15.3% to 13% (Figure 152).
- From 2013 to 2016, the percentage of adults with private insurance who filled any outpatient opioid prescriptions decreased from 13.4% to 10.8%. The percentage of publicly insured adults who filled any outpatient opioid prescriptions decreased from 27% to 20.2%. The percentage of uninsured adults who filled any outpatient opioid prescriptions decreased from 8.8% to 6.4%.

Opioid Use Disorder

This measure provides insight into opioid use disorder as it relates to race/ethnicity and education. Much of the current data and information on the opioid crisis highlights the White population, and greater understanding of how it affects racial and ethnic minority populations is needed to effectively address disparities and the opioid crisis as a whole.

Disparities are also seen by education. It is important to examine these disparities, as educational level may affect one's ability to understand and adhere to a treatment plan.

Figure 153. Prevalence: Adults with opioid (either prescription opioid or heroin) use disorder in the past year, by ethnicity, 2017
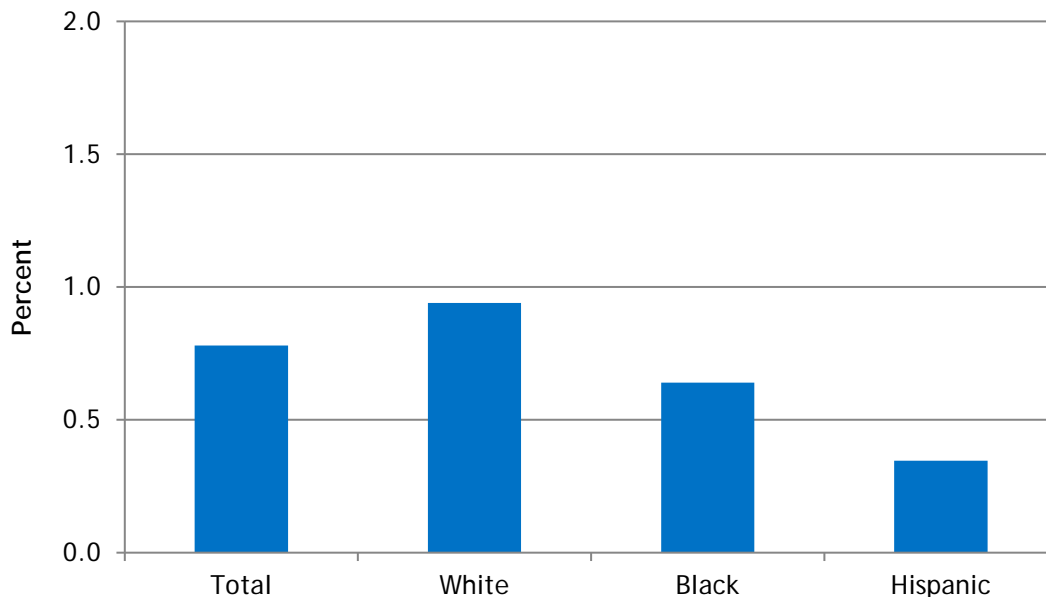
Source: Substance Abuse and Mental Health Services Administration, National Survey on Drug Use and Health, 2017.
Note: For this measure, lower rates are better. White and Black are non-Hispanic. Hispanic includes all races.

- In 2017, Whites had the highest percentage of opioid use disorder (0.94%), followed by Blacks (0.64%) and Hispanics (0.35%) (Figure 153).

Figure 154. Prevalence: Adults with opioid (either prescription opioid or heroin) use disorder in the past year, by education, 2017
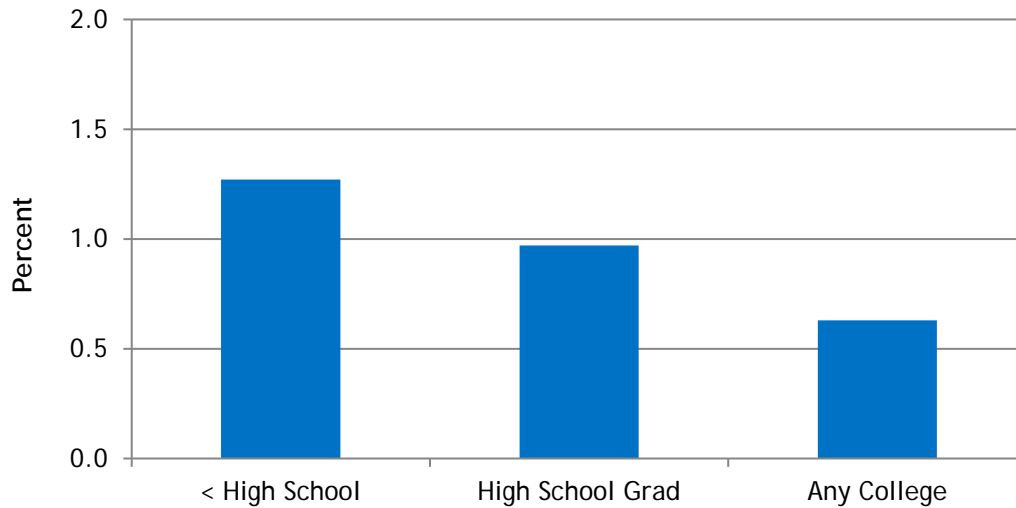
Source: Substance Abuse and Mental Health Services Administration, National Survey on Drug Use and Health, 2017.
Note: For this measure, lower rates are better.

- In 2017, the percentage of adults with an opioid use disorder was 1.27% for adults with less than a high school education, 0.97% for high school graduates, and 0.63% for adults with any college education (Figure 154).

Opioid-Related Mortality

In the past two decades, opioid overdose deaths have increased in the United States. This year, the QDR presents three measures of opioid mortality. Data for all three opioid mortality measures are based on International Classification of Diseases, Tenth Revision (ICD-10) codes and death certificates. For these three measures, state and local variation in the reporting of the specific drugs involved in the death must be considered.

The Centers for Disease Control and Prevention (CDC) opioid mortality data have not been analyzed for statistical significance in this report. Data were obtained from CDC's WONDER database (https://wonder.cdc.gov/mcd.html).

Overdose Deaths Involving Any Opioid

The first mortality measure is drug overdose deaths involving any opioid per 100,000 resident population. These annual data collected by CDC show the largest category of overdose deaths involving opioids. It provides the foundation and starting point to understanding overdose deaths involving opioids. Other measures of overdose deaths involving opioids are more specific to the type of opioids. While the data can be stratified by race/ethnicity, sex, age, region, and urbanization, they do not specify the type of opioid involved in the overdose death.

Figure 155. Outcome: Drug overdose deaths involving any opioid per 100,000 population, by race, 1999-2017
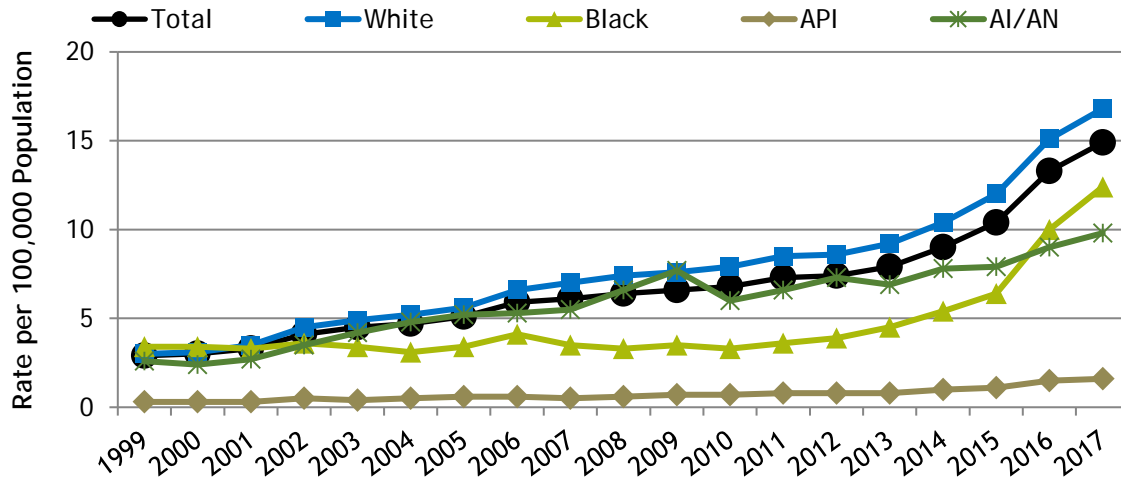
Key: AI/AN = American Indian or Alaska Native; API = Asian or Pacific Islander.
Source: Centers for Disease Control and Prevention, National Center for Health Statistics, National Vital Statistics System – Mortality, 1999-2017.
Note: For this measure, lower rates are better.

- From 2004 to 2016, overall, the rate of drug overdose deaths involving any opioid increased from 2.9 per 100,000 population to 14.9 per 100,000 population (Figure 155).
- From 1999 to 2017, the rate of drug overdose deaths involving any opioid increased:

  - From 3.0 per 100,000 population to 16.8 per 100,000 population for Whites,
  - From 3.4 per 100,000 population to 12.4 per 100,000 population for Blacks,
  - From 0.3 per 100,000 population to 1.6 per 100,000 population for APIs, and
  - From 2.6 per 100,000 population to 9.8 per 100,000 population for AI/ANs.

- Stratifications by race and gender show that males and females are both experiencing similar trends in opioid mortality across all subpopulations; however, males have much higher rates (data not shown).

  - For example, from 2004 to 2016, among males, the rate of drug overdose deaths involving any opioid increased from 7.0 per 100,000 population to 20.4 per 100,000 population for Whites, 4.4 per 100,000 population to 14.7 per 100,000 population for Blacks, 0.7 per 100,000 population to 2.3 per 100,000 population for APIs, and 6.2 per 100,000 population to 10.2 per 100,000 population for AI/ANs (data not shown).
  - Among females, from 2004 to 2016, the rate of drug overdose deaths involving any opioid increased from 3.5 per 100,000 population to 9.7 per 100,000 population for Whites, 2.0 per 100,000 population to 5.9 per 100,000 population for Blacks, 0.3 per 100,000 population to 0.8 per 100,000 population for APIs, and 3.3 per 100,000 population to 7.6 per 100,000 population for AI/ANs (data not shown).

Figure 156. Outcome: Drug overdose deaths involving any opioid per 100,000 population, by ethnicity, 1999-2017
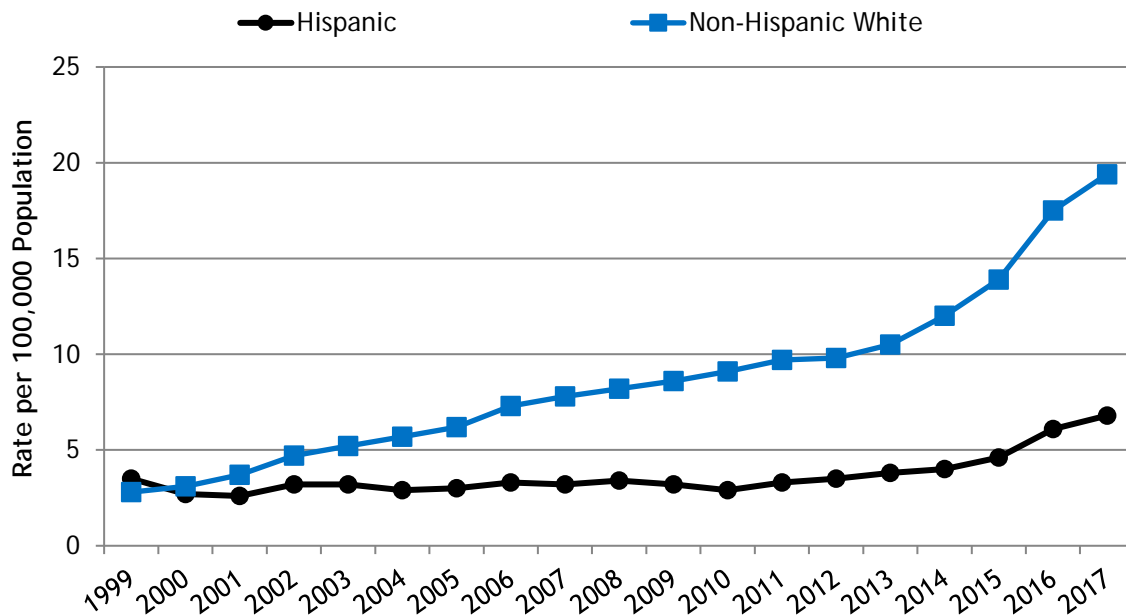
Source: Centers for Disease Control and Prevention, National Center for Health Statistics, National Vital Statistics System – Mortality, 1999-2017.
Note: For this measure, lower rates are better.

- From 1999 to 2017, overall, the rate of drug overdose deaths involving any opioid increased:

  - From 2.8 per 100,000 population to 19.4 per 100,000 population for non-Hispanic Whites (Figure 156).
  - From 3.5 per 100,000 population to 6.8 per 100,000 population for Hispanics.
  - From 3.5 per 100,000 population to 12.9 per 100,000 population for non-Hispanic Blacks (data not shown).
  - From 0.3 per 100,000 population to 1.6 per 100,000 population for non-Hispanic APIs (data not shown).
  - From 2.9 per 100,000 population to 15.7 per 100,000 population for non-Hispanic AI/ANs (data not shown).

Figure 157. Outcome: Drug overdose deaths involving any opioid per 100,000 population, by age, 1999-2017

Source: Centers for Disease Control and Prevention, National Center for Health Statistics, National Vital Statistics System – Mortality, 1999-2017.
Note: For this measure, lower rates are better. The data for 1999-2000 for age 85 years and over are not included because the data do not meet the criteria for statistical reliability, data quality, or confidentiality.

- From 1999 to 2017, overall, the rate of drug overdose deaths involving any opioid increased for most age groups (Figure 157); however, adults ages 25-34 years, 35-44 years, and 45-54 years have seen the largest increases in mortality rates:

  - 15-24 years: 1.6 per 100,000 population to 9.5 per 100,000 population.
  - 25-34 years: 4.1 per 100,000 population to 29.1 per 100,000 population.
  - 35-44 years: 7.2 per 100,000 population to 27.3 per 100,000 population.
  - 45-54 years: 5.4 per 100,000 population to 24.1 per 100,000 population.
  - 55-64 years: 1.5 per 100,000 population to 17.0 per 100,000 population.
  - 65-74 years: 0.5 per 100,000 population to 4.9 per 100,000 population.
  - 75-84 years: 0.4 per 100,000 population to 1.4 per 100,000 population.

- From 2001 to 2017, the mortality rate for adults age 85 years and over increased from 0.5 per 100,000 population to 1.2 per 100,000 population.

Overdose Deaths Involving Natural and Semisynthetic Opioids and Overdose Deaths Involving Synthetic Opioids Other Than Methadone

The second mortality measure is drug overdose deaths involving natural and semisynthetic opioids, and the third mortality measure is drug overdose deaths involving synthetic opioids other than methadone. These measures do not specify whether the overdose deaths from natural, semisynthetic, or synthetic opioids are due to legally prescribed medications or drugs that are illicitly manufactured or obtained.

Both of these annual measures provide more specific information than the first mortality measure by specifying the type of opioid involved in the overdose death. To understand the current opioid epidemic, it is critical to know which opioid drugs are contributing the most to overdose deaths involving opioids, and these two measures provide some insight.

The measure of drug overdose deaths involving natural and semisynthetic opioids describes individuals who have died from commonly prescribed opioids, including oxycodone, hydrocodone, and morphine. Oxycodone may be more commonly known by certain brand names, such as OxyContin and Percocet, and hydrocodone by the brand names Vicodin, Lortab, and Zohydro, among others.

The measure of drug overdose deaths involving synthetic opioids other than methadone describes individuals who have died from synthetic opioids such as fentanyl (illicit and prescription) and tramadol. Recent data have shown that fentanyl-related overdose deaths are heavily contributing to the opioid crisis. CDC reported that the age-adjusted rate for the number of drug overdose deaths involving fentanyl increased from 0.6 per 100,000 population in 2013 to 5.9 per 100,000 population in 2016.[179]

Although overdose death rates are higher for Whites and rates vary by gender within racial groups, Hispanics and Blacks are experiencing fast-rising rates of drug overdose deaths involving synthetic opioids other than methadone.[179] Members of Black and Hispanic communities have expressed concern about availability of resources to address this problem and stigma related to opioid use.

Figure 158. Outcome: Drug overdose deaths involving natural and semisynthetic opioids per 100,000 population, by race, 1999-2017
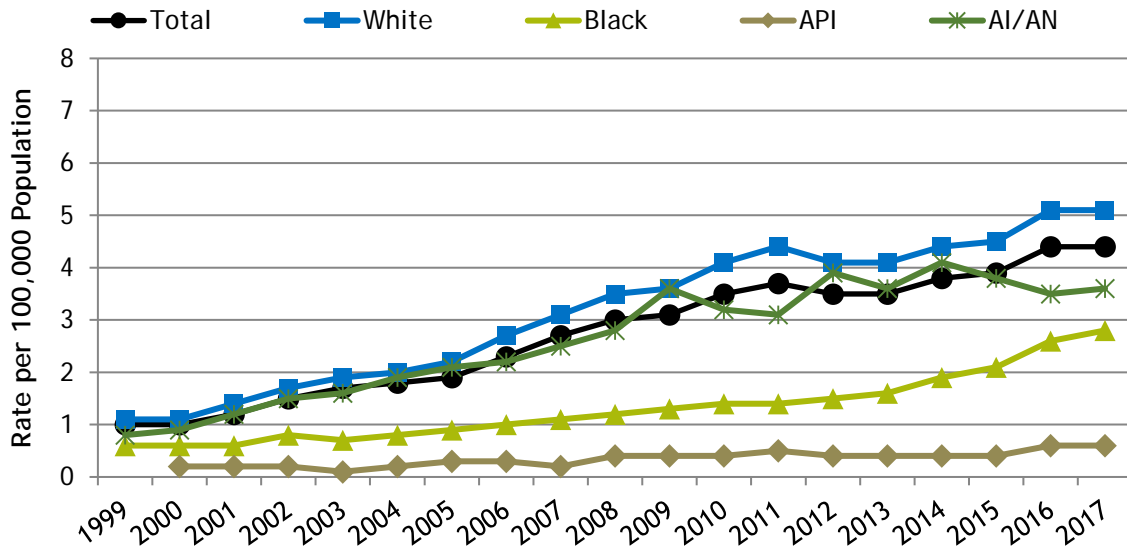
Source: Centers for Disease Control and Prevention, National Center for Health Statistics, National Vital Statistics System – Mortality, 1999-2017.
Note: For this measure, lower rates are better. The 1999 data point for APIs is not included because it does not meet the criteria for statistical reliability, data quality, or confidentiality.

- From 1999 to 2017, overall, the rate of drug overdose deaths involving natural and semisynthetic opioids increased from 1.0 per 100,000 population to 4.4 per 100,000 population (Figure 158).
- From 1999 to 2017, the rate of drug overdose deaths involving natural and semisynthetic opioids increased for three racial groups:

  - Whites, 1.1 per 100,000 population to 5.1 per 100,000 population.
  - Blacks, 0.6 per 100,000 population to 2.8 per 100,000 population.
  - AI/ANs, 0.8 per 100,000 population to 3.6 per 100,000 population.

- From 2000 to 2017, the rate of drug overdose deaths involving natural and semisynthetic opioids increased for APIs from 0.2 per 100,000 population to 0.6 per 100,000 population.
- Stratifications by race and gender show that males and females are both experiencing similar trends in opioid mortality across all subpopulations; however, males have much higher rates. Also, Hispanic males show a slight decrease in rates over time while Hispanic females show an increase (data not shown):

  - From 1999 to 2016:

    ♦ The rate of drug overdose deaths increased from 1.4 per 100,000 population to 7.0 per 100,000 population for White males.

♦ The rate increased from 1.0 per 100,000 population to 3.3 per 100,000 population for Black males.

♦ The rate decreased from 2.3 per 100,000 population to 2.1 per 100,000 population for Hispanic males.

■ From 1999 to 2016:

♦ The rate of drug overdose deaths increased from 0.6 per 100,000 population to 4.9 per 100,000 population for White females.

♦ The rate increased from 0.3 per 100,000 population to 2.3 per 100,000 population for Black females.

♦ The rate decreased from 0.3 per 100,000 population to 1.2 per 100,000 population for Hispanic females.

Figure 159. Outcome: Drug overdose deaths involving natural and semisynthetic opioids per 100,000 population, by ethnicity, 1999-2017
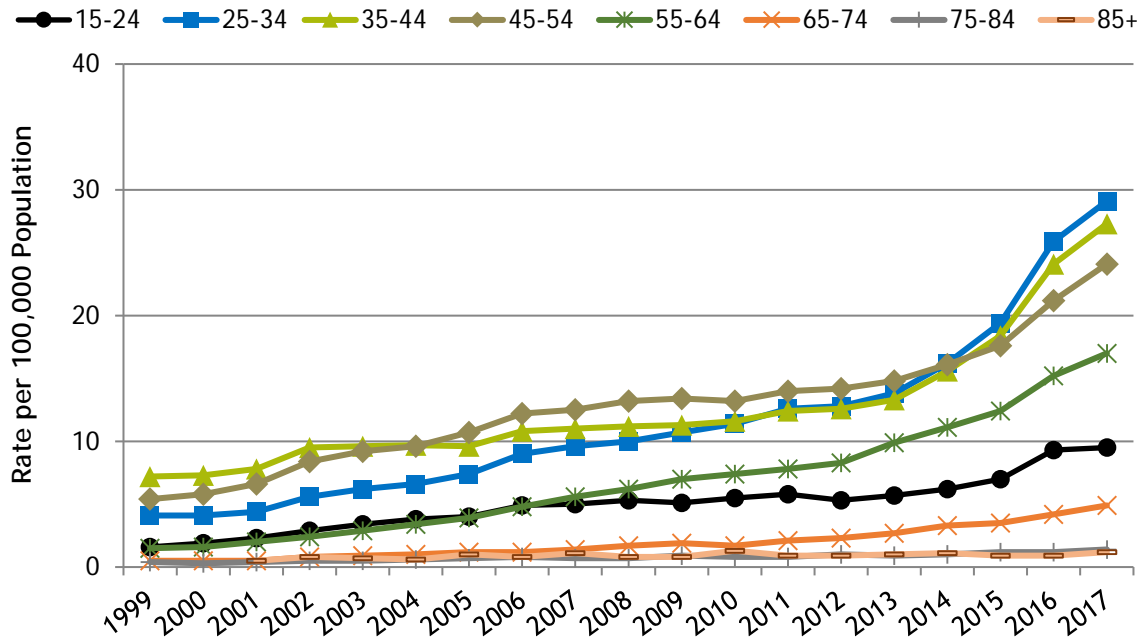

Source: Centers for Disease Control and Prevention, National Center for Health Statistics, National Vital Statistics System – Mortality, 1999-2017.
Note: For this measure, lower rates are better.

● From 1999 to 2017, the rate of drug overdose deaths involving natural and semisynthetic opioids increased from 1.0 per 100,000 population to 5.9 per 100,000 population for non-Hispanic Whites and from 1.4 per 100,000 population to 1.8 per 100,000 population for Hispanics (Figure 159).

- From 1999 to 2017, the rate of drug overdose deaths involving natural and semisynthetic opioids increased from 0.6 per 100,000 population to 2.9 per 100,000 population for non-Hispanic Blacks and from 1.0 per 100,000 population to 5.7 per 100,000 population for non-Hispanic AI/ANs (data not shown).
- From 2002 to 2017, the rate increased from 0.2 per 100,000 population to 0.5 per 100,000 population for non-Hispanic APIs (data not shown).

Figure 160. Outcome: Drug overdose deaths involving natural and semisynthetic opioids per 100,000 population, by age, 1999-2017

Source: Centers for Disease Control and Prevention, National Center for Health Statistics, National Vital Statistics System – Mortality, 1999-2017.
Note: For this measure, lower rates are better. The data for 1999-2002 and 2004 for adults age 85 years and over and data in 2000 for ages 75-84 years are not included because they do not meet the criteria for statistical reliability, data quality, or confidentiality.

- From 1999 to 2017, overall, the rate of drug overdose deaths involving natural and semisynthetic opioids increased for most age groups (Figure 160); however, adults ages 35-44 years, 45-54, and 55-64 years had the largest increases in mortality rates:

  - 15-24 years: 0.5 per 100,000 population to 2.1 per 100,000 population.
  - 25-34 years: 1.3 per 100,000 population to 6.3 per 100,000 population.
  - 35-44 years: 2.3 per 100,000 population to 7.7 per 100,000 population.
  - 45-54 years: 2.0 per 100,000 population to 8.6 per 100,000 population.
  - 55-64 years: 0.7 per 100,000 population to 7.1 per 100,000 population.
  - 65-74 years: 0.3 per 100,000 population to 2.5 per 100,000 population.

- From 1999 to 2017, the mortality rate for adults ages 75-84 years increased from 0.2 per 100,000 population to 1.0 per 100,000 population. Data are not available for 2000.
- From 2003 to 2017, the mortality rate for adults 85 years and over increased from 0.5 per 100,000 population to 0.9 per 100,000 population. Data are not available for 2004.

Figure 161. Outcome: Drug overdose deaths involving synthetic opioids other than methadone per 100,000 population, by race, 1999-2017
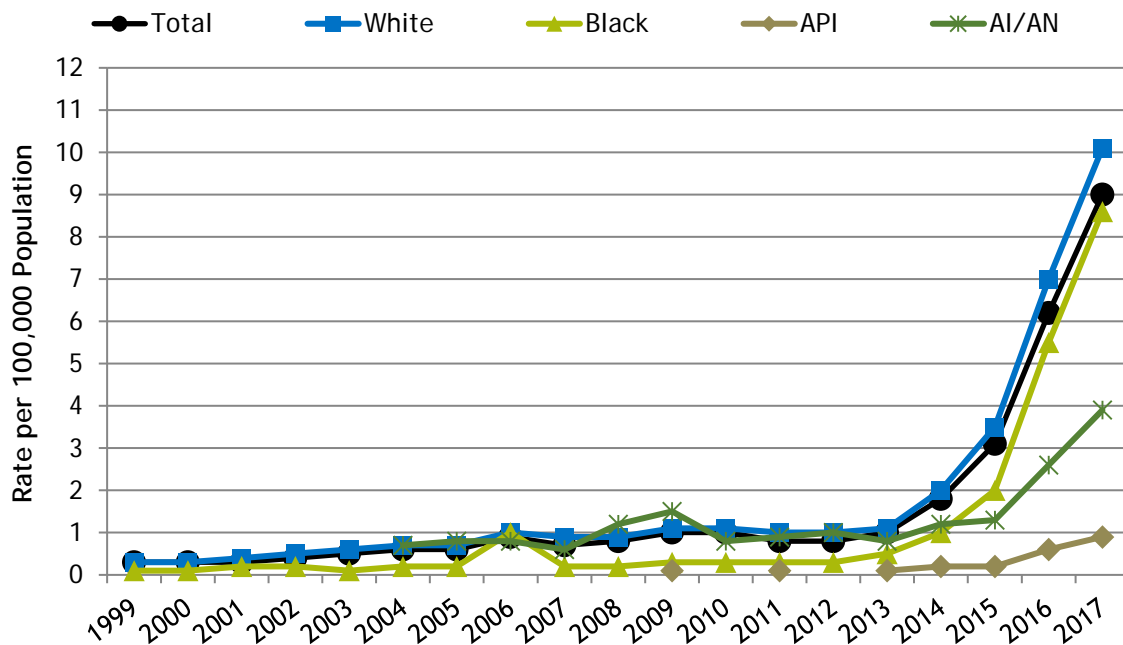
Key: AI/AN = American Indian or Alaska Native; API = Asian or Pacific Islander.
Source: Centers for Disease Control and Prevention, National Center for Health Statistics, National Vital Statistics System – Mortality, 1999-2017.
Note: For this measure, lower rates are better. The data for APIs (1999-2008, 2010, and 2012) and AI/ANs (1999-2003) are not included because they do not meet the criteria for statistical reliability, data quality, or confidentiality.

- From 1999 to 2017, the overall rate of drug overdose deaths involving synthetic opioids other than methadone increased from 0.3 per 100,000 population to 9.0 per 100,000 population (Figure 161).
- From 1999 to 2017, the rate of drug overdose deaths involving synthetic opioids other than methadone increased from 0.3 per 100,000 population to 10.1 per 100,000 population for Whites and 0.1 per 100,000 population to 8.6 per 100,000 population for Blacks.
- From 2013 to 2017, Blacks (0.5 to 8.6 per 100,000 population) showed a 17.2-fold increase in mortality, while Whites (1.1 to 10.1 per 100,000 population) showed a 9.2-fold increase in mortality.

- For AI/ANs, the mortality rate increased from 0.7 per 100,000 population in 2004 to 3.9 per 100,000 population in 2017, a 5.6-fold increase.
- For APIs, the mortality rate increased from 0.1 per 100,000 population in 2009 to 0.9 per 100,000 population in 2017, a 9-fold increase.

Figure 162. Outcome: Drug overdose deaths involving synthetic opioids other than methadone per 100,000 population, by ethnicity, 1999-2017
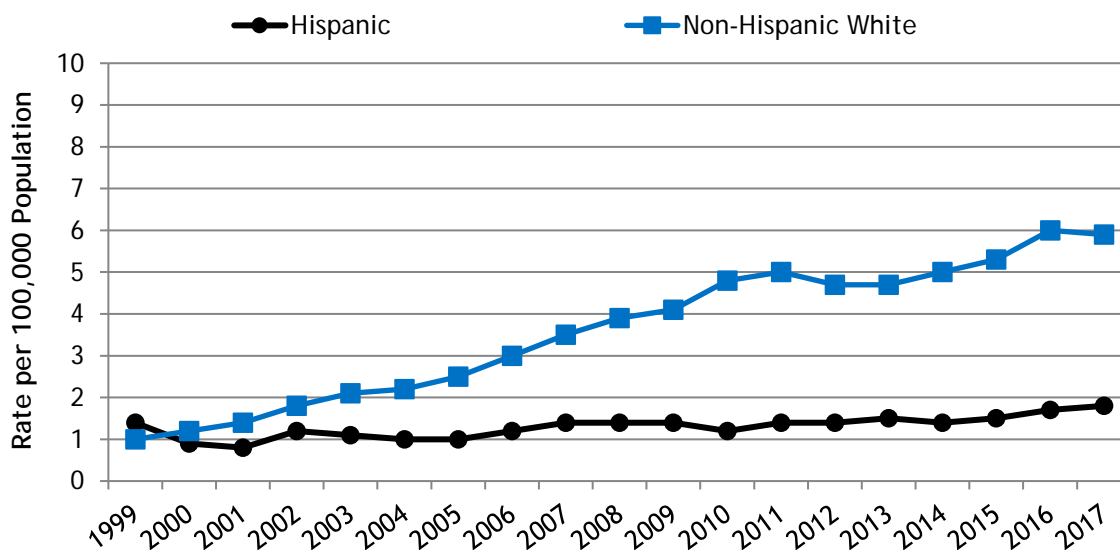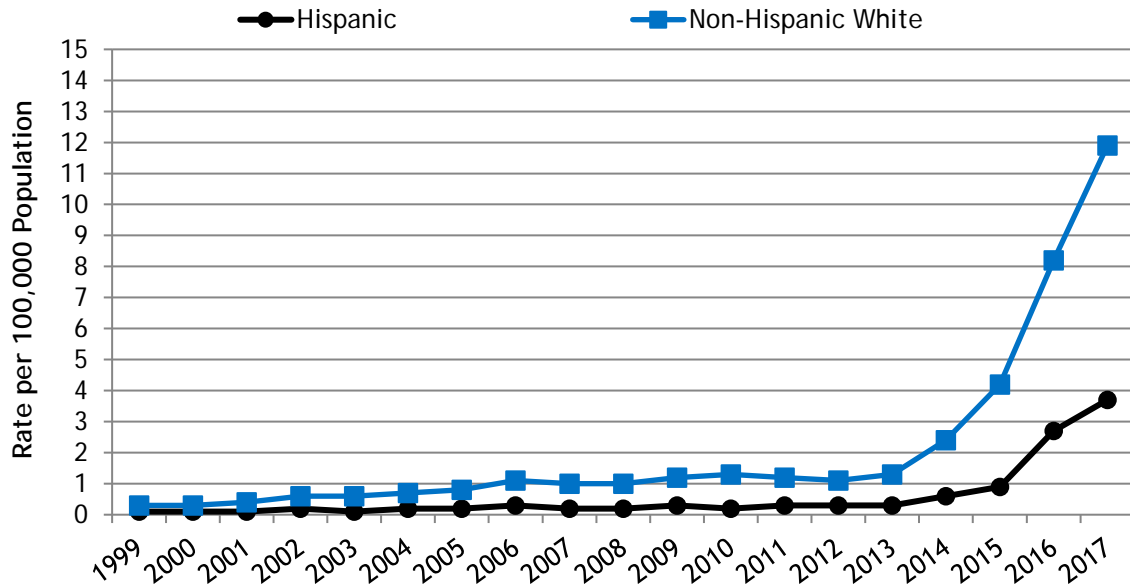

Source: Centers for Disease Control and Prevention, National Center for Health Statistics, National Vital Statistics System – Mortality, 1999-2017.
Note: For this measure, lower rates are better.

- From 1999 to 2017, the rate of drug overdose deaths involving synthetic opioids other than methadone increased from 0.3 per 100,000 population to 11.9 per 100,000 population for non-Hispanic Whites; and from 0.1 per 100,000 population to 3.7 per 100,000 population for Hispanics (Figure 162).
- From 2013 to 2017, non-Hispanic Whites had a 9.2-fold increase and Hispanics had a 12.3-fold increase in mortality due to synthetic opioids other than methadone.
- From 1999 to 2017, the rate increased from 0.1 per 100,000 population to 9.0 per 100,000 population for non-Hispanic Blacks. From 2013 to 2017, non-Hispanic Blacks had an 18-fold increase in mortality due to synthetic opioids other than methadone (data not shown).
- From 2004 to 2017, the death rate for non-Hispanic AI/ANs increased from 0.9 per 100,000 population to 6.5 per 100,000 population (data not shown).
- From 2011 to 2017, the death rate for non-Hispanic APIs increased from 0.1 per 100,000 population to 0.8 per 100,000 population (data not shown).

Figure 163. Outcome: Drug overdose deaths involving synthetic opioids other than methadone per 100,000 population, by age, 1999-2017
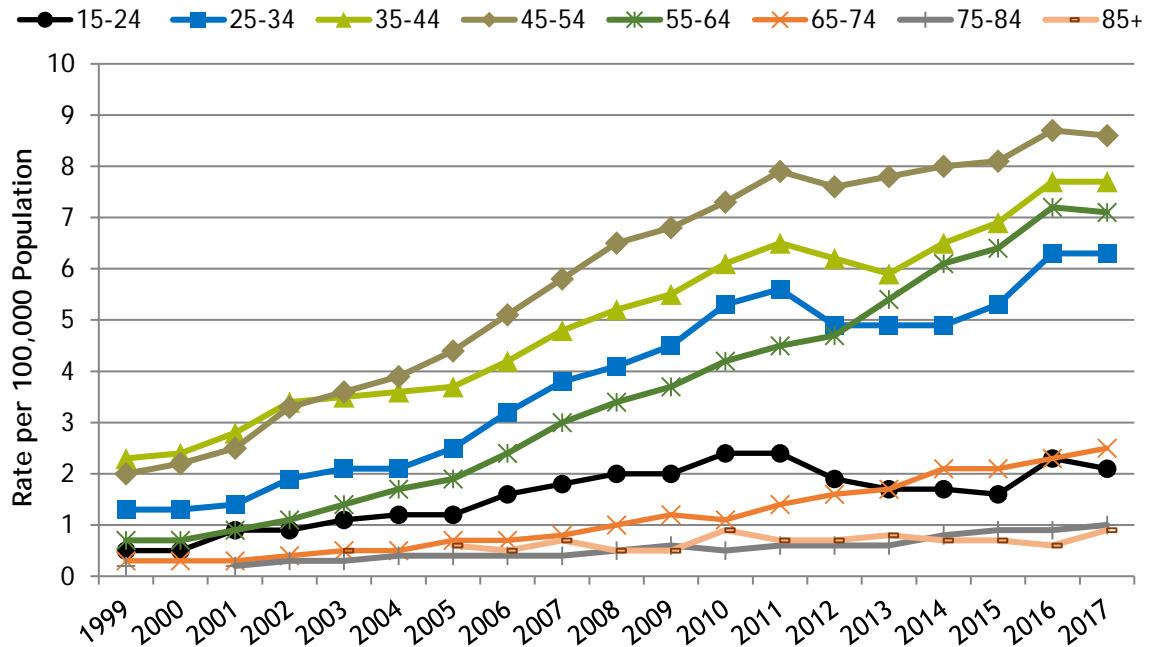

Source: Centers for Disease Control and Prevention, National Center for Health Statistics, National Vital Statistics System – Mortality, 1999-2017.

Note: For this measure, lower rates are better. The data for age 85 years and over (1999-2017), ages 75-84 years (1999-2004, 2008, 2013), and ages 65-74 years (2000-2001) are not included because they do not meet the criteria for statistical reliability, data quality, or confidentiality.

- From 1999 to 2017, overall, the rate of drug overdose deaths involving synthetic opioids other than methadone increased for most age groups (Figure 163); however, adults ages 25-34 years, 35-44 years, and 45-54 years had the largest increases in mortality rates:

  - 15-24 years: 0.1 per 100,000 population to 6.1 per 100,000 population.
  - 25-34 years: 0.3 per 100,000 population to 19.5 per 100,000 population.
  - 35-44 years: 0.6 per 100,000 population to 17.3 per 100,000 population.
  - 45-54 years: 0.5 per 100,000 population to 13.6 per 100,000 population.
  - 55-64 years: 0.2 per 100,000 population to 8.3 per 100,000 population.
  - 65-74 years: 0.1 per 100,000 population to 1.9 per 100,000 population.

- From 2005 to 2017, the mortality rate for people ages 75-84 years increased from 0.2 per 100,000 population to 0.3 per 100,000 population.
- Mortality rates across most age groups had sharp increases from 2013 to 2017.

Maternal Morbidity and Mortality

Maternal mortality, defined as the risk of dying from causes associated with childbirth, is considered a sentinel event in that it is a rare and negative maternal outcome.[180] At a population level, it is also an indicator used to monitor maternal health and the quality of reproductive healthcare both internationally and nationally.[181] Compared with other high-income industrialized countries, rates of maternal mortality in the United States are among the highest[181] and more than doubled from 1987 to 2014 (from 7.2 per 100,000 live births to 18.0).[182]

Persistent racial and ethnic disparities in maternal mortality have also accompanied the rise in maternal deaths, with Black women having a pregnancy-related mortality ratio 3 times as high as that of non-Hispanic White women.[183] Like maternal mortality, severe maternal morbidity, which encompasses unintended outcomes of labor and delivery that result in short-term or long-term health issues, has similarly increased in the United States in recent decades.[184] The perinatal period presents unique patient safety challenges, including potential overuse and underuse of interventions, misdiagnosis, and emotional harm, which contribute to maternal morbidity and perinatal adverse events.[185]

Nationally, perinatal adverse events constitute some of the highest liability costs. Efforts to minimize and eliminate harm to mothers and babies have examined the use of maternal safety bundles, which involve standardized approaches to address obstetric emergencies in hospital settings.[186,187,188] When these bundles have been implemented in hospitals with communication and resolution programs, hospitals, health systems, providers, and patients have observed lower rates of adverse events, lower costs, and improved patient outcomes.[186,187,189]

Most cases of maternal mortality and severe maternal morbidity are preventable, and prevention strategies include improving access to and coordination and delivery of quality care.[182,190,191] Recognition is growing of the need to develop, monitor, and improve performance on quality measures in obstetrics care, particularly around disparities.[192]

Currently, the QDR tracks one preventive health measure related to maternal health (i.e., women who completed a pregnancy in the last 12 months who received early and adequate prenatal care). The 2018 report does not include any treatment and management measures but now includes two outcome measures related to maternal morbidity and mortality.

Maternal Morbidity and Mortality Measures

- Cesarean deliveries among low-risk first births[*]
- In-hospital deaths per 100,000 delivery hospitalizations[*]

Cesarean Deliveries Among Low-Risk First Births

Nearly one-third of all births in the United States are delivered by cesarean section (C section),[193] which is higher than many other industrialized countries.[194] Reducing the C-section rate continues to be an important focus of public health efforts nationwide, particularly for low-risk deliveries with no medical indication for the procedure.[195]

For low-risk pregnancies, C sections pose a greater risk for maternal morbidity and mortality than vaginal delivery. Risks include hemorrhage, infection, and blood clots, and these risks increase with subsequent C sections.[196] Much of the increase in C-section rates is attributed to first births, which are amenable to intervention through quality improvement efforts.

Cesarean delivery of low-risk first births, also known as nulliparous term singleton vertex cesarean, relates to Healthy People 2020 Maternal, Infant, and Child Health Objective 7.1 (Reduce cesarean births among low risk women with no prior cesarean). This risk-adjusted measure has high face validity and easy measurability, controls for patient and fetal conditions before labor, and allows comparison between hospitals.[197,198]

This measure is also endorsed by multiple organizations, including the American College of Obstetricians and Gynecologists, the Joint Commission, the National Quality Forum, and the Centers for Medicare & Medicaid Services. However, this measure is not considered a measure of obstetric quality for higher risk women.

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[*] The measures that are noted with an asterisk (*) are newly added to this year's report.

Figure 164. Outcome: Cesarean deliveries among low-risk first births, by race/ethnicity, 2007-2017
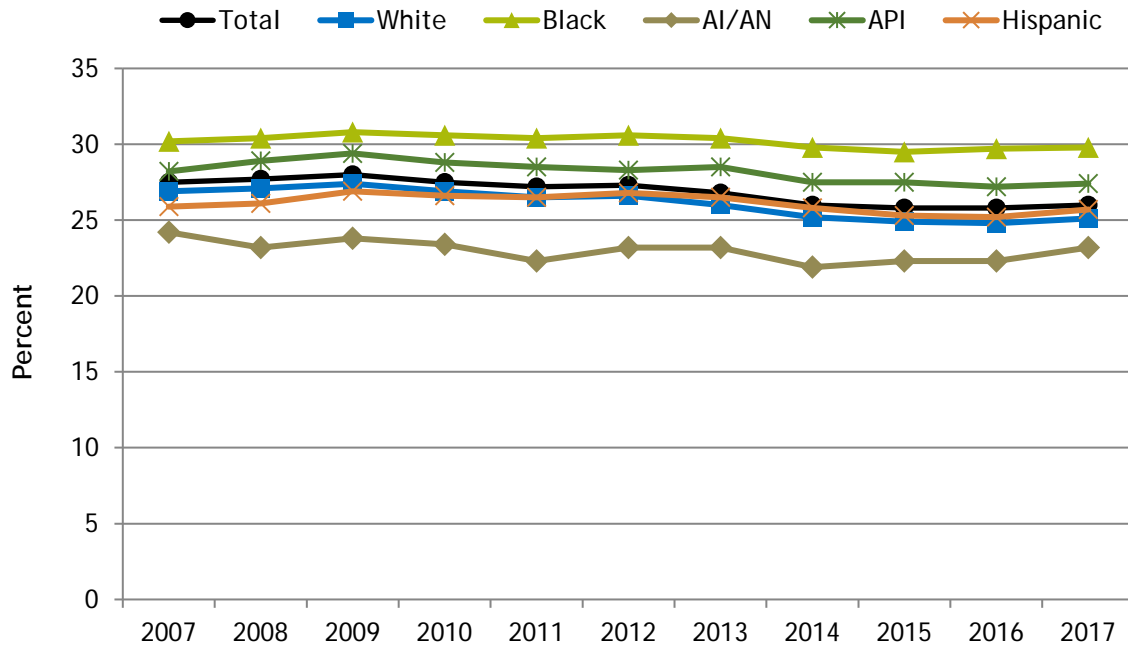
Key: AI/AN = American Indian or Alaska Native; API = Asian or Pacific Islander.
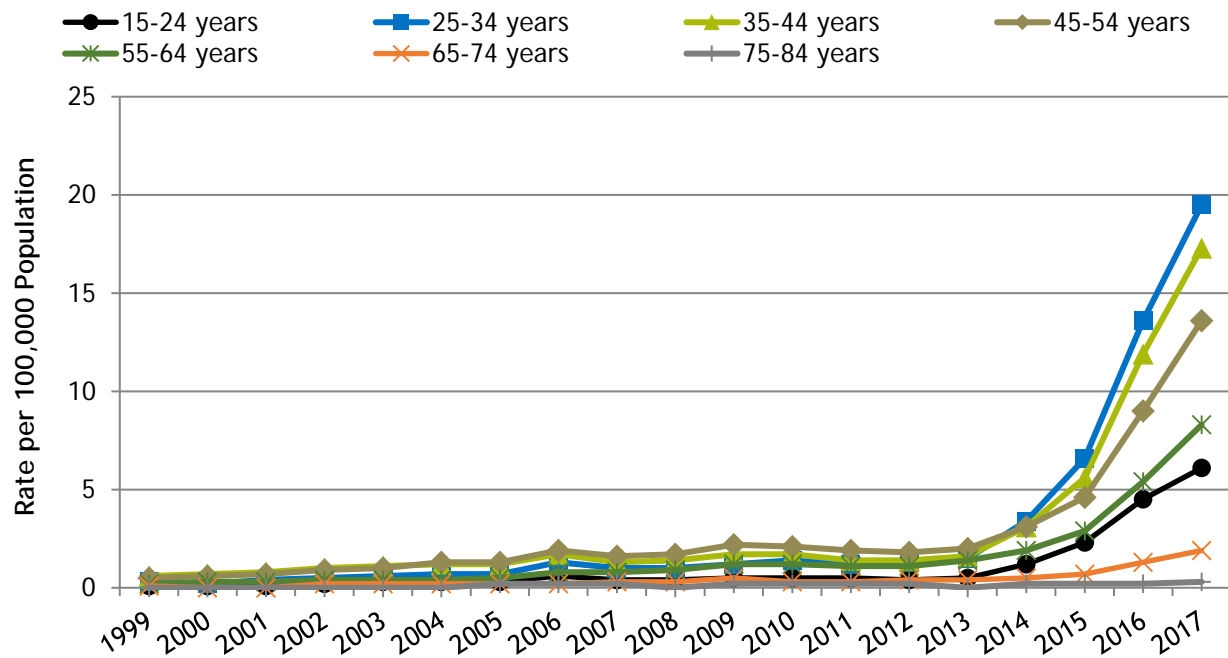**Source:** Centers for Disease Control and Prevention, National Center for Health Statistics, National Vital Statistics System – Natality, 2007-2017.
Note: For this measure, lower rates are better. White, Black, API, and AI/AN are non-Hispanic. Hispanic includes all races.

- In 2017, the percentage of women having cesarean deliveries for low-risk first birth was higher for Blacks (29.8%) than for Whites (25.1%; Figure 164).
- In 2017, there were no statistically significant differences in the percentage of cesarean deliveries among low-risk first births between:

  - Whites (25.1%) and American Indians and Alaska Natives (23.2%).
  - Whites (25.1%) and Asians and Pacific Islanders (APIs) (27.4%).
  - Non-Hispanic Whites (24.9%) and Hispanics (25.7%).

In-Hospital Deaths per 100,000 Delivery Hospitalizations

Reports from 2011-2015 Pregnancy Mortality Surveillance System data show that 16.9% of pregnancy-related deaths occur on the day of delivery and 18.6% of pregnancy-related deaths occur 1 to 6 days postpartum.[182] Thus, important insights can be gained from monitoring adverse maternal outcomes using hospital discharge surveillance data. Maternal deaths that occur during hospital stays may provide a window into both system and provider-level factors that can play a role in preventing maternal death.[182,189,190]

In-hospital deaths per 100,000 delivery hospitalizations provides a measure of intrapartum maternal mortality or those that occur during delivery through hospital discharge. This measure represents a small portion of the Centers for Disease Control and Prevention definition of pregnancy-related mortality and relates to Healthy People 2020 Maternal, Infant, and Child Health Objective 5 (Reduce the rate of maternal mortality).

This measure should be interpreted with caution as it is limited to in-hospital maternal deaths that occur during hospital stays. It does not include pregnancy-related deaths that occur outside hospital settings, those that occur prior to delivery, or those that occur after hospital discharge in the postpartum period.

Figure 165. Outcome: In-hospital deaths per 100,000 delivery hospitalizations, by race and ethnicity, 2016
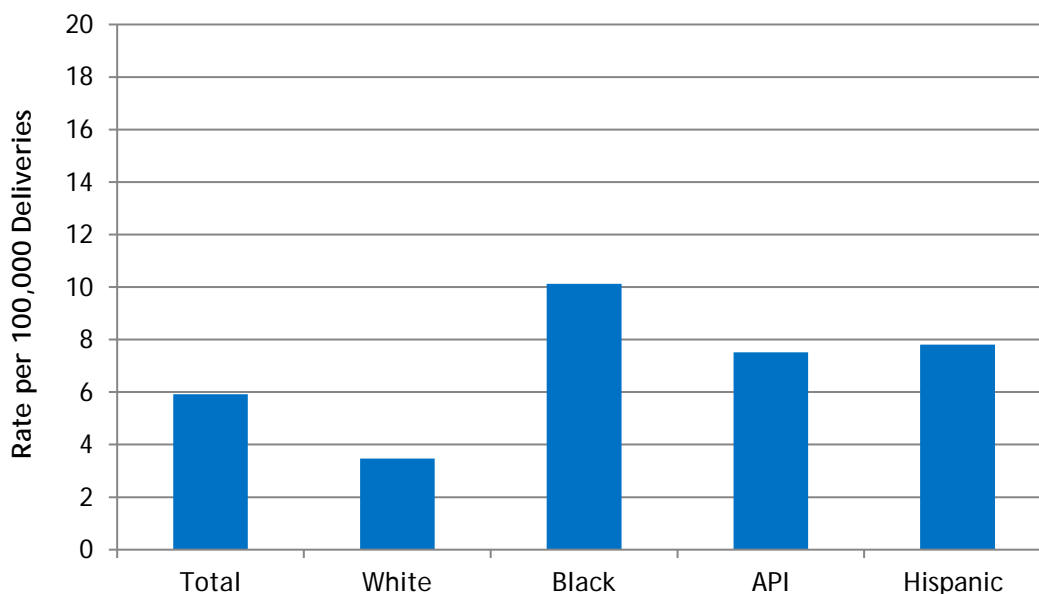
Key: API = Asian or Pacific Islander.
Source: Agency for Healthcare Research and Quality, Healthcare Cost and Utilization Project, State Inpatient Databases, 2016, weighted to provide national estimates.

- In 2016, the rate of in-hospital deaths per 100,000 deliveries was 3.5 among Whites, 10.1 among Blacks, 7.5 among APIs, and 7.8 among Hispanics (Figure 164).

LOOKING FORWARD

The 2018 QDR has examined data across about 25 federal data sources to describe trends and disparities in access measures and quality measures across six domains. The report offers a comprehensive assessment of the best and worst performing quality and access measures over the past year. While trend data are limited in this year's analysis, it is still clear that disparities exist by race, ethnicity, income, and residence location.

Opportunities for Measurement

The QDR measure set is assessed annually to explore whether new clinical areas can be included to provide a more complete representation of the clinical, quality, and disparity issues across the United States. Recently, more data on opioids, dementia, maternal morbidity, and more refined measures for cancer care have been added. The QDR measure set will continue to be assessed for future reports to maintain its relevance to current quality measurement and quality improvement issues.

HHS Research Priorities

In 2018-2019, the HHS Secretary identified four priorities for the Department: opioid use, health insurance reform, drug pricing, and value-based care.[199] The Department has also identified gaps in research and data for HIV, sickle cell disease, and other conditions that warrant further exploration. In support of these aims, the QDR team will explore opportunities to include additional data relevant to these topics in future reports. This section elaborates on how the QDR's activities remain relevant to the many ongoing HHS priorities.

HIV Research

In 2019, the Administration established an initiative to end the HIV epidemic in the United States, with a goal of reducing new infections by 75% in 5 years and by 90% in 10 years. This initiative focuses on four strategies: diagnosing, treating, protecting, and responding to patients in the United States.[129] The QDR currently tracks four unique HIV-related quality measures, one mortality measure, and five supplemental measures (not shown here).

The core measures in the QDR related to HIV include:

- New HIV cases per 100,000 population age 13 and over.
- People age 13 and over living with HIV who know their serostatus.

- People age 13 and over living with diagnosed HIV who had at least two CD4 or viral load tests performed at least 3 months apart during the last year, among reporting jurisdictions.
- People age 13 and over living with diagnosed HIV whose most recent viral load in the last 12 months was under 200 copies/mL.
- HIV infection deaths per 100,000 population.

Among these measures, this report has already highlighted the widening and narrowing disparities experienced by various racial and ethnic groups. These data are available through the online query tool at https://nhqrnet.ahrq.gov/inhqrdr/data/query. Moving forward, the QDR team will continue to track these measures with our data partners to understand how differences in quality measurement, disparities, and mortality are occurring over time.

Sickle Cell Disease Research

In 2018, HHS furthered an initiative to focus on management and treatment of sickle cell disease, a genetic condition that affects the shape and composition of a person's red blood cells. Patients with this disease are at higher risk for anemia, vascular conditions, and stroke.[200] This condition adversely affects Blacks and other racial and ethnic minorities. Currently, no national data are available to include in the QDR related to sickle cell disease. These data will be added to the QDR once they are available.

Kidney Disease Research

Patients who are managing kidney disease may have to undergo time-consuming, painful, and costly treatments to ensure their health. Among Medicare beneficiaries alone, CMS reported spending of $113 billion in 2016 for patients with kidney disease. In 2019, the Secretary of HHS delivered a presentation outlining a three-part strategy to support improved kidney health for all patients. This strategy includes "preventing, detecting, and slowing the progression of kidney disease; availing more treatment options; and lastly, increased organ transplantation as well as wearable and implantable artificial kidneys for patients."[201]

Patients with kidney disease may require medication, dialysis, or a kidney transplant to ensure their well-being. The core measures in the QDR related to kidney disease and treatment include:

- End stage renal disease (ESRD) patients age 18 and over who saw a nephrologist at least 12 months prior to initiation of renal replacement therapy.

- Dialysis patients under age 70 who were registered on a waiting list for transplantation within a year of initiation.
- Patients with treated chronic kidney failure who received a transplant within 3 years of date of renal failure.
- Hemodialysis patients whose hemoglobin level is less than 10 g/dL.
- Adult hemodialysis patients who use arteriovenous fistulas as the primary mode of vascular access.
- Adult hemodialysis patients with adequate dialysis (Kt/V 1.2 or higher).

Among these measures, the data show that kidney disease affects populations disparately. These data are available through the online query tool at https://nhqrnet.ahrq.gov/inhqrdr/data/query. Moving forward, the QDR team will continue to track these measures with our data partners to understand how differences in quality measurement and disparities are occurring over time.

Opioids

In 2017, the Department identified the opioid epidemic as an urgent national priority[199] and outlined a five-point strategy to combat the epidemic,[111] including:

- Improving access to treatment and recovery services,
- Promoting use of overdose-reversing drugs,
- Strengthening our understanding of the epidemic through better public health surveillance,
- Providing support for cutting-edge research on pain and addiction, and
- Advancing better practices for pain management.

The QDR team's IWG subgroup on opioids examined opioid use by examining current work supported by the Department, including:

- Healthy People 2030 proposed objectives,
- HHS Data Council's Opioid Data Work Group Opioid Metrics Recommendations,
- SAMHSA's 2017 National Survey on Drug Use and Health,
- SAMHSA's strategic plan, and
- CDC's 2018 Surveillance Report of Drug-Related Risks and Outcomes.

This year's QDR features new supplemental data for six opioid-related measures:

- Percentage and population estimates of past-year opioid (either prescription opioid or heroin) use disorder among people age 12 and over
- Number of people who died from drug overdoses involving opioids

- Number of people who died from drug overdose involving natural and semisynthetic opioids (e.g., oxycodone, hydrocodone, or morphine)
- Number of people who died from drug overdoses involving synthetic opioids other than methadone (e.g., prescription and illicit fentanyl, tramadol)
- Adults who filled an outpatient opioid prescription in the calendar year
- Adults who filled four or more outpatient opioid prescriptions in the calendar year

Gaps remain within available data and research.

Future Research and Work

Readers can use the QDR to learn more about the nation's progress in improving healthcare. The report helps identify opportunities to improve quality and reduce disparities. Ongoing disparities in care by race, ethnicity, income, residence location, and other socioeconomic factors underscore that while we have made important strides in quality and accessibility of healthcare, these outcomes are not equitably experienced across the United States and much work remains.

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APPENDIX B: DEFINITIONS AND ABBREVIATIONS USED IN 2018 REPORT

Definitions

Racial and Ethnic Groups

Racial and ethnic groups are defined according to Standards for the Classification of Federal Data on Race and Ethnicity, issued by the Office of Management and Budget (available at https://www.gpo.gov/fdsys/granule/FR-1997-10-30/97-28653).

The basic racial and ethnic categories for federal statistics and program administrative reporting are defined as follows:

1. **American Indian or Alaska Native (AI/AN).** A person having origins in any of the original peoples of North and South America (including Central America) and who maintains tribal affiliation or community attachment.
2. **Asian.** A person having origins in any of the original peoples of the Far East, Southeast Asia, or the Indian subcontinent, including, for example, Cambodia, China, India, Japan, Korea, Malaysia, Pakistan, the Philippine Islands, Thailand, and Vietnam.
3. **Black or African American.** A person having origins in any of the black racial groups of Africa. Terms such as "Haitian" can be used in addition to "Black or African American."
4. **Hispanic or Latino.** A person of Cuban, Mexican, Puerto Rican, Central or South American, or other Spanish culture or origin, regardless of race. The term "Spanish origin" can be used in addition to "Hispanic or Latino."
5. **Native Hawaiian/Pacific Islander (NHPI).** A person having origins in any of the original peoples of Hawaii, Guam, Samoa, or other Pacific Islands.
6. **White.** A person having origins in any of the original peoples of Europe, the Middle East, or North Africa.

Income

Income groups are based on the Federal Poverty Level (FPL) for a family of four:

- Poor: Less than 100% of FPL
- Low income: 100% to less than 200% of FPL
- Middle income: 200% to less than 400% of FPL
- High income: 400% or more of FPL

The poverty guidelines are available at https://aspe.hhs.gov/poverty-guidelines.

Urban-Rural Areas

Urban and rural areas are defined based on the National Center for Health Statistics 2013 Urban-Rural Classification Scheme.

Figure B-1. Map Showing 2013 NCHS Urban-Rural County Classifications in the United States
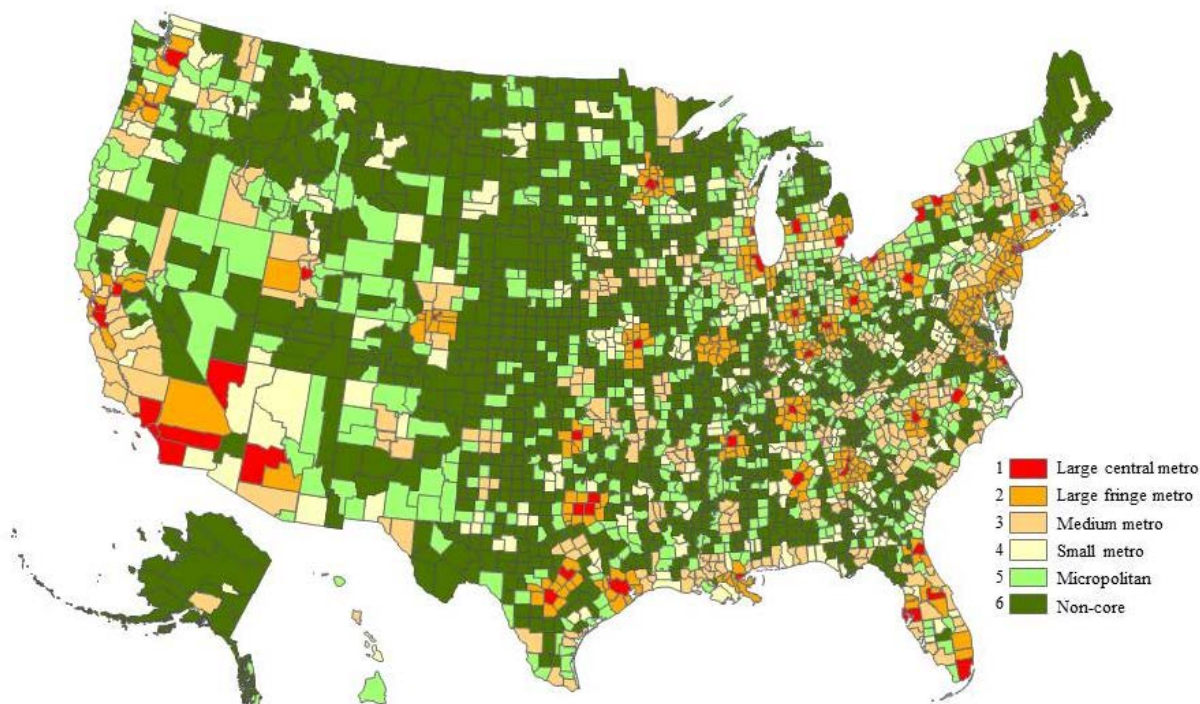
- Metropolitan counties:

  - Large central metro counties in metropolitan statistical area (MSA) of 1 million or more population that: (1) contain the entire population of the largest principal city of the MSA, or (2) are completely contained within the largest principal city of the MSA, or (3) contain at least 250,000 residents of any principal city in the MSA
  - Large fringe metro counties in MSA of 1 million or more population that do not qualify as large central.
  - Medium metro counties in MSA of 250,000-999,999 population.
  - Small metro counties in MSAs of less than 250,000 population.

- Nonmetropolitan counties:

  - Micropolitan: Counties in a micropolitan statistical area.
  - Noncore: Nonmetropolitan counties that are not in a micropolitan statistical area.

More information is available at
https://www.cdc.gov/nchs/data_access/urban_rural.htm.

Activity Limitations

Activity limitations are classified as basic, complex, and neither:

- Basic activity limitations include problems with mobility, self-care (activities of daily living), domestic life (instrumental activities of daily living), and activities that depend on sensory functioning (limited to people who are blind or deaf).
- Complex activity limitations include limitations experienced in work and in community, social, and civic life. For the purpose of the QDR, adults with disabilities are those with physical, sensory, and/or mental health conditions that can be associated with a decrease in functioning in such day-to-day activities as bathing, walking, doing everyday chores, and engaging in work or social activities.

The paired measure is intended to be consistent with statutory definitions of disability, such as the first criterion of the 1990 Americans With Disabilities Act and other federal program definitions of disability. The category "neither" refers to individuals with neither basic nor complex activity limitations, as defined here.

Abbreviations Used in the QDR

- AAA: abdominal aortic aneurysm
- ACS NSQIP: American College of Surgeons National Surgical Quality Improvement Program
- AD: Alzheimer's disease
- ADE: adverse drug event
- AI/AN: American Indian or Alaska Native
- AJCC: American Joint Committee on Cancer
- API: Asian and Pacific Islander
- BMI: body mass index
- CAP: community-acquired pneumonia
- CCQM-PC: Care Coordination Quality Measure for Primary Care
- COPD: chronic obstructive pulmonary disease
- DALY: disability-adjusted life year
- ED: emergency department
- FPL: Federal Poverty Level
- HCUP: Healthcare Cost & Utilization Project
- HHCAHPS: Home Health Consumer Assessment of Healthcare Providers and Systems

- HPV: human papillomavirus
- ICD-9: International Classification of Diseases, Ninth Revision
- ICD-10: International Classification of Diseases, Tenth Revision
- IMRT: intensity-modulated radiation therapy
- IOM: Institute of Medicine
- IWG: Interagency Work Group
- LAP: Language Access Plan
- LEP: limited English proficiency
- LN: lymph node
- LMWH: low-molecular-weight heparin
- MedPAC: Medicare Payment Advisory Commission
- MEPS: Medical Expenditure Panel Survey
- MPSMS: Medicare Patient Safety Monitoring System
- MSA: metropolitan statistical area
- NCDB: National Cancer Data Base
- NEDS: National Emergency Department Sample
- NHANES: National Health and Nutrition Examination Survey
- NHIS: National Health Interview Survey
- NHSS: National HIV/AIDS Surveillance System
- NHPI: Native Hawaiian/Pacific Islander
- NIS: National Immunization Survey
- NVSS: National Vital Statistics System
- OCR: Office for Civil Rights
- QDR: National Healthcare Quality and Disparities Report
- SID: State Inpatient Databases
- THA: total hip arthroplasty
- UM-KECC: University of Michigan Kidney Epidemiology and Cost Center
- USC: usual source of care
- USRDS: U.S. Renal Data System
- YPLL: years of potential life lost

Agencies and Offices in the U.S. Department of Health and Human Services

- AHRQ: Agency for Healthcare Research and Quality

  - CDOM: Center for Delivery, Organization, and Markets
  - CFACT: Center for Financing, Access, and Cost Trends
  - CQuIPS: Center for Quality Improvement and Patient Safety

- OC: Office of Communications
- OEREP: Office of Extramural Research, Education, and Priority Populations

- ACL: Administration for Community Living
- ASPE: Office of the Assistant Secretary for Planning and Evaluation
- CDC: Centers for Disease Control and Prevention

  - ACIP: Advisory Committee on Immunization Practices
  - NCHHSTP DHAP: National Center for HIV/AIDS, Viral Hepatitis, STD, and TB Prevention, Division of HIV/AIDS Prevention
  - NCHS: National Center for Health Statistics
  - NCIRD: National Center for Immunizations and Respiratory Diseases
  - NPCR: National Program of Cancer Registries
  - NCCDPHP-ONDIEH: National Center for Chronic Disease Prevention and Health Promotion, Office of Noncommunicable Diseases, Injury and Environmental Health

- CMS: Centers for Medicare & Medicaid Services

  - QIO: Quality Improvement Organization Program

- FDA: Food and Drug Administration
- HRSA: Health Resources and Services Administration

  - RWHAP: Ryan White HIV/AIDS Program

- IHS: Indian Health Service
- NIH: National Institutes of Health

  - NCI: National Cancer Institute
  - NHLBI: National Heart, Lung, and Blood Institute
  - NIDDK: National Institute of Diabetes and Digestive and Kidney Diseases
  - NIMHD: National Institute on Minority Health and Health Disparities
  - OD/ORWH: Office of the Director/Office of Research on Women's Health

- OASH: Office of the Assistant Secretary for Health
- SAMHSA: Substance Abuse and Mental Health Services Administration

Other Federal Agencies

- VHA: Veterans Health Administration

APPENDIX C. DATA SOURCES USED FOR 2018 REPORT

The *National Healthcare Quality and Disparities Report* is a comprehensive national overview of quality of healthcare in the United States. The report also examines disparities in healthcare among priority populations, such as racial and ethnic minority groups. The report is compiled from multiple federal, state, and private data sources, including databases and surveys.

Federal Sources of Data

Agency for Healthcare Research and Quality

- Healthcare Cost and Utilization Project (HCUP) (see next page for details)
- Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS)
- Home Health Consumer Assessment of Healthcare Providers and Systems (HHCAHPS)
- Medical Expenditure Panel Survey (MEPS)
- National CAHPS® Benchmarking Database (NCBD) – Health Plan Survey Database

Centers for Disease Control and Prevention

- Behavioral Risk Factor Surveillance System (BRFSS)
- National Ambulatory Medical Care Survey (NAMCS)
- National Health and Nutrition Examination Survey (NHANES)
- National Health Interview Survey (NHIS)
- National HIV Surveillance System (NHSS)
- National Hospital Ambulatory Medical Care Survey (NHAMCS)
- National Immunization Survey (NIS)
- National Program of Cancer Registries (NPCR)
- National Tuberculosis Surveillance System (NTSS)
- National Vital Statistics System—Linked Birth and Infant Death Data (NVSS-L)
- National Vital Statistics System—Mortality (NVSS-M)
- National Vital Statistics System—Natality (NVSS-N)

Centers for Medicare & Medicaid Services

- Hospital Inpatient Quality Reporting (HIQR) Program

Health Resources and Services Administration

- Uniform Data System (UDS)
- HIV/AIDS Bureau - Ryan White HIV/AIDS Program

Indian Health Service

- Indian Health Service National Data Warehouse (NDW)

National Institutes of Health

- United States Renal Data System (USRDS)

Substance Abuse and Mental Health Services Administration

- National Survey on Drug Use and Health (NSDUH)
- Substance Use Disorder Treatment Episode Data Set (TEDS)

Multi-Agency Data Sources

Centers for Medicare & Medicaid Services and Agency for Healthcare Research and Quality

- Medicare Patient Safety Monitoring System (MPSMS)

Academic Institutions

University of Michigan

- University of Michigan Kidney Epidemiology and Cost Center (UMKECC)

Professional Organizations and Associations

Commission on Cancer and American Cancer Society
- National Cancer Data Base (NCDB)

Additional Information on Agency for Healthcare Research and Quality HCUP Partners

The State Inpatient Databases (SID) disparities analysis file was created from SID data to provide national estimates for the QDR. It consists of weighted records from a sample of hospitals from the following 36 states participating in the Healthcare Cost and Utilization Project (HCUP) that have high-quality race/ethnicity data: AR, AZ, CA, CO, CT, DC, FL, GA, HI, IA, IL, IN, KS, KY, MD, MI, MO, NC, NJ, NM, NV, NY, OK, OR, PA, RI, SC, SD, TN, TX, VA, VT, WA, WI, WV, and WY.

In 2014, the 36 states accounted for 80 percent of U.S. discharges from community, nonrehabilitation hospitals (based on the American Hospital Association Annual Survey). A full list of HCUP partners appears below, including states that are not part of the disparities analysis file.

Sources of HCUP Data

- **Alaska** Department of Health and Social Services
- **Alaska** State Hospital and Nursing Home Association
- **Arizona** Department of Health Services
- **Arkansas** Department of Health

- **California** Office of Statewide Health Planning and Development
- **Colorado** Hospital Association
- **Connecticut** Hospital Association
- **District of Columbia** Hospital Association
- **Florida** Agency for Health Care Administration
- **Georgia** Hospital Association
- **Hawaii** Health Information Corporation
- **Illinois** Department of Public Health
- **Indiana** Hospital Association
- **Iowa** Hospital Association
- **Kansas** Hospital Association
- **Kentucky** Cabinet for Health and Family Services
- **Louisiana** Department of Health
- **Maine** Health Data Organization
- **Maryland** Health Services Cost Review Commission
- **Massachusetts** Center for Health Information and Analysis
- **Michigan** Health & Hospital Association
- **Minnesota** Hospital Association
- **Mississippi** State Department of Health
- **Missouri** Hospital Industry Data Institute
- **Montana** Hospital Association
- **Nebraska** Hospital Association
- **Nevada** Department of Health and Human Services
- **New Hampshire** Department of Health & Human Services
- **New Jersey** Department of Health
- **New Mexico** Department of Health
- **New York** State Department of Health
- **North Carolina** Department of Health and Human Services
- **North Dakota** (data provided by the Minnesota Hospital Association)
- **Ohio** Hospital Association
- **Oklahoma** State Department of Health
- **Oregon** Association of Hospitals and Health Systems
- **Oregon** Office of Health Analytics
- **Pennsylvania** Health Care Cost Containment Council
- **Rhode Island** Department of Health
- **South Carolina** Revenue and Fiscal Affairs Office
- **South Dakota** Association of Healthcare Organizations
- **Tennessee** Hospital Association
- **Texas** Department of State Health Services
- **Utah** Department of Health

- **Vermont** Association of Hospitals and Health Systems
- **Virginia** Health Information
- **Washington** State Department of Health
- **West Virginia** Health Care Authority
- **Wisconsin** Department of Health Services
- **Wyoming** Hospital Association

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