Respiratory Diseases

CHAPTER 24

Co-Lead Agencies

Centers for Disease Control and Prevention
National Institutes of Health

Contents

GOAL:

Promote respiratory health through better prevention, detection, treatment, and education efforts.

The objectives in this chapter track deaths, hospitalizations, and lost school or work days due to asthma; appropriate asthma care; and State-based asthma surveillance systems. Chronic obstructive pulmonary disease (COPD) deaths and activity limitations due to chronic lung and breathing problems are also monitored, as are issues related to persons with sleep apnea.

All Healthy People tracking data quoted in this chapter, along with technical information and Operational Definitions for each objective, can be found in the Healthy People 2010 database, DATA2010, available from http://wonder.cdc.gov/data2010/.

More information about this Focus Area can be found in the following publications:

- *Healthy People 2010: Understanding and Improving Health*, available from http://www.healthypeople.gov/2010/Document/tableofcontents.htm#under.
- *Healthy People 2010 Midcourse Review*, available from http://www.healthypeople.gov/2010/data/midcourse/html/default.htm#FocusAreas.

Highlights

- Substantial progress was achieved in objectives for this Focus Area during the past decade [1]. Seventy-one percent of the Respiratory Diseases objectives with data to monitor progress moved toward or achieved their Healthy People 2010 targets (Figure 24-1). However, statistically significant health disparities were observed for some objectives by race and ethnicity, as well as by sex, education level, and income [2]. Disparities of 50% or more remained for severe outcomes such as asthma and COPD deaths (Figure 24-2), as discussed below.
- The asthma death rate declined among adolescents and adults, especially at older ages. Between 1999 and 2007, asthma deaths among persons aged 15–34 (objective 24-1c) declined 28.6%, from 5.6 to 4.0 deaths per million population, moving toward the Healthy People 2010 target of 1.9 deaths per million; asthma deaths among persons aged 35–64 (objective 24-1d) declined 29.0%, from 15.5 to 11.0 deaths per million population, moving toward the 2010 target of 8.0 deaths per million; and asthma deaths among persons aged 65 and over (objective 24-1e) declined 37.7%, from 69.5 to 43.3 deaths per million population, exceeding the 2010 target of 47.0 deaths per million.
  - Among adolescents and adults aged 15–34 (objective 24-1c), the non-Hispanic black population had an asthma death rate of 11.5 deaths per million in 2007, approximately four times the rate for the non-Hispanic white population (2.9 deaths per million) [2]. Among persons aged 35–64, the asthma death rate for the non-Hispanic black population (34.0 deaths per million) was more than four times that of the non-Hispanic white population (8.3 deaths per million). The asthma death rates among adults aged 65 and over (objective 24-1e) for the Asian or Pacific Islander and the non-Hispanic black populations were 63.9 and 63.8 deaths per million, respectively, more than one and a half times the rate for the non-Hispanic white population (40.9 deaths per million).
  - Females aged 65 and over (objective 24-1e) had asthma death rates of 84.2 deaths per million in 1999 and 55.0 in 2007, whereas males had rates of 48.4 in 1999 and 27.2 in 2007. In 2007, the asthma death rate for females was approximately twice the rate for males [2]. Between 1999 and 2007, the disparity between females and males increased 28 percentage points [3].

- Adults aged 35–64 (objective 24-1d) with at least some college education had the lowest (best) asthma death rate among education groups, 7.6 deaths per million in 2002, whereas high school graduates and persons with less than a high school education had rates of 20.5 and 25.7 deaths per million, respectively. The rate for high school graduates was more than two and a half times the best group rate, whereas the rate for persons with less than a high school education was almost three and a half times the best group rate [2].

- The asthma hospitalization rates for persons aged 65 and over (objective 24-2c) increased 42.9% between 1998 and 2007, from 17.7 to 25.3 hospitalizations per 10,000 population (age adjusted), moving away from the 2010 target of 11.0 hospitalizations per 10,000.

- The proportion of persons with asthma who received assistance in reducing exposure to environmental risk factors (objective 24-7f) increased 18.6% between 2002 and 2008, from 43% to 51% (age adjusted), exceeding the 2010 target of 50%.

- The number of states (including D.C.) with state-based asthma surveillance systems (objective 24-8) increased from 19 states in 2003 to 36 states in 2009, exceeding the 2010 target of 25 states.

- The rates of activity limitations due to chronic lung and breathing problems (objective 24-9) for poor and near-poor persons aged 45 and over (5.1% in 2008, age adjusted) were more than three times the rate for middle/high-income persons (1.6% in 2008, age adjusted) [2]. Between 1997 and 2008, the disparity between near-poor persons (3.8% in 1997, age adjusted; 5.1% in 2008) and persons with middle/high incomes (1.8% in 1997, age adjusted; 1.6% in 2008) increased 108 percentage points [3].

- Deaths from COPD among persons aged 45 and over (objective 24-10) declined 9.3% between 1999 and 2007, from 123.9 to 112.4 deaths per 100,000 population (age adjusted), moving toward the 2010 target of 62.3 deaths per 100,000.

  - Among racial and ethnic groups, the Asian or Pacific Islander population had the lowest (best) death rate for COPD: 47.6 deaths per 100,000 (age adjusted) in 1999 and 33.9 in 2007. The American Indian or Alaska Native population had COPD death rates of 91.8 per 100,000 (age adjusted) in 1999 and 83.8 in 2007; the non-Hispanic black population had rates of 83.4 per 100,000 (age adjusted) in 1999 and 73.8 in 2007; and the non-Hispanic white population had rates of 133.1 per 100,000 (age adjusted) in 1999 and 124.8 in 2007.

    - In 2007, the rate for the American Indian or Alaska Native population was about two and a half times the best group rate (that for the Asian or Pacific Islander population); the non-Hispanic black population's rate was more than twice the best group rate; and the rate for the non-Hispanic white population was more than three and a half times the best group rate [2].

    - Between 1999 and 2007, the disparity in COPD death rates between the American Indian or Alaska Native population and the Asian or Pacific Islander population (group with the best rate) increased 54 percentage points [3]. During the same period, the disparity between the non-Hispanic white population and the Asian or Pacific Islander population increased 89 percentage points.

  - Persons aged 45–64 years with at least some college education had the lowest (best) COPD mortality rate (6.9 deaths per 100,000 in 2002, age adjusted) among education groups. The rate for high school graduates, 28.4 deaths per 100,000 (age adjusted), was more than four times the best group rate; whereas the rate for persons with less than a high school education, 49.7 deaths per 100,000 (age adjusted), was more than seven times the best group rate [2].

- COPD death rates vary by geographic region. In 2005–07, the highest rates were observed in the Ohio River Valley, the Great Plains, and Northern California (Figure 24-3). A few areas met the 2010 target.

Summary of Progress

- Figure 24-1 presents a quantitative assessment of progress in achieving the Healthy People 2010 objectives for Respiratory Diseases [1]. Data to measure progress toward target attainment were available for 24 objectives. Of these:

  - Three objectives (24-1e, 24-7f, and 24-8) met or exceeded their Healthy People 2010 targets.

  - Fourteen objectives moved toward their targets. A statistically significant difference between the baseline and the final data points was observed for four of these objectives (24-1c and d, 24-3b, and 24-10). No significant differences were observed for nine objectives (24-1b, 24-2a and b, 24-3a and c, 24-4, 24-5, 24-7d, and 24-9); and data to test the significance of the difference were unavailable for one objective (24-12).

  - Two objectives (24-7a and c) showed no change.

  - Five objectives moved away from their targets. A statistically significant difference between the baseline and final data point was observed for

one objective (24-2c). No significant difference was observed for the remaining four objectives (24-1a, 24-6, 24-7b, and 24-7e).

- One objective (24-11b) remained developmental [4].
- Follow-up data were unavailable to measure progress for one objective (24-11a).

- Figure 24-2 displays health disparities in Respiratory Diseases from the best group rate for each characteristic at the most recent data point [2]. It also displays changes in disparities from baseline to the most recent data point [3].
  - Of the 11 objectives with statistically significant health disparities of 10% or more by race and ethnicity, the non-Hispanic white population had the best rate for 6 objectives (24-1c through e, 24-4, 24-7d, and 24-11a) and the white population (including persons of Hispanic origin) had the best rate for 1 objective (24-3b). The non-Hispanic black population had the best rate for 3 objectives (24-6, and 24-7a and c), and the Asian or Pacific Islander population had the best rate for 1 objective (24-10).
  - Males had better rates than females for four of the eight objectives with statistically significant health disparities of 10% or more by sex (objectives 24-1d and e, 24-3b, and 24-9); females had better rates than males for the other four objectives (24-1c, 24-7f, 24-10, and 24-11a).
  - Persons with at least some college education had the best rate for both of the objectives with statistically significant health disparities of 10% or more by education level (objectives 24-1d and 24-10).
  - Persons with middle/high incomes had the best rate for the three objectives with statistically significant health disparities of 10% or more by income (objectives 24-7c and d, and 24-9).
  - Several objectives had health disparities of 100% or more. Many of these are discussed in the Highlights section, above.

Transition to Healthy People 2020

The Healthy People 2010 Respiratory Diseases Focus Area was divided into two Healthy People 2020 Topic Areas: Respiratory Diseases and Sleep Health. Sleep's contribution to public health is best communicated as a separate topic area because sleep is a fundamental biological requirement for health that crosscuts many topic areas and there are many nonrespiratory causes of disordered sleep. For Healthy People 2020, the Respiratory Diseases objectives have been expanded to include additional National Asthma Education and Prevention Program (NAEPP) guidelines for asthma care and indicators of the burden of COPD. The Respiratory Diseases objectives primarily assess the burden of asthma and COPD and related measures on prevention, detection, treatment, and education efforts. Sleep Health has added objectives tracking sufficient sleep. The Sleep Health objectives are focused on adequate sleep and treatment of sleep disorders as well as the impact of fatigue on motor vehicle crashes. See HealthyPeople.gov for a complete list of Healthy People 2020 topics and objectives.

The Healthy People 2020 Respiratory Diseases Topic Area objectives can be grouped into two sections:

- Asthma
- Chronic Obstructive Pulmonary Disease.

The differences between the Healthy People 2010 objectives and those included in Healthy People 2020 are summarized below:

- The Healthy People 2020 Respiratory Diseases Topic Area has a total of 27 objectives, 4 of which are developmental [4]. The Sleep Topic Area has a total of 4 objectives. The Healthy People 2010 Respiratory Diseases Focus Area had 26 objectives, 1 of which was developmental.
- Sixteen Healthy People 2010 objectives were retained "as is" [5]. These include: asthma deaths, separately assessed for persons aged 35–64 (objective 24-1d), and persons aged 65 and over (objective 24-1e); hospitalizations for asthma, separately assessed for persons under age 5 years (objective 24-2a), persons aged 5–64 years (objective 24-2b), and persons aged 65 and over (objective 24-2c); emergency department visits for asthma, separately assessed for persons under age 5 years (objective 24-3a), persons aged 5–64 years (objective 24-3b), and persons aged 65 and over (objective 24-3c); activity limitations among persons with asthma (objective 24-4); patient education among persons with asthma (objective 24-6); five objectives tracking NAEPP guidelines for asthma care, namely receipt of written asthma plans from health care provider (objective 24-7a), proper-use instructions with inhalers (objective 24-7b), education on early signs, symptoms, and response to asthma episodes (objective 24-7c), appropriate medication regimens for asthma care (objective 24-7d), and assistance in reducing exposure to environmental risks for asthma (objective 24-7f); and COPD deaths (objective 24-10).
- One Healthy People 2010 Respiratory Diseases objective, long-term management care after

hospitalization for asthma (objective 24-7e), was archived due to a lack of reliable data [6].

- One developmental Healthy People 2010 Respiratory Diseases objective on long-term medical management for persons with symptoms of obstructive sleep apnea (objective 24-11b) was removed during the Healthy People 2020 planning process, due to the lack of a national data source.

- Six Healthy People 2010 Respiratory Diseases objectives were modified to create five Healthy People 2020 Respiratory Disease objectives [7]:
  - Three asthma deaths objectives among persons under age 5 years (objective 24-1a), 5–14 years (objective 24-1b), and 15–34 (objective 24-1c) were combined into one objective for persons aged 35 and under.
  - The objective tracking the average number of school or work days lost due to asthma (objective 24-5) was divided into two separate objectives for children and adults and modified to assess the percentage of persons that miss school days or work days due to asthma, respectively.
  - The objective tracking states with asthma surveillance systems (objective 24-8) was expanded to count territories, and the definition was modified to include recipients of either of two funding sources that require asthma surveillance in addition to states and territories participating in a detailed asthma survey.
  - The objective tracking activity limitations due to chronic lung and breathing problems (objective 24-9) was modified to target adults with COPD instead of adults with activity limitations.

- Six new objectives were added to the Healthy People 2020 Respiratory Diseases Topic Area:
  - Three new developmental NAEPP asthma care objectives: routine annual follow-up visits for asthma, annual medical assessment of asthma control, and consultation on any work-related causes of asthma.
  - Two new health care utilization objectives for COPD: hospitalizations and emergency department visits.
  - A new developmental objective tracking the diagnosis of underlying COPD.

- Two objectives were moved to the new Sleep Health Topic Area including persons with symptoms of obstructive sleep apnea who seek medical evaluation (objective 24-11a) and motor vehicle crashes due to drowsy driving (objective 24-12). The motor vehicle crash objective was modified to include all crashes, not just those involving driver fatalities.

- Two new objectives were added to the Healthy People 2020 Sleep Health Topic Area:
  - Sufficient sleep among students in grades 9–12
  - Sufficient sleep among adults.

Appendix D, "A Crosswalk Between Objectives From Healthy People 2010 to Healthy People 2020," summarizes the changes between the two decades of objectives, reflecting new knowledge and direction for this area.

Data Considerations

Education and income are the primary measures of socioeconomic status in Healthy People 2010. Most data systems used in Healthy People 2010 define income as a family's income before taxes. To facilitate comparisons among groups and over time, while adjusting for family size and for inflation, Healthy People 2010 categorizes income using the poverty thresholds developed by the Census Bureau. Thus, the three categories of family income that are primarily used are:

- Poor—below the Federal poverty level
- Near poor—100% to 199% of the Federal poverty level
- Middle/high income—200% or more of the Federal poverty level.

These categories may be overridden by considerations specific to the data system, in which case they are modified as appropriate. See *Healthy People 2010: General Data Issues*, referenced below.

Beginning in 2003, education data for asthma and COPD deaths (objectives 24-1c and d and 24-10) from the National Vital Statistics System have been suppressed. The educational attainment item was changed in the new U.S. Standard Certificate of Death in 2003 to be consistent with the Census Bureau data and to improve the ability to identify specific types of educational degrees. Many states, however, are still using the 1989 version of the U.S. Standard Certificate of Death, which focuses on highest school grade completed. As a result, educational attainment data collected using the 2003 version are not comparable with data collected using the 1989 version [8].

In general, data on educational attainment are presented for persons aged 25 and over, consistent with guidance given by the Census Bureau. However, because of the requirements of the different data systems, the age groups used to calculate educational attainment for any specific objective may differ from the age groups used to report the data for other Healthy People 2010 objectives, as well as from select populations within the same objective. Therefore, the reader is urged to

exercise caution in interpreting the data by educational attainment shown in the Health Disparities Table. See *Healthy People 2010: General Data Issues*, referenced below.

Additional information on data issues is available from the following sources:

- All Healthy People 2010 tracking data can be found in the Healthy People 2010 database, DATA2010, available from http://wonder.cdc.gov/data2010/.
- Detailed information about the data and data sources used to support these objectives can be found in the Operational Definitions on the DATA 2010 website, available from http://wonder.cdc.gov/data2010/focusod.htm.
- More information on statistical issues related to Healthy People tracking and measurement can be found in the Technical Appendix and in *Healthy People 2010: General Data Issues*, which is available in the General Data Issues section of the NCHS Healthy People website under Healthy People 2010; see http://www.cdc.gov/nchs/healthy_people/hp2010/hp2010_data_issues.htm.

References and Notes

1. Displayed in the Progress Chart (Figure 24-1), the percent of targeted change achieved expresses the difference between the baseline and the final value relative to the initial difference between the baseline and the Healthy People 2010 target. As such, it is a relative measure of progress toward attaining the Healthy People 2010 target. See the Reader's Guide for more information. When standard errors were available, the difference between the baseline and the final value was tested at the 0.05 level of significance. See the Figure 24-1 footnotes, as well as the Technical Appendix, for more detail.

2. Information about disparities among select populations is shown in the Health Disparities Table (Figure 24-2). Disparity from the best group rate is defined as the percent difference between the best group rate and each of the other group rates for a characteristic. For example, racial and ethnic health disparities are measured as the percent difference between the best racial and ethnic group rate and each of the other racial and ethnic group rates. Similarly, disparities by sex are measured as the percent difference between the better group rate (e.g., female) and the rate for the other group (e.g., male). Some objectives are expressed in terms of favorable events or conditions that are to be increased, while others are expressed in terms of adverse events or conditions that are to be reduced. To facilitate comparison of health disparities across different objectives, disparity is measured only in terms of adverse events or conditions. For comparability across objectives, objectives that are expressed in terms of favorable events or conditions are re-expressed using the adverse event or condition for the purpose of computing disparity, but they are not otherwise restated or changed. For example, objective 1-1, to increase the proportion of persons with health insurance (e.g., 72% of the American Indian or Alaska Native population under age 65 had some form of health insurance in 2008), is expressed in terms of the percentage of persons without health insurance (e.g., 100% – 72% = 28% of the American Indian or Alaska Native population under age 65 did not have any form of health insurance in 2008) when the disparity from the best group rate is calculated. See the Reader's Guide for more information. When standard errors were available, the difference between the best group rate and each of the other group rates was tested at the 0.05 level of significance. See the Figure 24-2 footnotes, as well as the Technical Appendix, for more detail.

3. The change in disparity is estimated by subtracting the disparity at baseline from the disparity at the most recent data point and, therefore, is expressed in percentage points. See the Reader's Guide for more information. When standard errors were available, the change in disparity was tested at the 0.05 level of significance. See the Figure 24-2 footnotes, as well as the Technical Appendix, for more detail.

4. To be included in Healthy People 2010, an objective must have a national data source that provides a baseline and at least one additional data point for tracking progress. Some objectives lacked baseline data at the time of their development but had a potential data source and were considered of sufficient national importance to be included in Healthy People. These are called "developmental" objectives. When data become available, a developmental objective is moved to measurable status and a Healthy People target can be set.

5. As of the Healthy People 2020 launch, Healthy People 2020 objectives that were retained "as is" from Healthy People 2010 had no change in the numerator or denominator definitions, the data source(s), or the data collection methodology. These include objectives that were developmental in Healthy People 2010 and are developmental in Healthy People 2020, and for which no numerator information is available.

6. Archived objectives had at least one data point in Healthy People 2010 but were not carried forward into Healthy People 2020.

7. As of the Healthy People 2020 launch, objectives that were modified from Healthy People 2010 had some change in the numerator or denominator definitions, the data source(s), or the data collection methodology. These include objectives that went from developmental in Healthy People 2010 to measurable in Healthy People 2020, or vice versa.

8. Xu JQ, Kochanek KD, Murphy SL, Tejada-Vera B. Deaths: Final data for 2007. National vital statistics reports; vol 58 no 19. Hyattsville, MD: National Center for Health Statistics. 2010. Available from http://www.cdc.gov/nchs/data/nvsr/nvsr58/nvsr58_19.pdf.

Comprehensive Summary of Objectives: Respiratory Diseases

Objective	Description	Data Source or Objective Status
24-1a	Deaths from asthma—Children <5 years (per million population)	National Vital Statistics System—Mortality (NVSS-M), CDC, NCHS.
24-1b	Deaths from asthma—Children and adolescents 5–14 years (per million population)	National Vital Statistics System—Mortality (NVSS-M), CDC, NCHS.
24-1c	Deaths from asthma—Adolescents and adults 15–34 years (per million population)	National Vital Statistics System—Mortality (NVSS-M), CDC, NCHS.
24-1d	Deaths from asthma—Adults 35–64 years (per million population)	National Vital Statistics System—Mortality (NVSS-M), CDC, NCHS.
24-1e	Deaths from asthma—Older adults 65+ years (per million population)	National Vital Statistics System—Mortality (NVSS-M), CDC, NCHS.
24-2a	Hospitalizations for asthma—Children <5 years (per 10,000 population)	National Hospital Discharge Survey (NHDS), CDC, NCHS.
24-2b	Hospitalizations for asthma—Children and adults 5–64 years (age adjusted, per 10,000 population)	National Hospital Discharge Survey (NHDS), CDC, NCHS.
24-2c	Hospitalizations for asthma—Older adults 65+ years (age adjusted, per 10,000 population)	National Hospital Discharge Survey (NHDS), CDC, NCHS.
24-3a	Emergency department visits for asthma—Children <5 years (per 10,000 population)	National Hospital Ambulatory Medical Care Survey (NHAMCS), CDC, NCHS.
24-3b	Emergency department visits for asthma—Children and adults 5–64 years (per 10,000 population)	National Hospital Ambulatory Medical Care Survey (NHAMCS), CDC, NCHS.
24-3c	Emergency department visits for asthma—Older adults 65+ years (per 10,000 population)	National Hospital Ambulatory Medical Care Survey (NHAMCS), CDC, NCHS.
24-4	Activity limitations among persons with asthma (age adjusted)	National Health Interview Survey (NHIS), CDC, NCHS.
24-5	School or work days missed by persons with asthma, due to asthma (5–64 years)	National Health Interview Survey (NHIS), CDC, NCHS.
24-6	Patient education among persons with asthma (age adjusted)	National Health Interview Survey (NHIS), CDC, NCHS.
24-7a	Persons with asthma receiving written asthma plans from health care provider (age adjusted)	National Health Interview Survey (NHIS), CDC, NCHS.
24-7b	Persons with asthma receiving proper-use instructions with prescribed inhalers (age adjusted)	National Health Interview Survey (NHIS), CDC, NCHS.
24-7c	Persons with asthma receiving education on early signs, symptoms, and responses to asthma episodes (age adjusted)	National Health Interview Survey (NHIS), CDC, NCHS.
24-7d	Persons with asthma receiving medication regimens that prevent need for >1 beta agonist inhalation canister per month (age adjusted)	National Health Interview Survey (NHIS), CDC, NCHS.

Comprehensive Summary of Objectives: Respiratory Diseases (continued)

Objective	Description	Data Source or Objective Status
24-7e	Persons with asthma receiving long-term management care after hospitalization due to asthma (age adjusted)	National Health Interview Survey (NHIS), CDC, NCHS.
24-7f	Persons with asthma receiving assistance in reducing exposure to environmental risk factors (age adjusted)	National Health Interview Survey (NHIS), CDC, NCHS.
24-8	State-based asthma surveillance systems (no. States)	Behavioral Risk Factor Surveillance System (BRFSS), CDC, NCCDPHP.
24-9	Activity limitations due to chronic lung and breathing problems (age adjusted, 45+ years)	National Health Interview Survey (NHIS), CDC, NCHS.
24-10	Deaths from chronic obstructive pulmonary disease (COPD, excluding asthma) (age adjusted, per 100,000 population, 45+ years)	National Vital Statistics System—Mortality (NVSS-M), CDC, NCHS.
24-11a	Medical evaluation for persons with symptoms of obstructive sleep apnea (age adjusted, 20+ years)	National Health and Nutrition Examination Survey (NHANES), CDC, NCHS.
24-11b	Long-term medical management among persons with symptoms of obstructive sleep apnea	Developmental.
24-12	Drivers involved in fatal motor vehicle crashes due to excessive sleepiness	Fatality Analysis Reporting System (FARS), Department of Transportation (DOT).

Figure 24-1. Progress Toward Target Attainment for Focus Area 24: Respiratory Diseases

LEGEND — Moved away from target[1] | Moved toward target | Met or exceeded target

Objective	Percent of targeted change achieved[2] (0 25 50 75 100)	2010 Target	Baseline (Year)	Final (Year)	Baseline vs. Final: Difference[3]	Statistically Significant[4]	Percent Change[5]
24-1. Deaths from asthma (per million population)							
a. Children <5 years		0.9	1.7 (1999)	2.2 (2007)	0.5	No	29.4%
b. Children and adolescents 5–14 years	18.2%	0.9	3.1 (1999)	2.7 (2007)	-0.4	No	-12.9%
c. Adolescents and adults 15–34 years	43.2%	1.9	5.6 (1999)	4.0 (2007)	-1.6	Yes	-28.6%
d. Adults 35–64 years	60.0%	8.0	15.5 (1999)	11.0 (2007)	-4.5	Yes	-29.0%
e. Older adults 65+ years	116.4%	47.0	69.5 (1999)	43.3 (2007)	-26.2	Yes	-37.7%
24-2. Hospitalizations for asthma							
a. Children <5 years (per 10,000 population)	20.4%	25.0	45.6 (1998)	41.4 (2007)	-4.2	No	-9 .2%
b. Children and adults 5–64 years (age adjusted, per 10,000 population)	29.2%	7.7	12.5 (1998)	11.1 (2007)	-1.4	No	-11.2%
c. Older adults 65+ years (age adjusted, per 10,000 population)		11.0	17.7 (1998)	25.3 (2007)	7.6	Yes	42.9%
24-3. Emergency department visits for asthma							
a. Children <5 years (per 10,000 population)	24.6%	80.0	150.0 (1995–97)	132.8 (2005–07)	-17.2	No	-11.5%
b. Children and adults 5–64 years (per 10,000 population)	66.8%	50.0	71.1 (1995–97)	57.0 (2005–07)	-14.1	Yes	-19.8%
c. Older adults 65+ years (per 10,000 population)	52.4%	15.0	29.5 (1995–97)	21.9 (2005–07)	-7.6	No	-25.8%
24-4. Activity limitations among persons with asthma (age adjusted)	14.3%	7%	14% (2001)	13% (2008)	-1	No	-7.1%
24-5. School or work days missed by persons with asthma, due to asthma (5–64 years)	38.5%	1.9	5.8 (2002)	4.3 (2008)	-1.5	No	-25.9%
24-6. Patient education among persons with asthma (age adjusted)		38%	13% (2003)	12% (2008)	-1	No	-7.7%

Figure 24-1. Progress Toward Target Attainment for Focus Area 24: Respiratory Diseases (continued)

	Objective	Percent of targeted change achieved[2] (0 25 50 75 100)	2010 Target	Baseline (Year)	Final (Year)	Baseline vs. Final: Difference[3]	Baseline vs. Final: Statistically Significant[4]	Baseline vs. Final: Percent Change[5]
24-7.	Persons with asthma receiving							
	a. Written asthma plans from health care provider (age adjusted)	0.0%	40%	33% (2002)	33% (2008)	0	No	0.0%
	b. Proper-use instructions with prescribed inhalers (age adjusted)		98.8%	96.0% (2003)	95.9% (2008)	-0.1	No	-0.1%
	c. Education on early signs, symptoms, and responses to asthma episodes (age adjusted)	0.0%	68%	65% (2003)	65% (2008)	0	No	0.0%
	d. Medication regimens that prevent need for >1 beta agonist inhalation canister per month (age adjusted)	25.0%	94%	86% (2003)	88% (2008)	2	No	2.3%
	e. Long-term management care after hospitalization due to asthma (age adjusted)		87%	76% (2003)	69% (2008)	-7	No	-9.2%
	f. Assistance in reducing exposure to environmental risk factors (age adjusted)	114.3%	50%	43% (2002)	51% (2008)	8	Yes	18.6%
24-8.	State-based asthma surveillance systems (no. States)	283.3%	25	19 (2003)	36 (2009)	17	Not tested	89.5%
24-9.	Activity limitations due to chronic lung and breathing problems (age adjusted, 45+ years)	16.7%	1.9%	2.5% (1997)	2.4% (2008)	-0.1	No	-4.0%
24-10.	Deaths from chronic obstructive pulmonary disease (COPD, excluding asthma) (age adjusted, per 100,000 population, 45+ years)	18.7%	62.3	123.9 (1999)	112.4 (2007)	-11.5	Yes	-9.3%
24-12.	Drivers involved in fatal motor vehicle crashes due to excessive sleepiness	80.0%	1.4%	2.4% (2000)	1.6% (2009)	-0.8	Not tested	-33.3%

NOTES

See the Reader's Guide for more information on how to read this figure. See DATA2010 at http://wonder.cdc.gov/data2010 for all HealthyPeople 2010 tracking data. Tracking data are not available for objectives 24-11a and 24-11b .

FOOTNOTES

[1] Movement away from target is not quantified using the percent of targeted change achieved. See Technical Appendix for more information.

[2] Percent of targeted change achieved = $\frac{\text{Final value} - \text{Baseline value}}{\text{Healthy People 2010 target} - \text{Baseline value}} \times 100.$

[3] Difference = Final value – Baseline value. Differences between percents (%) are measured in percentage points.

[4] When estimates of variability are available, the statistical significance of the difference between the final value and the baseline value is assessed at the 0.05 level. See Technical Appendix for more information.

[5] Percent change = $\frac{\text{Final value} - \text{Baseline value}}{\text{Baseline value}} \times 100.$

DATA SOURCES

24-1a–e. National Vital Statistics System—Mortality (NVSS-M), CDC, NCHS.
24-2a–c. National Hospital Discharge Survey (NHDS), CDC, NCHS.
24-3a–c. National Hospital Ambulatory Medical Care Survey (NHAMCS), CDC, NCHS.
24-4–24-6. National Health Interview Survey (NHIS), CDC, NCHS.
24-7a–f. National Health Interview Survey (NHIS), CDC, NCHS.
24-8. Behavioral Risk Factor Surveillance System (BRFSS), CDC, NCCDPHP.
24-9. National Health Interview Survey (NHIS), CDC, NCHS.
24-10. National Vital Statistics System—Mortality (NVSS-M), CDC, NCHS.
24-12. Fatality Analysis Reporting System (FARS), Department of Transportation (DOT).

Figure 24-2. Health Disparities Table for Focus Area 24: Respiratory Diseases

Disparities from the best group rate for each characteristic at the most recent data point and changes in disparity from the baseline to the most recent data point.

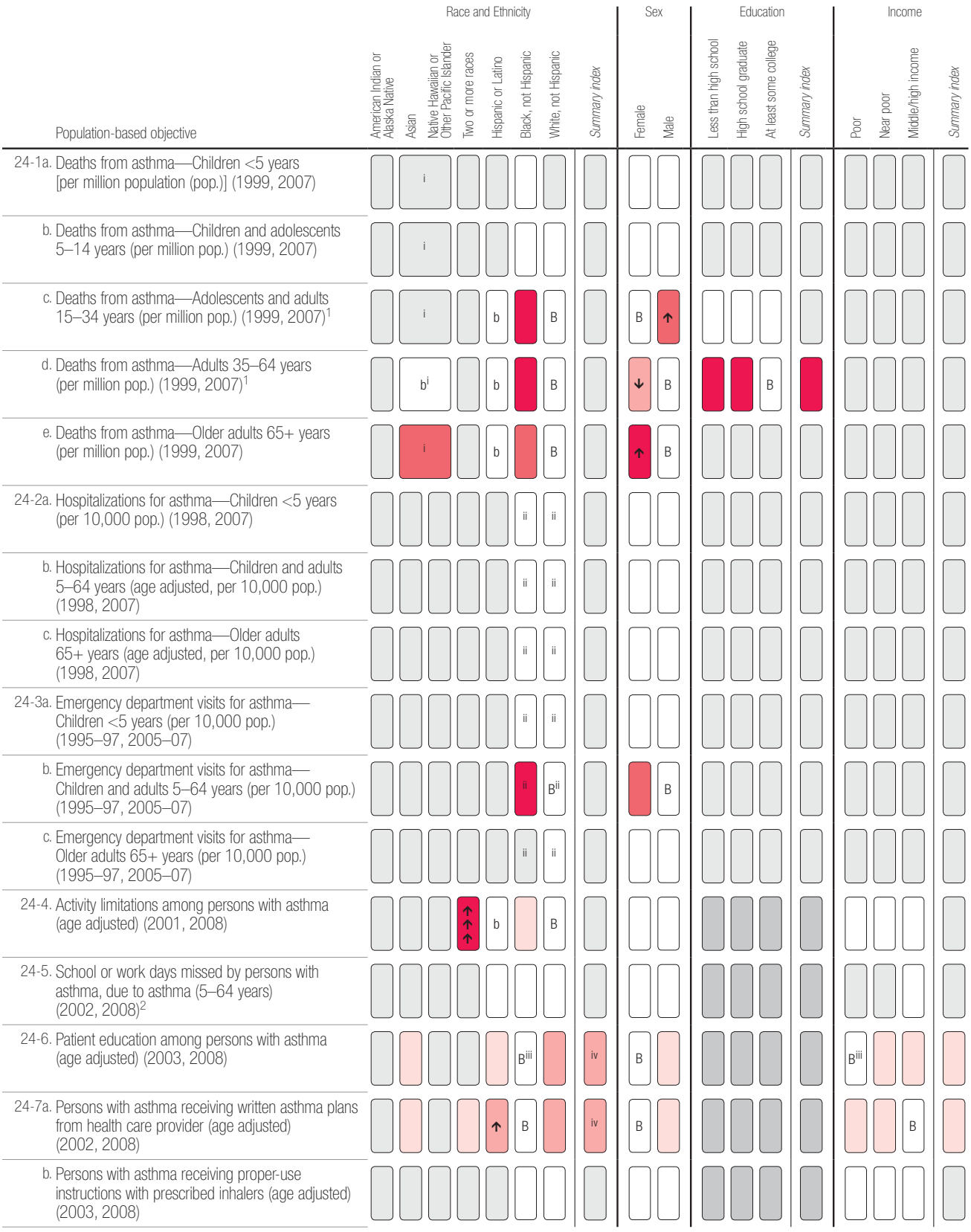


Figure 24-2. Health Disparities Table for Focus Area 24: Respiratory Diseases (continued)

NOTES

See DATA2010 at http://wonder.cdc.gov/data2010 for all Healthy People 2010 tracking data. Disparity data are either unavailable or not applicable for objectives 24-8, 24-11b, and 24-12.

Years in parentheses represent the baseline and most recent data years (if available).

Disparity from the best group rate is defined as the percent difference between the best group rate and each of the other group rates for a characteristic (e.g., race and ethnicity). The summary index is the average of these percent differences for a characteristic. Change in disparity is estimated by subtracting the disparity at baseline from the disparity at the most recent data point. Change in the summary index is estimated by subtracting the summary index at baseline from the summary index at the most recent data point. See Technical Appendix for more information.

Measures of variability were available for all objectives in this table. Thus, the variability of best group rates was assessed, and statistical significance was tested. Disparities of 10% or more are displayed when the differences from the best group rate are statistically significant at the 0.05 level. Changes in disparities over time are indicated by arrows when the changes are greater than or equal to 10 percentage points and are statistically significant at the 0.05 level. See Technical Appendix.

Figure 24-2. Health Disparities Table for Focus Area 24: Respiratory Diseases (continued)

LEGEND

The "best" group rate at the most recent data point.

B — The group with the best rate for specified characteristic.

b — Most favorable group rate for specified characteristic, but reliability criterion not met.

Reliability criterion for best group rate not met, or data available for only one group.

Percent difference from the best group rate

Disparity from the best group rate at the most recent data point.

- Less than 10%, or difference not statistically significant (when estimates of variability are available).
- 10%–49%
- 50%–99%
- 100% or more

Changes in disparity over time are shown when: (a) disparities data are available at both baseline and most recent time points; (b) data are not for the group(s) indicated by "B" or "b" at either time point; and (c) the change is greater than or equal to 10 percentage points and statistically significant, or when the change is greater than or equal to 10 percentage points and estimates of variability were not available. See Technical Appendix.

Increase in disparity (percentage points)

- ↑ 10–49 points
- ↑↑ 50–99 points
- ↑↑↑ 100 points or more

Decrease in disparity (percentage points)

- ↓ 10–49 points
- ↓↓ 50–99 points
- ↓↓↓ 100 points or more

Availability of Data

- Data not available.
- Characteristic not selected for this objective.

FOOTNOTES

[1] Most recent data by education level is for 2002.

[2] Most recent data by sex is for 2003.

[3] Baseline data by race and ethnicity are for 1999.

[i] Data are for Asian or Pacific Islander.

[ii] Data include persons of Hispanic origin.

[iii] The group with the best rate at the most recent data point is different from the group with the best rate at baseline. Both rates met the reliability criterion. See Technical Appendix.

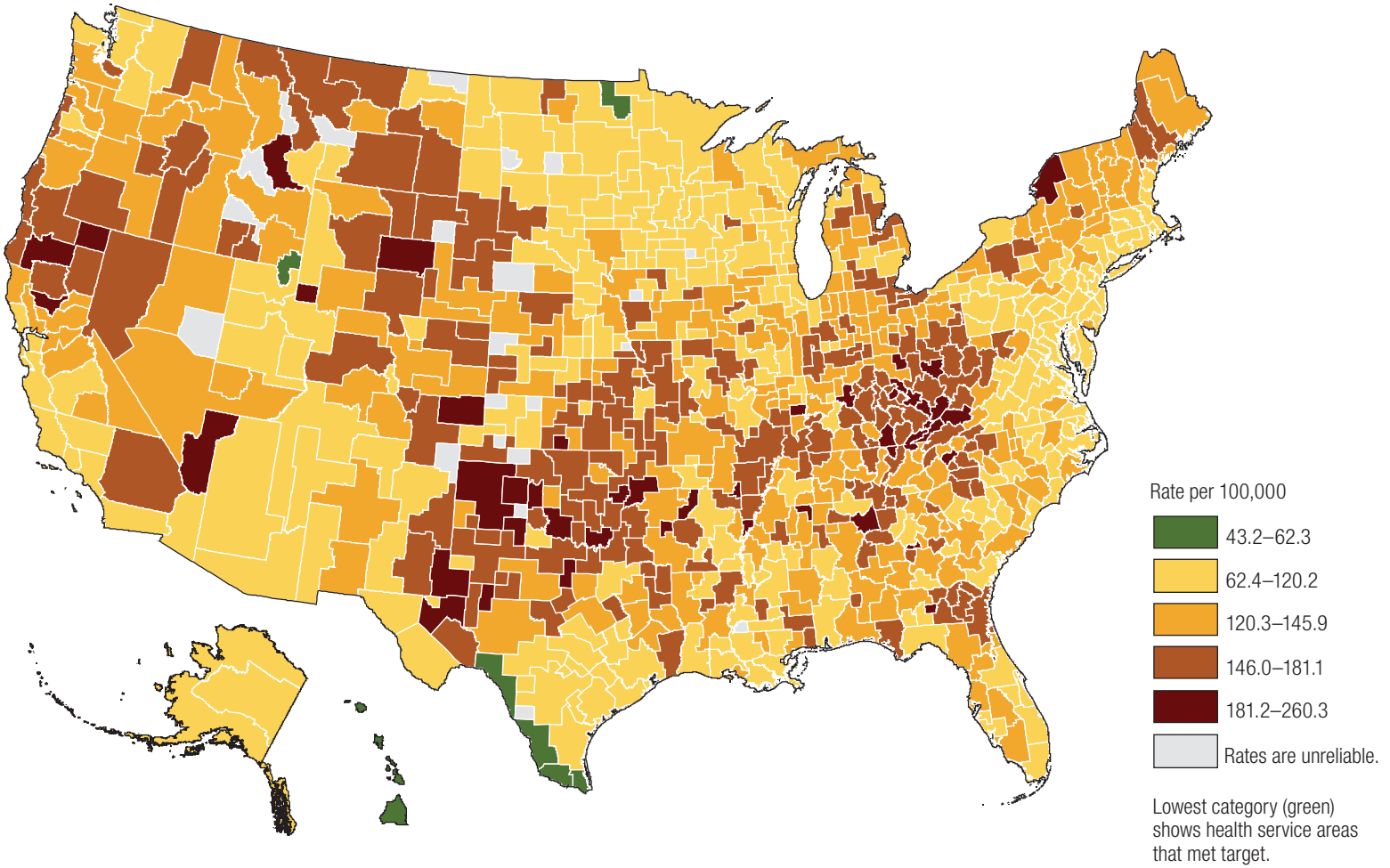
[iv] Change in the summary index cannot be assessed. See Technical Appendix.

[v] Data are for Mexican American.

DATA SOURCES

24-1a–e. National Vital Statistics System—Mortality (NVSS-M), CDC, NCHS.
24-2a–c. National Hospital Discharge Survey (NHDS), CDC, NCHS.
24-3a–c. National Hospital Ambulatory Medical Care Survey (NHAMCS), CDC, NCHS.
24-4–24-6. National Health Interview Survey (NHIS), CDC, NCHS.
24-7a–f. National Health Interview Survey (NHIS), CDC, NCHS.
24-9. National Health Interview Survey (NHIS), CDC, NCHS.
24-10. National Vital Statistics System—Mortality (NVSS-M), CDC, NCHS.
24-11a. National Health and Nutrition Examination Survey (NHANES), CDC, NCHS.

Figure 24-3. Deaths From Chronic Obstructive Pulmonary Disease (COPD, Excluding Asthma, Age 45+), 2005–07
Healthy People 2010 objective 24-10 • Target = 62.3 per 100,000



NOTES: Data are for ICD-10 codes J40–J44 reported as underlying cause, for ages 45 and over. Rates are age adjusted to the 2000 standard population. Rates are displayed by a modified Jenks classification for U.S. health service areas.

SOURCE: National Vital Statistics System—Mortality (NVSS-M), CDC, NCHS.