

## **24. RESPIRATORY DISEASES**

### *Asthma*

<b>Number</b>	<b>Objective</b>
1	Deaths
2	Hospitalizations
3	Emergency department visits
4	Activity limitations
5	School or work days lost
6	Patient education
7	Continuing medical education
8	Written asthma management plans
9	Counseling on early signs of worsening asthma
10	Instruction on peak expiratory flow monitoring
11	Short-acting inhaled beta agonists
12	Long-term management
13	Surveillance system

1

### *Chronic Obstructive Pulmonary Disease*

<b>Number</b>	<b>Objective</b>
14	Prevalence
15	Deaths
16	Culturally competent care
17	Training in early signs of COPD

2

### *Obstructive Sleep Apnea*

<b>Number</b>	<b>Objective</b>
18	Medical evaluations
19	Followup medical care
20	Vehicular accidents
21	Training in sleep medicine



## **Respiratory Diseases**

### **Goal**

Raise the public’s awareness of the signs and symptoms of lung diseases and what to do when they experience them—specifically symptoms of asthma, chronic obstructive pulmonary disease (COPD), and obstructive sleep apnea, and promote lung health through better detection, treatment, and education.

### **Terminology**

(A listing of all acronyms used in this publication appears on page 27 of the Introduction.)

This chapter discusses those respiratory diseases considered a significant public health burden to the population of the United States for which specific methods of detection, intervention, and treatment exist that may result in a measurable reduction of the burden. Many diseases that affect the respiratory system, such as tuberculosis, AIDS, pneumonia, occupational lung disease, and lung cancer or smoking, are covered in other chapters. Other important respiratory diseases, such as respiratory distress syndromes, sarcoidosis, or chronic sinusitis, are not discussed in any chapter because detection, definition, intervention, or treatment is not clear. Their omission is not a reflection on the magnitude of their associated morbidities and mortalities.

**Asthma:** Asthma is a lung disease with recurrent exacerbations of airway constriction, mucous secretion, and chronic inflammation of the airways, resulting in reduced airflow that causes symptoms of wheezing, cough, chest tightness, and difficulty breathing.

**Chronic obstructive lung disease:** COPD is characterized by the presence of airflow obstruction due to chronic bronchitis and emphysema, two diseases that often coexist. COPD is one of the commonest respiratory conditions of adults in the world and is the fourth leading cause of death in the United States.

**Obstructive sleep apnea:** OSA is an illness characterized by snoring, partial or complete cessation of breathing during sleep, reductions in blood oxygen levels, severe sleep fragmentation, and excessive daytime sleepiness. OSA is a chronic breathing problem with serious effects on individual health and productivity, including risk of sudden infant deaths, injury from accidents, and reduced quality of life.

### **Overview**

Asthma, COPD, and obstructive sleep apnea have a large impact on the Nation’s health. For example, asthma and COPD are among the 10 leading causes of restricted activity; asthma is a leading cause of chronic illness in children. Interventions are currently available to ameliorate the impact of asthma, COPD, and obstructive sleep apnea and thus improve the Nation’s health.

The Department of Health and Human Services through its public health agencies conducts biomedical research, translation, and educational activities to reduce illness due to lung disease and promote respiratory health for all Americans. The agencies’ research priorities are determined primarily by the magnitude, distribution, and trends of diseases in the United States and by the potential for improving the Nation’s health through specific interventions. When a disease disproportionately affects a certain population, research and interventions are targeted as much as possible so that various population groups can achieve health outcomes similar to other populations.

#### ***Asthma***

1  
2 An estimated 14.9 million Americans have asthma, with an 82 percent increase in the rate in the last 15  
3 years. The prevalence of asthma is increasing in most age groups, especially younger than age 18. In  
4 1995, the prevalence of self-reported asthma among persons under 18 years of age was 7.5 percent,  
5 compared to 5.7 percent among all persons. The rates are higher in boys than girls under 18 years. The  
6 prevalence of self-reported asthma is greater for women (6.7 percent) than men (5.2 percent) and greater  
7 for African Americans (6.7 percent) than whites (5.6 percent).  
8

9 Over 500,000 hospitalizations, 5,000 deaths, and more than 133 million days of restricted activity are due  
10 to asthma every year. The burden of asthma disproportionately affects children and minority populations.  
11 Yet most of the problems caused by asthma are preventable if asthma patients and their physicians manage  
12 the disease according to established guidelines. Effective management of asthma includes four major  
13 components: control of exposure to factors that trigger exacerbations, adequate pharmacologic  
14 management, continual monitoring of the disease, and patient education for a partnership in asthma care.  
15 Such secondary prevention efforts are essential to interrupt the progression from disease to functional  
16 limitation and disability and to improve the quality of life for those who have asthma.  
17

18 In 1996, asthma was the 10<sup>th</sup> most common principal diagnosis in emergency department visits. Among  
19 diseases commonly seen in the outpatient departments, asthma was the ninth most frequent in 1996. In  
20 1995, there were 9 million physician office visits for asthma. From 1990 to 1992 there were an estimated  
21 64 million days of bed disability for asthma, ranking as the 4th highest among chronic conditions. The  
22 proportion of people with asthma who have activity limitation rose from 19.4 percent in 1986-88 to 22  
23 percent in 1992-94. The rate is higher in African Americans: about 30 percent of African Americans with  
24 asthma have restricted activity due to their disease.  
25

26 Direct medical expenditures for asthma amounted to \$3.64 billion in 1990, and indirect economic losses  
27 accounted for an additional \$2.6 billion. Of the amount spent on medical care treatments, approximately  
28 56 percent was for 463,500 inpatient hospital stays (\$1 billion), 1.5 million outpatient hospital visits (\$129  
29 million), and 1.8 million emergency department visits (\$200 million). Physician-related services for  
30 asthma accounted for 14 percent of total expenditures, including 6.5 million ambulatory care visits (\$193  
31 million), and 30 percent of direct medical costs was for prescription medications. These data highlight the  
32 significant cost of institutional care relative to more frequently used and less costly outpatient and  
33 pharmaceutical services. The indirect cost of nonmedical economic losses, such as days missed from work  
34 or school caregiver expenditures, travel and waiting time, early retirement due to disability, and premature  
35 mortality, account for approximately 50 percent of total illness costs.  
36

37 The economic burden of asthma is large and disproportionately affects those with severe disease. The  
38 available cost-of-illness data suggest that an uneven share of costs relate to nonscheduled acute or  
39 emergency care, indicating poor asthma management and suboptimal outcome. One study revealed that  
40 people with severe asthma accounted for 10 percent of people with asthma, roughly 51 percent of all direct  
41 medical care expenditures and 54 percent of total asthma costs. People with mild asthma accounted for 70  
42 percent of the population but only about 20 percent of the costs.  
43

44 Socioeconomic status, particularly poverty, appears to be an important contributing factor to asthma  
45 morbidity and mortality. Asthma disproportionately affects minorities and the poor. In the United States,  
46 asthma prevalence for nonwhites is only slightly higher than for whites, yet the asthma hospitalization and  
47 morbidity rates for nonwhites are more than twice those for whites. Why this is so is not clearly  
48 understood, but it is likely due to multiple factors such as high levels of exposure to environmental tobacco  
49 smoke and pollutants and environmental allergens, lack of access to quality medical care, and lack of  
50 financial resources and social support to manage the disease effectively on a long-term basis.

1  
2 Environmental factors also contribute to asthma morbidity. Decreases in pulmonary function and  
3 exacerbations of asthma have been associated with ambient air pollutants (e.g., ozone, sulfur dioxide,  
4 nitrogen dioxide, acid aerosols, and particulate matter), indoor pollutants (e.g., tobacco smoke), and  
5 allergens. Approximately 25 percent of children in the United States reside in areas that exceed the  
6 Federal standard for ozone. One additional environmental factor contributing to asthma morbidity is upper  
7 respiratory infections. Infections due to rhinoviruses (the common cold virus) and other viruses appear to  
8 be responsible for the majority of asthma exacerbations in children and adults.  
9

10 Interventions to prevent asthma from developing, known as primary prevention intervention, have not been  
11 sufficiently studied. While information on primary causes of asthma is limited, there are some data on  
12 early infections and exposure in early life to allergens and tobacco smoke, and all are implicated as  
13 inducers of asthma. Most current efforts focus on the secondary prevention of illness and on improving the  
14 quality of life of asthma sufferers. Scientific evidence documents that a multidimensional approach is  
15 necessary to accomplish this objective. Professional education is required to disseminate and promote  
16 adoption of the existing guidelines to ensure appropriate diagnosis and management of asthma. Patient  
17 education is necessary to teach patients essential asthma management skills, including how to work  
18 effectively in partnership with their physician. Community education and outreach efforts are critical to  
19 raise awareness about asthma and to ensure that health care resources are available and used appropriately.  
20 Further, programs in schools and workplace sites can help develop policies and procedures that allow  
21 asthma patients to follow their asthma management plans. For example, schools must ensure that students  
22 with asthma have prompt and convenient access to their medications.  
23

24 Programs targeted to high-risk populations are critical. Interventions to ensure access to medical care and  
25 appropriate financial support (e.g., through insurance) for medication, monitoring aids (e.g., peak flow  
26 meters), and environmental control measures will be essential for reducing the disproportionate burden of  
27 asthma among minorities and the poor. Preliminary results suggest that some patients with severe asthma  
28 develop irreversible lung disease, with fibrosis and/or remodeling of their airways. It is possible that early  
29 identification of patients with severe asthma, and optimal management of asthma in such patients, will  
30 prevent the development of irreversible lung changes. Research is being done to learn how irreversible  
31 lung disease develops and how it may be prevented.  
32

33 The National Asthma Education and Prevention Program (NAEPP) of the National Heart, Lung, and  
34 Blood Institute has developed strong partnerships among professional organizations, lay volunteer groups,  
35 Federal agencies, and the private sector to implement a wide spectrum of asthma programs. In addition to  
36 distribution of the NAEPP guidelines, special educational materials and programs have been designed to  
37 meet the needs of specific professional groups. Numerous publications, media campaigns, and conferences  
38 have been targeted to different audiences, including nurses, pharmacists, patients, school personnel, and  
39 managed care organizations. Cooperative activities with community coalitions have developed and tested  
40 interventions to improve management of asthma among minority populations. Future activities will focus  
41 on intensifying efforts to reach primary care providers, patients, and school personnel.  
42

43 The National Institute of Allergy and Infectious Diseases, the National Institute of Environmental Health  
44 Sciences, and the National Institute of Child Health and Human Development, the Environmental  
45 Protection Agency, and the Centers for Disease Control and Prevention (CDC) also have significant  
46 programs on asthma within their respective missions to improve public health. These agencies participate  
47 in the National Asthma Education and Prevention Program to ensure collaboration.  
48

49 Work with local community groups to mobilize community resources for a comprehensive approach to  
50 controlling asthma among high-risk populations remains a priority. It is hoped that the collective impact of

1 the asthma education and outreach programs will be demonstrated by improved health status as measured  
2 for Healthy People 2010.

3  
4 ***Chronic Obstructive Pulmonary Disease***

5  
6 Chronic Obstructive Pulmonary Disease (COPD) is a term used for two closely related diseases of the  
7 respiratory system, chronic bronchitis and emphysema, that are characterized by the presence of  
8 irreversible airflow obstruction. Chronic bronchitis is defined as the presence of chronic productive cough  
9 for 3 months in each of 2 successive years. Emphysema is defined as abnormal permanent enlargement of  
10 the airspaces distal to the terminal bronchioles accompanied by the destruction of their walls and without  
11 obvious fibrosis. These two diseases often coexist and, in some patients, may be accompanied by an  
12 asthmalike airway hyperresponsiveness that leads to a reversible component to the airway obstruction.  
13 Most patients with COPD have a long history of cigarette smoking. COPD is progressive with continued  
14 exposure to causative agent, usually tobacco, but possibly occupational or environmental exposures.

15  
16 COPD is predominantly a disease of older persons. It has been estimated that the prevalence of COPD in  
17 North America may be as high as 10 percent of the population between the ages of 55 and 85. When  
18 COPD is diagnosed at an advanced age, it is usually irreversible in its course. COPD is having a major  
19 impact on health care utilization, morbidity, and mortality in the older population. The magnitude of the  
20 problem is growing. Within the past two decades the prevalence and mortality associated with COPD has  
21 increased by 30 percent and 40 percent, respectively. Importantly, most of this rise is occurring in persons  
22 over the age of 65.

23  
24 Between 80 and 90 percent of COPD is attributable to cigarette smoking.<sup>1</sup> However, not all smokers  
25 develop COPD and not all patients with COPD are smokers or have smoked in the past.<sup>2,3</sup> There seems to  
26 be a varying susceptibility to lung health effects of cigarette smoke within the general population. Only a  
27 portion of smokers (10 to 15 percent) show rate of lung function decline that will result in COPD with  
28 severe disability. The only treatment that slows the progressive decline in lung function is smoking  
29 cessation. Susceptible smokers who stop smoking do not regain their lost function or regain it only a  
30 little,<sup>4,5</sup> but the rate of their lung function loss will return to that at which lung function normally declines  
31 with aging in a nonsmoker. Bronchodilators, inhaled or oral steroids, and careful use of antibiotics may  
32 alleviate symptoms and shorten exacerbations. Proper immunizations are recommended to prevent  
33 pulmonary infections. A prescribed pulmonary rehabilitation program has been shown to improve  
34 symptoms. Oxygen therapy, if the level of oxygen in the blood is low, has been shown to improve  
35 survival.

36  
37 The mechanisms by which cigarette smoking causes COPD is an active area of research. Cigarette smoke  
38 has been found to attract inflammatory cells into lungs and stimulate the release of the proteases  
39 (proteolytic enzymes) from the cells. The proteases are normally prevented from breaking down elastin, a  
40 normal structural component of lung tissue, by protease inhibitors (antiproteases), the best known of which  
41 is alpha-1-antitrypsin (AAT). However, cigarette smoke attracts more cells and stimulates the release of  
42 more proteases than can be inhibited by the circulating levels of the antiproteases. Also, cigarette smoke  
43 itself may inactivate AAT and other antiproteases, swinging the balance in favor of more lung destruction.  
44 The development of COPD, in particular, emphysema, is thus thought to be due to an imbalance between  
45 the destructive proteases and their inhibitors, caused by cigarette smoke.<sup>6</sup> In some individuals, emphysema  
46 occurs because of a genetic deficiency of alpha-1-antitrypsin. Emphysema due to genetic deficiency of  
47 AAT, called familial emphysema, occurs even in nonsmokers, but smoking hastens its occurrence.  
48 Familial emphysema probably accounts for less than 5 percent of all cases of COPD.<sup>7</sup>

49

1 Studies have demonstrated that smoking and occupational exposures additively or synergistically cause  
2 respiratory diseases and lung cancer. Miners, firefighters, construction workers who handle cement, metal  
3 workers, grain handlers, cotton workers, workers in paper mills, agricultural workers, and others employed  
4 in occupations associated with prolonged exposure to dusts, fumes, or gases have been demonstrated to  
5 develop significant airflow obstruction, increased cough, phlegm, dyspnea, wheezing, and reduced lung  
6 function. One case-control study reported a significantly elevated risk for emphysema in individuals  
7 working for 10 or more years in a polluted occupational environment. Population studies have shown that  
8 chronic exposure to air pollution has an independent adverse effect on lung function. A multiyear study of  
9 the respiratory effects of long-term environmental tobacco smoke and air pollution exposures, reported that  
10 both long-term ozone and maternal smoking exposure in childhood were associated with diminished lung  
11 function in college students. Viral infections may contribute to susceptibility to COPD; they certainly play  
12 a role in the exacerbation of airflow obstruction.

13  
14 Despite the high prevalence and enormous cost to health care and society, COPD has received scant  
15 attention in comparison to other respiratory conditions, probably because COPD is thought of as a self-  
16 inflicted disease with few effective treatments and mainly affects a more elderly population.

### 17 ***Obstructive Sleep Apnea***

18  
19 Apnea means “without breath” and can occur during sleep when the airway to the lung collapses. OSA is  
20 one of the most common sleep disorders and is estimated to affect 18 million middle-aged and elderly  
21 adults in the United States. The syndrome affects all races, ages, and socioeconomic and ethnic groups  
22 and is persistent across the lifespan of affected individuals. OSA is especially prevalent in the elderly.  
23  
24

25 The potential consequences of obstructive sleep apnea are significant and include hypertension, congestive  
26 heart failure, stroke, cognitive impairment, psychiatric problems, sexual dysfunction, diminished quality of  
27 life, and injury due to accidents. OSA also can increase the seriousness of other lung diseases that  
28 decrease airflow, such as asthma and COPD. Cardiovascular deaths attributable to OSA alone have been  
29 estimated to be 38,000 annually. Individuals with OSA often do not recognize reductions in alertness,  
30 diminished productivity, and discord in interpersonal relationships as part of the syndrome. Yet,  
31 individuals affected by OSA are 7 times more likely to be involved in multiple vehicular accidents. In  
32 children also, obstructive sleep apnea can disrupt sleep and may cause daytime behavioral problems that  
33 affect learning ability in school. Infants with siblings or parents that have obstructive sleep apnea inherit  
34 an increased risk of sudden infant death syndrome. This tragic sleep-related breathing disorder takes the  
35 lives of more infants than all other causes of death combined.

36  
37 A major factor in the pervasiveness of obstructive sleep apnea’s effects on health and society has been the  
38 failure to educate Americans and especially health care practitioners about the disorder. A wide range of  
39 behavioral, mechanical, and surgical treatments can be used to manage OSA symptoms. Providing  
40 individuals at risk with this understanding could enable them to counter and mitigate the effects of  
41 obstructive sleep apnea. Primary care physicians are an important barometer of awareness of OSA since  
42 they are a first stop for patients seeking appropriate diagnosis and treatment. However, the 1993 National  
43 Commission on Sleep Disorders Research found only 79 cases where a sleep disorder was diagnosed (ICD-  
44 9 code) in a sample of 10 million patient records from 1989 and 1990. A 1990 survey of sleep education  
45 in medical schools found that about a third of the medical schools in the United States offered no training  
46 in sleep medicine and that another third provided less than 2 hours on average for all sleep topics. Absent  
47 strong educational models for physicians, the risk that obstructive sleep apnea will be misdiagnosed and  
48 mismanaged remains high.

49

1 The National Commission on Sleep Disorders Research states that even though the science of sleep  
2 disorders is not fully developed as it might be, such disorders can be prevented. The Commission  
3 recommends that research on the natural history of sleep disorders be made an urgent national concern.  
4 Epidemiologic studies must be initiated to evaluate risk factors that lead to sleep disorders and to  
5 determine which sleep disorders lead to other serious health problems.  
6

## 7 **Progress Toward Year 2000 Objectives**

8  
9 There are three objectives specific to asthma in Healthy People 2000, one in chapter 11, Environmental  
10 Health, and two in chapter 17, Diabetes and Other Chronic Disabling Conditions. Available data indicate  
11 that we are moving away from the targets as the rate of hospitalizations and activity limitation increase, but  
12 slowly toward the target for the proportion who receive patient education. No objectives were present for  
13 COPD and obstructive sleep apnea in Healthy People 2000.  
14

## 15 **Draft 2010 Objectives**

### 16 *Asthma*

- 17  
18  
19 **1. Reduce asthma death rate to no more than 14 per million population.** (Baseline: 18 per million  
20 population for all ages in 1993-95)  
21

<b>Select Populations</b>	<b>1993-95</b>
African American	38
American Indian/Alaska Native	Not available
Asian/Pacific Islander	Not available
Hispanic	Not available
Mexican American	Not available
Puerto Rican	Not available
White	15
Children aged 5-14	4
People aged 15-34	6

22  
23 **Target Setting Method:** Better than the best.

24  
25 **Data Source:** CDC *MMWR* #47, 1960-1995.  
26

- 1 **2. (Former 11.1) Reduce the overall asthma morbidity, as measured by a reduction in asthma**  
 2 **hospitalization rate to 10 per 10,000 people.** (Baseline: hospitalization rate per 10,000 population  
 3 in 1993-94: 18 for total population)  
 4

Select Populations	1993-94
African American	36
American Indian/Alaska Native	Not available
Asian/Pacific Islander	Not available
Hispanic	Not available
White	11
Children aged 0-4	50
Youth aged 5-14	18
People aged 15-34	10
People aged 35-64	Not available
People aged 65 years and older	Not available
<100% of poverty threshold	Not available
100-199% of poverty threshold	Not available
≥200% of poverty threshold	Not available

5  
 6 **Target Setting Method:** Better than the best.

7  
 8 **Data Source:** CDC *MMWR* #47, 1960-1995.  
 9

- 10 **3. Reduce asthma morbidity as measured by a reduction in annual rate of emergency department**  
 11 **visits to no more than 46 per 10,000 people.** (Baseline: 71 per 10,000 population for total  
 12 population in 1992-94)  
 13

Select Populations	1993-94
African American	229
American Indian/Alaska Native	Not available
Asian/Pacific Islander	Not available
Hispanic	Not available
Mexican American	Not available
Puerto Rican	Not available
White	49
Children aged 0-4	121
Youth aged 5-14	81
People aged 15-34	69
<100% of poverty threshold	Not available
100-199% of poverty threshold	Not available
≥200% of poverty threshold	Not available

14  
 15 **Target Setting Method:** Better than the best.

16  
 17 **Data Source:** CDC *MMWR* #47, 1960-1995.  
 18

- 1 **4. (Former 17.4) Reduce to no more than 10 percent the proportion of people with asthma who**  
2 **experience activity limitation.** (Baseline: 22 percent for overall population in 1992-94)

3  
4 **Target Setting Method:** National average.

5  
6 **Data Source:** National Health Interview Survey (NHIS), CDC, NCHS.

- 7  
8 **5. (Developmental) Reduce disruption of life for people with asthma, as measured by school or**  
9 **work days lost.**

- 10  
11 **6. (Former 17.14b) Increase to at least 40 percent the proportion of people with asthma who**  
12 **receive formal patient education, including information about community and self-help**  
13 **resources, as an integral part of the management of their condition.** (Baseline: 10.0 percent in  
14 1993.)

15  
16 **Target Setting Method:** National average.

17  
18 **Data Source:** National Health Interview Survey (NHIS), CDC, NCHS.

- 19  
20 **7. (Developmental) Increase to \_\_ percent the proportion of primary care physicians who have**  
21 **participated in continuing medical education on asthma.**

- 22  
23 **8. (Developmental) Increase to \_\_ percent the proportion of people with asthma who receive**  
24 **written asthma management plans from their physician.**

- 25  
26 **9. (Developmental) Increase to \_\_ percent the proportion of patients who receive counseling from**  
27 **health care providers on how to recognize early signs of worsening asthma and how to respond**  
28 **appropriately.**

- 29  
30 **10. (Developmental) Increase to \_\_ percent the proportion of asthma patients using daily therapy**  
31 **who have received instruction on peak expiratory flow monitoring to assess the course of their**  
32 **disease and response to treatment.**

33  
34 **Potential Data Source:** National Health Interview Survey (NHIS), CDC, NCHS.

- 35  
36 **11. (Developmental) Reduce to \_\_ percent the proportion of people with asthma who use more than**  
37 **one canister or equivalent a month of short-acting inhaled beta agonists for relief of symptoms.**

- 38  
39 **12. (Developmental) Increase to \_\_ percent the proportion of people hospitalized for asthma who**  
40 **have received followup medical care for long-term management of their condition.**

- 41  
42 **13. (Developmental) Establish in at least 15 States a surveillance system for tracking asthma**  
43 **mortality, morbidity, access to medical care, and asthma management.**

44  
45 Asthma is a serious and growing public health problem. Almost 15 million people suffer to some degree  
46 from chronic asthma. About 5,000 die each year from the disease. Minority populations, particularly  
47 African Americans and Hispanics, experience disproportionate deaths and disability from asthma. African  
48 Americans and Hispanics are 2 to 6 times more likely to die from asthma than their white counterparts.  
49 Although the number of deaths annually for asthma is fairly low compared to other chronic diseases and  
50 the death rate for most age groups has flattened recently, two trends are disturbing. The death rate for

1 children aged 5 to 14 years and young adults aged 15 to 24 years doubled from 1980 to 1993 (from 1.7 to  
2 3.2 per million and 2.5 to 5.2 per million population, respectively). In 1993, African Americans aged 5 to  
3 14 were 4 times more likely and African Americans aged 15 to 24 were 6 times more likely than whites to  
4 die from asthma. Mortality rates are slightly higher overall in females than in males.

5  
6 In addition, hospitalization rates for asthma are higher in women than in men and the rates for African  
7 Americans almost triple those for whites. Rates for asthma have increased primarily among children under  
8 5 years. From 1980 to 1993, hospitalization increased from 35.6 to 64.7 per 10,000 population for  
9 children under 1 year. A portion of this increase may be related to changes in diagnostic practices and  
10 changes in coding and reimbursement, but studies suggest that some of the increase is a true increase in  
11 morbidity. Hospitalization rates consistently were highest among African Americans. In 1993, among  
12 persons aged 0 to 24 years, African Americans were 3 to 4 times more likely than whites to be hospitalized  
13 for asthma.

14  
15 In the inner city, asthma patients use the emergency departments more often as their usual source of care.  
16 In 1993-94, the rate of ambulatory care for asthma was higher for African Americans than whites for all  
17 ambulatory care settings. In fact, the rate for African-American patients with asthma was 4 times the rate  
18 of white patients for emergency department visits. Asthma patients in general and high risk inner-city  
19 patients in particular—those who have a history of severe asthma or patients who had a hospitalization or  
20 emergency care visits for asthma within the previous 2 years—need to be able to recognize the signs and  
21 symptoms of uncontrolled asthma and how to respond appropriately.

22  
23 Children with asthma miss 10.1 million school days a year; they miss, on average, 3 times as much school  
24 as their classmates without asthma. The social burden goes beyond lost schooling: data suggest that 35  
25 percent of children with asthma experience a great deal of pain or burden as a result of their asthma, that  
26 17 percent have symptoms often, and that nearly 5 percent experience symptoms all the time. Children  
27 with asthma may be at higher risk of learning disability compared to children without asthma, and among  
28 families with low incomes, children with asthma have twice the odds of grade failure compared to well  
29 children.

30  
31 Patient education is one of the four components of effective asthma management established by the  
32 NAEPP. Asthma research has demonstrated that patients who are taught asthma self-management skills  
33 are better able to manage and control their disease. However, it is recommended that patients work with  
34 their health care providers to optimize the care they receive. Thus, both patients and health care providers  
35 need to receive training and education on the latest modalities for effective management of asthma. Health  
36 outcomes for asthma—mortality, morbidity, and quality of life—are directly related to health care  
37 professional and individual patient behaviors. The NAEPP's *Expert Panel Report 2-Guidelines for the*  
38 *Diagnosis and Management of Asthma*, based on review of the scientific literature, emphasizes that recent  
39 advances in the scientific understanding of the underlying chronic inflammation in asthma and the  
40 availability of medications to suppress and reverse this inflammation make asthma control possible now  
41 that was not possible just 15 years ago.

42  
43 Effective asthma management includes avoidance or control of those factors that contribute to asthma  
44 severity (e.g., environmental allergens and irritants), appropriate medications tailored to the severity of the  
45 disease, and continual monitoring of the disease by the patient and the health care professional, and active  
46 involvement of the patient in managing the disease. Studies demonstrate that with such care, most asthma  
47 deaths can be prevented, the need for hospitalizations and urgent care visits can be reduced, and patients  
48 can enjoy normal levels of participation in activities of their choice.

49

1 From a community-based perspective, asthma is a potential disease for States to target in their surveillance  
2 efforts due to the environmental factors that exacerbate asthma. Such surveillance efforts should include  
3 State-based monitoring of environmental exposures and their impact on asthma morbidity. The emphasis  
4 in treating persistent asthma is on daily long-term therapy aimed at treating underlying inflammation and  
5 preventing symptoms, rather than relying solely on symptomatic treatment with short-acting inhaled beta  
6 agonist. Use of more than one canister a month of a beta agonist medication is an indication that daily  
7 long-term preventive therapy should be initiated or increased. Thus, the proposed effort is a proxy  
8 measure for gauging appropriateness of therapy.  
9

10 To control asthma effectively, asthma patients, particularly those on daily medication, need to have an  
11 “Asthma Action Plan.” The plan helps patients know when to take their medicines appropriately because  
12 many patients tend to misuse or overuse their medicines, as well as what to do when their asthma gets  
13 worse. They also need to work with their physicians or other health care providers during followup visits,  
14 particularly after a hospitalization to ensure that they receive long-term management of their condition.  
15

16 ***Chronic Obstructive Pulmonary Disease***

17  
18 **14. Reduce to no more than 3 percent the proportion of adults 45+ with chronic obstructive**  
19 **pulmonary disease.** (Baseline: 5 percent for males aged 45-64; 9 percent for females aged 45-64; 12  
20 percent for males aged 65 and older and 10 percent for females aged 65 and older in 1994)  
21

<b>Select Populations</b>	<b>1994</b>
African American aged 45-64	3%
American Indian/Alaska Native aged 45-64	Not available
Asian/Pacific Islander aged 45-64	Not available
Hispanic aged 45-64	Not available
White aged 45-64	8%
African American aged 65 and older	6%
American Indian/Alaska Native aged 65 and older	Not available
Asian/Pacific Islander aged 65 and older	Not available
Hispanic aged 65 and older	Not available
White aged 65 and older	11%
Male aged 45-64	5%
Female aged 45-64	9%
Male aged 65 and older	12%
Female aged 65 and older	10%

22  
23 **Target Setting Method:** Better than the best.  
24

25 **Data Source:** National Health Interview Survey (NHIS), CDC, NCHS.  
26

1 **15. Reduce the chronic obstructive pulmonary disease (COPD) death rate for adults to no more**  
 2 **than 18 per 100,000 population.** (Baseline: Death rate from COPD was 93 per 100,000 in men and  
 3 57 per 100,000 in women in 1995)  
 4

Select Populations	1995
African American male	25
American Indian/Alaska Native male	16
Asian/Pacific Islander male	14
Hispanic male	13
White male	27
African American female	12
American Indian/Alaska Native female	12
Asian/Pacific Islander female	6
Hispanic female	7
White female	18

5  
 6 **Target Setting Method:** National average.  
 7

8 **Data Source:** National Vital Statistics System (NVSS), CDC, NCHS: *Health United States, 1996-*  
 9 *1997.*

10  
 11 **16. (Developmental) Increase to \_\_ percent the proportion of primary care providers who are**  
 12 **trained to provide culturally competent care to ethnic minorities seeking health care for chronic**  
 13 **obstructive pulmonary disease.**  
 14

15 **17. (Developmental) Increase to \_\_ percent the proportion of primary care providers who are**  
 16 **trained to recognize the early signs of chronic obstructive pulmonary disease before they**  
 17 **become serious and disabling, using appropriate lung function tests.**  
 18

19 COPD places an enormous burden on society in terms of direct costs of health care services and indirect  
 20 costs through loss of productivity. It is estimated that about 14 million persons in the United States suffer  
 21 from COPD, about 12.5 million from chronic bronchitis and 1.65 million from emphysema.<sup>8</sup> The  
 22 estimated number of those suffering from COPD has increased 41.5 percent since 1982. Estimates of  
 23 diagnosed emphysema or chronic airflow obstruction in the United States range from 4 to 6 percent of  
 24 adult white males and from 1 to 3 percent of adult white females. Age-adjusted prevalence rates for men  
 25 rose only slightly over the period 1979-85, with a prevalence of 110 per 1,000 in 1985. Among women,  
 26 however, prevalence rates increased by over 30 percent during this period, with a prevalence of 119 per  
 27 1,000 in 1985,<sup>9</sup> consistent with the increased smoking over the same time period.  
 28

29 Reliable data are not as available for prevalence, morbidity, or mortality statistics in African Americans,  
 30 Hispanics, and other ethnic groups.<sup>10,11</sup> In one survey conducted from 1982 to 1984, prevalence of COPD  
 31 was 6.2 percent among whites and 3.2 percent among African Americans. In 1982, age-adjusted mortality  
 32 from COPD for whites was 16.6 per 1,000 and 12.8 per 1,000 for African Americans. Among the  
 33 Hispanic groups studied, Puerto Ricans demonstrated higher prevalence of chronic bronchitis (2.9 percent)  
 34 than Mexican-Americans (1.7 percent) or Cuban Americans (1.7 percent). Similarly, mortality rates from  
 35 COPD were lower in the Hispanic groups than in non-Hispanic whites. However, these rates have been  
 36 increasing for Hispanics.<sup>12</sup> In 1994, the prevalence of COPD is 5 percent in males aged 45 to 64 years and  
 37 12 percent in males aged 65+ or older. For females, the prevalence is 9 percent in ages 45 to 64 years and  
 38 10 percent in ages 65 to 74 years. COPD prevalence in African Americans aged 45 to 64 years is 3 percent

1 and 6 percent for age 65+ years. For whites, the COPD prevalence rate is 8 percent of ages 45 to 65 years  
2 and 10 percent for 65+ years.

3  
4 Morbidity for COPD is more common in men than in women, and it increases steeply with age.<sup>13,14</sup> Men  
5 and women have similar COPD mortality rates before the age of 55, but the rate for men rises thereafter.  
6 At 70, the rate for men is more than double that for women, and at 85 and older, the COPD death rate for  
7 men is 3.5 times that for women.<sup>15</sup> Recent data show an increasing tendency to smoke among women,  
8 which might influence future figures for COPD morbidity; women might be more susceptible to  
9 developing COPD when exposed to risk factors, for example, tobacco smoke.<sup>16</sup> However, when smoking  
10 and occupational exposure are taken into account, the relative risk of developing and dying from COPD is  
11 probably not much higher in men than in women. With smoking on the increase in women, it is possible  
12 that women will catch up with men in these statistics. The beneficial effects of stopping smoking on the  
13 rate of lung function decline may be greater for women than men.<sup>17</sup>

14  
15 Primary care physicians are in a key position to provide optimal care to patients with COPD and to provide  
16 counseling during clinical visits to patients who smoke. Given that effective tests are available to screen  
17 potential patients, primary care physicians need to be trained in the latest medical modalities to detect and  
18 treat the disease. In addition, given the estimated prevalence and morbidity rates for COPD in ethnic  
19 minorities and older persons, it is vital that primary care providers become culturally competent health care  
20 providers.

### 21 *Obstructive Sleep Apnea*

22  
23  
24 **18. (Developmental) Increase to \_\_ percent the proportion of people seeking medical evaluations**  
25 **for excessive daytime sleepiness, loud snoring, and other signs associated with obstructive sleep**  
26 **apnea.**

27  
28 **19. (Developmental) Increase to \_\_ percent the proportion of people with diagnosed obstructive**  
29 **sleep apnea who are receiving followup medical care for long-term management of their**  
30 **condition.**

31  
32 **20. (Developmental) Decrease to \_\_ percent the proportion of vehicular accidents caused by**  
33 **patients with untreated sleep apnea.**

34  
35 **21. (New) Increase to 6 hours the average number of hours that medical school curricula devoted**  
36 **to training medical students in sleep medicine.** (Baseline: About 2 hours in 1990)

37  
38 **Target Setting Method:** National average.

39  
40 **Data Source:** American Sleep Disorders Association Task Force 2000 Survey.

41  
42 OSA is particularly prevalent in males over the age of 50 and in postmenopausal women when hormonal  
43 changes appear to increase risk. The risk of obstructive sleep apnea also is increased in certain ethnic  
44 groups. Among young African Americans, the likelihood of experiencing OSA symptoms is twice that of  
45 young whites. Nearly 50 percent of OSA patients have high blood pressure; in addition, a family history of  
46 OSA is a risk factor for sudden infant death syndrome (SIDS).

47  
48 Obstructive sleep apnea is the condition of interrupted breathing while asleep. The Association of  
49 Professional Sleep Societies estimates that as many as 18 million Americans have this condition. Because

1 of the serious disturbance to normal sleep patterns, patients with sleep apnea experience excessive daytime  
2 sleepiness and impaired daytime performance. Common consequences of OSA range from personality  
3 changes, sexual dysfunction, and falling asleep at work or while driving. Vehicular accidents are a  
4 particular problem. Thus, people need to recognize the symptoms of OSA. The symptoms include many  
5 repeated involuntary breathing pauses during sleep. The breathing pauses are often accompanied by  
6 choking sensations that may wake up the patient, intermittent snoring, nighttime insomnia, early morning  
7 headaches, and excessive daytime sleepiness.  
8

## 9 **Related Objectives From Other Focus Areas**

### 10 **Physical Activity and Fitness**

- 11 8 Daily school physical education
- 12 9 Physical education requirement in schools
- 13 10 School physical education quality
- 14 11 Inclusion of physical activity in health education
- 15 14 Clinician counseling about physical activity

### 16 **Tobacco Use**

- 17 1 Adult tobacco use
- 18 2 Cigarette smoking during pregnancy
- 19 3 Adolescent tobacco use
- 20 6 Smoking cessation
- 21 7 Smoking cessation during pregnancy
- 22 8 Smoking cessation by new mothers
- 23 10 Advice to quit smoking
- 24 12 Providers advising smoking cessation
- 25 13 Physician inquiries about secondhand smoke
- 26 14 Tobacco-free schools
- 27 15 Worksite smoking policies
- 28 16 Smoke-free air laws
- 29 21 Tobacco use prevention education

### 30 **Educational and Community-Based Programs**

- 31 4 School nurse-to-student ratio
- 32 5 Worksite health promotion programs
- 33 6 Participation in employer-sponsored health promotion activities
- 34 7 Patient satisfaction with health care provider communication
- 35 8 Patient and family education
- 36 9 Community disease prevention and health promotion activities
- 37 10 Community health promotion initiatives
- 38 11 Culturally appropriate community health promotion programs
- 39 12 Elderly participation in community health promotion

### 40 **Environmental Health**

- 41 1 Air quality
- 42 15 Municipal solid waste
- 43 16 Exposure to tobacco smoke
- 44 19 Household levels of lead dust and allergens
- 45 24 Monitoring of exposure to selected chemicals
- 46 26 Environmental and environmental health information systems

1 27 Monitoring diseases caused by environmental hazards

2

3 **Occupational Safety and Health**

4 5 Pneumoconiosis deaths

5 12 Latex allergy

6

7 **Access to Quality Health Services**

8 A.1 Uninsured children and adults

9 A.2 Insurance coverage

10 A.3 Routine screening about lifestyle risk factors

11 A.4 Reporting on service delivery

12 A.5 Training to address health disparities

13 B.1 Source of ongoing primary care

14 B.3 Lack of primary care visits

15 B.4 Access to primary care providers in underserved areas

16 B.5 Racial/ethnic minority representation in the health professions

17 B.6 Preventable hospitalization rates for chronic illness

18 C.1 Access to emergency medical services

19 C.2 Insurance coverage

20 C.5 Special needs of children

21

22 **Maternal, Infant, and Child Health**

23 3 SIDS mortality

24 39 Service systems for children with chronic and disabling conditions

25

26 **Public Health Infrastructure**

27 2 Training in essential public health services

28 3 Continuing education and training by public health agencies

29 4 Use of Standard Occupational Classification System

30 6 Access to public health information and surveillance data

31 7 Tracking Healthy People 2010 objectives for select populations

32 8 Data collection for Healthy People 2010 objectives

33 9 Use of geocoding in health data systems

34 10 Performance standards for essential public health services

35 13 Access to comprehensive epidemiology services

36 15 Data on public health expenditures

37 16 Collaboration and cooperation in prevention research efforts

38 17 Summary measures of population health and the public health infrastructure

39

40 **Health Communication**

41 1 Public access to health information

42 3 Evaluation of communication programs

43 4 Satisfaction with health information

44 7 Health communication/media technology curricula

45

46 **Cancer**

47 2 Lung cancer deaths

48

49 **Immunization and Infectious Diseases**

50 11 Tuberculosis

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