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## Asthma: A Growing Epidemic

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### OVERVIEW

Rates for asthma have steadily increased over the past 20 years in all age groups. Children under age 5 have been the hardest hit, experiencing a two and one-half fold increase.<sup>1</sup> Despite advances in medical treatment, asthma deaths have nearly doubled since 1980 and now total more than 5,000 per year. The economic costs are high as well—an estimated \$11.3 billion was spent on asthma treatment and hospitalization during 1998.<sup>2</sup> To date, little is known about the factors that cause individuals to develop asthma, and most states lack comprehensive asthma programs to effectively track and monitor the epidemic.

### DEFINING ASTHMA

More than 5 percent of Americans have asthma, a chronic disease that inflames the airways and lungs, causing shortness of breath, wheezing, and—in extreme cases—death. Asthmatics' respiratory systems tend to respond to a specific set of irritants and allergens, such as cigarette smoke, dustmites and air pollution. The airways constrict upon exposure to even very small amounts of these substances, reducing airflow and making it difficult to breathe; this reaction is reversible and varies between individuals and exposures. Breathing during an asthma attack is often compared to breathing through a straw, demonstrating how small the airways can become. Exercise, colds, food additives, and stress can also

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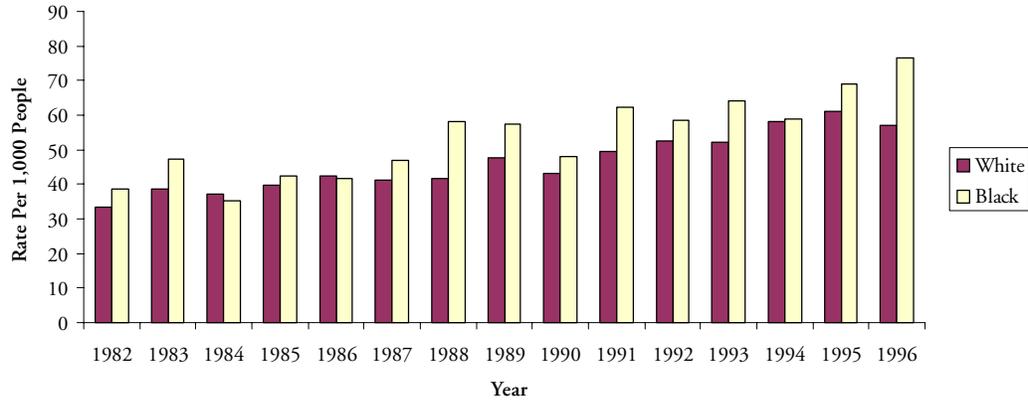
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Figure 1. Asthma Prevalence Under Age 45



Source: National Center For Health Statistics, *National Health Interview Survey 1996*.

*5.7 percent of the U.S. population has asthma.*

precipitate asthma attacks. Asthma can not be cured, but can be controlled with medical treatment and environmental intervention.

The medical community has long been aware that asthma can be triggered by allergens, but is still uncertain why some people develop asthma and others do not. Although it is thought that certain genetic components increase the likelihood of developing asthma, most researchers believe that the interaction of environment with genetic predisposition is important in its development. Some scientists believe that ongoing exposure to allergens very early in life may lead to a sensitization of the airways and, ultimately, asthma.<sup>3</sup> Supporting this contention is the January 2000 asthma report from the Institute of Medicine of the National Academies of Science, which states that—based on the scientific literature available—there is sufficient evidence of a causal relationship between exposure to house dustmite allergen and the development of asthma in susceptible children. The report also concludes that there is an association between exposure to tobacco smoke and the development of asthma in younger children.

A growing number of studies show that air pollution also influences asthma. Research has found that common air pollutants—particulates (very small pollutant particles that can reach the lungs), nitrogen oxides and ozone—exacerbate asthma. The American Lung Association found that children with asthma are 40 percent more likely to suffer asthma attacks on high pollution days than on days that do not violate pollution standards. Children are more susceptible than adults to air pollution, since they spend more time outside engaged in vigorous activity. Higher activity levels and longer duration of exposure, combined with a higher breathing rate relative to body weight, result in higher pollutant

exposures for children. Air pollution that may cause negligible breathing difficulties in an adult may seriously impair a child's ability to breathe because of higher exposures and smaller airways. Unfortunately, more than 132 million Americans (nearly half of the U.S. population) live in areas where air pollutants reach unhealthy levels as measured by the Environmental Protection Agency's Air Quality Index.

### WHY ARE ASTHMA RATES RISING?

Although conclusive evidence is lacking, the suspected causes of the asthma epidemic are manifold. While genetics is likely to play a role in asthma development, genetic traits change far too slowly to account for the recent increase in asthma cases. Improved recognition and diagnosis of asthma may also play a small role, although research indicates that this change alone cannot explain the recent upward trend.<sup>4</sup>

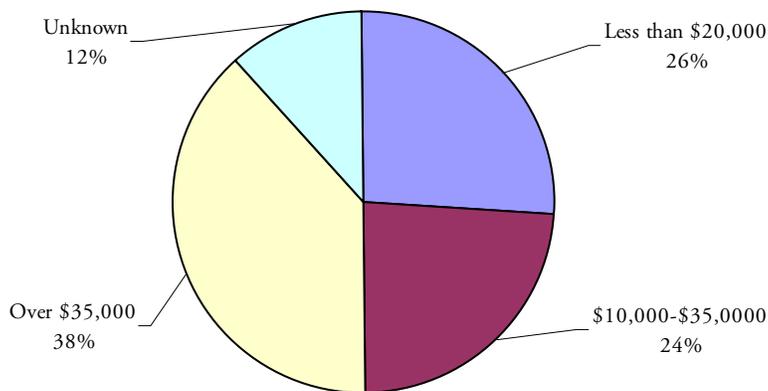
Given the current state of research, no one is certain what changes could explain the epidemic. Researchers do have suspicions, however: children are spending more time indoors, increasing their exposure to certain allergens and indoor air pollutants, and they are exercising less. More research on asthma's relationship to environmental exposure and genetics will be needed for scientists to determine its cause and remedy.

*There is no cure,  
and no certainty as  
to what causes  
asthma.*

### ASTHMA PREVALENCE AND COSTS

More than 5 percent of the people in the United States have asthma; its prevalence has steadily climbed since the 1980s, rising 75 percent in the general population and 160 percent in children under age 5. Asthma is the most common chronic disease in children and the primary cause of missed school days, responsible for more than 10 million per year.

Figure 2. Asthma Distribution by Family Income



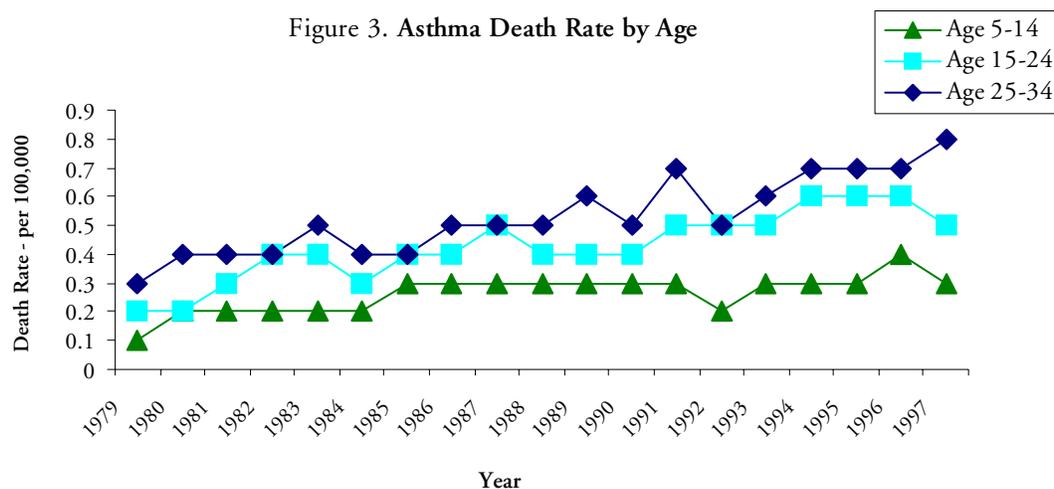
Source: National Center For Health Statistics, *National Health Interview Survey 1996*.

Each year, half a million people in the United States require hospitalization for asthma, while over 5,000 die. Hospital visits for asthma have increased to nearly 2 million per year, making asthma the primary cause of emergency room visits.<sup>5</sup> The significant increase in asthma in poor areas—where medical care and follow-up are lacking—means that asthma symptoms are more likely to result in full-blown attacks that lead to costly trips to the emergency room.

Although asthma affects people at all socioeconomic levels, poor and minority populations tend to experience a greater burden when measured by the chances of dying or being hospitalized for the disease. The reasons for this disparity, while not fully understood, probably include nutrition, a lack of preventive care, and exposure to higher levels of indoor and outdoor air pollution. A May 2000 report by the Pew Environmental Health Commission projects that if asthma continues to spread unchecked, by the year 2020 it will strike 1 in 14 Americans and 1 in 5 U.S. families.

*Asthma causes 500,000 hospitalizations and nearly 2 million emergency room visits per year.*

Figure 3. Asthma Death Rate by Age



Source: National Center For Health Statistics, *Annual Summary of Vital Statistics, 1979-1997*.

## BATTLING THE ASTHMA EPIDEMIC

Although great uncertainty remains about what causes the initial onset of asthma, researchers have gained a good deal of knowledge about asthma treatment. Besides having access to a number of new and more effective asthma medicines, more is known about the exposures that exacerbate asthma and how they can be eliminated or reduced in the asthmatic's environment. Research indicates that carpet removal, frequent cleaning with a special fine-particle filter vacuum cleaner, use of bedding covers that prevent dustmite buildup and

elimination of tobacco smoke are some of the many actions that can be taken to relieve asthma symptoms. Despite this knowledge, there is little evidence that these treatment strategies are being implemented.

## FEDERAL ACTIVITY

In January 1999, the President's Task Force on Environmental Health Risks and Safety Risks to Children released a report outlining what it considered to be the most effective strategies for fighting childhood asthma. The report acknowledges that asthma is a growing epidemic and that there is "no national system to collect data from states specifically on asthma."

It recommended the following:

1. Focus research on the environmental factors that cause or exacerbate asthma;
2. Implement public health programs that use current scientific knowledge to reduce environmental factors that worsen asthma symptoms;
3. Establish a coordinated, systematic and integrated nationwide asthma surveillance system that includes health outcomes and risk factors at state, regional and local levels and;
4. Identify and eliminate the unequal burden of asthma among the poor and ethnic and racial minorities.

*Costs of treating asthma were estimated to be \$11.3 billion in 1998.*

The administration slated \$68 million to address some of these recommendations, with a focus on implementing school-based asthma programs, developing disease management strategies to target low-income children and creating a national public information campaign.

The U.S. Department of Health and Human Services (HHS) outlines its approach to asthma in Healthy People 2010, a document designed to focus the nation's prevention goals. Healthy People 2010 suggests that the focus be on reducing the affect of asthma through education, outreach, and further research for those who already have the disease. The document adds that states need to track asthma and the factors that trigger asthmatic episodes. HHS released its Action Against Asthma strategy in April 2000.

## STATE ACTIVITY

In a report released May 2000 by an organization called Health Track, researchers used Centers for Disease Control and Prevention data to determine that most states have no ongoing asthma monitoring program. The study found that 30 states have no timely information that describes asthma within their borders and that only seven states have

“ready access” to statistics on emergency care for asthma. It also found that among the 23 states that track asthma, there is uncertainty as to the adequacy of their tracking efforts.

State legislative activity on asthma tends to fall into three main categories: bills designed to create state asthma programs, bills that deal with asthma medication use in schools, and bills that focus on improving insurance coverage for asthma.

When House Bill 1012 was signed in March 2000, Virginia became the first state to pass a law that requires the development of a comprehensive, statewide asthma strategy. The law requires the commissioner of the Department of Health to create an asthma plan that includes disease surveillance, public and professional education, and public and private partnerships with health care providers, local school divisions and community coalitions. It also requires identification of best practices for use in public health and clinical interventions. Funding for the program is designated to be from “such funds as may be appropriated” and from grants.

California, New York and North Carolina have introduced bills aimed at developing statewide asthma management and control programs. Other states have introduced legislation that would provide for the development of task forces to study asthma in the states and schools, and for asthma education.

In August 1999, Illinois enacted legislation requiring that the Department of Public Health work in conjunction with state and community-based asthma programs to develop and administer an informational program about asthma and its treatment. The program is targeted at high-risk population groups.

Twelve states passed legislation allowing students to carry and use asthma inhalers on school grounds. These bills were introduced in response to a number of school no-drug policies that required that asthma sufferer’s medication be locked in the nurse’s or principal’s offices.

Nine states have enacted legislation to improve health care access and coverage for asthma sufferers.

*Asthma rates have nearly doubled during the last 20 years.*

## NOTES

1. Surveillance for Asthma - United States, 1960-1995, *Morbidity and Mortality Weekly Report*, 47, no. SS-1 (Atlanta Georgia, 1998).
2. National Heart, Lung, and Blood Institute Data Fact Sheet - Asthma Statistics, National Institutes of Health (1999).
3. Elaine Friebele "The Attack of Asthma," *Environmental Health Perspectives* 104, no. 1 (January 1996).
4. Kevin B. Wess and Diane K. Wagener, "Changing Patterns of Asthma Mortality," *Journal of the American Medical Association*, 264, no. 13 (October 3, 1990).
4. State of the Air 2000, American Lung Association (2000).
5. Vital Health Statistics, Ambulatory Care Visits to Physician Offices, Hospital Outpatient Department and Emergency Departments, National Center for Health Statistics 13, no. 134 (1998).