

Asthma

Definition: Asthma is a chronic inflammatory disease of the airways characterized by airflow obstruction and airway hyper-responsiveness. Clinical symptoms include wheezing and shortness of breath. ICD-9 code 493; ICD-10 codes J45-J46. This chapter defines “current asthma” as adults who report on the Behavioral Risk Factor Surveillance System that a doctor or other health professional told them that they had asthma and that they still have asthma.

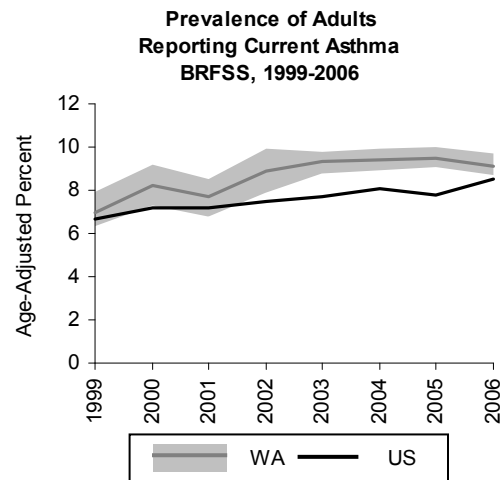
Summary

Washington State’s asthma rates continue to be higher than the national average. The 2006 [Behavioral Risk Factor Surveillance System](#) (BRFSS) survey showed that 9.1% ($\pm 0.5\%$, [age-adjusted](#)) of Washington adults had asthma compared to 8.5% nationally. In Washington State and in the United States as a whole, women are more likely to have asthma than men. Asthma prevalence increases as income decreases. BRFSS data for 2003–2005 showed American Indian and Alaska Native, black, and white adults having the highest rates of asthma in Washington, while Asians and Pacific Islanders combined and adults of Hispanic origin had the lowest.

The public health approach to asthma requires improving indoor and outdoor air quality, providing community health education, removing asthma triggers in the home and work place, and assuring high quality medical care. People with asthma must have the skills and resources to follow their asthma care plans.

Time Trends

In 2006, the age-adjusted rate of Washington adults who currently have asthma was about 9.1%. From 1999, the first year for which there are data, to 2002, Washington’s adult asthma rates increased from 7% ($\pm 1\%$) to about 9% ($\pm 0.5\%$). Washington’s rates have remained near 9% since then. The U.S. rates for current asthma have increased steadily from 7% in 1999 to 8.5% in 2006.



Year 2010 Goals

Healthy People 2010 (Midcourse Review) sets national targets for reducing asthma [hospitalizations](#) in three age groups: children younger than five; children and adults ages 5–64; and adults ages 65 and older.

The following table shows Washington’s age-adjusted hospitalization rates for asthma by age group for 2000 and 2004 and the *Healthy People 2010* target. Washington asthma hospitalizations for children younger than five dropped from 376 to 277 per 100,000 population. If this trend continues, Washington should meet the *Healthy People 2010* target of 250 for this age group.

Hospitalizations among children and adults ages 5–64 have also declined from 66 per 100,000 in 2000 to 54 per 100,000 in 2004, already a better rate than the national target for 2010.

Healthy People 2010: Age-Adjusted Hospitalization Rates for Asthma Per 100,000 Population

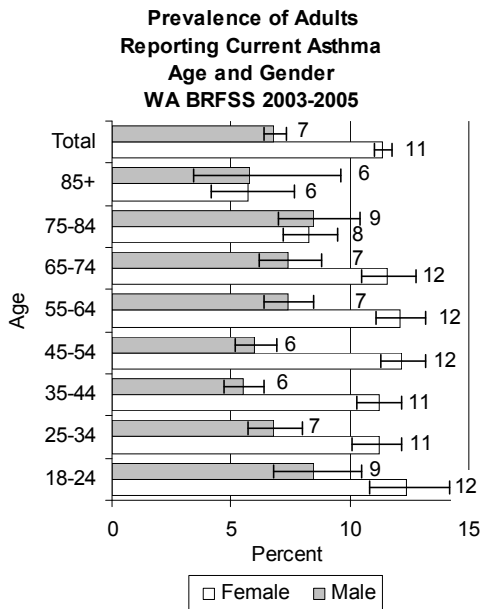
Age Group	Washington 2000	Washington 2004	U.S. Target
Children younger than 5 years	376	277	250
Children/adults ages 5–64 years	66	54	77
Adults ages 65 and older	111	114	110

Asthma hospitalization rates among adults ages 65 and older have remained relatively steady since 2000 and are close to the national target.

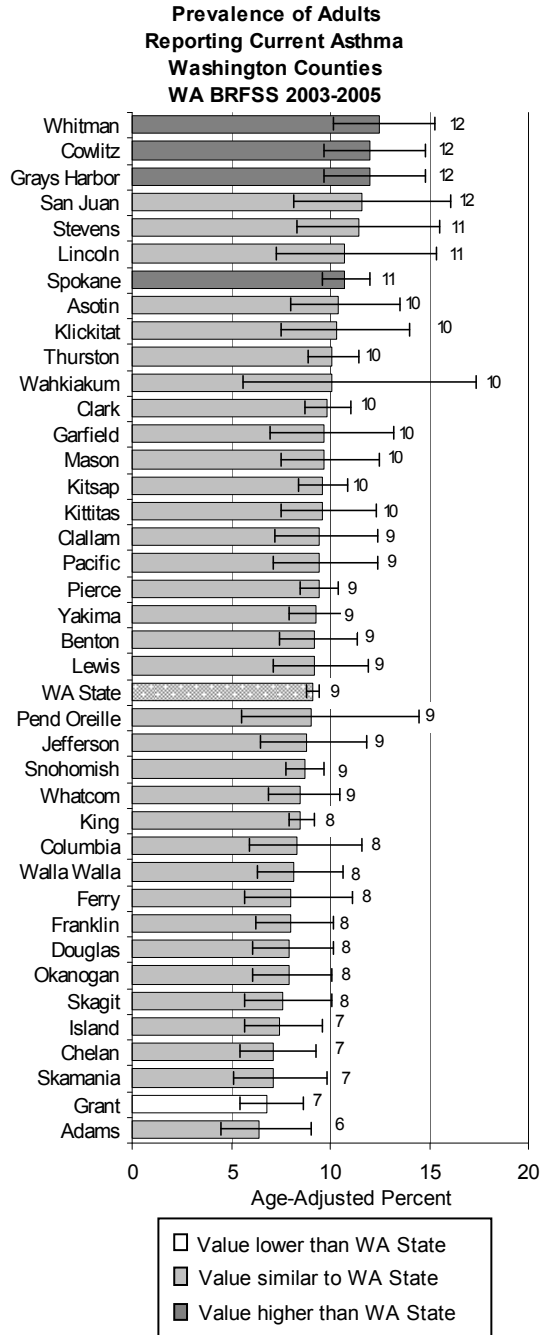
Geographic Variation

In 2003–2005 combined, the age-adjusted county-level prevalence for current asthma ranged from 6% to 12%. Grant County’s rate was below the state average; Whitman, Cowlitz, Grays Harbor, and Spokane counties had higher rates.

Age and Gender



Asthma can occur at any age. About two-thirds of adults who reported current asthma on the 2003–2005 Washington BRFSS said they were diagnosed after age 18. After taking gender,



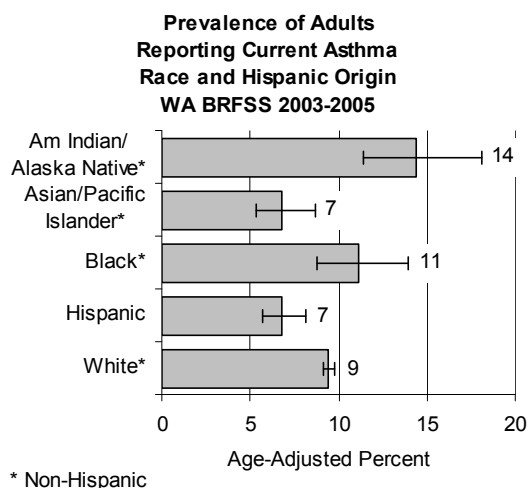
income, education, race, and Hispanic origin into account, adults ages 25–34 were about 30% more likely to report having asthma than adults ages 75–84, and they were about 90% more likely to report having asthma than adults ages 85 and older.

Women were nearly twice as likely as men to have asthma. This is true even after controlling for other factors such as age, income, education, race, and Hispanic origin.

In contrast to adults, among young children, boys are more likely to have asthma than girls. This difference decreases with age until middle adolescence, when the prevalence rate among girls begins to surpass that of boys. On the 2003–2005 Washington BRFSS, about 16% ($\pm 1\%$) of respondents with children in the household reported that at least one child had been diagnosed with asthma, and about 11% ($\pm 1\%$) reported at least one child who currently had asthma. There has been no significant change in these rates since 1999.

Race and Hispanic Origin

Based on the 2003–2005 combined BRFSS survey, American Indians and Alaskan Natives were about 30% more likely to have asthma than whites. This disparity persisted after taking age, gender, income, and education into account. People of Hispanic origin and Asian and Pacific Islanders combined had rates about 20% less than those of whites. These patterns are consistent with national data. Although national data show that blacks have higher asthma rates than whites,¹ there was no significant difference between blacks and whites in Washington even after controlling for age, gender, income, and education. Although the



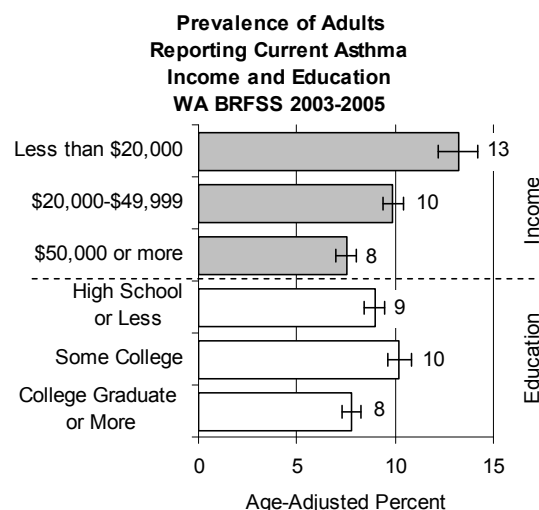
current asthma rate for Asians and Pacific Islanders combined was about 7% ($\pm 2\%$), the rate for Pacific Islanders alone was 12% ($\pm 5\%$) compared to 6% ($\pm 2\%$) for Asians alone.

Income and Education

Based on the 2003–2005 BRFSS data combined, there was a strong association between household income and reporting

current asthma. As income increased, the likelihood of asthma decreased. People with incomes less than \$20,000 per year were almost twice as likely to have asthma as those with incomes of \$50,000 per year or more. This relationship remained even after accounting for age, gender, education, race, and Hispanic origin.

People who had completed four years of college were less likely to report current asthma than those with less education. But when age, gender, income, race, and Hispanic origin were taken into account, the relationship between asthma and education level disappeared.



Other Measures of Impact and Burden

Hospitalizations. Although asthma hospitalizations are to some extent affected by the percent of people who have asthma, proper asthma management could prevent many hospitalizations.² From 2000 to 2004, Washington averaged about 5,200 asthma hospitalizations per year, but hospitalization rates dropped significantly from 2002 to 2004, from 95 to 77 per 100,000, respectively. Children younger than five were the most likely to be hospitalized for asthma. People, ages 15–24 were least likely to be hospitalized with asthma. Race, ethnicity, and income information is not collected in Washington hospitalization data. Therefore we are unable to describe differences in asthma hospitalization by race, Hispanic origin, or income. Studies in other states have shown hospitalizations to be higher among blacks and people of Hispanic origin compared to whites and among people with low incomes compared to people with higher incomes.³

Workers' compensation claims. For 2001–2005 combined, about 205 workers per year filed workers'

compensation claims for work-related asthma. The rate of asthma-related claims dropped significantly from 2001 to 2005, from 162 to 97 per million full-time equivalent employees, respectively.

Deaths. Asthma deaths are rare, affecting an average of 86 Washington residents per year since 1998. Washington's asthma death rate was about 1.9 per 100,000 during the 1990s and gradually declined to about 1.4 per 100,000 in 2001. It has stayed at that level since then. Adults ages 85 and older had the highest asthma death rates, with an average of 21 per 100,000 population from 2000 through 2005.

Risk and Protective Factors

Asthma is probably a syndrome rather than a single illness with a single cause. More research is needed to find out how exposures and genetic factors interact to cause asthma.

Many people with asthma have allergies, but it is not clear whether having allergies is related to the actual causes of asthma.⁴ There is evidence that early exposure to dust mites and roaches might cause asthma in some susceptible people.⁵

Children whose parents smoke are much more likely to get asthma than children of non-smokers.⁶ Tobacco smoke is also a probable cause of new asthma cases among adolescents and adults who smoke.⁷ Prenatal exposure to tobacco smoke has also been implicated as a factor in later development of asthma in children.⁸

Indoor exposure to allergens such as cat dander, dust mites, molds, and cockroach particles can also contribute to asthma symptoms, particularly in children.⁹ Studies also suggest greater disease severity in children exposed to smoking in the home.⁷

Viral respiratory infections can trigger asthma.¹⁰ Exposure to outdoor air pollutants such as ozone and diesel exhaust trigger asthma attacks. Physical exercise can increase symptoms in some people who have asthma. This is especially likely when air quality is poor. People who live near major highways have higher rates of asthma-related emergency department use and hospitalizations.¹¹

Mold has been associated with increased risk of asthma.¹² Among people who responded to the 2004 BRFSS and whose homes had signs of

mold, 13% ($\pm 2\%$) had asthma compared to 8% ($\pm 1\%$) of those whose homes did not have signs of mold.¹³ Additionally, people who are obese are at increased risk for asthma.¹⁴ The asthma rate for obese adults in Washington was 13% ($\pm 1\%$) compared with a rate of 8% ($\pm 1\%$) for adults who were not obese.

There are many allergens and irritants in the workplace that can cause or aggravate asthma. About 15% of all adult-onset asthma is thought to be caused by workplace exposures.¹⁵

Intervention Strategies

Since the underlying causes of asthma are not understood, intervention goals focus on controlling symptoms and preventing asthma attacks. Successful asthma control will require well-organized, multi-faceted efforts incorporating the interventions described below. Coalitions can be useful in creating a multidisciplinary approach needed to develop these efforts.¹⁶

In 2005, the Washington Asthma Initiative adopted the Washington State Asthma Plan,¹⁷ a comprehensive plan designed to improve the prevention, diagnosis, and management of asthma. The initiative established the following goals to enable this plan to move forward: 1) improve community understanding and management of asthma, 2) provide high quality care and tracking of patients statewide, 3) assure a safe and healthier environment for persons with asthma, 4) increase the number of asthma-friendly schools and child care settings, and 5) improve asthma policies in building construction, outdoor air, our schools, and health care access.

Improve community understanding and management of asthma. Asthma not only affects individuals and their families but also the communities in which they reside. Increased costs for workers' compensation claims attributable to asthma, lost productivity, and over-burdening of medical resources are just a few examples. Asthma awareness activities such as media campaigns, educational presentations, posters, and pamphlets help to increase understanding of the signs and symptoms of asthma as well as the needs of people who have asthma.

The National Asthma Education and Prevention Program guidelines,¹⁸ released August 2007, stress the importance of assessing asthma patients' level of impairment and their risk of future asthma attacks. They also recommend more asthma education so that people can learn to monitor and manage their

asthma. This is important because research studies have showed parents of children with asthma over-estimating their level of control of their children's asthma.^{19,20} Furthermore, among the elderly, asthma is more difficult to diagnose, and senior adults are less likely to recognize the symptoms of an impending asthma attack.²¹

People with asthma often need to take medicines over long periods to prevent attacks and to take additional medication when their asthma gets worse. A major cause of uncontrolled asthma is that some people with asthma do not adhere to their medication schedules.²² Others might believe that they "have asthma" only when they are symptomatic. For example, in the 2003 National Survey of Children's Health, some parents failed to identify their children as "still having asthma" despite the fact that their child had recently experienced an asthma attack or had been taking asthma medication.²³ Lack of insurance or financial problems may keep some patients from getting their medications regularly. Health care workers can use home or clinic settings to successfully teach people with asthma to manage their disease.^{24,25}

Provide high quality care and tracking of patients statewide. The health care delivery system needs to support the delivery of planned care that follows national clinical guidelines for the care of people with asthma.²⁶ The Global Initiative on Asthma has developed guidelines to aid people with asthma and their health care providers to determine appropriate care for their condition.²⁷

Registries of people with asthma can be an important tool in helping track their asthma status and can be used to facilitate regular doctor visits to support asthma management.²⁸

People with asthma have a higher risk of complications from influenza. The American College of Allergy, Asthma & Immunology recommends an annual flu shot for asthma patients.²⁹ Also, patient follow-up by a health care provider shortly after an emergency department asthma visit has been shown to decrease future emergency room visits by helping patients improve control of their asthma symptoms.^{30,31}

Assure a safe and healthier environment for persons with asthma. Reducing exposure to asthma attack triggers can reduce the number and severity of asthma attacks. Reducing

triggers can include decreasing household dust mite exposure, such as through use of impermeable mattress and pillow covers, removal of carpeting, and improving ventilation. Such interventions have been successfully implemented in several local projects in Washington State.^{32, 33}

There are a variety of ways to reduce workplace exposure to substances that cause or aggravate asthma. The best method is to remove the substance from the workplace. The next-best approach is to "engineer-out" or isolate the substance from the work environment. For example, enclosed production systems with isolated ventilation can protect workers from exposure.³⁴ Failing those two remedies, worker training and education and use of personal protective equipment such as respirators are the best approaches.³⁴

Increase the number of asthma-friendly schools and child care settings. Children need policies that support asthma-friendly environments in child care settings, after-school programs, parks and recreation programs, and schools. Child care facilities and schools located near major roads and highways can expose children to high levels of motor vehicle exhaust.³⁵ Air quality problems can be prevented when new schools or child care facilities are in the planning stage by choosing a site away from such sources of pollution.

School-based programs that focus on recognition of symptoms of asthma have been shown to be effective in reducing absences and improving asthma control.^{36,37} Comprehensive programs that require system changes and improved staff and student education, although not yet fully evaluated, show promise in creating better support for the student and family struggling with asthma management.

Improve asthma policies in building construction, outdoor air, our schools, and health care access. On a larger scale, policy changes can support healthy homes and buildings that minimize exposure to asthma triggers in new and existing construction. In April 2005, the Washington Legislature passed SB 5509, which requires all public buildings to be built according to green building standards. This includes using building materials that do not produce irritating gases such as formaldehyde, preventing mold through blocking intrusion of moisture into the building, and systems for air circulation and reducing humidity.

Decreasing exposure to secondhand tobacco smoke can also reduce asthma attacks.⁷ Recent policies to

ban workplace smoking and smoking in public buildings have decreased the public's exposure to secondhand smoke.

Another opportunity to decrease exposures to air pollutants is through campaigns at schools and industrial sites that discourage idling of buses and trucks. Such campaigns reduce exposure to diesel exhaust, another asthma trigger. Policies can be enacted to reduce other industrial pollutants. For example, several counties in eastern Washington recently set controls to reduce agricultural burning.

The fight against asthma is complex. It requires the combined efforts of everyone, from the individual person who has asthma to health care providers and the entire community.

See Related Chapters: [Tobacco Use](#), [Indoor Air Quality](#), [Outdoor \(Ambient\) Air Quality](#), and [Access to Primary Health Care Services](#)

Data Sources (For additional detail, see [Appendix B](#)).

Washington State Behavioral Risk Factor Surveillance System (BRFSS) data: 1987–2006. The data for 2003–2006 were also weighted to reflect the county population estimates from the Washington State Office of Financial Management (OFM). Data release for 2003–2005: November 2006; data release for 2006: June 2007.

Washington State Death Certificate Data: Washington State Department of Health, Vital Registration System Annual Statistical Files, Deaths 1980–2005, released December 2006.

Population Counts by Race and Census Tract: Washington State Department of Health, Vista Partnership, Krupski Consulting; Washington State Population Estimates for Public Health. October 2006.

Washington Hospitalization Data: Dataset compiled by the Washington State Department of Health, Center for Health Statistics from the Washington Comprehensive Hospitalization Abstract Reporting System, Oregon Hospital Discharge data, and Veterans Hospital Administration datasets, December 2006.

Data for workers compensation claims rates in Washington are from the Washington State Department of Labor and Industries—Labor and Industries Industrial Insurance System (LINIIS).

For More Information

Washington State Department of Health Asthma Program, (360) 236-3851

<http://www.doh.wa.gov/cfh/asthma/default.htm>

Technical Notes

Trends for current asthma are based on age-adjusted rates among English-speaking BRFSS respondents only.

Endnotes

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