



MMWRTM

Morbidity and Mortality Weekly Report

Weekly

May 2, 2003 / Vol. 52 / No. 17

World Asthma Day, May 6, 2003

The fifth annual World Asthma Day will be May 6, 2003, and will mark the beginning of Asthma and Allergy Month. On World Asthma Day, CDC, in collaboration with its worldwide partners, will help raise awareness about asthma through various activities, including proclamations by government officials and presentations by health-care officials.

During 1980–1996, the prevalence of asthma in the United States increased among all age, sex, and racial groups. In 2001, an estimated 31.3 million persons reported ever having asthma diagnosed, and 20.3 million persons currently had asthma. Each year, approximately 14 million days of school absences and approximately 100 million days of restricted activity are attributed to asthma.

Additional information about CDC's National Asthma Control Program and its public and private partners is available at <http://www.cdc.gov/asthma>.

Self-Reported Asthma Prevalence and Control Among Adults — United States, 2001

Asthma is a chronic illness that has been increasing in prevalence in the United States since 1980 (1). In 2000, asthma accounted for 4,487 deaths, approximately 465,000 hospitalizations, an estimated 1.8 million emergency department (ED) visits, and approximately 10.4 million physician office visits among persons of all ages (2). To provide prevalence data for state and local health department asthma programs, the Behavioral Risk Factor Surveillance System (BRFSS) collects data each year from the 50 states, the District of Columbia, and three U.S. territories. This report summarizes asthma

prevalence data for adults collected from the 2001 BRFSS survey and from the eight states that used the adult asthma history module. Findings from BRFSS indicate that approximately 7.2% of U.S. adults have current asthma. ED visits for asthma varied more than any other characteristic among the eight states that used the adult asthma history module. In Mississippi, 67.3% of respondents with current asthma reported no ED visits during the preceding 12 months, compared with 87.6% in Washington state. Continued use of the BRFSS asthma prevalence questions and the asthma history module will allow state health departments to monitor trends in asthma prevalence and control and to direct public health asthma interventions.

BRFSS is a state-based, random-digit-dialed survey of the noninstitutionalized civilian U.S. population aged ≥ 18 years; the survey collects information about modifiable risk factors for chronic diseases and other leading causes of death (3). In 2001, two asthma questions were used as part of the core survey by the 50 states, the District of Columbia, Guam, Puerto Rico, and the Virgin Islands. Lifetime asthma was defined as answering "yes" to the question, "Have you ever been told by a doctor, nurse, or other health professional that you have asthma?" Current asthma was defined as answering "yes" to the lifetime question and to the question, "Do you still have asthma?" Weighted prevalence estimates and 95% confidence intervals (CIs) were calculated by using SUDAAN to account for the complex survey design (4).

INSIDE

- 386 Women with Smallpox Vaccine Exposure During Pregnancy Reported to the National Smallpox Vaccine in Pregnancy Registry — United States, 2003
- 388 Update: Severe Acute Respiratory Syndrome — United States, 2003
- 391 Updated Interim Surveillance Case Definition for Severe Acute Respiratory Syndrome (SARS) — United States, April 29, 2003

The *MMWR* series of publications is published by the Epidemiology Program Office, Centers for Disease Control and Prevention (CDC), U.S. Department of Health and Human Services, Atlanta, GA 30333.

SUGGESTED CITATION

Centers for Disease Control and Prevention. [Article Title]. *MMWR* 2003;52:[inclusive page numbers].

Centers for Disease Control and Prevention

Julie L. Gerberding, M.D., M.P.H.
Director

David W. Fleming, M.D.
Deputy Director for Public Health Science

Dixie E. Snider, Jr., M.D., M.P.H.
Associate Director for Science

Epidemiology Program Office

Stephen B. Thacker, M.D., M.Sc.
Director

Office of Scientific and Health Communications

John W. Ward, M.D.
Director

Editor, MMWR Series

Suzanne M. Hewitt, M.P.A.
Managing Editor, MMWR Series

David C. Johnson
(Acting) Lead Technical Writer/Editor

Jude C. Rutledge
Teresa F. Rutledge
Jeffrey D. Sokolow, M.A.
Writers/Editors

Lynda G. Cupell
Malbea A. Heilman
Visual Information Specialists

Quang M. Doan
Erica R. Shaver
Information Technology Specialists

Division of Public Health Surveillance and Informatics

Notifiable Disease Morbidity and 122 Cities Mortality Data

Robert F. Fagan
Deborah A. Adams
Felicia J. Connor
Lateka Dammond
Patsy A. Hall
Pearl C. Sharp

The median response rate for all 54 BRFSS reporting areas was 51.1% (range: 33.3% [New Jersey]–81.5% [Puerto Rico]) (5). The overall prevalence of lifetime asthma among adults was 11.0% (95% CI = 10.8%–11.2%) (n = 204,797). Lifetime asthma prevalence from all 54 reporting areas ranged from 7.5% in Guam to 19.6% in Puerto Rico. Among the 50 states, lifetime asthma ranged from 8.4% in Nebraska to 13.3% in Nevada. During 2001, an estimated 15.1 million adults in the United States and the District of Columbia had current asthma; the overall prevalence was 7.2% (95% CI = 7.0%–7.4%). Current asthma prevalence from all 54 reporting areas ranged from 3.5% in Guam to 9.5% in Puerto Rico (Table 1). Among the 50 states, current asthma prevalence ranged from 5.3% (Louisiana and South Dakota) to 9.5% (Massachusetts). Current asthma was higher among persons who were multiple race and non-Hispanic (12.2%), followed by non-Hispanic blacks (8.5%), non-Hispanic whites (7.2%), other race and non-Hispanic (5.9%), and Hispanics (5.7%).

For this report, seven questions (of the nine questions in the asthma history module) were used to measure the level of asthma control in respondents with current asthma. Respondents were asked to report the number of visits to an ED, urgent (unscheduled) doctor visits, or routine check-ups; the number of days they could not perform their usual activities, had trouble with sleep, or had asthma symptoms; and whether they had an asthma attack or episode during the preceding 12 months.

The overall current asthma prevalence for the eight states that used the module was 7.7% (95% CI = 7.3%–8.1%) (Table 2). Current asthma prevalence varied from 5.3% (South Dakota) to 9.0% (Michigan). Among respondents with current asthma, 82.7% reported no visits to an ED during the preceding 12 months; 71.0% reported no urgent visits to a physician; and 54.4% reported routine check-ups for asthma during the preceding 12 months. An estimated 71.6% of respondents with current asthma reported no days of activity limitation, 60.9% reported no days of disturbed sleep, and 21.8% reported having no symptoms during the preceding 30 days. An estimated 47.2% of respondents with current asthma reported no asthma attack or episode during the preceding 12 months. The control characteristics presented were configured so high values represent positive aspects of asthma management. Over time, improved asthma management would result in increased values on each of the seven control characteristics.

On each of the seven asthma-control questions, several states were above or below the CI for the eight-state total. South Dakota was above the CI on six of seven questions, indicating above-average asthma control. Michigan, with the highest current asthma prevalence in the eight states, was within the eight-state total CI on all questions, indicating an average level of asthma control among residents with current asthma.

TABLE 1. Prevalence of lifetime* and current† asthma among survey respondents, by area — Behavioral Risk Factor Surveillance System, United States, the District of Columbia, Guam, Puerto Rico, and the Virgin Islands, 2001

Area	Lifetime asthma			Current asthma		
	No.‡	(%)	(95% CI¶)	No.	(%)	(95% CI)
Alabama	2,792	9.7	(8.5–10.9)	2,788	6.3	(5.4–7.3)
Alaska	2,871	11.5	(9.7–13.3)	2,866	7.3	(5.8–8.8)
Arizona	3,261	12.4	(10.7–14.1)	3,249	8.3	(6.8–9.8)
Arkansas	2,927	10.6	(9.3–11.9)	2,922	7.0	(5.9–8.1)
California	4,170	12.4	(11.3–13.6)	4,162	7.2	(6.3–8.0)
Colorado	2,030	12.1	(10.6–13.7)	2,019	8.0	(6.7–9.3)
Connecticut	7,745	12.3	(11.4–13.2)	7,719	7.9	(7.1–8.6)
Delaware	3,510	12.0	(10.5–13.5)	3,505	7.5	(6.3–8.8)
District of Columbia	1,886	12.0	(10.3–13.7)	1,881	7.4	(6.0–8.8)
Florida	4,675	9.9	(8.9–10.8)	4,666	5.8	(5.0–6.5)
Georgia	4,530	11.0	(9.8–12.2)	4,516	7.2	(6.2–8.3)
Hawaii	4,492	12.2	(10.8–13.5)	4,483	7.3	(6.2–8.4)
Idaho	4,830	11.7	(10.6–12.8)	4,821	8.0	(7.1–8.8)
Illinois	4,007	11.3	(10.2–12.4)	4,001	7.9	(6.9–8.8)
Indiana	3,991	11.3	(10.2–12.4)	3,985	7.5	(6.7–8.4)
Iowa	3,629	9.7	(8.6–10.8)	3,623	6.7	(5.8–7.7)
Kansas	4,593	11.7	(10.6–12.8)	4,583	8.1	(7.1–9.1)
Kentucky	7,518	10.9	(9.9–11.9)	7,503	8.3	(7.5–9.2)
Louisiana	4,999	9.1	(8.2–10.0)	4,994	5.3	(4.6–6.0)
Maine	2,413	12.6	(11.1–14.2)	2,413	9.4	(8.1–10.7)
Maryland	4,464	11.1	(9.8–12.4)	4,450	7.1	(5.9–8.2)
Massachusetts	8,614	13.1	(12.2–13.9)	8,589	9.5	(8.7–10.3)
Michigan	3,823	12.4	(11.1–13.7)	3,814	9.0	(7.9–10.2)
Minnesota	3,958	10.1	(9.1–11.2)	3,942	6.6	(5.8–7.4)
Mississippi	3,040	9.2	(8.0–10.4)	3,034	5.5	(4.6–6.5)
Missouri	4,175	12.0	(10.6–13.3)	4,167	8.2	(7.0–9.3)
Montana	3,334	11.8	(10.3–13.3)	3,329	8.0	(6.7–9.3)
Nebraska	3,696	8.4	(7.3–9.6)	3,693	5.8	(4.8–6.7)
Nevada	2,571	13.3	(11.5–15.1)	2,566	8.3	(6.8–9.7)
New Hampshire	4,063	12.5	(11.3–13.7)	4,051	8.4	(7.4–9.4)
New Jersey	6,009	9.4	(8.5–10.3)	5,998	6.2	(5.5–7.0)
New Mexico	3,618	10.8	(9.6–12.0)	3,605	6.9	(5.9–7.9)
New York	3,894	11.1	(9.9–12.3)	3,884	7.3	(6.4–8.3)
North Carolina	6,201	10.1	(8.8–11.3)	6,191	6.4	(5.4–7.4)
North Dakota	2,509	9.1	(7.9–10.3)	2,505	6.8	(5.8–7.9)
Ohio	3,431	9.8	(8.7–10.9)	3,424	7.3	(6.3–8.2)
Oklahoma	4,545	10.1	(9.0–11.2)	4,538	6.9	(6.1–7.8)
Oregon	2,529	13.0	(11.6–14.4)	2,524	8.1	(7.0–9.2)
Pennsylvania	3,658	10.7	(9.5–11.9)	3,652	7.3	(6.4–8.3)
Rhode Island	4,109	12.1	(10.9–13.3)	4,099	9.4	(8.3–10.5)
South Carolina	3,196	10.8	(9.5–12.0)	3,192	6.5	(5.5–7.6)
South Dakota	5,109	7.7	(6.9–8.6)	5,101	5.3	(4.6–6.0)
Tennessee	2,921	9.3	(8.1–10.5)	2,919	6.9	(5.8–7.9)
Texas	5,911	9.6	(8.8–10.5)	5,904	6.1	(5.4–6.8)
Utah	3,649	10.7	(9.4–12.0)	3,646	7.0	(5.9–8.1)
Vermont	4,292	12.1	(11.0–13.2)	4,285	8.8	(7.8–9.8)
Virginia	2,937	11.4	(10.0–12.7)	2,924	6.4	(5.5–7.4)
Washington	4,193	12.0	(10.9–13.1)	4,177	7.7	(6.8–8.5)
West Virginia	3,091	12.5	(11.2–13.8)	3,086	9.3	(8.2–10.4)
Wisconsin	3,350	10.9	(9.6–12.2)	3,336	7.8	(6.7–8.9)
Wyoming	3,038	11.6	(10.3–12.9)	3,035	8.3	(7.1–9.4)
Total**	204,797	11.0	(10.8–11.2)	204,359	7.2	(7.0–7.4)
Guam	871	7.5	(5.6–9.4)	870	3.5	(2.2–4.9)
Puerto Rico	4,234	19.6	(17.8–21.4)	4,234	9.5	(8.3–10.8)
Virgin Islands	2,263	9.2	(7.5–10.8)	2,260	4.9	(3.7–6.1)

* Persons who answered “yes” to the question, “Have you ever been told by a doctor, nurse or other health professional that you had asthma?”

† Persons who answered “yes” to the questions, “Have you ever been told by a doctor, nurse or other health professional that you had asthma?” and “Do you still have asthma?”

‡ Unweighted sample size.

¶ Confidence interval.

** 50 states and the District of Columbia.

Reported by: L Rhodes, MPH, JE Moorman, MS, SC Redd, MD, DM Mannino, MD, Div of Environmental Hazards and Health Effects, National Center for Environmental Health, CDC.

Editorial Note: Asthma is a multifactorial lung disease that causes wheezing, shortness of breath, coughing, and chest tightness. It is often associated with familial, allergenic, socioeconomic, psychological, and environmental factors (6,7). Asthma affects proportionately more children than adults, women than men, and nonwhites than whites (1). Morbidity and mortality can be partly preventable with better medical, environmental, and self management.

The 2001 BRFSS lifetime prevalence estimate (11.0%) was slightly higher than the 2000 BRFSS lifetime estimate (10.5%). This difference might be an actual increase in prevalence or might be associated with a minor change in question wording in 2001. The current asthma prevalence in 2001 (7.2%) was the same as in 2000. The findings in this report indicate no consistent regional pattern in asthma prevalence and some variability among the states. Possible reasons for this variability include demographic, socioeconomic (e.g., income and education levels), and environmental factors (e.g., outdoor air pollution and climate), physician diagnostic procedures, or data-collection practices. In 2001, current asthma prevalence estimates were comparable with 2000 BRFSS estimates for whites, blacks, and persons of other races. However, the change in the positioning of the race and ethnicity questions on the BRFSS core survey and the addition of a multiple race question could have affected the asthma prevalence estimates when both race and ethnicity are considered.

The findings in this report are subject to at least three limitations. First, the median response rate for BRFSS was low (51.1%); however, asthma prevalence is similar to estimates in other surveys with higher response rates (e.g., National Health Interview Survey). Second, BRFSS does not measure asthma prevalence among institutionalized adults, the military, children aged

TABLE 2. Percentage of respondents with current* asthma, by selected control characteristics and state — Behavioral Risk Factor Surveillance System, eight states, 2001

State	Current prevalence		No ED [†] visits	No urgent visits	Routine visits	No activity limitation	Sleep not disturbed	No symptoms	No attacks
	No. [§]	(%)							
Indiana	327	(7.5)	81.9	69.3	53.2	68.9	55.5	19.0	44.1
Iowa	241	(6.7)	83.0	76.7	56.4	78.6	65.3	17.4	44.9
Michigan	335	(9.0)	81.7	72.0	54.1	72.1	60.6	21.9	45.3
Mississippi	174	(5.5)	67.3	65.4	56.3	64.4	53.9	20.0	42.7
Missouri	333	(8.2)	81.1	74.9	54.8	71.8	59.9	26.0	47.0
Pennsylvania	284	(7.3)	84.8	66.1	58.3	71.6	64.2	21.1	53.4
South Dakota	269	(5.3)	87.3	76.2	46.9	81.1	70.0	29.2	55.3
Washington	334	(7.7)	87.6	75.4	46.7	71.4	60.5	23.3	43.7
Total	2,297	(7.7)	82.7[¶]	71.0^{**}	54.4^{††}	71.6^{§§}	60.9^{¶¶}	21.8^{***}	47.2^{†††}
Lower 95% CI ^{§§§}	—	(7.3)	80.6	68.3	51.3	68.9	58.0	19.4	44.3
Upper 95% CI	—	(8.1)	84.9	73.7	57.5	74.4	63.7	24.2	50.2

* Persons who answered "yes" to the questions, "Have you ever been told by a doctor, nurse or other health professional that you had asthma?" and "Do you still have asthma?"

[†] Emergency department.

[§] Unweighted number of respondents with current asthma.

[¶] Excludes 68 "Don't know/refused" responses and one outlier (>50 visits).

^{**} Excludes 98 "Don't know/refused" responses and three outliers.

^{††} Excludes 87 "Don't know/refused" responses and four outliers.

^{§§} Excludes 139 "Don't know/refused" responses and 131 "missing" responses.

^{¶¶} Excludes 99 "Don't know/refused" responses; includes 474 responses of "no asthma symptoms."

^{***} Excludes 125 "Don't know/refused" responses.

^{†††} Excludes 72 "Don't know/refused" responses.

^{§§§} Confidence interval.

<18 years, and residents without telephones; the percentage of households with telephones ranged from 87% (Mississippi) to 98% (Massachusetts) (8). Asthma prevalence in households without telephones might be different than in those with telephones. Finally, the validity of self-reported asthma status in BRFSS is unknown. BRFSS case definitions include respondents who have been told by a physician they have asthma; either the physician's diagnosis or the respondent's recall of that diagnosis might be inaccurate. A 1993 review of asthma questionnaires reported a mean sensitivity of 68% (range: 48%–100%) and a mean specificity of 94% (range: 78%–100%) when self-reported asthma was compared with a clinical diagnosis of asthma (9).

Use of BRFSS asthma lifetime and current prevalence questions allows state health departments to monitor trends in asthma prevalence and to direct asthma management. Combined with the existing adult asthma history module, health departments can examine detailed asthma characteristics within their states. BRFSS remains the only comprehensive source of state-level surveillance data for asthma and other chronic diseases.

Acknowledgment

This report is based on data contributed by state BRFSS coordinators.

References

1. Mannino DM, Homa DM, Akinbami LJ, et al. Surveillance for asthma—United States, 1980–1999. In: CDC surveillance summaries (March 29). MMWR 2002;51(No. SS-1).
2. CDC, National Center for Health Statistics. Asthma prevalence, health care use and mortality, 2000–2001. Available at <http://www.cdc.gov/nchs/products/pubs/pubd/hestats/asthma/asthma.htm>.
3. CDC. Behavioral Risk Factor Surveillance System Survey. Atlanta, Georgia: U.S. Department of Health and Human Services, CDC, 2001.
4. Shah BV, Barnwell BG, Bieler GS. SUDAAN user's manual. Release 7.5. Research Triangle Park, North Carolina: Research Triangle Institute, 1997.
5. CDC. 2000 BRFSS summary data quality report. National Center for Chronic Disease Prevention and Health Promotion, Division of Adult and Community Health, Behavioral Surveillance Branch. Available at <http://www.cdc.gov/brfss/ti-quality-req2000.htm>.
6. Weiss KB, Gergen PJ, Wagener DK. Breathing better or wheezing worse? The changing epidemiology of asthma morbidity and mortality. *Annu Rev Public Health* 1993;14:491–513.
7. Barbee RA, Dodge R, Lebowitz ML, Burrows B. The epidemiology of asthma. *Chest* 1985;87:21S–25S.
8. CDC. Behavioral Risk Factor Surveillance System user's guide. Atlanta, Georgia: U.S. Department of Health and Human Services, CDC, 1999.
9. Toren K, Brisman J, Jarvholm B. Asthma and asthma-like symptoms in adults assessed by questionnaires: a literature review. *Chest* 1993;104:600–8.