

# ASTHMA

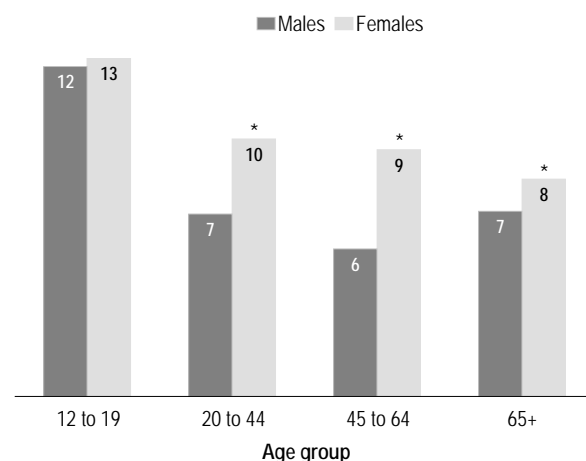
by Yue Chen, Helen Johansen, Satha Thillaiampalam and Christie Sambell

Asthma is a chronic disease, the symptoms of which include cough, shortness of breath, chest tightness and wheeze. Symptoms and attacks (episodes of more severe shortness of breath) usually occur after viral respiratory infections, exercise, or exposure to allergens, irritant fumes or gases.<sup>1</sup> These exposures cause inflammation of the airway wall and abnormal narrowing of the airways, which lead to asthma symptoms. Possible risk factors include a family history of allergies, low birth weight, respiratory distress syndrome, frequent respiratory infections, high exposure to airborne allergens in early childhood, and exposure to tobacco smoke.<sup>2,3</sup> Among adults, asthma may result from workplace exposure or concurrent exposure to infectious agents, allergens and pollution.<sup>2</sup>

## Prevalence

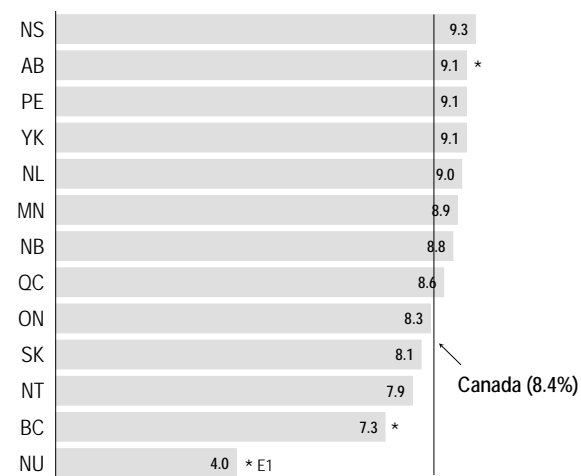
According to the 2003 Canadian Community Health Survey, 8.4% of the population aged 12 or older—9.6% of females and 7.1% of males—reported having been diagnosed with

Percentage of population<sup>†</sup> with asthma



Data source: 2003 Canadian Community Health Survey  
<sup>†</sup> Aged 12 or older  
 \* Significantly different from estimate for males ( $p < 0.05$ )

Percentage of population<sup>†</sup> with asthma, by province/territory



Data source: 2003 Canadian Community Health Survey  
<sup>†</sup> Aged 12 or older  
 \* Significantly different from estimate for Canada  
 E1 Coefficient of variation between 16.6% and 25.0%

asthma (Table A). This represents over 2 million people. Prevalence was similar for boys and girls during the teen years (12.2% and 12.6%, respectively). At older ages, rates decreased for both sexes, and women were more likely than men to report having asthma. While children and teens have the highest prevalence of asthma, the number of people affected is actually higher among adults.

## Few provincial/territorial differences

In 2003, the prevalence of asthma varied little by province or territory. Only Alberta's prevalence significantly exceeded the national figure. Low rates were reported by residents of British Columbia and Nunavut.

## Quality of life

An asthma attack, with its accompanying feelings of suffocation, breathlessness and loss of control, is frightening and potentially life-threatening. Of people who reported having asthma in 2003, 48% of males and 60% of females also reported experiencing

asthma symptoms or asthma attacks in the past 12 months. The likelihood of having had an attack was relatively low among teenagers and the elderly. By contrast, the likelihood was significantly elevated for people with asthma in the 20-to-44 age range, and for women with asthma who were aged 45 to 64.

Most people with asthma had taken medication to control the condition in the previous 12 months: 68% of males and 78% of females.

Asthma can affect quality of life, as it often results in time away from school, work, or other activities. An analysis of 1996/97 data showed that 35% of people with asthma reported having been restricted in their daily activities in the previous year: 22% for one to five days, and 13% for more than five days.<sup>4</sup> Over half of people with asthma had frequent symptoms, including wheezing, shortness of breath or fatigue, either daily (14%) or several times a month (37%).

Percentage of population with asthma who had symptoms or attacks in past 12 months

	Total	Males	Females
	%	%	%
Total	54.9	48.2	59.8†
12-19	42.7*	37.1*	48.5*†
20-44	61.1*	56.0*	64.7*†
45-64	57.9*	47.2	64.1*†
65+	46.2*	42.9*	48.5*

Data source: 2003 Canadian Community Health Survey  
 \* Significantly different from estimate for column total ( $p < 0.05$ )  
 † Significantly different from estimate for males ( $p < 0.05$ )

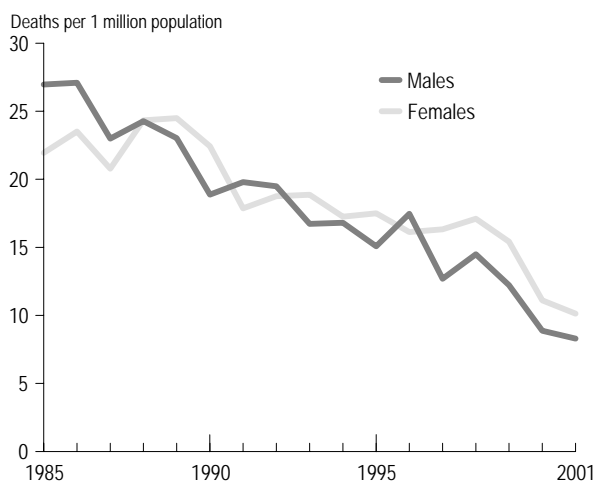
## Hospital admissions and readmissions

In the three-year period between April 1998 and March 2001, close to 80,000 people were admitted to hospital for asthma. Hospitalization rates were highest among young children and seniors. In childhood, boys were at greater risk of hospitalization for asthma than

were girls. This sex difference diminished during adolescence, and among adults, women were at greater risk. The disparity in hospitalization rates between men and women was greatest before age 50 and gradually narrowed among the elderly.

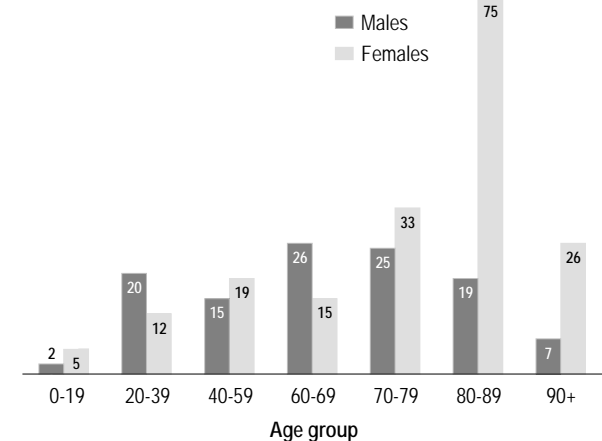
Because asthma is a chronic disease, readmissions to hospital for the condition are relatively common. Among the asthma patients admitted between April 1, 1998 and March 31, 2001, those younger than age 1 were most likely to have had more than one hospital stay during the period. Readmission rates for women were also high in the 15-to-19 and 45-to-49 age groups, while for men, readmission rates tended to rise from their thirties through their fifties. Similar patterns were found in analyses of data for the 1994/95 to 1996/97 period.<sup>5,6</sup>

Age-standardized asthma mortality rates, 1985 to 2001



Data source: Canadian Mortality Database

Number of asthma deaths, 2001



Data source: Canadian Mortality Database

## Deaths uncommon

Few people die of asthma, and for both sexes, age-standardized asthma mortality rates have declined sharply since 1985. In 2001, a total of 299 deaths were attributed to asthma. After age 70, considerably more women than men die of the disease, a reflection of the higher asthma mortality rate among older women and the fact that at older ages, women outnumber men.

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## The Questions

Estimates of the prevalence of *asthma* among Canadians aged 12 or older are based on responses to questions in the 2003 Canadian Community Health Survey. Respondents were asked about certain chronic health conditions that had lasted or were expected to last six months or more and that had been diagnosed by a health professional. If they answered "yes" to "Do you have asthma?", they were then asked:

- "Have you had any asthma symptoms or asthma attacks in the past 12 months?"
- "In the past 12 months, have you taken any medicine for asthma such as inhalers, nebulizers, pills, liquids or injections?"

## Data sources

### Canadian Community Health Survey, Cycle 2.1

The estimates of asthma prevalence are based on data from the second cycle of the Canadian Community Health Survey (CCHS), conducted from January through December 2003. The CCHS is a general health survey that covers the population aged 12 or older who were living in private households. It does not include residents of Indian reserves, Canadian Forces bases, and some remote areas. The overall response rate for the second cycle was 80.6%; the total sample size was 135,573.

Estimates were weighted to represent the 2000 Canadian population aged 12 or older. Variance on estimates and on differences between estimates, was calculated using the bootstrap technique which accounts for the complex sampling design of the survey.<sup>7,8</sup>

### Health Person-oriented Information Database

Information on hospitalization is based on hospital records for each province for the fiscal years 1998/99 to 2000/01, which were linked using patient identification numbers. The information is based on fiscal years beginning on April 1. The cause of hospitalization was coded and tabulated according to the *International Classification of Diseases, Ninth Revision* (ICD-9).<sup>9</sup> An asthma hospitalization was defined as an admission for which the first diagnosis was coded as asthma (ICD-9 code: 493).

### Canadian Mortality Database

Information on deaths attributed to asthma was obtained from the Canadian Mortality Database. This data source, compiled from information provided by the vital statistics registrar in each province and territory, is maintained by Statistics Canada. The ICD-10 codes used for asthma in 2000/2001 were J45 to J46.

## References

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- 8 Rust KF, Rao JNK. Variance estimation for complex surveys using replication techniques. *Statistical Methods in Medical Research* 1996; 5: 281-310.
- 9 World Health Organization. *Manual of the International Statistical Classification of Diseases, Injuries and Death*. Based on the recommendations of the Ninth Revision Conference, 1975. Geneva: World Health Organization, 1977.

Table A

## Prevalence of asthma, by sex and province, household population aged 12 or older, Canada, 2003

	Total		Males		Females	
	'000	%	'000	%	'000	%
Total	2,227	8.4	933	7.1	1,294	9.6 <sup>†</sup>
Age group						
12-19	411.7	12.4*	208.0	12.2*	203.7	12.6*
20-44	950.3	8.2	395.4	6.8*	554.8	9.6 <sup>†</sup>
45-64	578.0	7.4*	214.5	5.5*	363.4	9.2 <sup>†</sup>
65+	286.8	7.6*	114.9	6.9	172.0	8.1* <sup>†</sup>
Province/Territory						
Newfoundland and Labrador	41.5	9.0	20.1	8.9	21.4	9.2
Prince Edward Island	10.9	9.1	4.4	7.6	6.5	10.6
Nova Scotia	73.9	9.3	30.1	7.8	43.8	10.7 <sup>†</sup>
New Brunswick	56.2	8.8	22.6	7.2	33.6	10.3 <sup>†</sup>
Québec	544.7	8.6	228.0	7.3	316.8	9.8 <sup>†</sup>
Ontario	855.8	8.3	345.4	6.8	510.3	9.8 <sup>†</sup>
Manitoba	81.2	8.9	35.2	7.8	46.0	9.9
Saskatchewan	64.4	8.1	27.1	6.9	37.2	9.2 <sup>†</sup>
Alberta	236.6	9.1*	104.0	8.0	132.6	10.3 <sup>†</sup>
British Columbia	256.0	7.3*	113.5	6.6	142.5	8.0* <sup>†</sup>
Yukon	2.3	9.1	0.8 <sup>E1</sup>	6.8 <sup>E1</sup>	1.4	11.4 <sup>†</sup>
Northwest Territories	2.7	7.9	1.3 <sup>E1</sup>	7.4 <sup>E1</sup>	1.4 <sup>E1</sup>	8.4 <sup>E1</sup>
Nunavut	0.6 <sup>E1</sup>	4.0* <sup>E1</sup>	F	F	0.4 <sup>E1</sup>	5.9* <sup>E1</sup>

Data source: 2003 Canadian Community Health Survey

\* Significantly different from estimate for column total ( $p < 0.05$ )† Significantly different from estimate for males ( $p < 0.05$ )

E1 Coefficient of variation 16.6 to 25.0%

F Coefficient of variation greater than 33.3%