

*air quality*

STATE OF THE REGION'S

# HEALTH

*Focus on Asthma*

# 2002

*births*

POPULATION

A PEEL HEALTH STATUS REPORT

# Asthma

*Diversity*

*morbidity*

 Region of Peel  
Working for you

HOSPITALIZATION

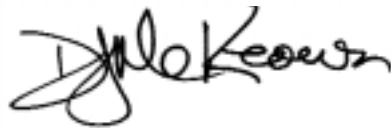


## *Message from the Medical Officer of Health*

**T**he annual State of the Region's Health reports highlight important health issues and trends affecting the one million residents of the Region of Peel. The latest health indicators summarized here reveal that the Region's population as a whole continues to enjoy relatively good health by provincial and national standards. Yet within this positive picture many health challenges remain.

The 2002 report highlights asthma, a common chronic disease which affects the lives of many Peel residents, both young and old. Recent years have seen increasing awareness of this important illness, and new information about the role of indoor and outdoor air pollution in the development and triggering of asthma symptoms. Municipal governments in the Region have been active in addressing environmental tobacco smoke in public places, and local sources of outdoor air pollution, both of which threaten the health of people with asthma and other respiratory diseases. More remains to be done to reduce the burden of illness of asthma in Peel.

The Region of Peel works with individuals and organizations in the public and private sectors to prevent illness and promote good health. The information in this and other Peel health status reports is intended to help chart a course to better health for everyone in Peel.



David McKeown, MDCM, MHSc, FRCPC  
Medical Officer of Health

STATE OF THE REGION'S  
**HEALTH**

2002

*Focus on Asthma*



A PEEL HEALTH STATUS REPORT

## ACKNOWLEDGEMENTS

This report was authored by: Julie Stratton, Senior Epidemiologist; Dr. David McKeown, Medical Officer of Health; Karen Funnell, Health Analyst; and Kit Ping Wong, Health Analyst.

Estimates of the asthma morbidity associated with air pollution in Peel region were provided by Kyle Wivcharuk, Environmental Health Research and Policy Analyst, and Paul Callanan, Manager, Environmental Health, using the Ontario Medical Association's Illness Costs of Air Pollution (ICAP) software.

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# STATE OF THE REGION'S HEALTH

*2002*  
*Focus on Asthma*



## *Introduction*

*The State of the Region's Health report is published annually as a summary of the health status of residents of Peel region. It is intended to highlight key health issues and trends for the population of Peel.*

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The *State of the Region's Health 2002* report focuses on asthma, a common chronic respiratory disease that affects individuals of all ages but is more prevalent in children and adolescents.

This report describes the occurrence of asthma in Canada, Ontario and Peel region. It also outlines what is known about the risk factors that can lead to the development of asthma, and the “triggers” that can provoke symptoms in individuals who already have asthma. In addition, the relationship between asthma and air pollution is described.

At the end of this report, a section titled *Peel Health Facts* (see page 15) highlights the most recent health indicator data, including population, leading causes of mortality and premature mortality, leading causes of hospitalization and selected reproductive health statistics, for Peel region.

# Overview of Asthma

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## HIGHLIGHTS

- In Canada, an estimated 10% of children and 5% of adults have active asthma, making it one of the most common chronic illnesses.
  - Asthma is responsible for approximately 43,000 hospitalizations and 500 deaths in Canada each year.
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## INTRODUCTION

Asthma is a condition that results in chronic inflammation of the airways. When the bronchial tubes in the lungs become inflamed and swollen, airflow to the lungs becomes blocked. This blockage causes symptoms such as wheezing, coughing, tightness in the chest, shortness of breath and an increased production of mucus. The severity of asthma symptoms can range from mild to life-threatening. Asthma is not always easy to diagnose because its symptoms can be similar to other respiratory conditions.

## ASTHMA IN ONTARIO AND CANADA

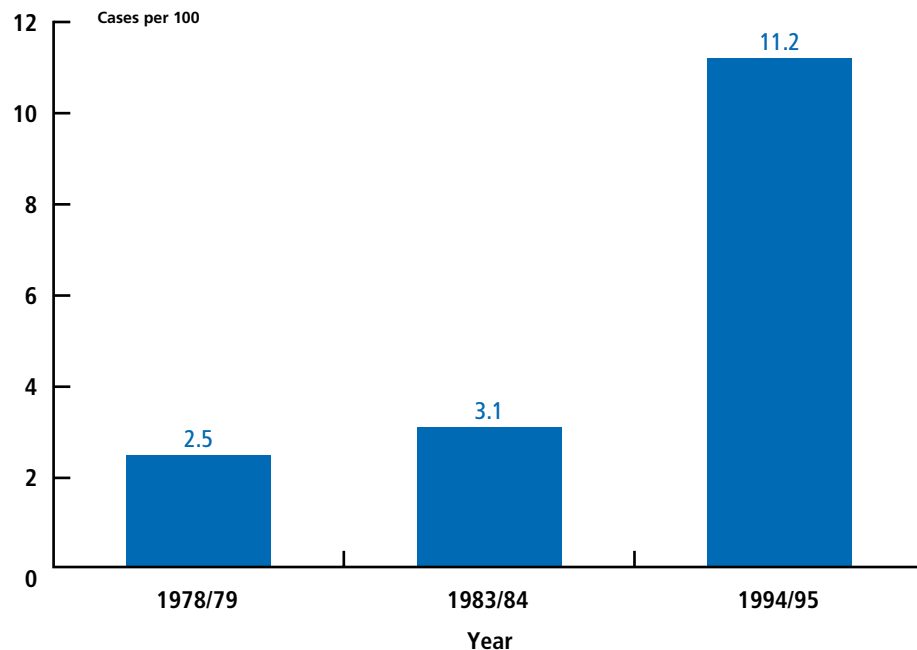
Currently, asthma is one of the most prevalent chronic conditions in Canada. In 1997, over 2.2 million Canadians were diagnosed with asthma by a physician.<sup>1</sup> In the 1996/97 *National Population Health Survey* it was estimated that 10% of Canadian children and 5% of adults had “active” asthma.<sup>2</sup> Canadians were defined as having active asthma if they had asthma diagnosed by a physician, and were either on medication for asthma or had experienced asthma symptoms or attacks in the past 12 months. Over the past two decades, the percentage of children with self-reported asthma appears to have increased from 2.5% in 1978/79 to 11.2% in 1994/95 (see *Figure 1 on the following page*).<sup>3</sup> Changes in awareness and diagnosis of asthma may have contributed to this increase.

Asthma is responsible for approximately 43,000 hospital admissions and approximately 500 deaths in Canada every year.<sup>4,5</sup> These morbidity and mortality statistics measure only the most severe impacts of asthma. In order to determine the full burden of illness related to asthma, data would also need to be obtained on family doctor, clinic and emergency department visits, as well as on symptoms that do not lead to the use of health services.

Between 1995 and 1996, a national study on childhood asthma was conducted in sentinel health units across Canada. The study reported that 13% of children between the ages of five and 19 years had been diagnosed with “current” asthma. Children were described as having current asthma if they had been diagnosed with asthma by a physician and had one or more



**Figure 1: Prevalence of Asthma Among Children Aged 0–14 Years, Canada, 1978–1995**



**Sources:** 1978/79 Canada Health Survey; 1983/84 Canadian Health and Disability Survey; 1994/95 National Longitudinal Survey of Children and Youth (for ages 0 to 11); 1994/95 National Population Health Survey (for ages 12 to 14). Adapted from Millar WJ, Hill GB. Childhood asthma. Health Reports 1998, 10(3):9-21.

of the following characteristics in the past 12 months: wheezing or whistling in the chest, an asthma attack or had taken asthma medication. Two Ontario cities in the study (Kingston and Guelph) had reported asthma rates in children aged five to 19 years of 16% and 11% respectively.<sup>6</sup>

Of the Canadian children who had current asthma:

- 69% had an asthma attack in the past 12 months and 4% had one or more asthma attacks per week,
- 90% had taken medication for asthma in the past 12 months,
- 64% had sleep disturbances and 7% experienced these disturbances more than once a week on average,
- 19% had visited an emergency department in the past 12 months,
- 4% had spent the night in hospital, and
- 16% had missed more than a week of school.

In the 1998/99 *National Population Health Survey*, 10% of Ontario children aged four to 19 and 7% of Ontario adults reported having been diagnosed with asthma by a physician. In the 1996/97 *National Population Health Survey*, nearly 49,000 Ontarians with asthma reported that their activities at home, school or work were limited by their asthma.

In the same survey, 18 per cent of asthma sufferers reported they had visited an emergency room in the past year for asthma-related symptoms. In 1996, 192 deaths were directly attributed to asthma in Ontario.<sup>1</sup>

# Asthma in the Region of Peel

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## HIGHLIGHTS

- In 2000/2001, 8.3% of Peel residents aged 12 years and older reported that a physician had diagnosed them with asthma.
- Hospitalization rates for asthma are declining. In 2000 in Peel, there were 1,200 asthma-related hospitalizations.
- Since 1997, hospitalization rates for asthma in Peel region have been slightly higher than provincial rates.
- In the ten years from 1987 to 1996, there were 85 deaths in Peel due to asthma. Mortality rates for asthma are highest in the population aged 65 years and older.



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## ASTHMA PREVALENCE

Preliminary results from the recently released *2000/01 Canadian Community Health Survey* indicate that among those aged 12 and older, nearly 72,000 (or 8.3%) of Peel residents had been told they had asthma by a health care professional. Proportions for Ontario and Canada were 8.5% and 8.4%, respectively. Similarly, data from the *2001 Peel Community Health Survey* indicated 7% of Peel residents aged 18 years and older had been diagnosed with asthma by a health professional.

Detailed information from the *1996/97 Ontario Health Survey* showed over half (55% for Peel and 58% for Ontario) of respondents with self-reported asthma had asthma symptoms or asthma attacks in the previous 12 months. Over three-quarters of respondents reported using asthma medications such as inhalers, nebulizers, pills, liquids or injections in the past year (76% for Peel and 78% for Ontario), and 74% of those with asthma in Peel reported asthma medication use in the past month (70% in Ontario). Overall, 5% of the Peel population currently use asthma medication to control their illness, a proportion similar to that found in Ontario and Canada.<sup>7</sup>

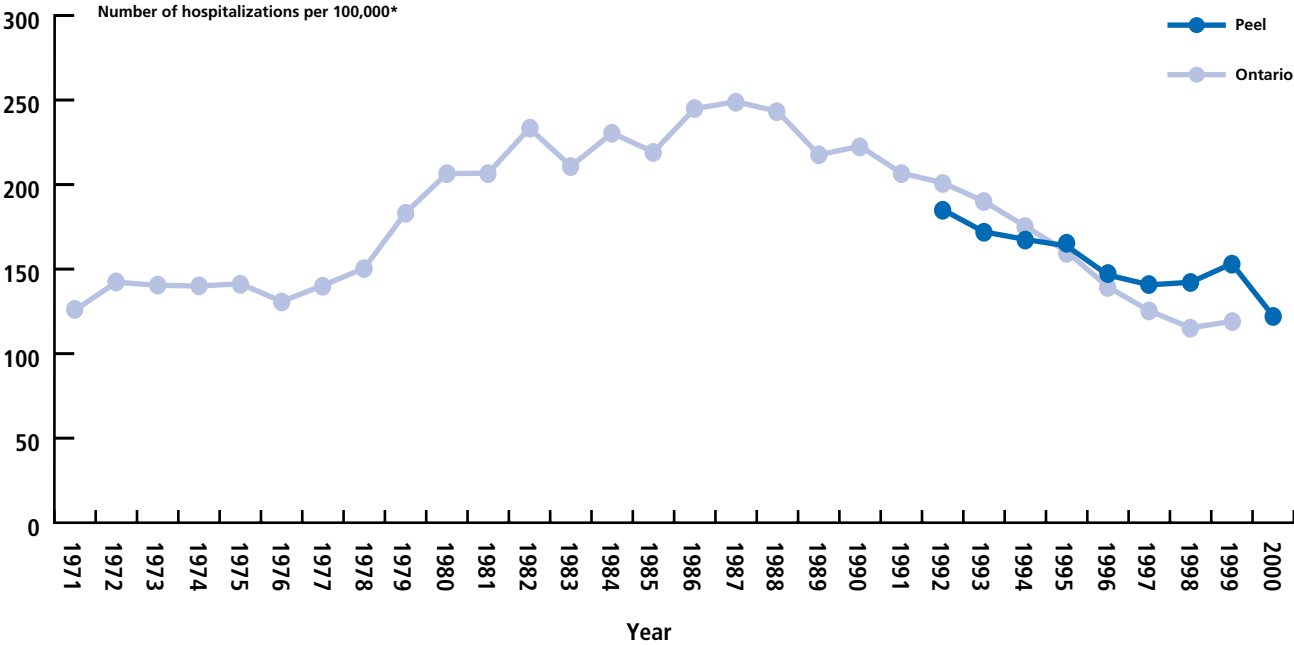
## HOSPITALIZATION DUE TO ASTHMA

Hospital statistics are collected for the number of times people enter and subsequently leave hospital with a diagnosis of asthma. Although these statistics do not tell us whether one person entered hospital numerous times, or numerous people entered once, they nevertheless provide an indicator of the burden of illness due to asthma.

In Ontario, hospitalization rates for asthma increased from the early 1970s to the late 1980s (see Figure 2). Since that time, rates have declined back to levels seen in the early 1970s. This decline may reflect improved control of the disease by asthmatics and their caregivers, reduced availability of hospital beds or increased use of outpatient management approaches.

From 1995 to 2000, rates of hospitalization for asthma were slightly higher in Peel than in Ontario. Rates of hospitalization for asthma showed a more pronounced decline in Ontario than in Peel over this time period.

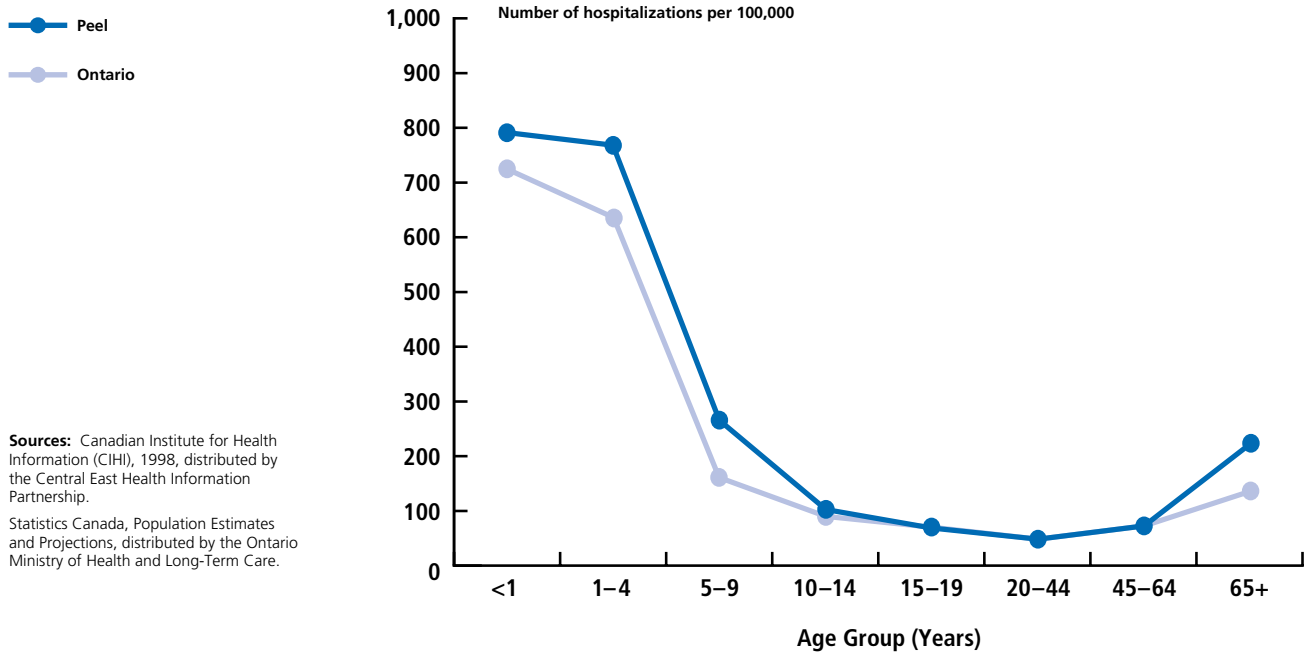
**Figure 2: Hospitalization for Asthma, Ontario and Region of Peel, 1971–2000**



Sources: Ontario data from Centre for Chronic Disease Prevention and Control, Health Canada, using Canadian Institute for Health Information data for the years 1971–1999. Peel data from Northern Health Information Partnership (1998), Hospital Morbidity Rates Program Version 2.2., Provincial Health Planning Database, for the years 1992–2000.  
 \* Standardized to 1991 Canadian population

In 2000, there were 1,200 asthma-related hospitalizations in Peel. In 1998, asthma was the leading cause of hospitalization among children aged one to nine years and the second-leading cause among children 10–19 years of age in both Peel and Ontario.<sup>8</sup> Age-specific hospitalization rates for 1998 were highest in the younger age groups (ages one to nine years) and in those aged 65 years and older (see Figure 3). These patterns were similar in both Peel and Ontario.

**Figure 3: Hospitalization for Asthma by Age Group, Region of Peel and Ontario, 1998**

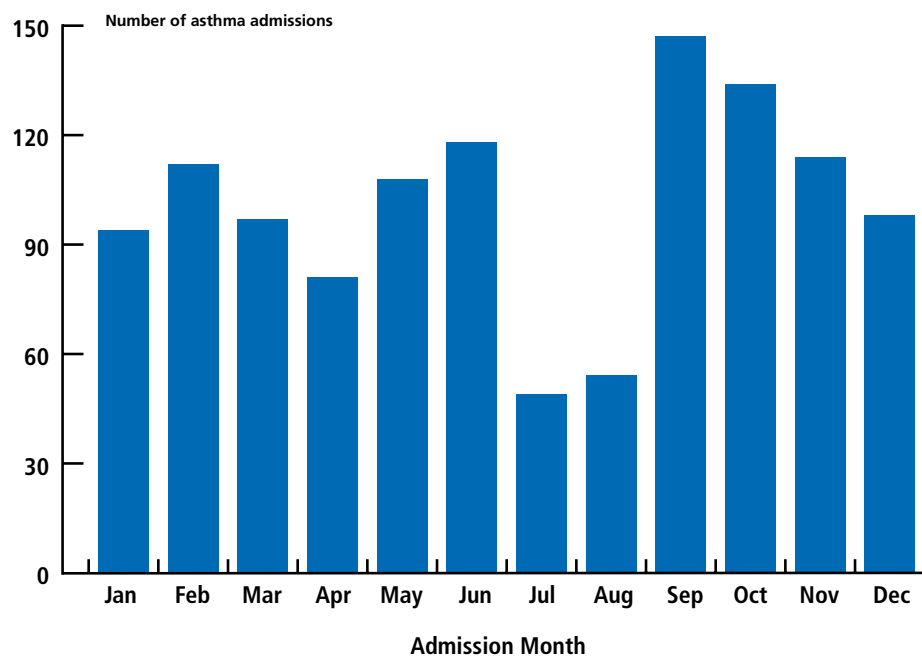


**Sources:** Canadian Institute for Health Information (CIHI), 1998, distributed by the Central East Health Information Partnership.  
 Statistics Canada, Population Estimates and Projections, distributed by the Ontario Ministry of Health and Long-Term Care.

Although not shown, hospitalization rates were similar for males and females in both Peel and Ontario for the period between 1995 and 1998.

An analysis of hospital separation data by date of admission was conducted to determine whether any seasonal variations were apparent. Peel data for 2000 are shown in Figure 4 (see following page). These data show a trough during the summer months of July and August, followed by a large peak in the autumn months of September and October. Although not depicted here, an analysis of the years 1997 to 1999 showed a similar trend.

**Figure 4: Hospitalization for Asthma by Month of Admission, Region of Peel, 2000**



**Source:** Hospital Separations, Canadian Institute for Health Information (CIHI), 2000, obtained through the Provincial Health Planning Database, Ontario Ministry of Health and Long-Term Care

Similar findings have been reported in a previous Canadian study<sup>3</sup>, as well as in a recent study of the seasonal variation of asthma hospitalization in Ontario between 1988 and 2000.<sup>9</sup> The authors of the most recent survey report that a summer trough and fall peak have been documented in countries around the world that have different climates, levels of air pollution and types of air-borne allergens than those found in Canada.

One possible explanation for this widely observed seasonal pattern is the role of viral respiratory infections. The authors of this study propose that the synergistic effect of children returning to school, with increased exposure to respiratory viruses in indoor settings, as well as exposure to fall allergens, could explain the regular peak in asthma hospitalizations in September and October.<sup>9</sup> However, further research is needed to confirm this hypothesis.

The authors also suggested that the increased rates among pre-school children might be the result of exposure to respiratory viruses transmitted from their school-age siblings<sup>9</sup> or from their return to day care settings following summer absences.

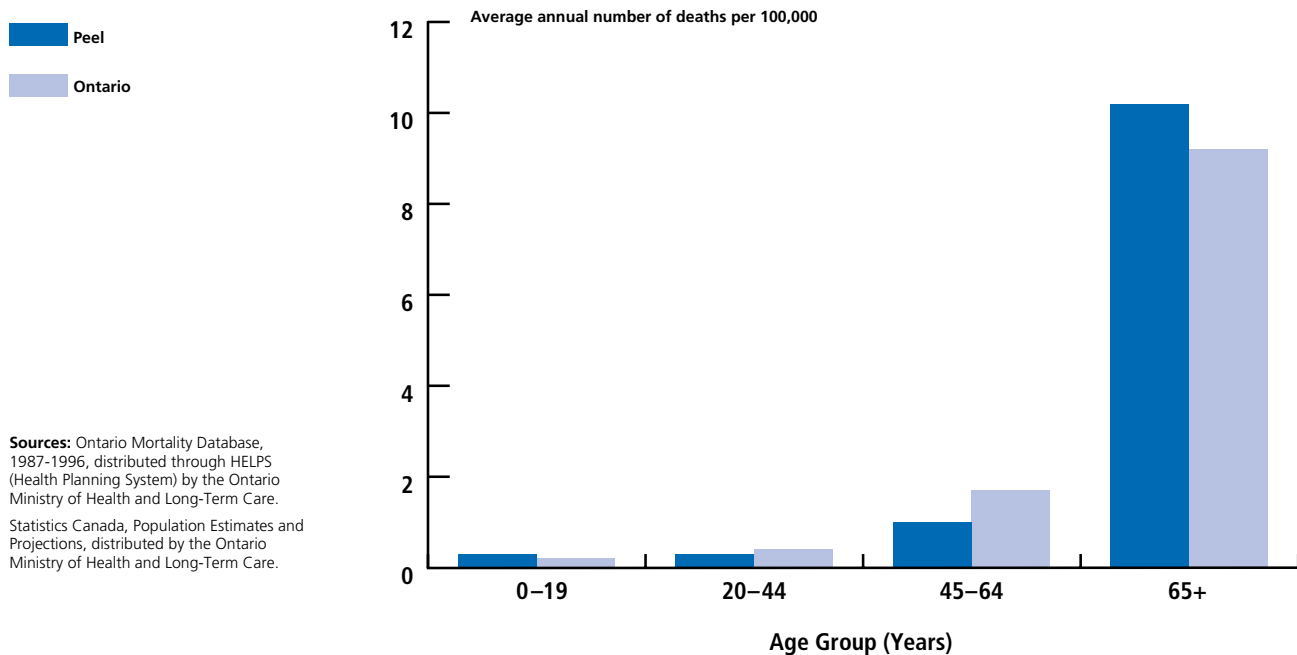
## MORTALITY DUE TO ASTHMA

Between 1987 and 1996, there were 85 deaths due to asthma in Peel, for an average annual age-adjusted rate of 1.7 deaths per 100,000 population. In Ontario, there were 1,712 asthma deaths over this same period, yielding a rate of 1.6 deaths per 100,000 population per year.

In Peel and Ontario, age-specific asthma mortality rates were highest for those aged 65 and older (see Figure 5).

Although not shown, rates of death due to asthma were slightly higher among females than males in both Peel and Ontario. From 1987 to 1996, the average annual age-adjusted asthma death rate for Peel females was 1.8 per 100,000, compared to 1.6 per 100,000 for males. This finding was similar to rates for Ontario at 1.7 deaths per 100,000 for females and 1.5 deaths per 100,000 for males.

**Figure 5: Asthma Related Deaths by Age Group, Region of Peel and Ontario, 1987–1996 Combined**



**Sources:** Ontario Mortality Database, 1987-1996, distributed through HELPS (Health Planning System) by the Ontario Ministry of Health and Long-Term Care. Statistics Canada, Population Estimates and Projections, distributed by the Ontario Ministry of Health and Long-Term Care.

# Asthma Risk Factors and Triggers



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## HIGHLIGHTS

- Factors that increase the likelihood asthma will develop are known as risk factors. Risk factors include family history of asthma and atopy, and early exposure to dust mites, tobacco smoke and other airborne substances. Breastfeeding appears to reduce the likelihood of developing asthma.
  - Factors that can provoke asthma symptoms in persons with asthma are called triggers. Colds or infections, exercise, tobacco smoke, dust and pollen were the top five asthma triggers found in a national study.
- 

## INTRODUCTION

Research has identified factors that increase the likelihood of the development of asthma or which provoke asthma symptoms. These are known as risk factors and triggers, respectively.

## RISK FACTORS FOR ASTHMA

A number of factors are associated with an increased likelihood of developing asthma. Examples of specific risk factors for asthma are described below:

- Sex— young boys appear to develop asthma more often than young girls. This situation reverses with age as more adult women than men develop asthma.<sup>2</sup>
- Parent history of asthma, especially if the parent is the mother.<sup>2</sup>
- Atopy— a greater than usual immune response to foreign substances.
- Fetal exposure to maternal smoking and exposure of infants and young children to second-hand smoke.<sup>2</sup>
- An infant feeding method other than breastfeeding.<sup>10</sup>
- Low income—it is not clear whether the higher prevalence among this group is a function of other factors such as smoking, diet, residential status or work exposures.<sup>2</sup>
- Exposure to dust mites— one study found a continuous dose-response relationship between the concentration of dust mites and the risk of developing childhood asthma. This study provides evidence that infant exposure to the mite allergen may be an important factor in inducing the onset of asthma.<sup>12</sup>
- Bronchitis or allergies in childhood—these may be risk factors, as more children with these conditions are later diagnosed with asthma.<sup>1</sup> However, the similarities between these conditions make them difficult to differentiate, so an initial diagnosis of bronchitis might in fact be the early stages of asthma.

## ASTHMA TRIGGERS

Factors that induce or worsen symptoms of asthma are called triggers. Triggers differ between individuals and may change over time. Triggers can be divided into three broad categories: allergens, irritants and those that are neither allergen nor irritant.

Asthma allergens include things such as animal dander, dust mites, pollen, mould and plants.<sup>5</sup> People with asthma react to allergens when their immune systems have been ‘sensitized’ to them. The effects of allergens on asthma symptoms are typically more severe than effects from irritants.<sup>13</sup>

Irritants are substances that can affect anyone but may cause asthma symptoms in people with asthma. These reactions are not the result of an immune response. Irritants include things such as paint fumes and other strong odours, air pollutants, cold air and high humidity.<sup>13</sup> Tobacco smoke in indoor environments and in vehicles is a common asthma trigger, as is ozone, a common outdoor air pollutant.

Other asthma triggers that are neither allergens nor irritants include bacterial or viral respiratory infections, medications and exercise.<sup>1,2</sup>

Indoor air quality is a factor in the development and persistence of asthma symptoms because of the types of allergens and irritants found indoors and the amount of time spent indoors either at home, at school or in the workplace. Canadian children and adults spend the majority of their time indoors.<sup>14</sup>

The most common asthma triggers as identified through the *1996/97 National Population Health Survey—Asthma Supplement* are shown in Table 1 (*see following page*).

Overall, the top five triggers for asthma symptoms found in this survey were colds or infections, exercise, tobacco smoke, dust and pollen. Although the list of triggers varied by age group, colds or infections and tobacco smoke ranked among the top three triggers in each age group.



**Table 1—Prevalence of Asthma Triggers among Those Diagnosed with Active Asthma, by Age Group, Canada, 1996–1997**

Asthma Triggers	Age Group				Total
	2–19 Years	20–34 Years	35–64 Years	65+ Years	
Colds/infection	84	81	76	78	80
Exercise	68	72	58	54	65
Tobacco smoke	55	67	70	73	64
Dust	47	70	70	54	60
Pollen	54	67	67	49	60
Cold air	47	64	68	71	59
Dampness and humidity	52	56	63	61	57
Animals	48	62	54	34	52
Air pollution	38	50	57	58	48
Emotions	40	47	57	54	48
Mould	38	44	56	37	44
Change in temperature	42	35	46	45	42
Feathers	29	39	37	34	34
Perfumes	21	31	46	41	33
Fumes from wood stove	24	25	41	35	30
Food	14*	15	25	NR	18
Medicine	9*	8*	12	NR	10

\* High sampling variability

NR = Not released due to small numbers

Source: The National Asthma Control Task Force. *The prevention and management of asthma in Canada: a major challenge now and in the future*. Ottawa: 2000. (Data—Statistics Canada, 1996/97 National Population Health Survey—Asthma Supplement Survey).

It is interesting to note that of the 47% of children aged five to 19 years surveyed as part of the Canadian childhood asthma study who reported pets were an asthma trigger, 56% had a pet in their home.<sup>6</sup> Additionally, 55% of children with asthma reported being exposed to environmental tobacco smoke and 35% of these children were exposed in their own homes on a regular basis.<sup>6</sup>

Data from the 1996/97 Ontario Health Survey indicated that 28% of Peel residents with asthma were regularly exposed to smoke inside their homes. In addition, over one-quarter of those with asthma in Peel were current smokers themselves (26% in Peel and 27% in Ontario).

# Air Pollution and Asthma

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## HIGHLIGHTS

- In 2001 in Peel, an estimated 58 hospitalizations for asthma were attributed to air pollution. This is equivalent to nearly 5% of all asthma hospitalizations.
- Additionally, an estimated 172,000 “asthma symptom days” were attributed to air pollution in Peel in 2001.
- In 2001 in Peel, annual health care costs for hospital admissions and minor illnesses related to asthma were estimated to be over \$2.5 million.



## INTRODUCTION

Outdoor air quality is affected by smog, which is composed of ground level ozone and fine particulate matter. Ozone is a respiratory irritant, formed when nitrogen oxides, volatile organic compounds and oxygen react with sunlight.<sup>15,16</sup> The formation of ozone is dependent upon weather conditions and levels of air pollutants.<sup>16</sup> As a result, the Ontario smog season usually extends from May to September, with ozone levels being highest between noon and early evening on hot, sunny days.<sup>16</sup> Hot, dry weather can also result in increases in fine particulate matter that is inhalable, such as sulphur particles.

A number of studies provide strong evidence that air pollutants such as ground level ozone, airborne particles and acid aerosols are linked to reduced lung function in children, increased hospitalization due to respiratory and cardiac diseases, and increased mortality. Some studies have specifically examined the relationship between air pollution and asthma:

- A 1997 study found that “air pollution was significantly and consistently correlated with acute asthma exacerbations, chest symptoms and lung function decrements in asthmatic individuals”.<sup>17</sup>
- There is strong North American evidence of an increased number of emergency room visits for asthma and respiratory illness related to ground level ozone.<sup>18</sup>
- Finally, there is evidence that PM<sub>2.5</sub> (particulate matter less than 2.5 micrometres in average diameter), PM<sub>10</sub> (particulate matter less than 10 micrometres in average diameter) and particulate sulphates are related to increased respiratory symptoms, lost school and work days, restricted activity, asthma attacks, emergency room visits, hospital admissions and death.<sup>19</sup>

## THE IMPACT OF AIR POLLUTION AND ASTHMA IN PEEL

In 2000, the Ontario Medical Association created a model for estimating the level of health problems and associated health care costs that could be attributed to air pollution using available scientific evidence on the relationship between air pollution and illness. Using the Ontario Medical Association software tool called Illness Costs of Air Pollution (ICAP) and Peel-specific air pollution data for both ozone and particulate matter (PM<sub>10</sub>) for 1999, estimates of asthma illness and health care costs attributable to air pollution were made.

In 2001 in Peel, it is estimated that 58 hospital admissions for asthma were attributable to air pollution. This number represents approximately 4.7% of all asthma hospital admissions, a proportion that is similar to that for Ontario (5.6%, based on a total of 610 asthma-related hospital admissions attributed to air pollution).<sup>20</sup>

There were also over 172,000 “asthma symptom days” estimated as attributable to air pollutants in Peel in 2001. An asthma symptom day is counted when a person diagnosed with asthma has increased symptoms (wheezing, chest tightness and/or difficulty breathing) on a given day. Every asthma symptom day due to air pollution experienced by every asthmatic individual in Peel is then added together to obtain the overall annual total.

In 2001 in Peel, health care costs for asthma related hospital admissions and minor illnesses, attributable to air pollution, were estimated to be over \$2.5 million.

## Summary

Asthma is one of the most common chronic illnesses in Canada, affecting 10% of children and 5% of adults. In Peel region, 8.3% of respondents from the *2000/01 Canadian Community Health Survey* reported that they had been diagnosed with asthma by a health professional. The prevalence of asthma in children is increasing.

Asthma is the leading cause of hospitalization in Peel children under 10 years of age and the second most common cause for those 10–19 years old. Although overall rates of hospitalization for asthma have been declining over the past 15 years, hospitalization rates for Peel have been higher than provincial rates since 1997. In Peel between 1987 and 1996, there were 85 asthma-related deaths, mostly in the elderly.

There are a number of factors that have been found to increase the likelihood of the development of asthma or that contribute to the development of asthma symptoms. Many of these factors, including environmental tobacco smoke and air pollution, can be modified by effective public health programs and healthy public policy.

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# Peel Health Facts

## POPULATION

### Census Population — 2001, Region of Peel and Municipalities

	Mississauga	Brampton	Caledon	Peel
Male	302,190	161,590	25,275	489,055
Female	310,735	163,840	25,320	499,890
<b>Total</b>	<b>612,925</b>	<b>325,425</b>	<b>50,595</b>	<b>988,950</b>

Source: Statistics Canada, Census of Canada 2001.

## LIFE EXPECTANCY

### Life Expectancy (in years) at Birth by Gender, Region of Peel and Ontario, 1999

	Peel	Ontario
Males	78.6	76.6
Females	82.8	81.8

Source: 1999 Deaths, Statistics Canada Vital Statistics Database, distributed by the Health Planning Branch of the Ontario Ministry of Health and Long-Term Care. Life Table Template distributed by the Central East Health Information Partnership (CEHIP).

## SELECTED REPRODUCTIVE HEALTH INDICATORS

### Live Births, Region of Peel and Ontario, 1999

	Number	Crude Birth Rate*
Peel	13,195	13.5
Ontario	130,734	11.4

\* rate per 1,000 population

Source: 1999 Live Births, Statistics Canada Vital Statistics Database, distributed by the Health Planning Branch of the Ontario Ministry of Health and Long-Term Care.

### Infant Mortality, Region of Peel and Ontario, 1999

	Number	Infant Mortality Rate*
Peel	62	4.7
Ontario	701	5.4

\* rate per 1,000 live births

Source: 1999 Deaths, Statistics Canada Vital Statistics Database, distributed by the Health Planning Branch of the Ontario Ministry of Health and Long-Term Care.

## TOP 15 CAUSES OF DEATH IN MEN

Deaths by Selected Leading Causes,  
Region of Peel and Ontario, 1999

Rank	Cause of Death	Peel #	Peel %	Ontario %
1	Ischemic heart disease	366	19.8	22.5
2	Lung cancer	160	8.7	8.4
3	All other heart disease and diseases of the arteries, arterioles and capillaries	111	6.0	6.7
4	Stroke (cerebrovascular disease)	106	5.7	5.8
5	Colorectal cancer	75	4.1	3.1
6	Chronic obstructive pulmonary disease	74	4.0	4.4
7	Diabetes mellitus	71	3.9	3.0
8	Leukemia and lymphoma	63	3.4	3.0
9	Pneumonia	56	3.0	3.7
10	Prostate cancer	48	2.6	3.2
11	Suicide	37	2.0	1.9
12	Chronic liver disease and cirrhosis	35	1.9	1.4
13	Motor vehicle traffic collisions	33	1.8	1.4
14	Accidental falls	25	1.4	1.2
15	Liver cancer	19	1.0	0.8
	Other Causes	565	30.6	29.5
	<b>ALL CAUSE TOTAL</b>	<b>1,844</b>	<b>100.0</b>	<b>100.0</b>

## TOP 15 CAUSES OF DEATH IN WOMEN

Deaths by Selected Leading Causes,  
Region of Peel and Ontario, 1999

Rank	Cause of Death	Peel #	Peel %	Ontario %
1	Ischemic heart disease	265	14.5	19.5
2	Stroke (cerebrovascular disease)	158	8.7	8.7
3	All other heart disease and diseases of the arteries, arterioles and capillaries	146	8.0	8.2
4	Breast cancer	112	6.1	4.5
5	Lung cancer	94	5.2	5.8
6	Pneumonia	88	4.8	4.3
7	Chronic obstructive pulmonary disease	63	3.5	3.7
8	Colorectal cancer	55	3.0	2.8
9	Diabetes mellitus	55	3.0	3.1
10	Leukemia and lymphoma	48	2.6	2.6
11	Dementia	37	2.0	1.7
12	Accidental falls	34	1.9	1.7
13	Hypertensive disease	30	1.6	0.8
14	Motor vehicle traffic collisions	26	1.4	0.7
15	Suicide	18	1.0	0.6
	Other Causes	596	32.7	31.3
	<b>ALL CAUSE TOTAL</b>	<b>1,825</b>	<b>100.0</b>	<b>100.0</b>

Source: 1999 Deaths, Statistics Canada Vital Statistics Database, distributed by the Health Planning Branch of the Ontario Ministry of Health and Long-Term Care.

## TOP 15 CAUSES OF PREMATURE DEATH IN MEN

Potential Years of Life Lost by Selected Leading Causes,  
Region of Peel and Ontario, 1999

Rank	Cause of Death	Peel #	Peel %	Ontario %
1	Ischemic heart disease	2,646	12.8	14.1
2	Lung cancer	1,319	6.4	7.1
3	Suicide	1,289	6.3	7.2
4	Motor vehicle traffic collisions	1,170	5.7	5.9
5	Leukemia and lymphoma	914	4.4	3.7
6	All other heart disease and diseases of the arteries, arterioles and capillaries	901	4.4	4.1
7	Colorectal cancer	736	3.6	2.7
8	Chronic liver disease and cirrhosis	624	3.0	2.3
9	Diabetes mellitus	396	1.9	2.1
10	Accidental falls	371	1.8	0.9
11	Stroke (cerebrovascular disease)	366	1.8	2.4
12	Accidental poisoning	327	1.6	1.8
13	Skin cancer	258	1.3	0.9
14	Prostate cancer	215	1.0	1.0
15	Chronic obstructive pulmonary disease	201	1.0	1.3
	Other Causes	8,867	43.0	42.5
	<b>ALL CAUSE TOTAL</b>	<b>20,600</b>	<b>100.0</b>	<b>100.0</b>

## TOP 15 CAUSES OF PREMATURE DEATH IN WOMEN

Potential Years of Life Lost by Selected Leading Causes,  
Region of Peel and Ontario, 1999

Rank	Cause of Death	Peel #	Peel %	Ontario %
1	Breast cancer	1,489	10.5	9.2
2	Lung cancer	906	6.4	8.2
3	Motor vehicle traffic collisions	814	5.8	3.8
4	Ischemic heart disease	610	4.3	7.0
5	All other heart disease and diseases of the arteries, arterioles and capillaries	572	4.1	4.3
6	Stroke (cerebrovascular disease)	560	4.0	3.4
7	Suicide	493	3.5	3.1
8	Leukemia and lymphoma	454	3.2	3.6
9	Colorectal cancer	441	3.1	2.9
10	Pneumonia	317	2.2	1.8
11	Chronic obstructive pulmonary disease	191	1.4	1.8
12	Cervical cancer	185	1.3	1.1
13	Diabetes mellitus	182	1.3	2.0
14	Chronic liver disease and cirrhosis	152	1.1	1.4
15	Liver cancer	146	1.0	0.6
	Other Causes	6,617	46.8	45.8
	<b>ALL CAUSE TOTAL</b>	<b>14,129</b>	<b>100.0</b>	<b>100.0</b>

Potential years of life lost (PYLL) is a measure of premature death. PYLL is calculated by subtracting the age at death from 75, which gives greater weight to deaths occurring at younger ages.

Source: 1999 Deaths, Statistics Canada Vital Statistics Database, distributed by the Health Planning Branch of the Ontario Ministry of Health and Long-Term Care.

## TOP 15 CAUSES OF HOSPITALIZATION IN MEN

### Hospital Separations by Selected Leading Causes, Region of Peel and Ontario, 2000

Rank	Cause of Hospitalization	Peel #	Peel %	Ontario %
1	Ischemic heart disease	2,708	8.3	9.2
2	Injury and poisoning	2,386	7.3	8.1
3	All other heart disease and diseases of the arteries, arterioles and capillaries	1,531	4.7	6.0
4	Chronic obstructive pulmonary disease	947	2.9	2.9
5	Pneumonia and influenza	770	2.4	3.1
6	Arthropathies	699	2.1	2.1
7	Stroke (cerebrovascular disease)	547	1.7	2.4
8	Affective psychoses	350	1.1	1.4
9	Schizophrenia	346	1.1	1.2
10	Diabetes mellitus	265	0.8	1.1
11	Prostate cancer	258	0.8	0.9
12	Leukemia and lymphoma	228	0.7	0.8
13	Colorectal cancer	199	0.6	0.9
14	Lung cancer	176	0.5	0.8
15	Benign neoplasms	149	0.5	0.4
	Other causes	21,102	64.6	58.7
	<b>ALL CAUSE TOTAL</b>	<b>32,661</b>	<b>100.0</b>	<b>100.0</b>

## TOP 15 CAUSES OF HOSPITALIZATION IN WOMEN

### Hospital Separations by Selected Leading Causes, Region of Peel and Ontario, 2000

Rank	Cause of Hospitalization	Peel #	Peel %	Ontario %
1	Labour, delivery and associated complications	11,709	24.4	17.0
2	Complications of pregnancy	2,385	5.0	4.8
3	Injury and poisoning	2,068	4.3	6.0
4	Ischemic heart disease	1,426	3.0	4.0
5	All other heart disease and diseases of the arteries, arterioles and capillaries	1,318	2.8	4.1
6	Benign neoplasms	955	2.0	1.8
7	Chronic obstructive pulmonary disease	904	1.9	2.2
8	Arthropathies	763	1.6	2.0
9	Pneumonia and influenza	718	1.5	2.1
10	Affective psychoses	718	1.5	1.8
11	Miscarriage, abortion and complications	688	1.4	1.0
12	Stroke (cerebrovascular disease)	575	1.2	1.8
13	Schizophrenia	268	0.6	0.7
14	Breast cancer	235	0.5	0.9
15	Diabetes mellitus	232	0.5	0.7
	Other causes	22,936	47.9	49.2
	<b>ALL CAUSE TOTAL</b>	<b>47,898</b>	<b>100.0</b>	<b>100.0</b>

Source: Hospital Separations, Canadian Institute for Health Information (CIHI) 2000, obtained from the Provincial Health Planning Database, Ontario Ministry of Health and Long-Term Care.



## TOP 15 EXTERNAL CAUSES OF HOSPITALIZATION IN MEN

### Hospital Separations by Selected Leading Causes, Region of Peel and Ontario, 2000

Rank	Cause of Hospitalization	Peel #	Peel %	Ontario %
1	Accidental falls	946	2.9	3.4
2	Other accidents*	487	1.5	1.5
3	Drugs causing adverse effects	461	1.4	1.9
4	Motor vehicle traffic collisions	324	1.0	0.9
5	Suicide and self-inflicted injury	268	0.8	0.9
6	Assault	98	0.3	0.4
7	Accidental poisoning	76	0.2	0.2
8	Road and air transport accidents	74	0.2	0.7
9	Late effects of accidental injury	44	0.1	0.3
10	Motor vehicle non-traffic accidents	44	0.1	0.2
11	Environmental and natural factors	39	0.1	0.1
12	Foreign body entering eye or other orifice	33	0.1	0.1
13	Undetermined injury	25	0.1	0.2
14	Accident caused by fire and flames	24	0.1	0.1
15	Suffocation, including choking	17	0.1	0.1
	Other causes	2,991	9.2	10.0
	All External Causes	5,951	18.2	20.9
	<b>ALL CAUSE TOTAL</b>	<b>32,661</b>	<b>100.0</b>	<b>100.0</b>

## TOP 15 EXTERNAL CAUSES OF HOSPITALIZATION IN WOMEN

### Hospital Separations by Selected Leading Causes, Region of Peel and Ontario, 2000

Rank	Cause of Hospitalization	Peel #	Peel %	Ontario %
1	Accidental falls	1,306	2.7	3.9
2	Drugs causing adverse effects	664	1.4	1.8
3	Suicide and self-inflicted injury	460	1.0	1.0
4	Motor vehicle traffic collisions	220	0.5	0.5
5	Other accidents*	188	0.4	0.5
6	Accidental poisoning	91	0.2	0.2
7	Late effects of accidental injury	34	0.1	0.2
8	Environmental and natural factors	31	0.1	0.1
9	Assault	27	0.1	0.1
10	Road and air transport accidents	26	0.1	0.2
11	Undetermined injury	26	0.1	0.2
12	Foreign body entering eye or other orifice	17	0.0	0.0
13	Motor vehicle non-traffic accidents	10	0.0	0.0
14	Accident caused by fire and flames	8	0.0	0.0
15	Suffocation, including choking	5	0.0	0.0
	Other causes	2,891	6.0	7.7
	All External Causes	6,004	12.5	16.5
	<b>ALL CAUSE TOTAL</b>	<b>47,898</b>	<b>100.0</b>	<b>100.0</b>

\*Other accidents include: those caused by being struck by, against or between objects or persons; those involving machinery, cutting or piercing objects, firearms, explosive materials, hot, caustic or corrosive materials, electric currents, or radiation; or those resulting from overexertion and strenuous movements or other environmental factors.

Source: Hospital Separations Data 2000, Canadian Institute for Health Information (CIHI), obtained from the Provincial Health Planning Database, Ontario Ministry of Health and Long-Term Care.

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# Data Sources, Methods and Limitations

Data sources used in this report and limitations of the data are described below.

## NATIONAL SURVEYS

### 1996/97 National Population Health Survey, 1998/99 National Population Health Survey and 1996/97 Ontario Health Survey

This survey is conducted nationally by Statistics Canada, with an enhanced sample that provides additional data on Ontario residents. When referring to the Ontario sample, the reference of *1996/97 Ontario Health Survey* is used. Responses to this survey were limited to respondents aged 12 years and older.

### 2000/01 Canadian Community Health Survey

The *2000/01 Canadian Community Health Survey* is conducted nationally by Statistics Canada. Data are available provincially and for specified regions within each province. Responses to this survey were limited to respondents aged 12 years and older.

### 2001 Peel Community Health Survey

Data for the *2001 Peel Community Health Survey* are collected by the Institute of Social Research at York University through the Ontario Rapid Risk Factor Surveillance System project. Responses to this survey were limited to respondents aged 18 years and older.

Data from the national, provincial and local surveys used in this report are all based on self-reports from survey respondents. Self-reported data may be subject to errors in recall, over or under-reporting because of social desirability, or errors from proxy reporting.

## HOSPITALIZATION

Hospitalization data in this report are from the Canadian Institute for Health Information (CIHI). Data for Peel from 1986 to 1992 were obtained from the Ontario Ministry of Health and Long-Term Care, while data for 1995 through 1998 were distributed to Peel Health from the Central East Health Information Partnership (CEHIP). For 1999 and 2000, data were obtained through the Provincial Health Planning Database (PHPDB) initiative at the Ontario Ministry of Health and Long-Term Care.

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Data for Peel and Ontario for the years 1992–2000 were also obtained from an on-line database program available through the Northern Health Information Partnership (NHIP). Historical data for Ontario (1971–1999) were obtained from the Centre for Chronic Disease Prevention and Control at Health Canada.

CIHI data were coded based on the International Classification of Diseases, 9th Revision (ICD-9) system of classifying causes of death and hospital stay, with asthma having the code ICD-9: 493.

Limitations of the hospital separation data include:

- only cases serious enough to require hospital admission are captured,
- these data reflect the cause of stay upon discharge, not at admission,
- people admitted to hospital more than once in a year for the same cause are counted for each hospital stay, not as an individual case
- other reasons, such as factors related to physician referral, screening and admission practices, may explain changes in the data over time.

## **MORTALITY**

Mortality data for this report were from the Mortality Data File, collected by the Ontario Registrar General and distributed to Peel Health through the Health Planning System (HELPS) initiative of the Ontario Ministry of Health and Long-Term Care. At the time this report was prepared, final data were available up to 1997. The death data were coded based on the International Classification of Diseases 9th Revision (ICD-9) system of classifying causes of death and hospital stay, with asthma having the code ICD-9: 493.

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HOSPITALIZATION