

The Burden of Asthma: Can It Be Eased?

The Ontario Record

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The Issue

After cardiovascular disease (34%) and cancer (29%), chronic respiratory disease is responsible for the greatest proportion of chronic disease deaths (4.3%) in Canada. Chronic respiratory disease can significantly reduce health-related quality of life and, unlike cardiovascular disease and cancer, is also highly prevalent in the population.

Asthma is the most common chronic respiratory disease in Canada, accounting for approximately 80% of chronic respiratory disease and affecting 8.4% of the population. Although its prevalence is higher in children, asthma affects persons of all ages. In addition to the negative impact of the illness on individuals, asthma represents a significant burden to society in the form of healthcare use and costs. In 1990, the total cost of asthma in Canada for all ages was estimated to be \$504 million.

In an effort to better understand this sizeable problem at the provincial level, scientists at the Institute for Clinical Evaluative Sciences (ICES) and the Research Institute of the Hospital for Sick Children examined the burden of asthma in Ontario from 1994/95 to 2001/02.

The Study

Ontarians from birth to 39 years of age were identified as having asthma between 1994/95 and 2001/02 by using healthcare administrative databases. Individuals were considered to have asthma if they had at least one



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Canadian Institute for Health Information Discharge Abstract Database (CIHI-DAD) hospitalization record or two Ontario Health Insurance Plan (OHIP) physician billings for asthma in a three-year time period. Healthcare resource use and expenditures were compared between those with and without asthma.

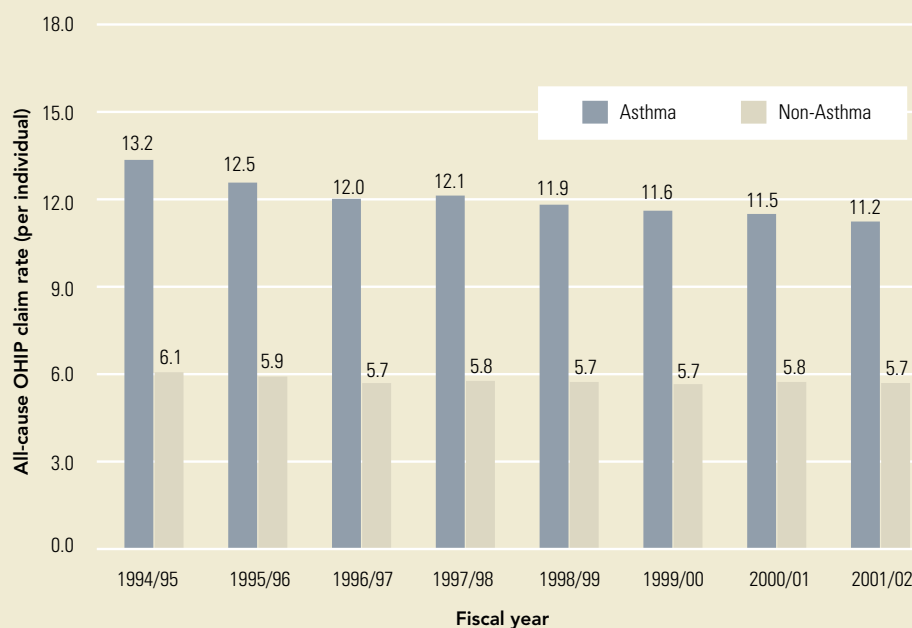
Table 1. Risk of developing asthma before 40 years of age, from a given age, in Ontario

Age (years)	0 (Birth)	6 (School Age)	12 (Early Adolescence)	18 (Late Adolescence)	24 (Early Adulthood)	30 (Adulthood)	36 (Adulthood)
Overall risk* (%)	41.2	25.9	20.0	16.0	12.3	8.2	3.5

*The risk of developing asthma is calculated based on age- and sex-specific asthma incidence and mortality rates for Ontario in 2001, and on life tables based on 1995–1997 all-cause mortality rates.

Data sources: Ontario Health Insurance Plan, Canadian Institute for Health Information, Life tables (Ontario) 1995–1997.

Figure 1. All-cause Ontario Health Insurance Plan (OHIP) claim rate (per individual) in individuals with and without asthma from birth to 39 years of age, in Ontario, 1994–1995 to 2001–2002



Data source: Ontario Health Insurance Plan

Key Findings

Who Has Asthma?

From 1994/95 until 2001/02, the prevalence of asthma in Ontario decreased modestly from 6.3% to 5.8%. The appearance of new asthma cases appeared stable (10–12/1,000 population) from 1997/98 until 2001/02. Asthma prevalence and incidence were greater in males during childhood and greater in females after early adolescence.

What Is the Risk of an Individual Developing Asthma?

An individual in Ontario has a substantial risk (more than two in five) of developing asthma before 40 years of age, decreasing to a one in five risk after 12 years of age (Table 1). The lifetime risk of developing asthma is even higher since asthma can develop after 40 years of age.

What Healthcare Resources Are Being Used by People with Asthma?

There was a large and persisting gap in the overall all-cause outpatient OHIP claim rates between those with and without asthma. Individuals with asthma had six more claims per year

All-cause outpatient claim costs for individuals with asthma were more than \$200 per individual per year higher than for those without asthma.

than did individuals without asthma (Figure 1). This was not completely explained by the additional asthma-specific claims expected in the asthma population. Similar differences were also seen in all-cause hospitalizations.

Family doctors and pediatricians were the front-line providers of asthma care, responsible for approximately 90% of asthma OHIP claims. At the same time, specialists, who have been shown to improve outcomes in people with asthma (e.g., in rates of emergency department visits and hospitalizations), appeared to be underused.

How Much Does Asthma Cost the Healthcare System?

Asthma-specific outpatient expenditures were modest and decreased over the time period studied. However, all-cause outpatient claim costs for individuals with asthma were more than \$200 per individual per year higher than for those without asthma.

What Is the Geographical Variation of Asthma in Ontario?

A modest variation was observed in prevalence and outpatient service use across Ontario Local Health Integration Network regions. There was a nearly four-fold variation in age- and sex-adjusted asthma hospitalization rates across Ontario (2.7–10.3 hospitalizations/100 individuals with asthma) – mostly explained by higher rates in the northwest part of the province. Asthma claims for in-patient and outpatient healthcare use were inversely correlated, so areas with higher outpatient claim rates had lower asthma hospitalization rates.

Discussion

Asthma affects a large proportion of the Ontario population at some point in their lives. Nearly half of the population is likely to receive medical attention for the management of asthma, contributing to substantial productivity loss and economic costs. Because so many individuals are affected, it is not surprising that there are significant healthcare resources dedicated to asthma. The impact is even greater when asthma-related conditions (e.g., upper respiratory tract infections, pneumonia, bronchitis and allergies) are taken into account. Outpatient costs, which only account for a small fraction of the cost of asthma, are also high. Finally, trends in geographical variation suggest that improved outpatient care might prevent hospitalization in parts of the province.

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Future Research

In order to systematically tackle the problem of asthma in Ontario, a number of future research directions are currently planned:

- Expand the study to individuals over 40 years of age and beyond 2001/02
- Explore emergency department visits for asthma more closely
- Explain the large gaps in costs between populations with and without asthma
- Study additional illnesses that affect people with asthma

Easing the Burden

Clearly, asthma is a societal problem that carries a heavy burden. Attempts to reduce the impact of asthma on individual patients, as well as on society as a whole, should include the following:

- Targeting primary care physicians for continuing education in asthma care
- Optimizing the use of specialists
- Developing and implementing effective interventions, asthma education and disease management programs known to improve asthma control, such as recognizing and reducing exposure to asthma triggers, encouraging appropriate medication use and adherence, the use of asthma action plans and self-management strategies, and ensuring patients have follow-up asthma care appointments.

In conclusion, attempts to ease the burden of asthma on society should include (1) ongoing research to inform clinicians and policy makers, (2) the development and implementation of effective disease management and (3) patient education interventions, as well as good policy decisions. **HQ**

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