

# **Prince Edward Island Asthma Trends**

2001-2011

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[www.gov.pe.ca/health](http://www.gov.pe.ca/health)

## ***Key Messages***

The proportion of Islanders who have been diagnosed with asthma in their lifetime (prevalence) rose from 7.9% in 2001 to 11.2% in 2011, an increase of 42% over that ten year period. Currently, more than 1 in 10 Islanders have been diagnosed with asthma. The proportion of Islanders with active asthma (asthma that is regularly being treated by a physician) has remained stable, ranging from 2.5 to 2.8% during the same time period. In 2009, the prevalence of asthma in PEI (10.8%) was similar to the Canadian average (10.6%).

The number of newly diagnosed cases of asthma (incidence) has dropped from a total of 964 newly diagnosed cases in 2001, to 657 new cases in 2011 (from 7.8 new cases per 1,000 Islanders to 5.3 per 1,000). Asthma is most commonly diagnosed in the younger years of life.

In 2011, there were 16,101 Islanders living with asthma. Of these, 3,660 were actively being treated for asthma. The age standardized lifetime prevalence of asthma in females and males was the same (11.2%). The age standardized prevalence of active asthma was also similar in males (2.6%) and females (2.5%), however this varies depending on age. More specifically, active asthma is more common in males until they reach the 20-24 year age group, after which it becomes more common in females.

Active asthma is more prevalent in our younger population. The prevalence of active asthma peaks in 5 to 9 year olds, then gradually decreases until the age of 20, after which the prevalence of active asthma remains stable with increasing age.

The rate of new cases (incidence) diagnosed in children over the years 2001 to 2011 has been declining. The largest decrease has been in children aged 1 to 4, from 35.9 cases per 1,000 children in 2001 to 26.2 per 1,000 children in 2011; however, this remains the age group with the highest rate of new cases.

In 2011, Islanders living with asthma had over 57% more visits to family physicians, 58% more visits to specialists, and 83% more time spent in hospital compared to Islanders who did not have asthma. The all cause mortality rate in Islanders diagnosed with asthma during their lifetime was 73% higher than in Islanders who had not been diagnosed with asthma.



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### **Introduction**

A chronic disease affecting many adults and children in Prince Edward Island (PEI), asthma is the result of hyper-responsive airways leading to chronic airway inflammation and an abnormal narrowing of the airway. The disease is characterized by repeated episodes of wheezing, shortness of breath, chest tightening, and coughing, often worse at night or in the morning. The reduction in airflow responsible for these symptoms is often improved spontaneously or with treatment.<sup>1</sup>

Across the world, there are an estimated 300 million people affected with asthma.<sup>2</sup> It is the most common chronic disease in children. Monitoring the level of asthma in PEI is fundamental to assessing the trend and understanding the burden of asthma on the population.

The purpose of this document is to provide a picture of asthma in PEI with the intention that policymakers, researchers, health practitioners and the general public can make informed public and personal health decisions.

### **Methods Used**

Information for this report is based on the Canadian Chronic Disease Surveillance System (CCDSS)<sup>3</sup>, coordinated by the Public Health Agency of Canada (PHAC). This surveillance system links the Prince Edward Island health insurance registry database with physician billing and hospitalization databases. For an Islander to be considered an asthma case within this surveillance system, a person would have had one hospitalization with a diagnosis of *Asthma* or have had at least two physician visits with a diagnosis of *Asthma* within a two year period. All Islanders over the age of 1 were included in these rates.

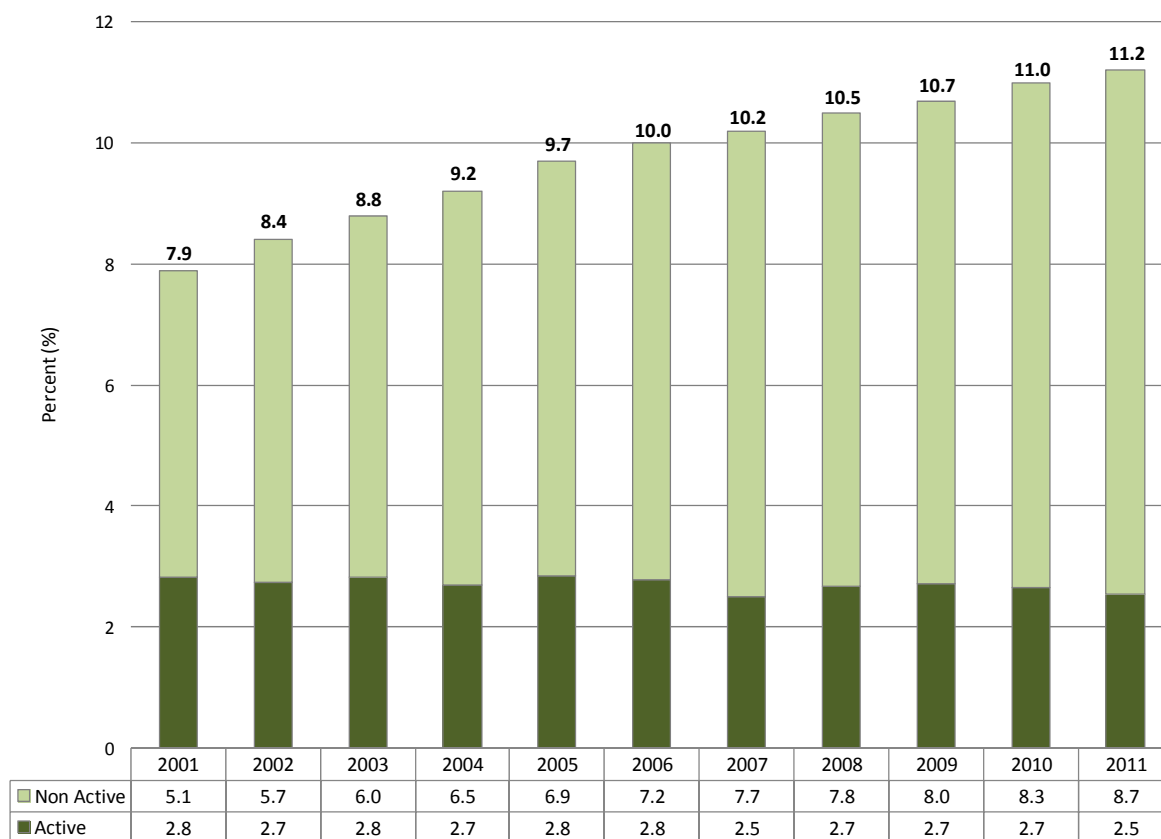
Incidence rate refers to the proportion of newly diagnosed people of all people that previously did not have asthma. As asthma is a chronic disease, once a diagnosis is in place, that person is considered to have asthma for their entire life. Prevalence rate refers to the proportion of all people diagnosed with asthma in the population. Some cases of asthma are very well managed and require less medical attention. Therefore, the prevalence of active cases of asthma can also be measured. Asthma cases contributed to the yearly prevalence of active asthma cases if they had one diagnosis of asthma at the hospital or by a physician during that year.

Prevalence data for other provinces and territories was available from the PHAC through the Chronic Disease Infobase.<sup>4</sup> These numbers were compared with PEI rates to show any differences. The most recent data available for Canada and other provinces and territories was for 2009. For this year, infants under the age of 1 were included in the rate. This differs from the current case definition which excludes Islanders less than 1 year of age. Age standardized rates were used to account for differences in age distributions from place to place and time to time. They are commonly used to compare the rates of disease in PEI to the rates in other provinces or all of Canada.

## People Living with Asthma

The proportion of Islanders who have been diagnosed with asthma (prevalence) rose from 7.9% in 2001 to 11.2% in 2011, an increase of 42% over that ten year period (Figure 1). Because asthma is a chronic disease, the proportion of people diagnosed with asthma tends to increase over time. However, this rate includes all cases, including those mild cases that are very well managed. The proportion of patients with active asthma (at least one diagnosis of asthma by physician visit or hospitalization per year) remained under 3% for each year after 2000.

**Figure 1. Asthma Prevalence by Year and Active Status, Aged 1+, PEI, 2001-2011**

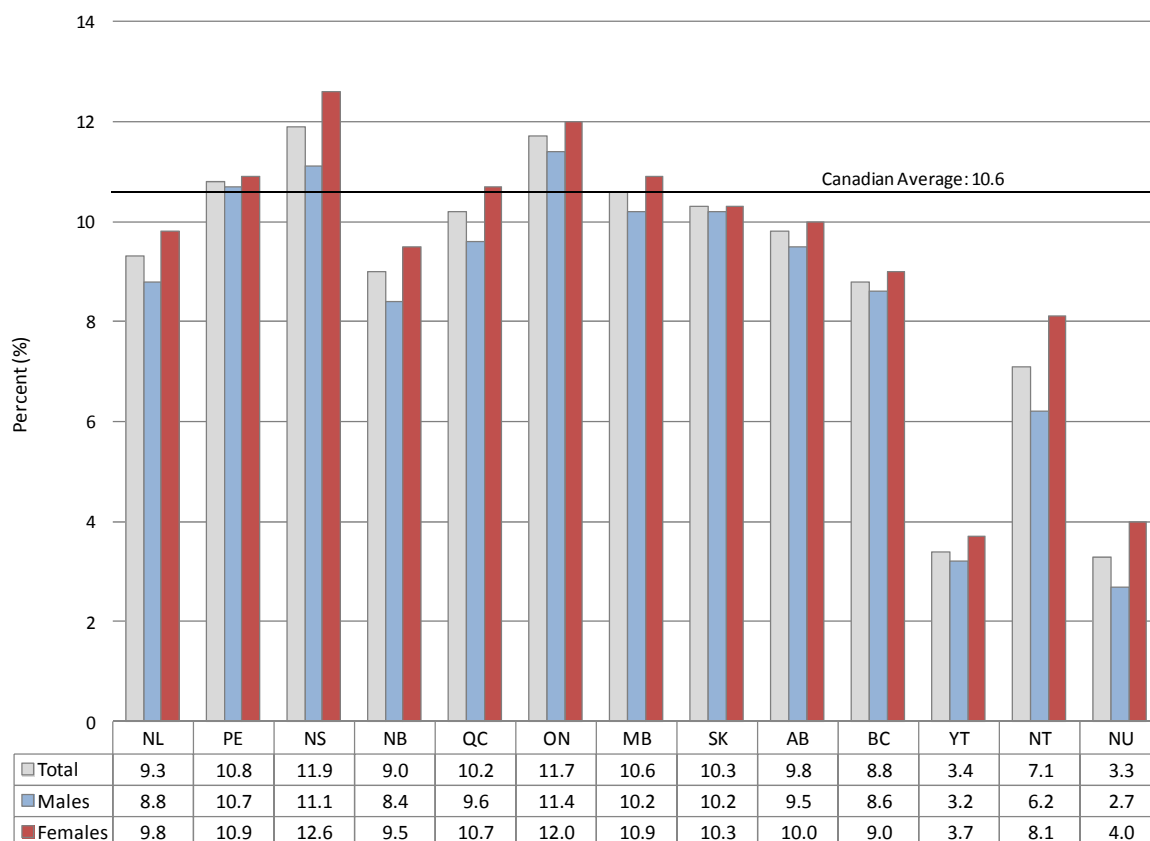


Age standardized



Data obtained from PHAC’s Chronic Disease Infobase Data Cubes<sup>4</sup> were used to compare asthma prevalence rates in PEI with other provinces and territories and the prevalence of asthma in Canada. After adjusting for differences in age distributions between provinces and territories, the prevalence of diagnosed asthma in PEI (10.8%) was similar to the Canadian rate of 10.6% (Figure 2) in 2009. The prevalence of diagnosed asthma is higher in females than in males in all provinces and territories.

**Figure 2. Asthma Prevalence\* by Province and Territory, 2009**



Age standardized

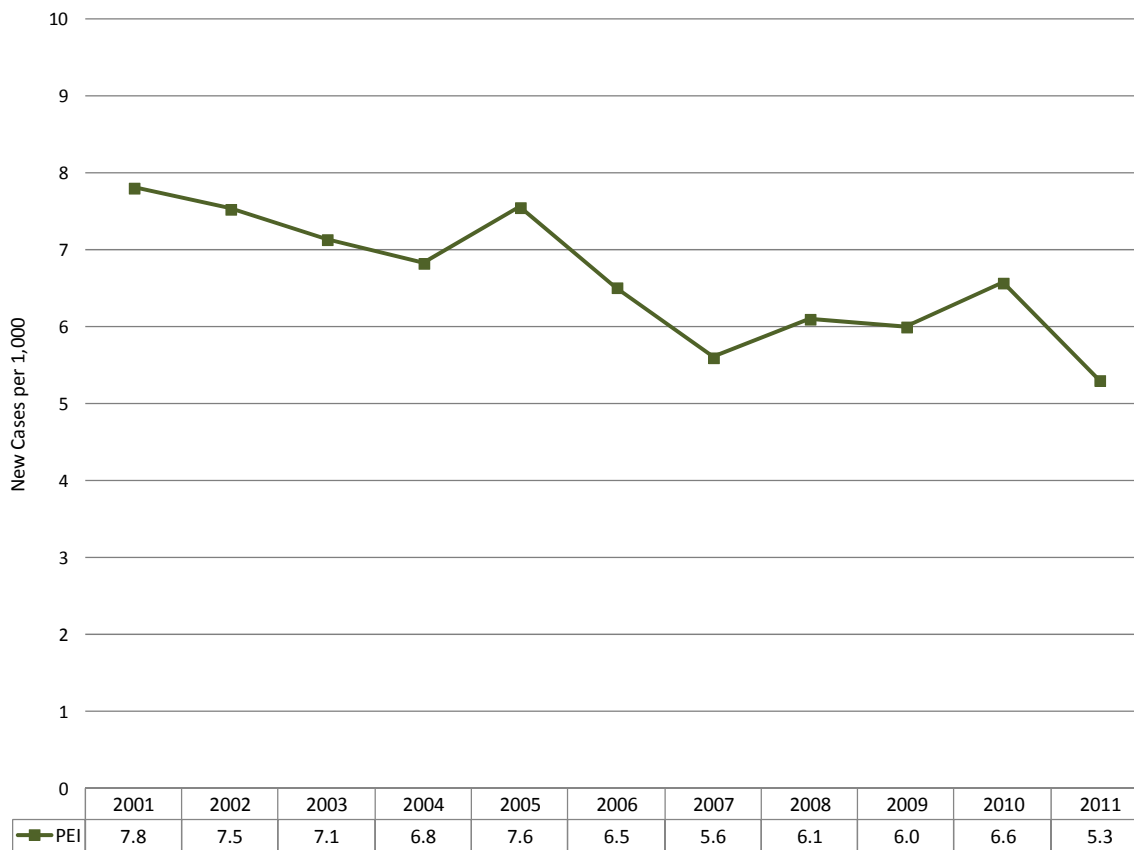
\*The case definition used for the data in this figure differs from the current case definition used for the remainder of this report in that this figure presents the rate in the entire population, whereas the current case definition includes those over the age of 1 only. Data for all provinces and territories including PEI was obtained from the Chronic Disease Infobase.<sup>4</sup>

## People Living With Asthma

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The number of newly diagnosed cases of asthma (incidence) has decreased by 32% over the study period, from a total of 964 newly diagnosed cases in 2001 to 657 new cases in 2011 (from 7.8 new cases per 1,000 Islanders to 5.3 per 1,000) (Figure 3).

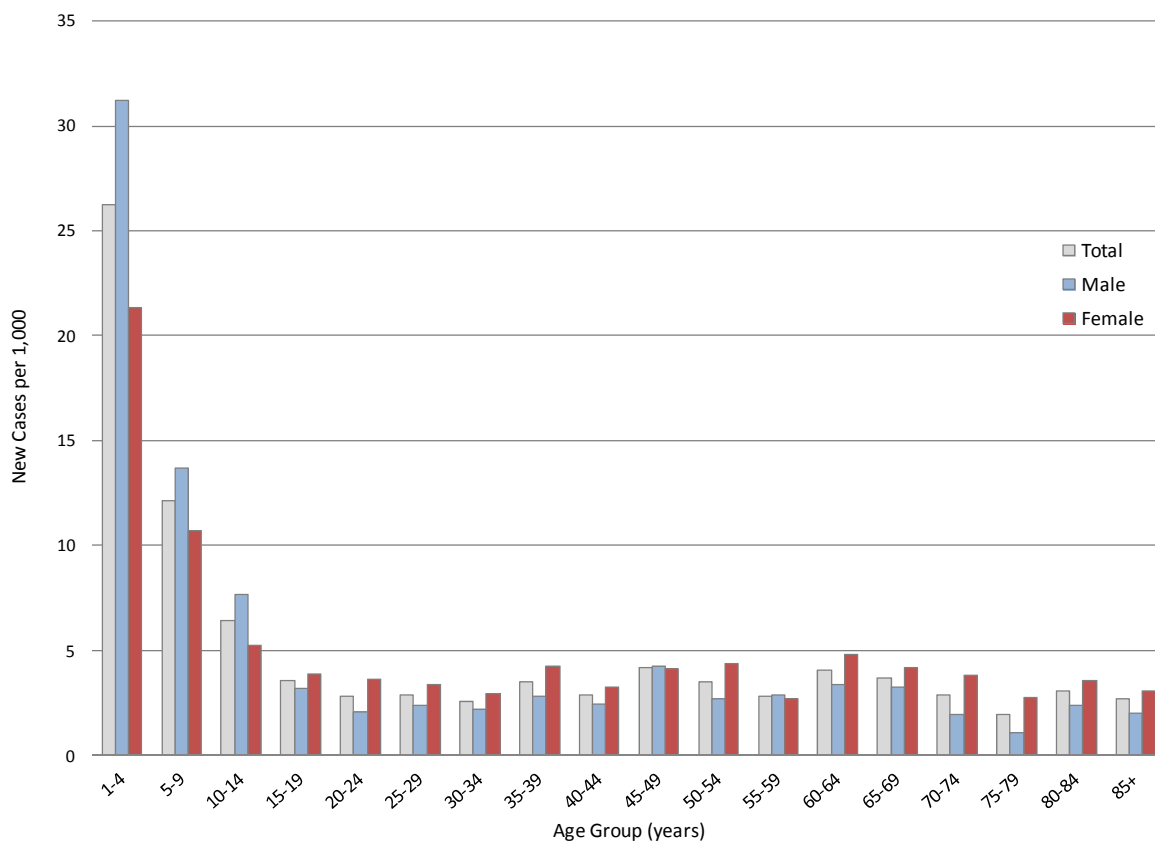
**Figure 3. Asthma Incidence, Aged 1+, PEI, 2001-2011**



Age standardized

Asthma is most commonly diagnosed in the early years of life, with incidence at its highest in 1 to 4 year olds (Figure 4). The incidence of asthma continues to decline steadily and is higher in boys than in girls until approximately 15 years of age, after which the incidence rate stabilizes across increasing age groups, and becomes higher in females than in males for most age groupings.

**Figure 4. Age Specific Asthma Incidence by Sex, Aged 1+, PEI, 2011**

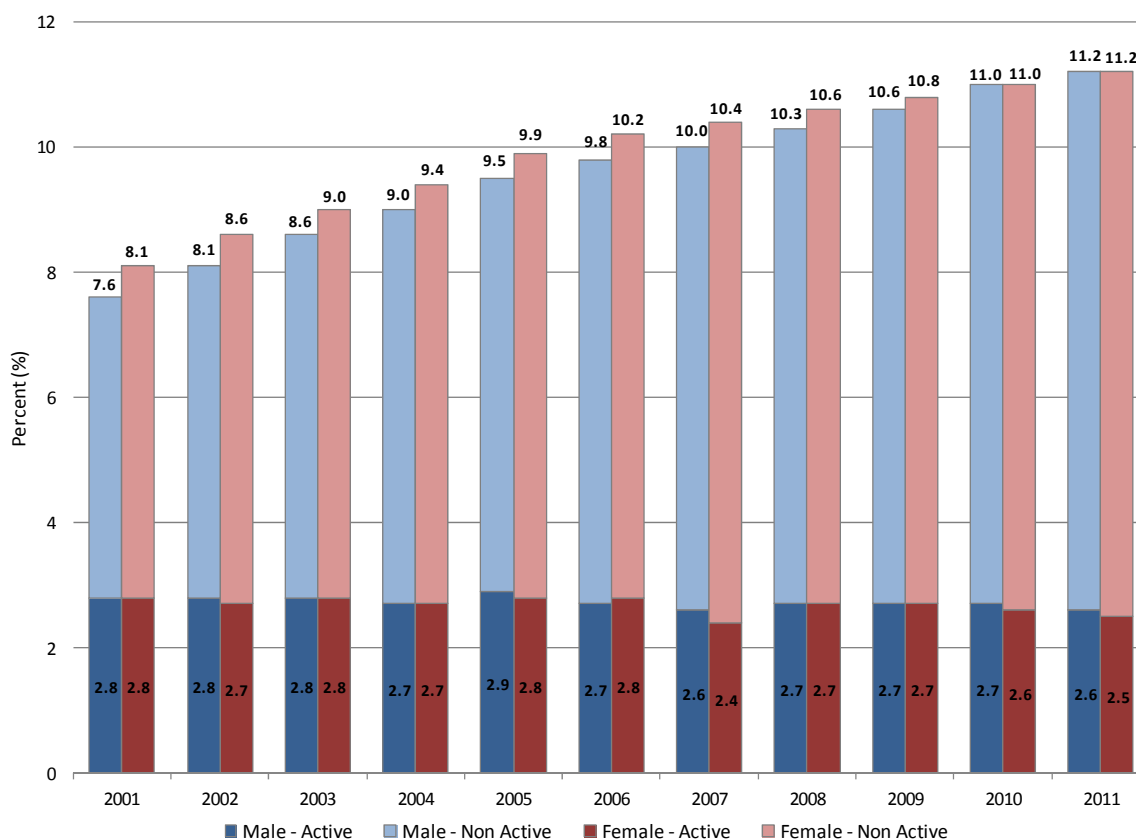


## People Living With Asthma

In 2011, there were 16,101 Islanders living with asthma. The age standardized lifetime prevalence of asthma in females and males was the same (11.2%) (Figure 5). Historically, the prevalence of asthma has been higher in females, however this gap has closed over time. Currently, more than 1 in 10 Islanders over the age of 1 have been diagnosed with asthma.

Of the 16,101 Islanders living with asthma, 3,660 were being actively treated for the disease. The proportion of Islanders being actively treated for asthma has been relatively stable over the past ten years, and is similar in males and females.

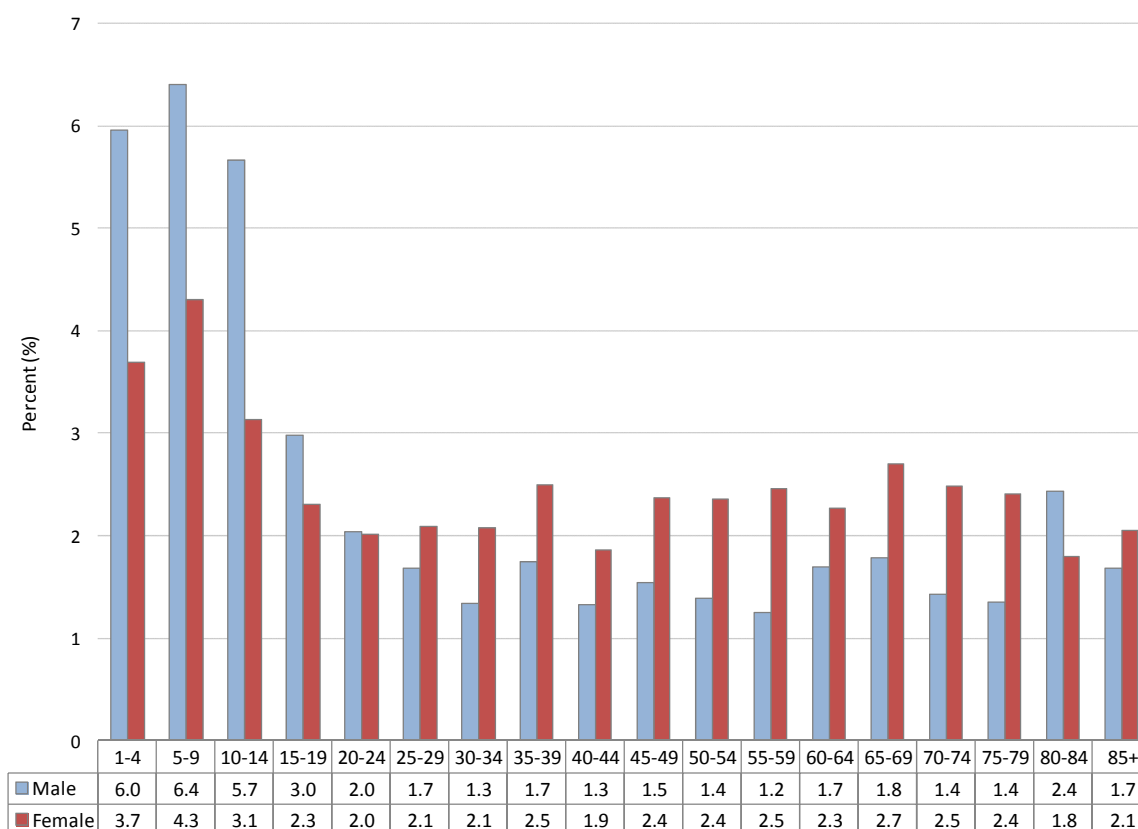
**Figure 5. Asthma Prevalence by Sex, Aged 1+, PEI, 2001-2011**



Age standardized

Active asthma is more prevalent in our younger population. The prevalence of active asthma peaks in 5-9 year olds then gradually decreases until the age of 20, after which the rate remains relatively stable (Figure 6). Active asthma is more common in males until they reach the 20-24 year age group, after which it becomes more common in females.

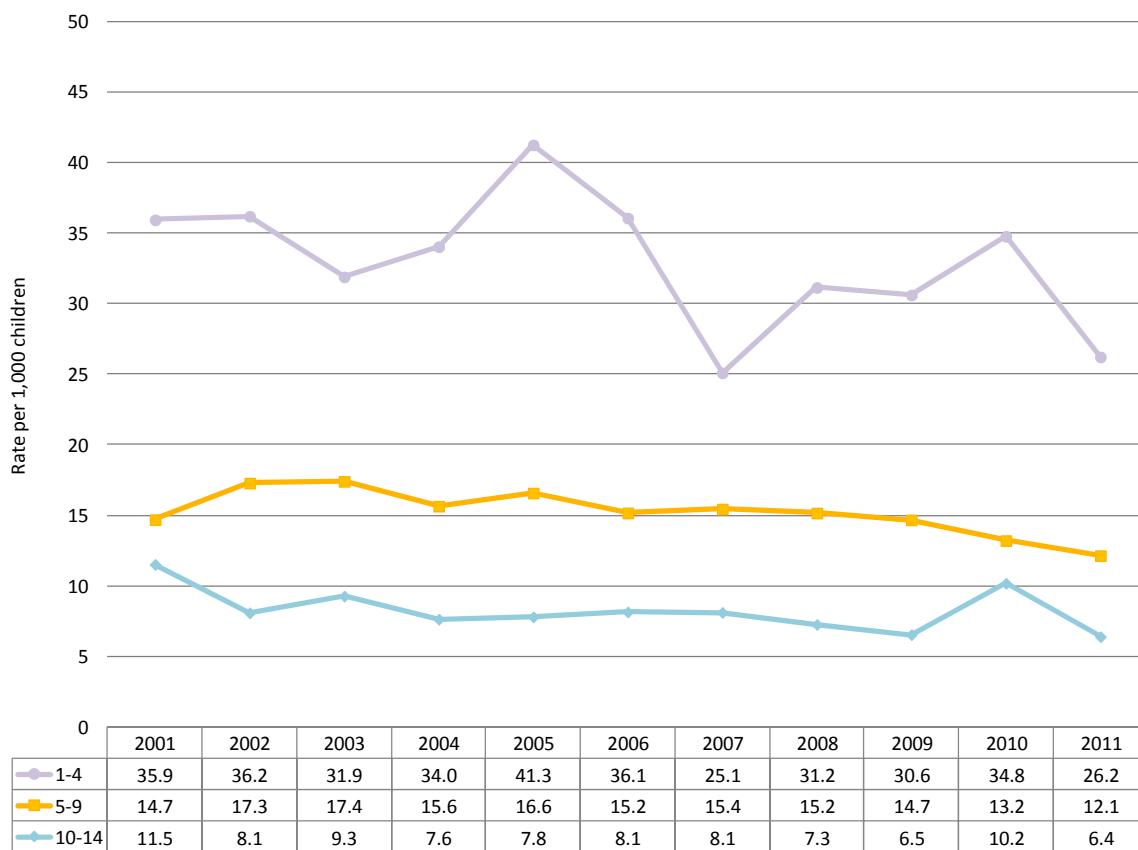
**Figure 6. Age Specific Active Asthma Prevalence by Sex, PEI, 2011**



### Children Living with Asthma

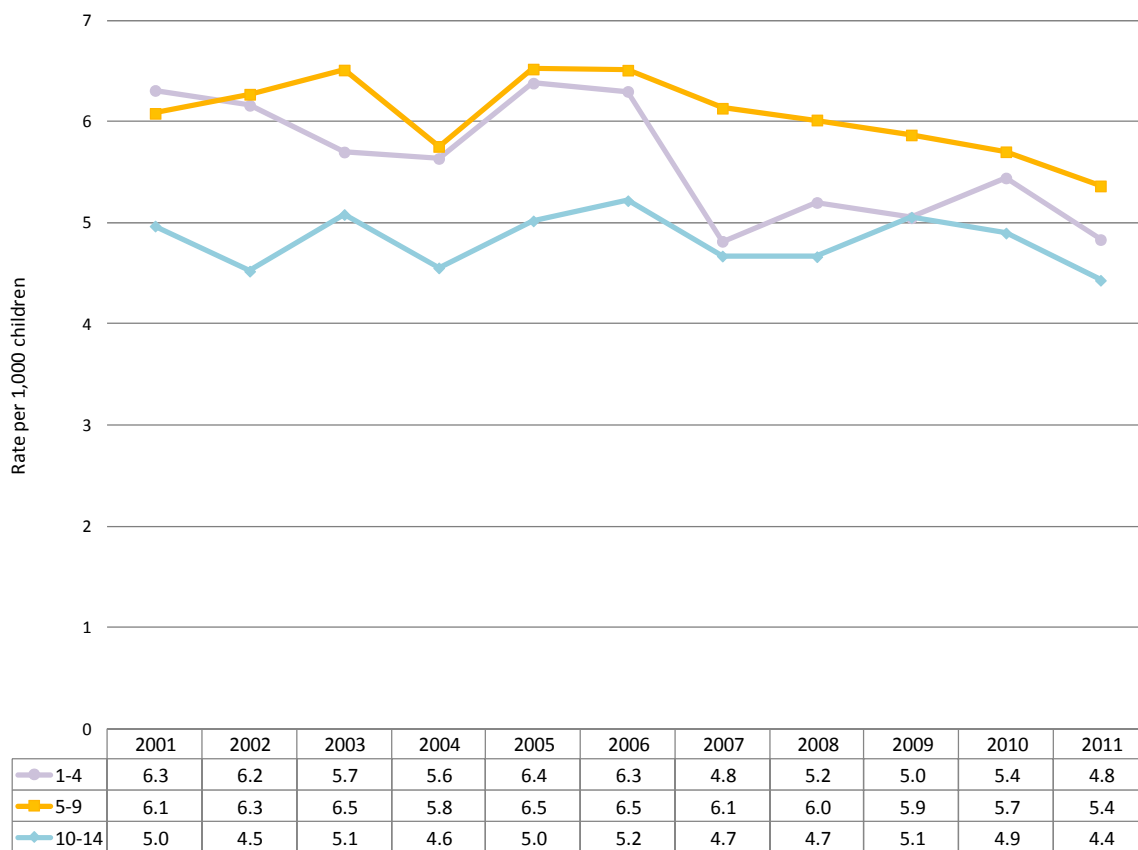
The rate of new asthma cases (incidence) diagnosed in children from 2001 to 2011 has been decreasing (Figure 7). The largest decrease has been in children aged 1 to 4, from 35.9 cases per 1,000 children to 26.2 per 1,000 children; however, this remains the age group with the highest rate of new cases. The rate of new cases in the 5-9 year old age group has remained stable over the same time period. In 2011, the older children, aged 10-14 years of age, have a significantly reduced rate of newly diagnosed cases of asthma compared to 2001.

**Figure 7. Asthma Incidence in Children by Age Group, Aged 1+, PEI, 2001-2011**



The proportion of children living with asthma who are consistently visiting a physician for asthma (active asthma) has been slowly decreasing over the years (Figure 8). Between 2001 and 2011, the greatest decrease (24%) has been in the youngest children (1-4 years old).

**Figure 8. Active Asthma Prevalence in Children by Age Group, Aged 1+, PEI, 2001-2011**



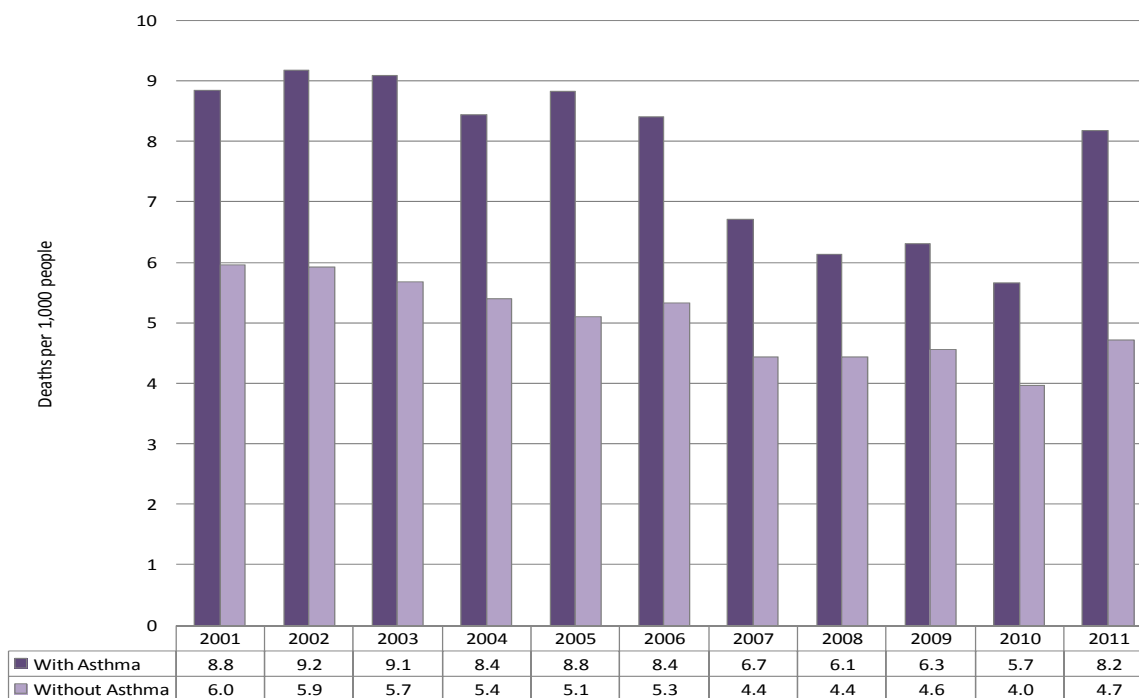
## Risk Factors for Asthma

The development of asthma is related to both host and environmental factors. Genetic predisposition with a strong family history is linked to the development of asthma. Obesity and sex (young males and older females) are also risk factors for asthma. The presence of environmental factors such as indoor allergens (i.e. dust mites, furry animals, cockroaches, fungi and yeasts) and outdoor allergens (i.e. pollen, fungi and yeasts); viral infections; work-place exposure to sensitizers; tobacco smoke via active, second-hand smoke, and in utero exposure; indoor and outdoor air pollution; and diet also influence the development of asthma.<sup>1</sup>

## Deaths among People with Diagnosed Asthma (Mortality)

In the last eleven years, death rates from all causes of death in Islanders with asthma have been higher than those without asthma. In 2011, the all cause mortality rate was 73% higher in Islanders with asthma compared to those without asthma.

**Figure 9. All Cause Death Rate for People with and without Asthma, Aged 1+, PEI, 2001-2011**



Age standardized

Although death rates are significantly higher in those with asthma, asthma is not a common cause of death. The number of people in Canada who died from asthma has dropped from 292 in 2000 to 218 in 2011.<sup>4</sup> This rate has continually been dropping since the 1990's and has likely been influenced by improvements in management of the disease.<sup>1</sup>



***Health Services Utilization***

In 2011, Islanders living with asthma had 57% more visits to family physicians and 58% more visits to specialists compared to Islanders who did not have asthma. In addition, Islanders living with asthma spent 83% more time in hospitals compared to Islanders without asthma.

### ***Special Section: PEI Asthma Education Centres***

Asthma is difficult to diagnose and proper management is multifaceted. Diagnosis is based on a careful medical history and pulmonary function testing. As asthma is a chronic disease, the focus is not on a cure, but rather management of the disease.

According to the Global Initiative for Asthma (GINA), the goals of a successful asthma management should be to<sup>1</sup>:

- Achieve and maintain control of symptoms
- Maintain normal activity levels, including exercise
- Maintain pulmonary function as close to normal as possible
- Prevent asthma exacerbations
- Avoid adverse effects from asthma medications

To achieve these goals, the 2010 Canadian Thoracic Society (CTS) guidelines<sup>5</sup> for asthma management recommend specific components of a successful asthma management program. Included in the recommendations is a written action plan about self-monitoring, maintaining good control using controller medication, making environmental changes, recognizing the signs and symptoms of uncontrolled asthma, and what do if you have uncontrolled asthma.

Recommendations also include education about what the disease is, what control could be expected, the difference between reliever and controller medications, and what are specific triggers. Proper inhaler technique and verification of and education on medications including onset of action and any potential side effects are also recommended.

PEI has two Asthma Education Centres (AEC) that will work with asthma patients to achieve their asthma management goals. Both Centres work with children and adults with asthma who have been referred by a physician. These Centres are free of charge. Patients with asthma should discuss how they may benefit from Asthma Education with a physician and ask for a referral.

### **Summary and Conclusions**

Prince Edward Islanders continue to cope with high levels of asthma similar to the rest of Canada. The proportion of Islanders who have been diagnosed with asthma in their lifetime is more than 1 in 10 persons. The lifetime prevalence rose from 7.9% in 2001 to 11.2% in 2011, an increase of 42% in the last ten years. Although the lifetime prevalence has risen, the prevalence of active asthma has remained stable, and the rate of newly diagnosed cases has dropped from 7.8 new cases per 1,000 Islanders to 5.3 new cases per 1,000; a decrease of 32% from 2001 to 2011.

Asthma is often considered a childhood disease. Although there is a higher rate of asthma in young Islanders, the disease does affect people of all ages. The highest rate of new cases diagnosed is in the youngest age group, 1 to 4 years of age. This rate has been decreasing over the last ten years, but this still remains the highest incidence age group.

The decrease in the number of new cases diagnosed and the proportion of children 1 to 4 years of age living with asthma may be due to a decrease in risk factors for asthma. One of the risk factors that has been decreasing in Canada is the rate of upper respiratory infections. Also included are environmental factors such as improvements in air quality, changes in hygiene practice particularly in daycares, and a reduction to environmental tobacco smoke at home.<sup>6</sup> The Province of PEI has enacted a series of smoking ban legislation that started in 2003. The proportion of people who smoke as well as the proportion of people exposed to environmental (secondhand) smoke has decreased since the start of the smoking bans.<sup>7</sup> The decrease in smoking rates and in secondhand smoke exposure is likely to have supported the reduction in new cases of asthma in children and also in adults.

The highest proportion of children living with active asthma is in children aged 5 to 9 years old followed by the 10-14 year old group. Recent research from Statistics Canada explores the relationship of asthma in children aged 7 to 15 years with school functioning. Children with asthma scored poorer in standardized math and reading tests compared to children with no chronic disease. The children with the worst asthma, as defined by reported wheezing or whistling with the use of medication, also had the worst test scores. This relationship remained even after adjusting for child and family factors.<sup>8</sup>

Young males and adult females continue to have a higher risk for asthma, although the reasons why sex appears to be a risk factor are still unresolved. This is true in PEI where the prevalence of asthma is significantly higher in males than females up until 25 years of age when this patterns switches. After 30 years of age, women have a significantly higher rate of asthma than men until 80 years of age.

Asthma remains a health concern in PEI. In addition to people with asthma feeling unwell, there is also the burden on health care services and lost productivity due to missed days at work or at school. Asthma is a chronic disease, but Islanders can learn to manage their asthma better.

Recommendations for this include:

1. Knowing the triggers for symptoms and avoiding them
2. Having a written asthma action plan
3. Learning how to use medications properly
4. Working with a Certified Asthma Educator to learn about asthma control

The first three recommendations can be enhanced by the 4<sup>th</sup> recommendation.<sup>9,10</sup>

The Department of Health and Wellness, along with community partners, continue to apply the best available evidence to support and promote self management and track and report health outcomes. Understanding the changes in the number of patients diagnosed with asthma and living with asthma is essential for policymakers, researchers, health practitioners and the general public to make informed public and personal health decisions. Reduction and avoidance of risk factors to reduce the development of asthma is critical to reducing the incidence of this disease. Following the recommendations is the key to management for Islanders living with asthma.

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