

Asthma: A Resource for Canadian Journalists

THE  LUNG ASSOCIATION™

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Preface: A Letter from the Editor

Dear Reader,

Asthma is one of the most prevalent forms of respiratory disease in Canada – 2.2 million Canadians over the age of 12 currently live with asthma. It is also a disease that is misunderstood by many, leading to higher rates of hospital visits, life-threatening episodes and even death. Since asthma, in most cases, is a controllable disease, such severe outcomes can be avoided and are often the result of inadequate education about the nature of the disease and its treatment.

In an effort to help fill the education gap, The Lung Association is proud to offer you this up-to-date resource: *Asthma: A Resource for Canadian Journalists*. This reference guide aims to assist journalists and other interested parties in gaining a solid understanding of this disease area.

The first section of the guide provides an introduction to the disease area and discusses the incidence and prevalence of asthma in Canada and around the world, its symptoms and progression, and guidelines for diagnosing and monitoring the disease. Subsequent sections cover treatment options and goals, psychological implications, economic and human cost, asthma in children and a brief review of guidelines for the treatment of asthma in Canada and around the world.

You will also find a list of other sources of information for extended research into the disease area and its treatment.

The Lung Association is dedicated to improving the respiratory health of all Canadians through research programs, awareness campaigns and patient support programs.

We hope you will find this guide to be a valuable resource.

Sincerely,

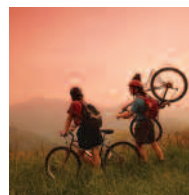
A handwritten signature in black ink that reads "Louis P. Brisson". The signature is fluid and cursive.

Louis P. Brisson
Vice President, The Lung Association
Chairman, Asthma Working Group

An Introduction to Asthma

There is no cure for asthma, but for most patients it can be controlled to such a degree that they can live a full and active life, virtually free of symptoms

What is Asthma?



Asthma is a chronic inflammatory disease of the airways (the breathing tubes that carry air in and out of the lungs). People with asthma constantly suffer from varying degrees of inflammation and muscle constriction of the airways.

This chronic inflammation causes the lining of the airways to become hyper-responsive to a variety of stimuli, especially to allergens and irritants. When a stimulus activates the inflammatory response in the airways, certain cells in the body release chemical substances called mediators. Many mediators trigger mucus hypersecretion. As a result, muscles surrounding the airways constrict and narrow the air passages, a process called 'bronchoconstriction'. Inflammation and bronchoconstriction both cause symptoms such as wheezing, coughing, chest tightness, and shortness of breath.

A worsening of asthma symptoms is called an asthma attack or exacerbation. Asthma attacks can vary in intensity. In a severe asthma attack, the airways can close so much that vital organs are deprived of oxygen. If emergency medical treatment is not started in time, the asthma attack can result in death.

There is no cure for asthma, but for most patients it can be controlled to such a degree that they can live a full and active life, virtually free of symptoms. Controlling asthma means working with health care providers to prevent symptoms *before* they occur, avoiding environmental triggers and adhering to medical treatment. If asthma is not well controlled, symptoms can negatively impact a person's quality of life, resulting in more emergency room visits, loss of sleep, missed school or work, and time away from family and fun activities.

About The Lung Association

The Lung Association is a national volunteer health charity. We work to improve the lung health of Canadians through research, prevention, education and advocacy. We lead national and international initiatives in lung health and are the primary resource for lung health in Canada. Our major programs and services include a national respiratory research program, national health professional societies (respirologists, nurses, respiratory therapists and physiotherapists), patient education programs in disease and issue areas such as asthma, chronic obstructive pulmonary disease (COPD), sleep apnea, tuberculosis, air quality, and tobacco prevention, protection and control. Founded in 1900, we are one of Canada's first voluntary health organizations. The Lung Association has a rich and trusted history of providing a broad range of vital lung health services to Canadians.

History of Asthma⁽¹⁾

1500 BC – First incidence of asthma-like symptoms is recorded in an Egyptian manuscript called Ebers Papyrus.

800–900 BC – Homer's Iliad contains the word 'asthma', meaning "laboured breathing" in Greek.

450 BC – Hippocrates uses the word asthma to describe an illness. Romans treat asthma by giving sufferers Owl's blood in wine.

1190 AD – Moses Maimonides, a physician to the Sultan Saladin, writes the first book specifically about asthma. Maimonides writes that asthma is characterized by sudden bouts of breathlessness. Treatment involves copious amounts of chicken soup and sexual abstinence.

1600–1700 AD – Physicians realize asthma is due to constrictions of the bronchi. One doctor calls asthma "epilepsy of the lungs," reflecting the sudden and unpredictable nature of asthma attacks.

1960 AD – Physicians discover that asthma is an inflammatory disease. This discovery leads to a revolution in the treatment of asthma – instead of just treating the constriction of the airways, doctors now treat the underlying inflammation as well.

2005 AD – Today, medical treatments allow people with asthma to have better control of their symptoms.

Incidence and Prevalence

The number of people with asthma in Canada has been increasing over the last 15 years.⁽²⁾ Currently, 2.2 million Canadians over the age of 12 have been diagnosed with asthma.⁽³⁾ Worldwide, the rate of asthma is increasing significantly, rising by 50 percent every decade.⁽⁴⁾

The cause of this increase in asthma prevalence has not yet been determined by researchers. However, one factor that may be contributing to the increase is urban development. The pollution associated with urban development adds additional irritants to the air, leading to asthma and exacerbations.⁽⁴⁾

Risk factors for developing asthma⁽⁵⁾:

- Family history of allergy and allergic disorders (including hay fever, asthma and eczema)
- High exposure of susceptible children to airborne allergens in the first years of life
- Exposure to tobacco smoke, including in utero exposure
- Frequent respiratory infections early in life
- Low birth weight and respiratory distress syndrome

Asthma in Canada

- With 8.4 percent of the population suffering from this chronic lung disease, Canada has one of the highest incidences of asthma in the world
- Asthma is the number one cause of emergency room visits in Canada⁽⁷⁾
- Asthma is the reason behind the deaths of 20 children and 500 adults each year⁽⁷⁾
- Direct costs of asthma, which include medical/nursing care and medication, in Canada are estimated at \$600 million per year⁽¹⁾
- Asthma continues to be a major cause of hospitalization of children in Canada⁽⁹⁾

- An estimated 10 per cent of children and five per cent of adults have active asthma (take medication for asthma or have experienced symptoms in the past 12 months)⁽⁸⁾
- Asthma is the most common chronic respiratory disease of children; it accounts for 1/4 of school absenteeism
- The prevalence of asthma among adults (15 years of age and over) has been increasing over the last 20 years⁽¹⁰⁾
 - 1979 – 2.3 per cent
 - 1988 – 4.9 per cent
 - 1994 – 6.1 per cent
 - 2004 – 8.4 per cent (among adults 12 years and over)⁽³⁾

The following charts indicate the growing incidence and prevalence of diagnosed asthma among Canadians aged 12 or older, by region.

1997⁽¹¹⁾

Province	Per cent of Population
Newfoundland	6.0
P.E.I.	7.5
Nova Scotia	8.8
New Brunswick	6.6
Quebec	7.9
Ontario	8.1
Manitoba	7.5
Saskatchewan	7.1
Alberta	7.5
British Columbia	7.7
CANADA	7.8

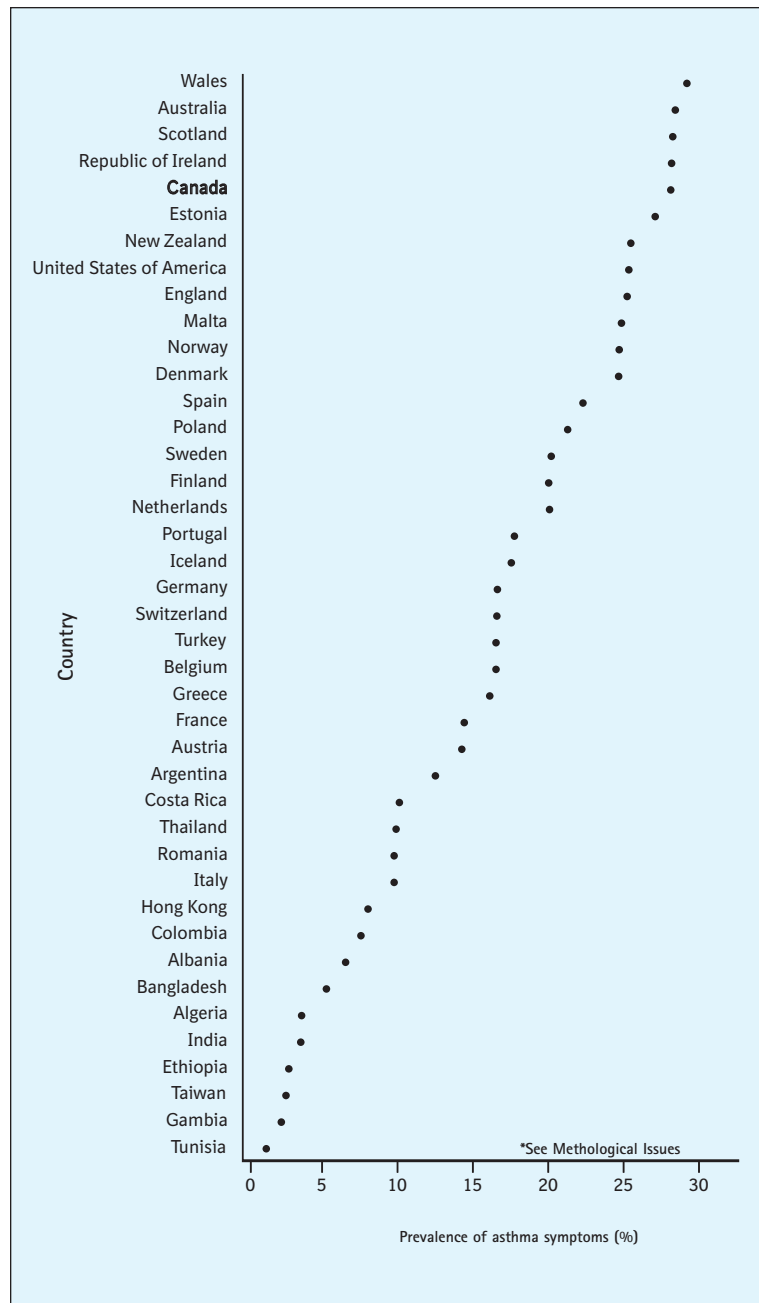
2003⁽³⁾

Province	Per cent of Population
Newfoundland	9.0
P.E.I.	9.1
Nova Scotia	9.3
New Brunswick	8.8
Quebec	8.6
Ontario	8.3
Manitoba	8.9
Saskatchewan	8.1
Alberta	9.1
British Columbia	7.3
CANADA	8.4

Global Asthma Prevalence

- Approximately 300 million people worldwide currently have asthma⁽⁴⁾
- By 2025, an additional 100 million people will suffer from asthma due, in part, to growing urbanization and pollution⁽⁴⁾
- Studies have shown that asthma is more prevalent in urban areas than in less polluted areas⁽¹²⁾
- Asthma is the leading chronic disease of children in industrialized countries^(13,14)
- Fifteen million disability-adjusted life years (DALYs) are lost worldwide each year to asthma. One DALY is equivalent to the loss of a healthy life year.⁽⁷⁾
- It is estimated that asthma accounts for about one in every 250 deaths worldwide⁽⁴⁾

Figure 1: Self-reported wheezing in the previous 12 month period, in 20 to 44 year old adults



Source: Global Burden of Asthma Report Developed for the Global Initiative for Asthma

Asthma Triggers

While the exact cause of asthma is unknown, there are a number of known or common triggers that can cause inflammation or narrowing of the airways.

Types of Triggers

Allergic

An allergy is an exaggerated reaction by the body to foreign substances. These substances are called allergens. After first contact with an allergen, mediators, like histamine and leukotrienes, can cause one or more of the following symptoms: redness, swelling, itching and increased mucus production. With an allergy to pollens, for instance, there may be itchy eyes and runny nose.

Common Allergens⁽¹⁵⁾

- Dust mites
- Food
- Mould
- Animal Dander
- Pollen
- Drugs

Non-allergic

Non-allergic triggers are substances that irritate the airways.

Non-allergic⁽¹⁵⁾

- Second hand smoke
- Smog
- Viral infections
- Changes in weather and temperature
- Cold air
- Exercise
- Fumes/odors

Identifying and then avoiding or reducing contact with triggers both at home and work can help prevent asthma attacks.

Genetics can also play a role in triggering asthma. If asthma runs in the family, the chances are higher that younger generations will also contract the disease.⁽¹⁶⁾

Figure 2: Common Asthma Risk Factors and Actions to Reduce Exposure

Risk Factor	Actions
Domestic dust mite allergens (so small they are not visible to the naked eye)	Wash bed linens and blankets weekly in hot water and dry in a hot dryer or the sun. Encase pillows and mattresses in air-tight covers. Replace carpets with linoleum or wood flooring, especially in sleeping rooms. Use vinyl, leather, or plain wooden furniture. If possible, use a vacuum cleaner with filters.
Tobacco smoke (whether the patient smokes or breathes in the smoke from others)	Stay away from tobacco smoke. Patients and parents should not smoke.
Allergens from animals with fur	Remove animals from the home, or at least from the sleeping area.
Cockroach (wastes) allergen	Clean the home thoroughly and often. Use pesticide spray, but make sure the patient is not at home when spraying occurs.
Outdoor pollens and mould	Close windows and doors and remain indoors when pollen and mould counts are highest.
Indoor mould	Reduce dampness at home; clean any damp areas frequently.
Physical Activity	Do not avoid physical activity. Symptoms can be prevented by taking an inhaled β_2 -agonist or a leukotriene modifier before strenuous exercise.
Drugs	Do not take drugs like beta blockers or aspirin, if these medications cause asthma symptoms.

Source: Global Initiative for Asthma. Pocket Guide for Asthma Management and Prevention.

Symptoms and Disease Progression

Asthma symptoms can differ from person to person, but most people experience a worsening of symptoms at night and in the early morning.

Common symptoms of poorly controlled asthma

- Coughing
- Wheezing
- Chest tightness
- Shortness of breath
- Increased mucus production

Asthma attacks (or exacerbations) are episodic, but airway inflammation is chronically present. For many patients, medication must be taken every day to control symptoms, improve lung function and prevent attacks. Medications may also be required to relieve acute symptoms, such as wheezing, chest tightness and cough.⁽¹⁷⁾

Although asthma symptoms can often be controlled, unnecessary deaths can occur if patients fail to use appropriate medication or comply with treatment. Failure to adhere to treatment is often a result of the patient's lack of knowledge or understanding about the severity and chronic nature of asthma.⁽⁹⁾ Effective asthma education and understanding is integral to bringing symptoms under control, reducing emergency room visits and needless deaths.

Diagnosis and Monitoring

Asthma specialists in Canada follow the national *Canadian Asthma Consensus Guidelines*. These evidence-based, clinical practice guidelines are used to diagnose and establish treatment plans for patients with asthma.

To diagnose asthma, a thorough history is taken and a physical examination is performed, with special attention to the nose, sinuses and lungs for evidence of chronic infection.⁽¹⁸⁾ More specific lung function measurements should be taken with a device called a spirometer that measures the amount of air inhaled and exhaled to determine the level of airway obstruction. A test called *bronchial provocation* can also be performed to evaluate the degree of airway hyper-responsiveness.

Monitoring asthma evolution involves measuring lung function after a patient begins treatment. A device called a *peak flow meter* is used to measure the amount of air a person can forcefully blow out of his/her lungs after inhaling, referred to as the *peak expiratory flow* or *PEF*. More specific lung function measurements can be taken with a device called a *spirometer* that measures the amount of air inhaled and exhaled to determine the level of airway obstruction.

If patients work with their physician to obtain and maintain control of their asthma, they should expect to lead an active lifestyle with minimal symptoms, be able to sleep through the night, and prevent asthma attacks.

The Management and Treatment of Asthma

It is estimated that more than 80 per cent of deaths due to asthma could be prevented with proper education



Treatment Goals

The *Canadian Asthma Consensus Guidelines* state that the primary goal of asthma therapy is to obtain the best possible results for each patient, which include:

- Fewest symptoms
- Least interference with daily living
- Least need for "rescue medications"
- Best lung function test of forced expiratory volume (FEV) or peak expiratory flow
- Fewest side effects from medications

Controlled vs. Uncontrolled Asthma

Poor asthma control often results in time away from school, work, sports, outdoor activities, physical exercise, or other activities that affect overall quality of life.⁽¹⁹⁾ Although optimal control of asthma means the absence of respiratory symptoms and no need for a rescue bronchodilator, as well as normal pulmonary function, this has historically been difficult to achieve in all patients with asthma.⁽²⁰⁾

Results of a 2004 national survey⁽²¹⁾ of Canadian asthma sufferers showed that almost all (94 per cent) believe their asthma is under control, yet despite this perception, many continue to experience symptoms that limit quality of life and can negatively impact family, work and social lives. Nearly half of respondents reported trouble sleeping and one in five (19 per cent) respondents admitted to avoiding social or sporting activities due to their asthma. The use of a rescue inhaler, highly indicative of uncontrolled asthma symptoms, was reported by more than half (51 per cent) of respondents.

Despite advances in understanding of the disease and the availability of more effective treatments, asthma still places a heavy burden on the quality of life of those suffering from it. This is often a result of under-diagnosis, under-treatment, lack of understanding and knowledge about the disease, and inadequate asthma supervision.⁽⁹⁾ It is estimated that more than 80 per cent of deaths due to asthma could be prevented with proper education.⁽²²⁾

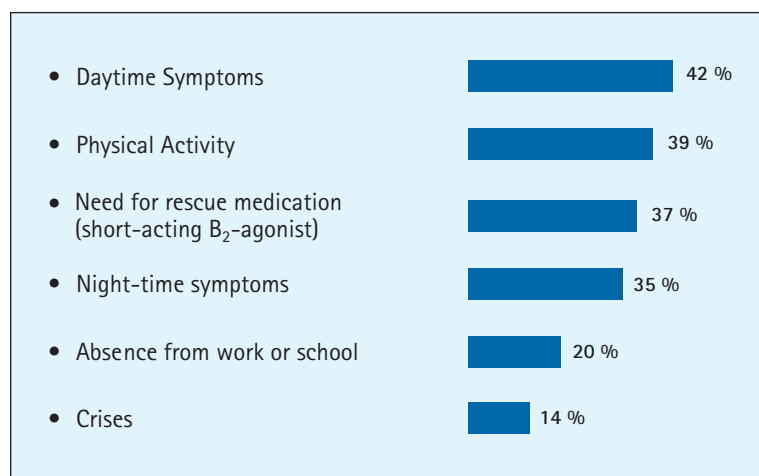
Figure 3: Indications of Asthma Control

Parameter	Frequency or value
Daytime symptoms	< 4 days / week
Night-time symptoms	< 1 night / week
Reduced Physical activity	Normal
Exacerbations	Mild, infrequent
Absence from work or school	None
Need for short-acting β_2 -agonist	< 4 doses / week*
FEV ₁ or PEF	> 85% of personal best, ideally 90%
PEF diurnal variation†	< 15% of diurnal variation

FEV₁ = forced expiratory volume in 1 second; PEF = peak expiratory flow obtained with a portable peak flow meter.
 * May use 1 dose/day for prevention of exercise-induced symptoms.
 † Diurnal variation is calculated by subtracting the lowest PEF from the highest and dividing by the highest PEF multiplied by 100.

Source: www.asthmaguidelines.com/home.html

Figure 4: Poor Asthma Control in Canada



Source: Asthma in Canada, survey 2000. Health-related behaviours, April 28, 2004

Today's Treatment Options

Education plays an important role in asthma treatment because non-compliance with asthma medications is common. Often, patients rely solely on their rescue medication for instant relief of symptoms, without treating the underlying cause of the disease, resulting in poor asthma control. In developing effective asthma management plans, both physician and patient need to view and treat asthma as a chronic disease.

Guidelines for the management of asthma recommend that anti-inflammatory medications, also known as controller medications, should be used as the cornerstone of asthma management.⁽²⁰⁾ Since airway inflammation or its consequences is important in the pathogenesis and persistence of asthma, there is a strong argument for the recommendation that the management of asthma should focus on reducing this inflammatory state through environmental control measures and the early use of disease-modifying medication.⁽²⁰⁾ In other words, focusing on treating asthma symptoms alone, as they occur, rather than the underlying inflammation, is less effective.

Reliever Medication

Relievers are used to quickly alleviate asthma symptoms by relaxing the muscles surrounding the airways. These medications do not, however, reduce inflammation.

Relievers used four times or more a week (apart from one dose/day before exercise) means that asthma is not well-controlled. People using relievers this frequently should consult their doctors about controller medications.

Reliever Medication	Effects
Short-acting bronchodilators (short-acting β_2 -agonists) ⁽²³⁾	<ul style="list-style-type: none"> • Provides relief of asthma symptoms (e.g., coughing and wheezing) • Relaxes muscles surrounding airways, opening up the bronchial tubes • Provides quick relief from shortness of breath, chest tightness, coughing, or wheezing • Generally used in the case of an acute asthma attack

Controller Medication

Controller medication, as the name implies, is used to control asthma symptoms or prevent them from occurring. These medications work by reducing inflammation and relieving airway constriction.

Controller Medication	Effects
Long-acting bronchodilators ⁽²⁴⁾ (long-acting β_2 -agonists) ⁽²³⁾	<ul style="list-style-type: none"> • Maintains control of asthma symptoms by relaxing the smooth muscles around the airways • Reduces need for rescue medications when added to regular anti-inflammatory medications • Does not treat inflammation in the airways • One dose is effective for 12 hours
Leukotriene modifiers ⁽²³⁾	<ul style="list-style-type: none"> • Prevents airway constriction, excess mucus production and inflammation in the lungs • Taken at least once a day • Noticeable effects take one week to one month
Inhaled corticosteroids	<ul style="list-style-type: none"> • Controls underlying cause of inflammation • Reduces bronchial hyper-responsiveness • Prevents exacerbations • When added to inhaled corticosteroid therapy, an inhaled long-acting bronchodilator can further improve lung function and reduce asthma symptoms

Combination Medication

Combination therapy is the most recent evolution in asthma medication that treats two areas of asthma symptoms (coughing, wheezing, chest tightness) and the underlying cause (inflammation of the airways). This type of medicine combines both an inhaled corticosteroid and a long-acting bronchodilator. Recent studies show that many people with asthma find combination medications give them better control and are convenient to use.⁽²⁵⁾

Combination Medication	Effects
Long-acting β_2 -agonists) + Inhaled corticosteroid	<ul style="list-style-type: none"> • Long-acting β_2-agonist relieves airway constriction • Corticosteroid reduces inflammation • Maintains control of asthma symptoms • Reduces need for rescue medications

The Psychology of Asthma

The majority of asthma patients believe their asthma is controlled, yet live with symptoms that result in unnecessary compromises



Many asthma patients tolerate a degree of symptom control that is below current Canadian Asthma Consensus Guideline standards.⁽²⁰⁾ The majority of asthma patients believe their asthma is controlled, yet live with symptoms that result in unnecessary compromises, such as overuse of rescue medication, avoiding social or sports activities, experiencing trouble sleeping, and missing school or work. Acceptance of poor symptom control not only affects overall quality of life, but can also result in emergency room visits, hospital admissions, anxiety disorders and even death.

In September 2004, The Lung Association released *The Psychology of Compromise: A Focus on Asthma*, a first-of-its-kind analysis of the psychology, and ultimately the behaviour, of asthma patients that causes them to adjust to life with asthma instead of striving to control their disease and eliminate symptoms.

Developed in partnership with leading Canadian asthma experts, the Psychology of Compromise report brings to light the serious misconception held by many asthma patients – that compromises in daily life are inevitable because of their disease.

Why Patients Compromise

Research indicates the reasons behind patient compromise are complex and often intertwined, such as:

- Some patients allow compromises in their life because they don't regard asthma as a chronic disease and don't understand the consequences of not following treatment regimens⁽²⁶⁾
- Anxiety about their disease or treatments leaves some asthma patients in an unending cycle of poor disease management, fear, and symptoms

- Some patients believe that their asthma symptoms are inevitable and choose to treat them after they occur, rather than preventing them from occurring in the first place
- 'Learned helplessness' is common in people with asthma because the great majority of patients are diagnosed as children — a time when they are truly helpless to control their disease
- Often, patients who suffer from chronic diseases like asthma are affected by 'psychological fatigue' because of the tremendous amount of time and energy they must devote to their condition and its care program

A Call to Action

It is evident from the research cited in *The Psychology of Compromise* report, that many asthma patients compromise by settling for the degree of asthma control they expect, and that this impacts their ability to manage their asthma effectively.

- Greater asthma control can be achieved if both asthma patients and their physicians have higher expectations for asthma control and believe a life without symptoms is possible
- Physicians and patients should treat asthma as a chronic disease, and work together to avoid even breakthrough symptoms
- Asthma educators and allied health care professionals should work with asthma patients to identify and overcome compromised expectations of control

The Economic and Human Cost of Asthma

Worldwide, the economic costs associated with asthma are estimated to exceed those of tuberculosis and HIV/AIDS combined



Direct medical costs related to asthma, such as hospital admissions and medication, cost the health care system approximately \$600-million per year.⁽¹⁾

Indirect productivity costs such as those associated with illness-related time away from work seriously affect the quality of life for people with asthma and their families.

Mortality

- While the death rate from asthma in Canada has slowly decreased since 1990, there are still approximately 10 asthma deaths per week⁽⁷⁾
- Asthma is still a major cause of morbidity, often a result of under-diagnosis, under-treatment, lack of public understanding and knowledge about the disease and inadequate asthma supervision.⁽⁹⁾

Economic Impact

- Asthma is the leading cause of absenteeism from school and the third leading cause of work loss⁽²²⁾
- Asthma is the leading cause of emergency room visits⁽⁴⁾
- Every year in Canada there are 146,000 emergency room visits due to asthma attacks⁽⁷⁾
- In 1994, the cost of hospitalization as a result of asthma in Canada was \$135 million⁽⁸⁾
- Worldwide, the economic costs associated with asthma are estimated to exceed those of tuberculosis and HIV/AIDS combined⁽²⁸⁾

Asthma Treatment Guidelines

A strong partnership between the physician and patient is key to establishing an optimal program of asthma management



In Canada, the *Canadian Asthma Consensus Guidelines* provides physicians with current guidelines and recommendations for the diagnosis and optimal management of asthma in children and adults. Likewise, the *Global Initiative for Asthma* (GINA) provides evidence-based guidelines for asthma management to improve the lives of people with asthma around the world. Both sets of guidelines are similar in that emphasis is placed on education, adherence to medication, avoiding asthma triggers and working with healthcare providers to develop a management plan that effectively reduces asthma symptoms and improves quality of life.

Canadian Criteria for Acceptable Asthma Control

- Daytime symptoms less than 4 days per week
- Night-time symptoms less than 1 night per week
- Normal physical activity
- Mild, infrequent exacerbations
- No absenteeism due to asthma
- Fewer than four doses per week of short-acting β_2 -agonist needed (apart from one dose/day before exercise)
- FEV₁ or PEF more than 85 per cent of personal best, ideally 90 per cent
- Diurnal variability in PEF less than 15 per cent

GINA Goals for Asthma Management

- Minimal (ideally no) chronic symptoms, including night-time symptoms
- Minimal (infrequent) episodes
- No emergency visits
- Minimal need for β_2 -agonist (rescue medication)
- No limitations on activities, including exercise
- PEF variability less than 20 per cent
- (Near) normal PEF
- Minimal (or no) adverse effects from medicine

Key Elements to Effective Asthma Control

Education – Education is an essential part of treatment for all asthma patients. Studies have shown that when patients are provided with adequate asthma education, they gain more than just knowledge – they gain a better quality of life, including a more positive attitude, feeling of control, better pulmonary function, improved treatment compliance, fewer emergency room and hospital visits and missed days from school or work.⁽²⁰⁾ Education should not, however, be limited to providing knowledge, but ideally should be aimed at altering behaviour.⁽²⁰⁾ In studies comparing group teaching with one-on-one counseling, asthma outcomes over more than one year revealed that people who had taken part in small-group educational sessions had used fewer health services. For best results, asthma educational programs should interactively engage patients and encourage frequent patient feedback.⁽²⁰⁾

Action Plan – According to the *Canadian Asthma Consensus Guidelines*, asthma education should begin in the physician's office and must include a written action plan. Patients should work with their physicians to develop a plan of action that is manageable with their lifestyle and meets their needs.

Partnership – A strong partnership between the physician and patient is key to establishing an optimal program of asthma management. To gain additional support and improve compliance with treatment, family members should also be included in the partnership. All parties need to work together to treat the chronic nature of the disease, eliminate asthma triggers and prevent symptoms.

Asthma in Children

Asthma is one of the most common illnesses among children in Canada



In Canada, it is estimated that 10 to 15 per cent of children currently have asthma and 20 children will die each year from the disease.⁽⁷⁾

Estimates from past studies have shown that more than 60 per cent of Canadians admitted to hospital due to asthma are children 0-19 years of age.⁽³⁰⁾

Diagnosing children with asthma can sometimes prove challenging as the symptoms could be mistaken for a common cold or chest infection – coughing, wheezing, shortness of breath, etc. Physicians may mistakenly diagnose the cause of the child's symptoms as an infection, like bronchitis.⁽³¹⁾

To compound the problem, small children have difficulty verbalizing their complaints. A persistent cough may seem irritable and cause discomfort, but may not necessarily seem serious.⁽³¹⁾

In school age children, undiagnosed asthma may interfere with school and extracurricular activities. Fatigue can also set in if symptoms cause nighttime awakenings.⁽³¹⁾

Children with asthma often suffer from more severe bouts of asthma because their lungs are narrower than those of adults. Their condition is also more likely to change in severity over time and some children will grow out of the disease.

Studies have shown that much of the asthma hospitalization and death can be prevented. An important element in preventing such occurrences is effective asthma management by health care providers, patients and their families.⁽³⁰⁾ Like adults, children can achieve better control of their asthma symptoms if they and their families work with health care providers to treat the disease as a chronic illness, and through regular ongoing treatment, aim to prevent symptoms from occurring.

Conclusion

A shift in thinking may be needed to improve asthma management and help patients achieve better control of their symptoms



Asthma represents a serious global problem, impacting the quality of life of the people who suffer from the disease and placing economic burden on the health care system.⁽⁴⁾ The problem is set to get worse due to growing urbanization and increasing environmental pollutants. By 2025, an additional 100 million people will suffer from asthma.⁽⁴⁾

Canada has one of the highest incidences of asthma in the world with an estimated 2.2 million people (8.4 per cent of the population) suffering from this chronic lung disease.⁽⁶⁾ If the number of people with asthma who are not in control of their symptoms continues to grow, the strain on the health care system will also increase.

A shift in thinking may be needed to improve asthma management and help patients achieve better control of their symptoms. While there is no cure for asthma, better symptom control is possible due to advances in medical treatments. Too many people with asthma settle for a lower expectation of symptom control and this leads to compromises in their quality of life. Expectations need to be raised, not only in the minds of patients, but also physicians. Physicians and patients need to work together to develop an asthma care program that aims for a life free from asthma symptoms and compromise.

Appendix 1 – Glossary of Terms

Agonist – A substance that can combine with a receptor to produce a reaction typical for that substance.

Allergen – A foreign substance (not produced by the body) that causes an allergic reaction. Allergens are also called antigens.

Allergy – A state of hypersensitivity caused by exposure to a particular allergen, resulting in harmful reactions on subsequent exposures. The term is usually used to refer to hypersensitivity to an environmental antigen or to drug allergy. Symptoms include hives, watery eyes, runny nose, and in some cases, asthma.

Antibodies – An antibody is a specialized protein the immune system makes in order to protect against disease-causing allergens, or antigens. While some antibodies are helpful, others may cause potentially harmful responses, including allergic reactions.

Asthma Attack – (also known as asthma episode or exacerbation) Term used to describe a worsening of asthma symptoms. Asthma attacks are episodic, and can differ in intensity.

β_2 -agonist – A drug that helps prevent asthma symptoms by relaxing the smooth muscles around the airways.

Bronchi (singular, Bronchus) – Tube-like airways that allow the air we breathe to enter and exit the lungs. Like a tree, each bronchus divides again and again, becoming narrower each time. The narrowest 'branch' or passageway, is called a bronchiole.

Bronchoconstriction – Occurs when the muscle that wraps around the bronchi constricts or tightens, the airways narrow, resulting in bronchoconstriction (bronchospasm).

Bronchodilator – A drug that widens the air passages of the lungs and eases breathing by relaxing bronchial smooth muscle.

Canadian Asthma Consensus Guidelines – Evidence-based, clinical practice guidelines used to diagnose and establish treatment plans for patients with asthma.

Chronic Disease – A chronic disease is one lasting three months or more.

Combination Therapy – The use of two or more medications to treat an illness. For asthma treatment, combination therapy includes an inhaled corticosteroid and an inhaled long-acting bronchodilator.

Controller Medication – In asthma treatment, a type of drug that controls asthma symptoms or prevents them from occurring by reducing inflammation and relieving airway constriction.

Corticosteroid Medication – A type of medication that reduces inflammation in the bronchial airways, making them less hyper-responsive. Corticosteroids used to prevent asthma symptoms are not the same as the steroid drugs abused by athletes.

DALYs – An acronym for Disability-Adjusted Life Years. DALYs are used to indicate the impact of disease. One DALY is equivalent to the loss of a healthy life year; the computation counts the number of deaths attributed to a disease, and incorporates the age at which the death occurs by counting the number of expected years of life lost, and then reduces this by the level of disability of the person prior to death.

Diurnal Variability – Calculated by subtracting the lowest PEF from the highest PEF multiplied by 100.

Environmental Trigger – An allergen derived from environmental sources that causes a worsening of asthma symptoms. Environmental triggers for asthma includes common allergens: dust mites, animal dander, food, pollen, mold, drugs, and also non-allergens: second-hand smoke, smog, viral infections, fumes/odors, cold air, changes in weather and temperature as well as exercise.

Exacerbation – See asthma attack

FEV₁ – Forced Expiratory Volume in one second

Global Initiative for Asthma (GINA) – Initiated in 1993, by the National Heart, Lung and Blood Institute (USA), National Institutes of Health, USA and the World Health Organization. GINA provides evidence-based guidelines for asthma management to improve the lives of people with asthma around the world. GINA's objective is to work with health care professionals and public health officials around the world to reduce asthma prevalence, morbidity and mortality.

Histamine – Substances released from damaged cells that cause dilation of small blood vessels, tissue inflammation, and constriction of the bronchi of the lungs.

Hypersensitivity – A heightened response in a body tissue to an antigen or foreign substance. The body normally responds to an antigen by producing specific antibodies against it. The antibodies impart immunity for any later exposure to that antigen. When exposure takes place under certain physiological conditions, or in allergic individuals with abnormal immune systems, a heightened immune response results that causes cell damage. Individuals with allergic, or atopic, hypersensitivity form special types of antibodies that cause local tissue damage and such symptoms as hives, hay fever, and asthma.

Inflammation – In asthma, the lining of the airways become swollen and inflamed, usually caused by irritants, allergies or infections.

Learned Helplessness – A common state in people with asthma. Learned helplessness is derived from asthma diagnosis as a child – a time when a person is truly helpless to control their disease.

Leukotrienes – A group of physiologically active substances that function as mediators of inflammation and as participants in allergic responses.

Mucous – The thick slimy substance that protects and lubricates the surface of mucous membranes and traps bacteria and dust particles.

PEF- Peak Expiratory Flow – A device called a *peak flow meter* is used to measure the amount of air a person can forcefully blow out of his/her lungs after inhaling.

Poorly Controlled Asthma – Common symptoms are: coughing, wheezing, chest tightness, shortness of breath, trouble sleeping (due to difficulty in breathing), inability to take part in physical activities.

Psychological Fatigue – This state is triggered by the tremendous amount of time and energy that asthma patients must devote to their disease and its care program.

The Psychology of Compromise: A Focus on Asthma – Developed September 2004, in partnership with leading Canadian asthma experts and The Lung Association. The Psychology of Compromise report brings to light the serious misconception held by many asthma patients – that compromises in daily life are inevitable because of their disease.

Rescue Medication – A type of medication used to relieve asthma symptoms quickly (wheezing, coughing, shortness of breath) or to treat an asthma flare-up.

Spirometer – A device used to measure the amount of air inhaled and exhaled to determine the level of airway obstruction.

Well-controlled Asthma – Patients under physician care should expect to lead an active lifestyle with minimal symptoms, sleep through the night, and prevent asthma attacks.

Wheezing – To breathe with difficulty producing a hoarse whistling sound

Appendix 2 – Resources

AsthmainCanada.Com

www.asthmaincanada.com

Asthma in Canada is an asthma resource that provides information to help Canadians with asthma make responsible decisions about how to manage and treat their disease.

AsthmaTrec

<http://www.asthmatrec.org>

A course created by the Lung Associations of Manitoba and Saskatchewan that helps teach health care professionals how to better educate people with asthma.

Canadian Asthma Consensus Guidelines

www.asthmaguidelines.com

Evidence-based, clinical practice guidelines used to diagnose and establish treatment plans for patients with asthma.

Canadian Network for Asthma Care

www.cnac.net

The Canadian Network For Asthma Care, through its member organizations, is dedicated to the promotion of asthma care and education in Canada with the ultimate goal of reducing illness and death caused by this common disease.

Canadian Nurses' Respiratory Society

www.lung.ca/resp/index.html

The Canadian Nurses' Respiratory Society of the Canadian Lung Association believes in the provision of high quality respiratory nursing care which promotes respiratory health and prevents and/or manages respiratory illness, thereby enhancing the quality of life for the individual, family and communities.

Canadian Thoracic Society**www.lung.ca/cts/index.html**

The Canadian Thoracic Society of the Canadian Lung Association provides a forum whereby medical practitioners and investigators may join in the study of thoracic diseases and other medical fields that may come within the scope of The Lung Association.

The Lung Association**www.lung.ca**

Founded in 1900, The Lung Association is the umbrella group for the ten provincial Lung Associations whose chief purpose is to combat both disease and environmental threats to lung health.

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