

## INFO-ASTHMA GUIDE

THE  LUNG ASSOCIATION™  
Quebec

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## To help you understand asthma...

This reference document, produced in accordance with the *Canadian Asthma Consensus Guidelines*, is intended for asthmatics, friends and family.

- Make sure the asthma diagnosis is confirmed using objective measurements (spirometry test, bronchial challenge).
- Better control of the environment.
- Promote education: self-management and use of an action plan.
- Emphasize inhaled corticosteroid as a first-line anti-inflammatory therapy.
- Rely on add-on treatment if necessary (if asthma control is not achieved with moderate corticosteroid doses).

Main goal practically symptom-free asthma.

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Source : <http://www.asthmaguidelines.com/highlights.html>

**Info  
Asthma** 1-800-295-8111  
EXT.: 232

The Lung Association provides the public with a toll-free help line: Info-Asthma.

Respiratory health professionals are on hand to help asthmatics and their families improve their understanding and management of the disease, in order to enhance their quality of life.

**The service is available Monday to Friday, from  
8:30 a.m. to 4:30 p.m.**



# INTRODUCTION

Over 3 million Canadians suffer from asthma, which makes it the country's number one respiratory disease. Quebec is estimated to have 700 000 asthmatics, including 300 000 children. This disorder affects people of all ages and nationalities.

There is currently no treatment which can cure asthma, but it is possible to manage the disease and to lead a full and active life practically symptom-free.

However, more than 60% of asthmatics fail to manage their illness properly, the result being daily symptoms, increased medication, emergency room visits with frequent hospital stays, absenteeism from work or school, and unfortunately several deaths.

Doctors must treat asthma like a chronic illness and develop an action plan to prevent symptoms as well as facilitate its management.

Health professionals must help to identify poorly managed patients so that they can be given an action plan designed to control their asthma.

The Lung Association offers you **a new offensive against asthma**: the Info-Asthma program designed to inform asthmatics and encourage them to better understand, manage and live with their disease.

*Take action...*

## GOING ON A TRIP?

Obviously, asthmatics can travel anywhere they like. However, it is wise for them to discuss their travel plans with their doctor first. Together, they can develop a specific action plan. In addition to corticosteroid tablets for emergency use, bring along your usual prescriptions and some extra medication, so that you can treat yourself as soon as you are experiencing asthma symptoms.

### Simple suggestions regarding your medication

Be sure to carry a rescue inhaler with you at all times.

Keep your prescription drugs in their original containers and have a description (in English) of each one.

Carry your medication in a hand luggage that is readily available, and a copy of your prescription in another piece of luggage in case you lose your luggage.

Bring along a second aerochamber for use with your metered dose inhaler, in case your other one is lost or damaged.

If you have to use an electric compressor to take your medication, make sure you have the proper adapter for the wall plug.

#### Don't forget:

- Your travel insurance
- Your certificate of vaccination
- Your medical alert bracelet
- Your medication and action plan
- Your peak flowmeter to assess your respiratory condition and adapt your treatment
- To request a hotel room with no carpeting
- That some people may find an anti dust mite cover and synthetic pillow useful.

Above all, never quit taking your medication while travelling, even if you feel perfectly fine.

### Tip:

Any medication of the metered-dose inhaler type should be administered with a spacer device to maximize inhalation of the entire dose and increase the medication's effectiveness in the bronchi.



### Medication for dealing with exacerbations as well as severe and persistent asthma (IgE controllers)

#### corticosteroids

- prednisone tablets
- oxtriphylline (Choledyl®) in syrup form for children

#### IgE controllers or anti-IgE – severe allergies

- omalizumab (Xolair®)



**Xolair** : a new regular-injection treatment for severe and persistent asthma in adults and children at least 12 years of age who, despite compliance with their usual treatment and a properly controlled environment, continue to experience serious respiratory difficulties. Effective but very expensive treatment.

### Action plan based on progression of the symptoms

The action plan is designed to help asthmatics determine when and how to adjust their medication themselves, when symptoms worsen.

This plan, to be developed with the attending physician, will tell you:

- when to switch medications, increase the doses or add other medications to your treatment;
- what to do if your condition fails to improve.

Request our «**Asthma Action Plan**» brochure.

## WHAT IS ASTHMA?

Asthma is a chronic respiratory disease characterized by variable obstruction of the bronchial airways.

When irritated by triggering factors, the bronchial tubes become inflamed and swollen. The muscles that surround them contract and create bronchial obstruction. Bronchial inflammation and contraction promotes the production of mucus, which makes breathing difficult.

### The symptoms are:

- shortness of breath
- chest tightness
- wheezing
- coughing
- mucus production

Proper understanding of the disease is important if you are to improve the treatment and optimize the management of the symptoms by treating bronchial inflammation with anti-inflammatories (corticosteroids), even if the symptoms are mild and occur less than 4 times a week. In the large majority of asthmatics, bronchial obstruction is completely reversible.

## ASSESS YOUR ASTHMA IN A JUST A FEW SECONDS

### This questionnaire can help you determine how well you are managing your asthma.

1. I have daytime symptoms more than 3 times a week.
2. I have night time symptoms more than once a week.
3. I cannot engage in normal physical activities.
4. I miss school or work because of my asthma.

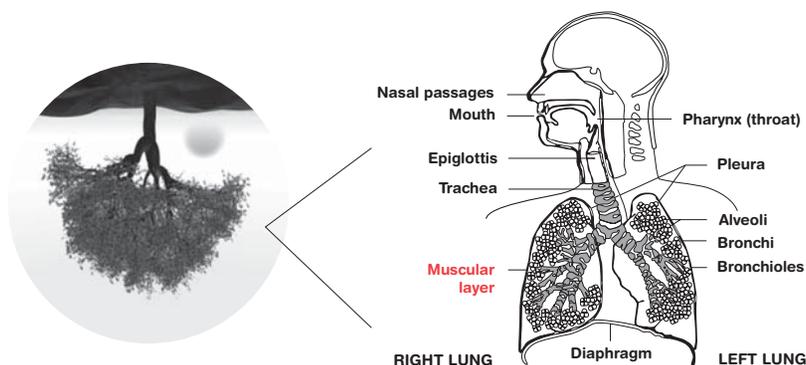
These symptoms do not necessarily mean that you are asthmatic. Other respiratory illnesses or heart problems may cause the same symptoms.

If you checkmarked one of these statements, your asthma may not be properly managed. **Take action!** Consult your doctor and take this test with you so that you can discuss it together.

5. I take more than 3 doses of my rescue medication (blue pump) per week (excluding a single dose taken preventively, prior to physical effort).
6. I often have asthma attacks (exacerbations).

## HOW DO YOUR LUNGS WORK?

To fully understand asthma, you have to know how your lungs work. In order to facilitate your understanding of the complex respiratory system, let's compare it to an inverted tree, hence the term bronchial tree.



The air we breathe is a gas mixture containing:

- 78% nitrogen
- 21% oxygen
- 1% argon and other gases

Inhaled air enters the body through the nose or mouth, flows down the trachea (tree trunk) and then inside the lungs through the right and left primary bronchi, (main branches of the tree), that split up into bronchi and bronchioli (smaller branches of the tree) to which are attached thousands of tiny air sacs called alveoli (leaves of the tree). These alveoli cause the oxygen we breathe to be transferred into the bloodstream and thus flow through the rest of the body.

At rest, an adult breathes 12-15 times a minute, and a child 18-25 times, or more if the adult or child engages in physical activity or experiences some form of respiratory difficulty.

*corticosteroids combined with a long-acting bronchodilator - inhalers*

- budesonide (Pulmicort®) and formoterol (Oxeze®) combined = (Symbicort®)



- fluticasone (Flovent®) and salmeterol (Serevent®) combined = (Advair®)

Never exceed the prescribed dose

### Rescue medication

*fast-acting beta<sub>2</sub>-blockers (most often used) – inhalers*

- terbutaline (Bricanyl®)
- salbutamol (Ventolin®)
- salbutamol (AiroMir®)



**Tip:** Regardless of the severity of your asthma, your rescue medication should always be readily available.

**Other types of bronchodilators may be tried but these are mainly recommended for people suffering from COPD**

*anticholinergics - inhalers*

- short-acting ipratropium bromide (Atrovent®)
- long-acting tiotropium bromide (Spiriva®) (24 hrs)



## Preventer-type medication

### corticosteroids (most often used) - inhalers

- budesonide (Pulmicort®)
- fluticasone (Flovent®)
- beclomethasone (Qvar®)
- ciclesonide (Alvesco®)



### antileukotrienes - tablets

as a complementary treatment with corticosteroids

- montelukast sodium (Singulair®)
- zafirlukast (Accolate®)



#### Oxeze® :

can be used as a rescue medication due to its fast action despite the fact that it is a long-acting drug.

#### Serevent® :

Caution  
Not to be used as a single method of treatment. It should always be associated with a corticosteroid treatment.

However, if the rescue inhaler needs to be used more than three times a week despite regular doses of an anti-inflammatory, an add-on treatment is recommended. Include a long-acting antileukotriene or a bronchodilator found in a separate inhaler or combined in a single inhaler, such as:

#### long-acting bronchodilators - inhalers

- formoterol (Oxeze®)
- salmeterol (Serevent®)

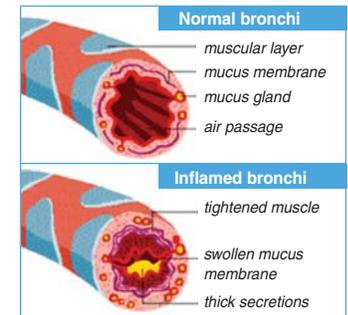


Never exceed the prescribed dose

## HOW DO THE BRONCHI REACT DURING AN ASTHMA ATTACK?

- The inner wall of the bronchi becomes red and swollen, thus restricting the flow of air.
- The muscles surrounding the bronchi contract (bronchoconstriction), as a result of a stimulus (triggering factor), which blocks the air passage and makes breathing even more difficult.
- The bronchi produce mucous in order to expel the respiratory irritants, but the accumulation of these secretions causes other complications such as inflammation.

In asthmatics, respiratory difficulty is felt during inspiration but even more during exhalation since the air remains partially trapped in the lungs due to swollen bronchi. In addition, this forced exhalation produces a wheezing sound when a person's breathing is difficult.



## WHAT CAUSES ASTHMA?

The exact causes are not clear, but it would seem that asthma occurs as a result of a complex interaction of environmental and genetic factors (hereditary predisposition).

In association with a triggering factor, the genetic factor affects the respiratory function and produces asthma symptoms that are variable and often persistent.

3 mechanisms affecting respiratory function:

- inflammation
- contraction
- hypersecretion

The bronchi react more quickly to triggers when inflammation is already present.

The symptoms of bronchoconstriction caused by irritants are usually immediate, brief and reversible with rescue drugs (bronchodilators).

The symptoms caused by inflammatory factors often appear later.

They may produce or exacerbate the symptoms of asthma during several weeks, or even months, and they are not as easily reversible.

## Asthma triggers

Elements or events are what cause the bronchi to react in a way that makes breathing more difficult. Some people may react to one or several factors at the same time while others develop a bronchial obstruction without any known triggering factor being the cause of it. Identifying these factors is crucial to the improvement of one's environment as well as the prevention and management of attacks.

### Irritant triggers

- sudden temperature changes (cold air and humidity)
- tobacco smoke (also an inflammatory factor)
- dust
- strong odours
- air pollution
- irritants in the workplace (occupational asthma)
- colds and viral respiratory infections

### Inflammatory triggers

#### Allergens

- dust mites
- food allergies
- animals
- mould spores
- pollens
- tobacco smoke

#### Respiratory infections

- cold
- flu
- sinusitis

## Ideally, the log book should include:

- peak expiratory flow readings
- symptoms
- medication
- daily activities

Request “**The Asthma logbook - PEF**”

## Controlling your environment and avoiding triggering factors

An appropriate treatment should be accompanied by sanitation of your environment. Identifying and eliminating or reducing contact with triggering factors can help prevent asthma attacks.

Identifying the factors that exacerbate asthma is not always easy but you pay close attention to whatever causes the symptoms to appear, and then adopt the necessary changes.

By avoiding exposure to certain asthma triggers, you may be able to reduce the doses of medication that you use to manage your asthma.

## Asthma medications

- 1. Preventer-type medication** (anti-inflammatories)
- 2. Short rescue medication and long-acting rescue medication** (bronchodilators)
- 3. Medication for treating exacerbations as well as severe and persistent asthma** (IgE controllers)

Asthmatics often neglect to take their medication regularly. Information and education therefore play a very important role in the treatment of asthma.

Asthma management guidelines recommend that anti-inflammatories, also referred to as preventive medication, serve as a cornerstone for the management of asthma.

In other words, focusing on reducing the underlying inflammation rather than relying on the single treatment of asthma symptoms has been proven to be more effective.

## Recognize the symptoms

Many asthmatics settle for inadequate management of their symptoms, which leads them to compromise and consequently to have a lesser quality of life, which is unacceptable.

It is imperative that you be able to recognize and monitor the signs of poorly managed asthma or of an imminent attack.

**The symptoms** can vary in nature and intensity, from light to severe depending on the individual:

- greater shortness of breath during exercise
- tightness of the chest
- wheezing
- more frequent coughing during early morning and/or night
- increased production of mucous with or without change of sputum colour

## You should also pay attention to certain indicators:

- reduced capacity to do exercise and/or to perform your daily activities
- increased use of your rescue medication (bronchodilator) or need to use it during the night or upon waking in the morning
- Abnormal drop or fluctuation of your peak expiratory flow (PEF - measure taken with a peak flowmeter)



A good way to monitor your asthma is to use a device called a peak flowmeter. Regular use of a flowmeter allows you to detect the symptoms of airway obstruction. This device measures the fastest rate at which the volume of expired air is expelled from the lungs. Recording your PEF values and symptoms in a log book will help you manage your asthma more efficiently.

In most asthmatics, the symptoms are **treatable** and **avoidable**.

## Other triggers

- gastroesophageal reflux (stomach acid reflux)
- aspirin intolerance
- hormonal changes (beginning of menstrual cycle, pregnancy)
- allergic rhinitis
- emotional disturbances
- physical exercise

Request our

**“Asthma triggers factors”** and **“Occupational asthma”** brochures

## ASTHMA MANAGEMENT

Asthma management is based on several important points designed to produce the best possible results. By properly managing your asthma right now, you prevent damage to your lungs.

## Key elements for the efficient management of asthma:

- obtain a precise and early diagnosis;
- recognize and understand the symptoms of asthma;
- control your environment and avoid the triggering factors;
- initiate the treatment required to manage your asthma;
- with your doctor, establish an action plan based on the progression of your symptoms;
- perform regular medical follow-ups.

## Obtain a diagnosis

Although these characteristics may sometimes point to asthma as a logical diagnosis, it is extremely important to establish a precise diagnosis, relying on in-depth evaluation and measurement of the degree of bronchial obstruction based on a spirometry test. A diagnosis is necessary to properly treat asthma with the correct medication and establish an adequate action plan.

The asthma attacks caused by these other factors can be eliminated by interrupting exposure to the agent or adopting an appropriate medical treatment.

The asthma diagnosis must be based on:

## Clinical evaluation

### Detailed medical history

Children will be more likely to experience symptoms if they have a family history of asthma and allergies.

- family history
- allergies, hay fever, eczema, etc.
- respiratory difficulty (since when?)
- nasal congestion (rhinitis) and itchy eyes (conjunctivitis)
- coughing – day, night, seasonal, under stress, frequent, moist or dry, productive, etc.
- sleep disturbed by symptoms
- absenteeism – from school or work (frequency)
- number of E.R. visits or hospital stays
- environment

### Physical examination

- auscultation (listening to pulmonary sounds with a stethoscope)
- examination of the nasal passages, etc.

A differential diagnosis (other cause resembling asthma) must be investigated to ascertain that the symptoms are not produced by another illness (for example, a heart disease, other pulmonary disorders or gastroesophageal reflux).

## Assessment of pulmonary function

A **spirometry** is a test measuring the maximum quantity of air exhaled from the lungs in one second (FEV1) using a device known as spirometer. This test helps confirm the presence of asthma and is useful in determining the severity of the disease. However, a spirometry is not indicated in children under the age of five, because the test requires a sustained and repeated effort in order to yield useful results.

**A bronchial provocation test** may be prescribed when the basic spirometry test is normal but your doctor suspects you might have asthma. A spirometric manoeuvre is performed before and after inhalation of a pharmacological agent (methacholine or histamine) that creates an obstruction at the bronchial level. It may be necessary to administer this agent several times while gradually increasing the dose before obtaining a bronchial reaction. At the end of the test, a bronchodilator is administered to dissipate, i.e. to reverse the reaction caused by the pharmacological agent.

There is also a specific bronchial provocation test designed to investigate occupational asthma (agent causing respiratory problems in the work place, e.g. flour, wood dust, chemical).



spirometry test

## Additional examinations

**Allergy skin tests** serve to confirm the presence or absence of allergies. However, they cannot be used to diagnose asthma. Allergy tests must be performed in correlation with the history of symptoms and a spirometry.

**Pulmonary and nasal X-rays** should be performed at the time of the original assessment, to exclude the possibility of respiratory difficulties caused by a disorder other than asthma.

**Blood sampling and a sputum examination** can be requested to determine if the eosinophils (white blood cells) and IgE (molecules that play a role in allergic reactions) are growing in number.

**A trial using asthma medications** will reinforce the asthma diagnosis if the symptoms improve following administration of the asthma medications.

The symptoms are highly variable and may worsen or improve over time.