CANA

COPD & ASTHMA NETWORK OF ALBERTA

COPD & ASTHMA HANDBOOK

Reference Guide for Health Professionals

Respiratory Educators in Primary Care
2011, Alberta 2nd Edition
www.canahome.org

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Alberta Asthma Centre: www.asthmacentre.org
Allergy/Asthma Information Association: www.aaia.ca
Anaphylaxis Canada: www.anaphylaxis.ca
Asthma Society of Canada: www.asthma.ca
Calgary COPD & Asthma Program: www.ucalgary.ca/asthma/
Calgary Community Pediatric Asthma Service: www.calgaryhealthregion.ca/ican or www.ucalgary.ca/icancontrolasthma
Caritas Centre for Lung Health & Edmonton COPD Outreach Program
COPD & Asthma Network of Alberta (CANA): www.canahome.org
Global Initiative for Asthma: www.ginasthma.org
Global Initiative for Chronic Obstructive Lung Disease: www.goldcopd.com
Living Well with COPD: www.livingwellwithcopd.com
Pharmaceutical companies: AstraZeneca, Boehringer-Ingelheim, GlaxoSmithKline, Graceway/3M, King, Merck Frosst, Novartis, Nycomed, Pfizer, Trudell
The Lung Association: www.lung.ca, www.teenasthma.ca, www.lung.ca/breathworks, www.resptrec.org, www.teamcopd.ca
The Canadian Thoracic Society: www.respiratoryguidelines.ca
Towards Optimized Practice Program (TOP): www.topalbertadoctors.org

Dear Partner in Health,

This Handbook is the result of a cross-provincial Task Force who came together to compile an Alberta Toolkit for Asthma & COPD that would benefit Health Care Professionals who work in Primary Care. The Task Force conducted personal consultations with Primary Care Network (PCN) representatives and Certified Respiratory Educators (CRE) to get a clear consensus on the type of asthma and COPD educational materials that should be included in the Toolkit. A subcommittee of the Task Force then began updating and collating several items that were identified to be ideal content for the Toolkit.

Your Toolkit contains:

- This Handbook.
- CD with (1) patient handouts, (2) Resource Catalogue, and (3) a PDF copy of this Handbook.
- Demonstrator devices.
- An airways model.

This Handbook is intended as an ***introductory guide*** for Health Care Professionals to support timely and accurate diagnoses of Asthma or COPD, with subsequent key management and self-management tips. We encourage the use of services provided by Certified Respiratory Educators (find under 'Programs' in the Resource Catalogue) and/or further training in patient counseling and education principles in order to enhance proficiency in chronic disease care for Asthma & COPD.

Within this Handbook, you will find a number of our provincially standardized tools such as our Alberta Asthma Action Plan, Device Technique Education Sheets, and Canadian Guidelines Summaries. Some of the tools may easily be photocopied from the Handbook, for ease of providing as patient handouts. For others, please follow the advice given or contact CANA at membership@canahome.org for your free electronic copy. Scattered within, and also in a listing at the back of this Handbook, you will also find useful Canadian websites and references. This Handbook was based upon significant content and updated material from the 'Respiratory Educators in Primary Care (REPC)' study modules.

At any time, we invite your suggestions and feedback. Please contact us via www.canahome.org, by email at membership@canahome.org, or by phone at 1-888-203-CANA.

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Section 1: Asthma

Section 2: COPD

Section 3: Medications

Section 4: Spirometry

Useful Websites

TABLE OF CONTENTS

SECTION 1 - ASTHMA

DESCRIPTION OF ASTHMA

Asthma is a chronic disease with occasional exacerbations that affects the airways in the lungs and is characterized by widespread, variable, and often reversible airflow limitation. In Canada approximately 12% of children and 8% of adults have asthma.

What Are Airways?

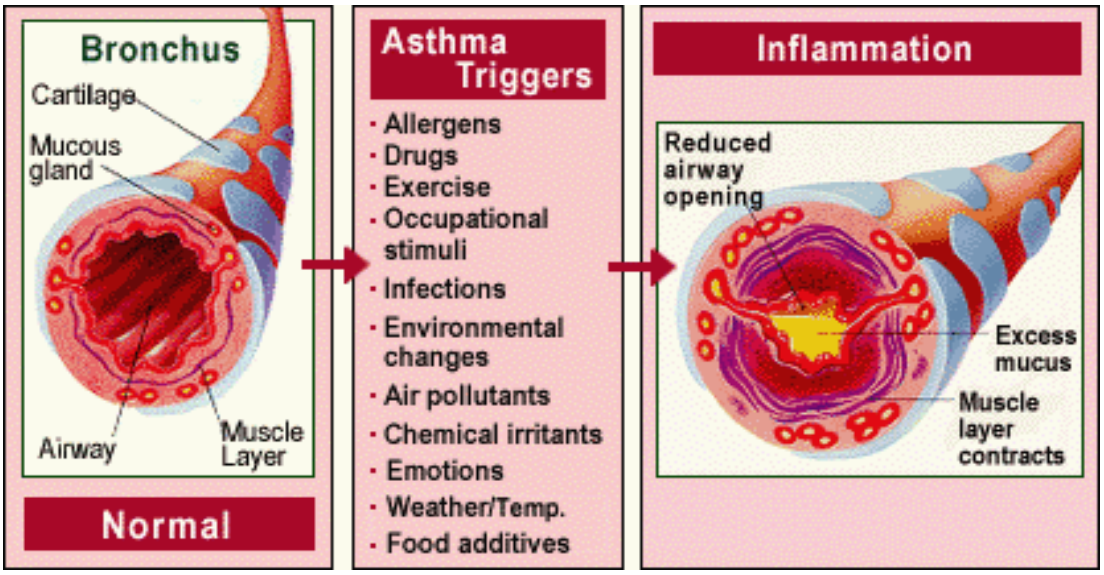
Airways are tubes connected together that carry air to the lungs. A ring of smooth muscle surrounds the outside of the airways. The inside has a membrane lining and contains numerous cells that produce mucus.

What Happens to the Airways in Asthma?

The airways are very sensitive and "twitchy" and react to triggers which then causes ***narrowing***.

How Does Narrowing of the Airways Develop?

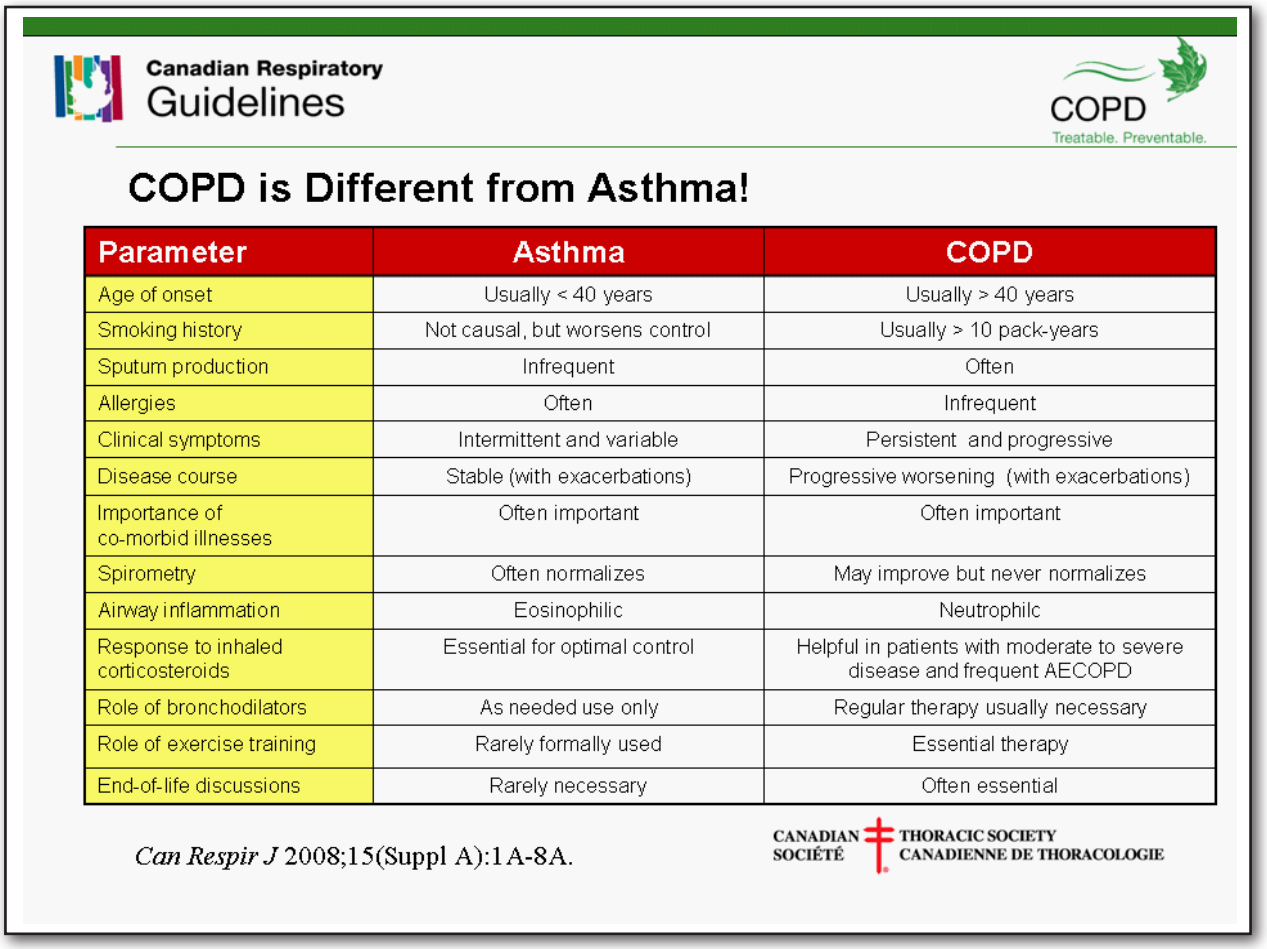
- Over time the inner lining of the airways becomes inflamed (swollen) and extra mucus is produced.
- The muscles in the walls of the airways constrict (tighten) and squeeze in response to triggers. ***Inflammation*** and ***constriction*** both cause a reduction of space available to move air.
- It is critical to treat both causes of narrowing (ie. inflammation and constriction) in order to effectively control asthma.



Source: http://www.healthylives.com/asthma.html,

DIAGNOSIS OF ASTHMA

Since misdiagnosis is common and has various implications, a confirmed diagnosis of asthma should be made - according to the most current Canadian Guidelines (www.respiratoryguidelines.ca). Key elements to diagnosis include a review of family history, medical history (including symptoms and allergies), response to a trial of asthma therapy, and for those over the age of 6, an objective measurement using simple spirometry or full Pulmonary Function Testing (which may include measurement of airway hyperresponsiveness).



Canadian Respiratory Guidelines

COPD
Treatable. Preventable.

COPD is Different from Asthma!

Parameter	Asthma	COPD
Age of onset	Usually < 40 years	Usually > 40 years
Smoking history	Not causal, but worsens control	Usually > 10 pack-years
Sputum production	Infrequent	Often
Allergies	Often	Infrequent
Clinical symptoms	Intermittent and variable	Persistent and progressive
Disease course	Stable (with exacerbations)	Progressive worsening (with exacerbations)
Importance of co-morbid illnesses	Often important	Often important
Spirometry	Often normalizes	May improve but never normalizes
Airway inflammation	Eosinophilic	Neutrophilc
Response to inhaled corticosteroids	Essential for optimal control	Helpful in patients with moderate to severe disease and frequent AECOPD
Role of bronchodilators	As needed use only	Regular therapy usually necessary
Role of exercise training	Rarely formally used	Essential therapy
End-of-life discussions	Rarely necessary	Often essential

Can Respir J 2008;15(Suppl A):1A-8A.

CANADIAN THORACIC SOCIETY
SOCIÉTÉ CANADIENNE DE THORACOLOGIE

Adapted in 2010 from Canadian Thoracic Society Asthma Management Continuum (Can Respir J 2010;17(1):15-24; www.respiratoryguidelines.ca) and the Global Initiative for Asthma (www.ginasthma.org).

Diagnosis

Confirm diagnosis by objective measures for those ≥ 6 yrs:

- Spirometry (the simplest and preferred diagnostic test):
  - ≥ 12% improvement in FEV_1 (minimum 200 ml in adults) from the baseline 15 minutes after use of an inhaled short-acting $beta_2$ agonist; **and**
  - Less than lower limit of normal ratio FEV1/FVC for age, sex, height, and ethnicity

PRACTICE POINT

In general, a history of recurrent symptoms (e.g., cough, breathlessness, wheeze) strongly suggests the diagnosis of asthma. Spirometry is an important tool used to confirm the diagnosis by demonstrating variable airflow limitation (obstruction), a key characteristic of asthma. Spirometry is also an important test used to assess the severity of airway obstruction.

Routine Management

All asthma patients/parents should receive ongoing education (≥ 2x/yr) to establish/confirm the goals of asthma treatment and support optimal control of their asthma including:

- Review medication device use technique
- Review benefits and side effects of medications, especially inhaled corticosteroids (ICS)
- Review the indicators of optimal asthma control
- Review a personalized written action plan
- Identify allergens and irritants and give practical advice on their avoidance
- Identify a support team, including a certified asthma educator
- Identify patients who would benefit from more substantial self-monitoring using symptom and/or peak expiratory flow (PEF) diaries. Poor perception of asthma symptoms is considered a risk factor for life-threatening asthma

PRACTICE POINT

Download Alberta's standardized tools for asthma education, including other languages: www.canahome.org under 'key resources'

Asthma Control

All of the following are necessary to indicate optimal asthma control:

- No daytime symptoms
- No night-time awakenings
- Normal physical activity
- No absenteeism due to asthma
- No need for urgent physician or emergency department visits due to asthma
- No use of reliever medication
- FEV_1 or PEF consistently at ≥ 90% of personal best

Pharmacotherapy

- It is important to educate patients about the differences between reliever and controller medications, and of the benefits of each
- If symptoms are infrequent and expiratory flow is normal, an inhaled short-acting $beta_2$ agonist (ie. SABA or fast acting bronchodilator) should be used as needed for relief
- If lung function is abnormal or a reliever is needed more than 3 times per week, initiating inhaled corticosteroid (ICS) is the preferred next step for control
- If symptoms are severe or expiratory flow is <60% of predicted value, oral steroids may be part of the initial management plan
- If asthma is not optimally controlled on low or medium dose ICS, consider:
  - increasing ICS dose (preferred in <12 yr olds)
  - combining long-acting beta-agonist with ICS (preferred in >12 yr olds)
  - adding a leukotriene receptor antagonist (preferred in <12 yr olds)

TOP Toward Optimized Practice

CANA COPD & ASTHMA NETWORK OF ALBERTA

PRACTICE POINT

Chronic use of *high dose* ICS (*see table*) increases the risk for long term side effects, especially in children. For preschool children with intermittent wheeze, intermittent SABA is recommended; intermittent use of LTRA has also been shown to be effective. For more severe episodes, intermittent use of systemic steroids needs to be considered in addition to regular treatment with ICS or LTRA. Intermittent use of ICS is not effective.

Notes: Dose equivilancies are approximate and are based on efficiency data.

1) Beclomethasone HFA (Graceway Pharmaceuticals, Canada).
2) Budesonide Turbuhaler, licensed for once daily dosing in Canada (AstraZeneca Inc, Canada).
3) Ciclesonide, licensed for once daily dosing in Canada (Nycomed Canada Inc.).
4) Fluticasone Diskus (GlaxoSmithKline Canada Inc, Canada).

Daily Inhaled Corticosteroid (ICS) Agents and Dosing

Product	Low	Medium	High
Beclomethasone HFA MDI – QVAR® [1]	≤ 200	201-400	> 400
Budesonide Turbuhaler – Pulmicort® [2]	≤ 400	401-800	> 800
Ciclesonide MDI – Alvesco® [3]	≤ 200	201-400	> 400
Fluticasone MDI & spacer or Diskus – Flovent® [4]	≤ 250	251-500	> 500

PRACTICE POINT

Uncontrolled asthma is a greater risk to pregnancy than asthma medications.

Asthma in Pregnancy

- Counsel pregnant women about avoidance of triggers and make them aware of the possible consequences for mother and fetus of inadequately controlled asthma
- Treatment should take the same approach as in the non-pregnant patient:
  - There is less information about the effects of long-acting beta$_2$ agonists and leukotriene receptor inhibitors in pregnancy and their use should be reserved only for patients whose asthma cannot be controlled using other therapies.
  - The use of systemic steroids for uncontrolled asthma, especially for prolonged duration, may be associated with a greater risk of pre-eclampsia, antepartum or postpartum hemorrhage, low birth weight, preterm birth, and hyperbilirubinemia.

Asthma in Pre-School Children

- A diagnosis of asthma can be made at any age (even < 1yr). Recurrent wheezing in non-atopic preschool children is likely to resolve in childhood, but atopy is a predictor of persistent asthma.
- A greater number of personal history and symptomatic indicators strengthens the diagnosis of asthma in preschoolers including:
  - Parental history of eczema or asthma
  - Recurrent episodes of wheezing
  - Chronic nocturnal cough
  - Clinical benefit from asthma medications, especially ICS

Asthma in Older Adults

- A diagnosis of asthma should be more widely considered in older patients with dyspnea, wheezing, or nocturnal cough
- Measures should be taken to prevent osteoporosis in elderly patients with asthma who require prolonged treatment with oral steroids
- Older patients with asthma have an increased risk of exacerbations and comorbidities are common in those over age 50; common causes of poor control are rhinitis and sinusitis

Chronic Asthma, January 2006
Renamed and Revised February 2010

SYMPTOMS OF ASTHMA

Symptoms of asthma vary; therefore it is important for you and your patient to understand relevant symptoms in order to intervene as early as possible, and to be able to optimize asthma control.

During an asthma attack, smooth muscles located around the airways constrict and decrease the flow of air in the airways. The amount of air flow can further be decreased by inflammation or excess mucus secretion. Swelling of the lining, tightening of the muscle, and increased production of mucus all make it difficult for air to pass through the airway, which causes shortness of breath.

Some asthma medications are designed to reduce the inflammation (swelling) inside the airways and other medications are designed to reduce the constriction (swelling) outside the airways in the smooth muscle. It is critical to treat both inflammation and constriction in order to effectively control asthma.

Common Symptoms:

Cough

Usually dry, hacking and persistent, often worse at night. Note: especially long after lying down.

Wheeze

A whistle type of noise that can be heard when an individual breathes. Not all people wheeze with asthma. Note: only 50% have a true medical wheeze.

Shortness of Breath

Breathing requires more effort and is fast and shallow.

Chest Tightness

Feeling of tightness or heaviness in the chest.

Difficulty Speaking

In severe cases the patient may have difficulty speaking in a full sentence.

Irritability

Common in children – irritability, crying, tiredness, stomach upset, and/or vomiting may occur as the attack continues.

TRIGGERS OF ASTHMA

- Individuals with asthma and/or allergies can experience worsening or severe symptoms when exposed to triggers.
- The best and most important method of treatment is avoidance of the trigger. If total avoidance is not possible, reduce exposure to triggers.
- Triggers can be divided into two groups – ***allergens*** and ***irritants***.
- Allergens usually produce more severe effects and only in those that are sensitive.
- Irritants produce less severe effects but will affect everyone in some way.
- The following are a list of common allergens and irritants. It is important for patients with asthma to identify their own personal asthma triggers.

Examples of Allergens (substances that trigger allergies by causing an immune response):

- Mold.
- Pollens (eg. grasses, trees, and weeds).
- Animal dander.
- Dust and dust mites.
- Certain foods - when food is an 'allergen' it can cause very severe and life threatening reactions (ei. anaphylaxis).

Examples of Irritants (substances that irritate the airways):

- Tobacco smoke.
- Strong smells (eg. paint, perfume).
- Strong emotions (eg. stress, hard laugh). Note: rarely causes inflammation so can be controlled rapidly.
- Air pollution.
- Cold air.
- Weather changes (eg. sudden temperature changes, humidity).
- Colds (viral infections).
- Exercise (NOTE: activity is encouraged; symptoms can be controlled. Rarely causes inflammation so can be prevented or reversed rapidly with bronchodilators).
- Pregnancy.
- Gastroesophageal reflux disease (GERD). Note: rare in children.
- Certain foods, preservatives, additives and dyes (eg. tartrazine, sulphites, MSG).
- Certain medications (eg. beta-blockers, aspirin containing products and some non-steroidal anti-inflammatory drugs (NSAIDs)).
- Certain occupational chemicals (eg. cleaning agents).

What Can Be Done To Reduce Exposure To Triggers?

Tobacco Smoke:

- Environmental exposure to any tobacco smoke is a major cause of asthma symptom development and also worsens any present asthma symptoms.
- Tobacco smoke is the most important pollutant present in the environment for those with asthma and allergies - reducing exposure is essential.
- Implement and enforce a no smoking policy.
- If smoking is permitted outside it must be away from areas where children play.
- Find resources at www.canahome.org under 'tobacco reduction links' and www.albertaquits.ca.

Dust:

- Dust mite insects live in warm and humid areas like carpets, bedding, and upholstered furniture. They eat the skin we shed.
- Eliminate dust from the indoor environment and keep indoor humidity at less than 50% to help remove this trigger and reduce asthma symptoms.
- Clean toys, curtains, and soft surface items regularly.
- Use allergen impermeable mattress and pillow covers.
- Wash bedding in hot water routinely, including any blankets.
- Remove all non-essential carpets.
- Consider using easy to clean materials such as wood, tile, or vinyl flooring.
- Reduce clutter and store toys, books and bedding in closed areas or allergen covers.
- Dust with a moist cloth or mop instead of a dry cloth.
- Air filters are NOT recommended to reduce the levels of dust mite triggers. See www.asthma.ca

Animal Dander:

- Cat and dog dander are common triggers for asthma and allergy.
- They are found in many public places even if such animals are not present because animal dander is brought indoors on the clothing of people who have come in contact with animals.
- Avoid direct and indirect contact with pets to help reduce pet triggers.
- Schools and daycares may consider the creation of a no pet or animal policy. See www.asthma.ca

Mold and Pollens:

- Found in the indoor & outdoor environment, especially during spring & fall.
- Sources of indoor mold growth include water damaged areas & humidifiers.
- Keep windows and doors closed to prevent pollen from entering.
- Avoid being outside when pollen counts are high, especially in spring & fall.
- Pollen counts are lowest just after rain and in the evening and at night.
- Check windows and ceilings for signs of mold or moisture.
- Clean any mold areas with a bleach solution.
- Discard any items that have a moldy odor.
- To find information on management of indoor air quality, visit Canada Mortgage and Housing Corporation at www.cmhc-schl.gc.ca/en under 'maintaining a home' or www.lung.ca.

Colds and Other Infections:

- Viral infections are often important triggers for most individuals - especially children. Preventing the spread of viruses and bacteria between individuals will help in reducing this potential trigger.
- Promote frequent hand washing.
- Wash toys regularly.
- Encourage parents to keep their sick children at home.
- Cover nose and mouth when coughing or sneezing.
- Promote annual flu vaccination.

Strong Odors:

- Strong odors are common triggers of asthma.
- Paints, cleaning solutions, perfumes, markers and glue are common in daycares/schools and are possible triggering odors for children.
- Create a "scent-free" daycare/school/work environment.
- Avoid using strong smelling cleaners, aerosols and deodorizers or clean when people are not present.
- Schedule major cleaning, painting, and repairs during times that people are not present.

Air Quality:

- Cold air and air pollution can affect some individuals with asthma; plan activity so that these irritants can be avoided.
- Cover the nose and mouth with a scarf on cold days if going outside.
- To find out about air quality in Alberta, visit www.casahome.org under 'air quality'. To find information on management of indoor air quality, visit Canada Mortgage and Housing Corporation at www.cmhc-schl.gc.ca/en under 'maintaining a home'. To find out more about weather and asthma, visit Asthma Society of Canada's special site: www.4seasonsofasthma.ca.

Exercise:

- In most cases asthma can be controlled & full exercise should be possible.
- Daycares/schools should have the ability to modify activities if participation by children with asthma and allergies is not possible.
- To prepare for exercise, make sure to warm up, look for signs of poorly controlled asthma, and take bronchodilator beforehand as prescribed.

MANAGEMENT OF ASTHMA

Goal:

With asthma under control, patients should have little or no symptoms and be able to live an active normal life, doing the things they like to do – including playing sports, and not missing school or work. Health Professionals should regularly assess control, triggers, compliance, inhaler techniques, and any co-existing conditions. Education is an essential component of asthma management and should be offered on an ongoing basis to parents and patients of all ages.

When a child is over 6 years, ask them about their goals and limitations due to their asthma in addition to asking their parents. Over 50% of families have serious concerns about side-effects of inhaled corticosteroids, so it is essential to allay these concerns. Stress the important social benefits and medical goals of using inhaled corticosteroids. For more, visit: www.ucalgary.ca/icancontrolasthma

Expertise:

In Alberta we have access to Certified Respiratory Educators (CRE, CAE), credible web sites, and a variety of education programs to assist with the optimal management of asthma. To learn more about available expertise in Alberta, visit www.canahome.org under 'key resources' and view the 'Resource Catalogue' or view the copy on the CD in your Toolkit.

Training:

There are a number of options available to develop expertise in helping patients to better manage their asthma as a chronic disease.

To learn more about training for Respiratory Educators visit www.canahome.org under 'training programs' and www.cnac.net under 'certification'.

Clinical Control of Asthma (ie. Optimal):

- No (or minimal)* daytime symptoms.
- No limitations of activity.
- No nocturnal symptoms.
- No (or minimal) need for rescue medication.
- Normal lung function.
- No exacerbations.

*minimal = twice or less per week.

Steps in Managing Asthma:

- Develop a partnership between patient/family and the health team. Note: it is the family's role to make decisions based on your advice.
- Ensure an accurate diagnosis.
- Identify and reduce exposure to triggers.
- Treat and monitor on an ongoing basis.
- Manage asthma exacerbations with the use of an Asthma Action Plan.
- Address patient self-management issues and special considerations.

Factors Affecting Self-Management:

Medication Factors	*Non-Medication Factors*
• Difficulties associated with inhaler technique. • Complicated regimens. • Fears about, or actual side effects. • Cost. • Distance to pharmacies. • Confusion about when to use each medication and at what dosage.	• Misunderstanding or lack of communication. • Fears about side-effects. • Inappropriate expectations. • Underestimation of severity. • Attitudes toward ill health. • Cultural factors. • Poor communication.

Special Considerations:

- Pregnancy.
- Surgery.
- Rhinitis, sinusitis, and nasal polyps.
- Occupational asthma.
- Respiratory infections.
- Gastroesophageal reflux.
- Aspirin-induced asthma.
- Anaphylaxis and asthma.

Addressing Compliance (also known as 'adherance' or 'concordance'):

- Compliance to treatment is the first thing to consider when asthma is not in control.
- Put the family at ease; they are not expected to be perfect.
- Ask how often the patient missed doses over the past week. Note: they may still inaccurately report.

What Is An Asthma Action Plan?

An Asthma Action Plan is written pharmacologic and non-pharmacologic instructions that are guided by action points, developed collaboratively between the patient (family) and their health professionals. It is used by the patient to maintain optimal asthma control and to respond appropriately to loss of control indicators (Alberta Asthma Action Plan Task Force 2007).

Alberta's Asthma Action Plan Has the Following Characteristics:

- Multiple format options (electronic, triplicate/chart copy, fillable pdf).
- Multiple language options (English, Punjabi, Chinese, French).
- Developed by cross-provincial health professionals of varying disciplines.
- Development was preceded by extensive surveillance.
- Ongoing evaluation and research informs its updates and implementation.
- Guides best practice based on current guidelines.
- Contains all routine management components.
- Based on patient goals and level of control.
- Individualized/relevant to patient.
- Applicable to most age groups.
- Provided with education and follow up.
- Culturally non-biased/specific.
- Easy to read/use.
- Attractive and colorful.
- Facilitates patient/provider communication.

What Are The Elements Of Alberta's Asthma Action Plan?

Alberta's Asthma Action Plan is divided into three sections (1) **GREEN ZONE** what to do when asthma is under control (2) **YELLOW ZONE** what to do when symptoms start to develop and (3) **RED ZONE** what to do when symptoms are severe. Alberta data shows that visits to Emergency Departments peak in April, September, and December, with an average frequency of one patient presenting every 16 minutes, and a higher presentation of certain populations such as welfare and aboriginal (Rosychuk et.al.; view at www.canahome.org under 'key resources').

GREEN ZONE	**Asthma is under control** Normal life with regular activities	**Action**
Day time symptoms	3 times or less per week *	Take usual medications
Night time symptoms	None	Avoid triggers
Reliever medication	3 times or less per week *	
Physical activity	Normal	
Able to go to school/work	Yes	
Peak expiratory Flow	85 to 100% (if you use a peak flow meter)	

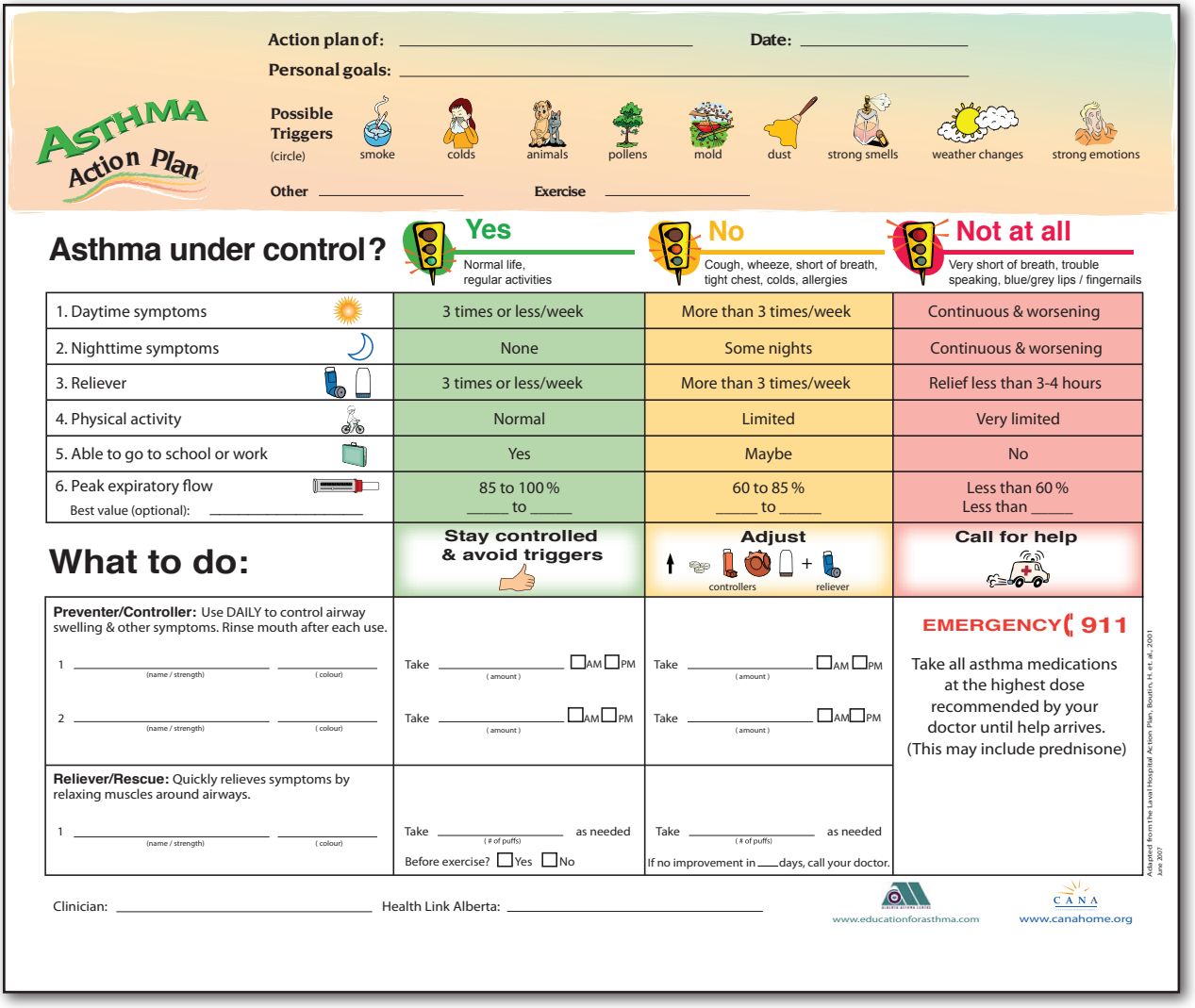
YELLOW ZONE	**Asthma is not under control** Cough, wheeze, short of breath, tight chest, colds, allergies	**Action**
Day time symptoms	More than 3 times per week *	Adjust medications
Night time symptoms	Some nights	
Reliever medication	More than 3 times per week *	
Physical activity	Limited	
Able to go to school/work	Maybe	
Peak expiratory Flow	60 to 85% (if you use a peak flow meter)	

RED ZONE	**Asthma is not at all in control** Very short of breath, trouble speaking, blue/grey lips/fingernails	**Action**
Day time symptoms	Continuous and worsening	Call 911
Night time symptoms	Continuous and worsening	Go to Emergency
Reliever medication	Relief less than 3 – 4 hours	Take all medications at
Physical activity	Very limited	highest dose
Able to go to school/work	No	
Peak expiratory Flow	< 60 % (if you use a peak flow meter)	

*Will be updated in accordance with new Canadian Guidelines.

Alberta's Asthma Action Plan:

You may download this in fillable PDF format, and in other languages, at www.canahome.org under 'key resources'.



ASTHMA Action Plan

Action plan of: _____ **Date:** _____

Personal goals: _____

Possible Triggers (circle): smoke, colds, animals, pollens, mold, dust, strong smells, weather changes, strong emotions

Other _____ **Exercise** _____

Asthma under control?

Yes — Normal life, regular activities

No — Cough, wheeze, short of breath, tight chest, colds, allergies

Not at all — Very short of breath, trouble speaking, blue/grey lips / fingernails

	Yes	No	Not at all
1. Daytime symptoms	3 times or less/week	More than 3 times/week	Continuous & worsening
2. Nighttime symptoms	None	Some nights	Continuous & worsening
3. Reliever	3 times or less/week	More than 3 times/week	Relief less than 3-4 hours
4. Physical activity	Normal	Limited	Very limited
5. Able to go to school or work	Yes	Maybe	No
6. Peak expiratory flow Best value (optional): _____	85 to 100 % _____ to _____	60 to 85 % _____ to _____	Less than 60 % Less than _____

What to do:

	Stay controlled & avoid triggers	Adjust (controllers + reliever)	Call for help
Preventer/Controller: Use DAILY to control airway swelling & other symptoms. Rinse mouth after each use. 1 _____ (name / strength) _____ (colour) 2 _____ (name / strength) _____ (colour)	Take _____ (amount) ☐AM ☐PM Take _____ (amount) ☐AM ☐PM	Take _____ (amount) ☐AM ☐PM Take _____ (amount) ☐AM ☐PM	**EMERGENCY 911** Take all asthma medications at the highest dose recommended by your doctor until help arrives. (This may include prednisone)
Reliever/Rescue: Quickly relieves symptoms by relaxing muscles around airways. 1 _____ (name / strength) _____ (colour)	Take _____ (# of puffs) as needed Before exercise? ☐Yes ☐No	Take _____ (# of puffs) as needed If no improvement in ___ days, call your doctor.	

Clinician: _____ Health Link Alberta: _____

www.educationforasthma.com www.canahome.org

Adapted from the Laval Hospital Action Plan, Boudrin, H. et. al., 2001 June 2007

(See Over for the Back Side)

Keeping Asthma in Control with Your Action Plan

With **Your Asthma** in control, you should be able to live an active normal life and do things you like to do - including playing sports, and not missing school or work.

Learn all about *your* asthma from Certified Asthma Educators, credible web sites and education programs.

When you learn about managing *your* asthma and using **Your Action Plan** from your doctor, Certified Asthma Educator, or pharmacist, you can control *your* asthma.

Uncontrolled asthma that is severe can lead to serious situations, including permanent damage to the lung tissue and, sometimes, even death.

Simple ways to take care of Your Asthma

1. The list under 'Asthma under control?' will help you decide if *your* asthma is in control or if you need to make changes to your medicine and triggers. The faster you take action on the attack by adjusting your medicine, the better the chances to improve *your* asthma quickly.
2. The 'What to do' list should tell you exactly what to do as agreed upon by you and your doctor or health professional.
3. There is space to write the numbers of important health professionals.
   Note: Consult your health professionals quickly if:
   - ⚠ You are unsure what to do
   - ⚠ You have adjusted your medicine as indicated and there is no change
   - ⚠ You are in the red zone
   - ⚠ You have greenish mucous, indicating a possible bacterial infection

Preparing for Your Appointments

The key to success in managing *your* asthma is to review *your* Action Plan and medication technique **every six months.** You can get the most out of your time with your doctor or Certified Asthma Educator by planning before you go.

Things you can do to prepare for your appointments include bringing:

- ☑ A record of your recent symptoms, medication use, activity level and/or peak flow meter readings.
- ☑ Your Action Plan, so that you and your doctor can develop, modify or review the plan.
- ☑ Your inhaler(s) to review your technique.

☑ A list of any questions you may have:

_____

_____

_____

_____

Your Asthma Control

If you answer "Yes" to ONE or more of these questions, *your* asthma is **NOT under control.** Activate *your* Action plan or talk to your doctor.

1	Do you cough, wheeze, or have a tight chest because of *your* asthma? (3 or more times a week)	☐ Yes	☐ No
2	Do coughing, wheezing, or chest tightness wake you at night? (1 or more times a week)	☐ Yes	☐ No
3	Do you stop exercising because of *your* asthma?	☐ Yes	☐ No
4	Do you ever miss work or school because of *your* asthma?	☐ Yes	☐ No
5	Do you use your reliever/rescue medicine more than 3 times a week? (except one dose/day for exercise)	☐ Yes	☐ No

For further information on living life to the fullest with asthma, visit:

Lung Association
www.lung.ca

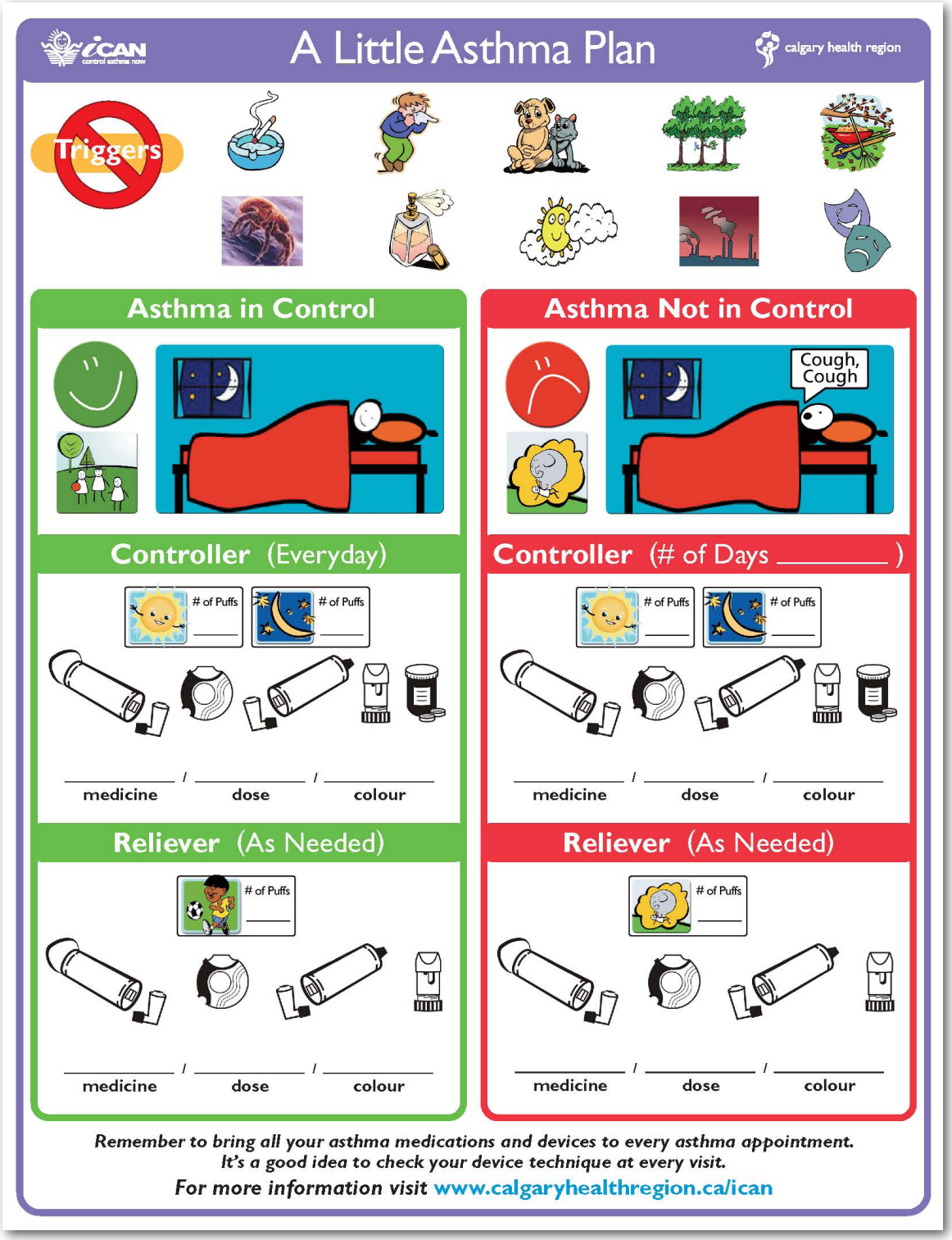
Asthma Society of Canada
www.asthma.ca

Children's site
www.calgaryhealthregion.ca/ican

Teen's site
www.teenasthma.ca

Alberta's Asthma Action Plan For Preschool Children:

Please look for this and other resources for children, particularly those of preschool age, on the interactive site: www.calgaryhealthregion.ca/ican or www.ucalgary.ca/icancontrolasthma.



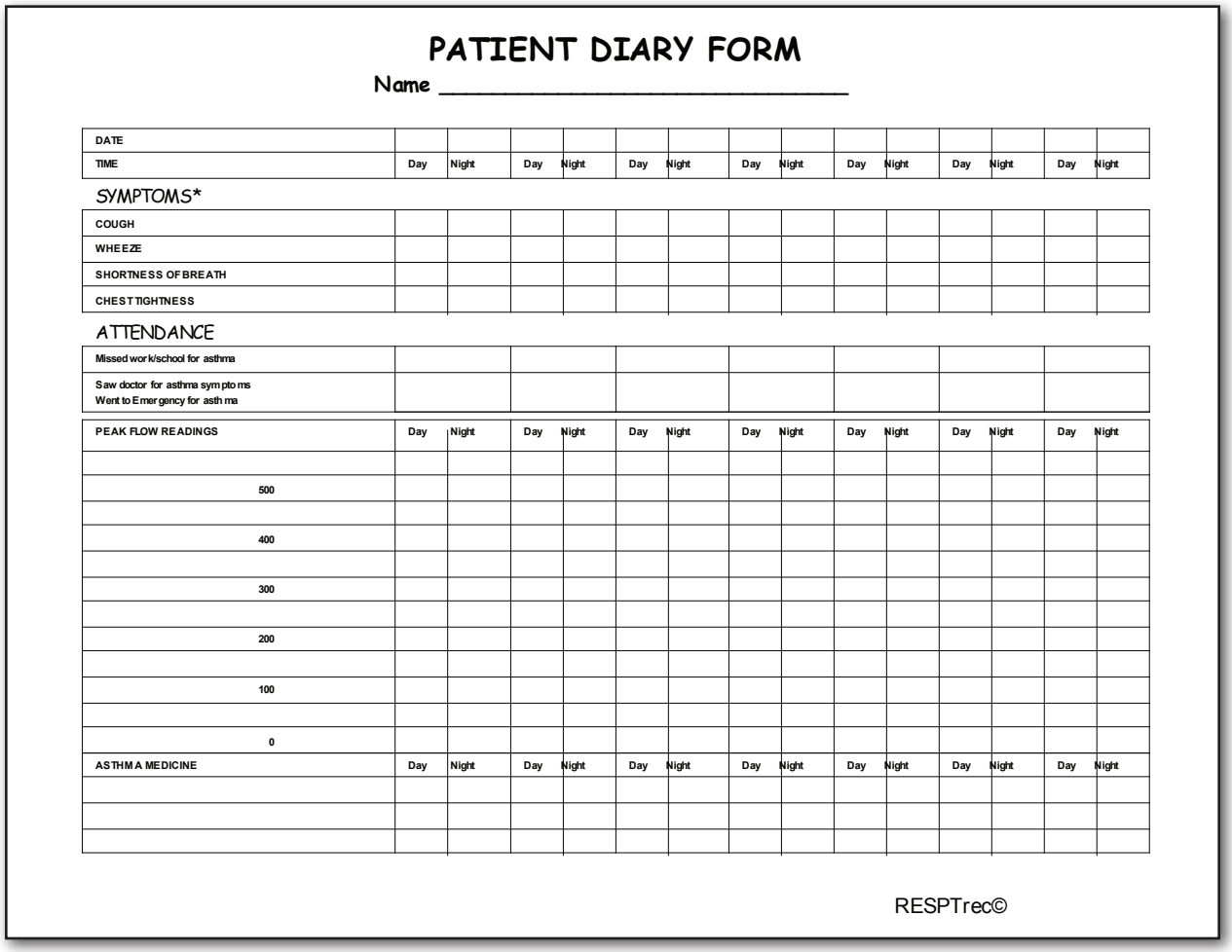
MONITORING OF ASTHMA

In order to ensure adequate control of asthma, it is important to monitor symptoms. Symptoms can be monitored through the use of an ***Asthma Diary*** and/or a ***Peak Flow Meter.*** Note: Most often these tools would be used when there is poor asthma control or the patient perceives their symptoms poorly. Since technique for peak flow meters varies significantly from medication device technique, be careful when selecting patients to use this tool and check their technique to ensure accuracy of results.

What Is An Asthma Diary?

An Asthma Diary is a tool used to document asthma symptoms, medication usage, peak flow measures (if applicable) and any changes in activity levels. The diary can help to see patterns to figure out the things that make asthma symptoms worse.

If medicines or dosages have been changed, the diary can show whether symptoms get better after the change. There are various templates available, or patients may develop their own. This sample illustrates common elements:



PATIENT DIARY FORM

Name _____

DATE														
TIME	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night
SYMPTOMS*														
COUGH														
WHEEZE														
SHORTNESS OF BREATH														
CHEST TIGHTNESS														
ATTENDANCE														
Missed work/school for asthma														
Saw doctor for asthma symptoms Went to Emergency for asthma														
PEAK FLOW READINGS	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night
500														
400														
300														
200														
100														
0														
ASTHMA MEDICINE	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night

RESPTrec©

What Is A Peak Flow Meter?

Peak Flow measures how fast air can be expelled from the lungs. Use of a Peak Flow Meter (mechanical or digital) can be helpful, particularly for those who are less aware of their symptoms. There is currently little evidence to support the value of measurement of Peak Flow in children.

Instructions For Use Of A Mechanical Peak Flow Meter:

Step 1: Put the indicator at zero.

Step 2: Hold the peak flow meter horizontally from your mouth, take a deep breath in.

Step 3: Seal your lips tightly around the mouthpiece and blow out as quickly and forcefully as possible (eg. blast air out).

Step 4: Read and record the number that the indicator now shows.

Step 5: Repeat steps 1 through 4 three times and record the BEST of the three readings.

*Note: Perform peak flow measurement before taking any asthma medications.

What Are The Typical Normal Rates For Peak Flow?

Peak Flow varies depending on age, height, and gender. The following tables are currently considered to be a good reference for the rates achieved by healthy lungs:

Peak Expiratory Flow Rates (PEFR) – MALES (Knudson, 1976)									
Age/Ht	**64**	**66**	**68**	**70**	**72**	**74**	**76**	**78**	**80**
20	472	500	523	547	571	595	618	642	666
25	526	549	573	597	621	645	668	672	716
30	494	523	551	580	609	637	666	695	723
35	483	512	541	569	598	627	655	684	713
40	473	502	530	559	588	616	645	623	702
45	463	491	520	548	577	606	634	663	692
50	452	481	509	538	567	585	624	653	681
55	442	470	499	527	556	585	613	642	671
60	431	460	488	517	546	574	603	632	660
65	421	449	478	506	535	564	592	621	650
70	410	439	467	496	525	553	582	611	639
75	400	428	457	485	514	543	571	600	629
80	389	418	446	475	504	532	561	590	618

Peak Expiratory Flow Rates (PEFR) – FEMALES (Knudson, 1976)							
Age/Ht	**60**	**62**	**64**	**66**	**68**	**70**	**72**
20	401	416	431	446	461	476	491
25	366	381	396	411	426	441	466
30	359	374	389	404	418	433	448
35	351	366	381	396	411	426	441
40	344	359	376	389	403	418	433
45	336	351	366	381	396	411	426
50	329	344	359	374	388	403	418
55	321	336	351	366	381	396	411
60	314	329	344	359	373	388	403
65	306	321	336	351	366	381	396
70	299	314	329	344	358	373	388
75	291	306	321	336	351	366	381
80	284	299	314	329	343	358	373

ALLERGY

What Is An Allergy?

- An allergy is an inappropriate reaction of the immune system.
- The immune system reacts to substances that are usually harmless by forming antibodies against these substances. The substances are referred to as allergens.
- Allergens can be eaten *(food)*, injected *(bee sting)*, inhaled *(pollen)*, or touched *(animals)*.
- Allergic antibodies are different from the antibodies that we produce to protect us from infections such as measles. When an antibody against measles comes in contact with a measles virus, it counteracts the virus. The measles antibody then protects a person without causing any symptoms or side effects. However when an allergic antibody reacts with an allergen, it will cause allergic symptoms.

What Are The Symptoms Of Allergy?

Allergy symptoms can affect various parts of the body, including the skin, respiratory, gastrointestinal and cardiovascular systems. Common symptoms are:

- Runny nose.
- Skin rashes.
- Irritability.
- Sniffling.
- Itchiness.
- Dark circles under the eyes.
- Puffy, itchy, watery eyes.
- Diarrhea or vomiting.
- Cough.

What Can Be Done To Manage Allergy?

Advise patients to avoid known allergens and to use medications such as antihistamines when symptoms arise. Better control of allergic reactions will assist in control of asthma symptoms.

What Is Food Allergy?

A food allergy is a reaction of the immune system to a component of food, usually a protein or molecule linked to a protein that is recognized as "foreign". Severe reactions are called ***anaphylaxis***.

What Is Food Intolerance?

Different from a food allergy, food intolerance occurs when the body is unable to process an additive or a naturally occurring food component. An additive is a substance that is not normally consumed by itself and is often added to food to enhance certain features such as texture or color, or to prevent spoilage.

ANAPHYLAXIS

Anaphylaxis is an acute, life threatening allergic response. Severe symptoms can occur suddenly following contact with the allergen and may progress rapidly or can develop over a short period of time and progress in severity, known as a delayed response.

What Are Some Causes of Anaphylaxis?

- Foods (eg. milk, peanuts, eggs, shellfish, whitefish, other nuts, and some food additives).
- Stings (eg. bees, wasp, hornets, yellow jackets, & fire ants).
- Medications (eg. antibiotics such as penicillin, muscle relaxants, ASA, and non-steroidal anti-inflammatory agents).
- Latex.
- Vigorous exercise after eating may enhance allergic response.

What Are Some Symptoms of Anaphylaxis?

The presentation of symptoms varies from episode to episode, with varying severity upon subsequent exposure to the same allergen. The same patient may experience different symptoms of varying degrees at each episode. Symptoms of anaphylactic shock tend to develop rapidly although the initial presentation can be delayed and/or deceptively mild. The victim may become uneasy, upset, and red in the face. They may also develop a rapid heartbeat, prickling and itchiness in the skin, throbbing in the ears, sneezing, coughing and difficulty breathing. Shock may then follow, in which blood vessels become leaky, blood pressure falls and the person becomes cold, clammy and faint.

What Are The Implications of Anaphylaxis?

Although anaphylaxis is most often diagnosed in childhood, it can also develop later in life. Living with anaphylaxis can be a challenge. People with this condition must learn how to avoid the allergen that causes their reaction. They must also be prepared to manage an unexpected reaction.

ALTHOUGH IT IS UNCOMMON, WITHOUT IMMEDIATE MEDICAL AID, DEATH MAY RESULT.

TREATMENT OF ANAPHYLAXIS

Anaphylaxis Canada can help a patient learn to live safely with allergy (www.anaphylaxis.ca). Start by following these important safety rules:

- See a doctor who is a qualified specialist in allergies (an allergist or clinical immunologist).
- Find out what could cause a reaction. Learn how to avoid these allergens.
- Keep an epinephrine auto-injector with you at all times. Even if careful to avoid the allergen, accidents can happen.
- For those who have food-related anaphylaxis, don't eat unless it is known exactly what is in the food and only if epinephrine is handy.
- Know how to recognize symptoms. Make sure to know how to use the epinephrine auto-injector correctly. If a child has anaphylaxis, make sure all caregivers and teachers are properly trained.
- Wear MedicAlert identification (www.medicalert.ca) and join Canada's Anaphylaxis Registry (www.anaphylaxis.ca) to receive relevant clinical and educational updates as well as product recalls.

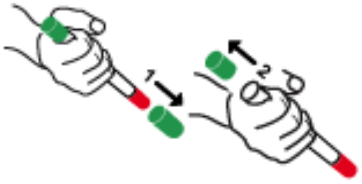
What Should Be Done During An Anaphylactic Episode?

- For those who have an epinephrine auto-injector (eg. EpiPen, Twinject) use on **first sign** of symptoms. Always know where the epinephrine is kept and how to administer it.
- Act quickly and call ***911*.**
- Stay with the person and keep them calm and motionless.
- Notify the family AFTER epinephrine is administered.
- Anyone who receives an injection of epinephrine **must go to the emergency department** for further assessment, even if symptoms have improved. A relapse reaction can occur up to 8 hours after the original reaction.
- Even if you are in doubt about whether epinephrine is needed, administer it. In normally healthy individauls, it will not cause harm if given unnecessarily.

What Should You Know About Epinephrine Auto-Injectors?

- There are currently two epinephrine auto-injectors available in Canada: EpiPen® and Twinject® which are prescribed based on weight.
- Epinephrine (adrenaline) is a hormone that the body naturally produces.
- It works on the cardiovascular and respiratory systems to constrict blood vessels & relax muscles of the chest to improve breathing.
- It must be administered by injection.

PEOPLE ARE SOMETIMES AFRAID TO USE THE AUTO-INJECTOR ON THEMSELVES OR ON THEIR CHILDREN / STUDENTS. PLEASE NOTE THAT THE DISCOMFORT IS MINIMAL AND SHORT-LIVED. A SMALL TRADE-OFF FOR SAVING A LIFE!



Twinject®

Practice with the epinephrine auto-injector Trainer Device and teach caregivers, friends, family members, and teachers how to use it. The trainer does not contain a needle or medication.

Current instructions and Trainer Devices can be found at www.epipen.ca and www.twinject.ca.

BE PREPARED! USE AN 'ANAPHYLAXIS ALERT FORM' AND CHECK FOR:

- Expiry date on medication.
- Physician written directions for school or daycare situations.
- List of the person's allergies, particularly for children.
- Emergency contact information kept up-to-date.

To download a customizable 'anaphylaxis alert form', or for additional resources and training, visit www.anaphylaxis.ca under 'living with anaphylaxis'. To learn more about resources available for schools, visit www.allergysafecommunities.ca and for resources available in Alberta's schools see www.education.alberta.ca/aair.

NOTES

SECTION 2 - COPD

DESCRIPTION OF COPD

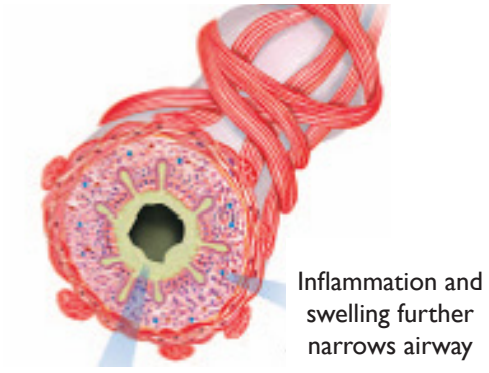
COPD stands for Chronic Obstructive Pulmonary Disease. It is a lung disease usually caused by smoking. COPD includes a few lung diseases, most commonly chronic bronchitis and emphysema. Many people with COPD have both of these diseases.

What Does COPD Do To The Lungs?

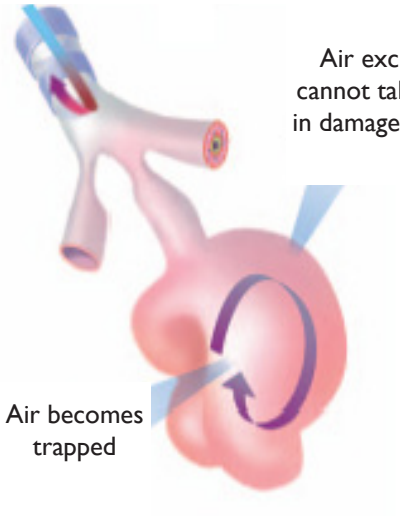
COPD slowly damages the airways (ie. the breathing tubes that go in and out of the lungs). People with COPD have swollen and partly blocked airways. They can also have damage in the air sacs at the tips of their airways. COPD makes it hard to breathe because:

- The airways and air sacs in the lungs lose their shape and stretchiness.
- The walls between many of the air sacs are destroyed.
- The walls of the airways become thick and swollen.
- Cells in the airways make more mucus than usual, which blocks the airways.

Chronic Bronchitis



Emphysema



http://www.livingwellwithbronchitis.com

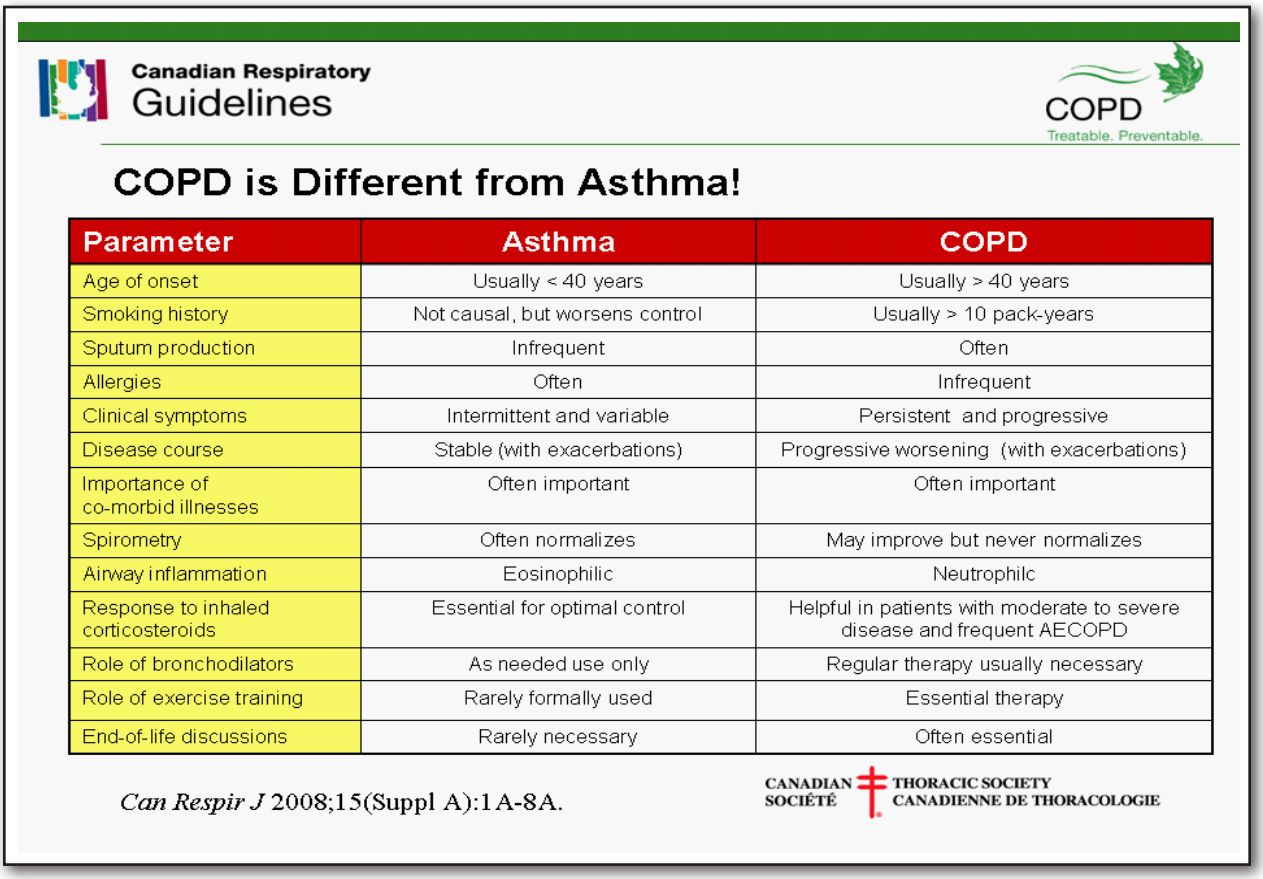
What Causes COPD?

In at least 80% of cases, tobacco smoking is the main cause of COPD; both current and former smokers are at risk. Other causes of COPD are:

- A rare genetic disorder called Alpha-1 antitrypsin deficiency.
- Second-hand smoke.
- Air pollution (dust, chemicals, occupational exposure).
- Having repeated lung infections as a child.

What Are The Signs of COPD?

Often the early signs of COPD are dismissed as either a normal sign of aging or as other diseases. It is critical to the treatment and prognosis of COPD that it is recognized and properly diagnosed as early as possible.



Canadian Respiratory Guidelines

COPD
Treatable. Preventable.

COPD is Different from Asthma!

Parameter	Asthma	COPD
Age of onset	Usually < 40 years	Usually > 40 years
Smoking history	Not causal, but worsens control	Usually > 10 pack-years
Sputum production	Infrequent	Often
Allergies	Often	Infrequent
Clinical symptoms	Intermittent and variable	Persistent and progressive
Disease course	Stable (with exacerbations)	Progressive worsening (with exacerbations)
Importance of co-morbid illnesses	Often important	Often important
Spirometry	Often normalizes	May improve but never normalizes
Airway inflammation	Eosinophilic	Neutrophilc
Response to inhaled corticosteroids	Essential for optimal control	Helpful in patients with moderate to severe disease and frequent AECOPD
Role of bronchodilators	As needed use only	Regular therapy usually necessary
Role of exercise training	Rarely formally used	Essential therapy
End-of-life discussions	Rarely necessary	Often essential

Can Respir J 2008;15(Suppl A):1A-8A.

CANADIAN THORACIC SOCIETY
SOCIÉTÉ CANADIENNE DE THORACOLOGIE

DIAGNOSIS OF COPD

Demonstration of airflow obstruction through spirometry is the only definitive test for COPD. This diagnostic test measures the amount of air the lungs can hold as well as the time it takes the patient to fully exhale. For more details, see Section 4. An important component of diagnosing COPD is increasing awareness of the disease, its risk factors, symptoms, and its treatable nature. This sample poster can increase awareness in your clinic; email membership@canahome.org for a copy.

CANA
COPD & ASTHMA NETWORK OF ALBERTA

www.goldcopd.com
www.canahome.org
www.lung.ca/breathworks

COPD stands for "Chronic Obstructive Pulmonary Disease"

- **Chronic** means it won't go away.
- **Obstructive** means partly blocked.
- **Pulmonary** means in the lungs.
- **Disease** means sickness.

COPD is a common lung disease that blocks the airways, making breathing difficult.

COPD is usually caused by smoking or prolonged exposure to fumes or very dusty places.

Symptoms of COPD include coughing, bringing up phlegm or mucus, and getting short of breath. If you are over 40, *and* have ever smoked or have any of these symptoms, ask your healthcare professional about *lung function testing* and COPD!

Many people have COPD and don't know it. Some think their symptoms are just a natural part of the aging process.

COPD is a life-threatening disease that will get worse if not treated. **COPD can be treated!** Although there is no cure, doctors can help you feel better and slow damage to your lungs.

The earlier a diagnosis is made, the more effective the treatment will be.

COPD can be prevented! If you are a smoker, quitting smoking is the best way to prevent COPD or to stop its progression.

It is NEVER too late to quit smoking!

What Other Factors Affect The Diagnosis Of COPD?

It is important to target patients who are at risk for COPD as early as possible, and to ensure they go for spirometry testing according to current best practice. This sample poster can help to target patients for spirometry; for a free customizable copy, send an email to membership@canahome.org.

CANA
COPD & ASTHMA NETWORK OF ALBERTA

www.goldcopd.com
www.canahome.org
www.lung.ca/breathworks

Do you know about COPD (Chronic Obstructive Pulmonary Disease)? This chronic lung disease is a major cause of illness, yet many people have it and don't know it.

1. Do you cough several times most days?
   Yes ☐ No ☐
2. Do you bring up phlegm or mucus most days?
   Yes ☐ No ☐
3. Do everyday chores make you breathless?
   Yes ☐ No ☐
4. Are you older than 40 years?
   Yes ☐ No ☐
5. Are you a current smoker or an ex-smoker?
   Yes ☐ No ☐

If you answered 'yes' to 3 or more of these questions, ask your doctor if you might have COPD and should have a simple breathing test called spirometry.

If COPD is found earlier, there are steps you can take to prevent further lung damage and help you feel better. **Take time to think about your lungs… learn about COPD!**

Adapted in 2010 from Canadian Thoracic Society Recommendations for Management of Chronic Obstructive Pulmonary Disease (Can Respir J 2008;15 Suppl A; www.respiratoryguidelines.ca) and the Global Initiative for COPD (www.goldcopd.com).

Diagnosis

Confirm diagnosis and assess severity by objective measures:

(1) Spirometry (the simplest and preferred diagnostic test):
- Postbronchodilator ratio FEV_1/FVC of less than 0.70

(2) Physical examination and chest x-ray are not diagnostic but are helpful to exclude other diagnoses or to look for comorbidities. Several other tests are useful to further assess clinical manifestation:

- Pulmonary Function Testing
- Exercise Testing
- Arterial Blood Gas
- Nutrition Assessment
- Echocardiography
- Sputum Cytology

PRACTICE POINTS

Most patients with COPD are not diagnosed until the disease is well advanced, but spirometry targeted at those who are at risk can establish an earlier diagnosis to help change the progression of the disease.

Who should undergo spirometry testing to detect COPD? Smokers or ex-smokers 40 years of age and older who have one of the following: persistent cough and/or phlegm, wheeze, frequent respiratory tract infections, or progressive activity-related shortness of breath.

Consider referral to a specialist when: diagnosis is uncertain, symptoms are severe or disproportionate relative to spirometry results, accelerated decline of lung function, onset of symptoms is at a younger age (< 40 years), failure to respond to bronchodilator therapy, severe or recurrent exacerbations, complex comorbidities, assessment for pulmonary rehabilitation, home oxygen, and/or surgical therapies.

Routine Management

COPD is treatable at any stage of the disease. Management goals include prevention of disease progression (smoking cessation), reduction of frequency and severity of exacerbations, improvement of both dyspnea and exercise capacity (maintain active lifestyle), and improvement of quality and quantity of life. Effective COPD education is individualized and varied according to disease severity; patient and family need support based on COPD specific self-management principles including:

- Counseling for smoking cessation
- Vaccination annually for influenza and once for pneumococcal infection
- Review medication device use technique
- Review the indicators, prevention, and treatment for acute exacerbations (AECOPD)
- Review a personalized written action plan
- Identify strategies and resources pertaining to relief of dyspnea
- Identify a support team, including a certified respiratory educator
- Identify patients who would benefit from pulmonary rehabilitation

PRACTICE POINTS

Smoking cessation is the single most effective intervention to reduce the risk of developing COPD and the only intervention that has been shown to slow its progression. Systematically offer minimal counseling interventions (less than 3 minutes) to every smoker and provide them with the option for more counseling and pharmacotherapy to further improve quit rates.

For a listing of available services visit www.albertaquits.ca

TOP Toward Optimized Practice

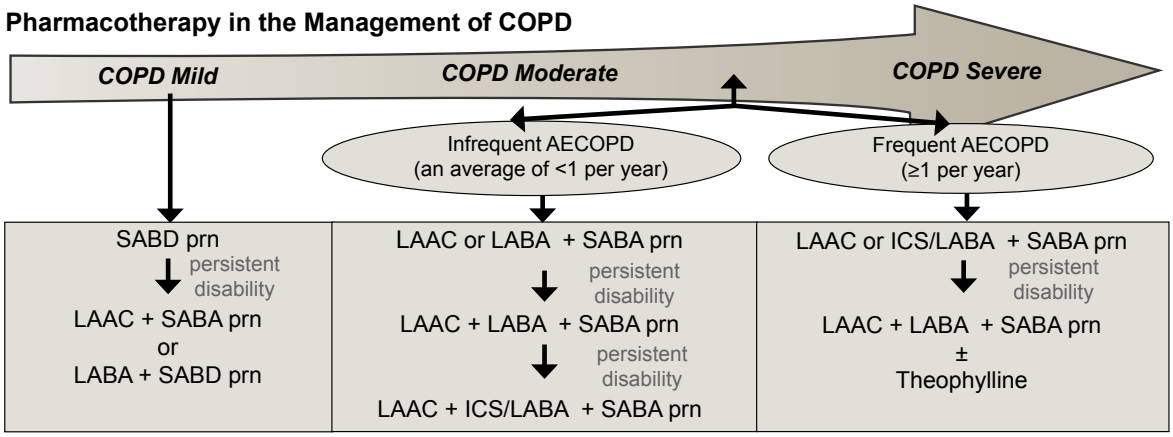
CANA COPD & ASTHMA NETWORK OF ALBERTA

COPD Severity	Symptoms
Mild	Shortness of breath from COPD when hurrying on the level or walking up a slight hill. Postbronchodilator FEV_1 ≥ 80% predicted.
Moderate	Shortness of breath causing patient to stop after walking about 100 meters (or after a few minutes) on the level. Postbronchodilator FEV_1 < 50-80% predicted.
Severe	Shortness of breath resulting in the patient too breathless to leave the house or breathless after dressing/undressing or the presence of chronic respiratory failure or clinical signs of heart failure. Postbronchodilator FEV_1 < 30-50% predicted.

Pharmacotherapy

- Inhaled therapy is preferred and bronchodilators (e.g., $beta_2$ agonists and anticholinergics) are the mainstay of COPD pharmacotherapy. They reduce air trapping (lung hyperinflation) and dyspnea, and improve exercise capacity and quality of life even if there is no improvement in spirometry.
- Optimal pharmacotherapy of COPD is individual and is guided by disease severity and frequency of acute exacerbations (AECOPD).
- Combining bronchodilators of different classes may increase efficacy compared with increasing the dose of a single bronchodilator.

Pharmacotherapy in the Management of COPD



AECOPD

AECOPD are associated with high costs of care, increased health care utilization, decreased quality of life, and increased mortality so management and prevention of AECOPD is critically important. At least 50% of AECOPD are thought to be infectious and other triggering factors include CHF, exposure to irritants, and pulmonary embolism.

Pulmonary Rehabilitation

Clinically stable patients who remain dyspneic and limited in their exercise capacity despite optimal pharmacotherapy should be referred for supervised pulmonary rehabilitation.

PRACTICE POINT

For a listing of available services for COPD in Alberta, view the 'Resource Catalogue' at www.canahome.org under 'key resources;' other standardized tools are also available.

Oxygen

Long term continuous oxygen therapy (>15 hr/day to achieve saturation of > 90%) offers a survival advantage to patients with stable COPD who have arterial oxygen tension <55mmHg on air.

Revised February 2010

Canadian Respiratory Guidelines

COPD
Treatable. Preventable.

Identify Patients with Possible COPD

Smoker or ex-smoker who is ≥ 40 years old

And answers yes to any 1 question below:

- Do you cough regularly?
- Do you cough up phlegm regularly?
- Do even simple chores make you short of breath?
- Do you wheeze when you exert yourself or at night?
- Do you get frequent colds that persist longer than those of other people you know?

SPIROMETRY RECOMMENDED

Can Respir J 2008;15(Suppl A):1A-8A.

CANADIAN SOCIÉTÉ THORACIC SOCIETY CANADIENNE DE THORACOLOGIE

Canadian Respiratory Guidelines

COPD
Treatable. Preventable.

Classification by Impairment of Lung Function*

Stage	Spirometry (post-bronchodilator)
Mild	$FEV_1 \geq 80\%$ predicted, $FEV_1/FVC < 0.7$
Moderate	FEV_1 50 – 79% predicted, $FEV_1/FVC < 0.7$
Severe	FEV_1 30 – 49% predicted, $FEV_1/FVC < 0.7$
Very Severe	$FEV_1 < 30\%$ predicted, $FEV_1/FVC < 0.7$

**In keeping with current GOLD guidelines classification system*

Can Respir J 2008;15(Suppl A):1A-8A.

CANADIAN SOCIÉTÉ THORACIC SOCIETY CANADIENNE DE THORACOLOGIE

SYMPTOMS OF COPD

People with COPD usually have a combination of these symptoms:

- Feeling short of breath (often dismissed as a normal sign of aging).
- Chronic cough or wheezing (a whistling sound when you breathe).
- Frequent, long-lasting lung infections (flu, pneumonia).
- Feeling tired (fatigue).
- Unexplained weight loss or losing weight without trying.

What Are Factors That Can Worsen COPD Symptoms?

Indoor pollutants
✔ cigarette smoke, household cleaning products, strong odors, dust

Outdoor pollutants
✔ exhaust fumes, gas fumes, smog

Emotions
✔ anger, anxiety, stress

Changes in temperature
✔ extreme heat or cold, wind, humidity

Respiratory infections
✔ cold, flu, bronchitis, pneumonia

What Are Symptoms Of A COPD Exacerbation (Flare-Up, AECOPD)?

- mucus (phlegm) that is yellow, green or brown.
- an increase in the amount, thickness or stickiness of mucus (phlegm).
- fever.
- swollen ankles.
- the need to sleep sitting up instead of lying down.
- morning headaches, dizziness, trouble sleeping.
- an unusual increase in shortness of breath.

MANAGEMENT OF COPD

COPD Can't Be Cured, But It Can Be Treated. Proper COPD Treatment Includes These Steps:

- Quit smoking to slow down the progression of COPD.
- Take COPD medications to prevent and lessen symptoms.
- Make lifestyle changes to stay healthy and prevent infections.
- Prevent and control COPD exacerbations (flare-ups, AECOPD).
- Join a pulmonary rehabilitation program to learn proper breathing and exercise techniques.
- Establish a support network (eg. www.teamcopd.ca online).

What Should Patients Know About Quitting Smoking?

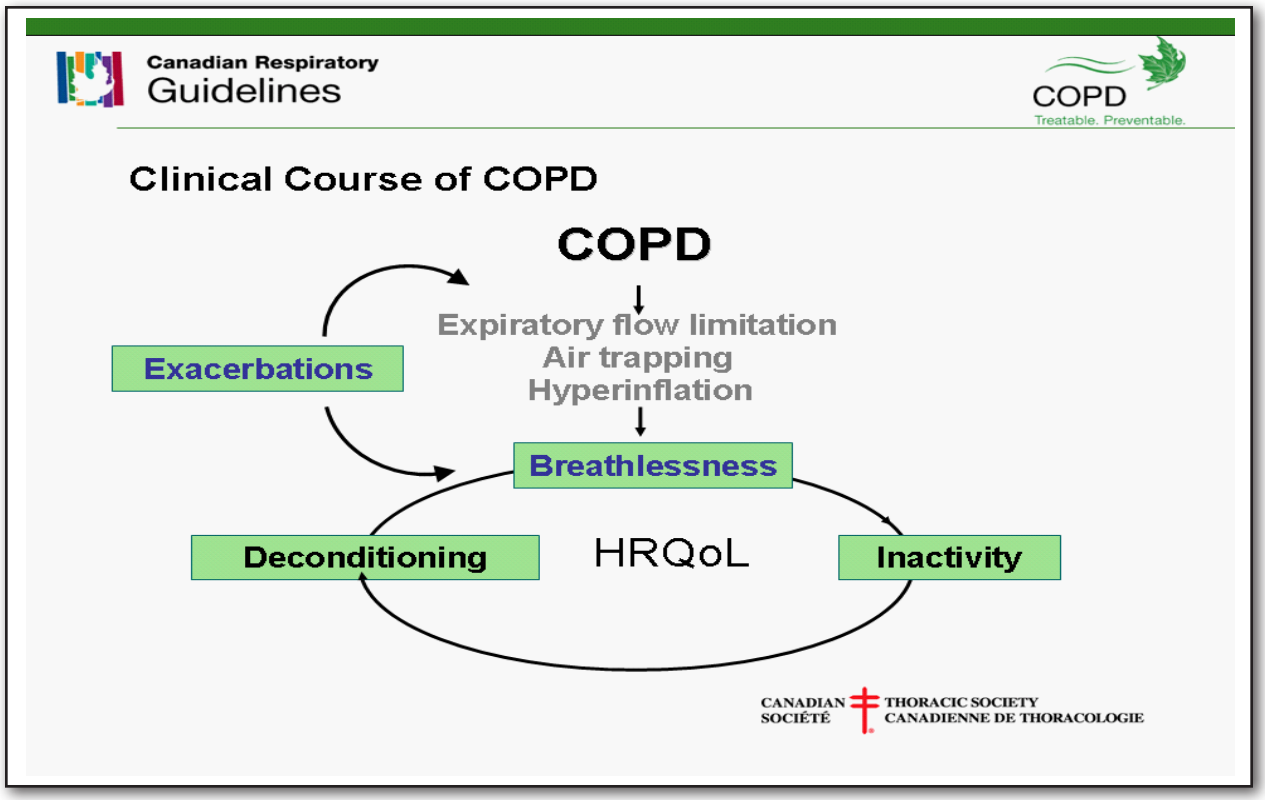
It helps to quit smoking, even if COPD is already diagnosed. In fact, quitting smoking is the single most important thing a patient can do to feel better. COPD gets worse over time if smoking continues. Though impossible to undo the damage that's already done, quitting smoking can protect lungs from further damage. It's also very important to stay away from second-hand smoke and air pollution.

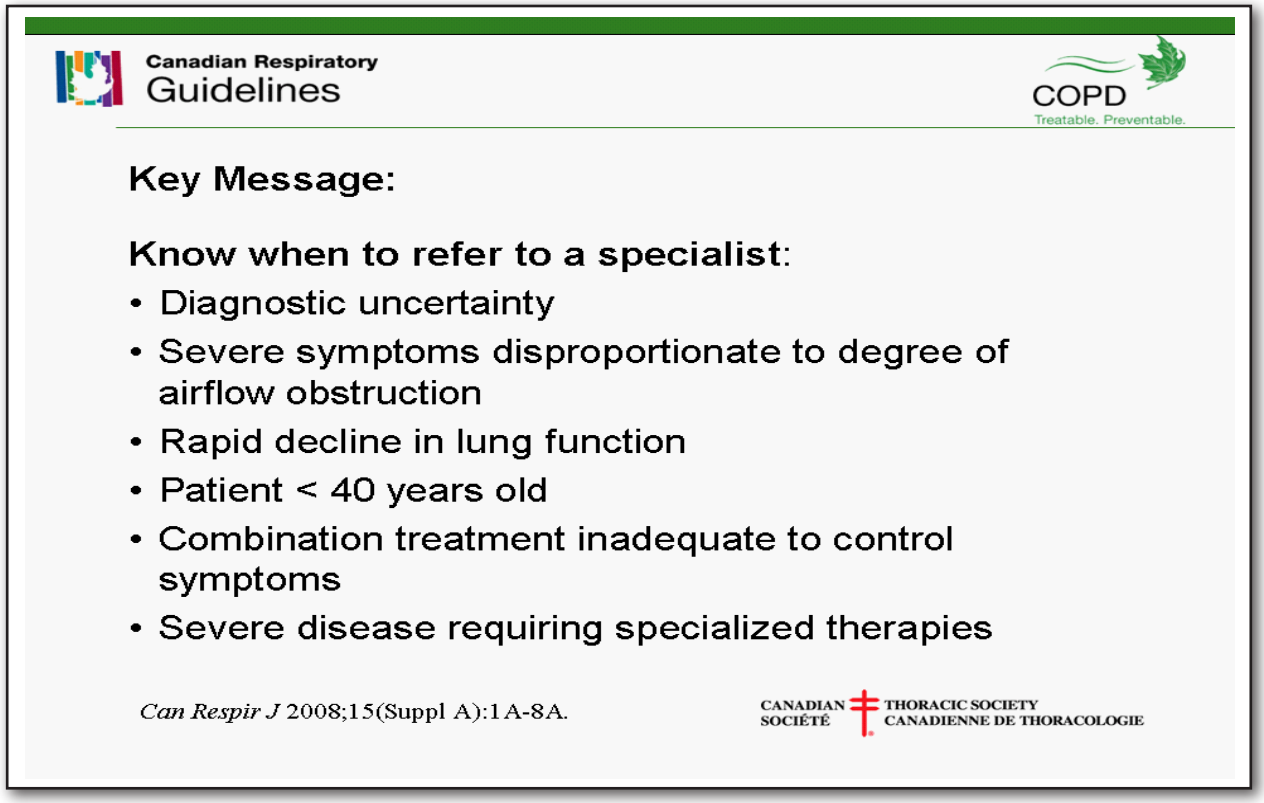
It is NEVER too late to quit smoking. Studies show that quick and positive interventions can be very successful in helping the smoker to quit. It is important to know that nicotine is highly addictive. Because of the multiple factors that influence addiction, quitting for good is often a journey – rather than an event – and relapses are common. There are a number of resources available in Alberta for both the smoker and for health professionals. Learn more at www.canahome.org under 'tobacco reduction links' and www.albertaquits.ca.

What Should Patients With COPD Expect From Treatment?

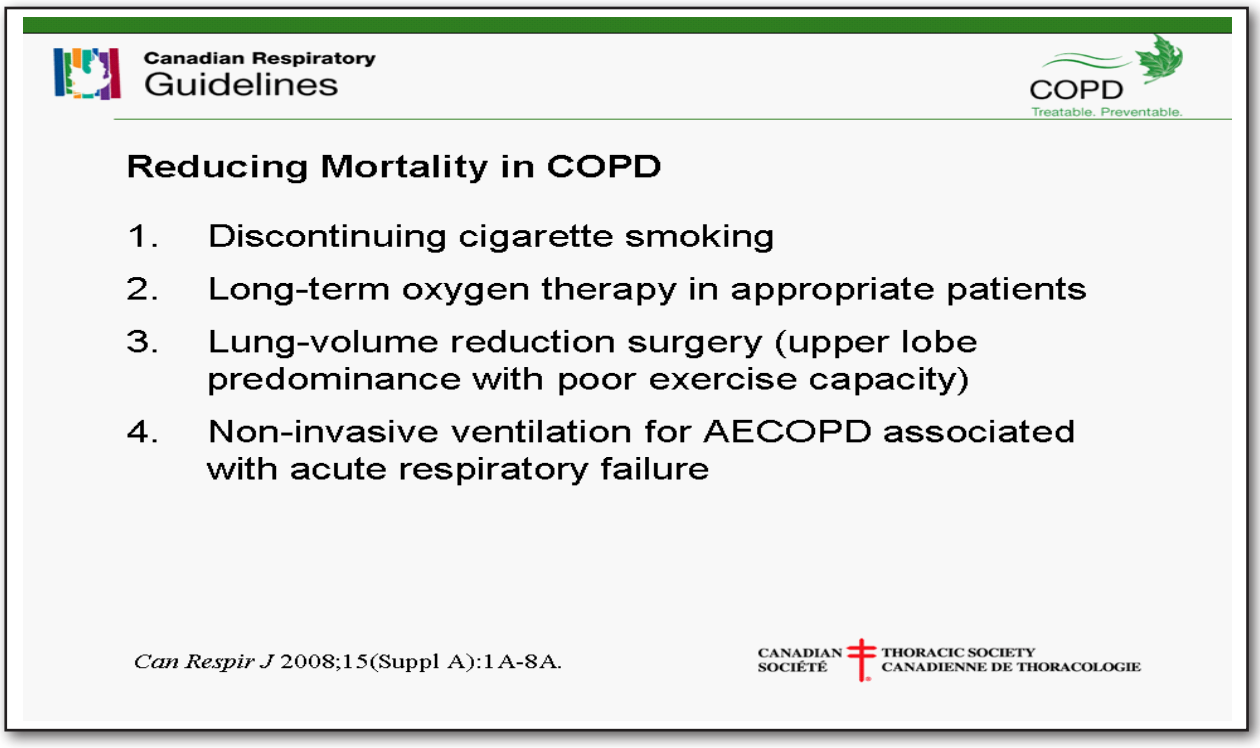
- To breathe more easily.
- To be more active.
- To spend less time in hospital.
- To have fewer chest infections.
- To feel better.
- To enjoy life more.

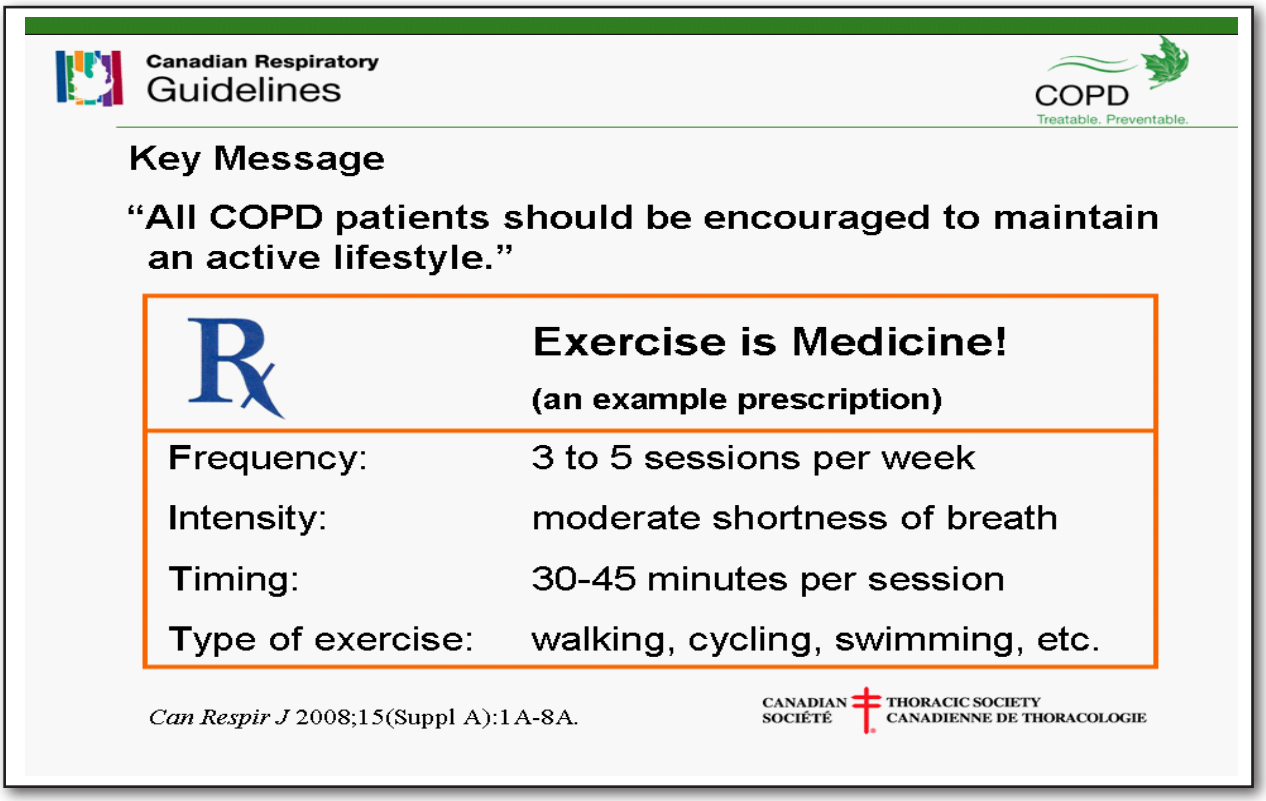
What Is The Typical Progression Of COPD?





What Can Be Done To Reduce Mortality?





Canadian Respiratory Guidelines

COPD Treatable. Preventable.

Long Term Oxygen Therapy: Survival

- Domiciliary oxygen (≥15 hrs/day to achieve SaO_2≥ 90%) improves survival in stable COPD patients with severe hypoxemia (PaO_2 ≤ 55 mmHg) or when the PaO_2 ≤ 60 mmHg in the presence of ankle edema, cor pulmonale or hematocrit ≥ 56%.

Can Respir J 2008;15(Suppl A):1A-8A.

CANADIAN THORACIC SOCIETY / SOCIÉTÉ CANADIENNE DE THORACOLOGIE

Canadian Respiratory Guidelines

COPD Treatable. Preventable.

AECOPD: Prevention Strategies

- Smoking Cessation
- Vaccinations
- Self-Management Education with Case Manager and written Action Plan
- Regular long-acting bronchodilator therapy
- Regular inhaled ICS/LABA therapy in moderate-severe COPD and > 1 episode per year of AECOPD necessitating therapy
- Appropriate treatment of episodes of AECOPD

What Is A COPD Action Plan?

A COPD Action Plan provides written instructions for the patient that will guide them to manage a COPD exacerbation, which is characterized by changes in sputum (mucus/phlegm) and/or an increase in shortness of breath. Health Professionals from across Alberta are currently developing a provincially standardized COPD Action Plan; watch www.canahome.org under 'key resources' for its availability. The following is an example of a foldable COPD Action Plan that can be found at: www.respiratoryguidelines.ca

I Feel Much Worse

My Symptoms	My Actions
• My symptoms get worse. • After 48 hours of treatment my symptoms are not better.	• I call my contact person. • After 5 pm or on the weekend, I go to the hospital emergency department.

I Feel I am in Danger

My Symptoms	My Actions
In any situation if: • I am extremely short of breath • I am confused and/or drowsy • I have chest pain	• **I dial 911 for an ambulance to take me to the hospital emergency department.**

Other recommendations from my doctor about my Plan of Action:

_____

_____

_____

Living Well with COPD™
Chronic Obstructive Pulmonary Disease
A plan of action for life

Living Well with COPD™
Chronic Obstructive Pulmonary Disease
A plan of action for life

Plan of Action

My name is: _____

Contact List

Service	Name	Phone Number
Resource Person		
Family Physician		
Respirologist		
Pharmacist		

I Feel Well

My Usual Symptoms
• I feel short of breath: _____ • I cough up sputum daily. ❑ No ❑ Yes, colour: _____ • I cough regularly. ❑ No ❑ Yes
My Actions
• I sleep and eat well, I do my usual activities and exercises

My Regular Treatment is:

Medication	Dose	Puffs/pills	Frequency

2nd Edition 2006

I Feel Worse

My Symptoms	My Actions
• **Changes in my sputum (colour, volume, consistency)** • **More shortness of breath than usual** Note that these changes may happen after a cold or flu-like illness and/or sore throat	• I take the **additional treatment** prescribed by my doctor • I avoid things that make my symptoms worse • I use my breathing, relaxation, body position and energy conservation techniques • I notify my resource person _____

CHANGES IN MY SPUTUM | MORE SHORTNESS OF BREATH THAN USUAL

My additional treatment is:

• **I start my ANTIBIOTIC if my SPUTUM becomes**

_____

I check my sputum **colour**, volume and consistency (not only in the morning).

I do not wait more than 48 hours to start my antibiotic.

Antibiotic	Dose	Number of Pills	Frequency/days

Comments:

• **I increase my reliever (BRONCHODILATOR) if I am MORE SHORT OF BREATH than usual.**

Bronchodilator	Dose	Number of Puffs	Frequency/days

Comments:

• **I start my PREDNISONE if after increasing my Bronchodilator my SHORTNESS OF BREATH DOES NOT IMPROVE and I have difficulty performing my usual activities.**

I do not wait more than 48 hours to start my prednisone.

Prednisone	Dose	Number of Pills	Frequency/days

Comments:

What More Can Be Done To Avoid COPD Exacerbations?

Wash hands regularly throughout the day, take medications as prescribed, eat a healthy diet and exercise regularly.

Understand warning signs:

- Unusual increase in the amount, thickness or stickiness of mucus (phlegm).
- Change in color of mucus to yellow, green, or brown.
- Fever.
- Increase in shortness of breath.
- General feeling of being unwell.
- Increased swelling of the ankles.
- Need for increased number of pillows in order to sleep, or the necessity to sleep sitting upright.
- Increased difficulty in the ability to sleep/restlessness.
- Sudden weight gain (>5 lbs).

What Are The Signs That Emergency Care Is Needed?

- Onset of chest pain.
- Development of blue lips or fingers.
- Dizzy spells or signs of confusion, agitation, or upset.
- Drowsy.
- Very short of breath.

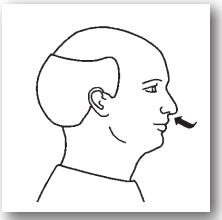
What Can Be Done To Manage Stress During A COPD Exacerbation?

- Reposition body to facilitate breathing.
- Use ***breathing and relaxation techniques (see over).***
- Keep calm.
- If necessary take short acting bronchodilator as prescribed.
- Follow steps on the written ***COPD action plan.***
- If symptoms persist or worsen, go to an Emergency Department.

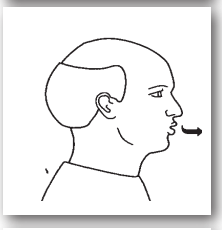
BREATHING AND RELAXATION

Technique 1

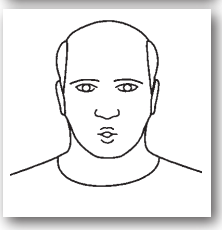
Pursed Lip Breathing: A technique that helps to control breathing rate and improve shortness of breath.



1. Breathe in slowly through the nose.



2. Pause.

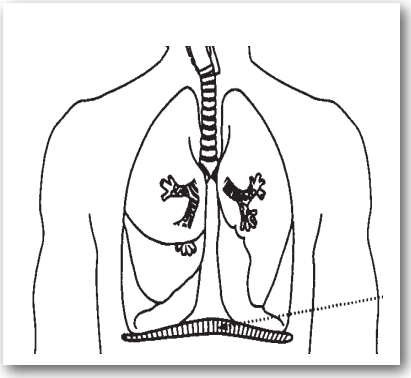


3. Exhale slowly through pursed lips. Do not force the air out, and do not let cheeks relax or "balloon out".

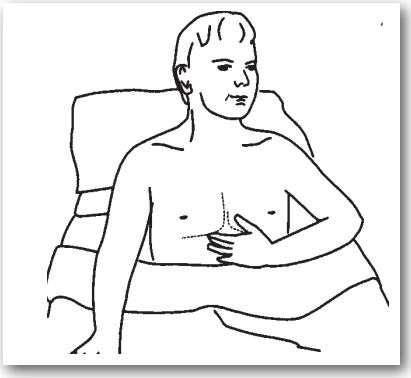
Technique 2

Diaphragmatic Breathing: A technique that helps to create more room in the chest cavity for the lungs to expand and helps draw air into the lungs.

1. In a comfortable position, place one hand on the abdomen, below the rib cage and above the belly button. Breathe in slowly through the nose.



Diaphragm



2. This type of breathing can be done sitting, lying down, standing, or walking.

BREATHING AND RELAXATION

Technique 3

Relaxation Techniques: These can be used to relieve shortness of breath.

Lying

- Lie on side, leaning on three or four pillows.
- Keep head up and shoulder supported.

Sitting (Position 1)

- Sit at a table, lean forward, resting arms on table.
- Rest head on a pillow.

Sitting (Position 2)

- Sit in a chair, lean forward, resting forearms on thighs.

Standing (Position 1)

- Lean forward, support arms on a stable object near shoulder level, resting head on forearm.

Standing (Position 2)

- Lean back against a wall, relax shoulders, let arms hang loosely.

BREATHING AND RELAXATION

Technique 4

Controlled Cough: This is the way to cough that helps to make breathing easier by removing mucus (phlegm).

- Cough and mucus are symptoms of the disease.
- Important times to focus on coughing are early morning (to clear secretions built up through the night), and 30 minutes prior to meals (to facilitate breathing for meal time).
- Devices such as a "flutter valve" can help the movement of mucus.

1. *Sit comfortably, feet resting firmly on the floor, and leaning forward slightly.*

2. *Take 3 to 4 deep diaphragmatic breaths before coughing.*

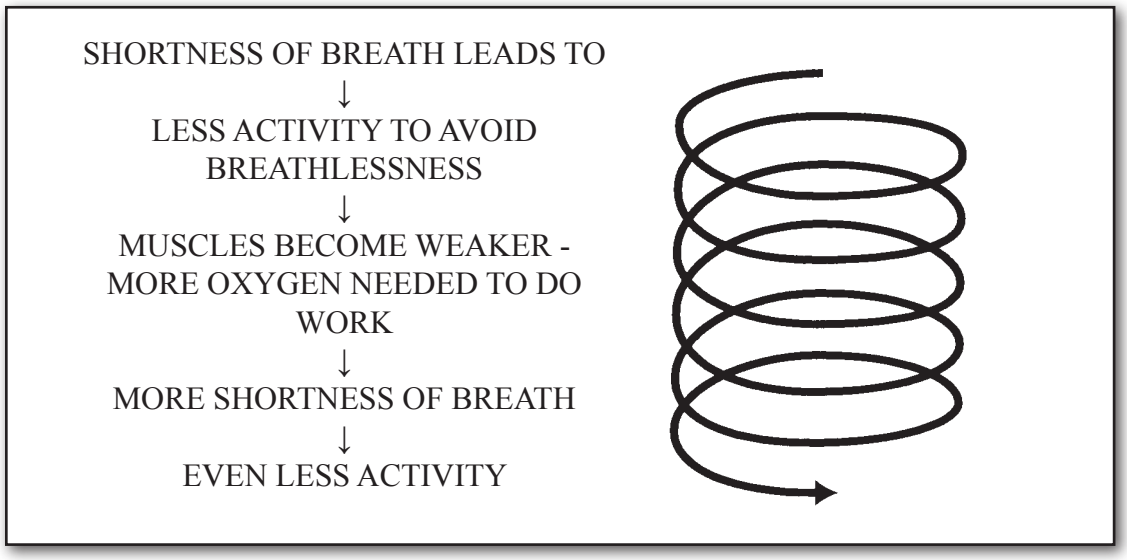
3. *Take a deep breath, hold for 3 seconds, tighten abdominal muscles and cough twice. The first cough loosens the sputum and the second cough moves it to the throat.*

4. *Spit into a piece of tissue (check color). If yellow, green, or red in color, see a physician and follow your written COPD Action Plan.*

5. *Take a break and repeat once or twice if no mucus is coughed up.*

What Are Some Important Lifestyle Considerations?

- Staying healthy with COPD may require some changes in current lifestyle.
- Breathlessness is the most common problem for people with COPD; routinely use breathing and relaxation techniques.
- When individuals are short of breath, exercise is often avoided, which stimulates a downward cycle.



What Are Some Ways To Conserve Energy?

- Sit or rest an elbow on a stable surface when doing activities like dressing, brushing teeth, and shaving.
- When dressing, put pants on first and then shirt.
- While showering, sit on a stool.
- Take time while showering; wear a terry robe to dry off.
- Place frequently-required items within easy reach.
- Have others assist with daily care.
- Organize activities of the day to alternate between periods of rest and activity; alternate difficult and easy tasks, don't do unnecessary ones.
- Plan daily and weekly schedules to do the most energy-consuming activities at the time of day or time of week when energy levels are at their best.
- Keep a slow, steady pace; do one activity at a time and use slow, smooth movements.

What Is The Importance Of Proper Nutrition?

- Maintains the muscle function of the lungs.
- Heals and repairs body tissue.
- Prevents infection.
- Reduces the side effects of certain medications.
- Improves the ability to exercise.

What Are Important Nutrition Guidelines For Those With COPD?

- Reach and keep a healthy body weight with a balanced diet and regular physical activity. This helps an individual with COPD to breathe easier and to feel more energetic.
- Being overweight makes the heart and lungs work harder to supply oxygen to all areas of the body.
- Being underweight increases the risk of getting lung infections and can decrease energy levels.
- Emphasize cereals, breads, other grain products, vegetables and fruits.
- Choose low-fat dairy products, lean meats and foods prepared with little or no fat.
- Limit salt, alcohol and caffeine.

What Can Be Done To Maximize Proper Nutrition?

- Eat small frequent meals throughout the day instead of big meals.
- Rest before eating and use bronchodilator and coughing techniques.
- Eat slowly and chew foods well; cut food into small pieces.
- Breathe evenly when chewing.
- Eat soft, high-calorie foods.
- Drink enough daily fluids after meals, or sip fluids 1 hr beforehand.

What Is An Example Of A Typical Menu?

Menu

Breakfast

Oatmeal (3/4 cup, 175 ml)

Milk (1 cup, 250 ml)

Banana (medium size)

Snack

Orange juice (1/2 cup, 125 ml)

Raisin bread (one slice)

Lunch

Bean and tomato soup (1/2 cup, 125 ml)

Bread (one slice)

Apple sauce (1/2 cup, 125 ml)

Snack

Yogurt (3/4 cup, 175 ml)

Dinner

Roast Chicken (50-100 g)

Rice (1 cup, 250 ml)

Vegetable medley (1/2 cup, 125 ml)

Canned peaches (1/2 cup, 125 ml)

Snack

Muffin (one)

This menu is only an example – it may not meet everyone's energy and protein needs. It provides the minimum daily intake of 5 cereal products, 5 fruits and vegetables, 2 milk products and 2 meat and meat substitutes as recommended by the Canada Food Guide.

PULMONARY REHABILITATION

Pulmonary rehabilitation (also called respiratory rehabilitation or 'rehab') is strongly recommended for most people with COPD. These are programs that are available at tertiary and other centers across Alberta, offered throughout the year.

These multi-week sessions teach people with COPD how to breathe easier and help them and their families to live better with COPD. Through a combination of breathing techniques, exercise, and targeted education, they have been proven to improve the patient's prognosis. Frequently they also act as (or establish upon completion) psychosocial support for patients and their families.

Education alone is NOT sufficient; best evidence and the Canadian Guidelines strongly support completion and maintenance of individualized exercise training to significantly improve:

- Strength.
- Endurance.
- Breathing.
- Quality of life.
- Self esteem.
- Less use of acute services.

Please view the most current Canadian Guidelines' recommendations on Pulmonary Rehabilitation at www.respiratoryguidelines.ca for specific details.

To find the local program nearest your patient's home, visit www.canahome.org and view the 'Resource Catalogue' under 'key resources' or view the copy on the CD in your Toolkit.

NOTES

SECTION 3 - MEDICATIONS

MEDICATIONS THAT RELIEVE SYMPTOMS

These medications are commonly referred to as Bronchodilators or 'Relievers' and they relax the tightened muscle around the airways allowing the airways to open. They are divided into ***short-acting relievers*** and ***long-acting relievers***. Relievers can be used to treat both asthma and COPD.

What Are Short-Acting Relievers?

- These medications are classed either as short-acting beta agonists (SABAs) or as short-acting anticholinergics.
- Can relieve symptoms quickly; effective for approximately 4 hours.

Airomir® (salbutamol)

Short-acting beta agonist. Available as an MDI (100 µg).
http://www.gracewaypharma.ca

Atrovent® (ipratropium bromide)

Short-acting anticholinergic. Available as an MDI (20 µg) or as an inhalational solution (125 or 250 µg/mL). Note: Mostly for COPD and emergency department treatment of asthma - rarely for asthma management at home.
http://www.boehringer-ingelheim.ca

Bricanyl® (terbutaline)

Short-acting beta agonist. Available as a Turbuhaler (0.5 mg).
http://www.astrazeneca.ca

Ventolin® (salbutamol)

Short-acting beta agonist. Available as an MDI (100µg), inhalational solution (multiple dosages), or Diskus (200µg).
http://www.gsk.ca

What Are Common Side Effects for Short and Long-Acting Relievers?

- Increased heart rate.
- Trembling.
- Nervousness.
- Flushing.

What Are Long-Acting Relievers?

- These medications are classed either as long-acting beta agonists (LABAs) or as long-acting anticholinergics.
- Long acting relievers have a longer onset of action than short-acting relievers but they also have a longer lasting effect.
- Effective for approximately 12 hours.
- Used in older children and adults.

Foradil® (formoterol)

Long-acting beta agonist. Available as capsules (12 µg) that are manually loaded in an Aerolizer®.
http://www.novartis.ca

Oxeze® (formoterol)

Long-acting beta agonist. Available as a Turbuhaler (6 or 12 µg). Note: also has rapid onset.
http://www.astrazeneca.ca

Serevent® (salmeterol)

Long-acting beta agonist. Available as a Diskus® (50 µg).
http:/www.gsk.ca

Spiriva® (tiotropium bromide)

Long-acting anticholinergic. Available as capsules (18 µg) that are manually loaded in a HandiHaler®. Note: mostly for COPD; rarely for asthma.
http://www.boehringer-ingelheim.ca

MEDICATIONS THAT PREVENT SYMPTOMS

These medications are commonly referred to as Inhaled Corticosteroids or 'Preventers' and they decrease the inflammation on the inside of the airways. Following current best practice, these medications are taken on a daily basis to prevent asthma symptoms and tissue remodeling. Note: you can expect improvement of symptoms in as few as 3 -5 days with major improvement by 2 weeks.

Alvesco® (ciclesonide)

Inhaled corticosteroid. Available as an MDI (100 or 200 µg)
http://www.nycomed.ca

Flovent® (fluticasone)

Inhaled corticosteroid. Available as an MDI (50, 125, or 250 µg) or Diskus (50, 100, 250, or 500 µg)
http://www.gsk.ca

Pulmicort® (budesonide)

Inhaled corticosteroid. Available as an inhalational solution (0.125, 0.25, or 0.5 mg/mL) or Turbuhaler (100, 200, or 400 µg)
http://www.astrazeneca.ca

QVAR® (beclomethasone)

Inhaled corticosteroid. Available as an MDI (50 or 100 µg)
http://www.gracewaypharma.ca

COMBINATION MEDICATIONS

These medications combine a reliever (bronchodilator) with a preventer (anti-inflammatory) so they can both decrease the inflammation in the airways and relax the muscle on the outside of the airways for up to 12 hours. It is important to follow current Canadian Guidelines regarding the optimal patient and time to introduce these medications during treatment.

Advair® (salmeterol + fluticasone)

Long-acting beta agonist + inhaled corticosteroid. Available as a Diskus (50+100 µg, 50+250 µg or 50+500 µg) or an MDI (25+125 µg or 25+250 µg).
http://www.gsk.ca

Symbicort® (formoterol + budesonide)

Long-acting beta agonist + inhaled corticosteroid.
Available as a Turbuhaler (6 + 100 µg or 6 + 200 µg).
http://www.astrazeneca.ca

LEUKOTRIENNE RECEPTOR ANTAGONISTS & PDE4 INHIBITORS

Leukotrienne Receptor Antagonists (LTRAs) are non-steroidal tablets used as add-on treament for asthma; they have a unique mechanism of action that results in both bronchodilating and anti-inflammatory effects. Note: you can expect improvement of symptoms in as few as 3 -5 days with major improvement by 2 weeks. PDE4 inhibitors are newly available in Canada; they have been shown to work selectively on phosphodiesterase found in inflammatory and immune cells.

Singulair® (montelukast)

Leukotriene receptor antagonist. Available as a once-a-day tablet (10mg), chewable tablet (4 or 5mg) and oral granules (4mg).
http://www.merckfrosst.ca

Accolate® (zafirlukast)

Leukotriene receptor antagonist. Available as a 20 mg tablet.
http://www.astrazeneca.ca

Daxas® (roflumilast)

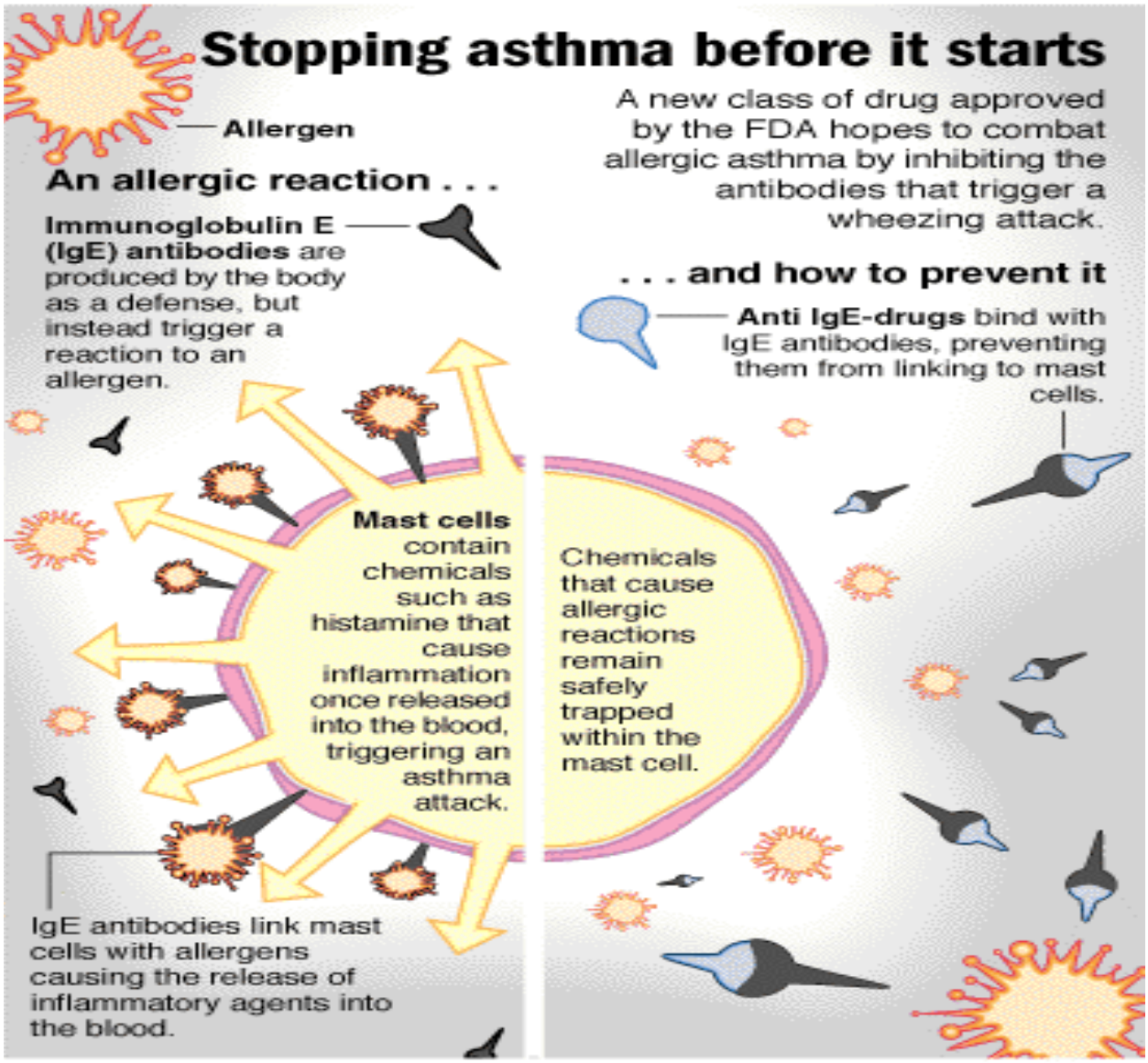
PDE4 Inhibitor. Available as a once-a-day tablet (500µg).
http://www.nycomed.ca

ANTI-IGE MEDICATIONS

Anti-IgE medications are also known as biologics; they are steroid-free and administered subcutaneously by injection every 2-4 weeks at specialty clinics. Anti-IgE medications work by inhibiting the antibodies (IgE) that trigger the allergic response that leads to asthma symptoms. They are used in the treatment of moderate to severe persistent and perennial allergic asthma. The annual cost of this treatment can exceed $15,000, making it appropriate that patients are carefully evaluated by a specialist allergist, pediatrician or respirologist prior to being initiated on this therapy.

Xolair® (omalizumab)

A humanized monoclonal antibody that selectively binds to immunoglobulin E (IgE), used to treat moderate to severe asthma those over 12 yrs.



NASAL SPRAYS

- Nasal sprays are available as corticosteroids or anticholinergics and also as simple saline rinses.
- Nasal corticosteroids must be taken as prescribed in order to be effective.
- Nasal saline sprays or rinses are used to treat non-allergic or vasomotor rhinitis.
- Improvement with nasal corticosteroids may be seen within 10 hours, but it may take up to 2 weeks for maximum improvement. Short-term side effects of nasal steroids may include irritation of the nose, sore throat, or cough.

Atrovent® 0.03% (ipratropium bromide)

An anticholinergic nasal spray used to treat runny nose caused by allergic and non-allergic perennial rhinitis those 12 yrs and older.
http://www.boehringer-ingelheim.ca

Avamys® 27.5 µg (fluticasone furoate)

A corticosteroid nasal spray used to treat nasal symptoms of indoor (perennial) and outdoor (seasonal) allergies for those 2 yrs and older.
http://www.gsk.ca

Flonase® 50 µg (fluticasone propionate)

A corticosteroid nasal spray used to treat nasal symptoms of indoor and outdoor allergies as well as non-allergic rhinitis for those 4 yrs and older.
http://www.gsk.ca

Nasonex® 50 µg (mometasone furoate monohydrate)

A corticosteroid nasal spray used to treat nasal symptoms of perennial and seasonal allergies for those 2 yrs and older as well as nasal polyps for those over 18 yrs.
http://www.nasonex.com

Omnaris® 50 µg (ciclesonide)

A corticosteroid nasal spray used to treat nasal symptoms of indoor (perennial) and outdoor (seasonal) allergies for those 12 yrs and older.
http://www.nycomed.ca

Rhinocort® Aqua 64 µg (budesonide)

A corticosteroid nasal spray used to treat nasal symptoms of perennial and seasonal allergies as well as non-allergic rhinitis and nasal polyps, for those 6 yrs and older. Also available as 100 µg dry powder Turbuhaler®.
http://www.astrazeneca.ca

SPACERS AND PEAK FLOW METERS

Spacers

Spacers are used with MDI's for optimal deposition and coordination of inhalation (several types available). Note: not all spacers are alike. It is essential that it contains a one-way valve and non-electrostatic properties. Ask an asthma expert for recommendations.

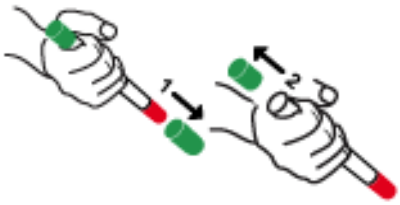
Peak Flow Meters

To ensure adequate control of asthma certain patients may use a peak flow meter (several types available).

EPINEPHRINE AUTO-INJECTORS

- There are currently two epinephrine auto-injectors available in Canada: EpiPen® and Twinject® which are prescribed based on weight.
- Epinephrine (adrenaline) is a hormone that the body naturally produces.
- It works on the cardiovascular and respiratory systems to constrict blood vessels & relax muscles of the chest to improve breathing.
- It must be administered by injection and comes as a single-dose EpiPen® or double-dose Twinject®.

PEOPLE ARE SOMETIMES AFRAID TO USE THE AUTO-INJECTOR ON THEMSELVES OR ON THEIR CHILDREN / STUDENTS. PLEASE NOTE THAT THE DISCOMFORT IS MINIMAL AND SHORT-LIVED. A SMALL TRADE-OFF FOR SAVING A LIFE!



Twinject®

Practice with the epinephrine auto-injector Trainer Device and teach caregivers, friends, family members, and teachers how to use it. The trainer does not contain a needle or medication. Current instructions can be found at www.epipen.ca and www.twinject.ca.

What Should Be Done During An Anaphylactic Episode?

1. For those who have an epinephrine auto-injector (e.g. EpiPen®, Twinject®) use on **first sign** of symptoms. Always know where the epinephrine is kept and how to administer it.

2. Act quickly and call ***911*.**

3. Stay with the person and keep them calm and motionless.

4. Notify the family AFTER epinephrine is administered.

5. Anyone who receives an injection of epinephrine **must go to the emergency department** for further assessment, even if symptoms have improved. A relapse reaction can occur up to 8 hours after the original reaction.

6. Even if you are in doubt about whether epinephrine is needed, administer it. In normally healthy individauls, it will not cause harm if given unnecessarily.

MEDICATION OVERVIEW

Category	Trade Name	My Dose	What it Does	Side Effects	Use
Anti-inflammatories: Inhaled corticosteroids	Flovent® Pulmicort® Qvar® Alvesco®		• decreases inflammation (swelling) of the airway • long-term improvement • works slowly (days)	• hoarse voice • sore throat • oral thrush	• **Rinse, gargle, spit, and brush your teeth after each use.** • Use spacer as directed. • Take regularly to control inflammation.
Long-acting bronchodilators	Serevent® Oxeze®		• relaxes muscles in the airways • varied onset • lasts 12 hours	• headache • tremor • fast heart rate • muscle cramps	• Used *with* inhaled steroids in **asthma**. • Oxeze® may be prescribed as needed.
Combinations: Inhaled corticosteroid and long-acting bronchodilator	Advair® *(Flovent® and Serevent®)* Symbicort® *(Pulmicort® and Oxeze®)*		• decreases inflammation (swelling) of the airway • relaxes muscles in the airway • lasts 12 hours	• hoarse voice • sore throat • oral thrush • headache • tremor • fast heart rate • muscle cramps	• **Rinse, gargle, spit, and brush your teeth after each use.** • Use spacer as directed. • Take regularly to control inflammation and relax muscles in airway.
Short-acting bronchodilators	Salbutamol (Airomir®, Novo-Salmol), Berotec®, Bricanyl®, Ventolin®		• relaxes muscles in the airways • works within minutes	• tremor (hands shake) • fast heart rate • nervousness, headache, • weakness, dizziness • sweating	• Use for sudden shortness of breath. • Use before activity to prevent attacks. • Use **2 puffs only as needed**. • May have to use regularly during flare-ups.
Short-acting bronchodilator	Atrovent®		• relaxes muscles in the airways • takes about 30 minutes to work • lasts 6 hours	• dry mouth, bad taste in mouth • tremor (hands shake) • headache • blurred vision • stuffy nose • trouble urinating	• Rinse with water if bothered by dry throat or bad taste in mouth. • Do not get in eyes. • Used commonly in COPD and in the emergency department for asthma attacks. • Do not use if taking Spiriva®.
Long-acting bronchodilator	Spiriva		• relaxes muscles in the airways • lasts 24 hours	• dry mouth/throat • constipation • trouble urinating	• Do not use Atrovent® when using Spiriva®. • Avoid getting the powder in your eyes. • Use once a day, in the morning. • Used mostly for COPD.
Leukotriene Antagonists	Accolate® Singulair®		• prevents inflammation of the airways	• headache • stomach upset • skin rash	• Use Accolate® 2 times a day. • Use Singulair® once a day, in the evening.
Methylxanthines	Uniphyl® Theophyllines		• opens the airways by relaxing muscle in the airway	• nausea, vomiting • headache • irritability • trouble sleeping	• Blood levels must be monitored. • Use Uniphyl® once a day.
Oral Corticosteroids	prednisone Prednisolone deltasone		• decreases inflammation of the airways • works within hours	• *short term:* increased appetite, weight gain, mood change, easy bruising • *long term:* increase blood pressure, round face, osteoporosis	• Used short term for severe worsening of breathing. • Take once a day with meals. • If taken longer than 2 weeks, doses are usually "tapered" (decrease the amount slowly rather than stop suddenly).
Nasal Sprays	Flonase®, Nasacort®, Nasonex®, Rhinocort® beclomethasone, Avamys®, Atrovent®, Omnaris®		• decreases inflammation in the nose	• nasal irritation (e.g., bleeding, crusting or dry nose)	• Use regularly when allergies are bothering you. • May use as needed throughout the year. **NOTE: Nasal sprays with saline are available over-the-counter**

SELECTION AND DOSING OF MEDICATIONS

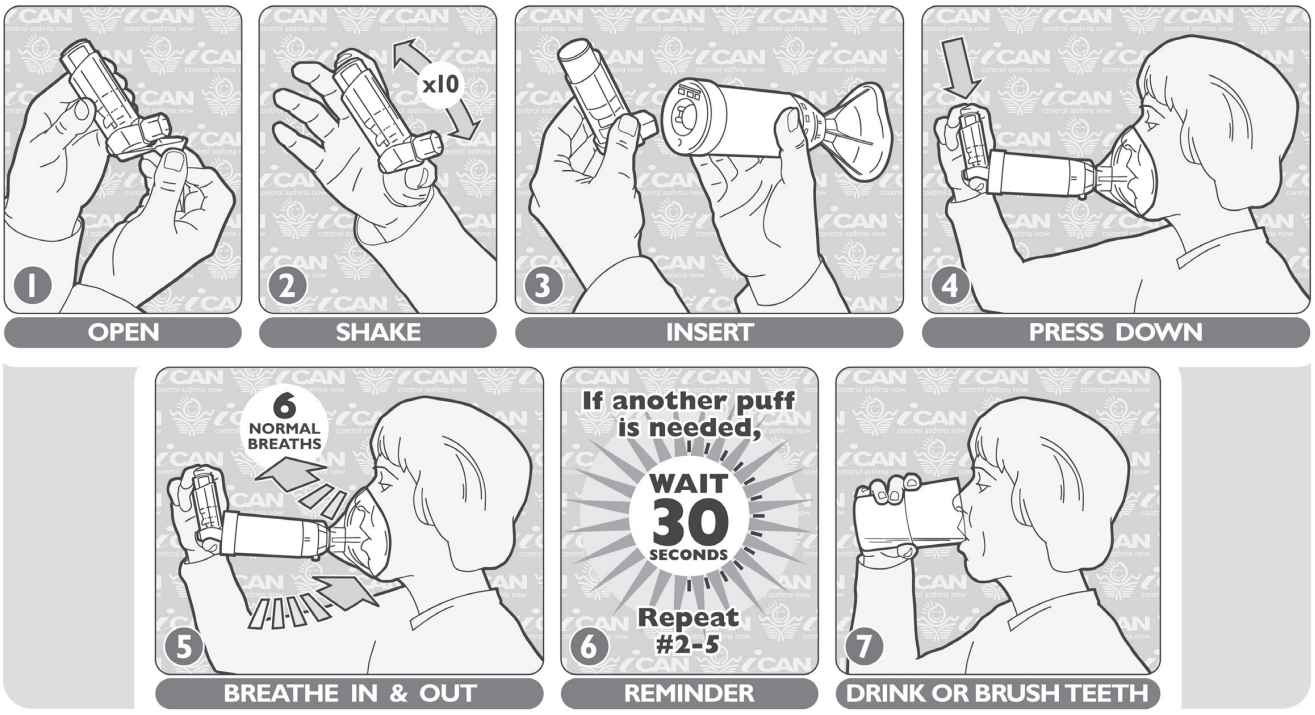
Below is a basic reference table on Inhaled Corticosteroids from the most recent Canadian Asthma Guidelines. The Canadian Asthma and COPD Consensus Guidelines (www.respiratoryguidelines.ca) elaborate on the dosages and recommended usages of most medications. Additionally, please check with the manufacturers and/or your local pharmacists for details including for the many therapies available for tobacco use cessation and allergies.

Daily Inhaled Corticosteroid (ICS) Agents and Dosing

Product	Low	Medium	High
Beclomethasone HFA MDI – QVAR® [1]	≤ 200	201-400	> 400
Budesonide Turbuhaler – Pulmicort® [2]	≤ 400	401-800	> 800
Ciclesonide MDI – Alvesco® [3]	≤ 200	201-400	> 400
Fluticasone MDI & spacer or Diskus – Flovent® [4]	≤ 250	251-500	> 500

METERED DOSE INHALER (MDI)

INHALER / "PUFFER" WITH SPACER & MASK



IMPORTANT INFORMATION

Note:	**Using an inhaler without a spacer is NOT recommended.**
Mask size:	Masks come in infant, child and adult sizes. Make sure the mask covers the mouth and nose snugly.
Spacers:	Replace spacer if valves are missing or broken. **Cleaning:** Soak in warm soapy water. Let it dry.
Empty?:	Shake it. If it feels light or you do not feel liquid moving, it is empty and needs to be replaced. Throw it away.
Expired?:	Pull the metal canister out of the plastic sleeve to check the expiry date on the canister.
Reminder:	Replace cap on plastic sleeve to store MDI.

This material is designed for information purposes only. It should not be used in place of medical advice, instruction and/or treatment. If you have specific questions, please consult your doctor or appropriate healthcare professional.

Developed by the Community Pediatric Asthma Service, Calgary and area.

For more information on asthma medications and device demos, visit our website at:

www.ucalgary.ca/icancontrolasthma

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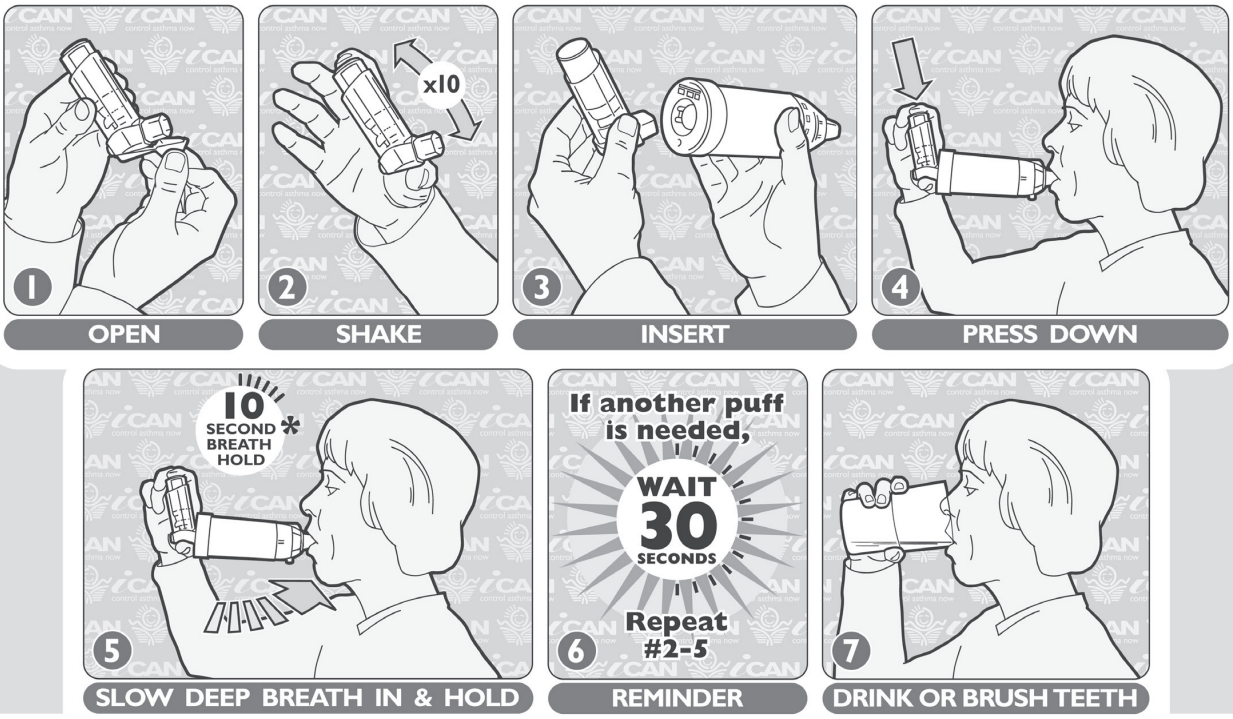
METERED DOSE INHALER (MDI)

INHALER / "PUFFER" WITH SPACER & MOUTHPIECE (4+ YEARS)



IMPORTANT INFORMATION

Note:	**Using an inhaler without a spacer is NOT recommended.** Place mouthpiece between your teeth and close your lips (like sucking a straw). *If you are not able to hold your breath, take 6 normal breaths.
Spacers:	Replace spacer if valves are missing or broken. **Whistle:** The whistle sound is a warning to SLOW your breathing. **Cleaning:** Soak in warm soapy water. Let it dry.
Empty?:	Shake it. If it feels light or you do not feel liquid moving, it is empty and needs to be replaced. Throw it away.
Expired?:	Pull the metal canister out of the plastic sleeve to check the expiry date on the canister.
Reminder:	Replace cap on plastic sleeve to store MDI.

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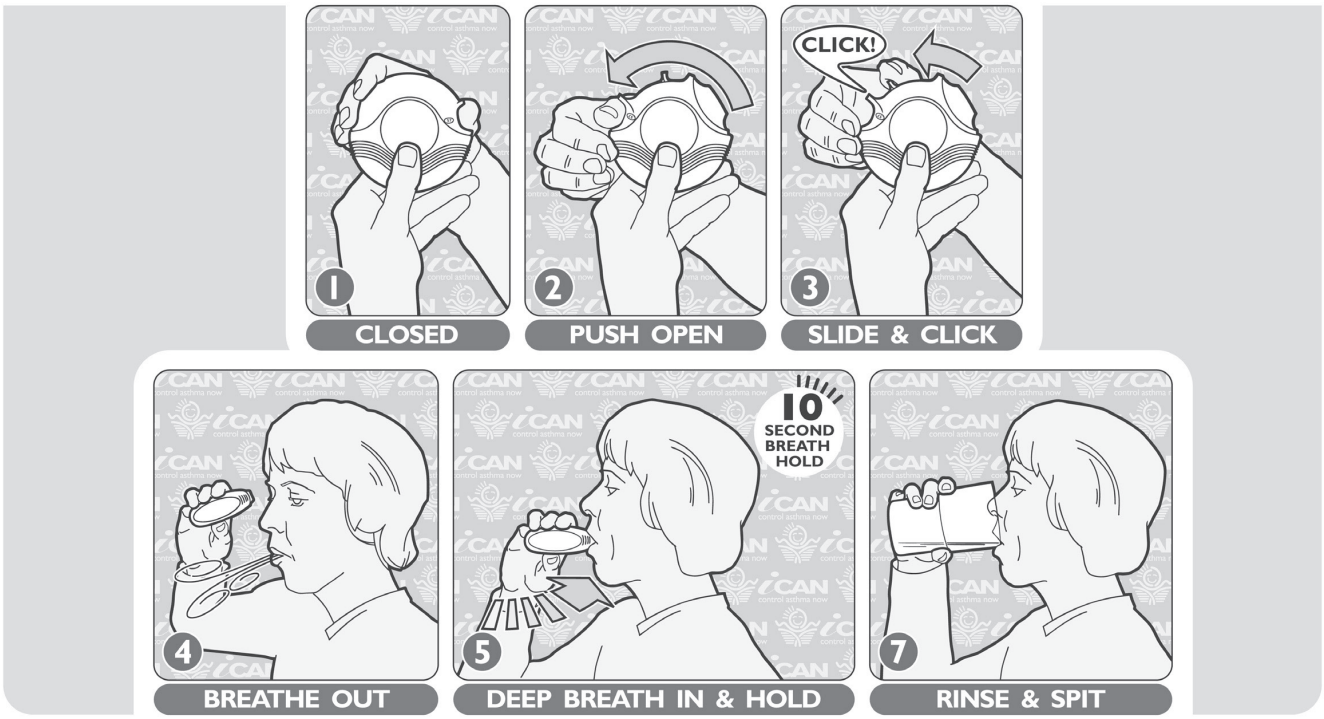
DRY POWDER INHALER

DISKUS (6+ YEARS)



IMPORTANT INFORMATION

Note:	Place mouthpiece between your teeth and close your lips (like sucking a straw).
Empty?:	The window has numbers that count down the dose – "0" means it is empty. Throw it away.
Expired?:	Check the expiry date on the back of the device.
Reminders:	Keep the Diskus dry. Do not breathe into the device. Close after use.

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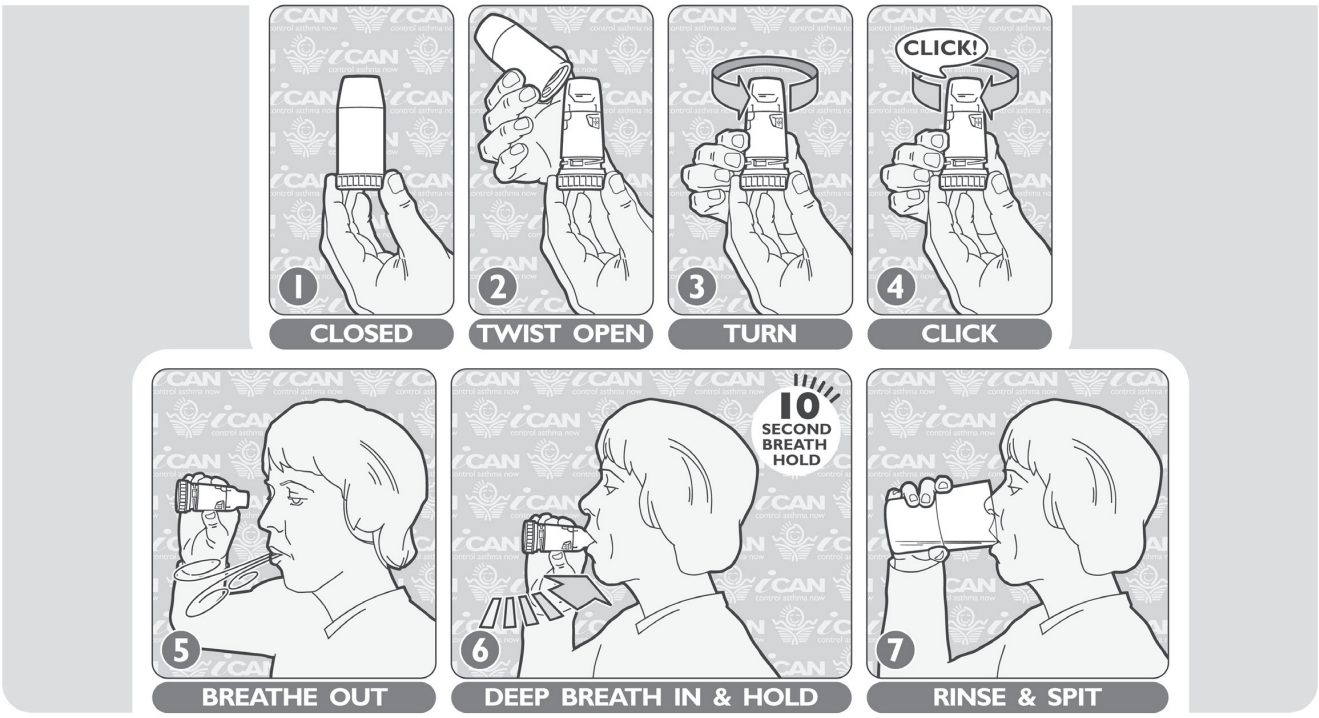
DRY POWDER INHALER

TURBUHALER (6+ YEARS)



IMPORTANT INFORMATION

Note:	Place mouthpiece between your teeth and close your lips (like sucking a straw).
Empty?:	The window on the device starts to show red when there are 20 doses left. When the window is completely red, it is empty. Throw it away. The window on some devices also shows a "0" when it is empty. Throw it away.
Expired?:	Remove the cap to check the expiry date on the device.
Reminders:	Keep the Turbuhaler dry. Do not breathe into the device. Replace the cap after use.

This material is designed for information purposes only. It should not be used in place of medical advice, instruction and/or treatment. If you have specific questions, please consult your doctor or appropriate healthcare professional.

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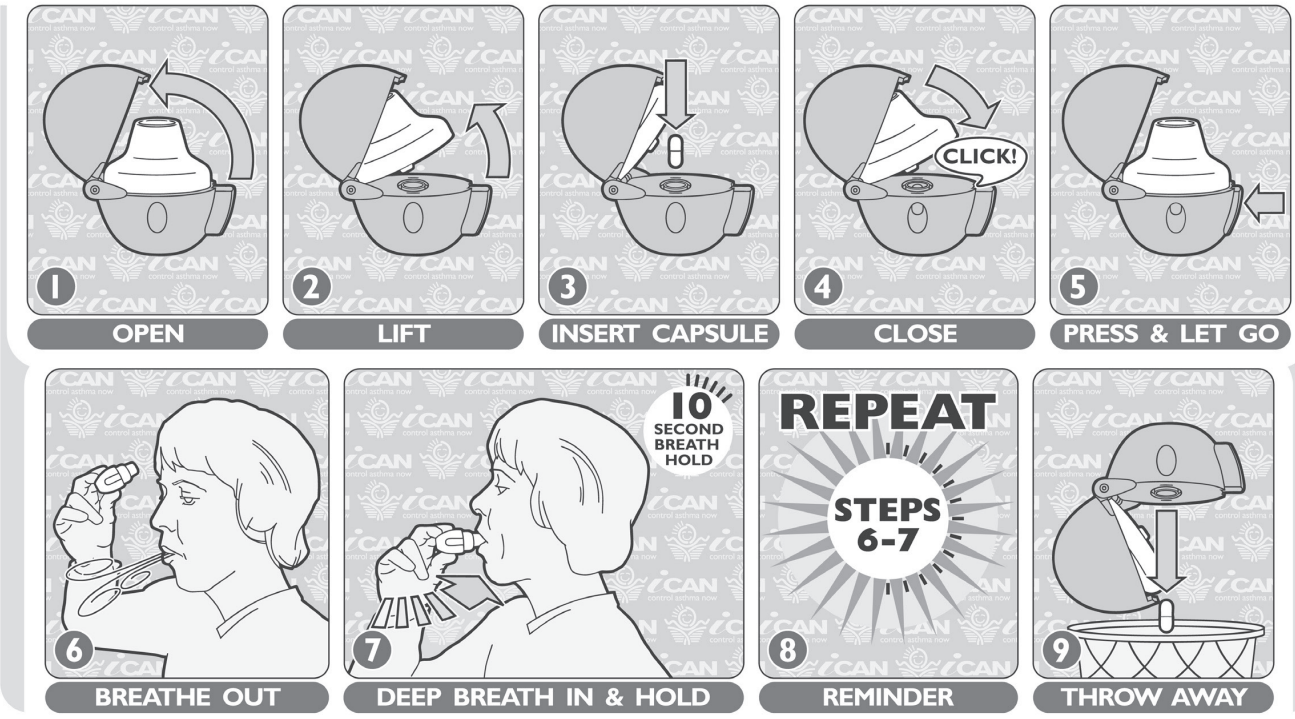
DRY POWDER INHALER

HANDIHALER



IMPORTANT INFORMATION

Note:	Place mouthpiece between your teeth and close your lips (like sucking a straw).
Expired?:	Check the expiry date on the box or on the pack that holds the capsules.
Reminders:	Keep the HandiHaler dry. Do not breathe into the device. Capsules are sensitive to light, moisture and extreme temperatures. Make sure to remove only **ONE** capsule from the pack at a time. If the dry powder gets on your hands, wash your hands because the powder may irritate your eyes.

Developed by the Community Pediatric Asthma Service and the COPD & Asthma Network of Alberta.

For more information on COPD medications, visit:

www.ucalgary.ca/asthma *or* **www.lung.ca/breathworks**

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NASAL STEROID

SPRAY

IMPORTANT INFORMATION

Expired?:	Check the expiry date on the label.
Reminders:	Wipe the spray tip and replace the cap after use. Store at room temperature, away from direct light. This medicine works best if taken daily for several weeks when needed. Always take medicine as prescribed by your doctor.

Developed by the Community Pediatric Asthma Service and the COPD & Asthma Network of Alberta.

For more information on asthma medications and device demos, visit:

www.ucalgary.ca/icancontrolasthma

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OXYGEN THERAPY

Supplemental oxygen therapy increases the level of oxygen in the blood. If oxygen levels are determined through arterial blood gas testing to be low, oxygen therapy may be needed. Certain patients may qualify for home oxygen funding through Alberta Aids to Daily Living (AADL); see details at www.seniors.alberta.ca/AADL

What Can Oxygen Therapy Do For The Patient?

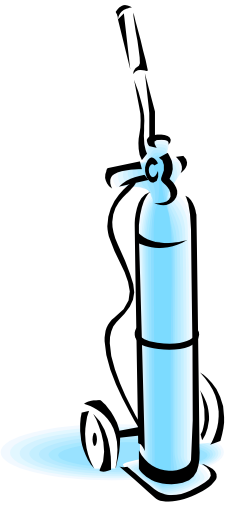
- It may reduce stress on the heart.
- It may improve exercise tolerance.
- It may improve quality and quantity of life.

What Are Key Terms Used In Oxygen Therapy?

Oxygen Concentrators:

Electrically powered devices that supply oxygen extracted from room air. Because they supply oxygen from room air, they never need to be "filled". They are convenient, safe, & reliable.

**Battery powered portable units are also available, although they may not be appropriate for everyone.*



Compressed Gas Cylinders:

Small cylinders containing oxygen that are provided for mobility. Cylinder size & flow affect duration of oxygen.

Oxygen Conserving Devices:

Devices or regulators connected to the compressed gas cylinder that provide a pulse of oxygen delivered upon inhalation. Since the oxygen flows only during inhalation, the contents of the cylinder last longer.

Liquid Oxygen:

A liquid oxygen reservoir provides oxygen at home. A portable reservoir can be filled from the large liquid oxygen reservoir to provide mobility away from home.

What Are Storage Considerations For Oxygen Therapy?

Though it is non-flammable, oxygen does support combustion (fire), and thus must be handled carefully. It should be stored in a room that is dry, cool, and well ventilated. Use away from smoking, heating pipes, radiators, open flames, and pilot lights.

NOTES

SECTION 4 - SPIROMETRY

DESCRIPTION OF SPIROMETRY

Spirometry is a medical test that measures various aspects of breathing and lung function. It is performed by using a spirometer, a special device that registers the amount of air a subject inhales or exhales and the rate at which the air is exhaled.

Spirograms are tracings or recordings of the information obtained from the test. The most common spirometric tests require that the subject exhale as forcefully as possible after taking in a full, deep breath. The subject's effort is the forced expiratory maneuver and once a maximal flow is achieved, further increases in effort do not result in higher spirometry results.

Physicians and health care professionals should think of spirometry measurements in the way that blood pressure is considered today as an indicator of a certain level of health. The widespread use of blood pressure measurements to identify asymptomatic hypertensive patients has been a major boost to the nation's health.

What Is The Difference Between Spirometry And Pulmonary Function Testing?

There is a difference between spirometry testing and pulmonary function testing. Spirometry testing has the capability of measuring vital capacity, peak flows and forced expiratory volume. It is quite inexpensive and can be portable. Pulmonary function testing includes all the measurements mentioned above and can also measure total lung capacity, residual volume and diffusing capacity. Pulmonary function testing is generally limited to hospitals and specialized labs since the equipment is costly.

When attempting to diagnose or manage a COPD or asthma patient (obstructive lung disease) or a smoker at risk, spirometry testing is sufficient. When looking at other restrictive lung diseases such as pulmonary fibrosis and other interstitial lung diseases it is usually better to perform pulmonary function testing.

ROLE OF SPIROMETRY

The role of spirometry is to help establish a respiratory diagnosis and for management (monitoring) of the lung disease.

What Are Key Factors Of Spirometry Used For Diagnosis?

- To evaluate patients with symptoms of lung disease, such as shortness of breath on exertion, cough, phlegm production, wheezing, frequent chest infection.
- To assess patients at risk of lung disease (eg. smokers over the age of 40 with one or more of the above symptoms).
- To investigate situations where there is a family history of lung disease (eg. Alpha-1 antitrypsin deficiency).
- To assess pre-operative risk.
- To assess health status before beginning strenuous physical activity or high risk employment.
- To compare subjective patient reporting with actual objective airways function.

What Are Key Factors Of Spirometry Used For Management?

- To assess prognosis.
- To assess effectiveness of treatment.
- To monitor patients for adverse reactions to medications.
- To monitor patients exposed to harmful agents, including environmental or occupational exposures.

Just like any medical test, spirometry must be measured and should be interpreted in the same way, in every lab, clinic or office. Standards for the equipment used in spirometry have been set by the ATS/ERS Committee. When purchasing spirometry equipment, you must verify that the equipment meets these standards; otherwise, your results will not be acceptable.

ACCESS TO SPIROMETRY

Inaccurate spirometric results can seriously jeopardize clinical interpretations and the health and well being of those being tested. A well run spirometry quality assurance program can eliminate the potential for such problems. Note: Spirometry is accessible within a one hour drive for all Albertans. Elements of such a program are as follows:

Management Support

Strong management support sets the norm for maintaining high standards. Spirometry technicians need proper training, accurate and precise equipment, and a realistic screening schedule to obtain the best possible test results consistently.

Spirometry Manual

A spirometry procedures manual keeps all spirometry information in a central place for quick access and can help maintain program consistency by ensuring that all staff and substitute staff use the same procedures. It can also be used to train new staff.

Equipment

Read all equipment manufacturer's information. The technician should be familiar with procedures for maintenance, infection control and calibration. Checking the spirometer's calibration is one of the most important functions that a technician can perform to assure that a subject's test results are accurate.

A Well-Trained Technician

Essential for achieving accurate and precise results and for making sure the required effort is achieved by the subject. Spirometry is not like other medical tests that do not require patient effort. Properly performed spirometry requires full cooperation and best effort from the patient. The technician is the key to successful spirometry.

What Is Important To Know About Access To Spirometry In Physician Offices?

For those who would like to perform spirometry in their clinic or office, it is highly recommended to take the one day SpiroTrec© course that is offered throughout Canada.

SpiroTrec© is a course that will teach how to conduct quality spirometry including: knowledge of spirometers, understanding of the ATS/ERS standards for spirometry, quality control, patient instruction and basic interpretation of results.

The course curriculum was established by a national expert committee with representation of key groups: Canadian Thoracic Society (CTS), Canadian Respiratory Health Professionals (CRHP), Family Physician Airways Group of Canada (FPAGC), the Lung Association (TLA), and multiple health professionals with expertise in: guidelines development, technical skills, teaching and conducting spirometry. The Lung Association of Saskatchewan is responsible for administering the course and there are Trainers in Alberta. To view available course dates/ locations, or to register, visit www.resptrec.org.

What Are Alberta's Guidelines On Spirometry Access In Physician Offices?

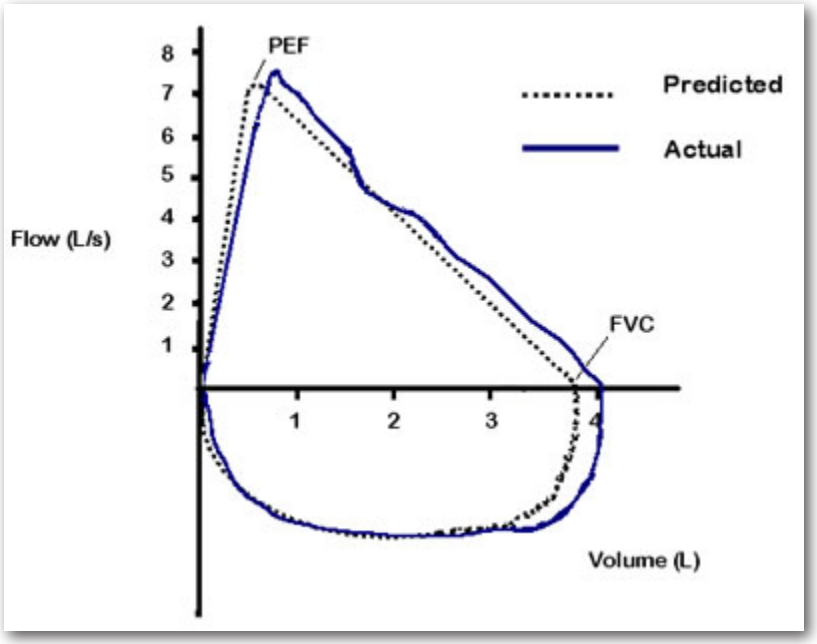
Presently, the best option is to refer your patients to centers that perform spirometry testing. Most hospitals have an outpatient spirometry lab that accepts referrals from physicians. There may also be community programs where patients can be referred for spirometry testing and education.

Though access to spirometry can sometimes prove to be a challenge, CANA provides an in-depth Resource Catalogue that can be viewed on their website at www.canahome.org under 'key resources', 'Alberta's Services' or view the copy on the CD in your Toolkit.

Download or print your free copy of the College of Physicians & Surgeons of Alberta's *Guidelines for Office Spirometry and Flow Volume Measurement* at: http://www.cpsa.ab.ca/Libraries/Pro_QofC_Pulmonary/Spirometry_Flow_Volume_Measurement_Guidelines.sflb.ashx or view the copy on the CD in your Toolkit.

RESULTS OF SPIROMETRY

With a practiced eye and a well-performed test, spirometry results can reveal a good deal of information about the state of the patient's lungs. In Alberta only certain physicians are qualified to interpret. Here is an example of a normal spirometry:



Measurement	Definition
FEV_1	Forced expired volume in one second - the volume expired in the first second of maximal expiration which is a useful measure of how quickly full lungs can be emptied.
FVC (VC)	Vital capacity - the maximum volume of air which can be exhaled or inspired during either a forced (FVC) or a slow (VC) manoeuvre.
PEF	Peak expiratory flow - the maximal expiratory flow rate achieved and this occurs very early in the forced expiratory manoeuvre.
FEV_1/FVC (VC) %	The ratio - the FEV_1 expressed as a percentage of the VC or FVC (whichever volume is larger) and gives a clinically useful index of airflow limitation.

http://www.inspiremed.com.au/tutorial_2.html

NOTES

USEFUL WEBSITES

Guidelines:

- Asthma: www.respiratoryguidelines.ca (national), www.ginasthma.org (international), www.topalbertadoctors.org or www.canahome.org (provincial summaries)
- COPD: www.respiratoryguidelines.ca (national, www.goldcopd.com (international), www.topalbertadoctors.org or www.canahome.org (provincial summaries)
- Spirometry: http://www.cpsa.ab.ca/Libraries/Pro_QofC_Pulmonary/Spirometry_Flow_Volume_Measurement_Guidelines.sflb.ashx (view also guidelines for Pulmonary Function Testing on this website)
- Tobacco Cessation: www.canadaptt.net/resources/filelist.aspx

Allergy & Anaphylaxis:

- Anaphylaxis Canada: www.anaphylaxis.ca
- Allergy / Asthma Information Association: www.aaia.ca
- Alberta's School Kit: www.education.alberta.ca/aair
- Allergy Safe Communities: www.allergysafecommunities.ca

Asthma:

- Adult Asthma (especially for Calgary; patient info applicable across Alberta): www.ucalgary.ca/asthma/
- Alberta Asthma (especially for schools and daycares): www.asthmacentre.org
- Allergy / Asthma Information Association: www.aaia.ca
- Asthma Society of Canada: www.asthma.ca
- COPD & Asthma Network of Alberta (CANA): www.canahome.org
- Global Initiative for Asthma: www.ginasthma.org
- Pediatric Asthma (especially for Calgary; patient info applicable across Alberta): www.ucalgary.ca/icancontrolasthma
- The Lung Association: www.lung.ca, www.teenasthma.ca

COPD:

- COPD & Asthma Network of Alberta (CANA): www.canahome.org
- Global Initiative for Chronic Obstructive Lung Disease: www.goldcopd.com
- Living Well with COPD: www.livingwellwithcopd.com
- The Lung Association: www.lung.ca, www.lung.ca/breathworks, www.teamcopd.ca and www.copdtoolkit.org

Device Technique Videos: (both diseases)

- Asthma Society of Canada: www.asthma.ca
- National Asthma Council Australia: www.nationalasthma.org.au/content/view/548/984
- Pediatric Asthma (especially for Calgary; patient info applicable across Alberta): www.ucalgary.ca/icancontrolasthma

Tobacco Cessation:

- COPD & Asthma Network of Alberta (CANA): www.canahome.org under 'tobacco reduction links'
- Alberta Services: www.albertaquits.ca
- Canadian Council for Tobacco Control: www.cctc.ca
- Centre for Addiction & Mental Health: www.smokingcessationrounds.ca
- Counselling Techniques: www.motivationalinterview.org
- The Lung Association of Alberta & NWT: www.ab.lung.ca under 'smoking and tobacco'

Specialized Patient Support:

- Air quality indoors: www.cmhc-schl.gc.ca/en under 'maintaining a home' or www.lung.ca under 'protect your lungs'
- Air quality outdoors: www.4seasonsofasthma.ca or www.casahome.org
- Asthma for Kids: www.ucalgary.ca/icancontrolasthma
- Asthma for Teens: www.teenasthma.ca
- COPD for Families and Patients: www.lung.ca/breathworks
- COPD for online patient-to-patient support: www.teamcopd.ca
- COPD oxygen therapy funding: www.seniors.alberta.ca/AADL
- Kids at risk for anaphylaxis: www.safe4kids.ca
- Medication carriers for all types of devices: www.omaxcare.com or ask your local pharmacist about products like Aero-To Go™
- MedicaAlert: www.medicalert.ca
- Universal Medical ID: www.canada.universalmedicalid.com
- Youth at risk for anaphylaxis: www.whyriskit.ca

Specialized Professional Training:

Standardized (sometimes certified) training is available for anaphylaxis, asthma, COPD, spirometry, and tobacco cessation counseling - view all at www.canahome.org under 'training programs'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