

The difference between ASTHMA and COPD

Symptoms are similar but each requires a tailored treatment approach

by Dr. J. Mark FitzGerald

ASTHMA AND CHRONIC Obstructive Lung Disease (COPD) are increasingly common conditions, and though there are similarities in symptoms and treatment, it's important to distinguish between the two. Controlling the environment and looking for sensitization to allergens is much more important in asthma. As well, treatment of asthma can often result in close to normal lung function, while with COPD there's often a certain amount of airflow obstruction at diagnosis and little chance of normal lung function returning even with optimal treatment.

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A diagnosis of asthma or COPD will be based on a careful history and physical examination complimented by a number of investigations, including measurement of lung function or breathing capacity.

Diagnosing asthma

Asthma can present at any age from early childhood well into adulthood. Although we consider asthma to be a disease of childhood and adolescence, about 40% of cases will be diagnosed in adulthood. There can be a progressive loss of breathing capacity over time, but symptoms tend to be intermittent with wheeze more prominent. Sometimes cough is the main symptom (this is called cough-variant asthma) and asthma will need to be distinguished from other common causes of cough including post-nasal drip and gastroesophageal reflux.

Adults presenting with asthma may have a positive family history of asthma, and may have experienced recurrent episodes of wheezy bronchitis as children or teenagers. A history of seasonal allergies with rhinitis is also common. Transition from this allergic status to asthma may be triggered by a viral illness or exposure to a significantly increased amount of allergen, i.e. a house move or renovation may lead to an increased amount of allergen exposure. In the initial stages, the diagnosis of asthma may be

missed and people may notice only that episodes of bronchitis are more frequent and last longer than usual.

Diagnosing COPD

A diagnosis of COPD is unusual in a person under 40 years of age and rare in the absence of a history of cigarette smoking. Diagnosis of COPD usually occurs after symptoms appear, although occasionally COPD may be observed on a chest x-ray or imaging test performed for other reasons. Almost 1 million Canadians are living with COPD, and a startling increase in the number of women affected has been noted over the past 20 years.

Initial symptoms may be nonspecific but in time usually consist of progressive shortness of breath and cough with sputum production. Although wheeze can be present, it's not as prominent as in asthma. Along with smoking, significant exposure to dust, chemicals or air pollution on an ongoing basis is associated with higher risk of COPD. A genetic disorder called alpha antitrypsin deficiency (see sidebar) is the best-documented hereditary risk factor. Chronic bronchitis, in which the walls of the bronchi become swollen and the lungs produce too much mucous, and emphysema, in which the small airways and air sacs are damaged, are the two processes that most commonly result in COPD.

Tests

The first step in diagnosing COPD or asthma is to measure breathing capacity. In asthma, especially in the early stages, breathing tests may be close to normal but show an improvement after taking a bronchodilator medication. This is diagnostic of asthma. When asthma is considered a possible diagnosis, a more specialized test is done, which provokes the airways to narrow and trigger asthma-like symptoms.

Skin testing against common allergens is also useful as it may identify environmental as well as food allergens that can be avoided to improve control of symptoms.

In contrast, by the time someone with COPD has their breathing capacity tested, they will usually have some degree of airflow obstruction. A chest x-ray isn't routinely required, but may be appropriate especially in a patient with a history of cigarette smoking who presents with more acute symptoms or where the possibility of lung cancer is of concern. Although most patients with COPD will not develop lung cancer, given the high prevalence of smoking they as a group are at higher risk than a nonsmoking population.

INHERITED COPD

About 1–3% of patients with diagnosed COPD are predicted to have a genetic disorder called alpha antitrypsin (AAT) deficiency. AAT is a protein in the blood that normally blocks the effects of elastase, an enzyme that can digest the elastin and collagen of the air sacs of the lung. If there is not enough AAT to block elastase, this can lead to the destruction of the air sacs of the lung and, with time, emphysema. Otherwise, elastase can destroy the air sacs of the lung. This form of inherited emphysema can be diagnosed through blood tests that measure the concentration of AAT. AAT deficiency is most common in individuals of Northern European descent.

In general, AAT deficiency leads to symptomatic emphysema after age 30 in smokers and a decade later in nonsmokers. Treatment is similar to other-cause COPD, but also includes intravenous augmentation therapy (Prolastin®) that replaces the alpha-1 protein in the blood with normal alpha-1 antitrypsin from healthy plasma donors.



Given that a significant minority of people still smoke, and that asthma is a relatively common condition, it's not surprising to find an overlap between asthma and COPD. Distinguishing between them is important from a treatment as well as prognosis point of view.

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Treatment

Stopping smoking and getting appropriate immunizations, including both influenza and — especially in COPD — pneumococcal pneumonia, are steps every person diagnosed with asthma or COPD should take.

Treatment of both asthma and COPD aims first to open up the airways and relieve shortness of breath using medications called bronchodilators. The main groups of bronchodilators are beta-agonists and anticholinergics. Beta-agonists can be short-acting, such as Ventolin® and Airomir® (salbutamol), Bricanyl® (terbutaline) and Berotec® (fenoterol), to open airways quickly when symptoms occur. Xanthines such as theophylline, Uniphyll® and Theo-Dur® can help relieve

breathlessness. If longer control of symptoms is required, a long-acting beta-agonist can be taken on a regular basis, such as Serevent® (salmeterol) or Oxeze® and Foradil® (formoterol).

In COPD, another type of medication called anticholinergics works to relieve breathlessness, and can be taken in short-acting (Atrovent® [ipratropium], or long-acting (Spiriva® [tiotropium] forms. Some COPD sufferers get better symptom relief with a short-acting beta-agonist and an anticholinergic combined in a single inhaler, such as Combivent® (salbutamol and ipratropium).

Corticosteroids are used over the long term to reduce inflammation in the airways in both asthma and COPD. Inhaled corticosteroids include: Flovent® (fluticasone), Pulmicort® (budesonide) and Qvar® (beclomethasone). Combined corticosteroids and long-acting beta-agonists include Advair® (fluticasone and salmeterol) and Symbicort® (budesonide and formoterol).

Because the lungs' natural defence systems are impaired in COPD, infections are more common and antibiotics may be needed even for mild infections. Not everyone with COPD needs oxygen, but doctors may recommend it either for a short period or as part of regular therapy.

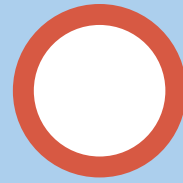
In general terms, treatment of COPD starts with greater use of symptom reliever (bronchodilator) medications. In asthma, anti-inflammatory or preventive therapy, most notably inhaled corticosteroids, is introduced earlier. For subjects with moderate to severe disease, both in asthma and COPD, the combination of a long acting symptom reliever and an inhaled corticosteroid is increasingly being recognized as the optimal treatment strategy.

How much will symptoms improve?

When asthma treatment is taken consistently, most people can achieve good symptom control using low-dose inhaled corticosteroids and a bronchodilator as needed. Unfortunately, adherence to treatment can be compromised by concerns over safety, problems with inhaler technique and the difficulty of accepting the need to take medication even when you feel well. This unfortunately leads to asthma being less well controlled than it could be. People may say their asthma is well controlled, but when asked specific questions about symptoms, it's clear they have uncontrolled disease. Nevertheless, the number of people requiring hospitalization or dying from asthma has fallen significantly in recent years.

Once COPD is established, it's difficult to reverse the changes. Despite the presence of a fixed airflow obstruction, it's clear that improved symptom control and a reduction in the frequency of exacerbations can be

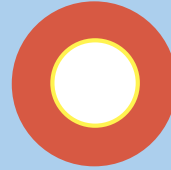
EFFECT OF COPD ON THE AIRWAYS



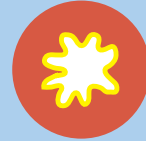
Normal bronchus



Bronchoconstriction



COPD bronchus with thickened mucosa




COPD bronchoconstriction

achieved with combination inhalers used in conjunction with long-acting anticholinergic inhaled medications. An important intervention to reduce the continued deterioration in lung function in COPD obviously involves smoking cessation. In addition, education and pulmonary rehabilitation, as outlined below, can significantly increase quality of life. These interventions are especially important as COPD is a significant and growing cause of death, admission to hospital and physician visits.

Education

Asthma and COPD are chronic diseases that require regular medication to maintain day-to-day control. Both can be associated with progressive worsening of symptoms or episodes called exacerbations. For asthma, and increasingly for COPD as well, a significant body of evidence shows that patients benefit from a structured education program from a trained educator. A key component of this process is the provision of a written action plan to advise people to increase treatment early on in exacerbations. It's also crucial to

develop and maintain correct inhaler technique, something a health care worker can help demonstrate. Although the principles of education can be reinforced at your doctor's visits, the time constraints of the usual primary care consultation make the educational process difficult in this setting.

Provincial Lung Associations will usually have a listing of available education programs. More recently, the importance of multidisciplinary has led to the development of specialized COPD and asthma clinics. More intensive education in COPD may include a pulmonary rehabilitation program, with an additional emphasis on exercise and pacing of activities of daily living. 

Both asthma and COPD can be associated with exacerbations