



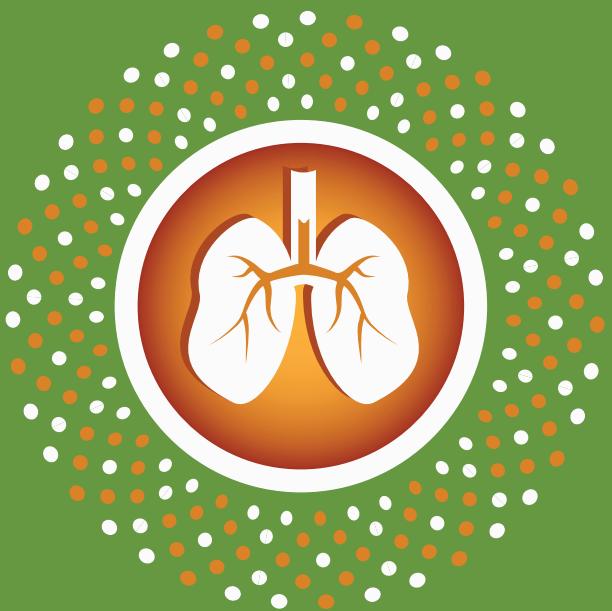
COPD and Asthma

Differential Diagnosis



AMERICAN ACADEMY OF
FAMILY PHYSICIANS

**Chronic Obstructive Pulmonary
Disease (COPD) is the third
leading cause of death in America.**



Learning Objectives

- Use tools to effectively diagnose chronic obstructive pulmonary disease (COPD) and asthma, and help patients self-manage these chronic diseases.
- Understand the importance of short- and long-term monitoring, maximizing lung function, and managing exacerbations and airflow limitations.

According to the Centers for Disease Control's (CDC) National Asthma Control Program, asthma is getting worse. In the last decade, the proportion of people with asthma in the United States grew by nearly 15%. Asthma led to:

- 439,400 hospitalizations (2010)
- 1.8 million emergency department visits (2011)
- 10.5 million physician office visits (2012)

The American Lung Association reports that COPD is the third leading cause of death in America, claiming the lives of 134,676 Americans in 2010.

Differentiating chronic obstructive pulmonary disease (COPD) from asthma can be complicated, especially in older adults and individuals who smoke. Initial diagnosis of these conditions requires the identification of patients at risk of, or likely to have, chronic airways disease. Asthma-COPD overlap syndrome (ACOS), which shares features with both asthma and COPD, should also be considered.

Epidemiology of COPD and Asthma

The Global Initiative for Chronic Obstructive Lung Disease (GOLD) defines COPD as "a common preventable and treatable disease, characterized by persistent airflow limitation that is usually progressive and associated with an enhanced chronic inflammatory response in the airways and the lungs to noxious particles or gases." It is estimated that 12.7 million individuals 18 years and older in the United States have been diagnosed with COPD. However, approximately 24 million adults in the United States have evidence of impaired lung function, which indicates that COPD may be underdiagnosed.

The prevalence of COPD varies considerably by state, from less than 4% in Washington and Minnesota to greater than 9% in Alabama and Kentucky. The median prevalence in the United States is 5.8%. The states with the highest prevalence of COPD—Alabama, Illinois, Kentucky, Oklahoma, Tennessee, and West Virginia—are clustered along the Ohio and lower Mississippi rivers.

The Global Initiative for Asthma (GINA) defines asthma as "a heterogeneous disease, usually characterized by chronic airway inflammation. It is defined by the history of respiratory symptoms such as wheeze, shortness of breath, chest tightness, and cough that vary over time and in intensity, together with variable expiratory airflow limitation." Unlike COPD, which typically develops later in life, asthma most often begins in childhood. According to the CDC, more than 6 million children and 16.5 million adults in the United States have asthma.

Medical and Economic Burden of COPD and Asthma

In 2010, COPD was the primary diagnosis in 10.3 million physician office visits, 1.5 million emergency department (ED) visits, and 699,000 hospital discharges. According to the American Lung Association, the United States spent \$29.5 billion in direct costs and \$20.4 billion in indirect costs for COPD in 2011. Much of the direct cost of COPD is for hospitalizations following exacerbations.

In 2010, asthma was the primary diagnosis in 14.2 million physician office visits and there were 1.8 million ED visits for asthma in 2011. Nearly one in five children who had asthma went to an emergency department for care in 2009. According to one study, asthma costs the United States \$56 billion each year.

Disease Burden and Treatment Needs in Diverse Patient Populations

Asthma prevalence and outcomes reveal significant disparities. Physicians are an important part of effective asthma management, but patients in some minority groups may not see a physician regularly as part of their asthma care. According to the National Institutes of Health (NIH), asthma is more common and more severe among women; children; low-income, inner-city residents; and African American and Puerto Rican communities. Social, economic, and cultural factors—ranging from lack of access to quality health care to differences in health beliefs between patients and their physicians—contribute to a greater burden of asthma on some patients. In addition, gaps in the implementation of clinical practice guidelines for asthma contribute to the ongoing problem of asthma-related health disparities among at-risk groups. These disparities in asthma care and burden suggest that culturally competent clinical and educational approaches are needed.

The Guidelines for the Diagnosis and Management of Asthma provides guidelines that emphasize the importance of asthma control and introduces approaches for monitoring asthma in high-risk groups and other patients with asthma.

The six key messages from the guidelines are:

- Assess asthma severity at the initial visit to determine initial treatment.**
- Use written asthma action plans to guide patient self-management.**
- Use inhaled corticosteroids to control asthma.**
- Assess and monitor asthma control and adjust treatment, if needed.**
- Schedule follow-up visits at periodic intervals.**
- Control environmental exposures that worsen the patient's asthma.**

Differential Diagnosis/Syndromic Diagnosis for COPD and Asthma

Though the most common diagnostic dilemma is differentiating COPD from asthma, many other illnesses share symptoms and/or physical findings with COPD. Most can be excluded without an extensive evaluation. Some may require the judicious use of select tests. Differential diagnosis of COPD must take into consideration the symptom complex obtained from the patient's history and physical examination findings. Spirometry should be performed to make the diagnosis of COPD.

As noted previously, asthma is the most common alternative diagnosis to COPD. Its symptoms (e.g., shortness of breath, chronic cough, etc.) can mimic COPD. Take into account clinical characteristics and epidemiological factors to narrow down the diagnosis. Smoking incidence and childhood exposure to secondhand smoke are important risk factors for COPD that are more likely to be present in individuals of lower socioeconomic status. However, given the higher incidence of asthma in certain populations, the risks of COPD and asthma may overlap.

In light of the common features of asthma and COPD, an approach that focuses on the features that are most helpful in distinguishing asthma from COPD is recommended. The diagnostic profile of asthma or COPD can be assembled from a careful history that considers age; symptoms (in particular, onset and progression, variability, seasonality or periodicity, and persistence); history; social and occupational risk factors (including smoking history, previous diagnoses, and treatment); and response to treatment.

The primary features of asthma include the following:

- Onset before age 20 years
- Symptoms that vary over time, often limiting activity
- A record (e.g., spirometry, peak expiratory flow [PEF]) of variable airflow limitation
- Family history of asthma or other allergic condition
- Lung function that may be normal between symptoms
- Symptoms that vary either seasonally or from year to year
- Symptoms that improve spontaneously or have an immediate response to bronchodilator treatment or to inhaled corticosteroids (ICS) over a period of weeks
- Normal chest X-ray

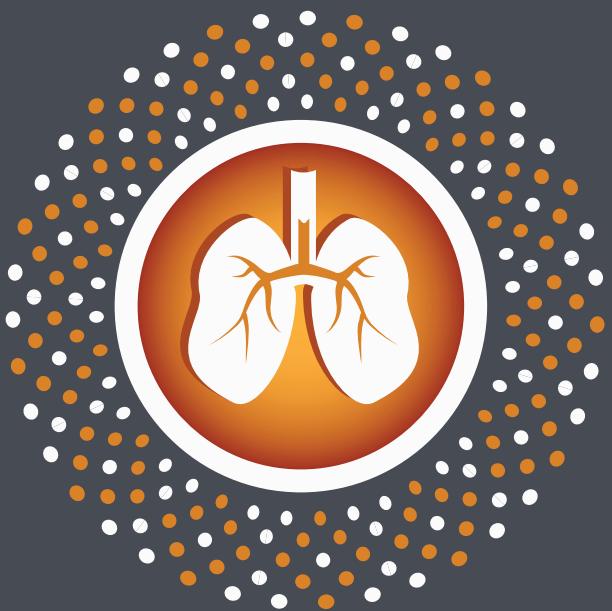
The primary features of COPD include the following:

- Onset after age 40
- Persistence of symptoms despite treatment
- Abnormal lung function between symptoms
- Heavy exposure to risk factors, such as tobacco smoke or biomass fuels
- Symptoms that worsen slowly over time (i.e., progressive course over years)
- Limited relief from rapid-acting bronchodilator treatment
- Severe hyperinflation or other changes on chest X-ray

Keep in mind that individuals who have COPD often do not know they have it, do not know when it developed, or are unaware of the severity of their condition. They develop exercise intolerance because of air trapping and exertional dyspnea-related chest expansion. Consequently, they minimize their exercise and attribute deconditioning to normal aging. Therefore, they do not experience dyspnea and may respond to open-ended questions by saying that they are “breathing fine.” If these patients do not have exacerbations, their COPD may not interfere with their lives. However, some individuals who have COPD have significant interference with function or frequent exacerbations, and these patients have progressive decline in lung function.

Distinguishing between COPD and asthma can have important implications in terms of management and life expectancy. The clinical examination may suggest asthma or COPD, but no set of clinical findings is diagnostic.

Asthma/COPD Management



There is a strong likelihood of correct diagnosis if a patient presents with three or more of the features listed for either asthma or COPD in the absence of features of the alternative diagnosis. However, the absence of any of these features has less predictive value and does not rule out the diagnosis of either disease.

COPD and Asthma Management in Primary Care

Short- and Long-term Monitoring

COPD worsens over time, so routine follow up and monitoring is essential. Perform spirometry yearly to identify patients who are experiencing a rapid decline. Ask specific questions about the patient's well-being (e.g., by using a questionnaire such as the COPD Assessment Test) every three months. Assess symptoms (e.g., cough, sputum production, dyspnea, limitations of activity, and sleep disturbances) and smoking status at every visit.

Exacerbation Management and Lung Function

Smoking cessation is key for all patients who smoke and have COPD. Medications are used to reduce symptoms, reduce the frequency and severity of exacerbations, and improve exercise tolerance. Long-acting formulations are preferred. Current medications for COPD have not been shown to lessen the long-term decline in lung function.

The most common cause of COPD exacerbations is viral or bacterial infection. The medication classes most commonly used to manage exacerbations are bronchodilators, steroids, and antibiotics. Short-acting β_2 -agonists are preferred in the acute setting. Systemic steroids may shorten recovery time, improve FEV1, and improve hypoxemia, but long-term management of COPD with oral steroid medicines is not recommended due to steroid myopathy.

An as-needed short acting β_2 -agonist (SABA) alone is considered the first step in treatment for asthma. Regular, daily, low-dose ICS treatment, plus an as-needed SABA, is highly effective to reduce asthma-related exacerbations, symptoms, hospitalizations, and mortality. For patients whose symptoms and/or exacerbations persist in spite of management with low-dose ICS, plus an as-needed SABA, a step up in treatment should be considered. However, patients should first be asked about treatment adherence, inhaler techniques, comorbidities, and level of exposure to allergens.

Dual Bronchodilation

For COPD, initial treatment should provide appropriate management of symptoms with bronchodilators or combination therapy, but not with ICS alone. Asthma should be managed with suitable controller therapy, including ICS, but not with long-acting bronchodilators alone.

Bronchodilators increase FEV1 by alternating smooth muscle tone. The two classes of bronchodilators are β_2 -agonists and anticholinergics. More recently, a combination of the long-acting anticholinergic umeclidinium and the long-acting β_2 -agonist vilanterol became available in a once-daily inhaled preparation. Additionally, there are combinations of a long-acting bronchodilator and anticholinergic, as well as long-acting anti-muscarinic agents (LAMAs) on the market and in development.

Conclusions and Recommendations

The most effective treatment for COPD or asthma is a partnership between the patient and his or her physician. Support patient self-management of COPD or asthma by encouraging smoking cessation, providing routine monitoring, promoting medication regimen adherence, and encouraging physical fitness. Patients should be trained to use inhaler devices properly in order to manage their condition effectively.

AAFP's tobacco cessation program, "Ask and Act," encourages family physicians to ASK their patients about tobacco use, then ACT to help them quit. This resource can be found at www.aafp.org/patient-care/public-health/tobacco-nicotine.html.

More Information

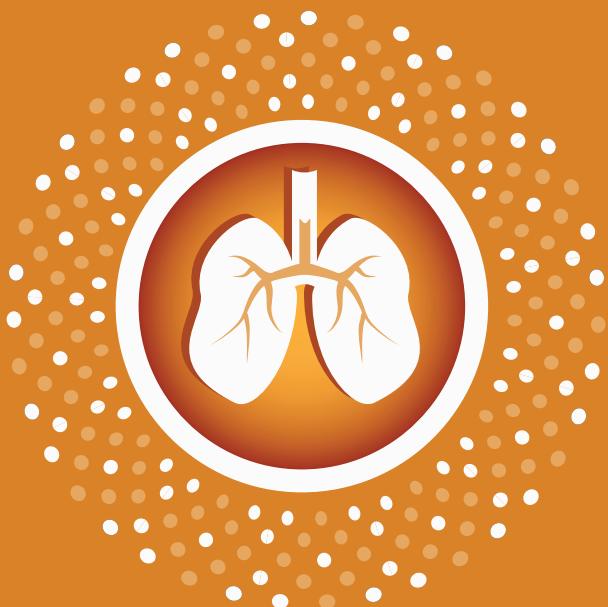
An expanded version of *COPD and Asthma: Differential Diagnosis* is available at www.aafp.org/asthma-COPD. The expanded version contains more in-depth information on diagnostic methods and tools for screening, along with citations and full references.

A printable handout about how to use a metered dose inhaler for asthma can be found at <http://familydoctor.org/familydoctor/en/diseases-conditions/asthma/treatment/how-to-use-a-metered-dose-inhaler.html>.

Patient resources on COPD treatment, starting with "stop smoking," can be found at <http://familydoctor.org/familydoctor/en/diseases-conditions/chronic-obstructive-pulmonary-disease/treatment.html>.

A written asthma action plan can help patients recognize and appropriately address worsening symptoms. More information on asthma action plans, including a downloadable plan, can be found at <http://familydoctor.org/familydoctor/en/diseases-conditions/asthma/treatment/asthma-action-plan.html>.

How does my doctor know whether I have COPD or asthma?





COPD and Asthma

What you need to know

Are COPD and asthma the same thing?

No. Chronic obstructive pulmonary disease (also called COPD) and asthma are both diseases of the lungs that make it hard for you to breathe. However, they are different diseases. COPD is caused by damage to the lungs over a long period of time. It includes two main conditions: chronic bronchitis and emphysema (say: "em-fa-see-ma"). Most people who have COPD have both of these conditions. The symptoms of COPD usually develop in people older than age 40.

Asthma is a disease that affects the part of the lungs called the bronchial tubes (also called airways). If you have asthma, your airways are extra sensitive to the things you are allergic to (called allergens) and to other irritating things you breathe in (called irritants). These things are sometimes called "triggers." Being exposed to triggers can cause an asthma attack.

Smoking tobacco and secondhand smoke can be triggers that irritate symptoms of asthma and help cause COPD. Substances released when inhaling tobacco smoke can cause an attack in a person who has asthma. The irritation over long periods can cause the onset of COPD.

What is an asthma attack?

An asthma attack happens when excess mucus causes your airways to swell and tighten. Asthma attacks can be mild, moderate, or severe. Symptoms of an asthma attack include wheezing (breathing that makes a hoarse, squeaky, or whistling sound), coughing, shortness of breath (breathless feeling), and a tight feeling in the chest. A person who is having an asthma attack may have trouble sleeping because of these symptoms.

What are the symptoms of COPD?

COPD can cause a variety of symptoms, including the following:

- Chronic (long-lasting) cough
- A cough that produces mucus
- Shortness of breath
- A tight feeling in the chest
- Wheezing

At first, you may have no symptoms or only mild symptoms, but COPD is a progressive disease. This means that the symptoms start slowly and get worse over time. COPD symptoms develop over the course of many years.

How does my doctor know whether I have COPD or asthma?

Talk to your doctor if you have any symptoms of COPD or asthma. These diseases are not treated in exactly the same way, so it is important to have a correct diagnosis.

Because COPD and asthma cause similar symptoms, your doctor will give you a physical exam and ask specific questions about your symptoms. For example, he or she might ask whether your symptoms get worse at a certain time of day. Your doctor will also ask about your medical history and your family's history of breathing problems.

It is especially important for your doctor to know if you smoke or if you have had a lot of exposure to irritants over a long period of time. Common causes of COPD include tobacco smoke (including secondhand smoke), and chemical fumes, gases or vapors.

Your doctor will also measure how well your lungs are working (called lung function). This can be checked with a simple breathing test called a spirometry test.

COPD and Asthma, continued

How is COPD treated?

Treatment for COPD aims to help control your symptoms, and reduce your risk of complications. You will need to make lifestyle changes and use prescribed medical treatments.

Stop smoking. If you use tobacco products and have COPD, the most important thing you can do is quit smoking. This will help to stop the damaging effects of cigarette smoke to your lungs and it could slow the progression of the disease. Talk to your doctor about how to quit smoking.

Help yourself breathe better. Avoid irritants that will make your symptoms worse, such as high ozone levels and air pollution (for example, motor vehicle exhaust). Also, avoid breathing in chemicals or dust.

Know how to use your medicine. Your doctor may prescribe one or more medicines to help you breathe more easily. He or she will tell you how to take your medicine. It is important to follow your doctor's instructions carefully so that your lungs receive the right amount of medicine. Only use the medicines that your doctor has prescribed for you.

Get recommended vaccines. Vaccines can help prevent certain respiratory infections, such as influenza (the flu) and pneumonia. These infections can make COPD symptoms worse or cause more lung damage. Talk to your doctor about when and how often you should get vaccines.

Make healthy lifestyle changes. Even small lifestyle changes can help control your COPD symptoms. Your doctor can tell you about pulmonary rehabilitation programs for people who have COPD. These programs provide information and support as you make healthy changes. In a rehabilitation program, you can work with a team of health care professionals to learn more about your disease, receive counseling, and create exercise and eating plans tailored to your needs.

How is asthma treated?

Treatment for asthma involves avoiding things that cause asthma attacks, keeping track of your symptoms, and taking medicine. Your doctor will show you how to use a peak flow meter. A peak flow meter is a handheld device that measures how fast you can blow air out of your lungs. Measuring your peak flow regularly can help you tell whether your asthma is getting worse.

Ask your doctor for written directions about how to prevent and treat asthma attacks at home. These written instructions are called your "asthma action plan." It will include information on specific allergens and irritants that you should avoid, as well as what to do if you have a severe asthma attack.

Asthma medicines can generally be divided into two groups: medicines to prevent attacks (called controller medicines) and medicines to treat attacks (sometimes called rescue medicines). Most people need to take more than one type of medicine to control their asthma. People who have asthma do not all take the same medicine. Your asthma action plan will tell you how to take your controller and rescue medicines based on your peak flow meter readings. Your doctor will show you how to take your medicine so that your lungs receive the right amount.

MORE INFORMATION

Find more information about COPD (including information about the spirometry test) online at <http://familydoctor.org/familydoctor/en/diseases-conditions/chronic-obstructive-pulmonary-disease.html>.

Find more information about asthma (including information about asthma action plans, how to take asthma medicine, and questions to ask when your asthma doesn't get better) online at <http://familydoctor.org/familydoctor/en/diseases-conditions/asthma.html>.



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COPD and Asthma: *Differential Diagnosis*

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