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# Guide to New Treatments for COPD

by the Editors of Johns Hopkins Health Alerts

**Special  
Report**

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**Guide to New Treatments for COPD**

**Table of Contents**

**Effective Steps to Relieve Chronic Obstructive Pulmonary Disease (COPD)..... 1**

**The Damaging Effects of COPD..... 1**

**Other Treatments for COPD..... 1**

**Living with COPD ..... 1**

**Recognizing COPD Complications..... 1**

**Further Resources..... 1**

**Disclaimer ..... 1**



# Effective Steps To Relieve Chronic Obstructive Pulmonary Disease (COPD)

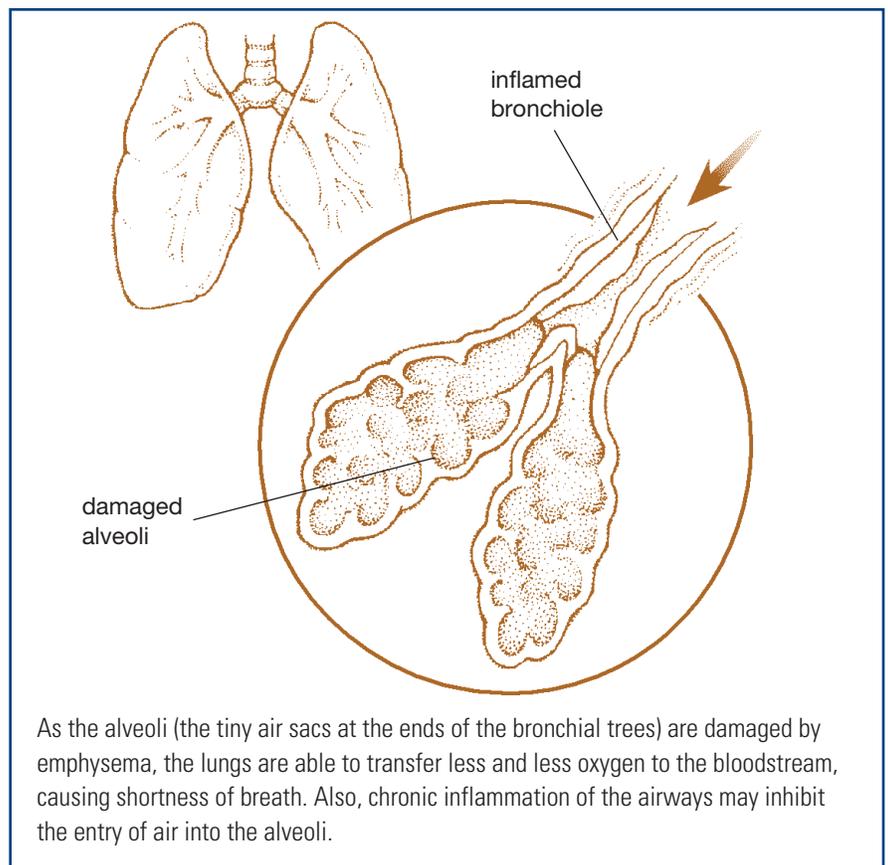
**W**hen taken together, chronic bronchitis and emphysema—two distinct conditions known collectively as chronic obstructive pulmonary disease (COPD)—are the fourth leading cause of death in the United States, after heart disease, cancer, and stroke. As many as 16 million Americans have been diagnosed with COPD. Experts estimate another 16 million have the condition without knowing it.

The symptoms of COPD—primarily shortness of breath and a productive cough—can be highly debilitating. Shortness of breath may be uncomfortable enough to trigger panic attacks in some sufferers. In a recent survey of 573 COPD patients, 45% of the respondents reported shortness of breath while washing, dressing, or doing light housework; about a third said they had difficulty breathing while talking or resting; 8% said they were too short of breath to leave home. COPD is also associated with frequent respiratory infections, malnutrition, weight loss, fatigue, and depression.

The survey also revealed that COPD patients tend to underestimate the severity of their illness. More than a third of those with severe symptoms characterized their condition as mild or moderate. Of these, a quarter thought that their symptoms were well controlled or even completely

controlled. Surprisingly, although COPD is a progressive disorder that cannot be cured, older adults reported fewer and less severe symptoms than younger ones.

This finding is counterintuitive, but there are at least two logical explanations. First, because people often become less active with age, older adults may not require as much functional lung tissue or as great a respiratory reserve (the abil-



As the alveoli (the tiny air sacs at the ends of the bronchial trees) are damaged by emphysema, the lungs are able to transfer less and less oxygen to the bloodstream, causing shortness of breath. Also, chronic inflammation of the airways may inhibit the entry of air into the alveoli.

ity of the lungs to exchange oxygen and carbon dioxide in response to increased activity) as they did when they were younger.

Second, older COPD patients tend to grow accustomed to their symptoms and may restrict their activities to avoid them. Regardless, lifestyle measures can reduce symptoms of COPD, increase stamina, and produce dramatic improvements in quality of life.

### The Damaging Effects of COPD

Gradually declining lung function due to airway obstruction is the hallmark of COPD. By reducing the elasticity of the lungs and destroying the walls between the air sacs (alveoli), emphysema leads to airway collapse and reduced airflow. Chronic bronchitis is an inflammatory disease of the airways that is frequently worsened by acute bacterial infections. The inflammation causes increased mucus production and swelling of the walls of the bronchial tubes, which leads to narrower passages.

Both emphysema and chronic bronchitis decrease the ability of the lungs to take in oxygen and remove carbon dioxide and are sometimes associated with spasms of the airways. Both conditions also coexist in many COPD patients.

As COPD advances, sufferers are vulnerable to acute episodes, which are typically prompted by a viral or bacterial infection. Extremely hot or cold air temperatures and poor air quality may worsen COPD symptoms. Acute episodes of COPD are marked by increased shortness of breath, wheezing, and a cough that produces more phlegm (the color of the phlegm may also change). People in the later stages of COPD are often underweight and malnourished because eating is tiring and the work of breathing increases calorie needs by 20% to 50%.

People with COPD also typically lose muscle mass owing to inactivity, leading to general

weakness as well as weakness of the muscles that control breathing. Disability and discomfort often prompt psychological problems, primarily depression. Serious potential medical complications include congestive heart failure and pulmonary embolism (a blood clot carried to the lungs).

Long-term smoking is responsible for 80% to 90% of COPD cases. Heredity, exposure to secondhand smoke and air pollution, and frequent respiratory infections during childhood may also play a role in COPD.

If you have COPD, you can improve your quality of life by following these three important steps:

#### Step 1: Don't Smoke

Not smoking can dramatically improve symptoms and stamina in COPD patients.

#### Step 2: Exercise

Exercise builds muscle strength and stamina and improves breathing ability in everyone, including those with COPD. Consequently, regular exercise may enable people with COPD to work harder and longer without triggering symptoms.

#### Step 3: Eat a Healthy Diet

Good nutrition may reduce the risk of respiratory infections, which can be life-threatening in patients with COPD. However, fatigue, depression, or the side effects of medications may rob people of their motivation to eat. Up to 60% of people with COPD do not get enough calories and nutrients from dietary sources alone.

If you have COPD, you are more likely to meet your calorie and nutritional needs if you:

- Eat a variety of foods
- Focus on foods that contain antioxidants (vitamins C, E, and beta-carotene), which are found in deep green and yellow-orange fruits and vegetables

- Limit salt, caffeine, and alcohol
- Avoid foods that cause gas or bloating
- Eat five or six small meals a day rather than a few large meals
- Choose calorie-dense foods like peanut butter
- Consider taking a high-calorie nutrition supplement and/or a vitamin supplement (beta-carotene supplements are not recommended, however, because current evidence indicates they may increase the risk of lung cancer in people who smoke)

### Other Treatments for COPD

When lifestyle measures are insufficient, inhaled bronchodilators, which relax and open constricted airways, can sometimes relieve COPD symptoms. If inflammation or extreme

sensitivity to irritants is a problem, some physicians add an inhaled corticosteroid to the regimen.

Antibiotics should be prescribed when a bacterial infection is suspected; influenza and pneumonia vaccinations should be up-to-date; and expectorants can help loosen and expel mucus.

Supplemental oxygen is beneficial for people with advanced COPD disease who have severely impaired lung function and an abnormally low blood-oxygen concentration. Surgery may be considered in selected patients. There are two options: lung reduction, an experimental procedure, and lung transplantation. Only about 1,250 lung transplants are performed annually worldwide owing to the scarcity of donated organs.



# Living with COPD – Breathing Training Brings Benefits

**R**ecent observations have underscored the benefits of pulmonary rehabilitation programs for people with COPD (chronic obstructive pulmonary disease). While maintaining general strength through regular aerobic exercise is beneficial, lung exercises to strengthen the muscles used for breathing are also important for people with COPD. Breath training helps to control breathing rate, decrease the amount of energy required for breathing, and improve the position and function of the respiratory muscles. A respiratory therapist can help people with COPD practice the following techniques:

**Pursed-lip breathing for COPD.** Inhale through your nose, and then exhale with your lips pursed in a whistling or kissing position. Each inhalation should take about two seconds and each exhalation should last about four to six seconds. It is not clear how pursed-lip breathing brings symptom relief for people with COPD, but it may work by keeping the airways open.

**Diaphragmatic breathing for COPD.** The diaphragm is the main muscle used for normal breathing. People with COPD, however, may also use the muscles in the rib cage, neck, and abdomen to breathe. This method is less efficient than using the diaphragm. To practice using the diaphragm, lie on your back, place your hand or a small book on your abdomen, and breathe. Your hand or the book should rise on inhalation and fall on exhalation. Practice for 20 minutes twice daily. Once you have mastered this skill while lying down, try to do it while sitting up.

**Forward-bending posture for COPD.** Breathing while bending slightly forward from the waist relieves symptoms for some people with severe COPD, possibly because the diaphragm has more room to expand.



# Recognizing COPD Complications

If you have COPD, how do you know when you're not merely in discomfort, but in danger? Here are some danger signs that you shouldn't ignore:

**COPD flare-ups and infections.** If you feel increasing shortness of breath, more mucus in your throat, and greater wheezing and coughing than usual, you may be experiencing a COPD flare-up – something you need to share with your doctor. You should also call if the material you cough up changes color or if you have a fever lasting more than 24 hours. COPD flare-ups often result from a bronchial infection, which may be treatable with antibiotics, or from breathing fumes, dust, or pollution.

**COPD and heart failure.** Swelling of the legs, ankles, and feet is a warning that someone with COPD may have developed a type of heart failure called cor pulmonale, or right ventricular failure. Because COPD makes the heart work harder (particularly the right side, which pumps blood into the lungs), that side of the heart may enlarge. As the blood pressure in the lungs rises, the right ventricle contracts less efficiently. Cor pulmonale increases the risk that a blood clot will develop in a leg vein.

**COPD and pneumothorax.** A hole that develops in the lung, allowing air to escape into the space between the lung and the chest wall, pneumothorax causes the lung to collapse, leading to severe shortness of breath. People with COPD have an increased risk of pneumothorax, because changes in their lungs cause air to be emptied unevenly from the lungs. Symptoms of pneumothorax include: sudden shortness of breath; painful breathing; sharp chest pain, often on one side; chest tightness; dry, hacking cough; rapid heart rate.

**COPD and too many red blood cells.** Weakness, headaches, fatigue, and light-headedness may indicate the presence of an uncommon condition known as secondary polycythemia, which arises when there isn't enough oxygen in the blood. Someone who develops polycythemia may have visual disturbances such as blind spots, distorted vision, and flashes of light. Gums and small cuts may bleed, and there may be a burning sensation in the hands and the feet.

# Rely on Expert Health Advice From Johns Hopkins

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## Lung Disorders White Paper

This comprehensive report provides the latest research on the prevention and treatment of the most common lung diseases, including: asthma, chronic obstructive pulmonary disease (COPD), sleep apnea, interstitial lung disease, lung cancer, bronchitis, and pneumonia. Written by Peter B. Terry, M.D., M.A., professor of medicine in the Division of Pulmonary and Critical Care at Johns Hopkins, the Lung Disorders White Paper is an excellent resource that can help you or a loved one manage your condition. 88 pages.

## Memory White Paper

A dramatic increase in the number of people affected by Alzheimer's disease has heightened the urgency of the research into Alzheimer's and other dementias. The Memory White Paper brings you state-of-the-art information on how to tell the difference between Alzheimer's, another form of dementia, or ordinary age-related memory loss, and the best ways to keep your memory sharp as you get older. You will also learn about important new research in identifying, treating, and preventing memory disorders, as well as new drugs for Alzheimer's and other dementias that can help slow memory decline.

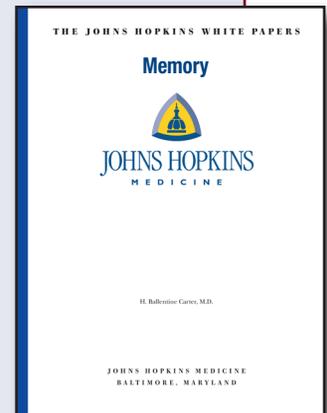
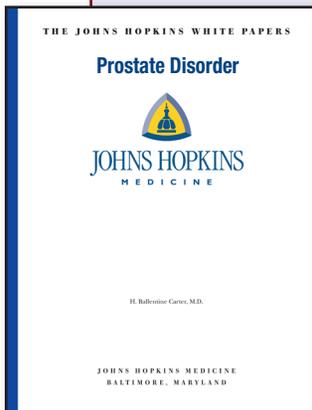
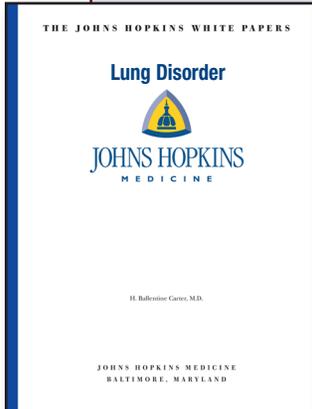
## Prostate Disorders White Paper

This all-in-one comprehensive guide explains everything you need to know about your prostate – what it is, what it does, and what problems can develop, such as prostatitis, benign prostatic hyperplasia (BPH or enlarged prostate), and prostate cancer. You'll learn key facts about prostate health, discover prostate treatments you never knew existed, and understand what your options are if you're ever diagnosed with prostate cancer. 96 pages

## The Johns Hopkins Medical Letter: Health After 50

Since 1988 this acclaimed monthly newsletter has delivered cutting-edge information on treating the major medical conditions affecting those over 50. Each eight-page issue delivers important news and research on women's health, men's health, nutrition, weight control, arthritis, COPD, colon cancer, dementia and much more. Friendly, easy-to-read, and written in plain English (without any advertising), Health After 50 speaks directly to your personal health concerns.

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