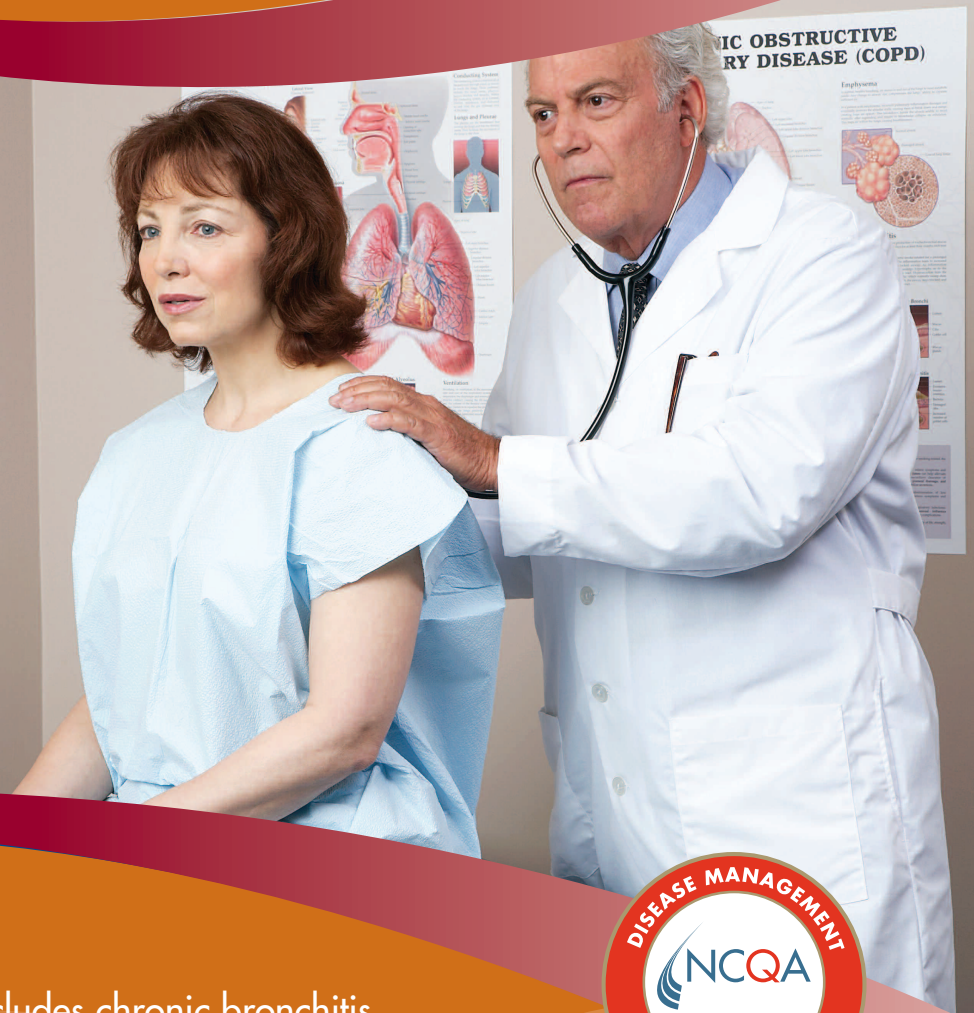


# UNDERSTANDING HOW YOUR LUNGS WORK

## AND HOW COPD\* AFFECTS YOUR BODY



Boehringer Ingelheim Pharmaceuticals, Inc. has no ownership interest in any other organization that advertises or markets its disease management products and services.

*A patient educational resource provided by  
Boehringer Ingelheim Pharmaceuticals, Inc.*



Printed on recycled paper in the U.S.A.  
Copyright © 2007, Boehringer Ingelheim Pharmaceuticals, Inc.  
All rights reserved. (06/07) DM44218

B100000

\*Includes chronic bronchitis,  
emphysema, or both



## INTRODUCTION TO COPD

COPD\* is a chronic lung disease. It includes both chronic bronchitis (brank-eye-tis) and/or emphysema (em-fuh-zee-muh).

Your healthcare practitioner may have said that you are at risk for COPD. Or you may have been told that you have COPD. You may have had it for awhile. But do you know just what your lungs do? And how COPD can affect them and your health?

In this booklet, we will show you how your lungs work. We will explain the important functions they have in your body. We will also show what happens to your lungs when you have COPD. We will show you how COPD can affect the rest of your body and your life. And we will give you tips on how you may reduce your symptoms and help prevent COPD-related problems.

COPD cannot be cured, but the good news is it can be treated.

\*Chronic (kron-ick) obstructive (ob-struck-tiv) pulmonary (pull-muh-nair-ee) disease.

## ABOUT THIS BOOKLET...

**This booklet will help you learn about COPD. It may help you manage it well. The topics covered include**

- What Do Your Lungs Do? . . . . .4
- How Do Your Lungs Work? . . . . .5
- What Happens When You Have COPD? . . . .10
- How Does COPD Affect You? . . . . .15
- Other Conditions You May Have  
Along With COPD . . . . .16
- How Are COPD and Asthma Different? . . . .17
- What to Ask Your Healthcare Practitioner . . . .18
- Where Can You Find  
More Information and Support? . . . . .19

## WHAT DO YOUR LUNGS DO?

The lungs have very important functions in your body. They help to keep you alive and well. In fact, lungs do more than most of your organs. Basically, they help

- Bring healthy air (oxygen [ox-ih-gen]) to your other organs, muscles, and tissues
- Take unhealthy waste air (carbon dioxide [car-bun die-ox-ide]) out of your body

This is what happens when you breathe in and out.

The lungs are made up of many different kinds of cells. These cells do many things. Some of their jobs are to

- Trap dust and other waste materials you may breathe in
- Keep the insides of your airways clean
- Help fight off infection

## HOW DO YOUR LUNGS WORK?

The lungs are the largest part of the respiratory (ress-per-uh-tor-ee) system. This system takes care of breathing. Besides the lungs, it includes your

- Nose
- Mouth
- Throat
- Windpipe (large airway)
- Airways (that get narrower and narrower and end in small air sacs)

When it's working well, it brings in the oxygen your body needs. And it takes out the carbon dioxide waste that your body can't use.

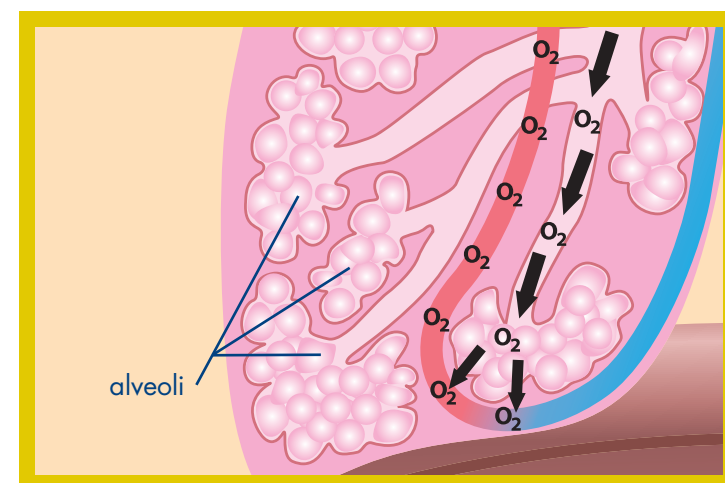
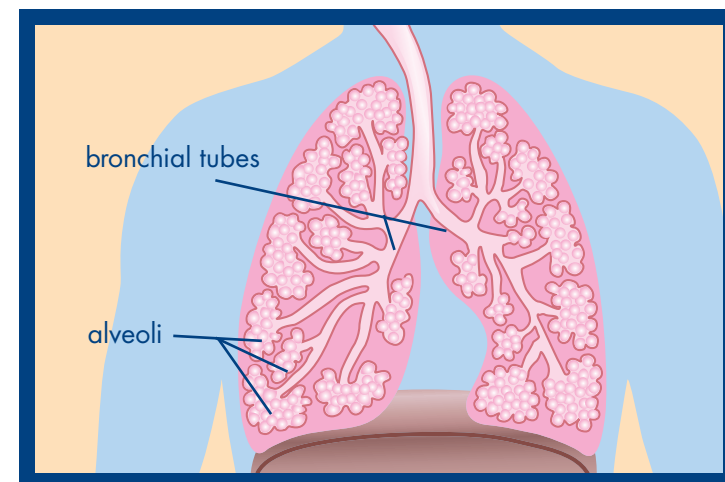
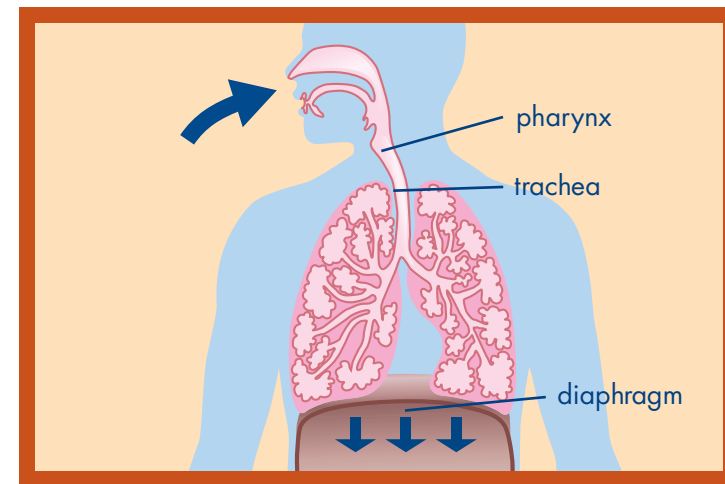


## Healthy Lungs

This is how a healthy lung works:

### When you inhale (breathe in air):

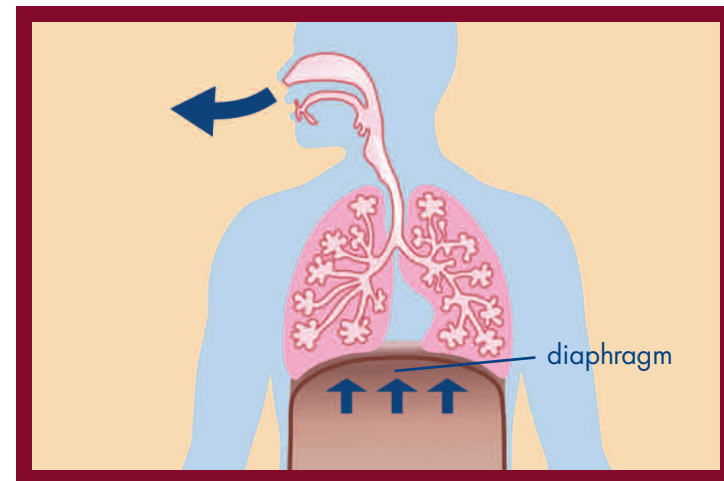
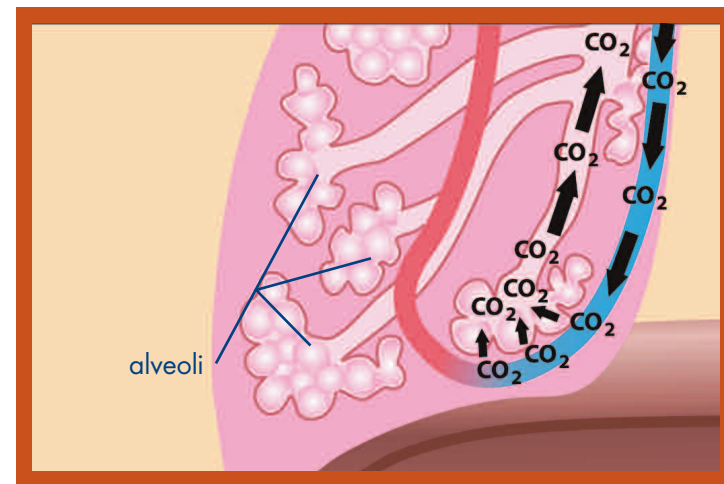
- 1 The diaphragm (die-a-fram), the large muscle at the bottom of your lungs, moves down, pulling air into the airways and finally into the lungs.
- 2 The air moves from your nose or mouth into your throat (pharynx [fah-rinks]).
- 3 From your throat, the air goes to your windpipe (trachea [tray-kee-uh]).
- 4 The windpipe breaks off into two bronchial tubes, one for each lung.
- 5 The bronchial tubes carry the air deep into each lung.
- 6 The bronchial tubes subdivide into many smaller tubes. These tubes end in air sacs called alveoli (al-vee-oh-lie), which are like clusters of grapes.
- 7 The alveoli stretch and expand like small balloons.
- 8 Oxygen ( $O_2$ ) from the air goes into blood vessels that surround the alveoli.
- 9 This oxygen is then sent through your body by the blood.





### When you exhale (breathe out air):

- 1** Carbon dioxide ( $\text{CO}_2$ ) moves from the blood flowing through the blood vessels into the alveoli.
- 2** The diaphragm moves up to help the chest push the carbon dioxide out of the lungs.
- 3** This air moves from the alveoli, up through the bronchial tubes and windpipe, and out of the nose.



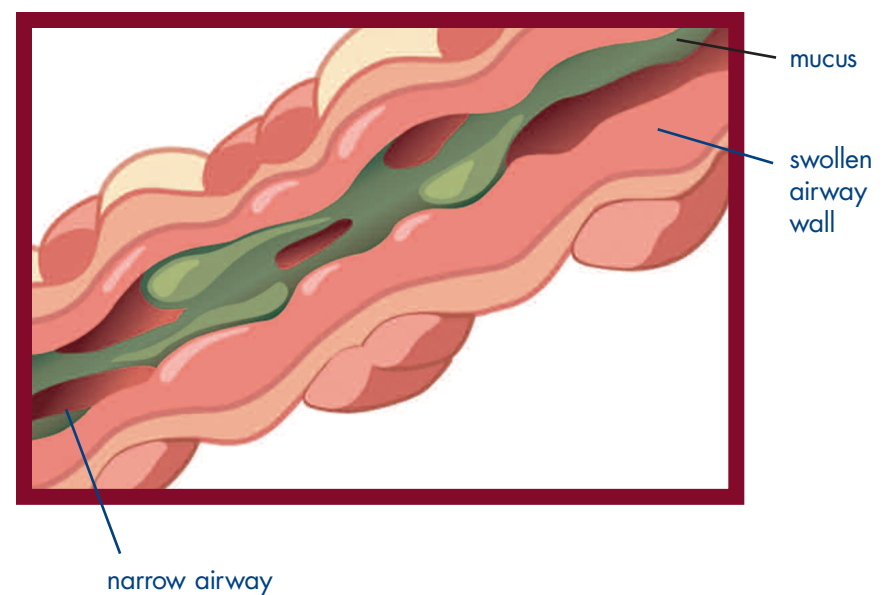
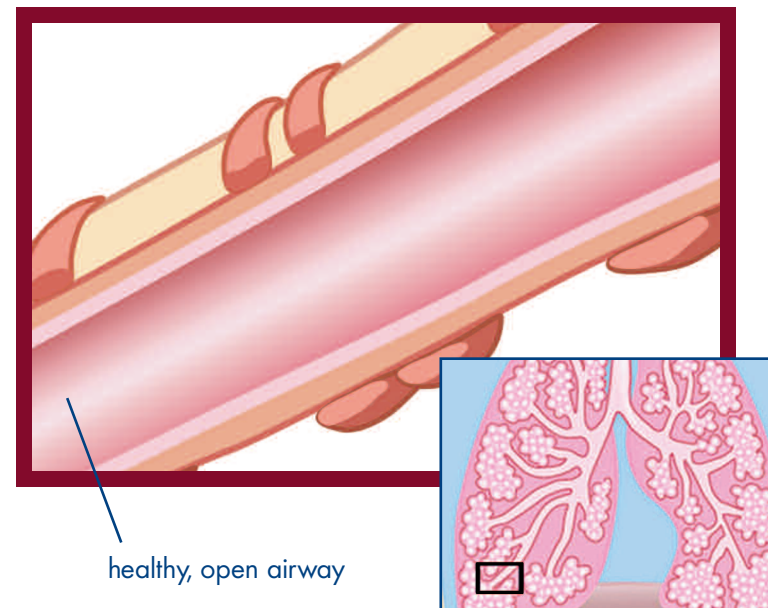
## WHAT HAPPENS WHEN YOU HAVE COPD?

When you have COPD, there are changes in your lungs. This affects your breathing.

COPD is not just one disease. It's a group of lung diseases. It includes chronic bronchitis and/or emphysema. You may have one or both of these.

### If you have chronic bronchitis

- The walls inside your airways become swollen and thick
- Your airways become narrow
- Large amounts of mucus form
  - This blocks your airways and may increase the risk of infection
  - Productive cough is common
- Over time, your lungs get scarred and can't function

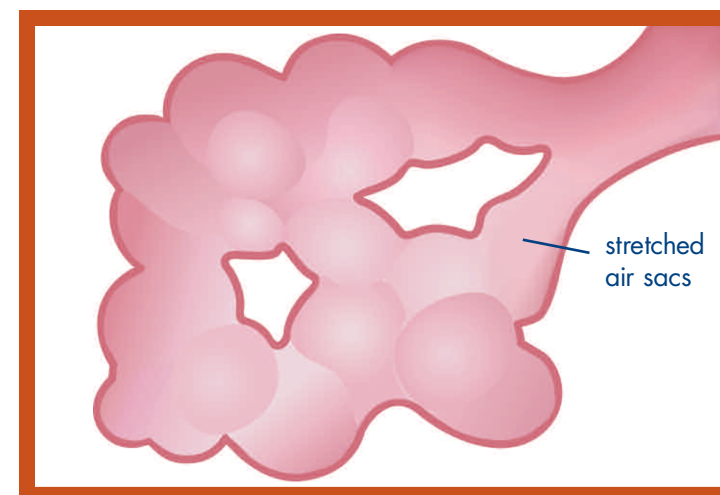
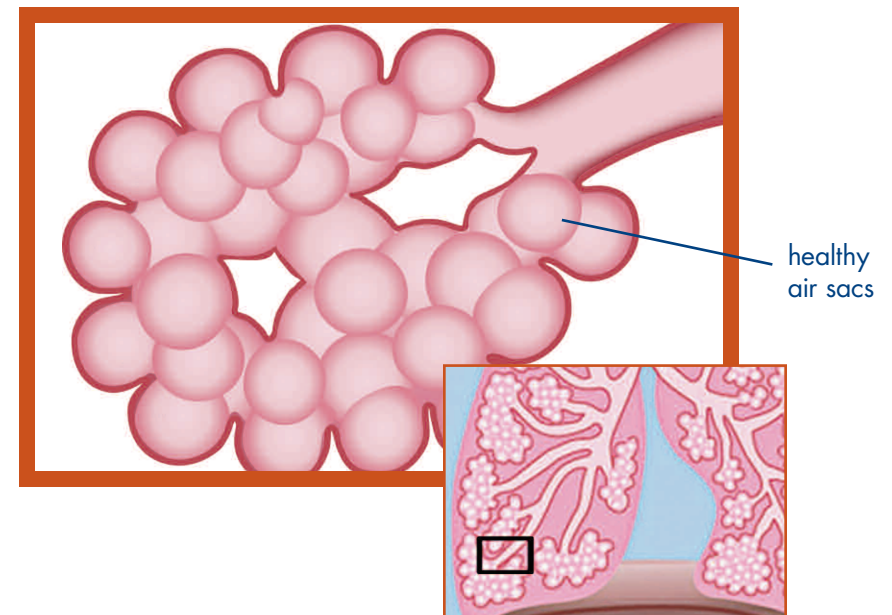


## If you have emphysema

- The air sacs at the ends of your airways are damaged. They get stiffer
- Air gets trapped in the tiny air sacs. The air sacs get stretched too much and break down, which makes them begin to not function properly
- This leads to a few large air sacs, instead of many tiny ones
- Not all the air in the larger space gets pushed out when you breathe out
- Your blood may not get enough oxygen. And you have to work harder to get rid of the carbon dioxide

All of these things cause problems when you breathe. That's because your lungs

- Have trouble pushing "used" air out
- May not have enough room left to take in healthy new air







### **Get the vaccines you need**

Get flu and pneumonia shots. They can help keep you from getting these infections. Ask your healthcare practitioner which shots to get, when, and how often.

## **HOW DOES COPD AFFECT YOU?**

When you have COPD, you work harder to breathe. Symptoms can differ from person to person. You may have one or more of the following:

- Shortness of breath
- Frequent cough (commonly known as “smoker’s cough”)
- Mucus coming from the lungs and throat
- Wheezing
- Fatigue (getting tired easily and often)
- Lung infections, such as acute bronchitis, more than once a year

### **Tips for Living Better With COPD**

- 1.** Stop smoking.
- 2.** Take each medicine the way your healthcare practitioner says to take it. See your healthcare practitioner regularly.
- 3.** Go to the hospital or healthcare practitioner right away if your breathing gets bad.
- 4.** Keep the air clean at home. Stay away from things like smoke that make it hard to breathe.
- 5.** Keep your body strong. Walk, exercise regularly, and eat healthy foods.
- 6.** If your COPD is severe, get the most out of your breath. Make life as easy as possible at home.



## OTHER CONDITIONS YOU MAY HAVE ALONG WITH COPD

- Heart disease, including congestive heart failure
  - Leads to fluid build-up in the lungs and the rest of the body; may cause swelling in ankles, legs, and belly
- Osteoporosis: A disease of bone loss and weakening
- COPD often increases the risk for other diseases, such as lung cancer
- People with COPD often don't sleep well. This is because COPD affects breathing and lessens the amount of oxygen in the body
- COPD often makes people feel depressed. This is because COPD can affect your activity levels and increase worry



## HOW ARE COPD AND ASTHMA DIFFERENT?

Some people have COPD and asthma, too. Asthma also affects the airways, but it is a different disease. If you have both COPD and asthma, you may need different treatments for each one.

	COPD	Asthma
When does it start?	<ul style="list-style-type: none"> <li>• Usually when you are over age 40</li> </ul>	<ul style="list-style-type: none"> <li>• At any age; often when you are a child</li> </ul>
How does smoking affect it?	<ul style="list-style-type: none"> <li>• Most people who get COPD smoked more than a pack a day for 20 years</li> </ul>	<ul style="list-style-type: none"> <li>• Both smokers and nonsmokers can get asthma</li> </ul>
What causes it?	<ul style="list-style-type: none"> <li>• Smoking or being around smoking</li> <li>• Having a low weight and a virus at birth</li> <li>• Having had severe respiratory infections as a child</li> </ul>	<ul style="list-style-type: none"> <li>• Being sensitive to something (like a certain food or pollen in the air) that causes an allergic reaction</li> <li>• Having a family history of asthma</li> </ul>
What are some of its symptoms?	<ul style="list-style-type: none"> <li>• Trouble breathing (at first when you are active and later when you are resting, too)</li> <li>• Cough that brings up mucus</li> </ul>	<ul style="list-style-type: none"> <li>• Chest tightness</li> <li>• Cough</li> <li>• Shortness of breath</li> <li>• Wheezing (You may have no symptoms between attacks)</li> </ul>
How does treatment for it affect your airways?	<ul style="list-style-type: none"> <li>• May be able to partially open your airways</li> </ul>	<ul style="list-style-type: none"> <li>• May be able to open your airways to a large degree</li> </ul>

People with COPD may get other illnesses as well.

Talk to your healthcare practitioner. Tell him or her about any symptoms or concerns you may have.

## WHAT TO ASK YOUR HEALTHCARE PRACTITIONER

Here are some things you may want to discuss with your healthcare practitioner. Add any others you have. Bring this page with you to your next visit. Write down the answers you get in the lines below each question.

How does my COPD affect me?

---

---

What can I do to help keep it from getting worse?

---

---

What should I do if my symptoms get worse?

---

---

Do I have other conditions?

---

---

What can I do to help keep from getting other illnesses?

---

---

Should I get a flu shot? Should I get a pneumonia shot?

---

---

## WHERE CAN YOU FIND MORE INFORMATION AND SUPPORT?

There are a lot of ways to get information and support. Contact these helpful resources:

**American Lung Association**  
1-800-LUNGUSA (1-800-548-8252)  
[www.lungusa.org](http://www.lungusa.org)

**Global Initiative for Chronic Obstructive Lung Disease (GOLD)**  
[www.goldcopd.com](http://www.goldcopd.com)

**National Lung Health Education Program (NLHEP)**  
1-972-910-8555  
[www.nlhep.org](http://www.nlhep.org)

**National Heart, Lung, and Blood Institute (NHLBI)**  
1-301-592-8573  
[www.nhlbi.nih.gov](http://www.nhlbi.nih.gov)

**The National Emphysema Foundation**  
1-203-866-5000  
[www.emphysemafoundation.org](http://www.emphysemafoundation.org)

**Centers for Disease Control and Prevention (CDC)**  
1-800-311-3435  
[www.cdc.gov](http://www.cdc.gov)

**Pulmonary Education and Research Foundation**  
[www.perf2ndwind.org](http://www.perf2ndwind.org)