

Understanding COPD



An educational health series from





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Understanding COPD

An educational health series from National Jewish Health®

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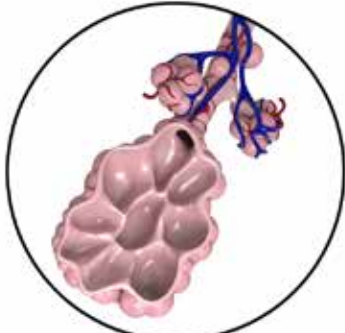
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Note: This information is provided to you as an educational service of National Jewish Health. It is not meant as a substitute for your own doctor.

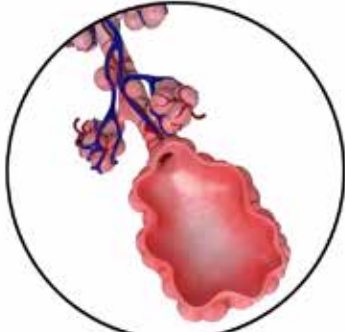
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What is COPD?

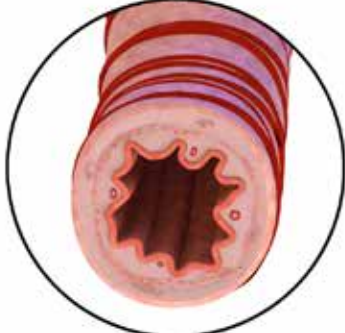
Chronic obstructive pulmonary disease (COPD) affects more than 24 million people in the United States. “Chronic” means long term, “obstructive” means it is hard to get air in and out of the lungs. The most familiar diseases in this group are emphysema and chronic bronchitis. A person with COPD may have either emphysema or chronic bronchitis, but many have both. Some people with COPD may also have asthma.



Healthy Alveoli



Emphysema



Healthy Airway



Chronic bronchitis

Let’s take a look inside the lungs to see what is happening. The air sacs, also call alveoli and the airways have been damaged in COPD, most often by cigarette smoking or certain agents in the environment. In the healthy lung the air sacs or alveoli look like a bunch of grapes. Look at the alveoli of emphysema. In emphysema the walls of the alveoli are partially destroyed. This results in a smaller total number of alveoli in the lungs. Fewer air sacs mean that the lungs are not able to transfer oxygen into the bloodstream as well. Also the airways may collapse a little.

Now look at the healthy airway. Air moves in and out of the middle of the airway. Now look at the airway of chronic bronchitis. In chronic bronchitis, the airway walls are swollen and produce more mucus. In chronic bronchitis a person has a chronic productive cough. This is often due to cigarette smoking.

The earliest symptom of COPD is shortness of breath with strenuous activity. Many people do not realize this and may simply reduce the amount of activity they do. An example includes running for the bus. Later symptoms with COPD include shortness of breath with lesser activity. An example includes walking across the street.

A person with COPD may also have heart disease, muscle weakness, osteoporosis, depression and other medical problems. They may also be at higher risk for lung cancer. Your health care provider will evaluate these problems as part of managing your COPD.

How is COPD Diagnosed?

The first step in diagnosing emphysema and chronic bronchitis is a good evaluation. Your doctor may have you do a number of tests to evaluate your breathing. These may include:

- **Detailed medical history and physical exam**
- **Breathing test (spirometry and full pulmonary function tests)**
- **CT scan of the chest**
- **Oxygen levels**
- **Exercise tests**
- **Blood tests**

Your doctor may order other tests based on the history and physical exam.

Many people see their family doctor, nurse practitioner, physician assistant or internal medicine doctor for COPD care. You and your health care provider may choose to have you seen by a specialist, such as a pulmonologist (lung specialist) also.

What is Spirometry?

Spirometry is a simple test to measure how much (volume) and how fast (flow) you can move air into and out of your lungs. Through routine spirometry, lung diseases can often be diagnosed in the early stages when treatment is most effective. Once a lung disease is diagnosed and treated, routine spirometry tests can monitor changes in lung functions with specific treatment. This will help your doctor find the best treatment plan for you.



What are your goals?



Put a check (✓) in the box for your goals

- Decreasing shortness of breath
 - Read more about medication, breathing techniques, exercise and lung volume reduction surgery for ideas on decreasing shortness of breath.
- Reducing exacerbations or flare-ups
 - Read more about medication, avoiding infections and symptoms for ideas on reducing exacerbations or flare-ups.
- Becoming more active
 - Read more about breathing techniques, healthy lifestyle and exercise for ideas on becoming more active.
- Decreasing anxiety or stress
 - Read more about breathing techniques and living with COPD for ideas on decreasing anxiety and stress.
- Improving mood
 - Read more about living with COPD and exercise for ideas on improving mood.
- Learning more about COPD

Write any other goals in the space below:

Talk with your health care provider about your goals.



How is COPD Managed?

People with COPD can become actively involved in the management of their disease. Participation in the treatment plan will help people with COPD and their families achieve the best possible results.

COPD management includes:

- Learning more about your COPD
- Healthy lifestyle including exercise and healthy eating
- Giving up smoking
- Avoiding infections
- Medication therapy
- Techniques to bring up mucus
- Oxygen therapy
- Breathing retraining
- An Action Plan

Now that you have an overview of management, let's talk about each topic in more detail.



Healthy Lifestyle

A healthy lifestyle is important for everyone, including people with COPD.

A health lifestyle includes:

- Regular exercise
- Giving Up Smoking
- Healthy eating
- Enough rest

Exercise

An exercise program is another very important step in managing COPD. It is common for people with lung disease to limit physical activities because they are afraid of becoming short of breath. But regular exercise can improve your heart, lungs and muscles, and it can help you breathe easier and feel better. Many people with COPD enjoy walking, water aerobics and riding a stationary bike. Think of a lifelong activity you enjoy.

Medication to Help You Exercise

People with COPD often use inhaled short-acting bronchodilators before exercise to decrease shortness of breath. Some people with COPD need oxygen therapy while exercising. Portable oxygen units are available. Talk with your health care provider about recommending an exercise program for you.

Getting Started

Before starting an exercise program, talk to your doctor about your plan to be sure that it is safe. Then, start with slow, small steps rather than attempting a quick “lifestyle overhaul.” Changing lifelong patterns is a gradual process. Succeeding in many little steps can be encouraging, where failing at a quick major change is definitely discouraging.

Exercise Tips

- While exercising, remember to inhale (breathe in) before starting the exercise.
- Exhale (breathe out) through the most difficult part of the exercise.
- Purse your lips while breathing.
- Don't hold your breath while exercising.
- Count out loud as you do the exercises.

People with COPD can benefit from a formal rehabilitation program. Most pulmonary rehabilitation programs will include medical and nursing management, exercise, breathing retraining, education, emotional support and nutrition counseling.

A successful pulmonary rehabilitation program (such as the program offered by National Jewish Health) addresses the needs of each person and tailors the treatment to meet those needs.



Regular exercise helps you improve your overall fitness by improving your heart and muscle function.

Steps to help you quit smoking

- Make a firm commitment to quit. Start thinking of yourself as someone who doesn't smoke.
- Talk to your health care provider about quitting and a plan to help you quit. Your provider can discuss the use of medicines to help you give up smoking.
- Consider joining in a program that provides guidance and support for learning to live without cigarettes. Every state offers free telephone counseling through the Quitline. **The Quitline number is 1-800-QUIT-NOW, or 1-800-784-8669.** In addition, there are many online and face to face group quit smoking programs.

Once you stop smoking it is important to avoid being around tobacco smoke. This will help decrease irritation to your lungs. Also, a smoke free environment is healthier for everyone.

- Talk with family members about avoiding tobacco smoke.
- Encourage family members and friends who smoke to quit. If they are not ready to quit, ask them not to smoke in your home or car.



Giving up smoking is the single most important thing you can do to help control your disease and prevent further damage to your lungs.

Giving Up Smoking

Giving up smoking is the single most important thing you can do to help control your disease and prevent further damage to your lungs. When you quit smoking, your breathing and response to your medicines may noticeably improve. Even if you have smoked many years, you will benefit from quitting.

Don't be discouraged if you have tried to quit, one time or many times, in the past. More services and quitting aids are now available to help you quit and remain smoke free.

Healthy Eating

Eating a balanced diet and maintaining a healthy weight are important parts of managing COPD. While it can be difficult to focus on this aspect of your life, eating well plays a big role in feeling good and staying healthy.

If you are underweight, focus on gaining weight. The average person requires approximately 50 calories per day for breathing. Individuals with COPD may expend 750 calories per day on breathing alone. This increases daily calorie requirements making it difficult to maintain weight.

If you are overweight, focus on losing weight. There are many benefits of weight loss, including reducing shortness of breath by decreasing pressure on the diaphragm and respiratory muscles. A good weight loss program should include a variety of foods and physical activity.

Rest

Rest is important. Make sure you get enough sleep each night. Some people need a nap or rest during the day also. If you are having trouble sleeping, talk with your health care provider.





Treatment of COPD

A healthy lifestyle is important for people with COPD. In addition, COPD management includes:

- Avoiding infections
- Medications
- Oxygen therapy
- Breathing retraining
- Techniques to bring up mucus
- Lung volume reduction surgery

Avoiding Infections

People with COPD have an increased risk of lung infections. There are a number of measures that can help avoid infections.

- Vaccines are recommended. The influenza or flu vaccine is recommended yearly, often in the fall. The pneumonia vaccines are recommended. These vaccines help prevent infections.
- Good handwashing with soap and water is also very important to help prevent the spread of germs and infections. Alcohol based gels are also effective.
- Avoid touching your eyes, nose and mouth. Germs are often spread this way.
- Avoid contact with others when they are sick.

Medications

Your doctor may prescribe medicine to control the symptoms of chronic obstructive pulmonary disease (COPD). Most people with COPD take long-acting medicine every day to help shortness of breath. In addition, short-acting medicine is used on an only-when-needed basis to decrease shortness of breath. For many, a combination of medicine is prescribed.

Here are the types of medication often prescribed for people with COPD.

- Bronchodilators
- Combination bronchodilators and anti-inflammatories
- Other COPD medications



Most people with COPD take medication every day to help shortness of breath.

BRONCHODILATOR MEDICATION FOR COPD

Bronchodilators help open the airways in the lungs by relaxing smooth muscle around the airways. Bronchodilator medication can be short or long acting. There are different types of short or long acting bronchodilators that work in different ways.

Short-Acting Bronchodilators (short-acting beta-agonists, SABA & short-acting muscarinic antagonists, SAMA)

These medications work quickly (within 15-20 minutes) to help decrease shortness of breath. Your doctor may prescribe these as-needed to decrease shortness of breath. They may also be prescribed before exercise.

SABA (Short-acting inhaled beta-agonists) include:

- Proventil HFA[®], ProAir[®], Ventolin HFA[®] (albuterol). Take with MDI or RespiClick[®].
- Xopenex HFA[®], Xopenex[®] (levalbuterol), Take with MDI or nebulizer.

SABA & SAMA (Short-acting muscarinic antagonist) combination bronchodilators include:

- Combivent[®] (albuterol and ipratropium), Take with Respimat[®].
- Duoneb[®] (albuterol and ipratropium) Take with nebulizer.

Long-Acting Bronchodilators

These medications are long-acting. Long-acting bronchodilators are used regularly to open the airways and keep them open.

Long-acting beta-agonists can be either LABAs (long-acting beta-agonists) or LAMAs (long-acting muscarinic antagonists). LABA and LAMA are types of bronchodilators:

LAMAs include:

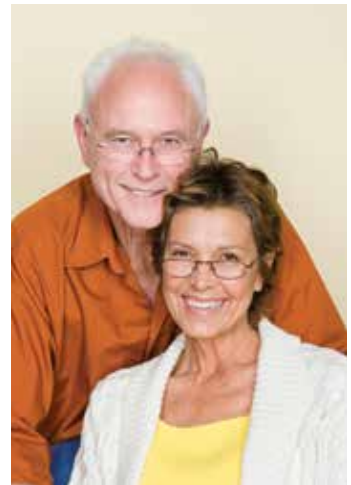
- Incruse[®] (umeclidinium), Take once daily using Ellipta[®].
- Seebri[®] (glycopyrronium), Take twice daily using Respimat[®].
- Spiriva[®] (tiotropium), Take once daily using Respimat[®] or Handihaler[®].
- Tudorza[®] (aclidinium), Take twice daily using Pressair[®].

LABAs include:

- Arcapta[®] (indacaterol), Take once daily using Ellipta[®].
- Brovana[®] (arformoterol), Take twice daily using nebulizer.
- Perforomist[®] (formoterol), Take twice daily using nebulizer.
- Serevent[®] (salmeterol), Take twice daily using Discus[®] or MDI.
- Stiverdi[®] (olodaterol), Take once daily using Respimat[®].

LAMA & LABA combinations include:

- Anoro[®] (umeclidinium and vilanterol), Take once daily using Ellipta[®].
- Stiolto[®] (olodaterol and tiotropium), Take once daily using Respimat[®].
- Utibron[®] (indacaterol and glycopyrrolate), Take twice daily using Neohaler[®].



Some people feel less shortness of breath with a combination of medications.

COMBINATION LONG-ACTING BRONCHODILATOR AND ANTI-INFLAMMATORY MEDICATIONS FOR COPD

These combination medications combine a LABA and anti-inflammatory medication (ICS). Anti-inflammatory medication helps reduce and prevent inflammation inside the airways.

LABA & ICS include:

- Advair® (fluticasone and salmeterol), Take twice daily using Discus® or MDI.
- Breo® (fluticasone and vilanterol), Take once daily using Ellipta®.
- Symbicort® (budesonide and formoterol), Take once daily using MDI.

Remember to rinse your mouth and use a spacer (if using a metered-dose inhaler) after inhaling these combination medicines. The inhaled steroid contained in these medicines can cause thrush. Thrush, a possible side effect, is a yeast infection causing white patches in the back of the throat.



OTHER COPD MEDICATIONS

Daliresp® (roflumilast)

This is pill for people with severe COPD to help decrease exacerbations or flare-ups.

Steroid Pills

Steroid pills are used when you have an exacerbation or flare-up and your symptoms are getting worse. Long-term use of steroid pills can result in serious side effects and are not recommended to treat COPD long-term.

Steroid pills include:

- Deltasone® (prednisone)
- Medrol® (methylprednisolone)

Antibiotics for COPD

A bacterial can cause worsening of the symptoms of chronic obstructive pulmonary disease (COPD). Antibiotics (azithromycin) help fight bacterial infections that can occur with COPD, Antibiotics may be used to treat an acute exacerbation or flare-up. They may also be used to help prevent an exacerbation.

Theophylline

Theophylline is a pill that may be used to every day to help shortness of breath.



The medication you are taking for COPD doesn't totally take away shortness of breath you often feel, but you should feel better.

Is My Medication Helping

How can you work with your health care provider to see if your medication is helping?

The medication you are taking for COPD doesn't totally take away the shortness of breath you often feel, but you should feel better. There are changes to watch for. Changes you may notice when the medication is helping include:

- You can do the same activities earlier and with less shortness of breath,
- You are able to walk more and be more active,
- You can do more chores and activities around the house,
- You don't tire as easily,
- You feel less short of breath.

Watch for these changes as your medications are adjusted.

When you visit your health care provider discuss any changes with him or her.

Devices for Inhaled Medications

Inhaled medications are often used to treat people with COPD. Inhaled methods deliver medication directly to the airways, which is useful for people with lung disease. Aerosol devices for inhaled medication may include:

- Metered-dose inhaler with spacer
- Dry powder inhaler
- Soft mist inhaler
- Nebulizer

Metered-dose Inhaler with a Spacer

It is crucial that you use the inhaled medication correctly to get the full dosage and benefit from the medication. It is often hard to use a metered-dose inhaler correctly. A spacer is a device which can be attached to the metered-dose inhaler. A spacer helps deliver the medication to the airways of the lungs, instead of the mouth. This helps the medication work better.

Common spacers include:

- AeroChamber®
- Vortex®

Dry powder inhaler

The dry powder inhalers consist of a plastic device used to inhale powdered medication. The dry powder inhalers are breath activated. This means when you inhale, the device automatically releases the medication

Soft mist inhaler

A soft mist inhaler consists of a plastic device containing medication. The medication is released as a slow-moving soft mist

Nebulizer

A nebulizer delivery system consists of a nebulizer (small plastic bowl with a screw-top lid) and a source for compressed air. The air flow to the nebulizer changes the medication solution to a mist that is inhaled.

Ask your doctor

about using a spacer with a metered-dose inhaler, which helps deliver the medication from the mouth into the airways of the lungs.



Inhaled methods deliver medication directly to the airways, which is useful for people with lung disease.

Many inhaled medicines have a counter.

This will help you identify when the device is out of medicine. Plan ahead to get the amount of medicine you need from the pharmacy.



Your health care provider may have you demonstrate inhaler technique each visit to make sure it's done correctly.

Your health care provider may have you demonstrate inhaler technique each visit to make sure it's done correctly. Whichever device you use, talk with your health care provider about:

- how to use the device,
- how to clean the device and,
- how to tell when the device is empty.

Helpful Hints for Remembering Your Medication

It can be difficult to remember your medication every day. Here are some helpful hints for remembering your medication.

- Use a daily routine for taking your medication. Pick something you do every day and take your medication around that activity. Many people take medication around meal time, brushing teeth or going to bed.
- Use a checklist to record when you take your medication. Place the checklist someplace visible to use as a reminder.
- Pack your medications in pill boxes to help you remember to take them.

Remember, there is no “best” medication regimen. Your medication is prescribed based on your symptoms and needs. Monitoring your COPD and working with your health care provider is the best way to ensure that your medication is right for you. Ask your health care provider if you have any questions or are concerned about your medication.

Oxygen Therapy

Some people with COPD may need oxygen therapy. Oxygen therapy is used to ensure there is enough oxygen in the blood to provide for the body's needs.

It is sometimes difficult for you to know when oxygen therapy is required. If your oxygen level is low you may have symptoms such as: shortness of breath, irritability, trouble with thinking, memory problems, morning headaches, fatigue or ankle swelling. If you notice any of these symptoms, talk with your health care provider. It is also possible your oxygen level is low and you will have no symptoms at all.

Testing the Oxygen Level

Your oxygen level can be tested to determine if oxygen is required. Two methods to test the oxygen level in the blood are pulse oximetry and arterial blood gas. Your oxygen level can be measured at rest, with activity and while sleeping. You may need different amounts of oxygen during rest and exercise.

When the tests determine that oxygen is needed, your health care provider will write a prescription for oxygen. If you need oxygen, it is important to use your oxygen as prescribed to live longer. You will also feel better using oxygen and have more stamina.

Some people will need oxygen all the time, twenty-four hours a day. Some people will need oxygen with activity or while sleeping. For the most benefit, use your oxygen exactly as prescribed.



Oxygen therapy is used to ensure there is enough oxygen in the blood to provide for the body's needs.

There are three systems that can supply oxygen:

- Concentrators,
- Compressed gas and,
- Liquid systems.

Each system has advantages and disadvantages. You will receive an explanation and demonstration of the system you choose. Your health care provider or oxygen supply company can assist you if you have questions.

Concerns with Oxygen

You may be concerned about how oxygen therapy may change your lifestyle, how oxygen affects your body and whether oxygen therapy is safe. You may worry that oxygen treatment will prevent you from leaving your home, but many convenient portable systems are available. In fact, oxygen therapy allows you to be more active by providing the oxygen that your body needs. Many people travel while using oxygen. Advance planning is important when traveling with oxygen.

Oxygen therapy does not cause any harm to your lungs or your body, if used as prescribed. You will not develop an addiction to oxygen. Oxygen therapy is very safe. Talk with your health care provider if you have specific safety concerns.

Information about oxygen therapy may be available in your community from your health care provider, your oxygen supply company and a support group of other people using oxygen.



Breathing Retraining

Learning new breathing techniques will help you move air in and out of your lungs. It is helpful to use effective breathing techniques with exercise to minimize shortness of breath and assure adequate oxygen to your working muscles. Breathing retraining has the added benefit of helping you relax when you are anxious or stressed. Two types of breathing techniques are pursed lip breathing and coordinated breathing with exercise.

PURSED LIP BREATHING

The purpose of pursed lip breathing is to help keep your airways open. This helps your airways to remain open. Pursed lip breathing also slows down your breathing rate and calms you down.

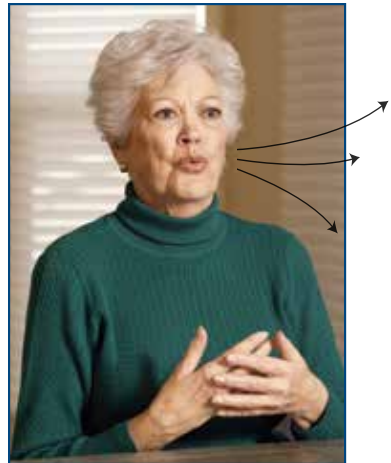
Here are the steps for pursed lip breathing:

- Inhale slowly through your nose with your mouth closed; try to take in a normal amount of air.
- Exhale slowly through your mouth with your lips in the whistling or kissing position.
- Breathe out for twice as long as you breathe in.

Do not take in a large deep breath. Never try to force out the air.



Pursed lip breathing inhale



Pursed lip breathing exhale

COORDINATED BREATHING

The purpose of coordinated breathing is to help assure adequate oxygen to your working muscles and to prevent you from holding your breath.

Here are the steps for coordinated breathing.

- Inhale through your nose before starting the exercise or activity.
- Exhale through pursed lips, during the most exerting part of the exercise or activity.

If coordinating your breathing with exercise is difficult, as you perform the movement, count out loud. This helps prevent you from holding your breath. If you become very short of breath, stop the exercise, use pursed lip breathing to help control your breathing, then start exercising again.

Practice these breathing techniques daily. When you feel short of breath, anxious or just wound up, use these breathing techniques.



The purpose of coordinated breathing is to help assure adequate oxygen to your working muscles and to prevent you from holding your breath.

Techniques to Bring Up Mucus

People with chronic bronchitis often produce a large amount of mucus. If the mucus is allowed to collect in the airways, breathing may become difficult and infection may occur.

Techniques to remove mucus may be recommended to help you cough up the mucus.

Common techniques used to help remove mucus include deep coughing and huff coughing.

Here are the steps for deep coughing.

- Take a deep breath.
- Hold your breath for 2-3 seconds.
- Use your stomach muscles to forcefully expel the air.

Avoid a hacking cough or merely clearing the throat. A deep cough is less tiring and more effective in clearing mucus out of the lungs.

Huff coughing is an alternative to deep coughing if you have trouble clearing your mucus.

Here are the steps for huff coughing.

- Take a breath that is slightly deeper than normal.
- Use your stomach muscles to make a series of 3 rapid exhalations with the airway open, making a “ha, ha, ha” sound.
- Follow this by controlled breathing and a deep cough if you feel mucus moving.

Other techniques to help remove mucus include:

- Medications can be used to help loosen the mucus.
- Devices such as Aerobika® and Acapella® help loosen the mucus. These are small devices you exhale into.
- Postural drainage, chest percussion and vibration promote drainage of mucus from the lungs.

Each technique can be ordered and demonstrated by your health care provider.



If the mucus is allowed to collect in the airways, breathing may become difficult and infection may occur.

Lung Volume Reduction Surgery

Lung volume reduction surgery (LVRS) is considered for people who are found to have moderate to severe emphysema on a chest CT scan. There are often portions of the lung tissue that are more diseased than other portions. LVRS removes up to 20 to 30 percent of the most diseased tissue from the lungs at one time. Removing some of the emphysema helps the healthier areas of the lungs and muscles to function better. People often are able to exercise more and feel less short of breath following lung volume reduction surgery. Other benefits of LVRS include improved quality of life and a longer life.

Testing can help your health care provider determine whether LVRS may be beneficial for you. Most people who are considering LVRS are referred to a pulmonary specialist. Not all medical centers can perform LVRS.

If LVRS is considered, in addition to the above a person must:

- have quit smoking for at least 6 months
- participate in a pulmonary rehabilitation program before and after the surgery





An Action Plan for COPD

Sometimes it is hard to know what to do when your symptoms change or worsen. Do you call your doctor, go to the emergency room? Your health care provider can tell you what you can do when this happens. This is an Action Plan. Knowing when your symptoms are getting worse can help you and your health care provider decide what you should do in your home, at your health care provider's office or in the emergency room.

An Action Plan for COPD

A change or increase in the symptoms you usually have may be the only early warning sign. When your symptoms are getting worse, you may notice one or more of the following:

- A change in the mucus, and/or mucus turns yellow or green,
- An increase in shortness of breath, coughing or wheezing,
- A fever,
- A general feeling of ill health,
- Trouble sleeping,
- Feeling of lack of energy or fatigue, and/or,
- Morning headaches.

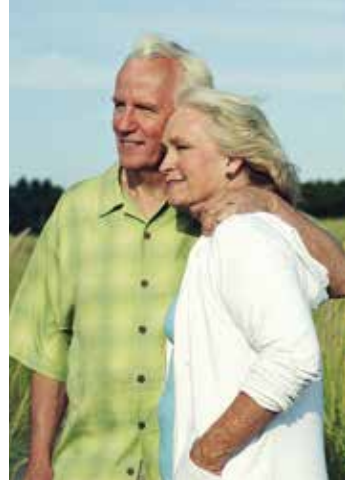
Symptoms do not go away when they are ignored. Therefore, call your health care provider if you have a change in symptoms, especially if they continue.

Severe symptoms may be a life-threatening emergency. Have an action plan for getting emergency care quickly if you have severe symptoms.

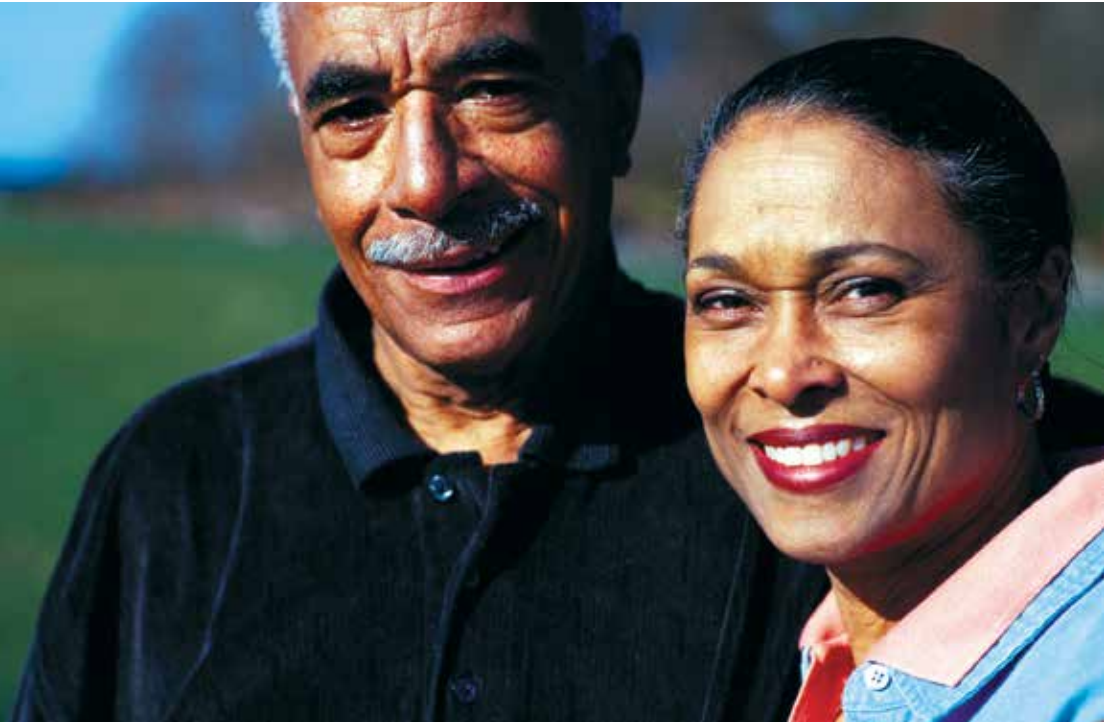
Talk with family members and those close to you about your action plan.

Advance Directives

As part of the action plan, talk with your health care provider and family about treatment if you become seriously ill and are unable to express your wishes. Written legal documents expressing your wishes are called Advance Directives.



Talk with family members and those close to you about your action plan.



Living with COPD

Living with COPD is a unique and special challenge that you and your family must deal with on a daily basis. But the more you know about COPD, the better suited you are in managing the various aspects of your disease. As you take control, your quality of life will improve.

Support groups can provide an important social outlet for people with COPD and their families. The meetings often provide education, discussions about a variety of health topics and social outings.

Sometimes COPD can put a strain on responsibilities or relationships you may have. COPD can impact your family, career and your finances. If COPD is causing any problems be sure to talk with someone. Your health care provider can help you find an expert to talk with.

This book has taught you about many aspects of managing your COPD. All of these can help you. Be sure to talk with your health care provider if you have questions or concerns after reading this book. Your health care provider is your partner in managing your COPD.

Remember your goals for managing your COPD

- Decreasing shortness of breath
- Reducing exacerbations or flare-ups
- Becoming more active
- Decreasing anxiety or stress
- Improving mood
- Accepting new health status
- Learning about COPD

Questions to ask my health care team

If you have thought of questions to ask your health care provider after reading this book, write them down. Ask your health care provider at your next appointment.



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