Keystone ACO

# Chronic obstructive pulmonary disease

# (COPD)

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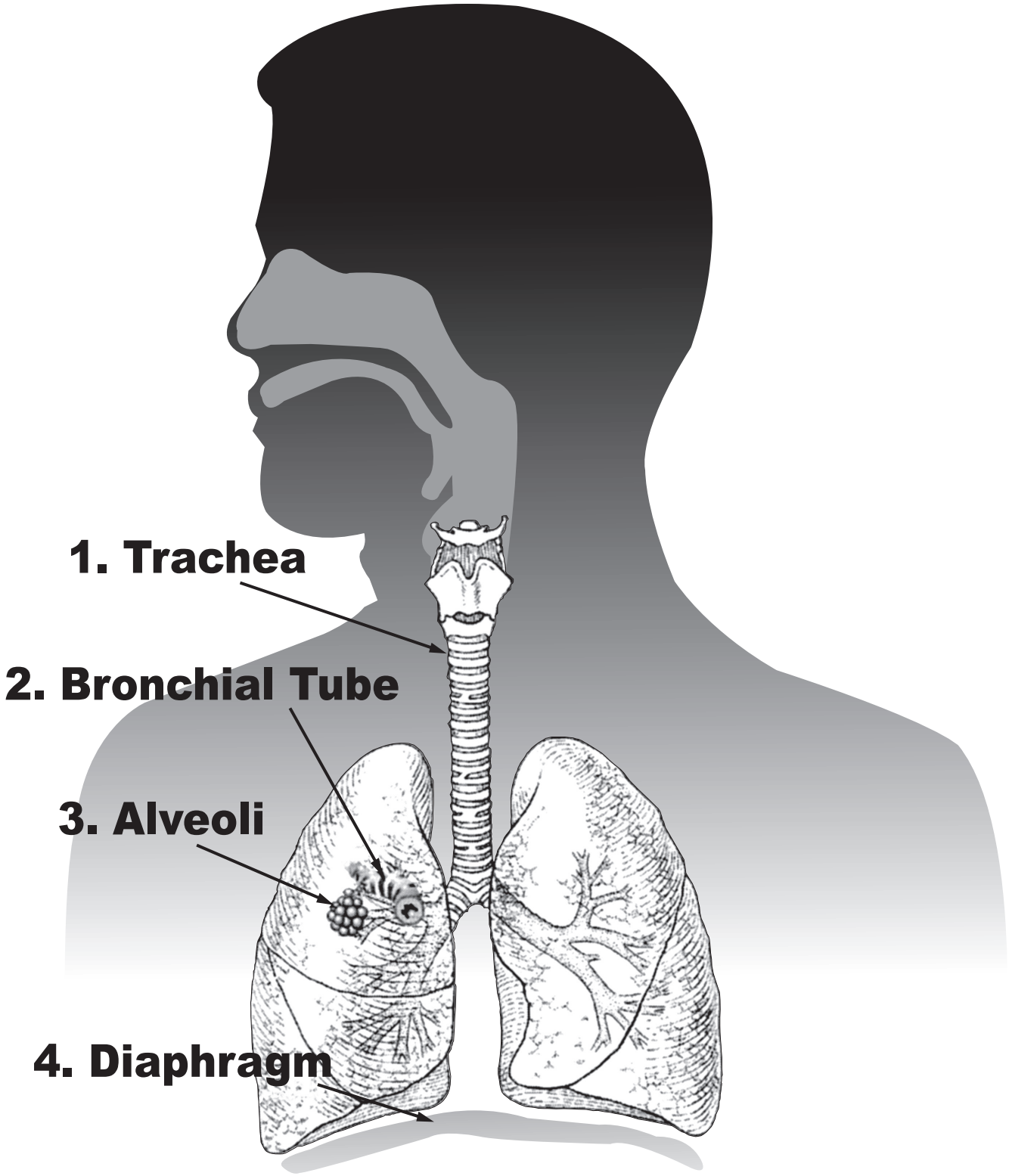
# Chronic obstructive pulmonary disease (COPD) program goals:

Geisinger has identified the following goals as important in the management and treatment of COPD:

1. Quit tobacco use (smoking, cigars, chew, snuff) as indicated
2. Spirometry testing as indicated (a breathing test that measures lung function. See page 2 for additional information).
3. Medication therapy to optimally manage and prevent acute and chronic symptoms.
4. Annual flu vaccine and pneumococcal vaccine as indicated to reduce the threat of infection.
5. COPD self-management education to help you better manage this health condition.


1. Trachea
2. Bronchial Tube
3. Alveoli
4. Diaphragm

# Your lungs

## How do my lungs work?

Air enters the respiratory (breathing) tract through the nose. The nose filters out bacteria (germs) and dust. It also warms and moistens the air.

The breathing tract looks like an upside down tree:

- The air passes from the nose into the trachea (windpipe). The windpipe is like the trunk of a tree (see #1 in diagram).
- The windpipe divides into two main branches or bronchial tubes (breathing tubes), one going to each lung. Each main branch divides into smaller and smaller bronchial tubes (see #2 in diagram). This system looks like the limbs of a tree.
- At the end of the smallest bronchial tubes are tiny air sacs or alveoli (see #3 in diagram). These air sacs are like clusters of grapes and are the most important part of your lungs. The walls of the air sacs are thin and elastic, letting oxygen pass through with ease.

## How does my body use oxygen?

When you breathe in, your lungs bring fresh oxygen into your body.

The oxygen passes through the thin walls of the air sacs and enters into blood vessels around the air sacs. The heart pumps the oxygen-rich blood to all parts of your body.

A waste product made by your body is called carbon dioxide. This gas is carried by the blood vessels to the lungs. Carbon dioxide passes through the walls of the air sacs and is then breathed out into the air.

## What muscles are used when I breathe?

To inhale or breathe in, the muscles of breathing must perform work. The diaphragm is the large muscle that lies underneath the lungs (see #4 in diagram). When the diaphragm and muscles over the chest contract, the chest cavity gets larger and air enters the breathing tract.
When we exhale or breathe out, the diaphragm relaxes and pushes the air out of your lungs.

# Chronic obstructive pulmonary disease (COPD)

## What is COPD?

Chronic obstructive pulmonary disease (COPD) is a problem with breathing due to obstruction or blockage in the lungs. This obstruction prevents air from flowing in and out as freely as it should causing shortness of breath, cough and mucus.

COPD occurs over many years. Shortness of breath is like the tip of an iceberg. You must have a lot of disease “beneath the surface” before you begin to notice it.

The two most common diseases causing blockage in the lungs are:

- Chronic bronchitis
- Emphysema

Each of these diseases may occur separately or they may occur in different mixed combinations (i.e. asthma and emphysema).

## What are some of the causes of COPD?

The most common causes of COPD are:

- Cigarette smoking - number one cause
- Air pollution
- Exposure to occupational dusts and fumes (examples: coal dust, asbestos, wood dust, chemicals, and material fibers)
- Repeated lung infections
- Heredity (factor in only a small number of those with emphysema)

### What are the stages of COPD?

A world-wide panel of clinical experts in the area of COPD identified the following stages of COPD:

Stage 0: At Risk – Symptoms (cough, mucus) with history of exposure (cigarette smoking, air pollution, etc.)

Stage I: Mild – May have chronic symptoms (cough, mucus).

Stage II: Moderate – Episodic exacerbations (worsening) of cough, mucus, shortness of breath on exertion.

Stage III: Severe – Worsening of cough, mucus, shortness of breath. Difficult to perform routine activities due to increased shortness of breath.

## What is spirometry?

Your health care provider will diagnose and stage COPD based on symptoms and a thorough medical history. Your health care provider may also order spirometry. Spirometry is a breathing test that measures lung function and assists in the diagnosis, staging, and treatment of COPD.

## You can quit tobacco use

One of the most important things you can do to stop the progression of COPD is to quit all tobacco products **especially cigarettes**, pipe, cigars, chew, and snuff. If you have tried to quit several times in the past without success, don't be discouraged. Most tobacco users try to quit **several** times before quitting for good. With each quit attempt, there is a higher chance of success.

If you are unable to quit using tobacco on your own, a "Tobacco Cessation" (quitting) program may offer you the help you need. Tobacco Cessation programs have trained staff who can help you quit.

**Additional materials at a minimal cost on quitting smoking from the U.S. Public Health Service may be requested:**

Publications Clearinghouse
P.O. Box 8547
Silver Spring, MD 20907-8547
ahrqpubs.ahrq.gov

Or call toll-free in the United States at 800-358-9295 (outside the United States, please call 703-437-2078).

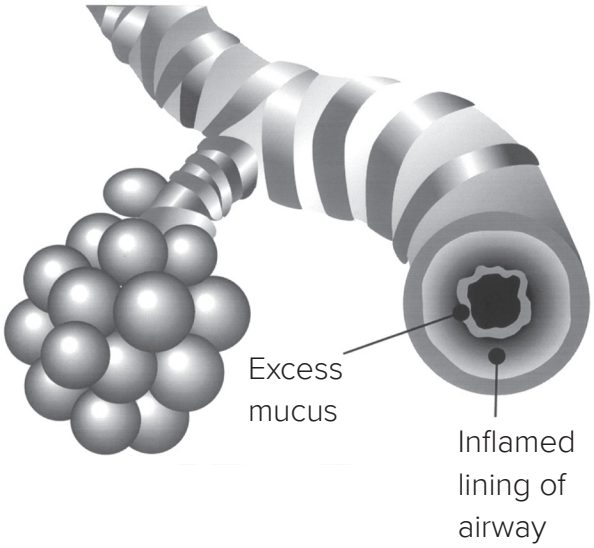
Also, you can access and download materials from *BeTobaccoFree.gov* at: *betobaccofree.hss.gov*

## Chronic bronchitis

### What is chronic bronchitis?

Chronic bronchitis is inflammation (swelling) and clogging of the airways with mucus (see diagram below). This, in turn, narrows the tubes through which air flows.

Chronic bronchitis also causes the tiny hairs (cilia) that line the airways to stop moving. When these tiny hairs stop moving, they cannot sweep out extra dirt and mucus. This causes the airways to become blocked.



### What is chronic bronchitis?

The most common causes are:

- Cigarette smoking
- Air pollution

### What are the symptoms of chronic bronchitis?

Some symptoms are:

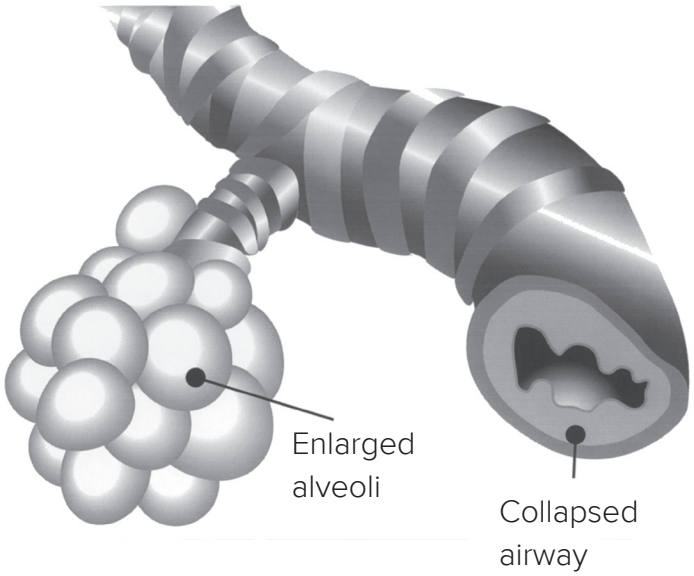
- Cough that occurs often or every day
- Coughing up mucus (may be a little or a lot)
- Shortness of breath
- Chest tightness or wheezing
- Frequent lung infections

# Emphysema

### What is emphysema?

Emphysema is a chronic disease of the air spaces in which the walls may breakdown and the air sacs (alveoli) lose their elastic property (see diagram below).

For example, you can compare this to a balloon. You must blow into a balloon in order to fill it. When you stop blowing, the balloon deflates. The balloon's own elasticity causes it to get rid of the air. This is how normal air sacs work.




In emphysema, the lungs and air sacs behave like a paper bag. When you blow air into a paper bag, it fills; when you stop blowing, what happens? The bag stays full of air because it is not elastic.

In emphysema, some of the air becomes trapped inside the air sacs causing their walls to break. This creates one large air sac that doesn't exchange oxygen and carbon dioxide very well.

### What are the causes of emphysema?

The causes of emphysema are:

- Cigarette smoking
- Heredity - only a very small amount of persons with emphysema are born without a protective enzyme in their lungs. Lack of this enzyme (alpha 1- antitrypsin) leads to a destruction of the air sacs. A blood test can detect if this enzyme is missing.

### What are the symptoms of emphysema?

The most common symptoms are:

- Shortness of breath - often becomes worse over a period of time and with activity
- Chest tightness

Other symptoms may include:

- Wheezing
- Poor appetite
- Cough
- Indigestion
- Weight loss

# Learning to breathe better

There are two (2) important principles to remember when learning to breathe better:

1. In part, you are short of breath because your main muscle of breathing, the **diaphragm**, (refer to picture on page 1) is weak and does not work properly. Instead the muscles of the neck, shoulder and upper chest (called the "**accessory muscles**") do most of the work of breathing. However, these accessory muscles tire easily and provide a more shallow way of breathing or smaller breaths.
2. Because COPD may narrow airways due to inflammation (swelling) or mucus, the respiratory muscles must work harder to move the air in and out of narrowed airways. As you gasp for air, more **air gets trapped** in the lungs, making breathing even more difficult. Also, some **airways may collapse** which further traps air. This may increase your anxiety and you may **panic** while trying to get the next breath.

## What can you do?

Breathing techniques such as pursed-lip breathing and diaphragmatic (belly) breathing can help you breathe better, improve your ability to move air in and out of the lungs, and decrease your work of breathing. These breathing techniques can:

- Help the diaphragm to work better
- Slow down the rate of breathing
- Keep airways open with better flow of air in and out

## Pursed-lip breathing

This technique slows down your breathing, helps to keep airways open, and aids in moving trapped air out of the lungs. Pursed-lip breathing creates "back pressure" in the airways so that they remain open and do not collapse. Therefore, you are able to breathe better and with less effort.

### How to do pursed-lip breathing

1. Relax. Let your neck, shoulder and chest muscles relax.
2. Breathe in (inhale) slowly through your nose, keeping your mouth closed.

3. Pucker your lips (as if ready to whistle) and blow out (exhale) slowly. Exhale twice as long as you inhale.

## Diaphragmatic breathing . . .

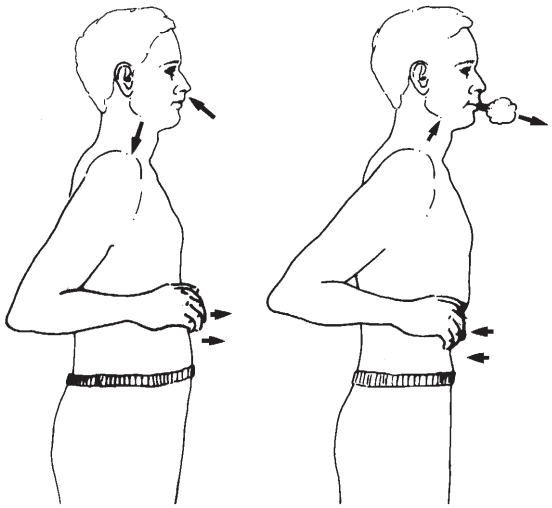
This technique trains and strengthens the diaphragm to ease the work of breathing.

### How to do diaphragmatic breathing

1. Relax. Let your neck, shoulder and chest muscles relax.
2. Practice by placing one hand on your abdomen (belly) just below your ribs, and the other hand on your chest.
3. Inhale (breathe in) slowly through your nose as your belly pushes out against your hands. Keep the other hand on your chest which should be still.
4. Pucker your lips and exhale (blow out) slowly as your belly muscles are pulled inward toward your hand. Exhale twice as long as you inhale.

**Helpful tips for learning pursed-lip and diaphragmatic breathing:**

- Practice, practice, practice! Remember. . . this type of breathing is only effective when put to use! The more you use it, the easier it will become!
- The key things to remember about pursed-lip and diaphragmatic breathing are:
    - Exhale (blow out) twice as long as you inhale (breathe in).
    - Keep your chest still so that your diaphragm (belly) is doing the work and not your neck and chest muscles.



# A reminder for you

### When you become short of breath. . .

1. Stop what you are doing.
2. Relax your muscles.
3. Use your pursed-lip and diaphragmatic breathing together.

You can also use these breathing techniques when you exert yourself in doing your daily activities such as bathing, dressing, climbing stairs, carrying groceries, or even walking.

# Mucus clearance

People with COPD often have excess amounts of thick, sticky mucus. Mucus can block the airways and increase your chances of getting a respiratory infection. The best time(s) to clear mucus from your lungs is in the morning, before your evening meal and one hour before bed. The following are tips that will help you with mucus clearance:

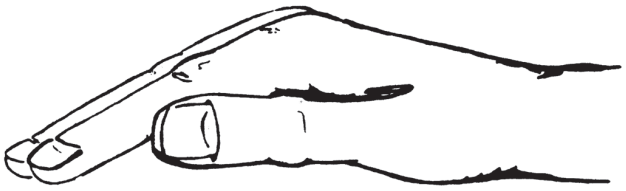
1. Drink plenty of liquids. Drinking 6 - 8 glasses of water per day can help to thin mucus and make it easier to cough up.
2. Avoid caffeine. Caffeine can cause fluid loss which will thicken the mucus.
3. Avoid antihistamines and over-the-counter (OTC) cold remedies. Some of these medications may increase the thickness of your mucus and make it more difficult to cough up. Consult your doctor before taking any OTC medications.
4. Use of a nebulizer (see page 18) can loosen and thin mucus because it sprays moisture into the lungs along with the medications.
5. Use of a mucus clearance device such as a flutter device, causes the airways to vibrate and will loosen mucus making it easier to cough up. You will need to discuss this with your health care provider to see if this device is right for you.

6. Controlled coughing can force mucus up and prevent you from becoming too tired or short of breath. You will need to discuss with your health care provider or nurse how often to do this. This should be done 1/2 hour after your nebulizer or bronchodilator medication and when your stomach is empty.
    - Sit upright in a chair with your back straight
    - Inhale slowly through your nose as deeply as you can and hold for 2 seconds
    - Instead of exhaling, cough twice with your mouth slightly open
    - Wait a few seconds, then exhale through your nose by sniffing gently
7. Postural drainage and chest percussion are therapies which help to eliminate excess mucus from the lungs. Both of these techniques should only be done if instructed by your health care provider.

# Postural drainage and chest percussion

Postural drainage and chest percussion can help you cough up mucus and keep your lungs clear. You may need to use either one or both of these procedures.

**Chest percussion** is done by gently tapping the chest in a rhythmic manner with your hand cupped and fingers straight (see picture below).

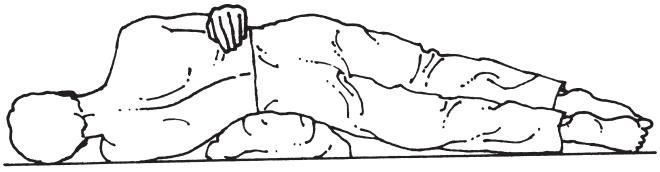


**Postural drainage** is accomplished by getting into a position so that gravity will help in removing mucus from the lungs. There are two major positions used in postural drainage. Each requires **that your head remain lower than your hips.**

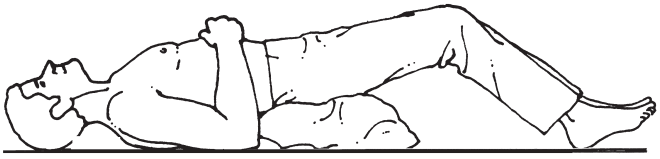
## The procedure is as follows:

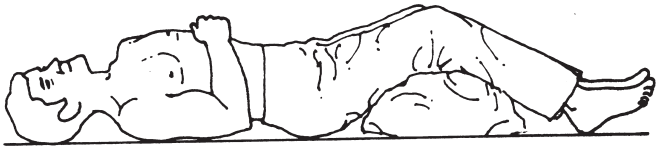
1. Lie on your right side with your head tilted downward.
2. Relax and hold the position for 5-10 minutes.
3. Have someone gently tap on the chest area below the armpit for two minutes with cupped hands.
4. Following the tapping, sit up and cough five times whether you think it is necessary or not. This helps to loosen and remove mucus.

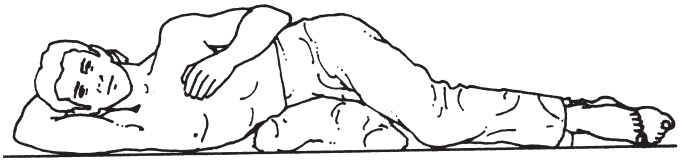
5. Repeat the procedure on your left side.



6. The following are additional positions of postural drainage which may be suggested by your health care provider or respiratory therapist.







### How to get into position

1. Purchase an exercise table, or use a chaise lounge chair where one end goes down.
2. If you have an extra bed, raise one end on cinder blocks.
3. Use a stack of 2-3 sofa cushions.
4. Take a stack of newspapers six inches high and tie it tightly. Place two pillows over them and rest your hips on them.
5. The most important thing is to be comfortable.

### When to do postural drainage and/or percussion

1. Two times daily:
    a. First thing in the morning or as soon as possible, and
    b. One hour before bedtime.
2. If you experience either of the following, do postural drainage treatments four times per day:
    a. Heavy sputum production.
    b. Sputum is yellow or green.
3. Always wait 10-15 minutes after any prescribed bronchodilator treatments (aerosol or metered dose inhaler).
4. **Caution:** It is best to do postural drainage **before** meals. Always wait at least one hour after meals to begin a postural drainage treatment.
5. Patients and family members may be taught postural drainage and chest percussion by a respiratory therapist.

## Coughing

A good cough is needed to remove extra mucus from the lungs, but coughing can be tiring. Try to master the technique of **controlled coughing**:

1. Coughing is easier when sitting upright with your head slightly forward.
2. Take a deep breath through your nose.
3. Hold your breath for two seconds.
4. Breathe out through pursed lips.
5. Repeat the above three steps, then. . .
6. Cough twice in a row using your stomach muscles and not your throat. Keep your mouth slightly opened. (The first cough loosens the mucus, and the second one moves it up the airways.)
7. Rest between coughs.
8. Inhale by sniffing in gently. Taking in a big breath following coughing can cause you to cough again.

It is important to drink plenty of liquids (6 to 8 ounce glasses each day unless your doctor tells you otherwise). Drinking liquids thins your mucus, plus it is the cheapest and best cough medicine. A drink of water, juice, decaffeinated coffee or tea before coughing can be helpful.

### Huff coughing

Huffing is used in place of coughing to help get rid of mucus. When done properly, it helps to prevent uncontrollable hacking cough.

1. Lean forward slightly while in a sitting position.
2. Breathe in slowly and deeply.
3. Hold your breath briefly.
4. Cover your mouth and
5. Let the air out in several short bursts while saying "**HUFF**." A huff sound is heard, rather than a sharp sound.
6. Rest between huffs.
7. Repeat as needed.

**Call your health care provider if:**

- Sputum is yellow or green
- Sputum production is heavy
- You have a fever

# Mucus clearance devices

## Description

Mucus clearance devices (PEP or Oscillatory PEP) provide positive expiratory pressure (PEP) therapy for patients who need help moving secretions. These devices combined with “huff coughing” may be used for airway clearance, bronchial hygiene or as an alternative to standard chest physical therapy and pursed-lip breathing. It may be used along with inhaler or nebulizer treatments.

## Indications

COPD, asthma, bronchitis, cystic fibrosis, atelectasis (lung collapse) or other mucus producing diseases.

## Contraindications

Patients with collapsed lung or right-sided heart failure.

## Goals of therapy

Prevent build up of mucus
Improve mobilization of mucus
Promote effective breathing patterns
Improve delivery of oxygen
Improve lung function
Prevent or reverse atelectasis (lung collapse).

# COPD medications

Inhaled medications are often prescribed to help you breathe easier, clear mucus from the lungs, and decrease swollen airways. Your health care team would like to work **with** you to find medications which help control your symptoms with the least side effects - this is a team effort!
Use the chart below to help you better understand COPD medications.
Please refer to page 14 to review proper use of a meter-dose inhaler (MDI).
**Never change a dose and start or stop medication without your health care provider's advice.**

| Medicine | Action | Examples | How supplied | Side effects | Important points and notes |
|---|---|---|---|---|---|
| Bronchodilators | | | | | |
| Short-acting Beta-2 (SABA) | • Dilates or opens airway | Albuterol *(Ventolin, Proventil, ProAir)*<br>Levalbuterol *(xopenex)* | Inhaler, nebulizer | Shakiness, jittery, racing heart, dizziness | • Wait a few minutes in between "puffs"<br>• May use "extra puffs" in a pinch to relieve shortness of breath.<br>**NOTE: If you need to use your inhaler more often or if it doesn't seem to last, call your health provider** |
| Long acting Beta-2 or "slow-acting" (LABA) | • Dilates or opens airway<br>• Works slower than Beta-2 medicine | Salmeterol *(Serevent)*<br>Arformoterol *(Brovana)*<br>Formoterol *(Proformist)* *(Foradil)*<br>Indacaterol *(Arcapta)* | Diskus<br>Nebulizer<br>Nebulizer<br>Aerolizer<br>DPI | Shakiness, dizziness, jittery | • **DO NOT** use for quick relief |
| Anticholinergic | • Dilates or opens airways<br>• Works slower than Beta-2 medicine | Tiotropium *(Spiriva)*<br>Ipatropium *(Atrovent)*<br>Aclidinium *(Tudorza, Pressair)* | Handihaler<br>Inhaler, nebulizer<br>DPI | Shakiness, jittery, dry mouth, trouble passing urine | • **DO NOT** need to wait in between "puffs"<br>• Does not work quickly so "extra" "puffs" |
| Anticholinergic & SABA | • Produces longer bronchodialation combination | Ipatropium<br>+<br>Albuterol<br>*(Combivent), (Duoneb)* | Inhaler, nebulizer | Shakiness, jittery, dry mouth, trouble passing urine | • Wait a few minutes between puffs |
| Anticholinergic & LABA | • Produces longer bronchodilation combination | Umeclidinium/vilanterol *(Anoro Ellipta)*<br>Tiotropium/olodaterol *(Stiolto Respimat)* | Inhaler | Nervousness, trouble passing urine, eye pain or discomfort | • **DO NOT** use for quick relief |
| Methylxanthines | • Relaxes or opens airways<br>• Long acting<br>• Stimulates diaphram muscle | Theophylline *(Theo-Dur, Slo-Bid, Uniphyl, etc.)* | Pill | Shakiness, jittery, sleep difficulty, racing heart, nausea, headache | • Report side effects to health care provider<br>• Dose is determined by your breathing, side effects and amount of medicine in your blood as measured by a "blood level" |

| Medicine | Action | Examples | How supplied | Side effects | Important points and notes |
|---|---|---|---|---|---|
| Corticosteroids | | | | | |
| Steroids | Decreases swelling in airways<br>Makes airways less “irritable” to irritants | Mometasone *(Asmanex)*<br>Ciclesonide *(Alvesco)*<br>Beclomethasone *(Vanceril, Beclovent)*<br>Flunisolide *(Areo-Bid)*<br>Budesonide *(Pulmicort)*<br>Fluticasone *(Flovent)*<br>Deltasone *(Prednisone)* | Twisthaler<br>Inhaler<br><br>Inhaler<br>Inhaler (Dry powder)<br>Inhaler, nebulizer<br>Pill | Hoarseness, dry mouth, fungal infections (thrush in mouth)<br><br>Nausea, heartburn, puffiness, ↑ appetite, ↑ blood sugar, mood swings, easy bruising | • Use after you have taken your other bronchodialator medicine<br>• Rinse mouth after each dose and use a spacer to help prevent mouth infections<br>• DO **NOT** use for fast relief<br><br>• Take in the morning with breakfast<br>• ***DO NOT STOP TAKING SUDDENLY!!!***<br>  • Taper the dose to give you body time to produce its own steroids |
| Corticosteroids & LABA | Combination decreases swelling in airways<br>Dilates or opens airways<br>Long acting | Fluticasone + Salmeterol *(Advair)*<br>Fluticasone + Vilanterol *(Breo Ellipta)*<br>Budesonide + Formoterol *(Symbicort)*<br>Formoterol + Mometasone *(Dulera)* | Inhaler, diskus<br><br>Inhaler<br><br>Inhaler<br><br>Inhaler | Sore nose/throat, headache, stomach irritation<br><br>Fungal infection (thrush in the mouth) | Rinse mouth after use<br>NOT a rescue inhaler |
| Phosphodiesterase Type 4 Inhibitor (PDE4) | Reduces inflammation in the lungs | Roflumilast *(Daliresp)* | Pill | Back pain, decreased appetite, flu-like symptoms | |

# Oxygen

Oxygen is as important as medicine for persons who do not have enough oxygen in their blood. Providing oxygen prevents strain on the heart muscle which must work harder when oxygen levels are low.

*The amount of oxygen must be prescribed by your health care provider and should not be changed based on how you feel unless instructed to do so.*

If you need oxygen, a home care company (i.e., medical supply store) will deliver oxygen to your home and train you on how to use it. The home care company and your health care provider can help to select an oxygen system that is right for you.

Your health care provider has found that you have a heart or lung problem which causes a low level of oxygen in the body. This lack of oxygen puts an extra strain on the heart and can be helped by the use of additional oxygen.

Oxygen is a drug and must be prescribed by your health care provider. An exact flow rate will be ordered to produce nearly normal oxygen levels. The oxygen delivered is measured in liters per minute.

**It is important that you use only the flow rate and length of time prescribed by your health care provider. Taking oxygen may not relieve your shortness of breath.**

Oxygen will not burn by itself, nor will it explode, but it does support fire. Anything that will burn in the air will burn more easily in oxygen. You can help prevent the chance of fire by following the safety rules listed below.

A respiratory therapist will teach you and your family how to safely use oxygen.

## Safety rules and tips

1. **Do not** permit the use of open flames or burning **tobacco** in the room where oxygen is being used or stored.
2. **Do not** use any household electric equipment in any oxygen-rich area. (Examples: electric razors, heaters and blankets. **Keep these items at least five (5) feet from your oxygen source**).
3. **Do not** use any heavy coatings of oily lotions, vaseline, face creams or hair dressings while receiving oxygen. If skin irritations occurs around the nose, you may use a small amount of K-Y Jelly.
4. **Do not** use aerosol sprays in the area of oxygen equipment.
5. **Do not** oil or grease oxygen equipment.
6. **Do not** allow oxygen tubing to be covered by any objects.
7. **Do not leave oxygen on when equipment is not in use.**
8. **Do not** abuse or handle oxygen containers roughly.
9. **Do not** store oxygen in a confined area.
10. **Do not** allow untrained persons to use or adjust equipment.
11. **Do not** attempt to fix or repair oxygen equipment.
12. **Do not** store oxygen containers near radiators, heat ducts, steam pipes or other sources of heat.
13. **Do not** touch frosted fittings or piping on liquid systems with bare hands.
14. **Do not** open cylinder valves quickly.
15. **Do not** leave cylinders loose. Secure either by a chain, cord or stand.
16. **Do not** transport oxygen in an enclosed area such as the trunk of your car.

**Never change the oxygen liter flow from what your health care provider prescribes.**

## Travel tips

1. **Do** transport oxygen in the back seat of your car. Secure it properly with seat belts.
2. **Do** open your window about one inch when transporting any oxygen equipment and/or use fresh air control on your heater-defroster.
3. **Do** secure liquid oxygen equipment in an upright position.
4. **Do** contact your oxygen supplier if you are planning to travel or transport your unit.
5. **Do** plan ahead for use of oxygen while on the road.

## Transport of the portable unit

1. The portable unit should be kept upright and secured by a seat belt, or placed on the floor between your feet for the ride home. (This will avoid a broken windshield if the driver has to stop suddenly.)
2. The liter flow should be turned on to the prescribed setting.
3. The respiratory therapist will instruct you in using the fill level gauge.
4. No one should be allowed to smoke in the car.

## Supplies

You should be provided with extra oxygen tubing and water bottles by the medical supplier. If you are not, ***ask***. The tubing and bottle should be changed at least once a week.

## Cleaning procedures

1. Take apart and wash parts in liquid dish detergent. Equipment should be thoroughly scrubbed.
2. Rinse equipment well, making sure all extra detergent is removed.
3. Soak equipment for twenty (20) minutes in white vinegar solution containing two (2) parts vinegar solution and three (3) parts distilled water (preferred) or tap water.
4. Rinse all parts with tap water.
5. Drain dry on clean towel.
6. Remember that all water must be removed from tubing. This can be done by attaching one end of tubing to flow of oxygen source, allowing water to drain out of tubing.

***Remember: Using dirty equipment can cause lung infections.***

## Cost

The cost of oxygen depends upon the type of system you need and your insurance coverage. Most major insurance companies will cover 80% of the cost. Your medical supplier will tell you what your monthly payment will be.

## Questions to ask supplier about home oxygen/respiratory equipment

1. Does insurance require purchase or rental?
2. What percent of total cost does insurance pay? What percent (co-pay) is the patient responsible for?
3. If patient has multiple insurance, which is primary payer and which is secondary payer?
4. If patient has multiple insurance coverage, will there be any out of pocket expense?
5. If unit is purchased, how much would a maintenance agreement cost the patient?
6. Will the patient incur any out of pocket expense at the time of delivery/setup?

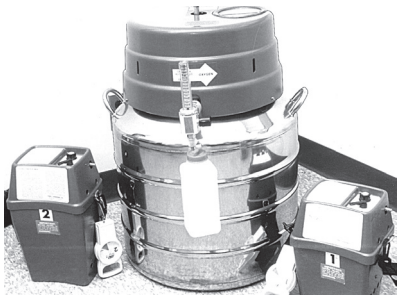
## Types of oxygen delivery systems

Liquid oxygen, an oxygen concentrator, compressed oxygen, and oxygen conserving devices are the forms of oxygen most often used at home. Your health care provider or home health care company will help you decide which type is best for you. In each case, oxygen is inhaled through a nasal cannula (lightweight tube) or a mask. The cannula has two hollow prongs that fit just inside your nose.

1. **Liquid oxygen** (Figures A and B) - comes in a container that cools the oxygen to -297°F, the temperature at which oxygen becomes liquid. As you use the unit, the liquid oxygen is warmed and becomes a gas again before it reaches the cannula. Most liquid oxygen tanks come with a portable unit that you can easily fill and carry with you or pull on a cart wherever you go. If you are active and need oxygen all the time, liquid oxygen is the most portable.

Figure A

Figure B



2. **Oxygen Concentrator** (Figure C) - This is a square unit about the size of a large suitcase. It takes oxygen from the air, concentrates it, and then delivers it to the cannula. When in use, the concentrator should be placed in an area where there's a good supply of fresh air – never in a closed space, such as a closet. A concentrator runs on electricity and plugs into an outlet in your home. A backup tank of oxygen is needed in case of a power failure and for use away from home. If you are home bound and need oxygen all the time or only at night, an oxygen concentrator may be your best choice.

Figure C

3. **Compressed oxygen** (Figure D) - comes in a tank that stores oxygen as a gas. A flow meter and a regulator are attached to the tank so that you can adjust the oxygen flow. Because the oxygen is stored under pressure, the tank must be handled very carefully.

   If you don't need to use oxygen all the time, compressed oxygen may be your best choice.

Figure D

4. **Oxygen conserving devices** - These devices sense your breathing in and out: delivering oxygen when you breathe "in" and will not deliver oxygen as you breathe "out". Conserving devices may help reduce the number of oxygen refills needed. They may also improve your ability to get around by allowing you to use a smaller portable unit that may last longer than a continuous flow unit. There are several types of oxygen conserving systems available.

   **Important:** Not all patients are able to maintain good oxygen levels by using these conserving devices. It is important to have your oxygen level evaluated on such a device to see whether this type of device will suit your oxygen needs.

# Using an inhaler

Many COPD medications are taken with a metered-dose inhaler or "puffer." An inhaler should be used with a spacer (a device which holds the medicine until you breathe it in). Inhalers and spacers must be properly used in order for the medicine to be effective in the airways.

## Prime for the first time

- Shake inhaler for 10 seconds
- Spray twice into the air (This only needs to be done once when the inhaler is new)

## Why use a spacer with inhalers?

Another name for a spacer is a "holding chamber." Spacers make it easier to take the inhaler because the medicine goes directly to the lungs rather than on the tongue, the back of the throat, or on the roof of your mouth. This provides useful treatment and helps to reduce unwanted side effects.

## Cleaning

- Wash all plastic parts of your inhaler, holding chamber, and mask once a week to keep them clean. Dirty inhaler equipment can cause infections in the lung!
- Use a mild soap (like Ivory or Joy) and plenty of warm water.
- Rinse well in a sink of clean, warm water. Let air dry. Make sure all parts are dry before re-using.
- Over time the flap valve in the holding chamber may harden and start to curl. If this happens, it will not work properly and will need to be replaced.

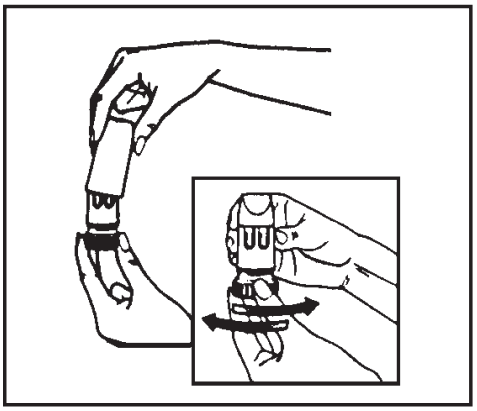
# Dry powder inhalants

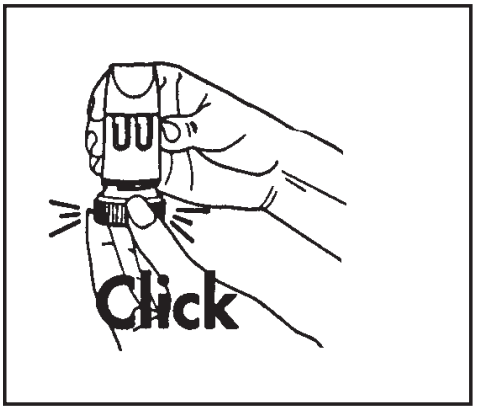
This method is another way to deliver medicine directly to your lungs. It is like using an inhaler, but it is not an aerosol. When you breathe in on this device, a fine dry powder goes into your lungs. You will not taste, smell, or feel the medicine when you breathe it in.

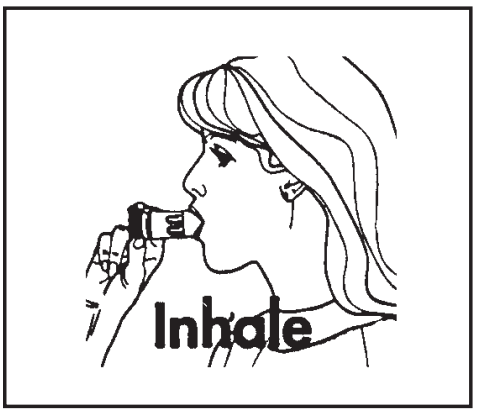
## How to use a turbuhaler (Dry powder inhaler)

Before you use a new turbuhaler for the first time, you must prime it. To do this, turn the cover and lift off. Hold Pulmicort turbuhaler upright (with mouthpiece up). Twist the brown grip all the way to the right and then twist it back all the way to the left until it clicks. **Repeat**. The first time you use the turbuhaler, you must do this two times. Now you are ready to use it. You do not have to prime it any time after this.

Follow the instructions below:





### Loading the dose:

1. Twist the cover off.
2. In order to provide the correct dose, the turbuhaler must be held in an upright position whenever a dose of medicine is being loaded.
3. Twist the brown grip fully to the right.
4. Twist it back again to left. You will hear it click.
5. Turn your head away from the inhaler and breathe out. Do not blow into the inhaler.
6. Do not shake the inhaler after loading it. Keep the inhaler upright.

### Inhaling the dose:

1. When you are inhaling, the turbuhaler must be held in the upright position or horizontal position.
2. Place the mouthpiece between your lips and inhale deeply and forcefully.
3. Remove the turbuhaler from your mouth. Breathe out slowly with your mouth away from the mouthpiece. You may not feel or taste the medicine.
4. If more than one dose is needed, just repeat the steps.
5. When you are finished, place the cover on the inhaler. Twist it shut. Rinse your mouth with water and spit it out.

Keep your turbuhaler clean and dry at all times.

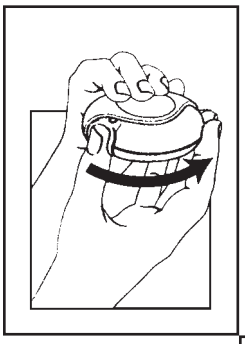
Pulmicort turbuhaler is designed to deliver only one dose at a time no matter how many times you click the brown grip. If you accidentally blow into your inhaler after loading a dose, simply follow the steps for loading a new dose.

The half red mark in the window means you are running low on medicine. Refill your prescription. If the window is all red, you have no medicine left.

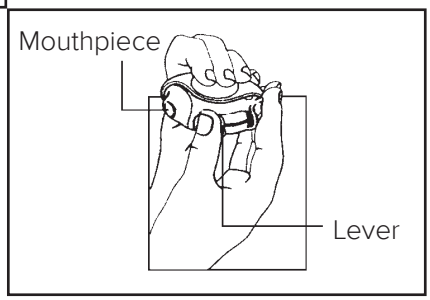
# How to use the Diskus inhaler

Usual dose is one inhalation twice a day. The built in dose counter lets you keep track of every dose. The doses from 5 to 0 will show up in red to remind you to refill your prescription.

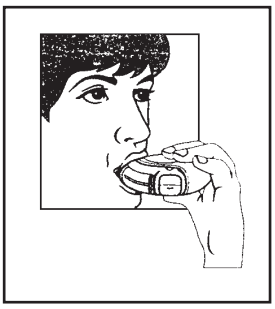
**Open...**



- While holding the Diskus in one hand, place thumb of other hand on grip and push away until the mouthpiece appears and snaps into position.




- Hold the Diskus in a level position,
- Slide the mouthpiece lever away from you as far as it will go until it clicks.
- Turn your head away rom the Diskus and breathe out. Never blow into the Diskus.



- Put mouthpiece to lips.
- Breathe in deeply and forcefully through the Diskus.
- Hold breath for about 10 seconds.
- Then close the Diskus.

**Remember:**

- Never breathe into the Diskus.
- Never attempt to take the Diskus apart.
- Never wash any part of the Diskus. Store in a dry place.
- Rinse mouth out with water after using the Diskus Inhaler. Do not swallow.

# How to use your Respimat inhaler (Combivent, Stiolto)

## Prepare for first time

1. With orange/green cap closed press the safety catch while pulling off the clear base.
2. Write the **discard by date** on the label. The **discard by** date is 3 months after the inhaler is opened.
3. Push narrow end of cartridge into the inhaler. About 1/8 of an inch will remain visible. Do not remove the cartridge once it has been inserted into the inhaler.
4. Put clear base back into place.

## Prime for first time use

5. Turn the clear base in the direction of the white arrows while holding the inhaler upright with orange/green cap closed. You will hear a click.
6. Flip open the orange/green cap.
7. Point inhaler toward the ground and press the dose release button until spray is visible. Repeat steps 5, 6, and 7 three more times to make sure inhaler is prepared for use.

## Daily dosing

1. Keep orange/green cap closed while turning the clear base in the direction of the white arrows until it clicks (half a turn).
2. Flip the orange/green cap until it snaps open. Breathe out slowly and then close your lips around the mouthpiece without covering the air vents. While taking a slow deep breath press the dose release button and continue to breathe in slowly for as long as you can. Hold your breath for 10 seconds or as long as comfortable. Close orange/green cap.

### When should I get a new Combivent Respimat inhaler?

Your inhaler contains 120 doses. The dose indicator shows approximately how much medicine is left. 7 days of medication is left when the arrow enters the red area. Throw away your inhaler 3 months after inserting the cartridge, even if all the medicine has not been used.

### When should I get a new Stiolto Respimat inhaler?

Your inhaler contains 30 or (4 doses of medicine (equal to 60 or 28 puffs). 2 puffs from Stiolto Respimat equal 1 dose of medicine. 7 days (30 dose product) or 3 days (14 dose product) is left when the arrow enters the red area. Throw away your inhaler 3 months after inserting the cartridge, even if all the medicine has not been used.

# How to use your Aerolizer (Foradil)

1. Pull off cover of Aerolizer.
2. Twist mouthpiece in the direction of arrow to open.
3. Place capsule in capsule chamber and close mouthpiece.
4. Hold mouthpiece upright and press both buttons once.
5. Exhale fully away from mouthpiece then breathe in rapidly through mouthpiece holding your breath as long as comfortably possible, then exhale.
6. Open Aerolizer and discard empty capsule.

# How to use your HandiHaler (Spiriva)

1. Open dust cap by pulling it upward.
2. Open mouthpiece and place capsule in center chamber.
3. Close mouthpiece until it clicks and leave dust cap open.
4. Hold HandiHaler with mouthpiece up and pierce capsule once with piercing button and release.
5. Exhale away from HandiHaler – then inhale through mouthpiece at a rate sufficient to hear capsule vibrate until lungs are full.

6. Remove device from mouth and hold breath as long as comfortably possible.
7. Repeat the inhalation to ensure complete dose is dispensed.
8. Remove capsule with tissue (never in bare hand) and dispose of it.
9. Replace dust cap.

# How to use your Pressair inhaler (Tudorza)

1. Remove protective cap.
2. Green button should be facing upward.
3. Depress green button and release.
4. Control window should turn green, if it stays red, press and release button again.
5. Breathe out completely away from inhaler.
6. Inhale rapidly through mouthpiece until you hear a “click” sound. Keep breathing in; even after you have heard the inhaler click to be sure you get the full dose. Hold breath as long as comfortable for you.
7. Control window should turn from green to red.
8. Place protective cap back on inhaler.

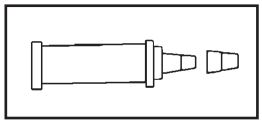
# How to use your Ellipta inhaler (Breo, Anoro)

1. Open cover of inhaler – you should hear a “click”.
2. Counter will count down by 1 number.
3. Breath out away from inhaler.
4. Place mouthpiece between lips and take a long and steady deep breath through your mouth.
5. Do not block air vent with your fingers.
6. Remove the inhaler from your mouth and hold your breath as long as comfortable for you.
7. Close the inhaler.

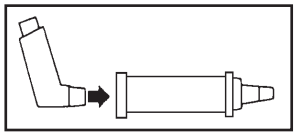
# How to use an inhaler with a holding chamber

Instructions for use

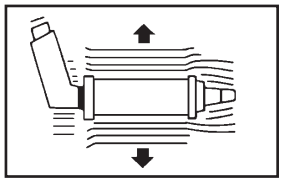
1. Remove the caps from both the inhaler and the holding chamber mouthpiece.



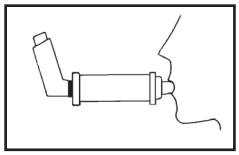
2. Put the inhaler mouthpiece into the wider rubber-sealed end of your holding chamber.



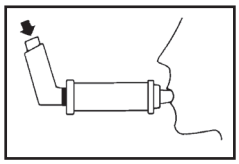
3. Shake the unit three or four times, vigorously. This mixes the medication properly.



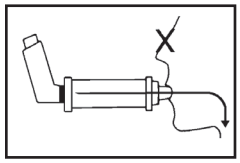
4. Gently breathe out. Place the holding chamber mouthpiece between your teeth and close your lips around it.



5. Press the inhaler once. The medication will be delivered into the holding chamber.



6. Breathe in slowly and fully, taking about five seconds to complete this step.



7. Hold in your breath for five-ten seconds. This allows the medication time to get into the airways.
8. If the breath you're taking in is making the aerochamber whistle, breathe slower to stop the whistling.
9. If a second puff is required, wait about 1 minute after the first puff. Then repeat steps 1-7.
10. Depending on the number of times the inhaler is needed or prescribed, one canister should last a minimum of three weeks.
11. No more than 2 puffs every four hours should be taken. This equals 12 puffs in a 24 hour period.
12. After using your inhaler, if symptoms are not cleared or clearing for less than four hours occurs, call your health care provider. Do not overuse your inhaler.

# Use of a nebulizer

A nebulizer is a device driven by a compressed air machine. It allows you to take COPD medicine in the form of a mist (wet aerosol). It consists of a cup, a mouthpiece attached to a T-shaped part or a mask, and thin, plastic tubing to connect to the compressed air machine. It is used mostly by two types of patients:

- Patients who have problems using metered-dose inhalers.
- Patients with severe COPD.

A nebulizer helps to make sure you get the right amount of medicine.

Routinely cleaning the nebulizer is important because an unclean nebulizer may cause an infection. A good cleaning routine keeps the nebulizer from clogging up and helps it last longer. (See instructions with nebulizer.)

Directions for using the compressed air machine may vary (check the machine's directions), but generally the tubing has to be put into the outlet of the machine before it is turned on.

## How to use a nebulizer

1a. **If your medicine is premixed**, open container and empty contents into nebulizer cup. Go to step 2.
1b. If you are using Atrovent, Pulmicort, or Cromolyn Sodium with Albuterol in your treatment, you do not need to use saline.
2. Fasten the mouthpiece to the T-shaped part and then fasten this unit to the cup **OR** fasten the mask to the cup.
3. Put the mouthpiece in your mouth. Seal your lips tightly around it **OR** place the mask on your face.
4. Turn on the air compressor machine.
5. Take slow, deep breaths in through your mouth. Breathe normally.
6. Continue until the medicine is gone from the cup (about 10 minutes).
7. Store the medicine as directed after each use.

## Cleaning the nebulizer

**Don't forget:** Cleaning and getting rid of germs prevent infection. Cleaning keeps the nebulizer from clogging up and helps it last longer. Please follow these **three** cleaning recommendations as directed.

### 1. Cleaning needed after each use

a. Remove the mask or the mouthpiece and T-shaped part from the cup. Remove the tubing and set it aside. The tubing should not be washed or rinsed. The outside should be wiped down. Rinse the mask or mouthpiece and T-shaped part – also the eyedropper or syringe – in warm running water for 30 seconds. Use distilled or sterile water for rinsing, if possible.
b. Shake off excess water. Air dry on a clean cloth or paper towel.
c. Put the mask or the mouthpiece and T-shaped part, cup, and tubing back together and connect the device to the compressed air machine. Run the machine for 10 to 20 seconds to dry the inside of the nebulizer.

d. Disconnect the tubing from the compressed air machine. Store the nebulizer in a ziplock plastic bag.
e. Place a cover over the compressed air machine.

2. Cleaning needed once every day

a. Remove the mask or the mouthpiece and T-shaped part from the cup. Remove the tubing and set it aside. The tubing should not be washed or rinsed.
b. Wash the mask or the mouthpiece and T-shaped part – also the eyedropper or syringe – with a mild dishwashing soap and warm water.
c. Rinse under a strong stream of water for 30 seconds. Use distilled (or sterile) water if possible.
d. Shake off excess water. Air dry on a clean cloth or paper towel.
e. Put the mask or the mouthpiece and T-shaped part, cup, and tubing back together and connect the device to the compressed air machine. Run the machine for 10 to 20 seconds to dry the inside of the nebulizer.
f. Disconnect the tubing from the compressed air machine. Store the nebulizer in a ziplock plastic bag.
g. Place a cover over the compressed air machine.

3. Cleaning needed once or twice a week

a. Remove the mask or the mouthpiece and T-shaped part from the cup. Remove the tubing and set it aside. The tubing should not be washed or rinsed. Wash the mask or mouthpiece and T-shaped part – also the eyedropper or syringe – with a mild dishwashing soap and warm water.
b. Rinse under a strong stream of water for 30 seconds.
c. Soak for 30 minutes in a solution that is one part distilled white vinegar and two parts distilled water. Throw out the vinegar water solution after use; do not reuse it. (2 cups boiled water & 1 cup white vinegar.)
d. Rinse the nebulizer parts and the eyedropper or syringe under warm running water for 1 minute. Use distilled or sterile water, if possible.
e. Shake off excess water. Air dry on a clean cloth or paper towel.
f. Put the mask or the mouthpiece and T-shaped part, cup, and tubing back together and connect the device to the compressed air machine. Run the machine for 10 to 20 seconds to dry inside of the nebulizer thoroughly.
g. Disconnect the tubing from the compressed air machine. Store the nebulizer in a ziplock bag.
h. Clean the surface of the compressed air machine with a well-wrung, soapy cloth or sponge. You could also use an alcohol or disinfectant wipe. Never put the compressed air machine in water.
i. Place a cover over the compressed air machine.

# Respiratory irritants

The lining of the bronchial tubes are sensitive to “irritants”. Irritants are particles, many of which we may not be able to see. When breathed (inhaled) into the bronchial tubes they may trigger your airways to be irritable causing you to cough, wheeze, and breathe harder and faster. Irritants may even lead to increased amounts of mucus (sputum) in your airways. Irritants can be found indoors as well as outdoors. Individuals may vary in what “triggers” or irritates their breathing symptoms.

Such irritants or triggers **may** include:

- Aerosol sprays
- Smoke
- Dust
- Perfumes
- Strong cooking odors
- Heating sources - fireplaces, wood stoves
- Exhaust fumes
- Air pollution (factories, automobile)
- Weather conditions (hot, humid; damp, rainy; cold, windy)

What can be done to avoid these troublemakers or "irritants?"

### Indoor irritants

Do not use aerosol sprays. If you must use an aerosol spray, a mask or loosely applied scarf over the nose can be used to help filter out large amounts of these irritants. However, it is also important to have good ventilation (circulation of air) in the room.

- Do not perform dust-raising activities such as cleaning attics or basements. Even weekly household cleaning can be troublesome.
- Do not breathe in smoke from cigarettes, pipes, and cigars. Either leave the smoke-filled room or ask smokers to smoke in another room. In addition, ask for the nonsmoking section of restaurants, clubs, or public places.
- Do not use perfumes or strong fragrances (for example, potpourri, room fresheners, or deodorants) which may cause breathing difficulty. Use unscented deodorants and detergents, if possible.
- While cooking with foods that may give off strong odors, use a circulating fan or open kitchen windows to help with circulation of air.
- When using fireplaces or wood stoves, make sure the stove is clean, in proper working order, and is adequately sealed. Dampening down a fire too much may cause a smoky fire which may lead to breathing difficulty.

### Outdoor irritants

- Avoid areas such as traffic jams or parking garages which may be exhaust-filled.
- Check your radio or TV for air pollution alerts.
- For variable weather conditions:
  - **Cold weather conditions** - if you must go outdoors, breathe in through your nose to warm the air that you breathe. Covering your mouth and nose with a cold weather mask or loosely applied scarf may also help.
  - **Hot, humid days** - stay indoors with windows closed and use an air-conditioner or circulating fan.
  - **Smoggy, rainy, damp days** - staying indoors may help.
- If sensitive to allergens such as pollens, grasses, molds, ragweed, etc., be aware of the time of day in which these irritants are in "peak" concentrations and limit outdoor activities at those times.

| Irritant | Time of day when "peaks" |
|---|---|
| Molds | Sunrise |
| Ragweed | Noontime |
| Grasses | Sunset |

**Avoid irritants!** Irritants can make your breathing worse, and avoiding these triggers is one of the most important things you can do!

# Infections

Individuals with COPD are prone to colds and respiratory (lung) infections. Frequent lung infections may worsen lung function and your ability to get around. As a result, it is very important that individuals with COPD protect themselves against infections that may cause their breathing difficulties to "flare."

### Hints to avoid infection

1. Avoid close contact with anyone, child or adult, whom you know is ill.
2. Avoid small, crowded places such as shops, meeting halls, or even church, when flu or illnesses seem to be common.
3. After returning home from being away (church, shopping, etc.) be sure to use good hand washing.
4. Keep your body as healthy as possible with nourishing foods (foods high in vitamins and minerals such as fruits and vegetables), getting enough rest and sleep, and maintaining a daily exercise regimen. These activities help to keep your resistance up so that you can fight off germs leading to infection.
5. **Keep your influenza (flu shot) and pneumovax (pneumonia shot) vaccinations up-to-date. Remember . . . you need to get a flu shot every year, usually in the fall season. A pneumonia shot can be given at any time of the year. Ask your health care provider how often the pneumonia vaccine needs to be repeated.**
6. Cleaning of respiratory equipment is very important, since dirty or contaminated parts can cause infection (see page 12).
7. Know the possible signs and symptoms of a lung infection:
    - Increase in mucus or sputum (phlegm).
    - Change in color of sputum (yellow or green).
    - Change in amount or thickness of sputum.
    - More shortness of breath than usual.
    - Coughing more than usual.
    - Wheezing more than usual.
    - Chest discomfort.
    - Fever, chills, increased tiredness, achiness, decease in appetite.

If you notice any of these signs or symptoms, it is best to contact your health care provider (unless you have already been given instructions for what to do) on how to handle a possible lung infection. If an antibiotic is prescribed, be sure to take **all** the medicine as ordered.

# Daily activities

Your every day activities are important to you. By coordinating your breathing with your activities and planning your time well, you will be able to do the things you would like to do with less shortness of breath. In order to conserve energy during your daily activities, you must make an effort to become more efficient at performing these activities.

Here are some general tips to help you with your daily activities:

### Plan & pace yourself

Schedule activities for a time of day when you have the most energy. Pace yourself – hurrying uses up your energy and increases shortness of breath. Use rest periods as necessary.

### Learn “new” ways to do “old things”

Individuals with COPD are prone to colds and respiratory (lung) infections. Frequent lung infections may worsen lung function and your ability to get around. As a result, it is very important that individuals with COPD protect themselves against infections that may cause their breathing difficulties to “flare.”

### Use pursed-lip & diaphragmatic breathing with daily activities

Coordinate your breathing with your activities and never hold your breath during any activity! Know when to inhale (breath in) and when to exhale (blow out). For the most part, exhale during the part of the task that requires exertion, when bending over, or activities in which you bring arms into the body.

Examples:

- Bending to pick something off the floor
- Leaning over to make the bed
- Bending to reach food in the oven
- Loading or unloading a front-load washer or dryer
- Bending to pull on socks or shoes
- Moving from a lying to a sitting position

**Inhale** when straightening the body, lifting upward, moving or pushing arms away from the body.

Examples:

- Reaching to get something from a cupboard
- Removing or putting on a T-shirt or sweater
- Hanging laundry
- Combing your hair

## Daily activities/home chore tips

### Bathing & showering:

- Use your oxygen in the bath or shower if you are to wear it with activity.
- Carry all needed items into the bath or shower with you in one trip.
- To decrease the amount of "steam" produced, turn on the cold water first, then slowly add the hot water.
- Put a chair or stool in the shower to rest, as needed.
- Install grab bars or no-slip strips to prevent falls.
- Keep water from splashing in your face by using a hand-held attachment, aiming the stream of water lower, or turning your back to the stream of water.
- Avoid use of strong scented or perfumed soaps or toiletries.
- Have your towel and robe nearby.

Relax and take your time - pace yourself!

## Grooming:

- Keep all supplies within easy reach.
- Sit on a chair or stool to apply make-up, brush teeth, or shave to conserve energy.
- Shave half of your face; rest, and finish the other half.
- Use a wash cloth instead of splashing water onto your face.
- Use an electric toothbrush.

## Lifting objects:

- Bend at the knees while keeping your back straight to decrease strain on the back muscles.
- For balance and ease, bend down on one knee and balance with the other.
- Exhale while bending and inhale while straightening up.
- If lifting a heavy object, do **not** hold your breath! Instead, pause while breathing in, then exhale through pursed lips as you lift.
- Tips to remember when lifting:
  - Chin up
  - Back straight
  - Arms straight
  - Knees bent
  - Grasp the load underneath

## Driving:

- Sit on a cushion or hold onto the lower part of the steering wheel to make sure arms are not raised to prevent tiring.
- While turning, slide the wheel back and forth through your fingers rather than doing a hand-over-hand turn.
- On long road trips, stop the car every 1-2 hours to rest and stretch.

## Dusting & cleaning:

- Use energy conserving equipment such as long-handled brooms, dust pans, and vacuum cleaners.
- Avoid aerosols and strong smelling chemical cleaners.
- Kneel rather than bend.
- A mask may be helpful if dusting causes you to experience difficult breathing. Remember, good circulation of air is a must!
- Use frequent rest periods, as needed.

### Lawn & gardening:

- When cutting grass, cut a small area at a time, pausing frequently to rest.
- Keep your back straight and pace yourself.
- During the warm weather months, cut grass during the cooler hours of the day - before 11 a.m. and after 4-5 p.m.
- A riding mower may be easier than a push mower.
- If you cannot finish mowing the entire area, rest and wait until later.
- Organize all garden tools in an easy to carry basket.
- Use a stool to sit among plants or rows.
- If raking, use slow, rhythmic strokes, resting as needed.
- Garden during the cooler hours of the day - before 11 a.m. and after 4-5 p.m.
- Use a mask if stirring up dirt causes you to experience difficulty breathing.

## Travel

Travel? **Yes**, individuals with COPD **can** travel! Travel can be an enjoyable form of recreation, a refreshing change from your usual lifestyle, and a great stress reliever. Travel can help keep close relationships with family, friends, and those we love who live long distances.

The key to successful travel is careful planning **before** your trip.

So, what are you waiting for?! You **can** do it. . . with general travel guidelines:

- Check with your health care provider to make sure your lungs are “stable” for travel.
- Carry a current medical summary, medical directives, and medical identification in the event of an acute problem.
- Carry a listing of important telephone contacts with you; for example, the name, address, and phone number of a pulmonary physician and/or oxygen vendor at your destination.
- Ask your health care provider for an extra set of medications to take with you. Be sure to carry a set with you in case you become separated from your luggage.
- Obtain information about your destination such as climate, altitude, air quality (pollution, humidity), and the availability of such things as escalators, elevators, ramps, stairs, and transportation.
- Contact the airline, bus line, cruise line, or train line in advance to inquire about policies, services, and use of special equipment such as oxygen, nebulizers, suction equipment, ventilators, or CPAP machines.

**No matter what method of transportation you use (air, bus, train, ship, or car), remember to use the basic principles you have been taught. . .**

- Plan well in advance of your trip.
- Pace yourself, allowing for adequate rest periods.
- Coordinate breathing with your activities (pursed lip and diaphragm breathing).
- Try to keep your medications and treatments on schedule.
- Conserve energy whenever possible.
- Utilize nonsmoking areas only.
- Change position frequently while traveling (leg exercises and stretching exercises can be done from your seat until you are able to take a short walk).

## Tips for traveling with oxygen

### Car

- Do not allow passengers to smoke in the car
- Place your oxygen unit upright, securing it with a seat belt.

### Bus

- Contact the bus line about one week before you leave regarding nonsmoking seating when making arrangements for oxygen with travel.
- Check with the bus line to determine their policies for traveling with oxygen.

### Airplane

- Do make your travel arrangements several weeks before you plan to travel
- The airlines will need a certificate of medical necessity from your health care provider and a current copy of your oxygen prescription.
- You will not be allowed to use your own oxygen while in flight. Most airlines will supply you with oxygen for a charge.
- You will need to arrange for oxygen when you arrive at your destination.
- A direct or nonstop flight can help to minimize layovers or interruptions.
- You will need to make specific arrangement for wheelchairs or help in transporting luggage.

### Ship

- Contact the cruise line several weeks to months prior to travel.
- The cruise line will require a certificate of medical necessity from your health care provider and a current oxygen prescription.
- Your oxygen units will need to be delivered directly to the cruise ship before your departure.

# Healthy eating

What you eat affects how you breathe and how you feel. You should make every effort to maintain good nutrition by eating a balanced diet. Eating properly can help prevent weight loss, help your body fight infection, and give you energy.

To help you plan a balanced diet, make food choices by using ChooseMyPlate.gov (see right).

MyPlate is an easy-to-understand visual cue to help the general public adopt healthy eating habits by encouraging them to build a healthy plate.

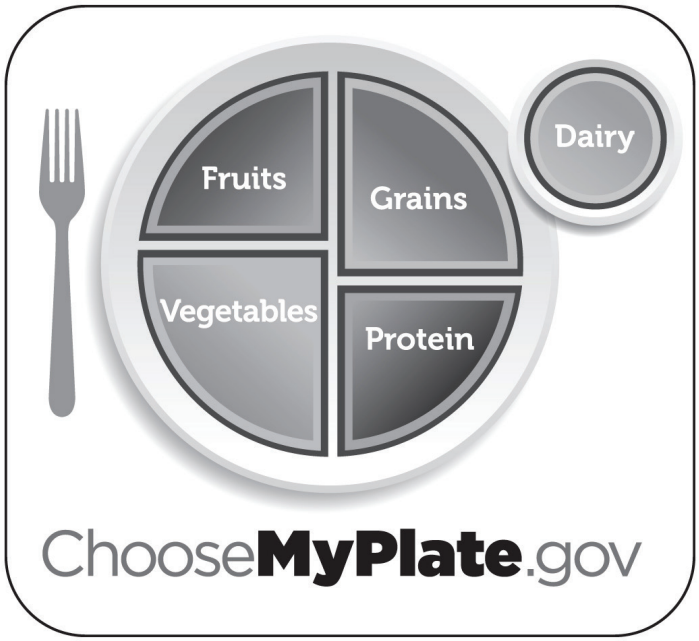
MyPlate illustrates the five food groups that are the building blocks for a healthy diet.

Speak to your doctor and registered dietitian if you follow a physician-prescribed diet as you may need to make modifications to your “plate”.

- **Focus on fruits** – 2 cups daily. Eat a variety. They may be fresh, canned, frozen, dried, whole, cut-up or pureed.
- **Vary your veggies** – 2½ cups daily. Choose from dark green, red and orange. Make it colorful.
- **Make half your grains whole** – 6 ounces/day. Aim for at least 3 ounces of whole grains.
- **Go lean with protein** – 5½ ounces/day. Keep meat and poultry portions small and lean. Vary your selections between beans and nuts. Incorporate seafood twice a week.
- **Get your calcium rich foods** – Dairy–3 cups daily. Drink fat-free or low-fat (1%) milk, yogurt and cheeses.
- **Know you allowance for added oils, sugar and sodium.** Cut back on foods high in solid fats, added sugars, and salt. They include cakes, cookies, ice cream, sweetened drinks, pizza, and fatty meats like sausages, bacon, and hot dogs. Use these foods as occasional treats, not everyday foods.
- **Find balance between food and physical activity**

For more information, speak to a Registered Dietitian or go to myplate.gov.

USDA’s Center for Nutrition Policy and Promotion



# Sodium-restricted diets

If you are bothered by swelling of the ankles, it may mean you are holding too much water in your body. In order to relieve this condition, it is often necessary to restrict the amount of sodium you eat. If your health care provider has prescribed a diet low in sodium, this section is for you.

The level of sodium prescribed for you will depend upon your needs. Your diet may range from a mild (4,000 mg) to a moderate (2,000 mg) to a more strict (1,000 mg) sodium diet. Check with your health care provider as to how closely sodium must be restricted in your diet. A dietitian (nutrition specialist) can help you select foods you like, read nutrition labels correctly, and develop a meal plan that will meet your special needs.
It is often recommended to avoid the following foods, as they contain large amounts of sodium:

## Foods high in sodium

Combination salts (garlic, onion, celery seasoning)
Monosodium glutamate
Meat tenderizers
Salt-soaked fish (anchovies, caviar, herring, sardines)
Salted and smoked meats (bacon, ham, sausage, lunch meat, hot dogs, koshered meats, etc.)
Meat extracts
Meat sauces
Sauerkraut
Pickles
Relish
Olives
Potato chips
Corn chips and other salted foods
Pretzels
Salted popcorn
Salted nuts
Bouillon
Canned soups
Dehydrated soups
Salted crackers
Commercial waffles
Ketchup
Mustard
Soy sauce
Steak sauce
Chili sauce or Worcestershire sauce
Barbeque sauce

*Salt substitutes should be avoided unless permitted by your health care provider.*

# What special problems can you encounter with eating?

## Shortness of breath

- Eat small meals (five or six small meals are better than three large meals) to avoid overloading the stomach at any one time.
- Choose soft foods that are easy to chew. For example, well-cooked vegetables, meats, casseroles.
- Rest before and after eating. Avoid prolonged walks, stair climbing, or exercise for about 30 - 60 minutes after meals.
- If your health care provider has prescribed oxygen, be sure to use your oxygen while eating.

## Bloating after meals

- Smaller, more frequent meals (five or six small meals instead of three large meals).
- Eat slowly to avoid swallowing excess air.
- Avoid gas forming foods if they cause you distress (such as beans, cabbage, broccoli, carbonated beverages, etc.).
- Avoid drinking beverages at meal times. Instead, drink beverages 30 to 40 minutes before or after meals.

## Weight loss

- If you find you are not able to eat all your meals or snacks, try adding a high protein liquid supplement to your diet such as Meritene, Sustacal, Ensure, Carnation Instant Breakfast Drink, or a homemade milk shake supplement.

- Try to include several high calorie, high protein foods in your diet such as, low sodium cheese, milk, eggs, ice cream, cottage cheese, low sodium peanut butter, meats or fish, and yogurt.
- Adding dry milk powder to mashed potatoes, casseroles, hot cereal, scrambled eggs, soups, sandwich fillings (such as egg and tuna salad), and homemade breads and desserts may help to increase their calorie and protein content.
- Avoid drinking beverages at meal time since they can fill you up and make you unable to finish eating your meals. Drink beverages between meals or 30 to 40 minutes before or after meals.
- Adding margarine to foods (such as potatoes, vegetables, breads, etc.), as well as gravies added to potatoes or meats may help to further increase calories.

# Keeping in shape

**Caution: Be sure to talk with your health care provider before starting any exercise program.*

Even though you have lung disease, you can still remain active and fit. Regular exercise is a very important part of helping you feel better. There are many benefits to exercise:

- Exercise increases your ability to do activity.
- Exercise decreases the fear associated with being short of breath.
- Exercise improves physical well-being.
- Exercise strengthens muscles (toned muscles use less oxygen).
- Exercise may improve appetite, help you sleep better, and decrease stress.

Three parts of a good exercise program:

*Stretching and toning*

- Warming or stretching the muscles should be done before and after aerobic exercise (warm-up and cool down).
- Stretching helps muscles and joints stay flexible and loose which can help prevent injuries.
- Stretching also improves blood supply to the muscle which helps the muscle take in more oxygen.
- Not warming up and cooling down can lead to sore tendons (tendonitis), inflamed joints (bursitis), and muscle pulls and strains.

*Aerobic exercise*

- Examples: Walking, cycling, dancing, swimming
- Trains the heart muscle and blood vessels
- Helps the lungs take in more oxygen
- Burns calories

*Stretching and toning*

- Muscles tend to get smaller and weaker as we age. Strength training can help build muscle strength and make muscles more efficient.
- Exercise using dumbbells, small barbells, or ankle or wrist weights to help build strength.
- A good plan is to use strengthening exercises every other day, as muscles need to rest between times of strength training.

*The goal is to slowly increase your exercise endurance until you can exercise about three to five times a week for 20-30 minutes.*
Some helpful tips include:

- Make exercise a part of your daily routine.
- Be sure to warm up before exercise and cool down after exercise.
- Keep a diary to track your exercise progress.

# Key points

## When you exercise. . .

- You may be instructed to pre-treat with a metered-dose inhaler (puffer) prior to exercise.
- Clear your lungs of mucus by coughing.
- Practice relaxation and deep breathing for several minutes prior to exercise.
- Be sure to warm up slowly before exercise and to take time to cool down after exercise.
- If you feel tired or short of breath, stop and relax a few minutes; then, continue on with your exercise.
- Pace yourself during exercise.
- On days you don't feel as well, break your exercise into several shorter periods.
- If you are having a problem increasing your exercise endurance, discuss with your health care provider. A pulmonary rehab program may be appropriate.

***Do keep in mind that different weather conditions may influence your exercise ability.***
Use the following tips:

## Warm weather tips

- During the hot summer months, exercise in the morning or later evening when temperatures are cooler.
- During periods of high humidity, exercise in an air-conditioned environment, such as at home or at a mall or gym.
- Shorter periods of exercise twice a day may be better than one long exercise period.
- Drink small amounts of water before, during and after exercise.
- Wear light, loose, cotton clothing.
- Recognize signs of heat stress:
  - Fatigue after exercise
  - Dizziness
  - Nausea
  - Heart palpitations (feeling your heart skipping beats)
  - Cool, pale skin

## Cold weather tips

- Plan to exercise indoors during the cold winter months (for example, at a mall, local gym, school, YMCA, etc).
- If you do exercise outdoors:
  - Layer clothing for extra warmth.
  - Wear a hat or scarf loosely around your head.
  - Cover your mouth or nose with a cold weather mask or loosely applied scarf.
  - Breathe in through your nose to warm the air you breathe in.
  - Remember to take the wind chill factor into account.
  - Plan a shorter walking course.

# Controlling stress

Everyone experiences stress in their daily life. **Stress** is the way we react physically and emotionally to a **stressor**, such as getting a flat tire, having a disagreement with a family member, or even driving in a rainstorm. Not all stress is negative (bad). In fact, some stress is actually positive (good)!

## Examples:

| *Negative stress* | *Positive stress* |
|---|---|
| Financial problems | Throwing a party |
| Death of a loved one | Planning a trip |
| Family conflicts | Having company |
| Car problems | Rooting for your favorite team |

## Dealing with stress

There are many ways to deal with stressors. Some helpful hints include:

***Simplify tasks in your life.***
For example: Avoid traffic jams by leaving for your destination earlier; lessen the frustration of losing things by always putting keys or glasses in the same place.

***Include things you enjoy in your life, even when major changes are occurring.***
For example: If you enjoy plays or concerts, continue these activities after retirement or a move. No matter what is going on in your life, you should always continue enjoying your favorite hobby or activities.

***Take time out for yourself no matter how busy you are.***
For example: Great ways to take time out for yourself include taking short walks, soaking in a hot tub, or doing some relaxation techniques for 15 to 20 minutes. Do something you enjoy every day!

***Seek help when you are feeling overwhelmed.***
For example: This may involve simply asking a family member to help out with chores or errands, or talking about your worries with a close friend. At other times though, it may be necessary to seek help from a professional such as a therapist or counselor, who can help you to learn new ways to cope with stress.

When your body is under stress, either negative or positive, you may get short of breath as breathing becomes faster; your heart rate or blood pressure may increase, muscles may become tight, you may feel "butterflies" or "knots" in your stomach. In turn, these feelings may cause you to become anxious and "panic."

## Strategies to help you relax:

**** Progressive muscle relaxation***

Progressive muscle relaxation is a method that may produce deep overall body muscle relaxation. By using this technique, you tense different muscle groups, then release the tension, and focus on the differences you feel between the tension and the relaxation of those muscles.

Sit comfortably in a chair or lie on your bed and slowly tense (count to five) and then relax the following muscle groups one at a time:

- Feet and calves (flex, then point the toes)
- Buttocks, stomach, back (slightly arch back gently, then relax)
- Shoulders (scrunch up toward ears and then relax)
- Arms (make tight fists with your hands, then relax)
- Neck (press head gently against pillow or back of chair, then relax)
- Face (grit teeth, then frown, then relax)

Be sure to breathe deeply as you do this relaxation technique.

**** Guided imagery***

Guided imagery is a technique in which you "take a vacation in your mind." Sit comfortably in a chair or bed. As you practice your deep breathing slowly begin to clear your mind. Once comfortable and relaxed, imagine a peaceful scene such as the beach, a beautiful flower garden, the cool crisp air of the mountains, or being on a sailboat on a quiet, peaceful lake. Try to imagine using your senses in each picture you create. For example, if imagining that you are at the beach, really feel the warm sand under your feet and the cool breeze of the ocean blowing on your face; listen to the sound of sea gulls overhead and the waves crashing on the shore; imagine smelling the salt from the ocean and tasting a cool glass of lemonade or iced tea on your lips and throat. Allow yourself 10 to 15 minutes to relax and enjoy your "mini vacation."

You can also relax by meditating, yoga, praying, listening to music or relaxation tapes.

### Stress management tips

1. Simplify tasks in your life - avoid traffic jams by leaving earlier, decrease the frustration of finding things like glasses and car keys by putting them in the same place.
2. Do things you enjoy or that are fun every day, even when major life changes are occurring - attend concerts, listen to music, enjoy your favorite hobby.
3. Take time for yourself no matter how busy you are - take a short walk, soak in the tub, do relaxation techniques for 15 to 20 minutes.
4. Seek help when you are feeling overwhelmed - ask a family member for help with chores or errands, talk to a close friend.
5. Lower or eliminate alcohol consumption.
6. Stop all tobacco as soon as possible.
7. Decrease caffeine intake (found in coffee, tea, chocolate, some pain relief medications, and colas).
8. Increase (or start) a regular exercise program (check with your health care provider before beginning any exercise program).
9. Learn not to take everything personally. Many things are not your fault or may not even be your responsibility.
10. Learn to accept what you cannot change.
11. Develop a reasonable schedule of work, rest, and play.
12. Use different strategies for getting more fulfillment out of life. . . “Don’t put all your eggs in one basket.”
13. Participate in social activities and relationships that you enjoy.
14. Eat a healthy, well-balanced diet every day.
15. Treat yourself as you would treat your best friend.
16. If you continue to have difficulty managing stress, discuss with your health care provider. You may need to see a therapist or counselor, who can help you learn new ways to cope with stress.

# Maintaining intimacy

Having COPD does not mean you must give up romance, intimacy, and a satisfying sexual relationship with your partner. Share your thoughts and feelings, honestly communicating your needs and desires to your partner. Consider the following pointers when planning for sexual activity:

- To avoid shortness of breath, choose a time when you are rested and relaxed.
- Select a familiar, pleasurable setting where you will not feel interrupted or rushed.
- Wait one to three hours after a meal to participate in sexual activity.
- Avoid drinking more than one or two drinks before sexual activity.
- Use a quick-acting bronchodilator inhaler (Proventil, Ventolin, Maxair) 15 to 20 minutes before sexual activity.
- If you use oxygen, be sure to use it during sexual activity. Set your oxygen at the same liter flow you would use with exercise.
- If you become short of breath during sexual activity, stop and rest; use your pursed lip and diaphragm breathing. Talk, hold, hug, or caress until you feel relaxed enough to resume sexual activity.
- Remember, there are other ways to express love and desire such as touching, hugging, and kissing.

# A note. . .

## For family, friends, and loved ones

Dealing with an ongoing chronic illness is not only difficult for the person with COPD, but can be taxing for family members, loved ones, or partners as well. The illness of someone you care about has a powerful effect on your life too.
You may have to take on new duties or responsibilities, shift roles, and experience interruptions in normal routines. These changes can add to stress you may already be feeling in dealing with a loved one with chronic illness.
To help you better understand COPD and deal with changes that may occur, try the following:

- Talk openly to your loved one and share feelings, fears, and concerns.
- Talk to your loved one's health team so that you understand COPD, the treatment plan, and your part in all aspects of COPD management.
- Attend classes, seminars, or breathing club meetings to learn all you can about the effect of COPD on people both physically and emotionally. A Pulmonary Rehabilitation Program can offer excellent learning for both you and your loved one with COPD.
- Seek out COPD support groups or caregiver support groups where you can learn a great deal from people with COPD and their spouses and partners, as well as share concerns and issues.
- Be supportive of your loved one, yet allow them to be as active and independent as possible.
- Ask your loved one's health team about other resources available for COPD.
- If the pressures of dealing with COPD become too much for you or your loved one, talk to your health care provider. A referral to a professional counselor may be helpful.

# COPD action plan

## Green zone

- Sleeping well.
- My sputum is clear/white and easily cleared in small amounts.
- I breathe without difficulty.
- I can do usual activities/ exercise without tiring.
- Appetite is good.

### What to do

- Continue taking medications as prescribed.
- Keep all doctor appointments.
- Maintain routine activity.
- Use oxygen as prescribed.
- At all times, avoid cigarette smoke, inhaled irritants.

## Yellow zone

- Just don't feel well-usually **restless/anxious.**
- **My sputum is thicker** than normal or I am producing more sputum.
- I have a change in color of phlegm/mucus.
- I am more **short of breath** with routine activity.
- I wheeze or **cough** more than usual.
- New swelling in feet or ankles.
- I **tire easily** cannot do usual activities without resting.
- I am not thinking clearly.
- **I am using my nebulizer/ rescuhaler more than normal.**
- **Side effects** from medications.
- My medication is not helping.
- **My appetite is not good.**
- I feel like I have a "chest cold".
- **Poor sleep** and my symptoms woke me up.
- **Gain** of 3-4 pounds over 1-2 days or 5 pounds in a week OR a gain of less weight than above AND also have any of the symptoms listed.
- **Bloated** abdomen
- Full feeling in abdomen
- I need to use 2 or more pillows or sleep in a recliner to breathe comfortably.

### What to do

1. Write down (or have someone write for you) what your concerns are and why you feel something is wrong.
   - Be very specific - Write down exactly what your symptoms are, how long you have had them, and how they are different than usual ex: my sputum has changed to color and I'm more short of breath.
   - Any meds that have changed since your last visit.
   - Any sick contacts.
2. Call your Pulmonologist. If you don't have a pulmonologist, call your regular doctor. Tell them:
   - Your name
   - Your doctor's name
   - Your history (ex: I have a history of COPD.)
   - What your symptoms are and how they have changed. (ex: my sputum is now thick and in color.)
   - Anything you wrote down about your concerns.
   - You need an appointment today.
3. If you cannot have an appointment today, insist on talking to the Nurse Practitioner or Doctor.
4. Emphasize that your goal is to stay out of the hospital.

## Red zone

- I have trouble coughing up sputum.
- Severe shortness of breath.
- My sputum contains blood.
- Not able to do any activity because of breathing.
- I am confused.
- Not able to sleep because of breathing.
- Fever or shaking chills.
- It is difficult for me to wake up.
- Chest pain.
- A feeling of impending doom.

### What to do

**Call 911 now!**

# Discrimination is against the law

Geisinger Health Plan, Geisinger Quality Options, Inc., and Geisinger Indemnity Insurance Company (the "Health Plan") comply with applicable federal civil rights laws and do not discriminate on the basis of race, color, national origin, age, disability, sex, gender identity, or sexual orientation. The Health Plan does not exclude people or treat them differently because of race, color, national origin, age, disability, sex, gender identity, or sexual orientation.

The Health Plan:

- Provides free aids and services to people with disabilities to communicate effectively with us, such as:
  - Qualified sign language interpreters
  - Written information in other formats (large print, audio, accessible electronic formats, other formats)
- Provides free language services to people whose primary language is not English, such as:
  - Qualified interpreters
  - Information written in other languages

If you need these services, call the Health Plan at 800-447-4000 or TTY: 711.

If you believe that the Health Plan has failed to provide these services or discriminated in another way on the basis of race, color, national origin, age, disability, sex, gender identity, or sexual orientation, you can file a grievance with:

Civil Rights Grievance Coordinator
Geisinger Health Plan Appeals Department
100 North Academy Avenue, Danville, PA 17822-3220
Phone: 866-577-7733, TTY: 711
Fax: 570-271-7225
GHPCivilRights@thehealthplan.com

You can file a grievance in person or by mail, fax, or email. If you need help filing a grievance, the Civil Rights Grievance Coordinator is available to help you.

You can also file a civil rights complaint with the U.S. Department of Health and Human Services, Office for Civil Rights electronically through the Office for Civil Rights Complaint Portal, available at https://ocrportal.hhs.gov/ocr/portal/lobby.jsf, or by mail or phone at:

U.S. Department of Health and Human Services
200 Independence Avenue SW., Room 509F
HHH Building, Washington, DC 20201
Phone: 800-368-1019, 800-537-7697 (TDD)

Complaint forms are available at http://www.hhs.gov/ocr/office/file/index.html.

ATTENTION: If you speak a language other than English, language assistance services, free of charge, are available to you. Call 800-447-4000 or TTY: 711.

ATENCIÓN: si habla español, tiene a su disposición servicios gratuitos de asistencia lingüística. Llame al 800-447-4000 (TTY: 711).

注意：如果您使用繁體中文，您可以免費獲得語言援助服務。請致電 800-447-4000（TTY：711）。

CHÚ Ý: Nếu bạn nói Tiếng Việt, có các dịch vụ hỗ trợ ngôn ngữ miễn phí dành cho bạn. Gọi số 800-447-4000 (TTY: 711).

ВНИМАНИЕ: Если вы говорите на русском языке, то вам доступны бесплатные услуги перевода. Звоните 800-447-4000 (телетайп: 711).

ACHTUNG: Wenn Sie Deutsch sprechen, stehen Ihnen kostenlos sprachliche Hilfsdienstleistungen zur Verfügung. Rufnummer: 800-447-4000 (TTY: 711).

주의: 한국어를 사용하시는 경우, 언어 지원 서비스를 무료로 이용하실 수 있습니다. 800-447-4000 (TTY: 711) 번으로 전화해 주십시오.

ATTENZIONE: In caso la lingua parlata sia l'italiano, sono disponibili servizi di assistenza linguistica gratuiti. Chiamare il numero 800-447-4000 (TTY: 711).

ملحوظة: إذا كنت تتحدث اذكر اللغة، فإن خدمات المساعدة اللغوية تتوافر لك بالمجان. اتصل برقم 800-447-4000 (رقم هاتف الصم والبكم:711.

ATTENTION : Si vous parlez français, des services d'aide linguistique vous sont proposés gratuitement. Appelez le 800-447-4000 (ATS : 711).

ACHTUNG: Wenn Sie Deutsch sprechen, stehen Ihnen kostenlos sprachliche Hilfsdienstleistungen zur Verfügung. Rufnummer: 800-447-4000 (TTY: 711).

સુચના: જો તમે ગુજરાતી બોલતા હો, તો નિ:શુલ્ક ભાષા સહાય સેવાઓ તમારા માટે ઉપલબ્ધ છે. ફોન કરો 800-447-4000 (TTY: 711).

UWAGA: Jeżeli mówisz po polsku, możesz skorzystać z bezpłatnej pomocy językowej. Zadzwoń pod numer 800-447-4000 (TTY: 711).

ATANSYON: Si w pale Kreyòl Ayisyen, gen sèvis èd pou lang ki disponib gratis pou ou. Rele 800-447-4000 (TTY: 711).

ប្រយ័ត្ន៖ បើសិនជាអ្នកនិយាយ ភាសាខ្មែរ, សេវាជំនួយផ្នែកភាសា ដោយមិនគិតឈ្នួល គឺអាចមានសំរាប់បំរើអ្នក។ ចូរ ទូរស័ព្ទ 800-447-4000 (TTY: 711)។

ATENÇÃO: Se fala português, encontram-se disponíveis serviços linguísticos, grátis. Ligue para 800-447-4000 (TTY: 711).

HPM 50 alb: Nondiscrimination dev. 9.12.16
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Source information: Health information provided by healthcare professionals at Geisinger.