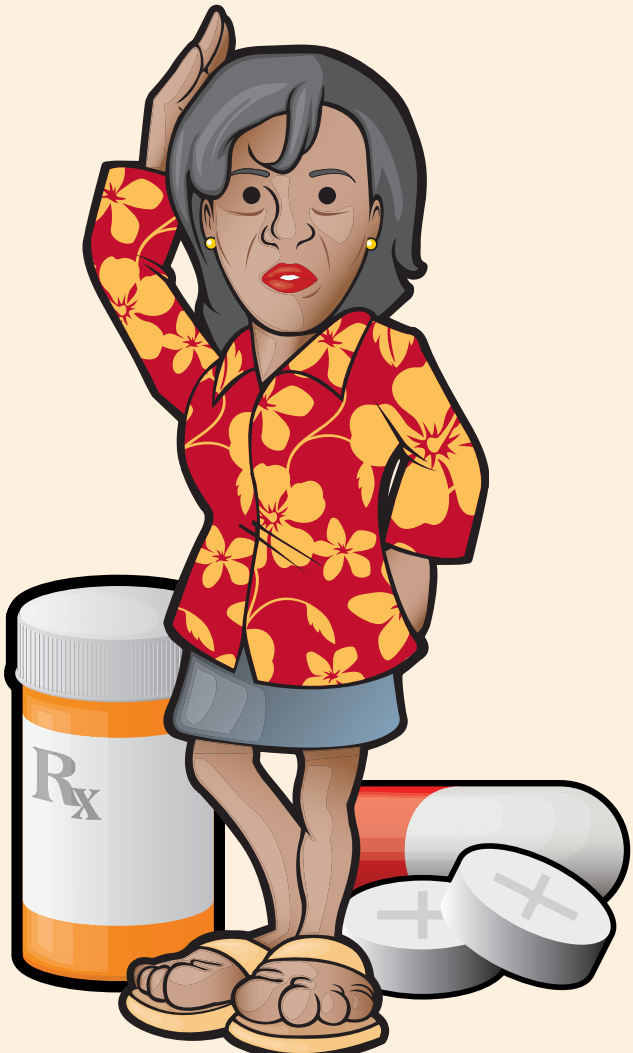
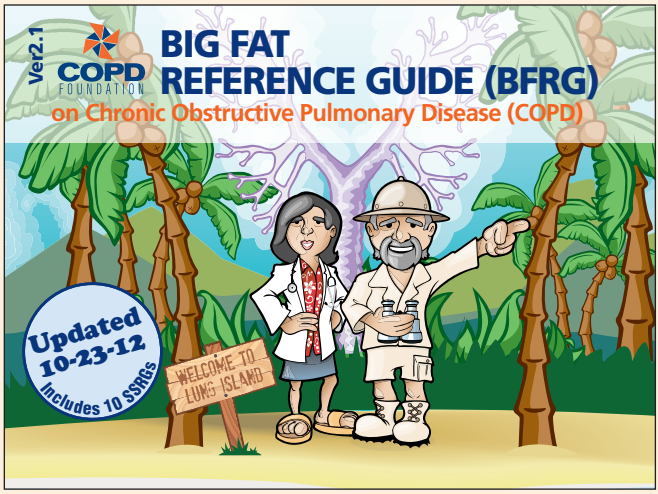
COPD Foundation's
Slim Skinny Reference Guide® (SSRG)

COPD Medicines



COPD FOUNDATION



This "Slim Skinny Reference Guide: COPD Medicines" is part of the COPD Foundation's *Slim Skinny Reference Guide*® series which has been taken from the *COPD Big Fat Reference Guide*®. To access the complete *COPD Big Fat Reference Guide*®, visit www.copdbfrg.org.

The mission of the COPD Foundation is to develop and support programs which improve the quality of life through research, education, early diagnosis, and enhanced therapy for persons whose lives are impacted by Chronic Obstructive Pulmonary Disease (COPD).

COPD Medicines

Chronic Obstructive Pulmonary Disease* – COPD – can almost always be treated. Exercise, medicine and oxygen can all help improve your symptoms. Together, these three things can help you lead as normal a life as possible with your lung disease.

(See the *Slim Skinny Reference Guides: Exercise and Diet for Someone with COPD* and *Oxygen Therapy* for more information on these topics. Or refer to the COPD Foundation's *COPD Big Fat Reference Guide*® at www.copdbfrg.org .)

***COPD** is an umbrella term used to describe the progressive lung diseases including: emphysema (em-fa-see-ma), chronic bronchitis (kron-ick-brawn-kie-tis), refractory (re-frac-ta-ree) asthma (az-ma) and some forms of bronchiectasis (brawn-key-eck-tay-sis). If you have COPD you have trouble moving air in and out of your lungs because of damage to the airways and/or the air sacs.*

What Do COPD Medicines Do?

The many medicines prescribed for lung disease work in many ways. These medicines:

- **Reduce the narrowing of the tubes in the lungs.** Air flows through the **bronchial** *(brawn-key-el)* tubes. When the narrowing of the tubes is improved, breathing is easier.
- **Relieve air trapped in the lungs.** Air becomes trapped in the lungs when the lungs are damaged by **emphysema** *(em-fa-see-ma)*. With emphysema (one type of COPD) the lungs' air sacs are damaged. The lungs lose their springiness. Air is trapped and this causes a feeling of shortness of breath.
- **Reduce swelling and irritation in the lungs.** With **chronic bronchitis** *(kron-ick) (brawn-kie-tis),* another type of COPD, the airways of the lungs are often inflamed or irritated.
- **Reduce the amount of mucus created in the lungs.** Coughing is a common symptom of COPD. Coughing causes the lungs' passages or tubes to be irritated. Irritated passages produce mucus.
- **Help with removing mucus from the lungs.** Mucus that is not removed can block the airways. And infections can occur, making your lung disease symptoms much worse.
- **Fight infections.** Lungs damaged by COPD are more likely to become infected. Infections make COPD symptoms much worse.
- **Prevent or treat exacerbations** *(x-saa-sir-bay-shuns)*. These are times when your COPD symptoms become much worse.

- Improve how your lungs work or function.
- Make your life better by making you feel better.

Your doctor may prescribe medicines for you that must be taken every day. These are called "maintenance medicines." They are very important for helping you control your symptoms. Or you may have medicines that are taken "only when needed." This is called "PRN." Most people with COPD must take medicines every day. These medicines can make you feel better and able to do more.

Types of Medicines for COPD

Medicines prescribed for COPD are listed here. These medicines are grouped by how they work. These groups are called "drug classifications." The side effects that may be caused by each group of drugs are also provided here. Common side effects are listed, but this does not mean that you will have all or even any of these side effects. The most common side effects are listed so that you will recognize them should they occur.

Beta-agonists

Beta-agonists drugs are used to relax the muscles around the lungs' airways. These muscles become tightened and the airways more narrow when the lungs become irritated. These drugs are a type of **bronchodilator** *(brawn-coe-die-lay-ter)* because they help open up the lungs' airways. Beta-agonists are made with **adrenaline** *(ah-dren-ah lin)*. This is a natural hormone. It causes a burst of energy when you are scared, startled or excited. Breathing in a beta-agonist drug with an inhaler is best. This method reduces side effects occurring in the rest of your body.

A Note About Side Effects

All drugs – both those prescribed and over the counter – can have side effects.

Some side effects, such as a dry mouth, are easily handled. Others such as unusual heart beats, may mean your medicine must be changed or stopped.

No list of side effects can list all the problems.

Always discuss any strange symptoms or side effects with your doctor.

Beta-agonists Side Effects

Mild side effects	Shaking, trembling, anxiety, headaches, nervousness, trouble sleeping, dizziness, increased heart rate
More serious side effects	Asthma attacks, chest pain, serious heart rhythm problems
Most severe side effects	Changes in electrical activity of heart, low potassium, seizures

There are many different types of beta-agonist drugs. They may last from 3 hours to more than 12 hours. *Fast-acting beta-agonists* are used as "rescue" medicines. They provide very fast relief of symptoms. They start to work within 5 minutes. These rescue drugs may be needed after exercise. Or they may be needed if you are around toxins that irritate your lung disease. These toxins may include smoke, dust, pollution or fumes from cleaning products.

Long-acting beta-agonists can last for 12 hours or more. The FDA approved one that lasts for 24 hours in July of 2011. They are not used as rescue drugs. These long-acting drugs are used on a routine basis to keep the airways open.

Anticholinergics

Anticholinergic *(an-tee cole-i-ner-jic)* drugs also relax the muscles around the airways, but these drugs do this in a different way. These drugs block signals from the nerves that tell the airway muscles to tighten. When these drugs are used with beta-agonists, an "additive effect" occurs. This means that when you take these two types of drugs together, you get a more powerful result.

Side Effects of Anticholinergics

- *Dryness of the mouth*
- *Cough, nervousness*
- *Headache*
- *Difficulty with urination (usually only seen in older men)*
- *Dilation of pupils in the eyes (not usually a problem when these drugs are inhaled)*
- *Possible heart and stroke problems (however, a large study has found this is not true)*

Glucocorticosteroids *(glue-coe-kort-te-coe-stair-royd)*

Steroids are another type of drug that can help people with COPD. The type of steroid that helps COPD is called a **glucocorticosteroid**. (These types of steroids are not the type of steroids that athletes use to get bigger muscles.)

These types of drugs may be given:

- With an inhaler (a device that helps you breathe in medicine)
- With a nebulizer (a device that delivers medicines in a fine spray or mist)
- By mouth as a pill or capsule
- By shot into muscle
- Through an I.V.

Inhaled steroids are used to reduce airway irritation or inflammation. Inhaled steroids are the safest type of glucocorticosteroids. When steroids are inhaled, the side effects are less serious. One side effect of inhaled steroids is an infection of the mouth called "thrush." Thrush causes a very bad sore throat, extreme redness of the tongue and white patches in the mouth.

CAUTION Must Be Taken When Stopping Systemic Steroids.

Steroids occur naturally in our bodies. They are produced by the adrenal glands in the kidneys. When you take "systemic" steroids (orally, by shot or by IV) for long periods of time, your kidneys stop making steroids.

When it is time for you to stop taking these systemic steroids, the dose must be gradually reduced. *This will tell your adrenal glands to start making steroids again.*

If you stopped these steroids suddenly, your kidneys would not have time to produce your own steroids. So, your body would be without steroids. The lack of enough steroids can cause death.

By slowly reducing your steroid dose, your adrenal glands will know to start making steroids again.

You may need steroids in the future. If so, tell you doctor if you stopped taking steroids within the last year.

Systemic steroids enter your blood and travel through your entire body. They may be taken by mouth in pill form, through an I.V. or by shot. These steroids can be very helpful during times when your symptoms are suddenly worse. Such times are called exacerbations. This is really the only time systemic steroids are given to COPD patients. Your doctor may put you on these drugs for 10 to 14 days. If you are only on them for 10 to 14 days, your doctor may have you continue the full dose until the end of the treatment course.

Steroid side effects usually occur when they have been used for long periods of time at high doses.

Side Effects of Steroids

Effect to Hormones	changes in menstrual cycle, weight gain, fullness of face, moodiness, depression
Effects to Fluids and Electrolytes	salt and water retention, high blood pressure, loss of potassium
Effects to Eyes	increased eye pressure, clouding of vision, blurred vision
Effects to Skin	more body hair, acne, easy bruising, thinning of skin, wounds don't heal well
Effects to Nutrition	increased appetite, stomach and throat irritation, ulcer symptoms
Effects to Muscles	muscle weakness or cramps
Effects to Bones	joint pain, thinning of bones, bone breaks, loss of blood to bones causing pain.
Effects to Immune System	suppression of the immune system causing more risks of infections

NOTE: For more information about steroids' side effects and how you can reduce these problems, see the COPD Foundation's COPD Big Fat Reference Guide®, *Chapter 3-B.* The Big Fat Reference Guide® *can be accessed at www.copdbfrg.org.*

If you are taking these systemic steroids for longer periods of time, the drugs will need to be tapered off rather than stopped abruptly (see the caution box). When taking systemic steroids you should always make sure you understand completely how to use them and when to stop. Discuss this with your doctor.

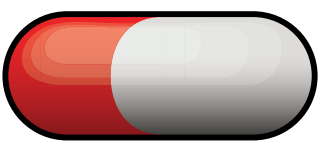
Theophylline *(thee-oh-fi-leen) and* ***Aminophylline*** *(a-meen-no-fi-leen)*

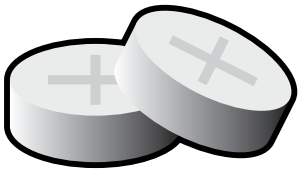
These drugs have been prescribed for breathing problems for over 100 years. They are closely related to caffeine. They are not prescribed as often anymore because of their possible severe side effects. Side effects include: nausea, vomiting, shakiness and sleeplessness. Severe side effects may include seizure and death.

Phosphodiesterase - 4 (PDE4) inhibitors *(fos-foe-die-es-ter-ase in-hib-it-tors)*

This is the latest class of COPD medications for adults with severe COPD to decrease their number of flare-ups or the worsening of COPD symptoms (exacerbations). The FDA approved of the first one, in March of 2011. Roflumilast should not be used to treat sudden breathing problems (acute bronchospam). PDE4 inhibitors may cause serious side effects including mental health problems and weight loss. Other common side effects include diarrhea, weight loss, nausea, headache, back pain, flu-like symptoms, insomnia, dizziness and decreased appetite.

Phosphodiesterase-4 inhibitors are prescribed to reduce the risk of future COPD exacerbations in patients with severe COPD associated with chronic bronchitis and a history of exacerbations. PDE4 inhibitors are taken as a once daily oral tablet.





Anti-leukotrienes

Leukotrienes *(lew-coe-try-eens)* are chemicals produced by the body. These chemicals cause airways to tighten. Anti-leukotrienes block the effect of these chemicals. They help open airways. These drugs are usually given to people with asthma. They have not been shown to help with usual COPD care. But these drugs do help people who have a mixture of both COPD and asthma. These drugs may also help people with COPD when they have seasonal colds and sinus problems. These drugs can affect the liver. Blood tests to check the liver must be done often.

Mucolytics

People with COPD can have breathing problems when too much mucus is made in their lungs. It can be difficult to cough up the mucus. COPD patients with bronchitis *(brawn-kie-tis)* or bronchiectasis *(brawn-key-eck-tay-sis)* have this problem. **Mucolytics** *(mew-coe-lie-ticks)* help thin out the mucus. This makes it easier to cough up. However, mucolytics may not help all people who take them. Side effects: These drugs can cause the muscles around the bronchial tubes to tighten. This is called a bronchospasm *(brawn-coe-spaz-em)*. To avoid these, a fast-acting bronchodilator is often used before or with the mucolytic.

CAUTION: Allergies to antibiotics are common.

A rash or hives can occur.

Some allergic reactions can be life-threatening.

If you are allergic to one antibiotic, you could be allergic to others.

Always tell your doctor about any medicine allergies you have.

Expectorants vs. Cough Suppressants

These medicines can be bought without a prescription. However, deciding which kind to buy can be confusing. Knowing the difference between these two medicines will help you know which one to buy.

Expectorants *(x-peck-tore-ants)* thin out mucus that blocks air tubes. Thinning the mucus can help you cough or "expectorate" it up. Coughing helps clear the airways. This is helpful for cases of **pneumonia** *(new-moan-yah)* or during COPD exacerbations.

Cough Suppressants *(su-press-ants)* lessen the urge to cough. They should not be used if your cough sounds wet and is producing mucus. If your cough is dry without mucus, a suppressant can be helpful. It can reduce coughing. This will provide comfort and allow you to sleep.

Antibiotics

Antibiotics *(an-tee-bye-ah-ticks)* are often used for COPD patients during an exacerbation. Exacerbations can be caused by bacterial infections. Your doctor may ask you to cough up a sample of your mucus. This is called a "sputum specimen." A test will be done on the sample. The types of bacteria in your mucus will be identified. This will help your doctor know which antibiotic will help you the most.

There is concern that overusing antibiotics can create bacteria that will not respond to common drugs. These are called "drug-resistant bacteria." Not all exacerbations are caused by bacterial infections. You and your doctor will need to decide together when to use an antibiotic.

Treatment for Alpha-1-Antitrypsin Deficiency COPD

Some patients have COPD because they also have a disorder called Alpha-1-Antitrypsin Deficiency *(al-fa-one-an-tee-trip-sin dee-fi-chin-see)* (Alpha-1). Alpha-1 patients do not have enough of the blood protein called Alpha-1-Antitrypsin (AAT). These patients can receive a treatment that can be life saving. It is called **augmentation** *(awg-men-tae-shun)* **therapy**. Augmentation therapy uses AAT from healthy donors. This AAT is given to Alpha-1 patients through an I.V. It is an ongoing, life-long treatment. (For more information about Alpha-1, visit the Alpha-1 Foundation's website at www.alpha-1foundation.org or AlphaNet at www.alphanet.org.)

To Avoid Side Effects:

When using an inhaler, always wash out your mouth after the drug has been inhaled.

Most side effects from inhalers happen when drugs are sprayed into the mouth and left there.

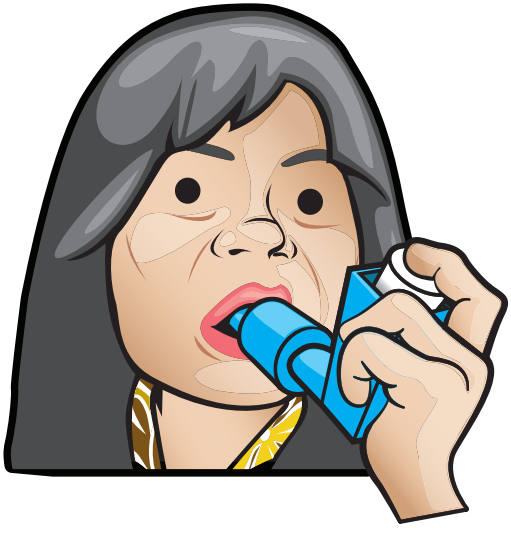
Using Inhalers

Some medicines for COPD must be used with an inhaler. There are two types of inhalers: *metered dose inhalers* (MDIs) and *dry powder inhalers* (DPIs). MDIs deliver a fixed dose with each use. DPIs are similar; the drug is just in powder form.

An MDI consists of a canister of medicine and a mouthpiece. Pressing the MDI releases a mist of medicine. How well you use the inhaler affects how much of the drug reaches your lungs. When inhaled correctly, the drug has a better chance to reach your airways.

Steps to using an MDI (without a spacer):

1) Remove the cap.
2) Hold inhaler with mouthpiece down.
3) Shake it.
4) Hold the mouthpiece 2-3 finger widths in front of your mouth.
5) Gently breathe out.
6) Tilt your head back slightly and open your mouth wide.
7) Press the inhaler while starting a slow, deep breath.
8) Continue to breathe in slowly and deeply for 5 seconds.
9) Hold your breath for up to 10 seconds.
10) Repeat steps 3-9 when more than one puff is prescribed.



Dry Powder Inhaler (DPIs)

A dry powder inhaler (DPI) is similar to an MDI, but the drug used is in powder form. A dry powder inhaler can sometimes be easier to use because it works *with* your breathing. You do not have to time your breathing with using the DPI. You simply breathe in quickly to start the medicine flowing into your lungs.

There are some problems that can occur with DPIs: if you breathe out near the DPI, the powder can be blown out. And much of the powder can end up in your mouth. This can cause side effects. Finally, for some people, breathing in powder irritates their lungs.

A Spacer Can Help With Inhalers

A spacer is a device used with your inhaler that can:

- *Help a fine mist of medicine go deeper in your lungs.*
- *Allow larger particles to be trapped in the spacer instead of your mouth.*
- *Allow you to not worry about timing your breathing with use of the inhaler.*

Using Nebulizers

A nebulizer is a device that delivers drugs in a fine spray or mist to your lungs. The drug is delivered through a mouthpiece or face mask. It is often used with beta-agonists, anticholinergics or steroids.

Sometimes nebulizers are used instead of inhalers because:

- Some drugs only come in a liquid form
- A higher dose of medicine can be given
- The medicine is given constantly for 10 to 15 minutes. This can provide relief during a bad breathing attack
- The drugs used with nebulizers are cheaper
- Some people find that using inhalers is not easy

There are some problems with nebulizers. These are:

- The side effects of anxiety and rapid heartbeat are more likely
- Too much of the drug can be given
- Using a nebulizer takes more time
- The nebulizer must be carefully cleaned each time
- The nebulizer is not easy to take when traveling

NOTES

Questions? Ask you PMD clinical staff.

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