COPD FOUNDATION Educational Materials

Treatment and Medications for COPD

COPD can be treated. Some treatments can decrease breathlessness, increase your ability to do activities while others may reduce your risk of exacerbations (x-saa-cer-bay-shun) (flare-ups). These treatments can make it easier for you to breathe, feel better, do more and stay out of the emergency department and hospital. Current treatments for COPD cannot repair the damage to your lungs.

COPD treatments include both medicines and other important therapies such as pulmonary rehabilitation, smoking/vaping cessation support and immunizations.

If you were asked about COPD medicines you would probably think about your inhalers and you'd probably say, "they open up my lungs". Yes, that's true, but what's important to know – and really understand – about COPD medicines is that there are different types of medicines that open your airways in different ways. Other medicines are used to decrease the inflammation in your lungs and may help prevent exacerbations sometimes thought of as "lung attacks".

Medicines only work if you take them as you and your doctor or other clinician agree; that usually means at least once a day. You also need to know how to use your inhalers and nebulizers correctly so that the medicines get into your lungs. COPD medicines work in different ways and different inhalers and nebulizers are also used in different ways. Make sure to ask your health care team to show you how to use the medicines and then watch you use them. You can also watch videos on the COPDF patient app **The COPD Pocket Consultant Guide** that is free and can be downloaded from Apple's **App Store** and **Google Play**.

Using medicines from different groups may help:

- Relax the muscles around the lungs' breathing tubes
- Reduce swelling in the breathing tubes
- Reduce mucus production

All of which makes breathing easier.

Pulmonary rehabilitation (pull mon aire ree reha bill ii tay shun) is also a very important treatment for COPD that includes showing you exercises and activities right for you, learning about your COPD and breathing techniques as well as the correct way to use your inhalers or nebulizers. It is one of the most effective treatments we have but is not often recommended or available. Ask about it.

COPD Medicines

Maintenance/Controller and Rescue/Quick-Relief Medicines

There are two basic ways that medicines open up the airways in your lungs: They act as **Maintenance** (controllers or preventers) or **Relievers** (rescue or quick relief). Here we'll refer to them as either controllers or rescue relievers. An easy way to understand how these medicines work is to look at this in the same way we look at fire.

Maintenance (Controllers-Prevention): As a responsible person, you do your best to prevent fires by maintaining your home, keeping the electrical wires operating safely, turning off the stove when you're not using it and putting hot matches in a fireproof container or in water. All these things prevent a fire from starting. If you are not careful,

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what might happen? A fire could start, and even if it starts slow and small, it could quickly become a raging inferno. As we all know, it makes a lot more sense to prevent a fire than allow one to start! This is what you do with your **Maintenance medicines** - try to prevent symptoms and flare ups.

Rescue Relievers: If and when a fire does start, however, you have (or should have) a fire extinguisher handy. We also have the 911-system to call for help. While prevention is always best, everyone needs quick relief sometimes---that is what you do with your **Rescue or Quick Relief** medicines. You use the quick relief or rescue medicines in addition to (not to replace) your prevention or Maintenance medicines.

To summarize - think of the medicines for your lungs as prevention and quick relief or rescue. Use your maintenance or controller medicines daily to prevent airway swelling, and having airways get narrow or spasms and getting tight. But sometimes, in spite or good prevention you have days with increased airway tightness and increased shortness of breath, that's the time to reach for your rescue or quick reliever medicine!

Keep track of how long your inhalers last and refill your prescriptions with time to spare so you don't run out. Remember to learn the best techniques for your specific type of inhaler and ask a member of your health care team to watch you use each type of inhaler, so you get the most benefit from your inhaled medicines.

Also talk to your doctor or clinician about when and where to call them if you are having increased symptoms or using your rescue inhaler for increased symptoms. This may help get an early start on treating flare ups and preventing more shortness of breath or being in the hospital.

Maintenance or Controllers

Daily maintenance or controller therapy is best done using a long acting medicine that opens up the airways called a long acting bronchodilator (brawn-coe-die-lay-ters). There are two types or "classes" of the long acting bronchodilators and they work in different ways on the lungs. So, you may start with either type alone or with an inhaler that combines the two. Currently there are nebulizer medicines for each of the two types of bronchodilators separately but none that give you both types together like in the combination inhalers. Below we talk about each of the types of maintenance or controller medicines.

Inhaled or nebulized medicines

Long-acting Anticholinergic (an-tee-coe-luh-nur jick) Bronchodilators also called Long-acting Anti-Muscarinic (an tee mus car in ic) Bronchodilators (Maintenance or Controller)

Inside our bodies, there is a constant stream of messages being sent to keep us safe and well. This is the job of the parasympathetic nervous system. If you touch something hot, a message is sent through your nerves to pull your hand away. How does this work in the lungs? In our lungs, messages are sent to squeeze down the airways in response to things like "bad air" like smoke or cold or other pollution or in response to things that might cause an infection or irritation to the lung. You can think of this as trying to prevent unhealthy things from coming into the lungs. This squeezing down of the airways also called bronchoconstriction (brawn-co-con-stric-shun), causes feelings of chest tightness and shortness of breath. Anticholinergic medicines block these messages from being produced or getting through to the airways and helping keep your airways open. Yes, this is pretty amazing!

The long-acting anticholinergic are also called long acting anti-muscarinic or LAMA drugs. Newer information suggests that for some people, the LAMAs may also help prevent flare ups or exacerbations. Different brands of LAMAs can last for 12 or up to 24 hours and so are usually taken once or twice a day by inhaler or nebulizer.

Currently approved LAMAs include these commercial brand names for umeclidinium bromide, tiotropium bromide, aclidinium bromide, and glycopyrrolate:

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- Incruse Ellipta®(I)
- Spiriva Handihaler®(I)
- Tudorza Pressair®(I)
- Lonhala Magnair®(N)

(An "I" after the name means it is an inhaler and an "N" means it is a nebulizer solution)

Long-acting Beta-agonist (bay-ta aa-go-nists) Bronchodilators (Maintenance or Controller)

These medicines also work to relax the muscles in your airways and keep them from squeezing. While the final result is similar to what happens with the Long-acting Anticholinergic medicines, these long acting medicines work on different places in the airways. The also help when your breath in things that irritate your lungs including smoke, pollution, cold air, or even things that cause infections. Like the LAMAs, the long-acting beta agonists (also called LABAs) can last for 12 to 24 hours and so need to be taken only once or twice a day. So, if you take it every day as prescribed you should have around the clock coverage for preventing those muscles from acting up and squeezing your airways.

Currently approved LABAs include the following commercial brand names for arformoterol tartrate, formoterol fumarate, salmeterol, and olodaterol.

- Brovana®(N)
- Perforomist®(N)
- Serevent®(I)
- Striverdi Respimat®(I)

(An "I" after the name means it is an inhaler and an "N" means it is a nebulizer solution)

Combination Long-acting Bronchodilators (Maintenance or Controller)

For some people, one type of long acting bronchodilator is not enough. We now have inhalers that combine both a LAMA and a LABA in one inhaler. This has the advantage of working on both ways to prevent airway narrowing and symptoms. There are now several different combination medicines that last for 12 to 24 hours and can be used with one inhaler once or twice a day.

For some people, the LAMA plus LABA combination medicines can help prevent exacerbations. This combination is often tried before adding corticosteroid inhalers for people who have not had to go to the hospital for an exacerbation or flare up. But when the combination is not enough, we move on to add other medicines to help prevent exacerbations.

Currently approved combination LAMA+ LABA include the following commercial brand names:

- Anoro Ellipta®(I)
- Bevespi Aerosphere®(I)
- Stiolto Respimat®(I)

(An "I" after the name means it is an inhaler and an "N" means it is a nebulizer solution)

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Corticosteroids (kort-te-coe-stair-royds) (Maintenance or Controller add on):

Corticosteroids work to reduce inflammation (swelling) on the inside of your airways. They are currently used only to help prevent exacerbations or flare ups, mainly in people who have multiple (more than 1 each year) or severe (going to the hospital) flare ups. They are not used alone in people with COPD and are not needed for everyone with COPD. If prescribed, they need to be taken every day in order for them to give you protection against flare-ups, commonly referred to as an exacerbation (x-saa-cer-bay-shun) of COPD. For most people, the inhaled corticosteroids (called ICS) can be used in an inhaler with other COPD medicines such as LABAs or LAMAs or both. However, some people may still use an inhaler with just the ICS.

Currently approved ICS only medicines include the following commercial brand names for ciclesonide, fluticasone furoate, mometasone furoate, fluticasone furoate, budesonide and beclomethasone dipropionate.

- Alvesco®(I)*
- Arunity Ellipta®(I)*
- Asmanex®(I)*
- Flovent®(I)*
- Pulmicort®(I)*
- Qvar Redihaler®(I)*

Generic ICS include:

- Budesonide (N)
- Beclomethasone dipropionate (N)
- Flunisolide (N)
- Fluticasone propionate (N)

(An "I" after the name means it is an inhaler and an "N" means it is a nebulizer solution)

Daily or every other day oral corticosteroids (pills) are not used for most people with COPD but are important for treating exacerbations and usually used for a short period of time such as 3 to 14 days.

Combination Corticosteroids and Long-acting Beta-agonists (Maintenance or Controller)

For people who have frequent exacerbations or flare ups (2 or more a year or one hospitalization for an exacerbation) that cannot be controlled with LAMA+LABA therapy, the addition of inhaled corticosteroid may help. Sometimes the choice is made to use only one bronchodilator with the ICS. When that choice is LABA+ICS there are medicines available. Many of these medicines have been available for many years and so it is important to review them with your healthcare team to make sure they are still the best choice for you. Most of the medicines are only needed once or twice a day since they can last from 12 to 24 hours.

Currently approved ICS + LABA medicines include the following commercial brand names: all are inhalers (I) as there are no combinations of ICS/LABA currently available as nebulizer solutions.

- Advair®(I)*
- Advair Discus®(I)
- AirDuo RespiClick®(I)*

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- Breo Ellipta®(I)
- Dulera®(I)*
- Symbicort®(I)

Combination Corticosteroids with Long-acting Anticholinergic Bronchodilators (also called Long-acting Anti-Muscarinic Bronchodilators)

Currently there are no approved combination medicines that have ICS + LAMA in one inhaler or in one solution for nebulizing.

Combination Corticosteroid, Long-Acting Anticholinergic Bronchodilators, plus Long-Acting Beta-Agonist (ICS/LAMA/LABA)

For people with frequent exacerbations or flare ups (2 or more a year or one requiring hospitalization) adding a corticosteroid (ICS) to the combination of LAMA +LABA can be helpful. This medicine combines three long-acting medicines and is sometimes called "triple therapy". It reduces inflammation, blocks messages telling the bronchial airways to close, and keeps the muscles around the airways from squeezing for 24 hours.

Currently approved ICS + LABA + LAMA inhalers (I) in the US include the following*:

- Trelegy Ellipta®(I)

*In other countries there are other approved ICS/LABA/LAMA combinations

There are no ICS/LABA/LAMA combinations currently available as nebulizer solutions.

Pills

Phosphodiesterase-4 (fahs foe di aa stir ace) Inhibitor (PDE-4 Inhibitor, Controller)

This is a new class of controller medicine that helps control airway inflammation. It has been proven to decrease COPD exacerbations (flare-ups) for patients with severe or very severe COPD, a high-risk for flare-ups and chronic bronchitis. This medicine is an oral tablet lasting 24 hours. Currently there is only one approved in the US; the brand name for roflumilast is.

- Daliresp®(O)

The (O) means pills are oral or taken by mouth.

Oral corticosteroids

These medicines work to reduce inflammation but unlike ICS which as inhaled medicines go mainly into the lungs, their doses are higher because they are taken by mouth and go throughout the body. Regular daily or every other day oral corticosteroids are recommended for some people with COPD. They are used mainly to treat exacerbations or flare ups and usually prescribed for a few days up to two weeks. There are many brand names of oral corticosteroid pills but some of the most common commercial brand names in the US include the following:

- Prednisone (O)
- Medrol Dose Pack (O)

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- Celestone (O)
- Orapred (O)
- DexPak 6 Day, 10 Day or 13 Day (O)
- The (O) means they are oral or taken by mouth.

Rescue or Quick Relief Inhalers

Short (fast)-acting Beta-agonist Bronchodilators (Rescue Reliever)

These medicines work to relax the muscles in your airways from squeezing. They go to work as soon as you take them, and you can feel relief within minutes. This is good, but they last for only about 4-6 hours – the exception is Xopenex - which works for 6-8 hours.

Remember, our goal is to keep your airways open without giving them the chance to flare-up. Use these medicines if you feel short of breath, but only as needed.

Short-Acting Anticholinergic Bronchodilators (SAMAs)

Your lungs try to protect themselves from hazards, so messages are sent to the airways to close up in order to prevent bad air from getting in. Anticholinergic medicines block these messages. This keeps your airways open before they even start to squeeze shut.

The SAMA Ipratropium bromide is available as inhaler (I) or nebulized (N) named:

- Atrovent®(I)
- Ipratropium Bromide®(N)

Short (fast)-Acting Beta-Agonist Bronchodilators (SABAs)

These medicines relax the muscles in your airways to keep them from squeezing and making it hard to get in and out. They go to work within the first few minutes after you take them but last for only 4-6 hours. The exception is Xopenex, which may last for 6-8 hours.

There are several SABAs available including:

- Albuterol(I,N)
- ProAir®(I)
- Proventil®(I)
- Ventolin®(I)
- Xopenex®(I) or (N)

(An "I" after the name means it is an inhaler and an "N" means it is a nebulizer solution.)

Short-Acting Anticholinergic plus Short-Acting Beta-Agonist Bronchodilators (SAMA/SABA)

These medicines combine the actions of the two different types of bronchodilators into one inhaler or nebulizer

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solution. Some people the two together to be more effective than using only one type of quick reliever alone. If you don't think your quick reliever is working well for you, ask your healthcare team to watch your inhaler technique and ask them about these combinations.

- Ipratropium Bromide/Albuterol(N)
- Duo-Neb(N)
- Combivent Respimat®(I)

(An "I" after the name means it is an inhaler and an "N" means it is a nebulizer solution)

Getting the medicines to your lungs by Nebulizers and Inhalers.

There are two main ways to get inhaled medicines into the lungs: nebulizers and inhalers sometimes called puffers.

Nebulizers (neh bew lie zer)

A nebulizer is a device that changes liquid medicine into a fine mist that can be inhaled into the lungs. This mist can be breathed in through a mouthpiece or face mask. There are different types of nebulizers: jet, vibrating mesh and ultrasonic nebulizers. Sometimes the vibrating mesh and ultrasonic types are lumped together under "electronic" nebulizers.

COPD Foundation Respiratory Therapists educational videos may help you use and clean your nebulizer.

These videos are also available on the patien track in The COPD Foundation's **Pocket Consultant Guide mobile app**.

A published review of different types of nebulizers is also available in: Tashkin, Donald P. "A review of nebulized drug delivery in COPD." International journal of chronic obstructive pulmonary disease vol. 11 2585-2596. 18 Oct. 2016, doi: **10.2147/COPD.S114034**

Jet nebulizers also called atomizer jet

The jet nebulizer is the most common. In jet nebulizers, pressurized gas from a small air compressor (in the hospital therapists may use an oxygen system) is forced through a narrow opening, combining it with the liquid medicine to create a mist or aerosol. The mist is then breathed in from a mask or mouth piece.

Electronic nebulizers:

Ultrasonic

Electric current is used to make high frequency vibrations in the medicine liquid forming a mist (aerosol) that is then breathed in through a mask or mouthpiece.

Vibrating mesh

A fine mist or aerosol is formed by forcing the medicine liquid through a fine mesh that is vibrating up and down at a high frequency of rate of speed. The mist (aerosol) is then breathed in through a mask or mouthpiece.

Inhalers

There are several types of inhalers sometimes also called puffers: pressurized metered-dose inhalers (pMDIs or just MDIs), different types of dry-powder inhalers (DPIs) and soft mist inhalers (SMIs).

A useful chart of inhaler types can be found **here** (for the US) and detailed information can be found in the UK National Health Institute Trust **article** by K. Lee and K. Ibrahim, Benefits of a comprehensive COPD inhaler identification aid, in

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Prescribing in Practice February 2019.

COPD Foundation Respiratory Therapists educational videos may help you use your inhalers.

Metered-Dose Inhaler (MDI) or Pressurized Metered-Dose (pMDI)

A pMDI or MDI releases medicine in the form of a fine mist that can be inhaled into the lungs. You have to pull or inhale the mist of medicine into your lungs. Each spray of mist has a precisely measured dose of medicine. This requires some coordination since you need to take in a deep breath and empty your lungs as much as you can then put the inhaler up to your mouth, closing the lips around the mouth piece, then push the button on top of the MDI canister or puffer and take in a slow deep breath. When you have finished breathing in you should hold that deep breath for at least 5 seconds before breathing out. If your directions say take two puffs each time, then you should wait about 30 to 60 seconds and repeat the process. For most MDIs it is important to shake them for 3 seconds or so before using the medicine for the first puff. If it has been several days since you used the puffer or MDI, it is also a good idea to do a couple of sprays into the air to clear it all out before you use the medicine. This should really only apply to the quick reliever medicine since you should be using the maintenance medicine daily. This priming should only be necessary when you start a new maintenance canister.

MDIs can be used with a spacer which is a chamber that attaches to the MDI or canister mouthpiece. You still shake the canister, then attach to the spacer and push the button to get the medicine into the spacer. Then you take a deep breath, empty your lungs, put the spacer into your mouth and inhale deeply to completely fill your lungs and again hold that deep breath for 5 to 10 seconds. Spacers can help people who have trouble with coordinating pushing the button and breathing in. They also are very useful if you MDI includes an ICS (inhaled corticosteroid) since the spacer can help prevent the thrush or yeast infections that can occur in the mouth and throat with ICS use. (For details and videos on different types of MDIs visit the **COPD Foundation Respiratory Therapists educational videos)**

Soft Mist Inhalers (SMI)

A soft mist inhaler is a handheld device that turns liquid into a precise dose in a soft mist. The soft mist comes out more slowly and in a bigger spray or cloud of medicine than the MDI. A spacer or holding chamber is not used with a soft mist inhaler. You use the SMI by holding the inhaler upright with the cap closed, turn the base in direction of arrows on label until it clicks (half a turn), open the cap until it snaps fully open, breathe out gently (away from inhaler), put mouthpiece in mouth and close lips to form a good seal but do not cover air vents, start to breathe in slowly and deeply through mouth and, at the same time, press down on the dose button. Continue to breathe in slowly and deeply and then hold your breath for 5 seconds or as long as comfortable. While holding breath, remove inhaler from mouth, breathe out gently (away from inhaler) and close cover to click shut. Two inhalations may be prescribed and if so, repeat from step 1 to get the full dose.

The device requires being put together when you get it from the pharmacy. You can ask the pharmacist to put it together for you since some people have trouble doing this. If you get your medicine by mail, make sure to read the instructions on how to get the inhaler ready to use. You can see a demonstration how to put it together in this **COPD Foundation patient video**.

Dry-Powder Inhaler (DPI)

DPI's also contain a precise dose of medicine either in the capsule or pod you put into the device or in the tiny pouches already in the device. The medicine is in the form of a very fine powder. DPIs do not contain a mechanism to push the medicine out of the device, so you have to "pull" it out of the device by taking in a deep breath, emptying your lungs then putting the device up to your mouth and taking a fast, deep breath through the mouthpiece. With the DPI it is the user who provides the force to get the medicine out of the device and into the lungs. Some people who have severe COPD with lower lung function or who have had a recent exacerbation may not have the breathing strength to use a DPI. Your healthcare team can check this by measuring your Inspiratory Flow Rate in the clinic or hospital. This is important to think about if your DPI medicines do not seem to be working as well as they did before.

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There are two main types of DPIs, those that have the medicine in the device already like the Diskus or Ellipta inhalers and those that you put the dose into each time you use them like the Handihaler. If you have the one already loaded with the30 days of medicine, use it without shaking and just open and inhale with a fast, deep breath as described above. If you have the one that you put the medicine into the device, it is important to do so only just before you use the medicine and other wise keep the capsule or medicine in its original pouch until you need it. For those devices that you load each time remember to do all of the steps and don't touch the capsule or pouch when removing it from the device. (For a demonstration on use of different types of DPIs visit the **COPD Foundation educational videos page)**.

Nebulizer or Inhaler- Which is Best for You?

Studies have shown that medicines that you breath into your lungs using nebulizer, metered-dose inhaler (MDI), dry-powder inhaler (DPI) or soft mist inhaler (SMI) all lead to similar results. However, those results require that the inhaler or nebulizers are use with proper technique and cleaning. To decide which system is best for you, talk with your health care professional. You may need to use both inhalers and nebulizers for best results for you. Here are some things to consider:

Potential Nebulizer Benefits:

- Works well for patients with severe disease and frequent exacerbations
- Works well for patients who have physical and/or cognitive limitations and a caregiver to help them
- Is good for inhalation drug delivery during exacerbations of COPD, especially when higher than routine drug doses are needed or the ability to breath in is limited
- Normal breathing pattern can be used—don't have to do special breathing in or holding breath required for inhalers
- The medicine is delivered constantly for several minutes providing relief during a bad breathing episode
- Easier for individuals who have trouble coordinating deep inhalation with activation of medicine
- Can be combined with inhaler use---but important not to take the same medicine twice at the same time.

Potential Nebulizer Drawbacks:

- Takes more time
- Proper assembly and cleaning are required
- Less portable than inhalers although new nebulizers can be small and portable
- Potential for delivery of medicine into the eyes
- Some nebulizers work for only one medicine requiring multiple nebulizers if using several medicines.
- Require separate use for each type of medicine used.

Potential Inhaler Benefits:

- Portable, light, compact
- Short treatment time
- Dose is exactly the same with each use
- No preparation of medicines is needed

- Medicine contamination is unlikely
- Have inhalers that combine multiple medicines in one inhaler

Potential Inhaler Drawbacks:

- Different ways of using are required for different types of inhalers.
- More dependent on proper technique including inspiratory hold and coordination of breath with device activation
- More likely to have medicine deposit into mouth and back of throat instead of getting deeper into the lungs
- Some devices may not work well for people with limited strength of breathing in during or after an exacerbation or as disease becomes more severe---this is call peak inspiratory flow and can be measured by a simple device in the clinic or hospital.

Discuss medicines with your health care professional

All medicines can have side effects. Tell your health care profession or clinic about all the medicines you take so you can talk together about them and be sure to ask about any side effects or problems you are having.

Be sure to bring all inhalers, nebulizer solution types and pills or liquids to all your visits so you and your clinic can review what you are taking and watch your inhaler use. Sometimes the medicine you are prescribed is changed at the pharmacy due to insurance coverage. If your medicine is different than the one prescribed, check with the pharmacist to have them explain how to use any different types of inhalers and call your clinic to let them know what you actually received if you think it is different than what was prescribed. You want to make sure that everyone on your healthcare team knows what you are using.

You can update and keep a current list of medicines on your Wallet Card on your COPD Foundation **Pocket Consultant Guide mobile app**. Download it from Apple's **App Store** and **Google Play**.

Additional Treatments

Oxygen

Severe COPD will reduce your lungs' ability to put oxygen into your blood to be carried throughout your body. Your doctor can measure the oxygen in your blood by using a pulse oximeter (ox-im-eh-ter). This is a small device that fits snugly on your finger. It measures how many red blood cells are carrying oxygen. If the level of oxygen in your blood is too low, it can be confirmed by an arterial (are-teer-ree-uhl) blood gas test (ABG). If so, your doctor may prescribe oxygen therapy for you.

Shortness of breath does not necessarily mean you need to be on oxygen. Many patients who have severe shortness of breath do not have low oxygen levels in their blood. Also, many patients who have low oxygen levels do not always feel breathless. Oxygen is usually ordered if the oxygen in your body or blood is low during sleep, exercise, during a 6-minute walk test and/or while you are not active.

Learn more about Oxygen Therapy

Pulmonary Rehabilitation

Pulmonary rehabilitation is one of the best treatments we have for COPD. It helps with many of the problems people with COPD experience. For example, pulmonary rehabilitation may help by increasing your ability to do activities, helping you to learn about using medicines properly with good inhaler or nebulizer technique, reduce your anxiety

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and depression, help prevent repeat hospitalizations and exacerbations and can reduce social cleaisolation. Pulmonary rehabilitation requires that you participate in the program and then continue to use what you have learned such as daily activities or exercise and regular and correct use of your medicines.

It provides exercise training, education about COPD, tips on how to complete everyday activities without becoming so short of breath and advice on how to live better with your disease. Many different types of medical professionals work with you in the program. These include doctors, nurses, physical therapists, exercise specialists and dietitians. Dietitians (dye-ah-ti-shuns) are individuals who can teach you about healthy food choices. You will work with this team to create a special program for you. Pulmonary rehab programs are available in most communities and often paid for by insurance. If you have not been to pulmonary rehab talk to your healthcare team and ask how you can be referred.

Learn more about Pulmonary Rehabilitation

Medical Procedures

Lung Volume Reduction Surgery (LVRS)

Lung Volume Reduction Surgery is surgical procedure for carefully selected patients with severe emphysema struggling despite maximal medical therapy. Currently, the surgery is almost always done with a minimally invasive approach called VATs, video assisted thoracoscopy. During the operation, the surgeon removes the worst area of emphysema. By doing this, the healthier portions of the lung are able to work more efficiently. This surgery also reduces pressure on the diaphragm, making it easier to breathe.

In order to decide whether LVRS is an appropriate option extensive evaluation is required including lung function testing, cardiac studies and lung scanning studies. Quitting smoking and completing a pulmonary rehabilitation program are important before the surgery to make healing as easy as possible.

The National Emphysema Treatment Trial (NETT), a large multicentered trial sponsored by the National Institutes of Health and The Centers for Medicaid & Medicare Services, found that in carefully selected patients LVRS can improve lung function, exercise capacity, quality of life, and even survival. LVRS is the first therapy since oxygen to show improved survival in advanced COPD. Because this is surgery in patients with limited lung reserve, there are risks that must be weighed. Centers with extensive experience in LVRS have documented decreased surgical risks and often long-term benefits.

Talk to your doctor about referring to a specialist to find out if LVRS might be an option for you.

Bronchoscopic Lung Volume Reduction (BLVR)

For some people living with COPD-emphysema, bronchoscopic lung volume reduction (BLVR) might be an option for treatment. This is a less invasive procedure where the doctor will use a tool called a bronchoscope to place one-way endobronchial valves in the airways. These endobronchial valves allow air to leave the diseased tissue but will not let air back into those damaged areas. By placing these valves properly, the damaged area begins to take up less space and gives the healthy lung tissue an opportunity to work better. The valves can be removed at any time, if necessary.

As with LVRS, smoking cessation and pulmonary rehabilitation are very important prior to the procedure. Even though this treatment is less invasive than LVRS, there are risks and careful evaluation is important to ensure that the person is a good candidate. Your doctor may need to refer you to a specialist to see if BLVR is right for you.

The COPD Pocket Consultant Guide Mobile App

An important newer resource is the patient track in the free COPD Foundation's **COPD Pocket Consultant Guide mobile app** that you can download from Apple's **App Store** and **Google Play**. It includes the following sections:

- My Wallet Card to keep track of your COPD and health information
- My COPD Action Plan that you an make right just for you
- Activity Tracking
- Calendar that lets you show how your COPD is doing everyday over weeks or months
- Inhaler and nebulizer videos that show you how to use and clean your inhalers and nebulizers
- Exercise videos that show you some simple exercises you can do sitting
- For my next visit which gives you list of suggested questions to ask at your clinic visit and lets you add you own questions
- More information like the CAT or COPD Assessment Test that you can take at home or share at a clinic visit, and links to other COPD Foundation resources.

Resources and Support

The COPD Foundation offers resources such as **COPD360social**, an online community where you can connect with patients, caregivers and health care providers and ask questions, share your experiences and receive and provide support.

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