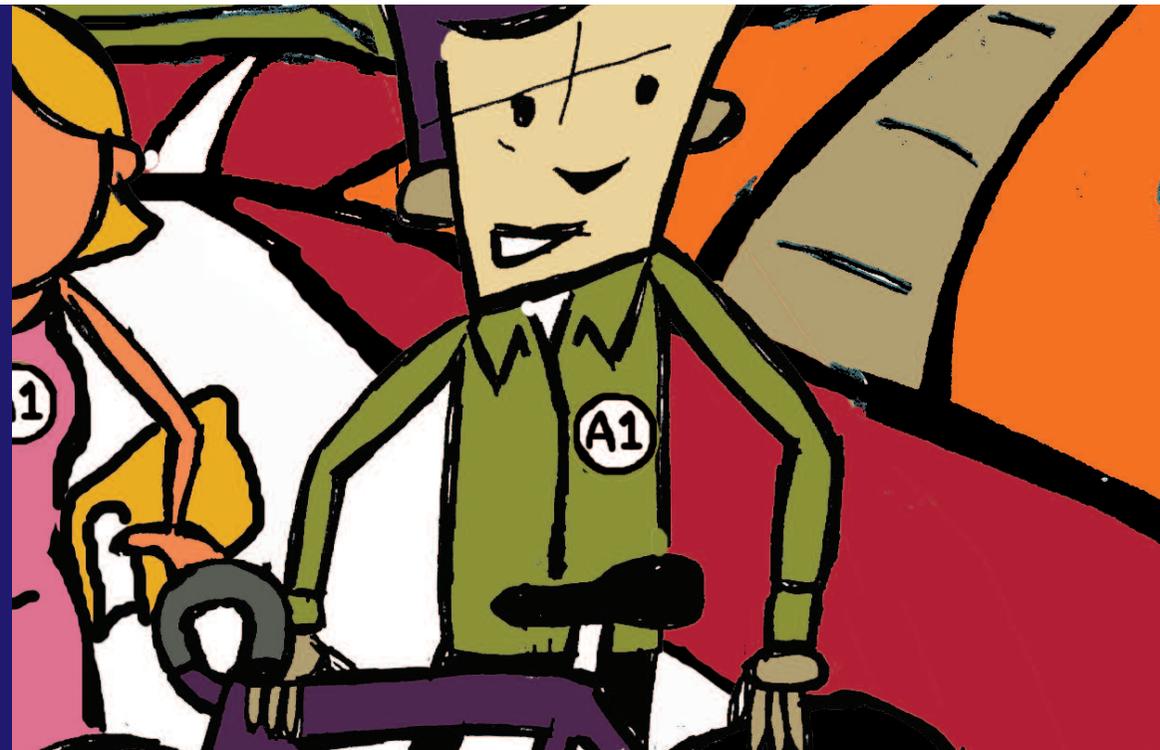


# Understanding Pulmonary Exacerbations

 AlphaNet

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## UNDERSTANDING PULMONARY EXACERBATIONS INTRODUCTION

Recognizing changes in signs and symptoms of your lung disease is an important part of managing your illness. You can be symptom-free for long periods of time and then suddenly develop acute respiratory distress. These flares of your respiratory symptoms are referred to as “exacerbations.” Despite their prevalence, exacerbations of chronic obstructive pulmonary disease due to Alpha-1 (Alpha-1 COPD) are poorly understood and a clear, standard definition does not exist. A working group of pulmonary physicians from the United States and Europe recently proposed the following definition:



**DEFINITION:** An exacerbation is a sustained worsening of the patient’s condition from the stable state and beyond normal day-to-day variations, necessitating a change in regular medication.

Knowing when your symptoms are changing is helpful so treatment can begin promptly. Accurate and timely assessment of your symptoms can help you and your health care provider decide if treatment should begin in the home, at your health care provider’s office, or in the emergency room.

All patients with Alpha-1 COPD occasionally have an increase in cough, sputum production, and breathlessness. Being able to tell a “bad day” from a more prolonged exacerbation is important, and sometimes difficult to do. Some factors that may cause a bad day include:

- Weather
- Barometric changes
- Emotions
- Allergies
- Higher altitude
- Using an empty inhaler

## HOW TO RECOGNIZE AN EXACERBATION

Early symptoms or warning signs of an exacerbation are unique to each person. Usually you will be the best person to know if you are having difficulty breathing. However, some changes are more likely to be noticed by other persons, so it is important to share this information with your family and those close to you. The most common signs and symptoms associated with an exacerbation are:

- Worsening of previously stable condition
- Increased difficulty breathing, even at rest
- Increased wheezing
- Increased coughing
- Increased amount of sputum production
- A change in the characteristics of sputum, such as appearing to be more thick/sticky, or a change in color from clear or white to yellowish-green, or the presence of blood in the sputum.
- Chest tightness
- Irritability and/or change in personality
- Fluid retention (swelling in the hands or feet)
- Forgetfulness, confusion, slurring of speech, and sleepiness

Sometimes, an exacerbation can be accompanied by:

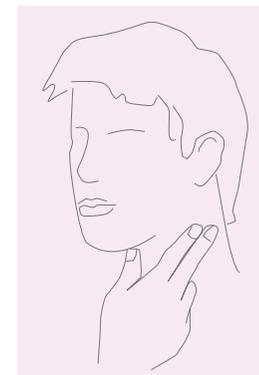
- Increased feeling of fatigue and a prolonged period of lack of energy
- Using more pillows or sleeping in a chair instead of a bed to avoid shortness of breath
- Fever
- Rapid breathing. It is important to know your respiratory rate at baseline, or when you are feeling good. Since your rate of breathing can be easily affected by self-consciousness, have someone else count your respirations.
- Skin tone changes to “ashen” or “blue” color, known as cyanosis, especially seen in the fingertips and/or lips
- Increasing morning headaches, dizzy spells, restlessness
- Rapid heart rate. It is important to know your heart rate at baseline, or when you are feeling good.

### How to measure respiratory rate (breaths per minute):

1. Place the hand on the upper chest to feel it rise and fall. Each rise/fall cycle counts as one respiration.
2. Count for 30 seconds and multiply the number by two.

### How to measure heart rate (beats per minute):

1. Find carotid pulse (put index and middle finger to the side of the windpipe, underneath the chin. Press gently and do not rub the area) The pulse can also be felt on the palm side of the wrist below the thumb.
2. Count pulse for six seconds
3. Place “0” on end of count (equals beats/minute.)



## WHAT CAUSES EXACERBATIONS?

Respiratory infections are the most common cause of exacerbations. The specific viruses responsible for exacerbations are often influenza, rhinovirus, or adenovirus. Recent evidence suggests exacerbations of COPD are often caused by certain kinds of bacteria known as mycoplasma and chlamydia-type organisms. Other bacteria commonly associated with exacerbations are *Streptococcus pneumoniae* (pneumococcus), *Hemophilus influenzae*, and *Moraxella catarrhalis*. Your health care provider should consider the likelihood of your developing an infection from one of these atypical, or less common organisms, when prescribing an antibiotic for you. Bacteria and viruses can cause infections in various parts of the lung, leading to bronchitis, bronchiolitis, and pneumonitis or pneumonia.



**BURNING ISSUE:** Bacteria and viruses can cause infections in various parts of the lung, leading to bronchitis, bronchiolitis, and pneumonitis or pneumonia.

In individuals with Alpha-1 COPD, an exacerbation is presumed to be caused by an infectious agent, unless there is another specific causative agent identified. Since antibiotics are only effective against bacterial infections, they are not prescribed for suspected viral infections for the general population. However, when Alphas develop an exacerbation from a viral infection, they frequently develop a secondary bacterial infection because of the damage caused to the lung tissue from the large influx of white blood cells. Therefore, antibiotic treatment is the mainstay of therapy for all exacerbations, whether or not a bacterial organism has been identified as the causative agent.

#### Other common causes of exacerbations include:

- Indoor and outdoor air pollution
- Heart failure (pulmonary edema)
- Pulmonary thromboemboli (blood clots to the lung)
- Other disorders

## MINIMIZING THE FREQUENCY AND SEVERITY OF EXACERBATIONS

While exacerbations cannot be totally prevented, you can diminish their frequency and severity if you manage your care properly on an ongoing basis.



**CROSS REFERENCE:** For more information on hand washing see the brochure “Staying Healthy” or the section “Management of Environmental Risk Factors.” in the **Big Fat Reference Guide** at [www.alphanet.org](http://www.alphanet.org).

#### General guidelines for minimizing exacerbations include:

- Washing your hands often and thoroughly is an easy way to ward off infection. Also, try to avoid close contact with people who have colds or the flu.
- Keep your flu and pneumonia vaccinations up to date.
- Keep your lungs functioning at their highest level by using bronchodilators and/or anti-inflammatory agents as part of your treatment regimen.
- Use antibiotics and other medications promptly when you need them for upper respiratory infections or sinus problems.

- Hand-held spirometry is a painless strategy for determining how well the lungs are functioning by measuring how much air the lungs can hold, and how fast air can be moved out of the lungs. A Peak Flow meter also is a device that can determine how fast air can be moved out of the lungs. These devices may be beneficial in early detection of an exacerbation for some Alphas with an asthmatic component. However, they may not be the best choice for Alphas with irreversible obstruction in monitoring exacerbations because of decreased airflow.
- Use steroids promptly if directed to do so.
- It has been shown that the use of long-acting betaagonists and inhaled corticosteroids decreases the frequency of exacerbations in COPD patients.

## DEVELOPING AN ACTION PLAN

You and your doctor should develop a written plan of action for exacerbations. This plan may include:

- Using more of your bronchodilators and using them more frequently
- Adding an inhaled steroid to your regime or increasing the dose if you are already taking one
- Adding a new bronchodilator
- Using antibiotics
- Using oral corticosteroids in tapering doses for up to two weeks
- Making sure to eat properly and drink plenty of fluids during the exacerbation

After you have met with your physician and you understand your action plan, you can probably manage the care of your exacerbations yourself at home. However, for those people who are on chronic oxygen therapy, who have had respiratory failure in the past, or others who are severely ill, you may need to be admitted to the hospital and perhaps even to an Intensive Care Unit. In addition, many patients with Alpha-1 COPD exacerbations may require a chest examination by the doctor, as well as an X-ray (to rule out pneumonia), and may have to have their arterial blood gases tested (to check oxygen and carbon dioxide levels in the blood) at the onset of an exacerbation to assess the severity of the episode.



**KEY LEARNING:** Symptoms do not go away when they are ignored. Knowing when to call your health care provider is very important in managing an exacerbation.



**1. Call your health care provider within 24 hours if you notice one or more of the following respiratory symptoms:**

- Using your inhaler or nebulizer more frequently to maintain breathing
- Change in color, thickness, odor, or amount of sputum persists
- Ankle swelling lasts even after a night of sleeping with your feet up
- You awaken short of breath more than once a night
- Fatigue lasts more than one day
- Persistent fever
- Shortness of breath or wheezing does not stop or decrease with inhaled bronchodilator treatments, or you are requiring more frequent use of inhaler or nebulizer

**2. Go immediately to the emergency room or call 911 when you are experiencing the following:**

- Disorientation, confusion, slurring of speech, or sleepiness during an acute respiratory infection
- Loss of alertness or two or more of the following:
  - Marked increase in intensity of symptoms, such as sudden development of resting dyspnea (shortness of breath while at rest)
  - Overuse of upper chest and neck muscles, also called your accessory muscles, to be able to breathe
  - Significant increase or decrease in respiratory rate
  - Significant increase in heart rate
- Any severe shortness of breath, chest pain, or other symptom that makes you fear for your ability to survive.

While there are many effective measures you can do at home to treat signs and symptoms, there also are actions that should be avoided:

- Do not take extra doses of theophylline
- Do not take codeine or any other cough suppressant
- Do not use over-the-counter nasal sprays for more than three days
- Do not smoke
- Do not wait any longer than 24 hours to contact your doctor if symptoms continue

## TREATMENT OPTIONS FOR EXACERBATIONS

There are a number of treatment options that may ease the symptoms of Alpha-1 COPD. It is very important to know all your options, so you and your health care professional can develop a treatment plan that suits you best. Staying on top of your treatment plan every day is vital to your comfort and your health. So read on about the following treatment options — and be sure to talk to your health care professional about them.

**1. Medications prescribed for Alpha-1 COPD exacerbations may include:**

- Short-acting beta2-agonists, such as albuterol; anticholinergic bronchodilators, such as ipratropium bromide; and theophylline derivatives. All of these help to open narrowed airways.
- Long-acting bronchodilators. These help relieve constriction of the airways and help to prevent bronchospasm associated with Alpha-1 COPD. *[Warning — do not use more than what has been prescribed.]*
- Inhaled steroids, which have been shown to prevent exacerbations and may be sufficient to shorten the course of an ongoing exacerbation, if symptoms are mild.
- Antibiotics, which are often given at the first sign of a respiratory infection to prevent further damage and infection in diseased lungs.
- Expectorants, which help loosen and expel mucus secretions from the airways, and may help make breathing easier.
- Frequently, oral steroid administration also is required during an exacerbation. Some suggest that the early use of high-dose steroids by mouth or by the intravenous route can greatly shorten the duration and severity of an exacerbation. A typical steroid course might be oral prednisone. Once improvement occurs, you will be weaned over 10 days to two weeks to low daily or alternate-day dosing, then moved to an inhaled steroid. You should never stop taking long-term oral steroids abruptly because the adrenal glands may not be able to immediately resume adequate steroid production. The lack of adequate levels of steroids could then lead to the development of life-threatening situations. If you have been on long-term oral steroids, it is critical that you inform the doctor treating you.





**BURNING ISSUE:** Never stop taking long-term oral steroids abruptly: the adrenal glands may not be able to immediately resume adequate steroid production.

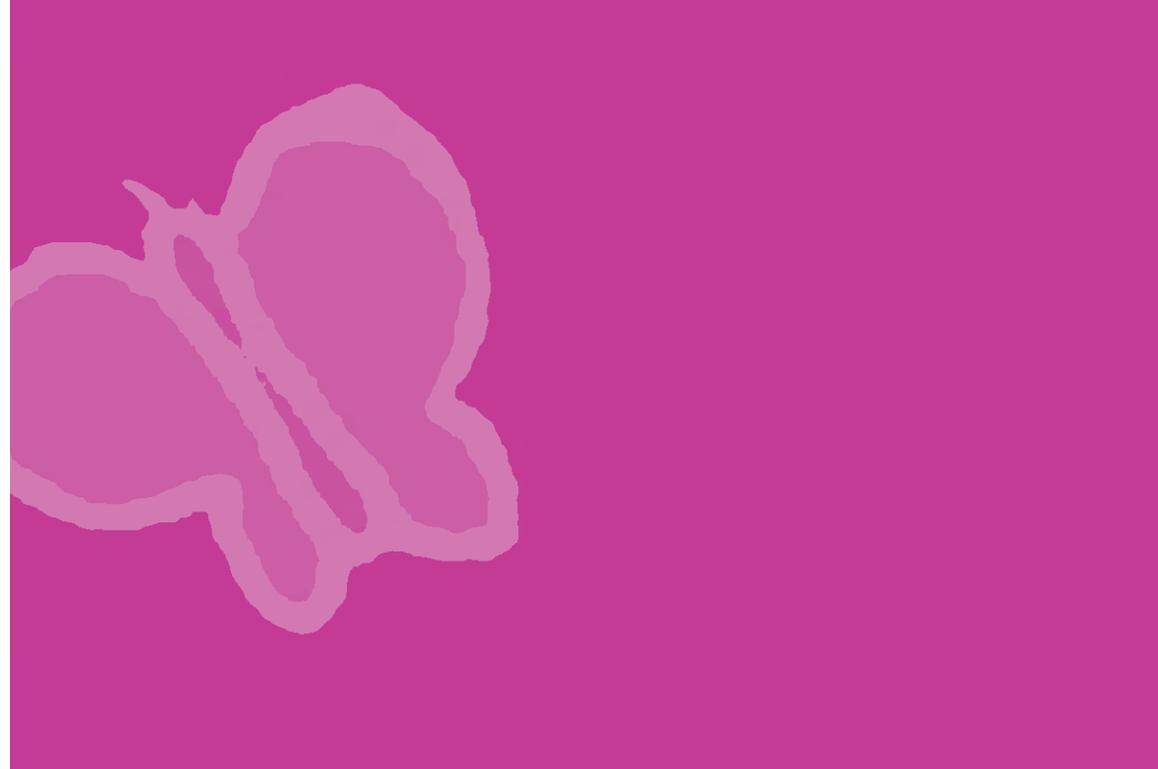
## 2. Oxygen therapy is the cornerstone of emergency room/hospital treatment of Alpha-1 COPD exacerbations.

Adequate levels of oxygenation greater than 90 percent are easy to achieve in uncomplicated exacerbations, but CO<sub>2</sub> retention can occur with little change in symptoms. Once oxygen is started, arterial blood gases should be checked 30 minutes later to ensure satisfactory oxygenation without CO<sub>2</sub> retention. Venturi masks are more accurate sources of controlled oxygen than are nasal prongs.

Although exacerbation in Alpha-1 COPD cannot always be prevented, it can be treated. Your physician will work with you to develop a plan which may include taking medication, learning to breathe in better ways, exercising, controlling stress, and quitting smoking to help prevent exacerbations from occurring. Following through on your treatment plan will make all the difference in how you feel and how much you can do.



**CROSS REFERENCE:** For more detailed information on oxygen therapy see the brochure on "Oxygen Therapy" or the corresponding section in the **Big Fat Reference Guide** at [www.alphanet.org](http://www.alphanet.org).



This brochure is produced by AlphaNet as part of its Alpha-1 Disease Management and Prevention (ADMAP) program.

AlphaNet is a not-for-profit organization providing disease management services and support to individuals affected by Alpha-1 through a staff of medical professionals and specially trained AlphaNet Coordinators, available 24 hours a day, 7 days a week. To learn more about ADMAP or to find the AlphaNet Coordinator nearest you, visit our website ([www.alphanet.org](http://www.alphanet.org)).