October – Week 3

Cough and Airway Clearance

JMM

You gotta do what you gotta do.
Sylvester Stallone

Phlegm. Secretions. Sputum. Mucous. Yuck! Whatever you call it, that junk in your lungs is yet another part of having COPD that's not a lot of fun. Yet, it's one of those things that as a person with COPD, you just have to deal with – and if you learn what to expect and how to handle it, you'll breathe easier.

What's the role and function of sputum in the lungs?

Before we talk about getting rid of secretions, we need to understand why we have them in the first place.

The lungs provide protection against foreign substances entering the body by stopping unwanted particles and trapping them before they get too deep into your lungs. Lining the airways (the breathing tubes, bronchi and bronchioles) inside your lungs is a mucous blanket, a thin layer of mucous. Just underneath this mucous blanket are cilia, millions of tiny little hair-like structures. The cilia move like a wave to help propel the mucous – carrying with it trapped dust, bacteria, and other substances upward, where they can be coughed out. This is how your lungs keep themselves clean.

Mucous also acts to humidify the air you breathe. As your air makes its way through your bronchial tubes, it passes over the mucous, picking up moisture and keeping air passages moist.

Dirty lungs

Remember the cilia, the little sweepers in your airways that help keep your lungs clean? Cigarette smoke and other irritants in the environment can destroy or paralyze them. This causes the cilia to stop functioning and thus, your lungs are not able to clean themselves as they should. Along with this the breathing tubes can become chronically (all the time) or acutely (suddenly and temporarily) swollen and inflamed. As a result, the airways can produce thicker and stickier mucous secretions.

With the loss of your normal cleaning mechanism as well as a tendency towards thicker, stickier secretions and swollen airways, you can see why

breathing with COPD can be so difficult. With all of this going on, your lungs have to figure out another way to get rid of excess mucous and that's why you may have a frequent, productive cough. If you cough on most days, producing sputum, even when you do not have an acute infection, you probably have chronic bronchitis.

All this sticky mucous can make it difficult to breathe, but there's another reason why it's important to keep your lungs clear. You have to keep your lungs as clear – and as healthy – as possible because repeated chest infections have been shown to contribute to a further deterioration in lung function. If sputum is not cleared from the lungs, it can cause ongoing inflammation, which can lead to further lung damage – and more coughing, making you tired and even more breathless.

What can I do to keep my lungs clear?

- Drink two quarts of water a day if approved by your doctor.
- Take an expectorant or mucolytic. This can be ordered by your doctor, or you can take a non-prescription expectorant if your doctor says it's okay.
- Use proper cough technique. Sit up straight, but bending slightly forward with elbow support. A straight chair with armrests works well.
- If at all possible, do not lay down when coughing. Coughing is much more effective when sitting up.
- Use the huff cough technique. Ask a respiratory therapist to show you.
- Ask your doctor if Percussion and Postural Drainage might help. If so, a respiratory therapist can train a family member or caregiver this technique.
- Use an airway clearance device if directed (see below).
- Take time for your bronchial hygiene each day, just as you take time to wash your face or brush your teeth.
- Keep your lungs clean and clear of excess mucous and you'll breathe easier!

Here's a report on Mucous Clearance Devices contributed by Richard D. Martin, the Editor of COPD-NEWS.

In some cases, our doctors or respiratory therapists might recommend we use a hand-held mechanism that vibrates and loosens the mucous to make it easier to cough out. These small devices vibrate when we breathe into them and are known by various names, such as "percussive airway devices," or "vibratory positive expiratory pressure (PEP) devices." They use vibrations and air pressure to reduce the thickness of mucous. Although the devices are used more commonly for individuals with Cystic Fibrosis and bronchiectasis, they are also used to help those

of us with COPD who have difficulty getting rid of mucous.

There are a number of brands on the market. They all require a prescription. The most commonly recognized brands are Acapella, Flutter, Lung Flute, and Quake, although there are others. Your doctor or respiratory therapist might recommend a particular brand for a specific reason. In some cases, they actually keep a small supply on hand and dispense them directly to patients. It pays, however to be familiar with the major brands.

If you are prescribed a device be sure to have a respiratory therapist teach you how to use it properly. Do not just blow into them!

Acapella

This device shakes your mucous loose when you blow into it. It must be dialed to the proper setting by someone who is trained it is in use. It will work if you are laying down. Visit the manufacturer's web site at: http://tinyurl.com/33tfgh

Flutter

The Flutter works in a similar way but you must be sitting or standing up straight to use it. You can read about this device on the manufacturer's web site: http://www.axcan.com/us_flutter.php?lang=1

Lung Flute

The Flute creates vibrations to loosen the mucus by passing air over a reed. The device includes a 6-month's supply of reeds. An additional 6-month's supply must be purchased. You can order them directly (prescription needed) from the manufacturer at: http://tinyurl.com/29epc7y

Quake

For more information about the Quake, visit the manufacturer's web site: http://www.thayermedical.com/consumers_quake.htm

Your Turn

Key points, or…If you don't remember anything else from this chapter, remember this…

- Lungs have an built-in cleaning system that can be disabled with COPD
- It's important to do all you can to keep your lungs clear, not only for good health now, but to protect your lungs from further damage.
- There are many things you can do to help clear your lungs

Ask yourself this…
Do I cough everyday?
Do I bring up mucous?
Do I have trouble bringing up mucous, feeling like it's "stuck?"

This week…
If you answer "yes" to any of the three questions above, make sure you're taking all the steps in "What Can I Do to Keep My Lungs Clear?"
Go back and read this chapter at least one more time this week.

Here's more help
Images of mucous clearance devices. http://tinyurl.com/29ykbcf
Acapella
http://tinyurl.com/33tfgh
Flutter or Flutter Valve
http://www.axcan.com/us_flutter.php?lang=1
Lung Flute
http://tinyurl.com/29epc7y
Quake
http://www.thayermedical.com/consumers_quake.htm

COPD News
http://copd-support.com/news.html

If a link does not work, type the name of the device into a search engine. If you are not online, to see a device or for more information, check with your local pharmacy or medical equipment company.

This chapter is an excerpt from Live Your Life with COPD – 52 Weeks of Health, Happiness and Hope. Jane M. Martin, BA, LRT, CRT. Infinity Publishing 2011. http://www.breathingbetterlivingwell.com/bookstore.php

Bonus Box

When Coughing is Too Distasteful

A lifetime of suppression leads to infection – and a very unladylike treatment for Lady Windermere Syndrome

By Francis V. Adams, Special to The L.A. Times
March 26, 2007

Coughing was a no-no for a proper lady. (Columbia Pictures)

I saw another Lady Windermere the other day. Over the years I have seen several patients who could have borne this name. The character originated in Oscar Wilde's play "Lady Windermere's Fan." She was a fastidious woman who at one moment refuses to shake hands with a visitor ("My hands are all wet with the roses"). Wilde's character would become a symbol of the Victorian era, an age when women wouldn't do anything they thought vulgar, such as spitting.

My first Lady Windermere was Agatha. I met her not long after I finished my training in pulmonary disease and opened my private practice. I glimpsed her in the waiting room as I picked up her chart. A few minutes later, as she sat in my office, I inquired as to what had brought her, and she went on to describe an unrelenting cough she'd had for nearly 10 years. During the interview, she coughed fitfully but would not expectorate.

Agatha was 63, very thin, almost skeletal, with high cheek bones, thin lips and a straight nose. Her forehead was made more prominent by her graying hair, which was pulled straight back. She held a tiny lace handkerchief in her left hand and covered her mouth as she coughed.

I proceeded to take Agatha's medical history. She had been in good health except for her chest problems, which she described as frequent colds that always settled in her chest. Agatha had been hospitalized twice for pneumonia. She was an actress and had done stage and film, mostly small parts as she described them. Agatha's physical examination did not add much to what I had already observed. Her lung sounds were a bit quieter than normal but I did not detect any congestion. I proceeded to take an X-ray, which showed that the air passages in the middle sections were thicker than normal.

We sat in my office and I told her that it would help if she could bring up some sputum for the lab to analyze for infection. I also explained that additional X-rays would be helpful.

Agatha said that she was used to having X-rays but doubted if she would be able to produce a sample of her sputum. Just then she coughed again, and I noted that she seemed to be trying to suppress her effort.

I told her that I had a few tricks for getting people to cough up. I took Agatha into another room and introduced her to a nebulizer, a simple machine that creates an aerosol mist by forcing air through a solution. I placed saline into the machine, attached some tubing, turned on the power and saw a steam-like vapor emitted.

I asked her to breathe the mist for 10 minutes and placed a sputum cup on the counter next to the nebulizer. When I returned to the room, I saw that the cup was still empty. I placed more saline into the machine and asked her to try again. After the second treatment, Agatha coughed and produced a tiny bit of yellow sputum. The sputum sample was sent off to the lab and her X-rays scheduled. I explained that I hoped to have the results of both tests in a few days.

Agatha's X-rays showed that there was evidence of old and new infection in the middle sections of both lungs. The bronchial tubes in both areas had been damaged causing them to dilate and become congested with mucous, a condition known as bronchiectasis. Bronchiectasis is usually produced by an untreated lung infection. In many of my elderly patients, the infection had occurred in childhood when antibiotics were not yet available.

The culture of the tiny piece of expectorated sputum yielded an organism known as mycobacterium avium intracellulare. This is a ubiquitous germ that lives in nature and can be found in the soil or water. At this point in my practice, I had seen this infection only in immune-compromised individuals but knew it could occur in anyone with damaged lungs. Agatha had no history of childhood infection so I wondered if the over-fastidiousness that kept her from clearing secretions had in fact promoted the development of her condition. I proceeded to outline a course of treatment that would include three antibiotics over a period of one-and-a-half years. I also placed her on an expectorant and arranged for a physical therapist to cup and clap her chest twice a week, hoping to help clear her air passages. Despite these efforts, my patient's cough did not produce sputum.

During the long course of Agatha's treatment, I saw two more women who bore not only a physical resemblance to her but also the identical illness. Irene was 68, a teacher with a widow's peak, and Constance was 60, a librarian. Both had similar X-ray changes as Agatha, and their sputum, which I obtained with great difficulty, also yielded the same organism. All three women were cooperative, intelligent, and easy to work with, but I became increasingly frustrated by their failure to clear their lungs despite the many maneuvers that I put them through.

After my third case, I consulted my colleagues and the medical literature and found that I was not alone. Other doctors were seeing similar patients. In 1992, 15 years after I first met Agatha, two radiologists published a report of "The Lady Windermere Syndrome." They had observed six women with the same characteristics as my patients. The authors noted that the middle portions of the lungs extend outward toward the front of the chest and require vigorous coughing for clearance of secretions. They concluded that mycobacterial infection had occurred in these overly fastidious women due to voluntary suppression of cough.

In the last several years, greater numbers of cases of mycobacterial infection have been reported. Unfortunately the treatment is not always successful and may be difficult to tolerate due to adverse effects of the antibiotics.

Agatha's infection was not cured by years of treatment but did improve. I continue to see a few women each year with the same striking features and pride myself on making the correct diagnosis simply from observing their appearance and hearing their cough before they are seated in my office.

A few of these delicate women have found me through Internet searches so that after introducing myself to one of these ladies recently, she replied: "And you may call me Lady Windermere."

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