

Better Living with Chronic Obstructive Pulmonary Disease

A Patient Guide

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THE
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Government**

Queensland Health

"When you can't breathe...nothing else matters"™

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Airway clearance: keeping your lungs clear

This chapter will help you to understand:

- What the role and function of sputum in lung conditions is.
- Why it is important to keep your lungs clear.
- When you should use airway clearance techniques.
- What the airway clearance techniques are.

What is the role and function of sputum in lung conditions?

The lungs provide protection against foreign particles entering the body by trapping unwanted particles in the mucous lining of the breathing tubes or airways.

Your secretions can be cleared from the lungs by coughing, breathing out and the movement of tiny hairs called cilia. These tiny hairs line the breathing tubes (*bronchi* and *bronchioles*) and move like a wave to help move the mucous and unwanted particles up to the mouth where they can be cleared.

The function of the tiny hairs (*cilia*) can be affected by smoke, oxygen therapy, alcohol and dehydration.

If you have a lung condition or a chest infection, the breathing tubes can become more swollen or inflamed. As a result, the breathing tubes or airways can produce thicker and stickier mucous secretions called sputum or phlegm.

Why is it important to keep your lungs clear?

Repeated chest infections have been shown to contribute to worsening in lung function. If sputum is not cleared from the lungs, it can cause ongoing inflammation, which can lead to further lung damage.

In some lung conditions, the ability to clear these secretions can be more difficult, resulting in:

- More coughing, which increases your fatigue and can make you more breathless.
- Narrowing of the breathing tubes or airways, and tightness of the chest which can make breathing harder.

When should you use airway clearance techniques?

When to use airway clearance techniques will depend greatly on your individual needs. For example:

- Many people who have chronic lung conditions produce very little or no sputum. These people generally do not need to do any regular airway clearance techniques.
- Some people who have chronic lung conditions develop a moist cough when they have an infection. These people may need to do a few simple airway clearance techniques when this occurs.
- A small number of people who have chronic lung conditions and who cough up sputum every day may need to use an airway clearance technique regularly.

What are the airway clearance techniques?

There are a variety of airway clearance techniques. If you regularly produce sputum, then you should discuss your airway clearance needs with your respiratory physiotherapist. They will assist you to find a technique that works best for you. Some of these may include:

- 'Hands on' techniques, such as percussion and expiratory vibrations to the chest wall.
- Independent breathing techniques, such as Active Cycle of Breathing Techniques and Autogenic Drainage.
- Respiratory devices, such as positive expiratory pressure devices (for example, PEP and Astra PEP) and oscillating positive expiratory pressure devices (for example, FLUTTER® and Acapella®).
- All airway clearance treatment regimes should include effective huffing and coughing to clear secretions.

Huffing

In most instances a huff uses a medium volume breath in, followed by a forceful expiration (breath out) that helps to move sputum towards the mouth so it can be cleared. This is particularly useful if the airway tends to collapse with coughing. If a wheeze is heard on the breath out then the expiration is too forced and you may need to breathe out slower. The wheeze represents airway closure and may cause sputum not to be cleared as effectively.

Coughing

Coughing is an effective way to remove secretions. However coughing should be done with minimum of effort.

How to cough effectively

1. Take a slow relaxed deep breath in.
2. Hold the breath for a second – to allow pressure to increase in the lungs.
3. Then force the air out. You will feel the abdominal muscles tighten to provide the force to expel the air. Try to avoid a coughing 'fit' by allowing one or two coughs on the breath out.

If you regularly produce sputum, airway clearance techniques will help you get rid of sputum build-up.

Your lung symptoms may change over time and this is important to remember. As a result of changes in your lung symptoms, your airway clearance routine may also need to be modified. For example:

- Your breathing tubes or airways may become 'tight' and you may become more breathless as a result. If this occurs, your airway clearance technique may be changed to decrease the work of your breathing.
- If you develop a chest infection in which you begin to produce larger quantities of sputum, you may be referred to a physiotherapist who may commence an airway clearance technique with you.

