

Airway Clearance Techniques

KEY POINTS

- Airway clearance techniques (ACTs) are ways to loosen thick, sticky mucus so it can be coughed up and cleared out of the lungs.
 - Respiratory therapists have special training in lung and breathing problems. The therapist will help you learn how to perform the techniques.
 - When you are trying to loosen and cough up mucus, make sure that you drink enough liquids so you stay well hydrated.
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What are airway clearance techniques?

If you have a lung disease such as cystic fibrosis or chronic obstructive pulmonary disease (COPD), you may have a lot of mucus in your lungs. If the mucus builds up in your airways, it can be hard to breathe. Excess mucus also makes it easier to get infections. Airway clearance techniques (ACTs) are ways to loosen thick, sticky mucus so it can be coughed up and cleared out of the lungs.

There are many airway clearance techniques. Most are easy to do. Your healthcare provider will work with you to decide which are best for you. Your provider may refer to you a respiratory therapist. Respiratory therapists have special training in lung and breathing problems. The therapist will help you learn how to perform the techniques.

Some of these techniques you can do yourself, and some require special equipment or a trained person to help you. The techniques that you can usually perform yourself include:

- **Deep coughing.** This is a deep, controlled cough. A deep cough is less tiring and more effective in clearing mucus out of the lungs than a “regular” cough.
- **Huff coughing.** To “huff,” you take a breath that is a little deeper than normal, then blow the air out like “huffing” onto a mirror or window to steam it up. It is not as forceful as a cough but can work better and be less tiring.
- **Self drainage or autogenic drainage (AD).** This technique involves breathing 3 different ways to move mucus out of the lungs. Learning to perform it correctly takes some training and practice. It works best for people over 8 years old.
- **Active cycle of breathing therapy (ACBT).** This technique combines gentle breathing, deep breathing, and huff coughs. You perform these different kinds of breathing in cycles to loosen and move mucus out of the lungs.
- **Physical exercise.** Exercise can be another good way to help bring up mucus in the lungs. Also, when you exercise regularly, your muscles are able to do more work with less oxygen.

Techniques that you need equipment or another person to help you with include:

- **Postural drainage and percussion.** For this technique, you lie down in certain positions (postures) so that gravity can help mucus drain from different parts of your lungs. Usually someone claps your chest, which is called percussion, to loosen and move mucus. This is done with you in different positions to drain all parts of your lungs.
- **Positive expiratory pressure therapy (PEP).** This therapy uses a hand-held device that creates resistance when you breathe out. This changes pressure in the lungs to loosen mucus.
- **Oscillating positive expiratory pressure or flutter PEP.** This technique also uses a handheld device to create resistance when you breathe out. The device flutters or vibrates the airways to loosen mucus.
- **High-frequency chest wall oscillation.** For this technique, you wear a vest that is filled with air and is attached to a machine. The vest gently squeezes and releases from 5 to 20 times per second. This rapid squeezing and releasing helps to vibrate your chest to loosen mucus. This technique may be used with huff cough or with a nebulizer.

Ask your healthcare provider what techniques or exercises will work best for you.

When you are trying to loosen and cough up mucus, make sure that you drink enough liquids so you stay well hydrated. Drinking plenty of liquids, keeps your mucus from being so sticky and hard to cough up. Ask your healthcare provider how much you should drink each day. Your provider may also recommend medicine, such as guaifenesin, to help keep mucus thin and easier to cough up. ACTs are often used with other treatments, such as inhaled medicines (bronchodilators).

For more information, contact:

- The National Heart, Lung, and Blood Institute
<https://www.nhlbi.nih.gov/health/health-topics/topics/cf/>
- The Cystic Fibrosis Foundation
<https://www.cff.org>

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Postural drainage and percussion: You sit or lie down in certain positions (postures) to let gravity help mucus drain from different parts of your lungs. Usually someone claps the front or back of your chest (percussion) to loosen and move mucus. This is done in different positions to drain all parts of your lungs.



Positive expiratory pressure therapy: A hand-held device creates resistance when you breathe out. This changes pressure in the lungs to loosen mucus.



Deep coughing: A deep, controlled cough that is less tiring and more effective in clearing mucus out of the lungs than a “regular” cough.



High-frequency chest wall oscillation: A vest filled with air is attached to a machine that gently squeezes and releases from 5 to 20 times per second. This rapid squeezing and releasing helps vibrate your chest to loosen mucus.

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