

# Better Living with Chronic Obstructive Pulmonary Disease

## *A Patient Guide*

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THE  
AUSTRALIAN  
**LUNG**  
FOUNDATION



**Queensland  
Government**

Queensland Health

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

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# Lung conditions

## This chapter will help you to understand:

- What chronic obstructive pulmonary disease (COPD) is.
- What chronic bronchitis is.
- What emphysema is.
- What Alpha-1 antitrypsin deficiency is.
- What asthma is.
- What bronchiectasis is.
- What interstitial lung disease is.

## Your lung condition

Lung or respiratory conditions can be caused by:

- Acute or long term breathing in of toxic agents (for example, cigarette smoke or chemical fumes).
- Infections.
- Genetic causes (for example, cystic fibrosis).
- Another disease, such as a muscular disorder, that impairs the function of the lungs.
- Sometimes lung disease can be caused by unknown reasons.

## What is chronic obstructive pulmonary disease (COPD)?

The term chronic obstructive pulmonary disease (COPD) is commonly used to describe a person who has chronic bronchitis, emphysema, chronic asthma or a combination of these conditions. Chronic obstructive airways disease (COAD), is also a term that has been used to describe these conditions.

Chronic bronchitis, emphysema and chronic asthma are common long term lung conditions that cause shortness of breath. Each condition can occur separately, but many people have a mixture of these conditions. In Australia, chronic bronchitis and

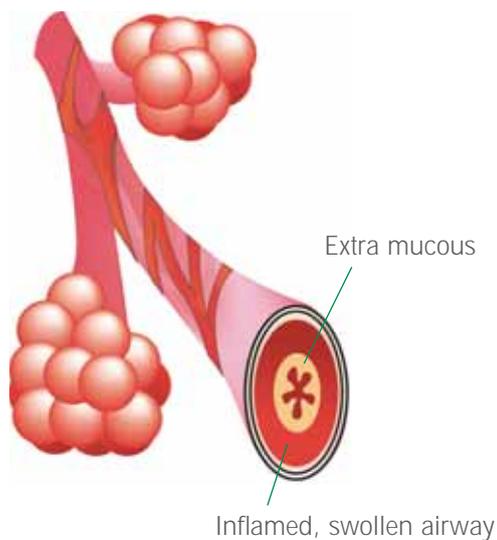
emphysema usually occur in people who have smoked or continue to smoke cigarettes, but they can be caused by environmental or genetic factors. Asthma commonly occurs in non-smokers as well as smokers. It is caused by a number of different factors including but not limited to the environment, allergy and genes.

A small number of people can get emphysema from an inherited protein deficiency called Alpha-1 antitrypsin deficiency.

COPD is a term used to describe a condition that includes chronic bronchitis, emphysema, chronic asthma or any combination of these conditions.

## What is chronic bronchitis?

Chronic bronchitis is a constant swelling and irritation of the breathing tubes (*bronchi* and *bronchioles*) and results in increased sputum production. This condition usually occurs as a result of infection and is often related to smoking. Chronic bronchitis is recognised or identified when sputum is produced on most days for at least three months, for two consecutive years.



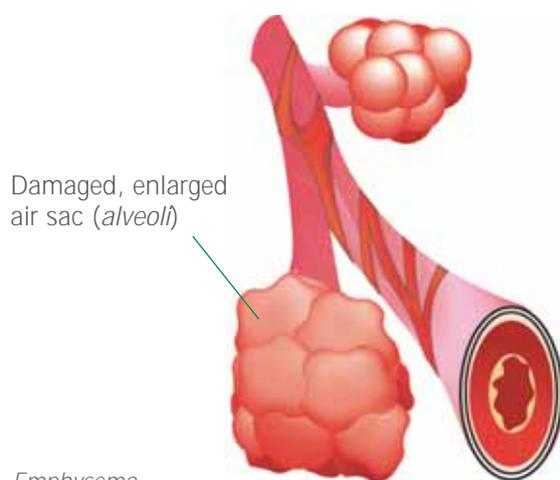
*Excessive sputum obstructs airways*

Airway obstruction occurs in chronic bronchitis because the inflammation and excessive sputum production causes the inside of the breathing tubes to be narrower than usual. Frequent infections occur due to the increased sputum. As the breathing tubes or airways become narrower, it is harder for air to move in and out of the lungs and breathlessness results.

### What is emphysema?

Emphysema is a condition where the air sacs (*alveoli*) become distended and the walls between them break down causing larger air spaces.

With emphysema, the breathing tubes (*bronchi* and *bronchioles*) become narrower and the lung tissue loses elasticity or springiness, which makes it harder to breathe the air out. As a result, air trapping (or *hyperinflation*) can occur.



*Emphysema*

The trapped air leads to an over-expansion of the lungs; this is often called a barrel chest.

The combination of constantly having extra air in the lungs, and the extra effort needed to breathe, results in the feeling of shortness of breath.

However, not all air sacs are involved to the same degree, and only parts of the lungs may be affected.

### What is Alpha-1 antitrypsin deficiency?

Alpha-1 antitrypsin deficiency is a genetic disorder. People with Alpha-1 antitrypsin deficiency are at greater risk of developing COPD. Alpha-1 antitrypsin (AAT) is a substance normally present in the blood; its role is to protect the lungs from damage. Over the course of a lifetime, the delicate tissues of the lungs are exposed daily to a variety of inhaled materials, such as pollutants, germs, dust and cigarette smoke. AAT helps the body fight against the damage caused by these pollutants. The estimated 1 in 2,500 Australians with a deficiency of AAT have too low a level to protect the lungs from the damaging enzymes produced by the body in reaction to the pollutants. This puts them at greater risk of developing COPD.

#### Other conditions:

Other lung conditions that commonly co-exist with COPD are asthma, bronchiectasis and interstitial lung disease. These are briefly explained below.

### What is asthma?

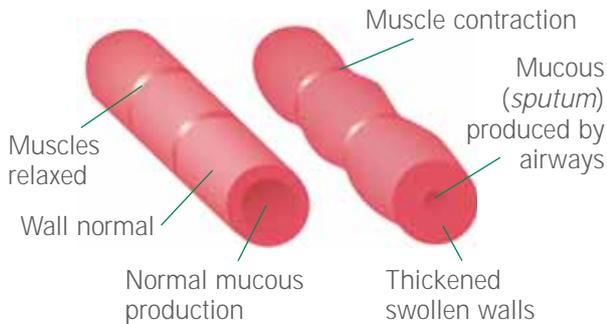
Asthma is a chronic condition manifested by variable constriction and swelling of the breathing tubes and airways and triggered by various factors, such as cold air or pollens.

Swelling of the airway wall and tightening of the muscles around the airway results in the narrowing of the breathing tubes (*bronchi* and *bronchioles*). Wheeze, chest tightness, breathlessness and cough are classic symptoms of asthma.

The swelling may produce an obstruction of the breathing tubes or airways, similar to COPD. Some people have both COPD and asthma.

Asthma is often believed to be a disease that affects children and young adults. However, asthma can occur in all age groups.

During an asthma attack, the breathing tubes or airways become inflamed, swollen and blocked with sticky sputum (as shown in the diagram below). This makes breathing more difficult.



*Excessive sputum narrows the airways*

## COPD and Asthma

Because asthma and COPD have similar symptoms, it may be difficult to distinguish between the two conditions. We know that many people with COPD may have asthma as well, especially those who are aged over 55 years. We also know that many older Australians being treated for asthma, in fact have COPD.

Asthma and COPD have different causes, affect the body differently and some of the treatments are different. It is important, therefore, to determine if you have asthma, COPD or both. The best way to do this is by having your doctor perform a lung function test (spirometry). See chapter 4 "Lung function tests", page 8, for further information.

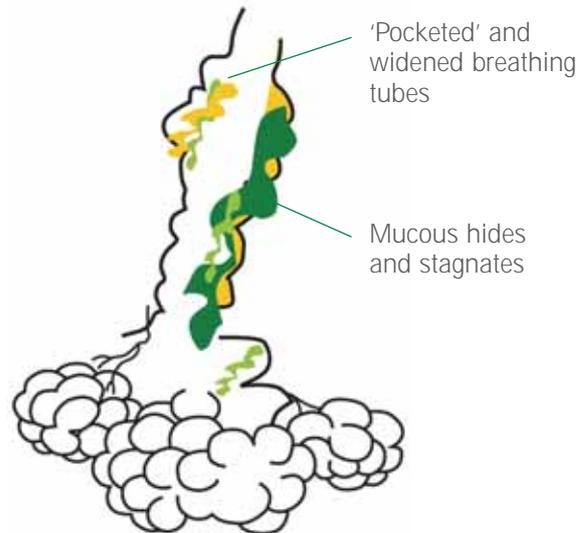
## What is bronchiectasis?

Bronchiectasis is a lung condition involving the destruction of the airways or 'breathing tubes' inner lining and widening or dilatation of the breathing tubes (*bronchi* and *bronchioles*).

Bronchiectasis is not caused by cigarette smoking and is usually caused by a previous severe infection of the lungs.

Bronchiectasis is characterised by repeated episodes of acute bronchial or airway infection with increased coughing and sputum production. This alternates with periods of chronic infection and mild coughing.

In bronchiectasis, sputum becomes difficult to clear. Sputum can be trapped in 'pockets' within the



*Bronchiectasis*

breathing tubes, which can lead to further infections and damage to the breathing tubes or airways.

Sputum is often white. If it changes to a different colour such as yellow, brown or green, it usually means there is an infection. Sometimes people with bronchiectasis will have discoloured sputum even when they are well.

The main treatments for bronchiectasis include:

1. **Airway clearance** techniques to loosen and clear sputum.
2. **Prevention of further infections** by vaccinating against infectious diseases, removing irritants and using aerosols and antibiotics when indicated.
3. **Pulmonary rehabilitation** is also recommended for people with bronchiectasis.

## What is interstitial lung disease?

Interstitial lung disease refers to a group of lung conditions, including pulmonary fibrosis, in which the lungs harden and stiffen (become fibrosed or scarred).

During interstitial lung disease, the walls of the air sacs (*alveoli*) thicken, which reduces the transfer of oxygen (or other gases) to and from the blood.

Interstitial lung disease may be caused by immune conditions, asbestosis, exposure to chemicals or irritants, or have no known traceable cause (idiopathic).