Lung conditions - chronic obstructive pulmonary disease

Chronic obstructive pulmonary disease (COPD) is the collective term for a number of lung diseases that prevent the lungs from breathing properly. Two of the most common types of COPD are emphysema and chronic bronchitis. These conditions often occur together. The main symptom is breathlessness, since the airways of the lungs are damaged, clogged with phlegm and unable to work efficiently. Cigarette smokers are most at risk.

COPD used to be more common in men, but the disease is quite evenly spread across the sexes now that women smoke in equal numbers to men. There is no cure for COPD, and the damaged airways don't regenerate. However, there are things people can do to slow progress of the disease, improve your symptoms, stay out of hospital and live longer.

Symptoms of chronic obstructive pulmonary disease

The symptoms of COPD include:

- Breathlessness after exertion
- In severe cases, breathlessness even when at rest
- Wheezing
- Coughing
- Coughing up sputum
- Fatigue
- Cyanosis - a blue tinge to the skin caused by insufficient oxygen
- Increased susceptibility to chest infections.

The structure of the lungs

The lungs are spongy lobes inside the chest, protected by the ribcage. Inhaled air is directed down the trachea (windpipe) into two tubes (bronchi) that each service a lung. The bronchi divide into smaller tubes called bronchioles, and further still into tiny air sacs called alveoli.

Each alveolus has a fine mesh of capillaries where the exchange of oxygen and carbon dioxide takes place. Oxygen molecules dissolve and migrate across a thin film of moisture from the air sac to the bloodstream. Oxygenated blood is sent to the heart, and then pumped around the body.

At the same time, carbon dioxide in the blood crosses from the capillaries to the air sacs using the same film of moisture. The carbon dioxide is then breathed out.

How COPD affects lung function

A person with emphysema has damaged alveoli and bronchi. The weakened and ruptured air sacs are unable to efficiently move oxygen from the air to the blood. As the disease progresses and damages more air sacs, the person may eventually feel breathless even when they are resting.

Bronchitis means inflammation of the bronchi. The lungs normally produce a small amount of fluid to keep healthy, but chronic bronchitis causes an overproduction of fluid. This leads to frequent and productive coughing.

Typically, COPD develops so slowly that the person doesn't realise their ability to breathe is gradually becoming impaired. The damage done to the lungs can be considerable before the symptoms are severe enough to notice.

Other complications of chronic obstructive pulmonary disease

A person with COPD is at increased risk of a number of complications, including:

- **Chest infections** - a common cold can easily lead to a severe infection.
- **Pneumonia** - a lung infection that targets the alveoli and bronchioles.
- **Collapsed lung** - the lung may develop an air pocket. If the air pocket bursts during a coughing fit, the lung will deflate.
- **Heart problems** - the heart has to work extremely hard to pump blood through the lungs.
- **Oedema (fluid retention)** - problems with blood circulation can cause fluid to pool, particularly in the feet and ankles.
- **Hypoxaemia** - caused by lack of oxygen to the brain. Symptoms include cognitive difficulties such as confusion, memory lapses and depression.
- **Risks of sedentary lifestyle** –as symptoms of COPD progress, many people adjust their lifestyle to avoid symptoms, for example, they reduce their physical activity to avoid breathlessness. As they reduce their physical activity, they become less fit and even more breathless on exertion. This downward spiral of inactivity means the person is prone to a range of potentially serious health problems, such as obesity and cardiovascular disease.

Causes and risk factors of chronic obstructive pulmonary disease

Some of the causes and risk factors of COPD include:

- **Cigarette smoking** - the most significant risk factor. Around one in five smokers will develop COPD.
- **Long-term exposure to lung irritants** - such as chemical vapours or dust from grain or wood. Severe air pollution can exacerbate COPD in smokers.
- **Genes** - a genetic disorder known as alpha-1-antitrypsin deficiency can trigger emphysema, even if no other risk factors are present.

Diagnosis methods for chronic obstructive pulmonary disease

COPD is diagnosed using a number of tests including:

- Physical examination
- Medical history
- Lung function tests – such as spirometry (measuring the breath)
- Blood tests
- Sputum analysis
- Chest x-ray
- Computed tomography (CT) scan.

Treatment options for chronic obstructive pulmonary disease

There is no cure for COPD, and the damaged lung tissue doesn't repair itself. However, there are things people can do to slow progress of the disease, improve your symptoms, stay out of hospital and live longer. Options may include:

- **Quit smoking** - techniques can include 'cold turkey', nicotine replacement therapy and hypnotherapy.
- **Bronchodilator medication** - to open the airways. The medication is best administered by puffer.
- **Corticosteroids** - drugs to reduce inflammation and swelling of lung tissue.
- **Expectorants** - drugs to loosen the phlegm and make it easier to cough up.
- **Oxygen therapy** – for those people with low oxygen levels in their blood, oxygen therapy can help prolong life. It is usually administered by a tube with two prongs that go into the nostrils. This treatment can reduce the risk of complications such as oedema and hypoxaemia, and has been shown to significantly increase the patient's life span. Generally, oxygen therapy is needed for around 16 or more out of every 24 hours. It may be given while the person is resting or by using a portable pump.
- **Treatment for chest infections** - such as antibiotics to treat existing infections, and pneumonia and flu vaccinations to reduce the risk of infections in the future.

- **Physical exercise programs** - or pulmonary rehabilitation. The patient is taught about their disease and how to make the most of their remaining lung function.
- **Surgery** - an experimental technique called lung volume reduction surgery is a possible option. Affected portions of diseased lung tissue are surgically removed, which allows the healthier tissue to better expand and contract.
- **Ongoing monitoring** - a person with COPD needs regular medical checkups.

Lifestyle factors

A person with COPD needs to make a number of important lifestyle changes, including:

- Try to be as physically active as possible.
- Eat a healthy diet.
- Make adjustments to lifestyle and home environment to ensure plenty of rest.
- Drink plenty of water to help keep the mucus in the lungs runny and easier to cough up.
- Avoid smoky or dusty environments.
- Join a support group - call The Australian Lung Foundation for information on a support group close to you.

Where to get help

- Your doctor
- Australian Lung Foundation (ALF) Tel. 1800 654 301

Things to remember

- Chronic obstructive pulmonary disease (COPD) is the collective term for a number of lung diseases that prevent the lungs from breathing properly.
- Two of the most common types of COPD are emphysema and bronchitis.
- Cigarette smoking is the most significant risk factor.
- There is no cure.
- Treatment aims to prevent further damage, reduce the risk of complications and ease some of the symptoms.
- Treatment options include drugs, pulmonary exercises and oxygen therapy.

This page has been produced in consultation with, and approved by:

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