CONDITION

Emphysema

Emphysema is permanent damage to the lungs' air sacs that makes breathing harder.

WHAT IT IS
Permanent damage and enlargement of the lungs' air sacs

BODY SYSTEM
Lungs and breathing

MAIN SYMPTOMS
Breathlessness, chronic cough, wheezing, reduced exercise tolerance

WHAT CAUSES IT
Usually smoke exposure; sometimes inherited alpha-1 antitrypsin deficiency

HOW IT IS DIAGNOSED
Spirometry for airflow obstruction; chest CT shows emphysema

MAIN TREATMENT
Inhalers, exposure avoidance, rehabilitation, and selected oxygen or procedures

CAN IT BE CURED?
No - damaged air sacs do not regrow

IS IT AN EMERGENCY?
Sometimes - sudden severe breathlessness or blue lips

LONG-TERM OUTLOOK
Usually progressive, but treatment can slow decline and ease symptoms

Overview

Emphysema is a long-term lung condition in which the walls of the tiny air sacs, called alveoli, become damaged. These air sacs normally move oxygen into the blood and remove carbon dioxide.

As the walls break down, the air spaces become larger and less elastic. Air can become trapped in the lungs, especially when you breathe out. This makes breathing less efficient and can cause increasing breathlessness.

Emphysema is one of the main conditions included under chronic obstructive pulmonary disease, or COPD. COPD can also involve long-term inflammation and mucus in the airways, sometimes called chronic bronchitis. Many people have features of both.

The lung damage cannot be reversed. However, treatment can reduce symptoms, improve

activity, prevent some flare-ups, and slow further damage. Stopping smoking is especially important if you currently smoke.

Symptoms

Emphysema often develops slowly. Early on, you may notice breathlessness only during exercise, climbing stairs, or walking uphill. Over time, ordinary activities such as dressing, washing, or preparing food may take more effort.

Common symptoms include:

Some people develop frequent chest infections or sudden periods when breathing becomes worse. These are called exacerbations, or flare-ups.

More advanced emphysema may cause tiredness, loss of appetite, unintended weight loss, or muscle weakness. Low blood oxygen can sometimes lead to morning headaches, poor concentration, or a bluish or grey colour around the lips. Ankle swelling may occur if the condition puts strain on the heart.

Symptoms do not always match the amount of damage seen on a scan. Some people have clear emphysema on a CT scan but few symptoms, while others have major breathing limitations.

- Shortness of breath, especially during activity
- A long-lasting cough, with or without mucus
- Wheezing or a tight feeling in the chest
- Reduced stamina and longer recovery after activity

Causes and risk factors

Cigarette smoking is the most common cause. Tobacco smoke causes inflammation and damages the delicate walls of the air sacs. The risk generally rises with the amount and length of exposure, although not every smoker develops emphysema.

Other inhaled irritants can contribute, particularly after years of exposure. These include second-hand smoke, workplace dust, chemical fumes, and smoke from indoor cooking or heating fires. Outdoor air pollution may also worsen lung damage and symptoms.

A less common cause is alpha-1 antitrypsin deficiency. This is an inherited condition in which the body has too little of a protein that helps protect the lungs. It can cause emphysema at a

younger age, including in people who have never smoked. Smoking greatly increases the risk of lung damage in someone with this deficiency.

Age also matters because damage can build over many years. A history of poor lung growth, repeated childhood respiratory problems, asthma, or previous serious lung infections may increase the chance of persistent airflow limitation later in life.

Emphysema is not contagious. You cannot catch it from another person.

Diagnosis

Breathlessness has many possible causes, including asthma, heart conditions, low fitness, anaemia, and other lung conditions. A diagnosis therefore involves more than checking symptoms.

Spirometry is the main breathing test used to identify persistent airflow obstruction associated with COPD. You blow as hard and fast as possible into a machine that measures how much air you can exhale and how quickly it comes out. The test is often repeated after an inhaled medicine that opens the airways.

A chest CT scan can show the enlarged air spaces and tissue destruction of emphysema. It can also show where the damage is located. A CT scan is not always needed when symptoms, examination, and breathing tests already give enough information.

A chest X-ray may help look for other explanations for symptoms, but it can miss mild emphysema. Pulse oximetry measures the oxygen level in your blood through a sensor placed on a finger. More detailed blood, exercise, or lung-function tests may be used to assess severity and treatment needs.

Testing for alpha-1 antitrypsin deficiency may be offered, particularly when emphysema begins unusually early, there is little smoking history, or close relatives have the condition.

Treatment and management

Treatment cannot rebuild destroyed air sacs, but it can help the remaining lungs work as well as possible.

If you smoke, stopping is the most effective way to slow further smoking-related damage. Support may include counselling, nicotine replacement, or other stop-smoking medicines. Avoiding second-hand smoke, workplace fumes, and other lung irritants is also important.

Inhaled bronchodilators relax the muscles around the airways, making it easier to move air out.

Some are used for quick symptom relief, while others work for longer periods. Correct inhaler technique matters because poor technique can prevent the medicine from reaching the lungs.

Inhaled corticosteroids like budesonide or fluticasone reduce airway inflammation. They are not appropriate for everyone with emphysema. They may be added when a person has repeated exacerbations, certain blood test findings, or asthma alongside COPD.

Pulmonary rehabilitation combines supervised exercise, breathing education, and support for managing symptoms. It can improve exercise capacity and confidence even though it does not reverse lung damage. Staying active also helps protect muscle strength.

Other parts of management may include:

Long-term oxygen treatment is used only when testing shows consistently low blood oxygen that meets specific clinical criteria. Oxygen is not a general treatment for breathlessness, and it must be prescribed because too much or too little can be harmful in some people. Smoking or using flames near oxygen creates a serious fire risk.

For severe emphysema that remains limiting despite other treatment, specialist options may include surgery to remove the most damaged lung areas, one-way valves placed through the airways, or lung transplantation. These procedures suit only carefully selected people.

- Vaccination against respiratory infections, based on current local advice
- Nutritional support for weight loss or muscle weakness
- A written plan for recognising and managing flare-ups
- Treatment for anxiety, depression, or sleep problems
- Medicines such as antibiotics or oral steroids like prednisone or hydrocortisone for selected flare-ups

Complications

An exacerbation is a noticeable worsening of breathlessness, cough, or mucus beyond the usual daily pattern. It may be triggered by a respiratory infection, smoke, pollution, or an unknown cause. Repeated exacerbations can lead to hospital treatment and further loss of lung function.

Severe emphysema can cause respiratory failure, meaning the lungs cannot supply enough oxygen or remove enough carbon dioxide. It can also raise pressure in the blood vessels of the lungs, placing strain on the right side of the heart.

Large damaged air spaces, called bullae, can sometimes rupture. This may cause a collapsed lung, known as a pneumothorax, with sudden chest pain and breathlessness.

Other possible effects include reduced mobility, muscle loss, poor nutrition, anxiety, depression, and loss of independence. People with emphysema, especially those with a smoking history, may also have an increased risk of lung cancer and heart conditions.

Prevention

Many cases can be prevented by not smoking. If you already smoke, stopping can reduce the risk of further damage at any stage. Avoiding second-hand smoke also lowers exposure.

At work, use the ventilation and protective equipment required for dust, fumes, or chemicals. Reducing exposure to indoor smoke from cooking or heating is important where cleaner ventilation or fuel is available.

Respiratory vaccinations do not prevent emphysema itself, but they can lower the risk or severity of infections that may trigger flare-ups.

Inherited alpha-1 antitrypsin deficiency cannot be prevented. If you have it, avoiding smoking and harmful fumes can reduce additional lung injury. Relatives may sometimes be offered testing after appropriate counselling.

Living with it and what to expect

Emphysema is usually a lifelong condition. It often progresses, but the speed is not the same for everyone. Smoking and continued irritant exposure, repeated flare-ups, other health conditions, and the amount of existing damage all affect the course.

Symptoms may remain fairly stable for long periods. Flare-ups can temporarily or permanently reduce what you are able to do. Regular follow-up is used to review symptoms, inhaler technique, activity, oxygen levels, nutrition, and any recent exacerbations.

Exercise is usually helpful when matched to your ability. Breathlessness during activity does not automatically mean that exercise is damaging your lungs. Pulmonary rehabilitation can help you learn how to pace activities, recover from breathlessness, and exercise more safely.

You may need to plan tasks, take breaks, or spread demanding activities through the day. Many people continue working, travelling, and taking part in family life, although adjustments may become necessary. More advanced emphysema can require help with daily activities, home oxygen, or discussions about future care preferences.

When to get medical help

Arrange routine follow-up if your usual breathlessness is gradually increasing, you are less active than before, or coughing is disrupting sleep. Also mention unintended weight loss, ankle swelling, repeated infections, low mood, or difficulty using your inhaler.

Seek prompt medical advice if you have a clear change from your normal symptoms, such as:

Call emergency services for severe or rapidly worsening breathlessness, especially if you cannot speak in full sentences. Blue or grey lips, confusion, unusual drowsiness, fainting, or severe chest pain also need emergency care.

Sudden sharp chest pain with sudden breathlessness may indicate a collapsed lung. Coughing up more than a small streak of blood also requires urgent assessment.

- More breathlessness than usual
- Increased coughing or mucus
- Mucus that changes colour or becomes thicker
- Fever or other signs of infection
- Usual reliever medicine working less well
- Oxygen readings below the range in your personal care plan

Common questions

Is emphysema the same as COPD?

Emphysema is one part of COPD. COPD describes persistent airflow obstruction and may include emphysema, chronic bronchitis, or both. A CT scan can show emphysema even before spirometry shows marked obstruction.

Can emphysema heal or go away?

No. Destroyed air-sac walls do not regrow. However, stopping harmful exposure and using appropriate treatment can slow further damage, reduce flare-ups, and improve how you function.

Can you get emphysema if you have never smoked?

Yes. Long-term exposure to second-hand smoke, workplace fumes, dust, air pollution, or indoor fuel smoke can contribute. Alpha-1 antitrypsin deficiency can also cause emphysema in someone who has never smoked.

Should I exercise if exercise makes me breathless?

Usually, yes, but the activity should match your health and ability. Regular movement helps maintain muscle strength and can make daily tasks easier. Pulmonary rehabilitation provides a supervised way to build activity and learn how to manage breathlessness.

How long can someone live with emphysema?

There is no single life-expectancy figure. Outlook is influenced by lung function, oxygen levels, age, smoking, flare-ups, fitness, weight, and other health conditions. Some people remain stable for years, while advanced emphysema can shorten life.

Is emphysema contagious?

No. It cannot spread through coughing, touch, or close contact. Respiratory infections that trigger a flare-up may be contagious, but the emphysema itself is not.

Sources

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