

Chronic bronchitis :

Chronic bronchitis is defined as **a chronic productive cough lasting at least three months in two consecutive years**, and at the same time, other possible causes of cough - pulmonary (bronchiectasis) and non-pulmonary (heart failure) are excluded. The disease is further characterized by an obstructive ventilation disorder.

Chronic bronchitis can be considered a component of chronic obstructive pulmonary disease (the other component being emphysema).

Etiology:

- **Endogenous causes**

1. age (incidence increases with age) and male gender (men are affected twice as often as women),
2. individual predisposition – atopy, immune disorders,
3. sinusitis (sinobronchial syndrome),

- **exogenous causes**

1. **smoking** – represents probably the most significant risk factor,
2. **repeated respiratory infections** – mainly haemophilic and pneumococcal,
3. work and environmental pollution.

Pathology :

Inflammatory infiltration of the wall of the bronchi, at the same time there are increased and hypertrophic mucus glands in the mucosa (overproduction of mucus). These changes lead to **a narrowing of the lumen of the bronchi** and thus to an obstructive air flow disorder.

Manifestations of the disease :

- Cough – mostly productive,
- **mucus hypersecretion** ,
- shortness of breath
- hypoxemia to cyanosis – a very advanced symptom,

- pulmonary hypertension – a very advanced symptom, essentially the result of a long-standing lung disease.

Disease types

1. **Simple** chronic bronchitis
2. **Purulent** chronic bronchitis
3. **Obstructive** chronic bronchitis

Investigation :

- **Medical history** (smoker, work environment, recurrent DCD infection),
- **physical examination** - may be completely without findings,
- **X-ray of the lungs** – to rule out infection, bronchogenic carcinoma,
- spirometric examination – reveals an obstructive lung ventilation disorder,
- bronchoscopy - in cases of uncertainty, suspicion of bronchogenic carcinoma .

Therapy :

The therapy of chronic bronchitis is similar to the therapy of COPD, it involves the administration of inhaled forms of drugs, often in combination.

- **Inhaled corticosteroids (ICS)**,
- **inhalation bronchodilators** ,
 - β 2 agonist (THIRD, SEVEN),
 - anticholinergic (SAME, OLD)..

Quitting smoking is an integral part of the therapy .

Chronic obstructive pulmonary disease (COPD) :

COPD is the name for a group of lung conditions that cause breathing difficulties.

It includes:

- emphysema – damage to the air sacs in the lungs
- chronic bronchitis – long-term inflammation of the airways

COPD is a common condition that mainly affects middle-aged or older adults who smoke. Many people do not realise they have it.

The breathing problems tend to get gradually worse over time and can limit your normal activities, although treatment can help keep the condition under control.

Symptoms of COPD :

The main symptoms of COPD are:

- shortness of breath, particularly when you're active
- a persistent chesty cough with phlegm – some people may dismiss this as just a "smoker's cough"
- frequent chest infections
- persistent wheezing

Without treatment, the symptoms usually get progressively worse. There may also be periods when they get suddenly worse, known as a flare-up or exacerbation.

Causes of COPD :

COPD happens when the lungs become inflamed, damaged and narrowed. The main cause is smoking, although the condition can sometimes affect people who have never smoked.

The likelihood of developing COPD increases the more you smoke and the longer you've smoked.

Some cases of COPD are caused by long-term exposure to harmful fumes or dust. Others are the result of a rare genetic problem that makes the lungs more vulnerable to damage.

Treatments for COPD :

The damage to the lungs caused by COPD is permanent, but treatment can help slow down the progression of the condition.

Treatments include:

- stopping smoking – if you have COPD and you smoke, this is the most important thing you can do
- inhalers and medicines – to help make breathing easier
- pulmonary rehabilitation – a specialised programme of exercise and education
- surgery or a lung transplant – although this is only an option for a very small number of people.

Preventing COPD :

COPD is largely a preventable condition. You can significantly reduce your chances of developing it if you avoid smoking.

If you already smoke, stopping can help prevent further damage to your lungs before it starts to cause troublesome symptoms.

Pulmonary embolism

A **pulmonary embolism** is a clot of material (an **embolus**) that blocks blood from getting to the lungs. It is usually caused by a blood clot that starts somewhere else in the body and travels to the lungs. However, it can also be caused by clumped cancer cells, fat, or bone. Rarely, while giving birth, a woman can get a clot of amniotic fluid.

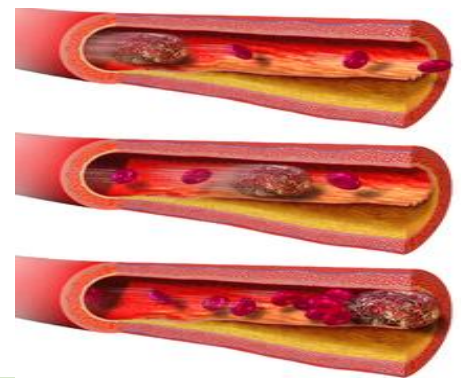


Illustration of a blood clot traveling through the blood vessels until it gets stuck. A pulmonary embolism is often caused by a blood clot that forms somewhere else in the body, travels to the lungs and gets stuck there.

Symptoms :

Symptoms of a pulmonary embolism start suddenly, as soon as the clot starts blocking blood flow to the lungs. Blood is supposed to pick up oxygen in the lungs and then carry that oxygen to the rest of the body. If blood cannot get through to the lungs, it cannot pick up oxygen or deliver it to the body. Every part of the body needs blood and oxygen to survive.

Often, the first sign of a pulmonary embolism is syncope (fainting), because the brain is not getting enough blood and oxygen. Other symptoms include:

- Chest pain that feels like a knife sticking into the chest. The pain is often worse when the person breathes in.
- Trouble breathing
- Hemoptysis (coughing up blood)
- Low oxygen saturation (because the body is not getting enough oxygen)

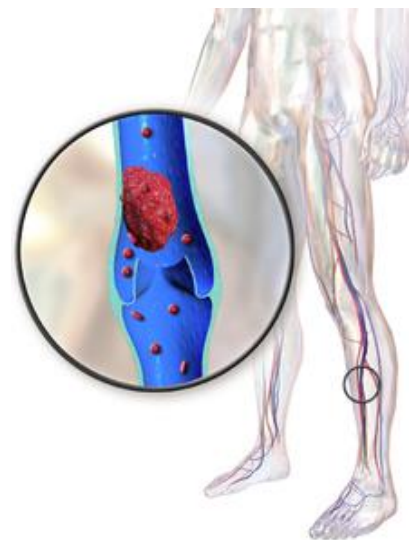
Saddle embolus :

The worst kind of pulmonary embolism is caused by a *saddle embolus*. This kind of embolus blocks the pulmonary artery, which carries blood from the right side of the heart to the lungs. This makes it impossible for any blood to get through to the lungs. Since no blood can get out to the rest of the body, the person's blood pressure drops and they can go into shock. A saddle embolus is a very serious medical emergency. Many people with this type of embolus die.

Risk factors :

There are many risk factors that make it more likely for a person to get a pulmonary embolism. For example:

- Smoking
- A type of abnormal heart rhythm called atrial fibrillation ("A-fib")
- Recent surgery (after surgery, the body's blood clotting system works harder than usual, to help heal the body. If clots travel to the lungs, they can cause a pulmonary embolism)
- Being paralyzed, bedridden, or not able to move around very much



Deep vein thrombosis - a blood clot in a large vein, like a leg vein - is a risk factor for pulmonary embolism

- Sitting in one place for a long time, like on a long airplane flight (this makes the blood pool in the legs; if a blood clot forms in the leg, it can travel through the blood vessels to the lungs)
- Recent fracture of one of the long bones in the leg (because having a broken leg makes it harder to move around; also, clots of fat from the bone marrow can escape from the broken bone and travel to the lungs)
- High levels of estrogen because of pregnancy or some birth control pills
- Having had a deep vein thrombosis (DVT) - a blood clot in a large vein .
- Certain kinds of cancer (some kinds can cause extra blood clotting)
- Being overweight or obese

Treatment :

There are a few treatments for pulmonary embolism. The choice of which treatments to use depends on how serious the pulmonary embolism is. Treatments include:

- *Oxygen*. Oxygen can be given through a special mask to make it easier for the person's body to get the oxygen it needs.
- *Anticoagulants*. These are medicines commonly called "blood thinners." Doctors may give a few blood thinners together. For example, they may give heparin because it works right away. They may also give warfarin (Coumadin), which takes a few days to start working, but which the patient can keep taking at home.
- *Thrombolytics*. These are medicines often called "clot busters" or "clot dissolvers." They can quickly dissolve (break up) a clot. However, they are usually given only if a pulmonary embolism is life-threatening, because they can cause bleeding.
- *Removing the clot*. Sometimes a doctor will thread a catheter (a flexible tube) up through a vein and into the lung. Once the doctor finds the clot, the catheter can be used to pull the clot out, or to give medicine to dissolve the clot. In very bad cases, surgery may be needed to remove a clot.