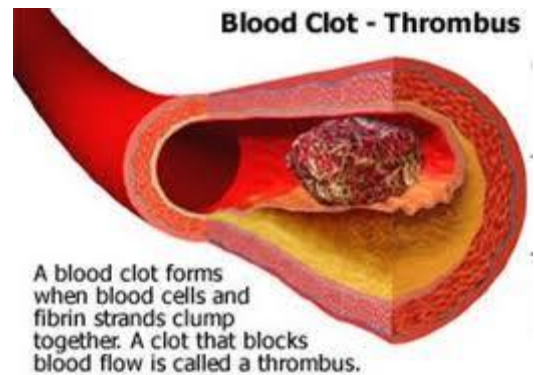


## Pulmonary Embolism

### Overview

An emboli or an embolus is a foreign object, quantity of gas or air, a bit of tissue or tumour or a blood clot that travels through the circulatory system to another location.




A pulmonary embolism is a blood clot in the lung. A blood clot or thrombus forms in one of the body's veins, usually in smaller vessels in the leg, pelvis, arms, or heart. When a clot forms in the legs or arms, it is referred to as a deep venous thrombosis. The blood clot or thrombus then has the potential to break off and enter the circulatory system. It can travel via the bloodstream through the heart into a pulmonary vessel of the lung, continuing to reach smaller vessels until it becomes wedged in a vessel that is too small to allow it to continue further.



The clot gets wedged and prevents any further blood from travelling to that section of the lung. Not only does this prevent gaseous exchange in the blood, it also prevents blood and oxygen reaching part of the lung, which means this tissue dies. This is referred to as a pulmonary infarct.






### Causes

Several factors can make someone more likely to develop a blood clot, and increase the risk of having a pulmonary embolism. These are referred to as Virchow's triad and include:

<p> <b>Immobilisation</b> leading to alterations in blood flow</p>	<p>If an individual is confined to bed for extended periods of time, for example after a serious injury or a stroke, formation of a blood clot becomes more likely to occur. This can also happen if someone has been travelling for extended periods. For example long haul flights, or being seated in a car for a very long journey, can cause blood to collect in the legs.</p>
<p> <b>Hypercoagulability</b> or increased clotting potential of blood</p>	<p>A number of factors can actually increase the potential for the blood to clot, such as medications, for example birth control pills, smoking, pregnancy, and cancer. Some people may have a genetic predisposition for blood that clots easily.</p>
<p> <b>Damage to blood vessel walls</b></p>	<p>This can be damage caused by previous trauma or by conditions which increase risk of damage to blood vessels, such as high blood pressure.</p>

### Symptoms

Symptoms can be quite varied and is the reason why a pulmonary embolism can be fatal. The condition needs to be recognised and treated immediately for treatment to be effective. Symptoms include:

-  shortness of breath;
-  chest pain;
-  anxiety;
-  coughing – dry or accompanied by blood; and
-  loss of consciousness.

## Treatment

Prevention is always better than a cure, so patients who are more prone to suffer a pulmonary embolism should avoid being immobile for long periods, use anticoagulants or blood pressure reducing medication, and wear compression stockings on any extended journeys.

For a patient who has suffered a pulmonary embolism, treatment depends on severity. Sometimes if it is a very small embolus and the patient is stable they can be treated at home.

Treatment in stable patients consists of the use of anticoagulants or blood thinners, either orally or intravenously, depending on the patient and the drug. These prevent further clots forming, however, they do not break up clots that are already formed, the body will do this of its own accord.

If the pulmonary embolism is life threatening the doctor will use medicine to break up a clot, these are known as thrombolytics. They are dangerous themselves as they can cause sudden bleeding and this is why they are only used in emergency situations. Doctors can also use catheters to remove blood clots, and on rare occasions, surgery.

Surgery may involve a doctor putting a filter in the vena cava, the vein that carries blood back from the body to the heart, preventing clots from reaching the lungs, however, this does not stop clots from forming.



*A vena cava filter, used to prevent clots reaching the lungs.*

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