This information is for patients who have a pulmonary embolus (PE). It explains what it is, why it happens, what treatment is given and what to expect when you leave hospital.

What is a pulmonary embolus?
A PE is a blockage of one or more of the blood vessels in the lungs. It is commonly caused by a blood clot that has developed in the leg or pelvic veins, which then becomes dislodged and travels to the lungs.

What are the signs and symptoms?
- shortness of breath
- chest pain
- coughing up blood
- collapse in severe cases

What causes a PE?
Some PEs occur for no obvious reason but they may be associated with the following:
- surgery
- trauma such as fractures or muscle injuries
- long periods of inactivity for example being in bed with ‘flu’
- long journeys including flights of over four hours duration or long unbroken car journeys
- pregnancy, both during pregnancy and after delivery
- certain types of oral contraceptive pill or hormone replacement therapy
- obesity
- cancer
- a previous DVT (deep vein thrombosis)

Some people have an inherited or acquired tendency to clot in their blood. This is called thrombophilia and can increase the likelihood of a PE developing. It can affect other members of the family and you will be given advice about this if it applies to you.

How does the doctor confirm a PE?
The doctor will tell you about your symptoms and you may have one or more of the following tests:
- Chest X-ray – to help diagnose PE but mainly to exclude other conditions.
- VQ scan – to confirm the diagnosis of PE. This is a two-part scan; the first part involves injecting a contrast dye into the lungs so that the scanner can detect blood flow. The second part involves breathing in a harmless gas that will show the airflow in the lungs. The two parts are then matched and assessed by the radiologist to determine whether a clot is present.
- Spiral CT scan – to help identify the presence of a blood clot if other tests are inconclusive. This is a non-invasive scan.
- Pulmonary Angiogram – this involves injecting a dye directly into the blood vessels in the lung. Any blockages may then be detected on the X-ray. This test is not used routinely.
- ECG (electrocardiogram) – to trace the heart rhythm. This can help to confirm the presence of a PE.
- Echocardiogram – to show the effects of PE on the heart. This is a non-invasive test using ultrasound.
- Blood gas analysis – a blood test to show the oxygen levels in the blood, which may be reduced after a PE.
- Ultrasound – to look for clots in the deep veins of the legs or pelvis. This is a painless test and involves moving an ultrasound probe over the top of an affected limb. If a clot is detected this may help confirm the diagnosis of PE.

What is the treatment for a PE?
Once the blood clot is confirmed you will be started on anticoagulant drugs. These drugs prolong the blood’s clotting time (sometimes referred to as thinning the blood or making it less sticky). They do not dissolve the clot, the body does this itself over the next few weeks. The most commonly used anticoagulants are heparin and warfarin.

You will start on heparin.

- Heparin – is usually given by once daily injection under the skin or by a drip into a vein. It works immediately by prolonging the time it takes the blood to clot and therefore reduces the risk of further PEs. Heparin is stopped when anticoagulation with tablets is fully established.
- Warfarin – is taken once a day in tablet form. Warfarin also prolongs the time it takes the blood to clot but it takes several days to reach its therapeutic effect. Heparin is used with the warfarin until the right blood level is reached and then the heparin is stopped.

- Clot buster (Thrombolytic) drugs – dissolve the blood clot. They are given very occasionally if the PE is life threatening. Anticoagulants are still required after this treatment.
- Surgery – to remove the clot is not used routinely. It is only necessary in a small number of patients if the PE is life threatening. Anticoagulants are still required after this treatment.

- IVC filter – very rarely, treatment with anticoagulants alone may not prevent at recurrence of PE. A filter can be inserted into the main blood vessel carrying blood to the heart (inferior vena cava) which will trap clots and prevent them reaching the lungs. These are usually removed 10 to 12 days later when the risk is lower, although they may be left in place permanently.
The anticoagulant clinic

The clotting time of your blood needs to be monitored regularly. We measure your clotting times against a standard and the result is known as the INR (International Normalised Ratio). Your INR will normally be kept between 2 to 3 (this means that your blood will take two to threemtimes longer to clot than normal). Your dose of Warfarin may be changed according to the INR result.

Warfarin can interact with other medications. It is essential that you inform anyone prescribing other drugs for you that you are on warfarin.

Please tell your anticoagulant clinic immediately of any changes to your other drugs.

What to expect at home?

You will be given advice depending on the severity of your PE. Your specialist doctor will advise you on any individual measure that you may need to follow.

- **Work** – you should not return to work until your acute symptoms have resolved, usually about six weeks. Your GP will advise you about returning to work.

- **Pain** – you may continue to experience chest pain for several weeks after your PE. Taking regular painkillers should help. If your chest pain worsens or changes then you need to seek medical advice immediately (see below).

- **Driving** – only resume driving when you can carry out an emergency stop.

- **Weight** – being overweight can increase the risk of a clot developing.

- **Sex** – there is no medical reason to refrain from sex after a blood clot.

If you experience any of the following you should contact your GP immediately:

- worsening shortness of breath
- new/worsening chest pain
- coughing up blood.

How long does the treatment last?

Most people remain on Warfarin for six months; although your specialist doctor may advise a longer period of treatment depending on the severity and cause of the blood clot. If you have had a clot before you may be advised to stay on warfarin for life.

After stopping warfarin you may be asked to have a blood test to check whether you have an inherited or acquired tendency to develop blood clots.

How likely is it that you will develop another blood clot?

The risk depends on what caused your clot. Special precautions are required in the following situations:

- airline flights, particularly if longer than four hours duration
- after surgery/ trauma/ lower limb fracture
- long periods of inactivity
- pregnancy.

If you are considering taking hormone replacement therapy or the combined oral contraceptive pill, then you should seek advice from your GP.

If you are admitted to hospital **remember** to tell your doctor that you have had a blood clot previously.

For further advice – please contact the anticoagulant clinic on 020 8725 5443 or your GP.

Further information

You might also find it useful to visit [www.nhs.uk](http://www.nhs.uk) and select Pulmonary Embolism from Health A-Z.

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