

Several large, thick, purple curved lines of varying radii are positioned on the left side of the page, creating a stylized, abstract graphic.

# Venous Thromboembolism (VTE)

Nursing

A guide for patients and carers

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**This leaflet is for patients (and their relatives/carers) who have been diagnosed as having either a Deep Vein Thrombosis (DVT) or a Pulmonary Embolism (PE). DVTs and PEs are collectively known as venous thromboembolism.**

## Why do blood clots form in veins?

Blood normally flows quickly through veins and does not usually become solid (clot). Blood flow in leg veins is helped along by leg movements because muscle action squeezes the veins. Sometimes a DVT occurs for no apparent reason. However, the following may increase your risk of having a DVT:

- Immobility
- Damage to the inside lining of the vein
- Conditions that cause the blood to clot more easily than normal
- People with cancer or heart failure
- Older people (over 60 years of age)
- Smoking
- Being male
- Lack of fluid in the body (dehydration)

## How common is a deep vein thrombosis (DVT) or pulmonary embolus (PE)?

It is estimated that about 1 in 1,000 people have a DVT each year in the UK; left untreated approximately 1 in 10 people with a DVT will develop a PE. The most common cause of a blood clot developing in a vein is immobility; however cancer patients do have an increased risk of developing a VTE and there is also an increased risk for patients with certain types of medical devices i.e. PICC lines.

## How are DVTs/ PEs diagnosed?

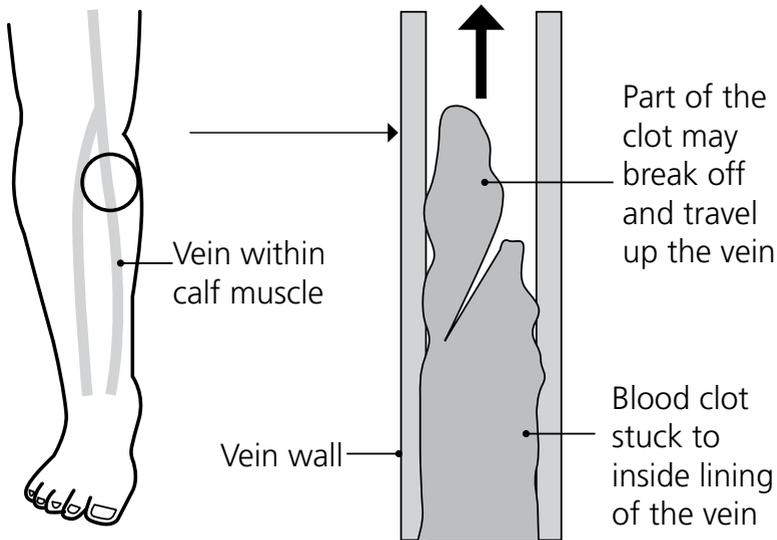
At The Clatterbridge Cancer Centre most DVTs are diagnosed using a special type of ultrasound called a duplex Doppler, a test to see how blood moves through arteries and veins. Ultrasound is useful because it is an easy, readily available test.

A special scan called a CTPA (Computed Tomography Pulmonary Angiography) is the most common way to diagnose a PE. CTPA is a type of CT scan looking at the lung arteries. If you are allergic to the dye (contrast) used in CTPA scanning or, if you have chronic kidney disease, you may need a V/Q scan (pulmonary ventilation/perfusion test) instead. More information on both types of scan can be provided, if needed.



## What is a deep vein thrombosis (DVT)?

A deep vein thrombosis (DVT) is a blood clot occurring in a deep vein. Veins are blood vessels that take blood towards the heart. Blood clots in veins most often occur in the legs, calf veins are the most common site for a DVT. However other deep veins in the body can be blocked by blood clots, including the arms. When you have a DVT, the blood flow in the vein is partially or completely blocked by the blood clot.



### Deep vein thrombosis

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## What are the symptoms of a deep vein thrombosis (DVT)?

### Typical DVT symptoms include:

- Pain and tenderness of the calf/arm
- Swelling of the calf/arm
- Colour and temperature changes of the calf/arm. Blood that would normally go through the blocked vein is diverted to outer veins. The area may then become warm and red.

Sometimes there are no symptoms and a DVT is only diagnosed if a complication occurs, such as a pulmonary embolus. Sometimes, if clinical staff suspect you have a DVT or PE, you may be given daily injections to thin your blood until a scan has been performed to confirm the diagnosis. This is, in effect, treating you as if you do have a DVT/PE, even though it has not been proven. This is safer than doing nothing whilst waiting for a scan.

## What is a PE (Pulmonary embolus)

In a small number of people who have a DVT, a part of the blood clot breaks off. This travels in the bloodstream and is called an embolus. An embolus will travel in the bloodstream until it becomes stuck. An embolus that comes from a clot in a vein will be carried up through the body's veins to the heart, through the large heart chambers, but will get stuck in a blood vessel going to a lung. This is called a pulmonary embolus. Nearly all cases of PE are caused by a DVT.



## What are the symptoms of a pulmonary embolism (PE)?

The symptoms will depend on how large or small the clot is, and on how well the person's lungs can cope with the clot. People who are frail or have existing illness are likely to have worse symptoms than someone who is fit and well. Symptoms often start suddenly.

| Symptoms from a small PE  | Symptoms from a large PE   |
|---|--|
| No symptoms at all (common).  | Severe breathlessness.   |
| Breathlessness - this can vary in degree from very mild to obvious shortness of breath.   | Chest pain - with a large PE the pain may be felt in the centre of the chest behind the breastbone.  |
| Chest pain which is pleuritic, meaning sharp pain felt when breathing in. Often you feel like you can't breathe deeply, as this causes you to catch your breath. This happens because the blood clot may irritate the lining layer (pleura) around the lung. Shallow breathing is more comfortable. | Feeling faint, feeling unwell, or a collapse. This is because a large blood clot interferes with the heart and blood circulation, causing the blood pressure to drop dramatically. |
| Coughing up blood (haemoptysis).  | Rarely, in extreme cases, a massive PE can cause cardiac arrest, where the heart stops pumping due to the clot. This can result in death, even if resuscitation is attempted.      |
| A mildly raised temperature (fever).  |  |
| A fast heart rate (tachycardia).  |  |

## What are the treatments for a deep vein thrombosis (DVT) and pulmonary embolus (PE)?

### The aims of treatment are:

- To prevent the clot spreading up the vein and getting larger. This may prevent a large embolus breaking off and travelling to the lungs (a pulmonary embolus).
- To reduce the risk of post-thrombotic syndrome developing. (Chronic swelling, pain and dry/dark pigmentation of the limb).
- To reduce the risk of venous ulcers of the leg in future. A venous leg ulcer is the most common type of leg ulcer that can develop after minor injury, where persistently high pressure in the veins of the legs has damaged the skin. This can happen to people who have developed post-thrombotic syndrome.
- To reduce the risk of a further DVT/PE in the future.

### Anticoagulation treatment

Anticoagulation is often called thinning the blood, medicines which work in this way are called anticoagulants. They alter certain chemicals in the blood to stop clots forming so easily. The body's own healing mechanisms can then get to work to break up the clot.

If you have a DVT/PE, you will usually need an anticoagulant medicine for a number of months to be decided by your clinician or GP. However, the tablets used may take a few days to start



working properly, so normally you have some fast-acting injections given for the first few days until the tablets are working properly. A serious embolus is rare if you start anticoagulation treatment early after a DVT.

**The injections used are usually given just under the skin (subcutaneously). The ones used are:**

- One of a number of heparin injections - dalteparin, enoxaparin or tinzaparin
- Fondaparinux sodium

**Once a DVT/PE has been confirmed, you will also be started on an anticoagulant tablet. There are a number of options:**

- Warfarin has been the usual anticoagulant for many years. The aim is to get the dose of warfarin just right so the blood will not clot easily, but not too much, which may cause bleeding problems. You will need regular blood tests (called INRs) whilst you take warfarin. Recently, some alternatives to warfarin have become available, which do not need regular blood tests.
- Rivaroxaban, apixaban and dabigatran are newer anticoagulant medicines. You do not have to have regular blood tests to monitor your blood clotting. This is an advantage over warfarin. However, there is no antidote (as there is with warfarin) to stop you bleeding too easily. These newer tablets are not suitable for everybody.

The length of time you will be advised to take anticoagulation depends on various factors, some people continue to have an

increased risk of having a DVT. In this case, the anticoagulation may be long-term.

Some medicines used to treat or prevent DVT or PE may be derived from animal products, if this is an issue please speak to your pharmacist, nurse or doctor for further information.

## Compression stockings treatment

Most people who develop a DVT are advised to wear compression stockings. Compression stockings are also known as compression hosiery or thromboembolic deterrent stockings ('TEDs'). This treatment has been shown to reduce the risk of developing another DVT and can also reduce the risk of developing post-thrombotic syndrome. It is recommended that you wear the stockings each day, for at least two years. Your GP will be able to replace any stockings as necessary and discuss you with when you might be able to stop wearing them.

The stockings work by applying pressure from outside the veins. This helps squeeze the blood in the veins back up the legs. This then makes the pressure inside the veins less. In turn this prevents leakage of blood into the surrounding tissues.

## Preventing a recurrence of a DVT/PE

Some people who develop a DVT have an ongoing risk of a further DVT. For example, if you have a blood clotting condition or continued immobility, you may be advised to take anticoagulation



medicine long-term, but your consultant/GP will advise you about this.

**Other things that may help to prevent a first or recurrent DVT include the following:**

- If possible, avoid long periods of immobility; if you are able to get up and walk around do so or, even better, take a brisk daily walk for 30-60 minutes. The aim is to stop the blood pooling and to get the circulation in the legs moving.
- Major operations increase the risk of a DVT - particularly operations to the hip, lower tummy (abdomen) and leg. To help prevent a DVT, you may be given an anticoagulant such as a heparin injection just before an operation, and you may be asked to wear compressions stockings. It is also now common practice to get you up and walking as soon as possible after an operation.
- When you travel on long plane, train, car or coach journeys, you should have little walks up and down the aisle every now and then. Try to exercise your calf muscles whilst sitting in your seat. If you have had a previous DVT, you should see your doctor for advice before you travel on a long journey or fly.

**Once you have been discharged from The Clatterbridge Cancer Centre it is important that you contact your GP if you have any further concerns.**

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Issue date: 01/12/17

Issue no: 1.1

Reference: LNUCVTES

Review date: 01/12/19