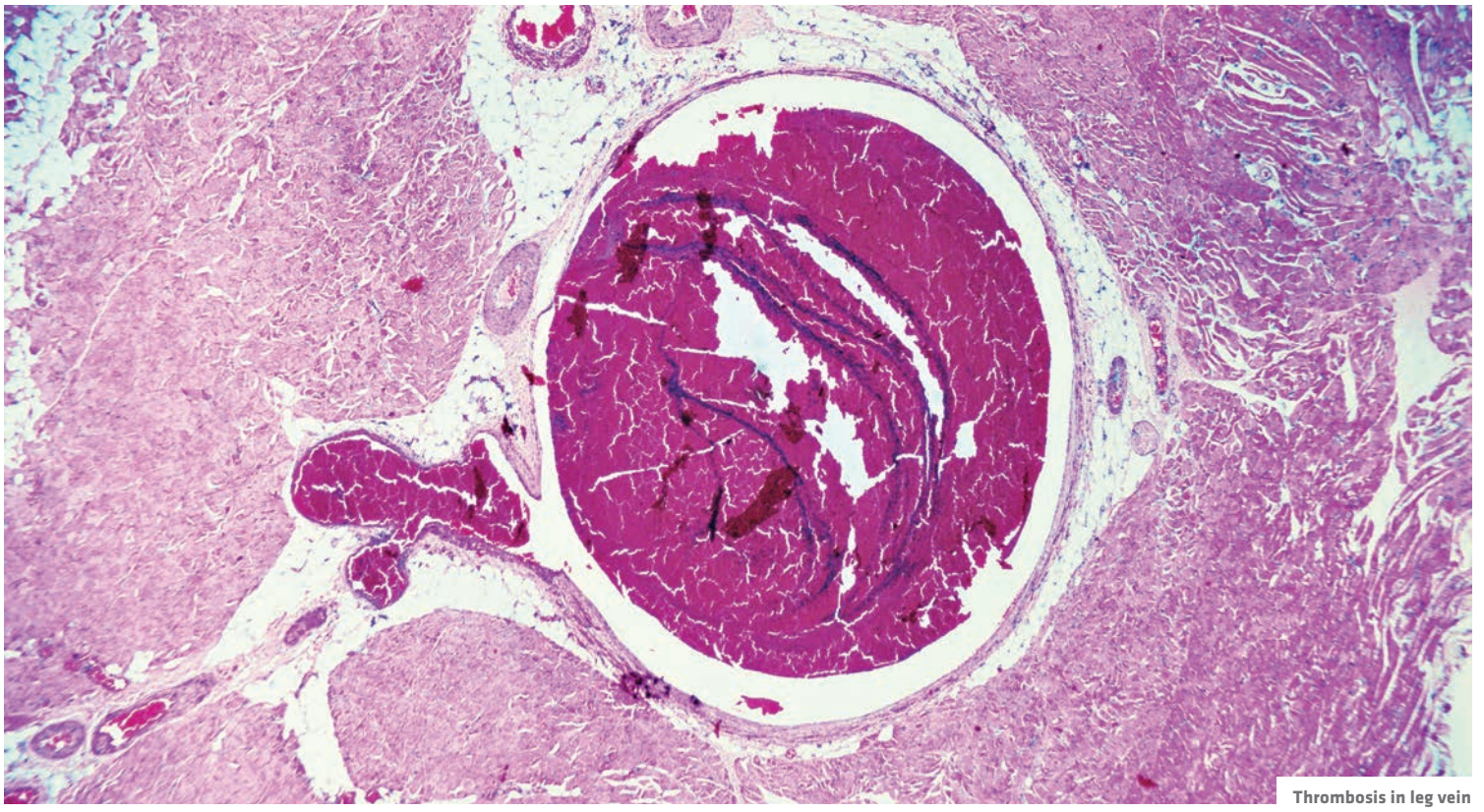
Patient Education

UNDERSTANDING BLOOD CLOTS



Thrombosis in leg vein

As many as 900,000 people in the United States develop blood clots annually, and clots are responsible for approximately 100,000 deaths each year. Research has shown that fewer than one in four people has any recognizable signs and symptoms of a blood clot, so understanding the risk for blood clots is an important factor in identifying symptoms and seeking treatment in a timely manner.

Read below for more information about the diagnosis, treatment, and prognosis of blood clots.

This "Patient Education" tear sheet was produced in collaboration with the National Blood Clot Alliance *(stoptheclot.org)*.

What Is a Blood Clot?

A blood clot (*thrombosis*) is a gelatinous or semi-solid mass of coagulated (*congealed*) blood that develops in the veins of the body.

Deep vein thrombosis (DVT) occurs when a blood clot forms in one of the deep veins of the body. These usually occur in the legs, but can sometimes occur in the arms.

Clots can break off from a DVT (most likely in the legs, groin, or pelvic area) and travel to the lung, causing a *pulmonary embolism* (PE), which can be fatal.

How Are Blood Clots Diagnosed?

People who might have a dangerous blood clot may undergo a number of tests, including a blood test called a *D-dimer test*, as well as other laboratory tests and imaging scans to diagnose blood-clotting problems.

Deep Vein Thrombosis

Most often, DVT is diagnosed by ultrasound, which is a non-invasive test. If the results are not definitive, then venography (an invasive test using contrast dye) or magnetic resonance imaging may be used.

Pulmonary Embolism

For PE, a lung ventilation/perfusion scan is performed, but if it does not identify a clot – and one is still suspected – a pulmonary angiogram is performed. During a pulmonary angiogram, a catheter is threaded through a vein in the groin and passed through the heart into the pulmonary artery. Contrast dye is then injected and X-rays are taken to monitor blood flow in the lung. The angiogram will give a definite diagnosis as to the presence of a clot.

What Are the Symptoms and Risks of a Blood Clot?

The signs and symptoms of a DVT (clot in the legs or arms) include:

- swelling, usually in one leg or arm
- pain or tenderness in the leg or arm (often described as a cramp or charley horse)
- reddish or bluish skin discoloration
- leg or arm that is warm to the touch

If you experience any of these symptoms, you should see a doctor as soon as possible.

The signs and symptoms of PE include:

- sudden shortness of breath
- sharp and/or stabbing chest pain that may get worse with a deep breath
- rapid heart rate
- unexplained cough, sometimes with bloody mucus

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If you experience any of these symptoms, you should seek medical attention immediately.

The following are risk factors associated with developing blood clots:

- hospitalization for illness or surgery
- major surgery, particularly of the pelvis, abdomen, hip, or knee
- severe trauma, such as a car accident
- injury to a vein (e.g., from a broken bone or severe muscle injury)
- hip or knee replacement surgery
- cancer and cancer treatments
- use of birth control methods that contain estrogen, such as the pill, patch, or ring
- pregnancy, including six weeks after birth
- use of hormone replacement therapy, which contains estrogen
- family history of blood clots
- obesity
- confinement to bed
- sitting too long, especially with legs crossed

How Can Blood Clots Be Prevented?

Knowing the risk factors for and signs and symptoms of blood clots is an important part of prevention. You can also prevent blood clots by:

- discussing risk factors with a doctor
- talking with the doctor about blood clots prior to any surgery
- visiting a doctor as soon as possible if any symptoms of a blood clot appear
- knowing your family history and discussing it with your doctor
- standing up, walking around, and stretching your legs every two to three hours, particularly when traveling long distance by car or plane
- maintaining a healthy weight
- not smoking or taking steps to quit smoking

How Are Blood Clots Treated?

Blood clots are treated with *anticoagulants* (also known as *blood thinners*), which slow the time it takes for blood to clot and prevent clots from growing, while also preventing more clots from forming in most patients. Some anticoagulant options are discussed here.

Unfractionated (UF) heparin is a fast-acting blood thinner that is administered into the vein via an *intravenous* needle or under the skin via a *subcutaneous* needle. People taking UF heparin require a daily blood test (called a UF heparin level or anti-Xa level) to monitor the treatment dose, which the doctor will adjust based on the results of these blood tests.

Low-molecular-weight heparin (LMWH) is similar to UF heparin but can be administered subcutaneously at home. LMWH lasts longer in the body than UF heparin, and the effect of LMWH is more predictable than UF heparin, so most patients do not need monitoring. In the United States, LMWH treatment options that have been approved by the U.S. Food and Drug Administration (FDA) include dalteparin and enoxaparin.

UF heparin and LMWH are used most often as short-term options for anticoagulation.

Warfarin is an oral pill for long-term anticoagulation treatment and requires frequent monitoring via the international normalized ratio (INR) blood test, which measures how long it takes blood to clot. It standardizes results of prothrombin time (or clotting time). INR can be measured via a blood test in the lab or a finger stick test in a clinic or at home with an INR self-monitoring device. The optimal INR for most patients on warfarin is between 2.0 and 3.0.

Several new anticoagulants have recently been approved by the FDA, including apixaban, dabigatran, edoxaban, and rivaroxaban. These target-specific oral anticoagulants do not require frequent lab monitoring.

Prognosis and Follow-up

After DVT, it is common for patients to have residual swelling in the leg or arm after the initial treatment. Graduated compression stockings or sleeves may help increase blood flow and reduce swelling.

After PE, patients may have shortness of breath and mild pain or pressure in the affected area. Pain may occur in response to physical activity or a deep breath and may persist for months or years. Shortness of breath should decrease with time and exercise.

Most patients who experience a blood clot will not experience another one, but they have a higher risk for a blood clot than the general population. The degree of increased risk depends on the location of the clot, the number of clots that occurred, the presence of a family history of blood clots, and the presence of blood clotting disorders or any underlying medical conditions.

Patients do not need follow-up ultrasounds unless a new clot is suspected. Prior to treatments or surgeries, patients should tell all health-care professionals – dentists, surgeons, emergency room technicians, nurses – about the use of anticoagulants and any history of blood clots. ●

The National Blood Clot Alliance Resources

The National Blood Clot Alliance (NBCA) is dedicated to advancing the prevention, early diagnosis, and successful treatment of life-threatening blood clots, such as deep vein thrombosis, pulmonary embolism, and clot-provoked stroke. NBCA works on behalf of those who may be susceptible to blood clots, including those with clotting disorders, atrial fibrillation, cancer, traumatic injury, risks related to surgery, lengthy immobility, child birth, and birth control.

National Blood Clot Alliance
Stop The Clot®

For more information on NBCA, visit *stoptheclot.org*. For more patient resources on blood clots, visit *stoptheclot.org/learn_more/about-clots.htm*.

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