

What is DVT?

Deep vein thrombosis (DVT) is a condition resulting from the formation of a blood clot thrombus inside a deep vein, commonly located in the calf or thigh. DVT occurs when the blood clot either partially or completely blocks the flow of blood in the vein. When the rhythm of circulation of the blood slows down due to illness, injury, or immobility, there is a tendency for blood to accumulate or "pool." A static pool of blood offers an ideal environment for clot formation and poses a potential risk for DVT.

Know the Signs

DVT may occur without obvious symptoms and may be difficult to detect. Up to 50% of DVT incidents may produce minimal symptoms or are completely "silent."

- Pain, tenderness, or sudden swelling in the leg
- Discoloration or visibly large veins
- Skin that is warm to the touch

Seek urgent medical help if you experience any of the following:

- Shortness of breath
- Rapid pulse
- Excessive sweating or anxiety
- Sharp chest pain
- Coughing up blood
- Dizziness or fainting

Why do blood clots develop?

The main reason blood clots form is to help heal the body after an injury. Clots are what stop the bleeding when you cut yourself. How a clot forms:

1. When a blood vessel is injured, disc-shaped elements in the blood called platelets attach themselves to the wounded area.
2. They send signals to attract more platelets in a process called aggregation.
3. Special proteins known as clotting factors then bond the platelets together, creating a clot.
4. The clotting factors release chemicals that signal the body to produce fibrin, a thread-like protein that weaves itself through and stabilizes the clot.

In most situations, blood clots are a natural part of the healing process. They enable the injured tissue to begin to repair itself without excessive blood loss. In the case of deep vein thrombosis, however, the body signals the clotting process to occur unnecessarily at the wrong time and in the wrong place.

High levels of cholesterol may lead to plaque deposits which may narrow your arteries and increase your risk for blood clots.

What are the risk factors for the development of DVT?

Most DVT victims are over 60 years of age; however, DVT can strike almost anyone at risk. Genetics plays a part, but so does environment. Factors and conditions that may increase the risk of DVT include:

Immobility: Because immobility slows down the circulation of blood, anyone who sits immobile for hours at a stretch is at risk for DVT. This includes patients who are paralyzed by a stroke, postoperative patients who are confined to bed, and travelers subject to long automobile rides or airplane flights.

Injuries: Blood vessels may be injured in a variety of ways including: a blow to the leg, athletic injuries, surgery, or radiation therapy for cancer. Traumatic injuries may set the stage for DVT because they initiate the blood clotting process and narrow the vein. This slows the passage of blood and encourages pooling.

Inherited Clotting Disorders: If blood clots run in your family, you may have an inherited clotting disorder. Among people of European descent, the most common genetic mutations that encourage clotting are the factor 5 (V) Leiden and the prothrombin gene mutation. Individuals who inherit one of these mutations from either parent may experience recurrent episodes of DVT, but the risk is highest if both parents were affected.

Infections, Inflammatory Diseases: Infections and inflammatory diseases like systemic lupus erythematosus, Crohn's disease, rheumatoid arthritis, and glomerulonephritis may stimulate the blood clotting process and promote DVT.

Pregnancy: Pregnant women are 5 times more likely to develop DVT than non-pregnant women. Cases occur most often in the third trimester and immediately following delivery.

Oral Contraceptives: Hormonal preparations such as oral contraceptives or replacement estrogens may also increase the risk of clotting, particularly when combined with other risk factors like smoking, hypertension, or obesity (a Body Mass Index of 30 or higher. Not sure? Use our [BMI Calculator](#)).

Cancer: Some cancers release substances that increase the blood's tendency to clot (i.e. prothrombotic). Cancers of the ovaries, pancreas, lymphatic system, liver, stomach, and colon are particularly likely to provoke DVT.

Smoking: Tobacco smoke reduces the amount of oxygen carried in the blood and may damage vessel walls, potentially leading to clot formation. It is one of the most modifiable risk factors for cardiovascular disease.

Obesity: Once thought to be dangerous only in association with high cholesterol levels, obesity is now recognized on its own as a significant risk factor. Obesity is defined by the National Institutes of Health as having a Body Mass Index greater than 30 (approximately 30 pounds or more overweight). Central obesity, also known as the "apple shape," has been associated with cardiovascular disease - which may increase the risk of DVT.

Air Travel with Prolonged Sitting: Prolonged sitting during air travel slows down circulation and increases the blood's propensity to clot. In addition, tightly packed seating and long periods of immobility can contribute to an increased risk of DVT. Even in young, healthy travelers, long stretches of time spent in cramped seats of an aircraft with very low humidity may set the stage for the formation of a blood clot in the lower leg.

Diagnosing DVT

Because several other conditions, such as muscle strains, skin infections, and inflammation of superficial veins (phlebitis), display symptoms similar to DVT, the condition may be difficult to diagnose without doing specific imaging studies. If your healthcare provider suspects you could have DVT, here are some of the tests that may be ordered.

Doppler (Duplex Venous) Ultrasound: This noninvasive procedure uses a wand-like device called a transducer that sends sound waves into the leg. The waves travel through the leg tissue and reflect back, enabling a computer to transform them into a moving image that can reveal the presence of a clot.

Doppler Ultrasound is the most popular method for diagnosing DVT. Not only is it painless and easy to perform, it is also very effective for diagnosing thrombi (clots) where they are most dangerous-in the deep veins of the upper leg and groin. It is not quite as effective when diagnosing below the knee.

Venography: In this study, dye is injected into a large vein in the foot or ankle. An x-ray image is then taken to reveal the location of possible clots. Venography is one of the most accurate ways to identify deep vein thrombosis, but it may be uncomfortable. Occasionally it may cause phlebitis, an inflammation of the superficial veins. In addition to being invasive, venography is expensive. It also requires a high degree of expertise to perform and interpret correctly.

Magnetic Resonance Imaging (MRI) : MRI uses a strong magnet to visualize the body's internal structures and generate clear, high-quality images. Preliminary studies suggest that Magnetic Resonance Imaging may be very effective in diagnosing DVT, especially in the thigh and pelvic areas.

The most threatening complication of DVT is pulmonary embolism (PE).

A pulmonary embolism occurs when a blood clot breaks loose from the wall of a vein and travels to the lungs, blocking the pulmonary artery or one of its branches. This blocks the blood flow from the heart. Obstruction of a large pulmonary artery by one or more of these migrating clots (emboli) may be life threatening.

Symptoms of a pulmonary embolism may include

- Shortness of breath
- Anxiety or nervousness
- Rapid pulse
- Excessive sweating
- Sharp chest pain
- Cough that may produce a bloody discharge
- Very low blood pressure
- Fainting

Anyone experiencing these symptoms should call for assistance and go to a hospital immediately.

This information was taken from www.dvt.net and is provided as an educational resource from the Rush Hemophilia & Thrombophilia Center. For more information please contact your physician.