



## What is Deep Vein Thrombosis (DVT)?

Deep vein thrombosis, commonly referred to as “DVT,” occurs when a blood clot or thrombus, develops in the large veins of the legs or pelvic area. Some DVTs may cause no pain, whereas others can be quite painful. With prompt diagnosis and treatment, the majority of DVT’s are not life threatening. However, a blood clot that forms in the invisible “deep veins” can be life threatening. A clot that forms in the large, deep veins is more likely to break free and travel through the vein. It is then called an embolus. When an embolus travels from the legs or pelvic areas and lodges in a lung artery, the condition is known as a “pulmonary embolism,” or PE, a potentially fatal condition if not immediately diagnosed and treated.

## Symptoms

Approximately one-half of those with a DVT never have recognizable symptoms. The most common symptom is leg pain and tenderness in the calf muscles. One may also observe swelling or a change in color of one leg to purple or blue. These signs and symptoms may appear suddenly or may steadily develop over a short period of time. If you observe these signs or symptoms, you should contact your doctor immediately.

Symptoms are quite different if the clot breaks loose and travels to the lungs, causing a pulmonary embolism (PE). The symptoms of PE include chest pain, shortness of breath, rapid pulse, or a cough. There may also be a feeling of apprehension, sweating, or fainting. Such symptoms are not specific to a PE, and can occur with pneumonia, heart attack, and other medical conditions.

*These are always critical symptoms that demand immediate medical attention.*

## Most common Signs and Symptoms of DVT

These symptoms can develop slowly or suddenly. If you have any of these symptoms, contact your doctor immediately.

- Sudden swelling of one limb
- Pain or tenderness
- Skin that is warm to the touch
- Fullness of the veins just beneath the skin
- Change in color (blue, red or very pale)

## Common Signs and Symptoms of PE

PE can be fatal, if you experience these signs or symptoms seek medical attention right away.

- Shortness of breath
- Sudden chest pain
- A feeling of apprehension
- Sudden collapse
- Coughing
- Sweating
- Bloody phlegm (coughing up blood)

*The signs and symptoms of these disorders (DVT and PE) can vary by individual and event. Some individuals may also experience uncommon symptoms such as dizziness, back pain or wheezing.*

## Diagnosis

DVT is diagnosed by an ultrasound exam. This simple, painless test is safe and widely available. A specific blood test may also be performed to measure “D-dimer” which is a sign of recent clotting. When this test is negative, it is unlikely that DVT has occurred.

## Causes

DVT is generally caused by a combination of two or three underlying conditions:

- Slow or sluggish blood flow through a deep vein
- Tendency for a person’s blood to clot quickly
- Irritation, inflammation or injury to the inner lining of the vein

There are a variety of settings in which this abnormal clotting process can occur. These include individuals on bed rest (such as during or after a surgical procedure or medical illness, such as heart attack or stroke) or those who are confined and unable to walk for prolonged periods of time (such as during prolonged air or car travel). It can occur in certain families where there is a history of parents or siblings who have suffered from prior blood clots. It can also occur in individuals with active cancer or those undergoing cancer treatment which may predispose the blood to clotting.

Having a recent major surgical procedure, especially hip and knee orthopedic surgeries or one that requires prolonged bed rest, predispose the blood to clotting. Irritation or inflammation occurs when a leg vein is injured by a major accident or medical procedure.

Also, there are specific medical conditions that may increase your risk of developing a DVT via these three mechanisms, such as congestive heart failure, severe obesity, chronic respiratory failure, a history of smoking, varicose veins, pregnancy and estrogen treatment. If you are concerned that you may be at risk, please consult with your health care provider.

## Treatment

Both DVT and PE are treated with blood thinning medication. These medicines, called anticoagulants, decrease your blood's ability to clot and can also stop clots from getting bigger. The use of medication may also prevent new clots from forming. They do not, however, break up existing clots that have already formed. The body's natural systems will help dissolve the clot to varying degrees.

Sometimes patients with DVT are also asked to wear a prescription stocking to help treat the symptoms of swelling and prevent skin changes that can occur over time from the damage to the vein from the DVT. Skin changes can include dermatitis, skin discoloration, scarring and ulcers. This condition is called "post-thrombotic syndrome." Stocking and devices that use air pressure to inflate long leg cuffs are also used for the prevention of DVT.

Some health care providers may recommend sequential compression devices to promote blood flow. Anticoagulant therapy lots from forming and diminishes the risk of a pulmonary embolus. It consists of heparin, which may be given intravenously or, more frequently, by subcutaneous injection, followed by warfarin, which can be given orally and continued on an outpatient basis.

The health care providers may also recommend thrombolysis, using an intravenous agent that dissolves clots. With this procedure, a catheter is threaded up through the clot, and one of the clot-dissolving drugs is injected to dis-

solve it. The clotbuster is injected slowly through a catheter with many tiny holes into the area of the DVT, much like a soaker hose. Sometimes a tiny vacuum cleaner is used to suck out the softened clot. Once the clot is gone, balloon angioplasty or stenting may be necessary to open the narrowed vein, but this is common only in the iliac veins, located in the pelvic area. With this approach, the patient will also need anticoagulant medication (heparin) to prevent new blood-clot formation while the existing clot is being dissolved.

For a few patients who have valid reasons for clot removal but for whom clot-dissolving drugs cannot be used, extraction of the clot, through a small incision at the groin, may be recommended. Both approaches are designed to remove the clot and restore the venous system to normal, but they involve additional risk and expense and therefore are applied selectively by the appropriate vascular specialist. Clot removal, by either technique, is usually recommended only for major clots higher up in the leg, and particularly in active, healthy patients without any serious associated diseases. It can significantly reduce the serious late after-effects of DVT, such as chronic leg swelling, discoloration, and, ultimately, ankle ulcers, but they do so at an increased risk of serious bleeding.

### Some Tips to Avoid DVT

- Do not sit for long periods of time
- Elevate legs if you are sitting for moderate periods of time
- If you are on an airplane for more than four hours-get up and walk in the aisles, pump your feet up and down
- If you are flying, drink plenty of non-alcoholic beverages
- Keep hydrated-drink six glasses of water a day
- Talk to your doctor about the need for medications or graduated elastic compression stockings for long airplane flights
- If you have varicose veins, wear support hose (especially if pregnant)
- Do not wear constricting garments around the legs or waist (elastic bands or garters)

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