

# Patient Information

## Deep Vein Thrombosis (DVT) and Post Thrombotic Syndrome (PTS)

### 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 pelvis. Some DVT's cause no pain, whereas others are quite painful. A blood clot that forms in the 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 to the lungs. When an embolus travels from the legs or pelvis 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.

### What are the causes of DVT?

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

- slow or sluggish blood flow through a deep vein
- a tendency for a person's blood to clot quickly
- irritation or inflammation of the inner lining of the vein.

Major surgical procedures, especially orthopedic surgeries or those requiring prolonged bed rest, predisposes the blood to clotting. 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.

### Symptoms of Deep Vein Thrombosis (DVT)

Approximately one-half of those with a DVT never have recognized symptoms. When symptoms are present, the most common is leg pain and tenderness in the calf muscles, or one may 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 time. 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.

### Diagnosis of Deep Vein Thrombosis (DVT)

A suspicion of DVT is raised after a clinical exam and by identifying the associated risk factors, but a definite diagnosis of DVT cannot be accurately made without additional testing.

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An ultrasound scan of the legs is highly accurate, non-invasive, and relatively painless. During the ultrasound scan, any blood clots in the vein are displayed on a monitor. A specific blood test may be performed to measure "D-dimer", a sign of recent clotting. When this test is negative, it is very unlikely that you may have suffered a DVT.

## Deep Vein Thrombosis (DVT) Treatment Options

For most DVTs, physicians recommend wearing graduated compression stockings, elevating the leg, and taking anticoagulant medications to prevent blood clotting. Anticoagulant medications prevents further clots from forming and diminishes the risk of a PE . Lovenox, heparin, and Coumadin are frequently used.

In severe cases, the physician may recommend thrombolysis, which is the use of an intravenous medication that dissolves clots. With this procedure, a catheter is threaded through the vein to the clot, and then a clot-dissolving drug is injected to dissolve it. The clot-dissolving drug is injected slowly through the catheter's many tiny holes into the area of the DVT, much like a soaker hose. Sometimes a tiny device that works like a vacuum cleaner is used to remove or suck the softened clot out. Once the clot is gone, a balloon angioplasty or stenting may be necessary to keep 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 and warfarin) to prevent new blood clot formation. Some patients cannot have clot-dissolving drugs. In these instances, a thrombectomy in which the clot extracted through a small incision at the groin may be recommended. Both approaches are designed to remove the clot and restore blood flow through the veins. The procedures can significantly reduce the serious consequences of DVT, such as chronic leg swelling, discoloration and, ultimately, ankle ulcers, called PTS.

## What are the late effects of DVT?

Small blood clots in the leg veins may dissolve without serious later consequences. However, larger blood clots, especially those located in the upper thigh and pelvic areas, are more likely to contribute to significant, long-term leg symptoms. The long-term consequences of a DVT can persist even when the use of medications has, in the short term, been "successful". For example, the leg veins can remain obstructed by remaining clot or scar tissue, or the valves in the vein may be damaged and not function properly. This may result in chronic swelling, skin discoloration, and ultimately, the development of chronic skin ulcers near the ankle. These problems can be diminished, if the individual who suffered a DVT will faithfully wear graduated compression stockings and elevate the legs periodically during the day.

Anticoagulant medications will reduce the risk of future DVT and PE's; these medications cannot prevent the long-term tendency for leg swelling, discomfort, and skin changes, commonly called the "post-thrombotic syndrome" (PTS).

## Post-thrombotic syndrome:

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The complications after DVT may include persistent edema (swelling), pain, purpura (bleeding into the skin), increased skin pigmentation, eczematoid (eczema-like) dermatitis, pruritus (itchiness), ulceration, and cellulitis (bacterial infection just below the skin). All of these complications result from the impaired return of blood through the veins of the lower leg to the heart. This is called post thrombotic syndrome or PTS.

## **Can DVTs be prevented?**

Regular exercise will decrease the risk of DVT. Persons who undergo major surgery are at risk to develop DVT, therefore calf and leg exercises before surgery along with promptly resuming physical activity as soon as possible after the surgery will decrease the risk for DVT. Preventing a DVT is the major reason why hospitalized patients are encouraged to be up and walking as soon as possible after surgery. Regular stretching and leg movement are important for individuals who sit at a desk all day or are traveling on long trips, particularly air travel. As always, it is important to stop smoking, as smoking increases the tendency of the blood to clot. Patients should always ask their physician about what steps are being taken to avoid DVT after a surgery is performed. The hospital should have a plan for prevention of DVT.