

Deep Vein Thrombosis (DVT)

You may know or care for someone who developed a blood clot in a leg and is now taking warfarin (Coumadin®) to prevent further blood clots from forming. This paper will provide information regarding blood clots that form in the deep veins of the body. For information on long term treatment with warfarin please refer to the companion paper: Warfarin (Coumadin®).

Blood clots

When a blood clot (thrombus) forms in a vein it is called a venous thrombosis. Usually this occurs in the “deep veins” of the legs, thighs, and pelvis and then it is called a deep vein thrombosis, or DVT.

When a part or all of a blood clot in a vein breaks off, it can travel through the veins to other areas in the body. This is called an embolus. If the embolus lodges in the lung, it is called a pulmonary embolus (PE). This is a very serious condition causing over 50,000 deaths each year in the US.

Risk factors for blood clot formation

1. **Inherited disorders** – there are a number of genetic disorders that cause blood to clot more easily. These usually involve deficiencies in blood clotting factors such as protein C, protein S and factor V Leiden.
2. **Medical conditions** – some medical conditions increase a person’s risk of developing blood clots. These include:
 - Pregnancy
 - Obesity
 - Smoking
 - Heart conditions (atrial fibrillation, mechanical heart valves)
 - Increased age
 - Previous episodes of DVT’s
 - Cancer
 - Kidney problems
 - Blood disorders such as polycythemia vera
 - Medications – especially birth control pills and hormone replacement therapy
3. **Surgery** – surgical procedures, especially involving the hip, pelvis, or knee, increase the risk for clots to form. This risk continues through recovery from surgery as the person is less active.
4. **Trauma** – especially if blood vessels are injured.
5. **Inactivity** – prolonged sitting, especially sitting for six or more hours on a plane or in a car; or prolonged bed rest increase the risk for a clot to form.

Symptoms

Classic symptoms of a DVT include swelling, pain, warmth, and redness in the involved leg.

Superficial phlebitis

Superficial phlebitis can mimic the symptoms of a DVT. This causes pain, tenderness, firmness, and/or redness in a vein due to inflammation, infection, or a blood clot.

Superficial phlebitis differs from a DVT in that the veins involved are near the surface of the skin, often it occurs in varicose veins. There is almost no risk for developing a pulmonary embolism with this therefore, anticoagulation is usually not needed.

Diagnosis

If a patient's symptoms, history, and exam suggest the presence of a DVT; tests are ordered to confirm this. The most common test is an ultrasound of the leg. Contrast studies of the veins, CT scans, and MRI's are sometimes used also.

Treatment of DVT's

The main goal of treatment is to prevent a pulmonary embolus. Other goals include preventing the clot from becoming larger and preventing new blood clots from forming. The primary treatment for blood clots is the use of anticoagulants. Anti means *against* and coagulant refers to *blood clots*. Therefore an anticoagulant helps reduce clots from forming. These medications have been referred to as "blood thinners"; however they do not actually cause the blood to become less thick, only less likely to clot. Other treatments can be used in specific situations and include filter placement and therapy to dissolve the blood clot.

When a clot is first diagnosed, usually patients are treated with an anticoagulant such as heparin that needs to be injected under the skin. A medication that comes in pill form and is used to treat and prevent blood clot formation is warfarin (Coumadin®). Depending upon the situation that led to the blood clot formation, warfarin can be prescribed for as little as three months or be taken for a lifetime. Please refer to the companion paper on warfarin for more information regarding this medication.

Prevention

1. **Surgery** – at the time of surgery, certain high-risk patients may be given anticoagulants to decrease the risk of clot formation. This treatment is started shortly after the surgical procedure. It is used mostly in bone and joint surgeries and cancer surgeries.

Other measures to prevent clot formation at the time of surgery include:

- Inflatable compression devices that are worn around the legs during and immediately after surgery and periodically fill with air. These devices apply gentle pressure to the legs which will improve circulation.
- Graduated compression stockings are also used. These stockings apply pressure to the lower legs with the greatest pressure at the ankle.
- Activity – getting up and walking as soon as possible after surgery also decreases the risk for blood clots.

2. **Extended travel** – since sitting for prolonged periods of time during travel increases the risk for clot formation, there are things that can be done to help prevent this from occurring.

- Stand up and walk around every hour or two when traveling in a plane or stop at rest stops and walk every couple of hours when traveling by car
- Avoid smoking prior to travel
- Wear loose-fitting, comfortable clothing
- Flex and extend the ankles and knees and change positions frequently. Avoid crossing the legs
- Avoid dehydration by drinking plenty of fluids
- Avoid medications (sleeping pills) or alcohol, which would impair the ability to get up and move around
- Consider wearing knee-high compression stockings