

WHAT ARE THE SIGNS AND SYMPTOMS OF PULMONARY EMBOLISM?

Signs and symptoms of pulmonary embolism occur quickly and need prompt attention.

The symptoms of PE are different than for DVT. These symptoms include:

- Shortness of breath
- Sharp chest pain usually with breathing in or a deep breath
- A feeling of apprehension
- Sudden collapse
- Rapid pulse
- Coughing
- Sweating
- Bloody phlegm (coughing up blood)



These symptoms are not unique to pulmonary embolism and can be associated with many other conditions. Unfortunately, a majority of people with PE, unlike DVT, will experience uncommon symptoms such as dizziness, back pain, or wheezing. However, because pulmonary embolism can be fatal, **if you experience these signs or symptoms seek medical attention right away.**

HOW ARE DVT'S AND PE'S DIAGNOSED?

The easiest and most reliable method for diagnosing deep vein thrombosis is an ultrasound exam. This test is simple, painless, safe and widely available. A specific blood test may be performed to measure “D-dimer” which is a sign of recent clotting. When this test is negative, it is very unlikely that you have suffered a DVT. An invasive “venogram” (an x-ray using dye injected into the veins) may sometimes be needed, but the ultrasound exam has made this much less commonly needed.

PE may be diagnosed by a special type of chest CT scan, a lung scan, or pulmonary angiogram.

HOW ARE DVT'S AND PE'S TREATED?

Treatment of acute deep vein thrombosis has four goals: 1) to stop the clot from getting bigger, 2) to stop the clot from breaking free in your vein and moving to lungs, 3) to decrease your chance of having another deep vein thrombosis, 4) to minimize the likelihood of developing PTS.

DVT's are treated with medications sometimes called “blood thinners” or anticoagulants, which decrease your blood's ability to clot. These medications are used to stop clots from getting bigger and to prevent additional blood clots from forming. Giving a blood thinner as soon as a clot is suspected may rapidly improve symptoms and help to prevent complications. Blood thinners do not break up blood clots that have already formed. Your body's natural clot-breaking system will help dissolve the clot. Blood thinners are usually prescribed as an injection first, followed by either an injection or a pill. Your doctor will decide what is best for you. To be effective, you may need to take this medication for at least 3-6 months, often for 1-2 years, and sometimes long-term.

If you take the pill blood thinner you will be asked to get regular blood tests to monitor the degree of thinning of the blood. There are many medications that can affect your blood test result, so make sure your health care provider knows ALL of your medicines, including over the counter pills and herbal supplements.

In addition to your blood thinners, you may be asked to wear prescription stockings (stockings that become tighter as it goes up the leg to help push your blood up your leg). Stockings will help to reduce leg pain, swelling, discoloration, and ulcers commonly called the “post-thrombotic syndrome.” These post-thrombotic symptoms are best treated by lifelong use of prescription compression stockings. You need to work with your health care provider to prevent additional clots and to treat them if they should happen.

PE's are also treated with “blood thinners.” For very large clots in the lungs causing severe symptoms, or large clots in the legs, a medication to dissolve the clot may be needed. This procedure of using a clot-busting drug is called thrombolysis. With thrombolysis, clot-dissolving medications are given into an arm vein or by an IV catheter threaded through a leg vein to the clot and medication is injected into the clot through many

tiny holes in the catheter, much like a soaker hose. Sometimes a device like a tiny vacuum cleaner cleans out the pieces of clot. For large clots in the legs, an angioplasty (balloon to open the vein wider) or stent may be needed if there are any remaining narrowings after the clot is dissolved. For some patients, extraction of the clot (thrombectomy), through a small incision at the groin or through surgery may be recommended. There is some additional risk and expense with this procedure. 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.

Patients with a DVT may or may not be hospitalized for a few days, depending on doctor preference and the severity of the clot. Patients with a PE are generally hospitalized for a few days. Most patients with VTE are not on bed-rest unless they have thrombolysis.

As with the treatment for DVT, patients with PE will typically take blood thinners for several months, or years, and will be monitored with regular blood tests to be sure the blood thinner medication is properly adjusted. Prescription stockings may also be prescribed, particularly if there is a DVT along with a PE.

CAN VTE BE PREVENTED?

Regular exercise will decrease the risk of VTE. Persons who undergo major surgery are at risk to develop DVT, therefore calf and leg exercises before surgery along with resuming physical activity as soon as possible after the surgery will decrease the risk for DVT. In some cases, low doses of blood thinners, elastic stockings, or compression pumps for the legs are used to prevent VTE after surgery or during hospitalization for another illness. Preventing VTE is the major reason that 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 a lot or when 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. Also avoid wearing tight garments that produce constrictions below the waist, like elastic or socks that are too tight.

If you are on blood thinner medication, and a procedure is planned that involves cutting the skin, you can undergo that

procedure by transitioning safely and effectively using “bridge therapy.” This generally means decreasing or stopping the dose of your blood thinner before surgery, or being put on an alternative blood thinner, such as an injection medication, while the pill is stopped. If you are on blood thinner medication and require an invasive procedure, bridging therapy should be discussed with your health care provider.

WHAT CAN YOU DO TO PREVENT VTE?

- Stay active. Walking helps with blood circulation and with weight loss
- STOP smoking
- Maintain a normal body weight and eat a healthy diet
- Discuss risks of birth control or hormone replacement therapy with your health care provider
- If you are hospitalized for any medical or surgical condition, ask the doctor what he or she is planning to do to decrease your risks of DVT's and PE's
- Find out if there is any family history of VTE or abnormal blood clotting. If so, discuss any tests or steps you should take with your health care provider
- If you take long airline or auto trips, get up and walk every hour or so, and tighten the calf muscles by flexing your foot and raising on your toes 10-15 times each hour. Additionally, avoid alcohol and drink plenty of fluids
- Follow your health care provider's instructions to keep any medical conditions under best control

VTE prevention is a very dynamic field with exciting research expected to bring new treatments. New oral medications that will require less monitoring are on the horizon. Discuss all treatment options with your health care provider.

