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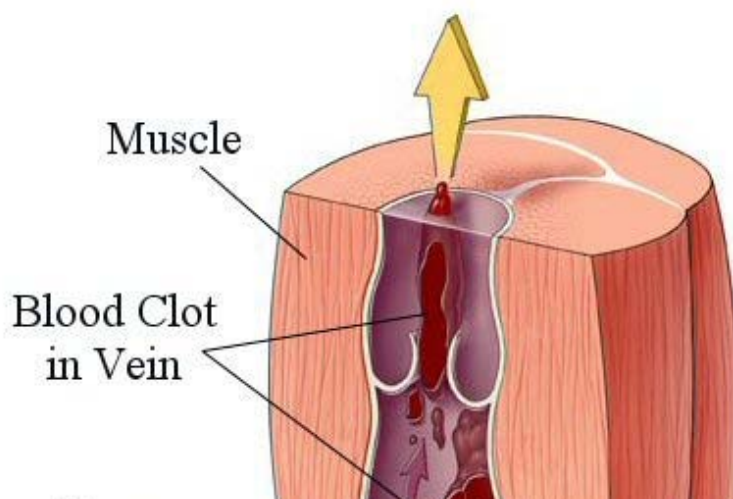
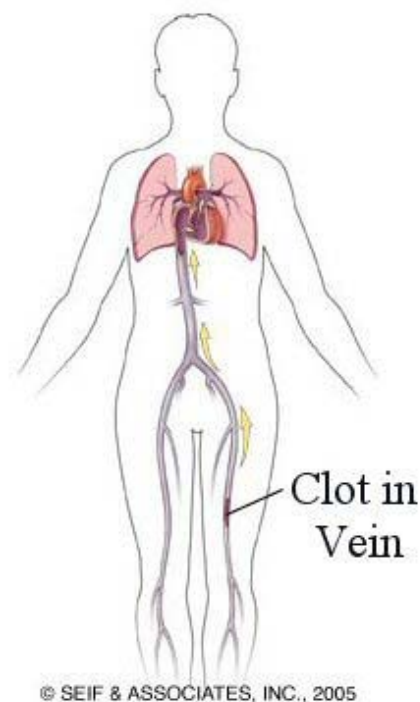
## Venous Thromboembolism

Venous thromboembolism (VTE) refers to blood clots that form in veins. These clots usually form in the deep veins in the legs, pelvis, or elsewhere, and can travel to the lungs. They can also form in the lungs.

A blood clot in a deep vein is called a Deep Venous Thrombosis (DVT). A blood clot in the lungs is called a Pulmonary Embolism (PE).

VTE is a dangerous and potentially life threatening condition. A large PE can block blood flow to the lungs and can cause death. A DVT in the leg can break off and travel up your veins to your lungs and become a PE. This can happen suddenly and without warning. Once identified, VTE can be treated. It can also be prevented in some circumstances.

A DVT can damage the valves in your leg veins, so that instead of flowing upwards, the blood pools in the lower leg. This is called post-thrombotic syndrome, and can result in pain, swelling, discoloration and sores on the leg.



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## CAUSES

- Blood clots form in a vein for different reasons. Usually several things contribute to this. They include:
  - The flow of blood slows down.
  - The inside of the vein is damaged in some way.
  - The person has a condition that makes blood clot more easily.
- Some people are more likely than others to develop blood clots. That is because they have more factors that make clots likely. These are called risk factors. They include:
  - Older age, especially over 75 years old.
  - Having a history of blood clots. This means you have had one before. Or, it means that someone else in your family has had blood clots. You may have a genetic tendency to form clots.
  - Having major or lengthy surgery. This is especially true for an operation on the hip, knee or belly ( *abdomen*). Hip surgery is particularly high risk.
  - Breaking a hip or leg.
  - Sitting or lying still for a long time. This includes long distance travel, paralysis, or recovery from an illness or an operation.
  - Cancer, or cancer treatment.
  - Having a long, thin tube ( *catheter*) placed inside a vein during a medical procedure.
  - Being overweight ( *obese*).
  - Pregnancy and childbirth. Hormone changes make the blood clot more easily during pregnancy. The fetus puts pressure on the veins of the pelvis. There is also risk of injury to veins during delivery or a caesarean. The risk is at its highest just after childbirth.
  - Medicines with the female hormone estrogen. This includes birth control pills and hormone replacement therapy.
  - Smoking.
  - Other circulation or heart problems.

A blood clot can form even if none of the above risk factors are present.

## SYMPTOMS

Symptoms of VTE vary depending on where the clot is located. Sometimes, there may be no symptoms.

- Signs of a DVT may include:
  - Swelling of the leg or arm - especially if one side is much worse.
  - Warmth and redness of the leg or arm - especially if one side is much worse.
  - Pain in an arm or leg. In the leg, may be more noticeable or worse when standing or walking.
- The symptoms of a PE usually start suddenly, and include:
  - Shortness of breath.
  - Coughing.
  - Coughing up blood or blood tinged phlegm.
  - Chest pain. Pain is often worse with deep breaths.
  - Rapid heartbeat.

A PE is a medical emergency. Call your local emergency services (911 in U.S.) if you have these symptoms.

## DIAGNOSIS

If a VTE is suspected, your caregiver will take a full medical history and carry out a physical exam. Your caregiver will check for the risk factors listed above. Tests that also may be required include:

- Blood tests, including studies of the clotting properties of your blood.
- Imaging tests. Ultrasound, CT, MRI, and other tests can all be used to see if you have clots in your legs or lungs.
- An electrocardiogram to look for heart strain from blood clots in the lungs.

## PREVENTION

- General preventative advice:
  - Exercise the legs regularly. Take a brisk 30 minute walk every day.
  - Maintain a weight that is appropriate for your height.
  - Avoid sitting or lying in bed for long periods of time without moving the legs.
  - Women, particularly those over the age of 35, should consider the risks and benefits of taking estrogen medications including birth control pills.
  - **Do not** smoke, especially if you take estrogen medications.
  - Long distance travel can increase the risk of DVT. You should exercise your legs by walking or by pumping the muscles every hour.
- In-hospital prevention:
  - Many of the risk factors above relate to situations that exist with hospitalization, either for illness, injury, or elective surgery.
  - Your caregiver will assess you for the need for VTE prophylaxis when you are admitted to the hospital. If you are having surgery, your surgeon will assess you the day of or day after surgery.
  - Prevention may include medical and non-medical measures.

## TREATMENT

Treatment for VTE helps prevent death and disability. The most common treatment for VTE is blood thinning ( *anticoagulant*) medicine, which reduces the blood's tendency to clot. Anticoagulants can stop new blood clots from forming and old ones growing. They cannot dissolve existing clots. Your body does this itself over time. Anticoagulants can be given orally, by IV, or by injection. Your caregiver will determine the best program for you.

- Heparin or related medications (low molecular weight heparin, LMWH) are usually the first treatment for a blood clot. They act quickly. However, they cannot be taken orally.
- Heparin can cause a fall in a component of blood that stops bleeding and forms blood clots ( *platelets*). You will be monitored with blood tests to be sure this does not occur.
- Warfarin (Coumadin®) is a blood thinner that can be swallowed ( *taken orally*). It takes a few days to start working, so usually heparin or related medicines are used in combination. Once warfarin is working, heparin is usually stopped. Blood tests must be done while taking warfarin. This is to make sure that you are getting enough of the drug to stop clots, but not too much. Too much warfarin can cause bleeding. Be sure you review and understand the warfarin directions below before you leave the hospital.
- Less commonly, clot dissolving drugs called thrombolytics are used to dissolve a DVT or PE. They carry a high risk of bleeding, so are used mainly in severe cases, where a life or limb is threatened.
- Very rarely, a blood clot in the leg or lung needs to be removed surgically.
- If you are unable to take anticoagulants, your caregiver may arrange for you to have a filter placed in a main vein in your abdomen to prevent clots from traveling to your lungs.

## HOME CARE INSTRUCTIONS

- Take all medications prescribed by your caregiver. Follow the directions carefully.

- Most people will continue taking warfarin after hospital discharge. Your caregiver will advise you on the length of treatment (usually 3 to 6 months, sometimes lifelong).
- Too much and too little warfarin are both dangerous. While taking warfarin, you will need to have regular blood tests to be sure the dose is correct. The dose can change for many reasons. It is critically important that you take warfarin exactly as prescribed, and that you do blood tests exactly as directed.
- Many foods can interfere with warfarin. Foods high in vitamin K include spinach, kale, broccoli, cabbage, collard and turnip greens, Brussels sprouts, peas, cauliflower, seaweed and parsley as well as beef and pork liver, green tea and soybean oil. Your caregiver should discuss limits on these foods with you, or arrange a visit with a dietician to answer your questions.
- Many medications can interfere with warfarin. You must tell your caregiver about any and all medications you take, this includes all vitamins and supplements. Be especially cautious with aspirin and anti-inflammatory medications. Ask your caregiver before taking these.
- Warfarin can have side effects, primarily excessive bruising or bleeding. You will need to hold pressure over cuts for longer than usual. Your caregiver or pharmacist will discuss other potential side effects.
- Alcohol can change the body's ability to handle warfarin. Avoid alcoholic drinks or consume only very small amounts while taking this medicine.
- Ask your caregiver how soon you can go back to normal activities. For most people, it is important to do this fairly soon. Not being active can lead to new clots. Ask for a list of what you should and should not do.
- Exercise your lower leg muscles. This is especially important while traveling. Exercise your legs by walking or by pumping the muscles frequently.
- Sometimes, people with DVT need to wear compression stockings. These are tight elastic stockings that apply pressure to the lower legs. This can help keep the blood in the legs from clotting.
- If you are a smoker, you should quit. Ask your caregiver for a list of support groups that can help you.
- Learn as much as you can about VTE. Knowing more about the condition should help you keep it from coming back.
- If you are taking a blood thinner (such as warfarin):
  - Wear a medical bracelet or necklace.
  - Notify your dentist or other caregivers before procedures.
  - Avoid contact sports.

## **SEEK MEDICAL CARE IF:**

- You notice a rapid heartbeat.
- You feel weaker or more tired than usual.
- You feel faint.
- You notice increased bruising.
- You feel your symptoms are not getting better in the time expected.
- You believe you are having side effects of medication.
- You have an oral temperature above 102° F (38.9° C).
- Discover other family members with blood clots. You (or they) may require further testing for inherited diseases or condition.

## **SEEK IMMEDIATE MEDICAL CARE IF:**

- You have chest pain.
- You have trouble breathing.
- You have new or increased swelling or pain in one leg.
- You cough up blood.
- You notice blood in vomit, in a bowel movement, or in urine.
- You have an oral temperature above 102° F (38.9° C), not controlled by medicine.

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