Blood clots that can kill

Here's how to lower your risk and recognize the symptoms.

Blood clots—jellylike masses of protein, blood cells, and platelets—can be lifesaving when they stop bleeding caused by an injury. But they can be deadly if they form where they aren't needed. A clot in a vein close to the skin's surface *causes* a burning or itching sensation yet typically doesn't lead to *serious* problems. But a clot that develops in a vein deep in the lower abdomen and legs can interfere with blood flow, often causing swelling and inflammation. Called deep-vein thrombosis (DVT), it can also break up and form emboli (clots that travel through the bloodstream) that can lodge in the lungs. Those pulmonary emboli can lead to severe organ damage and death. Up to 100,000 people die each year in the U.S. from a pulmonary embolism, according to the Centers for Disease Control and Prevention. But the good news is that most blood dots are preventable and can usually be treated if discovered early.

THE DANGER

Every year, as many as 600,000 people in the U.S. experience DVTs and clots in the lungs. DVT refers to clots that occur in the lower leg, thigh, or pelvis. When clots occur in the arms or other areas, they're usually referred to simply as venous thrombi.

The biggest danger is that portions of DVTs can break off and travel through the bloodstream. If the traveling clots, or emboli, lodge in the lungs they can block blood flow and cause a pulmonary infarction (tissue death)—a serious condition that can severely compromise lung function. Untreated pulmonary emboli lead to death in about 30 percent of cases, so it's urgent to seek prompt medical care.

Long-standing impairment of blood flow in the legs by clots can also cause darkening and scarring of the skin. That can eventually lead to painful skin ulcers that are difficult to heal and can be very disabling.

WHO'S AT RISK?

Blood clots were very much in the news recently when it was announced in late December 2012 that doctors had discovered a clot near Secretary of State Hillary Clinton's brain. While Clinton's clot might have been due to an earlier concussion, not all risk factors are injury-related. A number of situations can increase your risk. They include:

- Sitting for longer than 6 to 8 hours, such as during a trip in a car or plane.
- Having limited mobility due to a medical issue, surgery, or paralysis.
- Having an injured vein from a bone fracture, severe muscle injury, trauma, or major surgery (especially involving the abdomen, pelvis, hip, or legs).
- Having a tube placed in a vein for medication or other treatment, such as a central venous catheter.
- Having heart failure or cancer in the abdomen.
- Having previously suffered a clot or having a family history of blood clots.
- Being pregnant, taking birth-control pills, or taking prescription hormones for menopause symptoms.
- Being older than 60, being overweight or obese, having high blood pressure, or being a smoker.
- Having certain genetic or inherited blood-clotting disorders, such as Factor V Leiden.

PREVENTION MEASURES

About half of the people with deep-vein thrombosis don't have symptoms. Blood clots in the pelvis, for example, are usually silent. So the best way to protect yourself is to reduce your risk by following a healthy lifestyle, including regular exercise, losing weight if needed, and not smoking.

Other things that can reduce your risk include avoiding immobility. Sitting or lying down for long periods of time allows blood to pool and can induce clotting. Walking or otherwise working the lower leg muscles helps propel blood upward toward the heart. If you're stuck on a long trip and are unable to get up, you can still exercise your legs while in your seat. Also wear loose-fitting clothing that doesn't restrict blood flow.

If you're confined to a bed due to surgery or illness, get up and move around as soon as your doctor clears you to do so to prevent blood clots from forming. And talk to your doctor about preventing blood clots before you are admitted to a hospital or have surgery, particularly if you are at risk for them. Anticoagulant medication, such as heparin, may be given before or after surgery to help reduce the risk of blood-clot formation.

RECOGNIZING SYMPTOMS

The first step in preventing dangerous complications is to be alert for symptoms. See your doctor promptly if you have unexplained swelling, pain, tenderness, or redness in an arm or leg, as they could be signs of a dangerous clot.

A clot in the lungs is more serious because it can quickly become deadly. Signs include difficulty breathing, a rapid or irregular heartbeat, chest pain or discomfort, coughing up blood, and feeling faint. If you have any of those symptoms, go to an emergency room or call 911. Since most people who die from a dot in the lungs succumb within a few hours after symptoms surface, prompt treatment is essential.

It can be tricky to determine whether you have a deep-vein thrombosis or a pulmonary embolism because other conditions can cause similar symptoms. For example, muscle strains and tendon tears in the calf can mimic the symptoms of deep-vein thrombosis. And the symptoms indicating pulmonary embolism can also be due to a heart attack or pneumonia.

So in order to be certain, your doctor will need to run special tests. Deep-vein thrombosis is often diagnosed with a blood test known as a D-dimer and using ultrasound, which can assess the flow of blood in veins.

If your doctor suspects a clot in your lungs, you might undergo a chest computerized tomography (CT) scan with a simultaneous pulmonary angiogram. That combination is the gold standard for the diagnosis of pulmonary emboli. If you're allergic to the dye used in an angiogram, a nuclear lung perfusion scan can be done instead.

TREATMENT

If you receive a diagnosis of a deep-vein thrombosis, your doctor will probably prescribe an anticoagulant (clot-preventing) medication. The first anticoagulant treatment is usually given intravenously in the hospital, with heparin (preferably low-molecular-weight heparin) or fondaparinux *(Arixtra* and generic). This is often followed by warfarin *(Coumadin, Jantoven,* and generic).

Although these medications are often referred to as blood thinners, they don't actually thin the blood. Instead, they impair the clotting process and can prevent existing clots from growing

larger. But they can also cause life-threatening internal bleeding.

You probably won't receive intravenous medication for more than a few days. After that, most people are switched to self-injections of heparin and warfarin, which is usually taken in pill form. Warfarin takes two or three days to work but once it becomes effective heparin can be stopped and you can continue taking warfarin for several months or longer.

Warfarin is a very effective drug but poses a risk of serious internal bleeding while you are taking it, so blood tests are required at least once a month to make sure it's continuing to work properly and that you're not at risk of bleeding. Uncontrolled bleeding caused by the drug leads to an estimated 43,000 visits to emergency rooms each year.

Some foods and beverages can reduce warfarin's effectiveness. Specifically, you should avoid eating unusually large amounts of food high in vitamin K, such as broccoli, brussel sprouts, collard greens, kale, and spinach. Also be sure to tell your doctor about any medications or dietary supplements you take, because many drugs and supplements can interact with warfarin.

A blood clot in the lungs is an emergency and requires hospital treatment. Contact your doctor immediately if you notice any of these side effects after taking anticoagulant drugs:

- Prolonged bleeding from cuts, your gums, or nose.
- Unusual bruising.
- Pink or brown urine or red or tar-black stools.
- Pain or a purple color in your toes.
- For women, a heavier than normal menstrual flow.

If the clot is life-threatening, doctors usually give the patient medications called thrombolytics, including alteplase *(Activase)*, to try to dissolve it. Those medications carry a risk of serious sudden internal bleeding, so they're used only in life-threatening situations. In rarer cases, doctors might have to perform surgery to remove the clot.

Medical compression stockings are commonly used to prevent further blood clots after suffering a DVT, and after any surgery that might require bed rest. The stockings, which stretch from the foot to the knee, can help relieve pain and swelling. They're tight at the ankle and looser near the knee, to keep blood from pooling and forming a clot in the lower leg. Some people wear them for two years or longer after first having a clot.

Know the warning signs

Deep-vein thrombosis and pulmonary embolism are serious, often underdiagnosed, conditions. A pulmonary embolism occurs when a portion of a blood clot in a leg or the pelvis travels to the lungs. Both can affect people of any age and cause serious illness and disability. In some cases pulmonary emboli can be fatal. Quick medical attention is crucial.

- **Deep-vein thrombosis** *(a blood clot* in a large vein)
- **Symptoms:** Swelling, pain, tenderness, redness *of lower* leg or thigh (common) or arm (rare, called venous thrombosis).
- **What to do?** Seek medical attention as soon as possible.

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