

Know the key terms

The following are medical terms related to thrombosis - and specifically, blood clots in the leg or lung - that you should know and that may be useful.

Arterial thrombosis - A blood clot that develops in an artery. A clot in a coronary artery blocks blood flow to the heart and is the underlying cause of most heart attacks. A clot that blocks blood flow in an artery in the brain is a major cause of strokes.

Anticoagulant medication - Sometimes called blood thinners; anticoagulants are used to stop the formation of blood clots, thereby reducing the risk of clots in the leg or lungs, strokes and other dangerous events. Examples include: heparin, warfarin, enoxaparin and newer drugs such as dabigatran, rivaroxaban, apixaban and edoxaban.

Atherosclerosis - A disorder caused by a buildup of plaque (a waxy substance containing fat and cholesterol) on the inner walls of large arteries. This narrows the artery and slows the flow of blood. Atherosclerosis/plaques are the underlying process on which thrombosis can take place if ruptured.

Atrial fibrillation - An irregular and often rapid heartbeat that can lead to clot formation in a chamber of the heart. In atrial fibrillation, the heart's upper chambers called the atria beat irregularly and out of synch with the lower chambers. Atrial fibrillation can cause a stroke if the clot breaks free and travels to the brain.

Blood clot - A thick mass of blood cells, platelets and fibrin. Clotting is a natural process to stem the flow of blood from damaged blood vessels.

Blood vessels - Include (1) arteries, which carry blood from the heart to the brain, limbs and organs; (2) veins, which carry blood from the limbs and body organs toward the heart; and (3) capillaries, very small vessels that connect the two.

Cardiovascular disease - Any disease affecting the heart or the circulatory system.

Clotting - The process in which liquid blood becomes a solid mass (called a thrombus). Clotting is also called coagulation. This process is important to prevent excessive bleeding when a blood vessel is injured (such as when you cut yourself). However, the process can be harmful when clots form inside the vessel and block the flow of blood.

Clotting factors - A group of proteins (sometimes called "factors") in the blood that works together to cause blood clotting.

Deep vein thrombosis (DVT) - A blood clot that forms in the veins located deep within a limb, usually the lower leg or thigh. By blocking the flow of blood back to the heart, these clots are often characterized by pain and swelling of the leg. Clots in the leg can break off, travel to the lungs and lodge there as pulmonary embolism (PE). These can be fatal because they block the flow of blood from the lungs back into the heart.

D-dimer - A molecule released from the breakdown of clot; raised levels may indicate a deep vein thrombosis (DVT) or pulmonary embolism (PE), but levels are also raised in many other conditions. Measurement of D-dimer is useful to doctors in helping rule out a diagnosis of DVT or PE.

Embolus - A mass, usually a detached blood clot, that travels through the bloodstream and the heart and then lodges in an artery, blocking it.

Factor Xa - Factor Xa converts prothrombin to thrombin, which then converts fibrinogen to fibrin, a blood clot. Anticoagulant drugs known as Xa inhibitors act by inhibiting Factor Xa and preventing the formation of thrombin.

Fibrin - The protein substance in blood clots; fibrin creates a web-like structure that binds together platelets and red and white blood cells at the site of injury.

Hemostasis (or Haemostasis) - Hemostasis is a physiological process that maintains blood in a fluid state normally and prevents excessive bleeding from damaged vessels. Because hemostasis has to keep blood fluid in the vessel and form clots when the vessel is damaged – two opposing roles – it is very complicated. Hemostasis is responsible for the balance between bleeding and thrombosis.

Ischemia - Insufficient oxygen supply due to a blockage or constriction of a blood vessel.

Myocardial infarction (MI) - Commonly known as a heart attack, this event is triggered when plaque ruptures in a heart artery. This triggers the formation of a blood clot that blocks the flow of blood and deprives the heart muscle of oxygen. Unless the artery is opened rapidly, an area of the heart is deprived of oxygen, known as ischemia, and the cells can die, which can trigger life threatening abnormal heart rhythms or impair the heart's pumping activity and lead to heart failure.

Platelet - A small blood particle, which when activated, will clump together with other platelets (and other cells) and contribute to blood clot formation.

Platelet aggregation - One of the first steps in the formation of a blood clot to stem the flow of blood; platelets clump together to form "aggregates" or masses that plug the hole in the vessel.

Post-thrombotic syndrome - A complication of deep vein thrombosis (DVT) caused by damage to the veins. The condition usually causes swelling and heaviness in the legs that becomes worse with standing and is relieved with leg elevation. In severe cases, ulcers can develop around the ankles.

Prophylactic therapy - Treatment intended to prevent a medical condition from taking place.

Pulmonary embolism (PE) - A blockage of arteries in the lung by a blood clot that has travelled through the bloodstream from elsewhere in the body. Telltale signs include shortness of breath, chest pain, unexplained cough and rapid heart rate. Generally, a PE is caused by a blood clot in a deep vein in the leg (deep vein thrombosis), which breaks off and travels up to the lungs. A pulmonary embolism can be fatal. Therefore, patients with pulmonary embolism require immediate medical attention.

Rudolf Virchow - The German physician and pathologist who formulated the major causes of thrombosis in the mid-19th century.

Stasis - The slowing of blood flow through arteries or veins.

Stenosis - Narrowing or constriction of a blood vessel.

Stroke - The interruption of blood flow to the brain as a result of either a blockage in a blood vessel in the brain (ischemic stroke) or bleeding from a ruptured blood vessel in the brain (hemorrhagic stroke). This results in death of brain cells in the affected area.

Thrombin - An enzyme in the blood that converts the soluble protein fibrinogen into insoluble fibrin; the protein that gives blood clots their structure and sets the stage for subsequent wound healing.

Thrombus - Also known as a blood clot, a thrombus is a mass of coagulated blood formed by platelets, and red and white blood cells bound together by fibrin within a blood vessel. If large enough, a thrombus can block the flow of blood in a blood vessel.

Thrombosis - The medical term for a blood clot that forms within a blood vessel can be either a venous or arterial thrombosis.

Thrombophilia - The medical term for genetic or acquired blood abnormalities that increase the risk of abnormal blood clotting.

Transient Ischemic Attack (TIA) - Often labeled mini-stroke, it is a temporary blockage of blood flow in the brain. It is a very serious warning that the individual may be at risk for a full stroke. Approximately one-third of people who experience a TIA will have a stroke within a year if not given preventive treatment.

Veins - The vessels that carry blood low in oxygen back to the heart from the legs and arms, the organs in the abdomen and the brain.

Venous thromboembolism (VTE) - Deep vein thrombosis and pulmonary embolism are collectively known as VTE.

Virchow's Triad - The three factors involved in thrombosis, which include injury to the vessel wall (such as from trauma or surgery), abnormality of blood clotting, called "hypercoagulability" of blood, which increases the risk of clots in blood vessels (caused by many factors including admission to hospital with an illness or for surgery, cancer, estrogen therapy, pregnancy, obesity, etc.) and slow blood flow (caused by immobility or paralysis).

VTE protocol - A standardized VTE risk assessment that is linked to a menu of appropriate prevention options, including pharmacologic and mechanical prophylaxis.