Blood clots and AF

Blood is responsible for carrying nutrients and oxygen to every part of the body. Pumped by the heart and pushed back to the heart by major muscle groups, blood is carried along through a series of channels known as blood vessels. These blood vessels, arteries and veins, along with the heart make up the circulatory system. When blood flows naturally through the circulatory system, it keeps the body healthy and strong. When blood flow is disturbed, as in atrial fibrillation (AF), serious complications such as blood clots can occur.

Blood clotting (or coagulation) is a natural occurrence which guards against excessive blood loss in case of external injury. This protective measure can be equally dangerous when clots form inside the body.

In this brochure, you will encounter the causes and consequences of common blood clots. You will also read about current procedures for clots. If you have any questions about the information contained in this brochure, please consult your Borealis-AF study doctor.

Borealis-AF

Atrial Fibrillation and You

Having AF puts you at risk for events where blood flow to your lungs, heart or brain may be disrupted, causing potentially serious setbacks. Knowing more about the diagnosis, treatment and complications of AF will help you continue to make informed decisions about your health. The Borealis team appreciates your continued strength and commitment. Your participation in the Borealis-AF trial may help advance treatments for future patients with atrial fibrillation.

Have questions?

For more information about blood-clotting complications of atrial fibrillation, consult your study doctor.

Sources: World Health Organization
U.S. National Institutes of Health

In Circulation: Blood Clots and AF

A Borealis-AF participant's guide

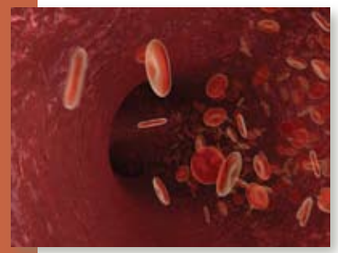
Common Blood Clots in AF

Atrial fibrillation occurs when rapid, disorganized electrical signals in the heart's two upper chambers, called the atria, cause them to contract quickly and irregularly. This erratic contraction is called fibrillation. As a result, blood pools in the atria and isn't pumped completely into the heart's two lower chambers, called the ventricles. When this happens, the heart's upper and lower chambers don't work together as they should. The blood pools and becomes sluggish and can result in blood clots.

Deep Vein Thrombosis

Deep vein thrombosis, or DVT, is a blood clot that forms in a vein deep in the body. Most deep vein blood clots occur in the lower leg or thigh. They also can occur in other parts of the body. A blood clot or embolus in a deep vein can break off and travel through the bloodstream.

DVT risk factors include disorders that make your blood thicker or more likely to clot than normal (called hypercoagulation); injury to a deep vein from surgery; a broken bone or other trauma; slow blood flow in a deep vein from lack of movement, such as occurs during pregnancy, the first 6 weeks after childbirth, during extended bed rest or after surgery; advanced age; obesity; and a history of DVT.



DVT is usually treated with blood thinners (called anticoagulants). Treatment with blood thinners is intended to stop the clot from getting bigger, prevent the clot from breaking off and moving to the lungs and reduce your chances of another clot. Although anticoagulants typically improve the symptoms of the DVT, they do not actually remove the clot itself. This process occurs naturally over weeks to months and often leaves the vein permanently damaged. As a result, patients sometimes have long-term pain and swelling.

Pulmonary Embolism

A blood clot in a deep vein that breaks off and travels through the blood stream to the lungs and blocks blood flow is called a pulmonary embolism (PE). This condition damages lung tissue and other organs, and is frequently fatal. Symptoms include shortness of breath and chest pain.

To determine if you have PE, an electrocardiogram (EKG), chest X-ray, blood tests, pulmonary scintigraphy and/or spinal CT scan may be performed. A pulmonary angiogram also may be performed in which a tube, called a catheter, is inserted in the pulmonary arteries and dye is injected to see the clot. Blood thinners are prescribed to stop the blood clot from getting bigger and to prevent new clots from forming.

A life-threatening PE may require doctors to insert a catheter in the vein to remove or deliver medicine directly to the clot. In rare cases, surgery may be the only remedy.

Signs of a heart attack

- Nausea
- Lightheadedness
- Fainting
- Shortness of breath
- Chest pain or discomfort

If you experience any of the above symptoms call for emergency help immediately. Treatment is most effective within one hour of symptoms.

Coronary Thrombosis

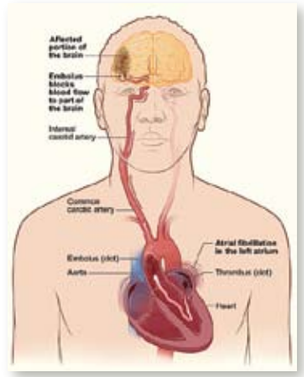
Also known as a heart attack, coronary thrombosis occurs when blood flow to the heart is obstructed. The obstruction is caused by a buildup of fatty material called plaque inside the arterial walls. If enough plaque forms, it can rupture, causing a blood clot to form on the surface of the plaque. Over time, the clot can block the passageway that supplies blood and oxygen to the heart.

Blood Clots:
Know the risks

- **History of DVT**
- **Hypercoagulation**
- **Injuries**
- **Inactivity**

Atrial Fibrillation and Stroke

A stroke occurs when blood flow to the brain is restricted or a blood vessel in the brain bursts. Strokes are serious and can lead to disability and death. Causes include hardening of the arteries due to high blood pressure, clogging of arteries by plaque buildup or an embolism or clot traveling from the heart to the brain.



Symptoms of stroke include weakness or numbness on one side of the body, including the arm, leg or face. Confusion, severe headaches and dizziness, and difficulty seeing and walking also are common.

MRI scans, blood tests and heart tests are used to evaluate whether someone is having or has had a stroke. Treatments include blood thinners, blood pressure medication and rehabilitation. Controlling blood pressure and cholesterol levels is essential to stroke prevention.

The illustration above shows how a stroke can occur during atrial fibrillation. If a clot (thrombus) forms in the left atrium of the heart, a piece of it can dislodge and travel to an artery in the brain, blocking blood flow through the artery. The lack of blood flow to the portion of the brain fed by the artery causes a stroke.