

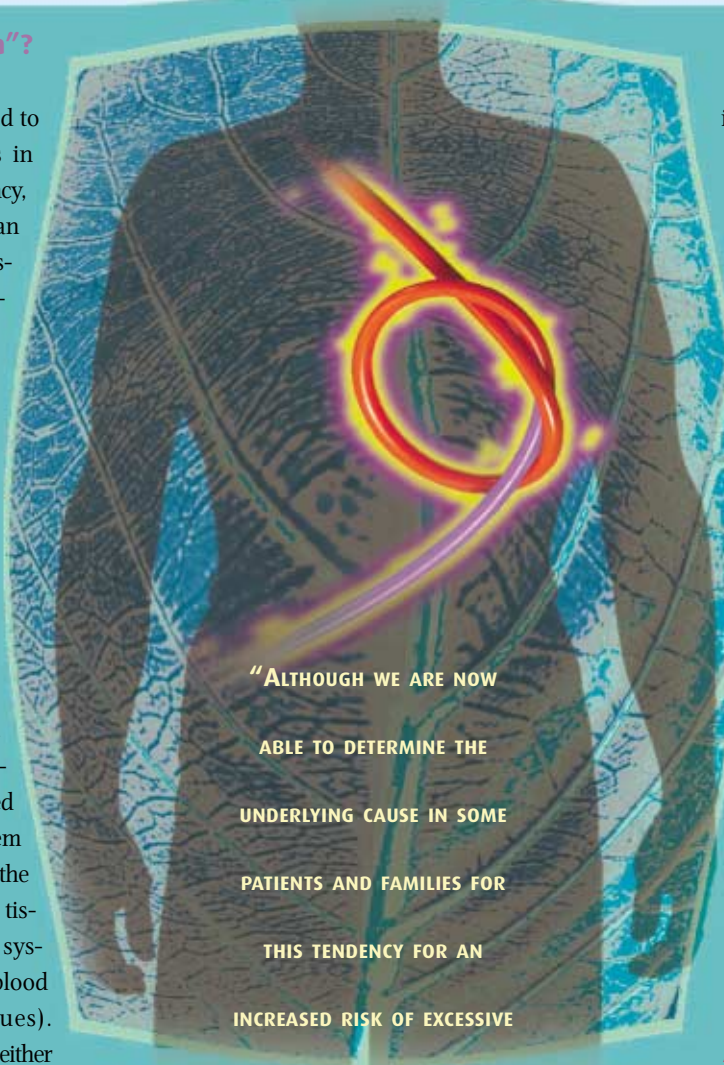
# An Overview of Thrombophilia

A Q & A WITH AMY D. SHAPIRO, MD

## Q: What is “thrombophilia”?

**A:** Thrombophilia is a term used to describe a group of conditions in which there is an increased tendency, often repeated and often over an extended period of time, for excessive clotting. These include conditions due to:

- 1) family history of clotting or a diagnosis based on a demonstrated genetic mutation such as factor V Leiden, protein C and S deficiencies, antithrombin and prothrombin 20210A mutations.
- 2) an acquired condition such as lupus inhibitor or antiphospholipid antibody, which can occur in persons with systemic lupus erythematosus. The development of a blood clot is called thrombosis. The vascular system includes both the venous system (the veins that deliver blood from the tissues to the heart) and the arterial system (the system that delivers blood from the heart to the tissues). Thrombotic episodes may occur in either system. The symptoms relate to the part of the vascular system in which they occur, the extent of the clot and whether the clot breaks off and travels to another part of the body (eg, the lungs—pulmonary embolus, the brain—embolic stroke, etc). There are different terms used to further define these thrombotic episodes such as deep vein thrombosis (DVT) or peripheral vascular disease, when the clots are in the arterial system (usually in the extremities). Although we are now able to determine the underlying cause



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in some patients and families for this tendency to an increased risk of excessive blood clotting, we are still not able to make this determination in all cases. This means that there is still more to be understood about why some persons and families have thrombophilia.

## Q: Is it a new disease?

**A:** Thrombophilia is not a new disease, but it has become a more recognized and discussed topic due to an increased ability to test for and identify some of the underlying contributing abnormalities.

## Q: Who has thrombophilia?

**A:** Thrombophilia affects a large number of people in the world. People who experience episodes of thrombosis, either as an isolated event or as a repeated event, may be affected with a thrombophilic disorder. There are people who have inherited an abnormality, such as factor V Leiden or activated protein C resistance, who have an increased tendency for thrombosis, but who may never personally experience a blood clot. They may, therefore, have a known thrombophilic condition, but never experience a thrombosis.



▶ Both children and adults may have thrombophilia, but it is more commonly diagnosed during the adolescent and adult years due to normal changes in the hemostatic balance that occurs with growth and aging. Both men and women may have thrombophilia. In fact, women who have thrombophilia may have an increased tendency to show symptoms due to the contributing effects of pregnancy or use of hormonal agents.

**Q: How many people in the United States have thrombophilia?**

**A:** Thrombosis is a very common medical problem. It is estimated that approximately two million people experience a DVT each year in the United States. In addition, nearly half of patients with deep vein clots experience long-term health consequences that adversely affect their quality of life and require millions of dollars of treatment.

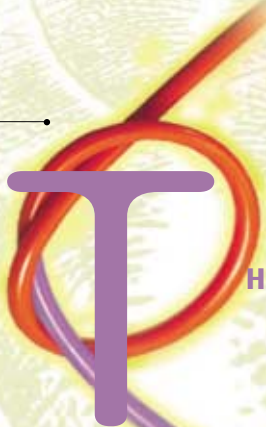
Thrombosis may manifest itself as the formation or presence of a blood clot in a blood vessel or one of the cavities in the heart. In fact, emboli (clots or plugs brought by the blood from another blood vessel and forced into a smaller vessel so as to obstruct the circulation) from deep vein clots are a leading cause of death in hospitalized patients. Annually, 200,000 to 300,000 patients develop this form of clot for the first time during a hospitalization. Nearly 40% of these patients suffer pulmonary emboli (a clot that travels to the lung and obstructs a significant amount of blood flow to the organ) that are fatal in 30% of the cases.

Recent research shows that these disorders contribute significantly to morbidity and mortality in the United States. Each year, more than 600,000 Americans die from abnormal blood clots.

Factor V Leiden is the most common inherited abnormality causing an increased tendency to thrombosis, and it affects approximately 5% to 7% of the Caucasian population of European descent in the United States. Many of these people have not yet experienced a clot.

**Q: What are the differences between genetic and acquired thrombophilia?**

**A:** Genetic thrombophilia is an inherited abnormality that leads to an increased risk of thrombosis throughout a person's life. The most common disorder that is an inherited thrombophilic disorder is factor V Leiden, initially



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described by Dr. Dahlback in 1993. Acquired thrombophilia refers to a group of disorders that an individual is not born with, but may develop throughout his or her life due to another illness or situation. An example of acquired thrombophilia is the development of a lupus anticoagulant or antiphospholipid antibody syndrome.

**Q: Who takes care of patients with thrombophilia?**

**A:** Many healthcare professionals take care of people with thrombophilia. For example, primary healthcare providers (pediatricians, internal medicine physicians, family practitioners, obstetricians and gynecologists, emergency physicians, etc) may all care for patients with this disorder. Subspecialists, such as pulmonologists, vascular surgeons, neurologists and hematologists, may also care for this patient population. Other specialists, such as pathologists and radiologists, may provide services to these patients including diagnostic and interventional services. There is an increasing tendency to have these patients seen at some point by a facility or physician that provides expertise in this area.

**Q: How is thrombophilia related to hemophilia?**

**A:** Thrombophilia is the reverse side of the process of blood clotting compared to hemophilia. While people with hemophilia have an increased tendency to bleed, people with thrombophilia have an increased tendency to clot. Just as hemophilia is caused by an abnormality of a blood-clotting factor, some forms of thrombophilia are also caused by an abnormality or deficiency of a blood-clotting factor. In some cases these clotting factors may have an abnor-

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mality that leads to an increase in their function (such as factor V Leiden). Thrombophilia is also related to hemophilia in that the providers that staff hemophilia treatment centers (HTCs) may be well suited to provide specialized services to this population, as well. People with hemophilia may also inherit a thrombophilic abnormality; in fact, it has been shown that people with hemophilia who also inherit factor V Leiden, begin bleeding at a later age and may bleed less frequently.

**Q: What kinds of treatment do people with thrombophilia receive?**

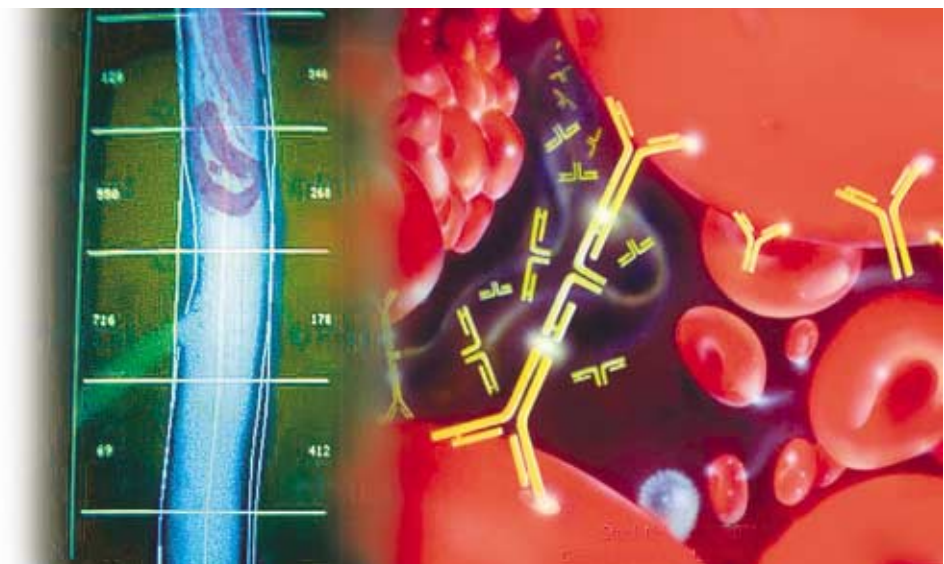
**A:** People with thrombophilia may receive medications that affect the coagulation system, just as people with hemophilia do, but not always in the same manner. Some people with thrombophilia may receive “replacement factor

concentrate” to treat their thrombophilia either on a long-term or an intermittent basis, depending on the underlying cause of their thrombophilia. Some people with thrombophilia are treated with medications that are classified as blood thinners, which decrease a person’s ability to form a clot. Examples of these medications include aspirin, heparin, low molecular weight heparin and coumadin. There are also some specific medications (thrombolytic agents) that are given under certain circumstances to dissolve clots. People with hemophilia who have central venous access devices that have become clotted may receive small doses of these medications locally. People with thrombosis may receive these agents in larger doses that are either given at the site of thrombosis or systemically. People with thrombophilia may receive medications only during a time of increased risk of thrombosis or for a prolonged period of time (even for a lifetime), depending on their specific diagnosis and clinical circumstances.

**Q: Is there a patient organization that advocates for improved treatment and more research?**

**A:** Yes, there is a national organization called the “American Thrombosis Association,” which has been formed to advocate for the population affected with these disorders in the United States. Go to [www.airhealth.org](http://www.airhealth.org) on the Web—it is advocating for changes in airline practices to prevent “economy class syndrome.” Economy class syndrome is more accurately described as DVT. It occurs when blood

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▶ clots form in leg veins during long periods of immobility. These can be fatal if they enter the heart or lungs, and there have been several deaths reported among airline passengers. Airlines reject any link between cramped air travel and DVT, but have started giving passenger advice through inflight videos, magazines and their Web sites.


**Q: What is the CDC Pilot Program?**

**A:** NHF is interested in thrombophilia because many HTC are providing care for these patients. The Centers for Disease Control and Prevention (CDC) is also interested in thrombophilia, due to its impact on the health of so many people in the United States. Similar to hemophilia care and prevention services delivered through HTCs, CDC is devel-

oping a pilot program to demonstrate the effectiveness of multi-disciplinary comprehensive care to persons with clotting disorders who, in many cases, are currently receiving fragmented care. The goal is to prevent disease and improve medical outcomes. An expanded population served by HTCs may help in the long-term survival of these specialized treatment facilities.

**Q: How many HTCs are caring for thrombophilia patients?**

**A:** Many HTC medical directors provide care to people with clotting disorders. The demand for hematological expertise from HTC providers is growing at a rapid rate. 🏠



BY MARK W. SKINNER, PRESIDENT, NHF

**A** fundamental responsibility for the NHF Board of Directors is to identify and respond to emerging issues. One such issue, which the Board has been considering, is the future supply of physicians trained in the management and treatment of bleeding disorders. The data is clear—without an aggressive effort, there will soon be a shortage of doctors to staff the hemophilia treatment center (HTC) network. It is also clear there is no simple or single answer to address this eventuality. A core part of NHF's mission is to support those who support us—the doctors, nurses, physical therapists, social workers and others who staff the HTCs.

To maintain financial viability and to attract young physicians into the field, we have seen a growing movement by HTCs across the country to incorporate thrombophilia patients into their care. Many, including the Centers for Disease Control and Prevention (CDC), believe that merging bleeding and clotting disorders into one network (hemostasis and thrombosis centers) is one approach to address the shortage and meet the growing need for care of thromboembolic disease.

Since NHF works closely with HTCs and the CDC, the question of what role NHF as an organization would adopt in relation to individuals with thrombophilia was inevitable. Following an intensive review of this issue, which included numerous interviews with members of the bleeding disorders community, the NHF Board of Directors voted last spring to have NHF continue its core focus on hemophilia and other bleeding disorders, while also providing advocacy, information and education to meet the needs of NHF's provider constituents (regarding thrombophilia). In addition to exploring additional strategies to address the shortage, the Board will continue to evaluate this position annually. This is not a shift in NHF's mission, but simply an affirmation that we must address this critical issue or risk losing the critically important HTC network.