

There are also individual risk factors (acquired and hereditary changes in coagulation and antithrombotic factors), which can be measured or detected from a blood sample.

What is important to understand is that coexisting risk factors can reinforce and potentially compound each other.

Various special laboratory tests using blood samples can be carried out to see if there is an increased risk of thrombosis. The range of possible tests is very extensive, but we recommend testing for the following:

- APC resistance
- Protein C deficiency
- Protein S deficiency
- Antithrombin III (ATIII) deficiency

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Thrombophilia



Information about the
risk of thrombosis



Thrombophilia is the medical term for an increased tendency of the blood to form clots. It can be inherited or acquired, or a combination of both ("multi-factorial").

Along with heart attacks, blood clots forming inside deep veins (deep vein thrombosis) is one of the most common disorders of the cardiovascular system. Acute symptoms include pain, swelling or tenderness in the leg, sometimes accompanied by reddening of the skin. Long-term complications of venous thrombosis are known collectively as "post-thrombotic syndrome". These can range from circulatory problems, such as numbness or pins and needles (paraesthesia), to pain and even leg ulcers. Another serious and potentially life-threatening complication is pulmonary embolism, which occurs when the blood clot travels to the lungs and blocks the pulmonary artery. In Germany alone, about 40,000 people die as a result of pulmonary embolism each year.

The science

Some sixty years ago, the scientist Rudolf Marx, one of the forefathers of blood coagulation research, described his work as "the study of slowing down or stopping blood" (haemostaseology). Haemostasis involves a complex chain of interactions between vascular, platelet and plasma coagulation factors, as well as antithrombotic and fibrinolytic (clot-dissolving) factors, which all have to work in balance with each other.

When a blood vessel is injured, the arterioles contract, the platelets attach themselves to the damaged blood vessel lining (endothelium), aggregate and cover the breach. They release coagulation factors and the activated platelets clump together, forming a temporary seal known as "platelet plug" that covers the injury.

In a series of biochemical reactions known as the "coagulation cascade", prothrombin is transformed into thrombin, which then converts soluble fibrinogen into insoluble fibrin strands. These polymerise forming a mesh that gradually stabilises the platelet plug and transforms it into a solid clot that seals the injury.

At the same time, antithrombotic and fibrinolytic factors are activated to limit coagulation and prevent thrombosis. If the balance between these two contrary processes is disturbed, the result is either a tendency to excessive bleeding (haemorrhage) or an increased tendency to form clots (thrombophilia).

While heavy bleeding is generally perceived as a highly alarming symptom, thrombosis is often seen as "less dangerous".

In fact, people will often wait to see a doctor about their swollen legs until pain and limited movement forces them to. Yet early diagnosis and appropriate treatment can help prevent complications that may be life-threatening (e.g. pulmonary embolism) or can become chronic and severe (post-thrombotic syndrome).

Ideally, of course, the best course of action against thrombosis is prevention. In addition to lifestyle factors, which you can influence yourself (exercise, weight management, smoking habits, use of medication), other factors, which are described below and can be determined by our lab, can also affect your risk.

What promotes the onset of thrombosis?

The following are the most common acquired or lifestyle-related risk factors:

- prolonged bedrest or sitting down (e.g. at work, during a long flight or bus ride)
- immobility after major surgery
- taking oral contraceptives ("the pill"), hormone replacement therapy (HRT) during menopause or pregnancy
- being overweight, smoking
- advanced age, poor general health, cancer