TEST

Factor VII assay

A factor VII assay is a blood test that measures how well clotting factor VII works.

WHAT IT MEASURES
How well clotting factor VII helps blood form a clot

SAMPLE
Venous blood

FASTING NEEDED?
No

HOW LONG IT TAKES
About 5 to 10 minutes for a blood draw

RESULTS IN
Usually several days; turnaround differs by laboratory

USED FOR
Diagnosing factor VII deficiency and sometimes monitoring treatment

MAIN LIMITATION
Medicines and sample problems can falsely lower factor VII activity

Overview

Factor VII is a protein made mainly by your liver. It works with other clotting factors to stop bleeding after a blood vessel is injured.

A factor VII assay usually measures factor VII activity -how well the factor works rather than how much is present. The result is commonly reported as a percentage or in international units per decilitre.

The test often follows an abnormal prothrombin time (PT), which measures how long blood takes to clot through a pathway involving factor VII. A prolonged PT with a normal activated partial thromboplastin time (aPTT) can suggest a factor VII problem, but does not confirm one.

Low activity may be inherited or caused by vitamin K deficiency, liver disease, medicines, or another condition affecting clotting. The assay cannot identify the cause by itself.

Why the test is ordered

Your healthcare professional may order the test after an unexpectedly prolonged PT,

particularly when other clotting tests are normal. It may also be used when your personal or family history suggests a bleeding disorder.

Reasons include:

It is not usually a general screening test for people without relevant symptoms, history, or abnormal clotting results.

- Frequent or hard-to-stop nosebleeds
- Heavy menstrual bleeding
- Unusual bleeding after surgery, dental work, or childbirth
- Bleeding into joints, muscles, or internal organs
- A family history of factor VII deficiency
- Monitoring factor VII replacement treatment

Who should have the test

You may be offered a factor VII assay after an abnormal PT or when bleeding symptoms need further investigation. A haematologist may request it.

Relatives of someone with inherited factor VII deficiency may also be tested. Genetic testing is sometimes considered, but an activity assay shows how well the protein functions.

If you have factor VII deficiency, the assay may assess your usual activity or response to treatment. Recent plasma or factor VII treatment can affect the result, so timing matters.

How to prepare

Fasting is not normally required. You can usually eat and drink unless another test requires fasting.

Tell the healthcare professional about all medicines and supplements you take, especially warfarin, other anticoagulants, vitamin K, and factor replacement products. Do not stop prescribed medicine unless the clinician responsible for it tells you to.

For treatment monitoring, blood may need to be collected at a specific time before or after a dose. Follow your treatment centre's instructions.

Report any recent blood transfusion, plasma, or factor VII treatment. Also mention pregnancy, liver disease, or known vitamin K problems because these can affect interpretation.

What happens during the test

A healthcare professional places a small needle into a vein, usually in your arm. Blood is collected into a tube containing sodium citrate to prevent clotting before analysis.

In the laboratory, plasma is separated from the blood cells. For a common activity assay, your plasma is mixed with plasma lacking factor VII. The laboratory activates the factor VII pathway, measures clotting time, and compares it with calibrated samples.

The blood draw usually takes 5 to 10 minutes. Analysis takes longer and may be performed at a specialist centre.

Understanding your results

Use the reference range on your laboratory report. Ranges and interpretation vary with the laboratory method, age, pregnancy, medicines, and clinical circumstances.

Low factor VII activity means the sample clotted more slowly than expected. Possible causes include inherited factor VII deficiency, vitamin K deficiency, warfarin treatment, reduced liver function, or a serious illness that uses up clotting factors.

The activity level does not always predict bleeding severity. People with inherited factor VII deficiency and similar results can have very different bleeding histories. Previous bleeding, planned procedures, medicines, and other tests are therefore important.

A result within range makes major factor VII deficiency less likely, but does not rule out platelet disorders, von Willebrand disease, other factor deficiencies, or every cause of bleeding.

An unexpectedly low result is often repeated. Further testing may include PT and aPTT, liver tests, vitamin K assessment, a mixing study, factor VII antigen testing, or genetic testing.

What affects the results

Warfarin lowers vitamin K-dependent clotting factors, including factor VII. Vitamin K deficiency from poor absorption, limited intake, or some prolonged antibiotic treatments can have a similar effect.

Liver disease and severe illnesses that consume clotting factors may lower activity. Other anticoagulants like warfarin or apixaban can interfere with clot-based assays and produce misleading values, depending on the medicine and test method.

Recent plasma transfusion, factor VII concentrate, or recombinant activated factor VII can

temporarily raise measured activity. Tell the laboratory what treatment was given and when.

Pregnancy, newborn age, oestrogen-containing medicines, and the laboratory method may also influence results.

Collection problems can make the result unreliable. These include an underfilled citrate tube, a clotted sample, delayed processing, or contamination with heparin from an intravenous line. People with a very high red blood cell proportion may need the citrate amount adjusted.

Accuracy and limitations

A properly collected activity assay is useful for detecting reduced factor VII function, but no single result is definitive.

Laboratories use different clot-activating reagents. Rare forms of factor VII may react differently to them, producing different results between methods. A specialist laboratory may repeat testing when the result does not match your history.

Low activity can reflect warfarin, another anticoagulant, vitamin K deficiency, liver disease, or sample problems rather than an inherited disorder. A normal result does not assess platelet function or von Willebrand factor and cannot exclude all mild bleeding disorders.

An antigen assay measures the amount of factor VII protein and may distinguish too little protein from protein that works poorly. A mixing study can help identify whether a clotting factor is missing or an inhibitor is interfering. Genetic testing may confirm inherited deficiency, but does not replace the activity result or bleeding history.

Risks and complications

The main risks are minor bruising or soreness where the needle entered. Some people feel light-headed or faint during a blood draw.

What happens next

If the result is normal and other tests are reassuring, factor VII-specific follow-up may not be needed. Significant bleeding symptoms may still require investigation for another cause.

A low or unclear result is often confirmed with a new sample. Follow-up may include a medicine review, liver tests, repeat clotting studies, or referral to a haematologist. If inherited deficiency is confirmed, relatives may be offered testing, and you may need a treatment plan for surgery,

dental work, pregnancy, or childbirth.

Routine follow-up is appropriate for results found during planned testing when you are otherwise well.

Seek urgent medical care for bleeding that does not stop with firm pressure, blood in vomit, coughing up blood, black or heavily bloody stools, or sudden severe weakness. Emergency assessment is also needed for a severe headache, confusion, fainting, or new difficulty speaking or moving, especially after a head injury.

Common questions

Can I drink coffee before a factor VII assay?

Yes. Coffee does not usually affect the assay, and fasting is not normally required. Follow separate instructions for other tests collected at the same time.

Does the time of day matter?

Usually not for diagnosis. Timing matters when measuring your response before or after factor VII treatment.

Can I exercise beforehand?

Ordinary activity is unlikely to cause a meaningful change. Avoid unusually strenuous exercise if instructed or if it tends to trigger bleeding.

Should I stop warfarin or another blood thinner?

No, not without specific medical instructions. Stopping anticoagulants unexpectedly may be unsafe. Tell the laboratory what you take and when you took the last dose.

Will a recent transfusion change my result?

Yes. Plasma, blood products containing plasma, and factor VII treatment can temporarily raise measured activity. Report what you received and when.

How long will I wait for the result?

Results often take several days because many laboratories send factor assays to a specialist centre. It may take longer if testing must be repeated.

Sources



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