Test Definition: F_7

Coagulation Factor VII Activity Assay, Plasma

Overview

Useful For

Diagnosing congenital deficiency of coagulation factor VII

Evaluating acquired deficiencies associated with liver disease, oral anticoagulant therapy, and vitamin K deficiency

Determining degree of anticoagulation with warfarin to correlate with level of protein C

Investigation of a prolonged prothrombin time

Special Instructions

- Coagulation Guidelines for Specimen Handling and Processing

Method Name

Optical Clot-Based

NY State Available

No

Specimen

Specimen Type

Plasma Na Cit

Ordering Guidance

Coagulation testing is highly complex, often requiring the performance of multiple assays and correlation with clinical information. For that reason, consider ordering Coagulation Consultation.

Specimen Required

Specimen Type: Platelet-poor plasma

Patient Preparation:

1. Specimen **must be** collected prior to initiation of anticoagulants and thrombolytic therapy.
2. Patient **must not** be receiving warfarin, heparin, direct thrombin inhibitors (argatroban, dabigatran), or direct factor Xa inhibitors (apixaban, rivaroxaban, and edoxaban).
   a. If medically feasible, for 4 to 6 hours before specimen collection, **do not** administer intravenous heparin.
   b. If medically feasible, for 10 to 14 days before specimen collection, **do not** administer subcutaneous heparin or warfarin**.**
3. It is best to collect the specimen pretransfusion if possible. If patient has been recently transfused, wait at least 48 hours after transfusion to collect the specimen.

Supplies: Sarstedt Aliquot Tube, 5 mL (T914)

Collection Container/Tube: Light-blue top (3.2% sodium citrate)
Submission Container/Tube: 13-mm x 75-mm, 5-mL, plastic vial (polypropylene preferred)
Specimen Volume: 1 mL Platelet-poor plasma
Collection Instructions:
1. Specimen must be collected prior to factor replacement therapy
2. For complete instructions, see Coagulation Guidelines for Specimen Handling and Processing.
3. Centrifuge, transfer all plasma into a plastic vial, and centrifuge plasma again.
4. Aliquot plasma into a separate plastic vial, leaving 0.25 mL in the bottom of the centrifuged vial.
5. Immediately freeze plasma (no longer than 4 hours after collection) at -20 degrees C or, ideally, -40 degrees C or below.
Additional Information:
1. Double-centrifuged specimen is critical for accurate results as platelet contamination may cause spurious results.
2. Each coagulation assay requested should have its own vial.

Forms
If not ordering electronically, complete, print, and send a Coagulation Test Request (T753) with the specimen.

Specimen Minimum Volume
Platelet-poor plasma: 0.5 mL

Reject Due To

Gross hemolysis	Reject
Gross lipemia	Reject
Gross icterus	Reject

Specimen Stability Information

Specimen Type	Temperature	Time	Special Container
Plasma Na Cit	Frozen	14 days	

Clinical & Interpretive

Clinical Information
Factor VII is a vitamin K-dependent serine protease synthesized in the liver. It is a component of the extrinsic coagulation scheme, measured by the prothrombin time. Plasma biological half-life is about 3 to 6 hours. Deficiency may result in a bleeding diathesis.

Reference Values
Adults: 65-180%
Normal, full-term newborn infants or healthy premature infants may have decreased levels (> or =20%) which increase within the first postnatal week but may not reach adult levels for > or =180 days postnatal.*

*See Pediatric Hemostasis References section in Coagulation Guidelines for Specimen Handling and Processing

Interpretation

Liver disease, vitamin K deficiency, or warfarin anticoagulation can cause decreased factor VII activity.

Newborn infants usually have levels at or above 25%.

Cautions

Factor VII is the first vitamin K-dependent coagulation factor to decrease after starting warfarin therapy and one of the first to return to normal when anticoagulation is discontinued.

Clinical Reference

1. Girolami A, Scandellari R, Scapin M, Vettore S. Congenital bleeding disorders of the vitamin K-dependent clotting factors. Vitam Horm. 2008;78:281-374. doi:10.1016/S0083-6729(07)00014-3
2. Brenner B, Kuperman AA, Watzka M, Oldenburg J. Vitamin K-dependent coagulation factors deficiency. Semin Thromb Hemost. 2009;35(4):439-446. doi:10.1055/s-0029-1225766
3. Mariani G, Bernardi F. Factor VII deficiency. Semin Thromb Hemost. 2009;35(4):400-406. doi:10.1055/s-0029-1225762
4. Franchini M, Marano G, Pupella S, et al. Rare congenital bleeding disorders. Ann Transl Med. 2018;6(17):331. doi:10.21037/atm.2018.08.34

Performance

Method Description

The factor VII assay is performed on the Instrumentation Laboratory ACL TOP using the prothrombin time (PT) method and a factor-deficient substrate. Patient plasma is combined and incubated with a factor VII-deficient substrate (normal plasma depleted of factor VII by immunoadsorption). After a specified incubation time, a PT reagent is added to trigger the coagulation process in the mixture. Then the time to clot formation is measured optically at a wavelength of 671 nm.(Owen CA Jr, Bowie EJW, Thompson JH Jr: Diagnosis of Bleeding Disorders. 2nd ed. Little, Brown and Company; 1975; Meijer P, Verbruggen HW, Spannagi M: Clotting factors and inhibitors: Assays and Interpretation. In: Kottke-Marchant K, ed. Laboratory Hematology Practice. Wiley Blackwell Publishing; 2012:435-446)

PDF Report

No

Day(s) Performed

Monday through Friday

Report Available

1 to 3 days

Specimen Retention Time

7 days

Performing Laboratory Location

Mayo Clinic Jacksonville Clinical Lab

Fees & Codes

Fees

- Authorized users can sign in to Test Prices for detailed fee information.
- Clients without access to Test Prices can contact Customer Service 24 hours a day, seven days a week.
- Prospective clients should contact their account representative. For assistance, contact Customer Service.

Test Classification

This test has been modified from the manufacturer's instructions. Its performance characteristics were determined by Mayo Clinic in a manner consistent with CLIA requirements. This test has not been cleared or approved by the US Food and Drug Administration.

CPT Code Information

85230

LOINC® Information

Test ID	Test Order Name	Order LOINC® Value
F_7	Coag Factor VII Assay, P	3198-9

Result ID	Test Result Name	Result LOINC® Value
F_7	Coag Factor VII Assay, P	3198-9