# 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

Yes

## 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; Cielsa B. Defects of plasma clotting factors. In: Hematology in Practice. 3rd ed. FA Davis; 2019:chap 17)

### PDF Report

No

### Day(s) Performed

Monday through Saturday

### Report Available

1 to 3 days

### Specimen Retention Time

7 days

### Performing Laboratory Location

Mayo Clinic Laboratories - Rochester Main Campus

## 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 |