Test Definition: HEPTP

Heparin Anti-Xa, Plasma

Overview

Useful For

Measuring heparin concentration:
-In patients treated with low-molecular-weight heparin preparations
-In the presence of prolonged baseline activated partial thromboplastin time (APTT) (eg, lupus anticoagulant, "contact factor" deficiency, etc)
-When unfractionated heparin dose needed to achieve desired APTT prolongation is unexpectedly higher (>50%) than expected

This test is **not useful for** monitoring therapy with the heparinoid "danaparoid."

Method Name

Chromogenic Method

NY State Available

Yes

Specimen

Specimen Type

Plasma Na Cit

Ordering Guidance

To test for the presence of inhibitors directed against factor X (FX), order 10INE / Factor X Inhibitor Evaluation, Plasma.

Specimen Required

Specimen Type: Platelet-poor plasma
Collection Container/Tube: Light-blue top (3.2% sodium citrate)
Submission Container/Tube: Plastic vial
Specimen Volume: 1 mL
Collection Instructions:
1. For complete instructions see Coagulation Guidelines for Specimen Handling and Processing.
2. Centrifuge, aliquot plasma, and centrifuge plasma again.
4. Aliquot plasma into a plastic vial leaving 0.25 mL in the bottom of centrifuged vial.
Additional Information: Double-centrifuged specimen is critical for accurate results as platelet contamination may cause spurious results.

Specimen Minimum Volume

0.5 mL

Reject Due To

Gross hemolysis	Reject
Gross lipemia	OK
Gross icterus	OK

Specimen Stability Information

Specimen Type	Temperature	Time	Special Container
Plasma Na Cit	Frozen (preferred)	14 days	
	Ambient	2 hours	

Clinical & Interpretive

Clinical Information

Heparins are sulphated glycosaminoglycans that inactivate thrombin, factor Xa, and several other coagulation factors; act by enhancing activity of the plasma coagulation inhibitor, antithrombin III; and prolong the activated partial thromboplastin time (APTT). The anti-Xa assay is the preferred method for monitoring low-molecular-weight heparin (LMWH) therapy because of reduced sensitivity of APTT. Heparin is absent in normal plasma. The heparin level obtained must be analyzed in the context of the treatment given to the patient (type of heparin, dosage, administration mode, time of sampling, etc) and the desired therapeutic effect. It is clinically recommended that platelet counts be monitored frequently in patients receiving unfractionated heparin or LMWH in order to detect heparin-induced thrombocytopenia.

Reference Values

Adult Therapeutic Range
UFH therapeutic range: 0.30-0.70 IU/mL
(6 hours following initiation or dose adjustment)
LMWH therapeutic range: 0.50-1.00 IU/mL for twice daily dosing*
LMWH therapeutic range: 1.00-2.00 IU/mL for once daily dosing*
LMWH prophylactic range: 0.10-0.30 IU/mL

*Sample obtained 4 to 6 hours following subcutaneous injection

Interpretation

Results above the therapeutic range may be supratherapeutic suggesting that the heparin dose may need to be decreased.

Results below the therapeutic range may be subtherapeutic suggesting that the heparin dose may need to be increased.

Cautions

Plasma specimen must be depleted of platelets by repeat centrifugation before freezing.

In order to reduce the influence from heparin antagonists, such as platelet factor 4, dextran sulfate is included in the reaction mixture.

Very low endogenous antithrombin III (AT III) levels might result in spuriously-low results.

Antibodies to bovine factor X or AT III can interfere with assay (very rare).

Clinical Reference

1. Marci CD, Prager D. A review of the clinical indications for the plasma heparin assay. Am J Clin Pathol. 1993;99(5):546-550
2. Houbouyan L, Boutiere B, Contant G, et al. Validation of analytical hemostasis systems: measurement of anti-Xa activity of low-molecular-weight-heparins. Clin Chem. 1996;42(8 Pt 1):1223-1230
3. Jeske W, Messmore HL Jr, Fareed J. Pharmacology of heparin and oral anticoagulants. In: Loscalzo J, Schafer AI. Thrombosis and Hemorrhage. 2nd ed. Williams and Wilkins; 1998:1193-1204
4. Monagle P, Michelson AD, Bovill E, Andrew M. Antithrombotic therapy in children. Chest. 2001;119(1 Suppl):344S-370S
5. Fraser G, McKenna J. Monitoring low molecular weight heparins with antiXa activity: house of cards or firm foundation? Hospital Pharmacy. 2003;38(3):202-211. doi:10.1177/001857870303800302
6. Nutescu EA, Spinler SA, Wittkowsky A, Dager WE. Low-molecular-weight heparins in renal impairment and obesity: available evidence and clinical practice recommendations across medical and surgical settings. Ann Pharmacother. 2009;43(6):1064-1083
7. Hoffman R, Benz Jr EJ, Silberstein LE, et al. Hematology: Basic Principles and Practice. 7th ed. Elsevier; 2018

Performance

Method Description

The Liquid Anti-Xa kit (ACL TOP) is a 1-stage chromogenic assay based on a synthetic chromogenic substrate and on factor Xa inactivation.(Package insert: HemosIL Liquid Anti-Xa. Instrument Laboratory; R5, 12/2020)

PDF Report

No

Day(s) Performed

Monday through Sunday

Report Available

Same day/1 day

Specimen Retention Time

1 day

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 cleared, approved, or is exempt by the US Food and Drug Administration and is used per manufacturer's instructions. Performance characteristics were verified by Mayo Clinic in a manner consistent with CLIA requirements.

CPT Code Information

85520

LOINC® Information

Test ID	Test Order Name	Order LOINC® Value
HEPTP	Heparin Anti-Xa, P	3274-8

Result ID	Test Result Name	Result LOINC® Value
HEPTP	Heparin Anti-Xa, P	3274-8