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**Lab Dept:** Coagulation

**Test Name:** HEPARIN ASSAY, LOW MOLECULAR WEIGHT

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***General Information***

**Lab Order Codes:** HLMW (Low Molecular Weight)

**Synonyms:** Anti-Xa Assay

**CPT Codes:** 85520 – Heparin assay

**Test Includes:** Heparin Low Molecular Weight level measured in IU/mL.

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***Logistics***

**Test Indications:** Measurement of low molecular weight heparin levels specifically Lovenox® in patients treated for thrombotic disease.

**Lab Testing Sections:** Coagulation

**Phone Numbers:** MIN Lab: 612-813-6280

STP Lab: 651-220-6550

**Test Availability:** Daily, 24 hours; Testing performed in Minneapolis and St. Paul Laboratories.

**Turnaround Time:** 2 hours

**Special Instructions:** **Do Not** draw through a heparinized line. Notify section supervisor if other anti-thrombin agents are used.

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***Specimen***

**Specimen Type:** Whole blood

**Container:** Light Blue top tube (Buffered Na Citrate 3.2%)

**Draw Volume:** 1.8 mL blood (in 2 mL tube) or 2.7 mL blood (in a 3 mL tube).

**Processed Volume:** 0.9 mL plasma

**Collection:**

- A clean venipuncture is essential, avoid foaming.
- Entire sample must be collected with a single collection, pooling of sample is unacceptable.
- Capillary collection is unacceptable.
- Patient's with a hematocrit level >55% must have a special tube made to adjust for the hematocrit; contact laboratory for special tube.
- Mix thoroughly by gentle inversion. Deliver immediately to the laboratory at room temperature via courier or pneumatic tube.

**Off campus collection:**

- Must be tested within 4 hours.
- Do not refrigerate.
- If not received in our lab within 4 hours of collection, sample must be centrifuged and \*platelet-poor plasma removed from cells and transferred to an aliquot tube being careful not to disturb the cell layer. Centrifuge the plasma a second time and transfer into a clean aliquot tube being careful not to include any residual platelets on the bottom of the tube. Freeze at 20°C and delivered to lab on dry ice within 2 weeks.

**\*Validation of your lab's centrifuge for platelet poor plasma is required.**

**Special Processing:**

Lab staff: Centrifuge in Stat Spin for 5 minutes or 10 minutes at 3000 rpm at room temperature. For primary tube testing, leave plasma on cells OR remove plasma and place in a 4 mL plastic cup; allow for 100 mL of dead-space.

Test within:

- Four (4) hours when stored in the capped tube above the packed cells 18 to 24°C.
- Four (4) hours as plasma that has been separated from cells by centrifugation when stored 2 to 8°C or 18 to 24°C.
- Two (2) weeks when stored -20°C.
- Six (6) months when stored -70°C (rapidly frozen).
- Plasma must be frozen if testing cannot be completed within four (4) hours.
- Frozen plasmas are thawed at 37°C for three (3) minutes, test immediately.

**Patient Preparation:**

None

**Sample Rejection:**

Improper tube; clotted specimens; under-filled tubes; hemolyzed specimens; mislabeled or unlabeled specimens

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***Interpretive***

**Reference Range:**

Normal: <0.10 IU/mL (patient not on heparin)

Therapeutic Range: 0.5 to 1.0 IU/mL

Prophylactic Range: 0.2 to 0.4 IU/mL (LMW – Low Molecular Weight)

HLMW Level	Hold Next Dose	Dose Change	Repeat HLMW Levels
>0.35	NO	25%	4 hours after dose given
0.35 - 0.49	NO	10%	4 hours after dose given
0.5 - 1	NO	No change	1x after this range is reached, then 1x per week at 4 hours after dose given
1.01 - 1.5	NO	20%	4 hours after next dose
1.51 - 2	3 hours	30%	4 hours after next dose
>2	For these patients, all further doses should be held and heparin levels measured every 12 hours until it is less than 0.5 IU/mL. Restart at 60% of last dose.		

**Critical Values:** N/A

**Limitations:** The test cannot distinguish between unfractionated and low molecular weight heparin. The correct assay must be requested for the type of heparin the patient is receiving.

The plasma cannot be treated for heparin removal.

**Methodology:** Chromogenic Anti-Xa

**References:** Massicoti P, et al (1996) Low Molecular Weight Heparin in Pediatric Patients with Thrombotic Disease: A Dose Finding Study, J Pediat 128:313

Enoxaparin Guidelines, Children's Thrombophilia Network (4/22/1996)

**Updates:** 9/15/2014: Added Off Campus collection info.

7/18/23: Updated special processing instructions. Corrected reference range from <0.01 IU/mL. Testing is performed in Minneapolis and St. Paul labs.