

**Genesis Health System  
Medical Policy**

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Policy Title: **Adult Enoxaparin Policy**      Effective Date:      08/25/2021

Department: Pharmacy      Reviewed/Revised:      08/25/2021

Owner      Clinical Pharmacist      Review Cycle:      Biennial  
Title:

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Owner Signature:      Page 1 of 4

[Owner Signature here (must be signed  
by owner prior to uploading into Policy  
Manager)]

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**I. POLICY:**

To provide guidance on the monitoring of enoxaparin and how to adjust doses based on the anti-Xa level (low molecular weight heparin [LMWH] assay).

**II. APPLICABLE BUSINESS UNITS:**

All GHS Business Units:

- |  |   |
|--|---|
| <input type="checkbox"/> Crescent Laundry                                | <input checked="" type="checkbox"/> Genesis Medical Center, Aledo     |
| <input type="checkbox"/> Crosstown Square                                | <input checked="" type="checkbox"/> Genesis Medical Center, Davenport |
| <input type="checkbox"/> Genesis Accountable Care Organization           | <input checked="" type="checkbox"/> Genesis Medical Center, DeWitt    |
| <input type="checkbox"/> Genesis Convenient Care                         | <input checked="" type="checkbox"/> Genesis Medical Center, Silvis    |
| <input type="checkbox"/> Genesis EAP                                     | <input type="checkbox"/> Genesis Occupational Health                  |
| <input type="checkbox"/> Genesis Family Medical Center                   | <input type="checkbox"/> Genesis Philanthropy                         |
| <input type="checkbox"/> Genesis FirstMed Pharmacy                       | <input type="checkbox"/> Genesis Psychology Associates                |
| <input type="checkbox"/> Genesis Health Group                            | <input type="checkbox"/> Genesis Senior Living, Aledo                 |
| <input type="checkbox"/> Genesis Health Group, Aledo Rural Health Clinic | <input type="checkbox"/> Genesis VNA                                  |
| <input type="checkbox"/> Genesis Health Group, Erie Rural Health Clinic  | <input type="checkbox"/> Genesis Westwing Place                       |
| <input type="checkbox"/> Genesis Health Services Foundation              | <input type="checkbox"/> Genesis Workplace Services                   |
| <input type="checkbox"/> Genesis Home Medical Equipment                  | <input type="checkbox"/> Genesis Workers Comp Plan & Trust            |
| <input type="checkbox"/> Genesis Hospice                                 | <input type="checkbox"/> Illini Restorative Care                      |

**III. APPLICABLE ORGANIZATIONAL ROLES:**

Nurses, pharmacists, physicians, lab

**IV. PURPOSE:**

To provide guidance on enoxaparin monitoring and dose adjustment based on anti-Xa levels

**V. DEFINITIONS:**

LMWH Assay: low molecular weight heparin assay  
Anti-Xa level: lab value used to interpret whether anticoagulant is therapeutic

## VI. GENERAL CONSIDERATIONS:

Enoxaparin can be monitored using anti-Xa levels (LMWH assay) to determine if patient is in therapeutic range (See Table 1)

Consider monitoring for:

- Renal impairment (CrCl < 30 mL/min) – could measure trough level for target of < 0.5 units/mL before the 4<sup>th</sup> dose
- Obesity (BMI ≥ 35)
- Low body weight (< 45 kg)
- Liver disease
- Pregnancy
- Recurrent thrombosis while on LMWH
- LMWH for prolonged periods

Levels should generally be drawn as peak levels 4 hours after dose administration. If a trough is desired, it should be drawn about an hour before the next dose

Order Anti-Xa level/LMWH assay after at least the 3<sup>rd</sup> dose of enoxaparin 4 hours after the dose to obtain peak

Patient must get to steady state to allow for accurate anti-Xa level. First level would need to be drawn at the earliest after the 3<sup>rd</sup> dose of enoxaparin

This policy will only address adjustments for enoxaparin 1 mg/kg twice daily dosing and prophylactic enoxaparin dosing

This policy may be used as a guide for adjustments of enoxaparin based on LMWH concentrations

## VII. PRACTICE/PROCEDURE:

### **ADULT SUBCUTANEOUS ENOXAPARIN DOSING ADJUSTMENT**

#### **Goal Concentrations:**

<b>Enoxaparin Dose</b>	<b>Level Type</b>	<b>Target LMWH Serum Concentration (units/mL)</b>
BID treatment dose	Peak	0.6 – 1
Daily treatment dose	Peak	1.0 – 2.0
Daily treatment dose with CrCl < 30 mL/min	Peak	0.6 – 1.0 OR 1.0 – 2.0*
Prophylactic dose	Peak	0.2 – 0.5
Treatment dose	Trough (drawn before next dose)	< 0.5

\*Literature unclear on target in this population so use clinical judgement based on the patient

**[A.] 1 mg/kg bid dosing**

- Target 0.6 – 1
- Draw first LMWH assay 4 hours after administering the 3<sup>rd</sup> enoxaparin dose. This will provide **peak** at steady state.

LMWH Assay (anti-Xa units/mL)	Hold Next Dose	Dose Adjustment	Next LMWH Assay
< 0.35	NO	Increase by 25%	4 hours after next dose
0.35 – 0.49	NO	Increase by 10%	4 hours after next dose
0.5 – 1.0	NO	Goal – No change	Consider next day, then in 1 week, then monthly
1.1 – 1.5	NO	Decrease by 20%	1 hour before next dose **
1.6 – 2.0	3 hours	Decrease by 30%	1 hour before next dose** AND 4 hours after next dose
> 2	Until LMWH Assay < 0.5 units/mL	Decrease by 40% OR consider switching to UFH in place of enoxaparin when appropriate	1 hour before next dose and q12h until LMWH assay < 0.5

\*\*Target trough level for LMWH Assay before next dose is < 0.5

**[B.] VTE Prophylaxis Enoxaparin Dosing Adjustment**

- Target 0.2 – 0.5
- Draw first LMWH assay 4 hours after administering the 3<sup>rd</sup> enoxaparin dose. This will provide **peak** at steady state.

LMWH Assay (anti-Xa units/mL)	Hold Next Dose	Dose Adjustment	Next LMWH Assay
< 0.2	NO	Increase by 25%	4 hours after next dose
0.2 – 0.5	NO	Goal – No change	Weekly
0.51 – 0.69	NO	Decrease by 20%	4 hours after next dose
0.7 – 1.0	NO	Decrease by 30%	4 hours after next dose
> 1.0	Until LMWH assay < 0.2	Decrease by 40%	1 hour before next dose and q12h until LMWH assay < 0.2 then 4 hours after next adjusted dose

Laboratory

- A. Anti-Xa/LMWH assay 4 hours after at least the 3<sup>rd</sup> dose of enoxaparin for those patients that require monitoring, then use appropriate titration table to adjust enoxaparin dosing
- B. Collect stool and send to Laboratory for occult blood when melena (black, tarry stool) or bloody stool is present
- C. Once Warfarin (Coumadin) is started, order daily INR

Monitoring

- A. Assess for bleeding every shift (signs and symptoms, hemoglobin/hematocrit changes, platelet changes, etc)
- B. Notify provider immediately of bleeding
- C. Monitor for HIT (platelet reduction, refer to 4Ts score)
- D. Monitor anti-Xa level

**VIII. REFERENCES:**

1. Garcia DA, Baglin TP, Weitz JI, Samama MM. Parenteral anticoagulants: Antithrombotic Therapy and Prevention of Thrombosis, 9th ed: American College of Chest Physicians Evidence-Based Clinical Practice Guidelines. *Chest*. 2012;141(2 Suppl):e24S - e43S.
2. Tahaineh L, Edaily SM, Gharaibeh SF. Anti-factor Xa levels in obese patients receiving enoxaparin for treatment and prophylaxis indications. *Clin Pharmacol*. 2018;10:63-70.
3. Enoxaparin General Dosing Guidelines. Seattle, WA: University of Washinton; 2014;1.
4. WMC Pharmacy Anticoagulation Protocol. Casper, WY: University of Wyoming; 2017:4-6
5. Low Molecular Weight Heparin (Enoxaparin) Protocol. Ventura, CA: Ventura County Medical Center/Santa Paula Hospital; 2017:1-5
6. LMWH Therapeutic Range and Monitoring. San Diego, CA: UC San Diego; 2021:1
7. Adult Enoxaparin Protocol. Chicago, IL. University of Chicago Medical Center; 1-10

**IX. SUPERSEDES:**

N/A

**X. CROSS REFERENCE:**

N/A

**XI. ENDORSEMENTS:**

1. Formulary Committee, 10/06/21
2. Pharmacy and Therapeutics Committee, 10/21/21