Our Lady of the Lake Regional Medical Center

Pharmacy Anticoagulation Stewardship

Anti-Xa Monitoring Guideline in Morbidly Obese Patients and other selected indications

Anti-Xa monitoring should be considered for the following adult patient populations:

- Morbidly obese ($\geq$ 150 kg or BMI $\geq$35kg/m^2)
    - ***Clinical pharmacists will automatically monitor and manage enoxaparin treatment dosing in morbidly obese patients using an anti-Xa assay***
- Underweight patients (BMI <18.5kg/m^2 or <50kg)
- Age <18 years
- Pregnancy
- Renal insufficiency (CrCl $\leq$30 mL/min). Preference is to use unfractionated heparin instead of LMWH.

Enoxaparin Dosing and Monitoring

Therapeutic Anticoagulation:

Initial Enoxaparin Dose*	Target Peak Anti-Xa Level (units/ml)
1 mg/kg Q 12 hours	0.6 - 1
1.5 mg /kg Q 24 hours	1 - 2
1 mg/kg Q 24 hours for CrCl < 30 ml/min	1 - 2

***Initial doses will be capped at 150mg**

Anti-Xa Monitoring and Dose Adjustment

- Initial anti-Xa level should be ordered **4 hours after the 3rd dose of enoxaparin.**
- If anti-Xa monitoring is desired for a patient with normal renal function receiving enoxaparin 1.5mg/kg Q 24 hours, it is recommended to convert patient to Q 12-hour dosing and then take an anti-Xa level 4 hours after the 3rd dose.

Enoxaparin dosing nomogram for treatment dose 1mg/kg q12h[8]

Anti-Xa level	Hold next dose	Dosage change	When to order next Anti-Xa level
< 0.35	No	↑25%	4 h after next dose
0.35 - 0.59	No	↑10%	4 h after next dose
0.6 - 1	No	0	Next day, then in 1 week, and then monthly
1.1 - 1.5	No	↓20%	4 h after next dose
1.6 - 2.0	Yes, for 3 hours	↓30%	4 h after next dose
>2.0	Until anti-Xa level 0.5	↓40%	All further doses should be held and the anti-Xa level should be measured Q 12 hours until <0.5 units/mL. Enoxaparin can then be restarted at a dose of 40% less than what was originally ordered.

Linear Kinetics equation[7]

$$\text{New dose} = \frac{\text{Current dose x goal Anti- Xa}}{\text{Current anti - Xa}}$$

Clinical considerations for Morbidly obese patients only

1. **When to transition from q12h to q24h**
   a. When there is intolerance of ≥ 0.6 mg/kg q12h
   b. Avoid < 0.6 mg/kg q12h
2. **Switching to q24h dosing**
   a. Continue with current dose that resulted in peak level of 1 – 2 units/ml
   b. Titrate enoxaparin dosing based on subsequent levels
3. **Interpreting levels collected at the wrong time**
   a. Peak level window is 3 – 5 hours post dose
   b. Level less than 3 hours; may not reflect true peak
   c. Level greater than 5 hours may reflect less than true peak level

Prophylactic Anticoagulation

- Goal anti-Xa level: 0.2-0.4 units/mL
- Clear guidance for appropriate dose adjustments is not available at this time. It has been proposed to adjust prophylaxis doses by 10mg increments.

Lab monitoring

- Baseline platelet count, serum creatinine, hemoglobin and hematocrit
    - Repeat weekly

This Guideline Review and Revision information

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References

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