

ENOXAPARIN - SAFE PRESCRIBING - CHECK IT OUT

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- ▶ **CHECK** THE RENAL FUNCTION IS NORMAL
- ▶ **CHECK** INR, APTT, PLATELET COUNT AND LIVER FUNCTION ARE NORMAL
- ▶ **CHECK** IF THERE IS AN INCREASED RISK OF HAEMORRHAGE
- ▶ **CHECK** THE DOSE IS APPROPRIATE
- ▶ **CHECK** ADMINISTRATION TECHNIQUE

Enoxaparin is a low molecular weight heparin used for the prevention and treatment of VTE (venous thromboembolism) and for the treatment of acute coronary syndromes.¹ Enoxaparin requires a Special Authority to obtain subsidised funding for certain conditions.² (see back page)

Check the following parameters before prescribing to reduce the risk of a significant bleed.

CHECK THE RENAL FUNCTION IS NORMAL

If renal function is compromised, the clearance of enoxaparin will be delayed, and the risk of bleeding will increase.

Calculate the patient's estimated creatinine clearance (CrCL) using the Cockcroft-Gault formula:

$$\text{CrCL (mL/min)} = \frac{F \times (140 - \text{age}) \times \text{weight (kg)}}{0.814 \times \text{serum creatinine (micromol/L)}} \quad F = 1 \text{ male} \\ F = 0.85 \text{ female}$$

There are online CrCL calculators available, [click here](#) for an example.

- If the calculated CrCL is between 30-80mL/min, use the standard dose
 - If the calculated CrCL is less than 30mL/min, adjust the dose as per tables overleaf
- Note:** The initial dose should be a standard dose to ensure an effective concentration is achieved³

For patients with significant renal impairment, or if abnormal coagulation parameters or bleeding should occur, anti-Factor Xa may be used to monitor the anticoagulant effect of enoxaparin.¹

CHECK INR, APTT, PLATELET COUNT AND LIVER FUNCTION ARE NORMAL

Make sure the patient has a normal coagulation profile (INR, APTT), platelet count, and liver function prior to prescribing enoxaparin.³

- If platelet count is < 50x10⁹/L, enoxaparin is contraindicated³
- If there is a decrease of 30-50% from baseline during treatment, enoxaparin should be discontinued immediately and HIT considered.

The risk of heparin-induced thrombocytopenia (HIT), although rare, does exist with low molecular weight heparins. It is an immune-mediated reaction, and usually appears between 5-10 days of starting treatment.⁴

HIT is diagnosed when HIT antibodies are detected together with any of the following:

- Platelet count decreases by > 50%
- Thrombosis
- Skin reactions occurring at heparin injection sites.

The '4Ts score' should be used to determine pre-test probability for HIT ([click here for more information](#))

The risk of HIT is greatest postoperatively, or with prolonged exposure to heparins.³ Ask patients to report any symptoms of a new VTE or painful skin lesions.⁵ Enoxaparin should be used with caution if there is hepatic insufficiency; it is contraindicated if the patient has severe hepatic disease.¹

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CHECK IF THERE IS AN INCREASED RISK OF HAEMORRHAGE

Enoxaparin is contraindicated if the patient has a condition with a high risk of haemorrhage.¹ Examples include a recent history of haemorrhagic stroke, bacterial endocarditis, or active ulcerative conditions such as peptic ulcer disease or ulcerative colitis.¹

Use enoxaparin with caution if patients have uncontrolled hypertension, diabetic retinopathy, congenital or acquired bleeding disorders, or if they have had neurological or ophthalmologic surgery within the previous month.

Since 2010, there have been 14 bleeding-related deaths reported to CARM (Centre for Adverse Reactions Monitoring) in New Zealand that are thought to be related to enoxaparin use.⁶ Bleeding can occur at any site, so a fall in haemoglobin or blood pressure should be investigated immediately.¹

Other anticoagulants such as warfarin, dabigatran, rivaroxaban, apixaban, antiplatelet agents (aspirin, clopidogrel), thrombolytics or NSAIDs (non-steroidal anti-inflammatory drugs), affect haemostasis and should be discontinued prior to enoxaparin therapy, unless strictly indicated.¹ In 13 of the 14 deaths associated with enoxaparin, the patient was prescribed other medicines that also affect haemostasis.

CHECK THE DOSE IS APPROPRIATE

Dosing of enoxaparin for the prevention of thromboembolic events following elective surgery is the responsibility of the surgeon, however, it is important to be aware of the dosing requirements and the length of the course so that it is not continued (or discontinued) in error.¹¹

Prophylaxis of VTE

Standard dose ¹	40mg once daily
Duration	
High risk surgery ¹	7-10 days or until risk diminished
Medical patients ¹	6-14 days or until full ambulation
Exceptions	
Low weight < 45kg ⁷	20mg once daily
CrCL < 30mL/min ¹	20mg once daily
Hip replacement ¹	Should continue for 30 days post operatively
BMI > 40kg/m ²	Consider 40mg twice daily ⁹
Note: If the patient is at extremes of weight, refer to a haematologist for anti-factor Xa monitoring. ³	

Treatment of VTE

Standard dose ¹	1.5mg/kg once daily or 1mg/kg twice daily
Duration ¹	Minimum 5 days Continue enoxaparin until therapeutic anticoagulant effect (INR 2-3) has been achieved for 2 consecutive days. ¹¹ Initiate warfarin within 72 hours where appropriate.
Exceptions	
CrCL < 30mL/min ¹	1mg/kg once daily (after initial standard dose)
Weight > 100kg ³	1mg/kg twice daily
Weight > 200kg*	Consider dosing as per lean body weight
Pulmonary embolism ³	1mg/kg twice daily
Active malignancy ^{7,8}	1mg/kg twice daily for 2 weeks, then 1.5mg/kg once daily for 2 weeks, then 1mg/kg once daily (on advice from haematologist)

*Refer to a haematologist for advice if patient weighs over 150kg⁷

Lean body weight:

Male: 50kg + (0.9kg/cm >150cm)

Female: 45kg + (0.9kg/cm >150cm)

For convenience, prescribe to the nearest 10mg dose (as per graduations on the pre-filled syringe) until 120mg, and then round to 135mg or 150mg. Always measure precisely.

CHECK ADMINISTRATION TECHNIQUE

When administering enoxaparin, do not expel the air bubble before injection. If the volume needs to be adjusted, hold the syringe down to dispel any excess enoxaparin without expelling the air bubble.¹⁰

Administer by deep subcutaneous injection. The full length of the needle should be injected vertically (90° angle) into a skin fold. Inject slowly and hold the skin for the duration of the injection. Pull the needle straight out, do not rub the injection site.¹⁰

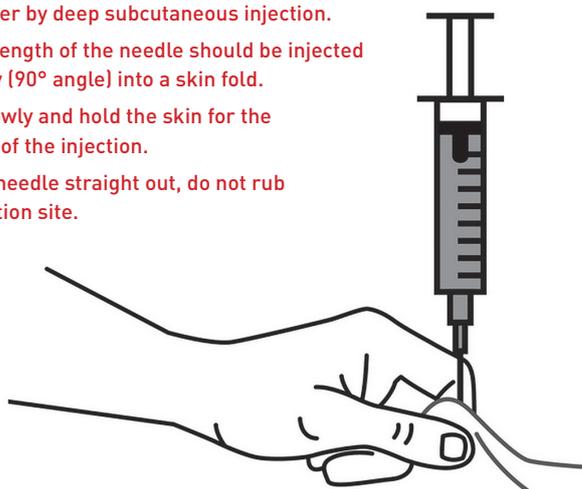
See Diagram Overleaf

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- Administer by deep subcutaneous injection.
- The full length of the needle should be injected vertically (90° angle) into a skin fold.
- Inject slowly and hold the skin for the duration of the injection.
- Pull the needle straight out, do not rub the injection site.



To avoid scarring from multiple injections, alternate the injection site between the left and right abdomen. Ask patients to check their injection sites, and to report any painful skin reactions. Emphasise safe storage of new and used syringes to all patients.

SPECIAL AUTHORITY CRITERIA

Enoxaparin is available fully subsidised for 1 year for:²

- Pregnant women who require LMWH
- Treatment of VTE for patients with a malignancy

Subsidy is valid for 1 month for:

- Short-term treatment of VTE prior to establishing a therapeutic level of oral anticoagulant treatment
- Prophylaxis and treatment of VTE in high-risk surgery
- Cessation or re-establishment of existing oral anticoagulant treatment pre or post-surgery
- Prophylaxis and treatment for VTE in ACS (Acute Coronary Syndrome) with surgical intervention
- Cardioversion of AF (Atrial Fibrillation)

ACKNOWLEDGEMENTS

We wish to thank Dr Eileen Merriman, Consultant Haematologist and, Elizabeth Brookbanks, Pharmacist, at Waitemata District Health Board for their valuable contribution to this bulletin.

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No: 0182-01-066, Issued August 2015; Review August 2018

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