

Weight Appropriate Enoxaparin Dosing in Orthopaedic Trauma Patients (Re-audit)

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Background

Venous thromboembolism (VTE), including deep vein thrombosis (DVT) and pulmonary embolism (PE), is a significant cause of morbidity and mortality in hospitalized patients. Anticoagulant-based prophylaxis in the form of low molecular weight heparins (LMWH) reduce the relative risk of VTE by 45% to 63% in unwell patients. For this to be effective, patients at extremes of weight require a special consideration to determine appropriate enoxaparin doses. NICE guidelines recommend that all trauma patients should be assessed to identify the risk of VTE and bleeding. Pharmacological VTE prophylaxis for trauma patients should start as soon as possible or at least within 14hrs of admission.

Indication	Renal function	Weight		
		<40kg	40-150kg	>150kg
Thromboprophylaxis	CrCl ≥ 30 mL/min	20mg OD	40mg OD	40mg BD
	CrCl 15-30 mL/min	20mg OD	20mg OD	40mg OD
	CrCl <15 mL/min	20mg OD ¹		
This is considered generally safe in this patient group, but consider seeking senior/specialist advice if used for prolonged periods and/or the patient is at extremes of weight (anti-Xa monitoring can be considered)				
DVT or PE treatment	CrCl ≥ 30 mL/min	1.5mg/kg OD	1mg/kg BD	Note: SPTs give this dose if >100kg
	CrCl 15-30 mL/min		1mg/kg OD	
	CrCl <15 mL/min	Seek specialist advice		

Table 1 – Subcutaneous doses according to indication, patient's body weight and renal function

Aims

The aim of this audit was to:

1. Assess if patients were being prescribed the correct dose of LMWH according to their weight.

Method

The data was collection over a randomly selected two week period (27/05/2019-09/06/2019). The sample size included all trauma admissions over this time. Patients with impaired renal function (CrCl < 30) were excluded as well as paediatric patients and patients already on other forms of anti-coagulation. The data was collected then inserted into a meridian questionnaire.

REFERENCES:

1. Sebaaly J, Covert K. Enoxaparin Dosing at Extremes of Weight: Literature Review and Dosing Recommendations. *Annals of Pharmacotherapy*. 2018;52(9):898-909.
2. Rondina M, Wheeler M, Rodgers G, Draper L, Pendleton R. Weight-based dosing of enoxaparin for VTE prophylaxis in morbidly obese, medically-ill patients. *Thrombosis Research*. 2010;125(3):220-223.
3. NICE guidelines: <https://www.nice.org.uk/guidance/ng89/chapter/Recommendations#risk-assessment>. Accessed on 13/6/19.
4. Department of Health VTE risk assessment tool: <https://www.nice.org.uk/guidance/ng89/resources/department-of-health-vte-risk-assessment-tool-pdf-4787149213>. Accessed on 13/6/19.

Results

There was a large improvement in weights being recorded on admission. 81.7% have documented weights compared to 33.8% during the initial audit.

Despite weights being recorded in nursing/medical notes there was only a small rise in the % of weights recorded on drug charts, 20% to 25%.

There was an increase in incorrect dosages of enoxaparin for weight. This could be due to the continued poor documentation of weights on drug cards and the practice of prescribing 40mg for everyone. There was also a higher proportion of patients at extremes of weight in this re-audit.

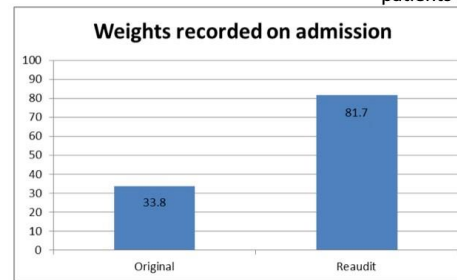


Figure 1. Percentage of patients with weights recorded on admission

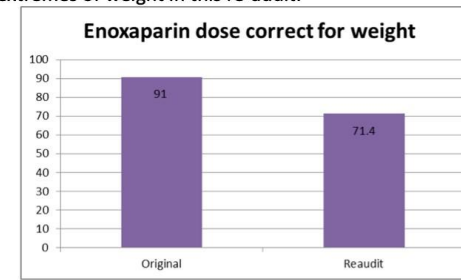


Figure 2. Percentage of patients with correct enoxaparin dosage for weights.

Difficulty arises in elderly patients with NOF fractures who are unable to mobile or weight bear. This results in patients being on the ward without documented weights making correct LMWH dosage increasingly difficult. Incorrect dosing can increase the risk of venous thromboembolism or bleeding. This is particularly relevant in trauma patients who may be undergoing surgery.

Recommendations

Recommendations from previous audit included:

1. T&O SHOs to ask ED to make sure patients have weights documented when accepting patients.
2. Clerking doctors to document weights on drug charts to avoid confusion when prescribing enoxaparin.
3. If pre-op weights are not documented, to make sure patients are weighed post-op (when weight-bearing) and make necessary adjustments to the LMWH dosage.

Additional recommendations from this audit includes:

1. Junior doctors to be informed during induction regarding the importance of correct LMWH dosage.
2. Ward 12 sister to educate the nursing team in regards to the importance of documenting weights on arrival and to obtain a accurate weight at the earliest opportunity if not able to on admission.