**Pharmacist-Driven Anti-Xa Enoxaparin Dosing and Monitoring**

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**Background:** Nearly 900,000 people in the United States may be affected by venous thromboembolism (VTE) annually, appropriate treatment with therapeutic anticoagulation is required to reduce the risk of morbidity and mortality. Therapeutic anticoagulation carries the risk of serious adverse events which can be potentially mitigated through monitoring.

**Objective:** The primary objective of this study was to evaluate the incidence of anti-Xa laboratory monitoring in patients receiving enoxaparin therapy, for which monitoring is deemed appropriate by the manufacturer’s prescribing information.

**Methods:** This was a retrospective cohort study conducted across all Novant Health facilities in North Carolina and Virginia. Patients were included if they were prescribed enoxaparin, and determined to be a candidate for anti-Xa laboratory monitoring based on the following criteria: (1) body mass index greater than or equal to 40 kg/m2; (2) total body weight greater than or equal to 120 kg or less than 50 kg; (3) estimated creatinine clearance less than 30 mL/min. Participants were then randomized into two groups based on their subsequent dose adjustments performed by pharmacists upon the result of an anti-Xa level where the control group did not require dose adjustment, and the experimental group required dose adjustment.

**Preliminary Results:** A total of 30 patients were included in this study, 15 patients were assigned to both the control and experimental group. All patients were treated with therapeutic enoxaparin (1mg/kg q12h) initially. Both groups consisted of mostly male subjects 66.6% and 60%, with an average age of 63 years and 68 years, respectively. The control group included 46.6% of patients with a BMI greater than or equal to 40 kg/m2 (n=7), 33.3% of patients with an estimated creatinine clearance of less than or equal to 30 mL/min (n=5), and 20% with a total body weight less than 50 kg (n=3). The experimental group included 53.3% of patients with a BMI of greater than or equal to 40 kg/m2 (n=8), 33.3% of patients with an estimated creatinine clearance of less than or equal to 30 mL/min (n=5), and 13.3% with a total body weight less than 50 kg (n=2). The incidence of the primary outcome of anti-Xa monitoring was 1.53 (SD, ± 0.52) for the control group and 2.8 (SD, ± 1.1) for the experimental group (p=0.0033). The secondary outcome of the incidence of repeat levels that resulted within goal range was 47.6% in the experimental group (p=0.464). Additionally, the experimental group averaged 31.3% (n=15, 20%-50%) reduction in enoxaparin dose upon resulting anti-Xa level.

**Conclusion:** The use of anti-Xa laboratory monitoring in patients with a BMI ≥ 40 kg/m2, total body weight ≤ 50kg, or an estimated creatinine clearance ≤ 30 mL/min is reasonable to confirm patients are receiving therapeutic enoxaparin therapy. The frequency of anti-Xa levels drawn was significantly higher in patients who required dose adjustment (p=0.0033) with only 47.6% of patients repeat levels resulting in range. Based on this data we plan to reevaluate our pharmacist dosing and monitoring enoxaparin protocol and provide additional education in this patient population.