Weight Based Enoxaparin Prophylaxis Achieves Anti-Xa Goals in Critically Ill Surgical/Trauma Patients

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What is the problem or challenge you identified?
Surgical and trauma patients have a high risk of venous thromboembolism (VTE) events despite VTE prophylaxis. Standard fixed dosing of enoxaparin prophylaxis may fail to achieve optimal anti-Xa concentrations and reduce VTE rates in critically ill surgical/trauma patients regardless of weight. Weight based dosing of enoxaparin in obese trauma patients has achieved targeted anti-Xa concentrations without increasing bleeding complications, but over anticoagulation in the non-obese may increase bleeding. We hypothesized weight based enoxaparin prophylaxis in all critically ill surgical/trauma patients would achieve target anti-Xa concentrations without increasing bleeding.

Describe the intervention you developed/change you implemented to address the problem:
We implemented a protocol for weight based dosing of enoxaparin in VTE prophylaxis. All critically ill surgical/trauma patients regardless of weight received enoxaparin 0.5mg/kg/dose every 12 hours. Doses were rounded to the nearest 10mg increment without dose capping. Dosing was based upon actual body weight at time of admission. Patients with epidural catheters, traumatic brain injury, or decreased renal function were excluded. Goal peak anti-Xa concentrations were 0.2 to 0.6 IU/mL. Peak steady state anti-Xa concentrations were collected at the discretion of the surgical/trauma intensive care clinicians. Peak steady state anti-Xa concentrations and bleeding complications were retrospectively collected by chart review.

How did you measure the effects of the change?
Over 6 months, 19 patients had anti-Xa values measured. Fifteen patients (79%) achieved goal anti-Xa concentrations, and none exceeded goal values. The mean steady state anti-Xa concentration was 0.29 ± 0.1 IU/mL and patient mean weight and creatinine were 112.8 ± 37.2kg and 0.80 ± 0.3mg/dL respectively. No bleeding complications were identified in the patients receiving weight based enoxaparin prophylaxis.

How did you sustain the change?
We continue to measure anti-Xa values in high risk patients and use weight based dosing of Lovenox for critically ill patients. We have seen a decreasing trend of DVT’s in the injured population admitted to the Trauma Service.