Submission Type: Research

Presenters: Vaishnavi Parchuri, MD, Twisha Patel, PharmD

Additional Authors:
Joseph Reilly, PharmD, BCGP, Shana Szymborski, PharmD, MHS, BCPS, Samson Zarbiv, MD

Title: Monitoring Unfractionated Heparin in Patients Transitioning from Factor Xa Inhibitors: A Quality Improvement Analysis Using Anti-Xa Levels

Purpose & Objective

Unfractionated heparin (UFH) remains the cornerstone of inpatient anticoagulation, traditionally monitored by the partial thromboplastin time (PTT). Recently, anti-Xa levels have become the preferred monitoring method for UFH, offering better correlation with heparin activity. Patients admitted on factor Xa inhibitors may have elevated baseline anti-Xa levels, complicating the interpretation and dosing of UFH. In these cases, reverting to PTT monitoring is indicated until anti-Xa levels normalize with checking levels every 6 hours. Our objective is to identify the time to anti-Xa normalization in patients with recent factor Xa inhibitor exposure and optimize monitoring recommendations in our institutional pharmacy-managed UFH protocol.

Methods:

Our hospital began monitoring UFH with anti-Xa levels in May 2025 with a therapeutic range of 0.3 to 0.7 IU/mL. A retrospective review of 217 pharmacy-managed UFH patient protocols between May and June 2025 was conducted at AtlantiCare Regional Medical Center. Included patients were admitted with documented use of a factor Xa inhibitor (apixaban, rivaroxaban, fondaparinux) within 24 hours prior to inpatient UFH initiation and a baseline anti-Xa level greater than 0.7 IU/mL. Those with a baseline anti-Xa level of ≤ 0.7 IU/mL were excluded. Data collection included patient demographics, the specific factor Xa inhibitor used, and the time (in hours) until anti-Xa levels fall ≤ 0.7 IU/mL, utilizing serial anti-Xa measurements taken every 6 hours. Based on our findings, recommendations will be provided to potentially modify our hospital pharmacy-managed UFH patient protocol, specifically for those starting UFH with anti-Xa levels of greater than 0.7 IU/mL due to recent factor Xa inhibitor use. Emphasis will be placed on the necessity for serial anti-Xa measurements taken every 6 hours in this population. Descriptive statistics will be utilized for our analysis. Study approval was granted by our Institutional Review Board.

Results:

Of the 217 protocols reviewed, 51 patients were included who had prior factor Xa inhibitor use with an elevated baseline anti-Xa level >0.7 IU/mL. Those with a baseline anti-Xa level of ≤ 0.7 IU/mL were excluded. The mean age of patients was 69 years (± 13.6) with 86.3% having a baseline anti-Xa level >1.1 IU/mL. The mean time to anti-Xa normalization among patients with elevated levels was 23.06 hours (± 13.15; median 24 hours; range 6-60 hours). Approximately 75% of patients received UFH for cardiac indication. These findings suggest that 6-hour anti-Xa monitoring offers limited clinical value and may lead to unnecessary laboratory testing. As a result, our UFH protocol was revised for patients with known factor Xa inhibitor use and an elevated baseline anti-Xa level. The updated approach recommends using PTT alone for initial heparin dose adjustment, monitoring anti-Xa levels every 24 hours until therapeutic, and then transitioning to anti-Xa monitoring only for subsequent adjustments.

Conclusion:

Adapting our pharmacy heparin protocol to account for prior factor Xa inhibitor use improved workflow efficiency without compromising patient safety. This change streamlines workflow reduces blood draws and lab resource use and enhances protocol clarity. Future evaluation should assess clinical outcomes such as bleeding and thrombosis.