

Monitoring of Unfractionated Heparin Post-Infusion in Adult Inpatients at a Community Hospital

Sandra Eid PharmD Candidate 2020¹

Nicole Ryba PharmD, BCPP, BCGP^{1,2}; Jessica Hill PharmD, BCPS, BCACP²

Joseph Cavanaugh PharmD, BCPS, BCCCP²

1. Fairleigh Dickinson University School of Pharmacy and Health Sciences, Florham Park, NJ. 2. Community Medical Center, Toms River, NJ

The authors have no conflicts of interest to declare

BACKGROUND

Unfractionated heparin (UFH) infusions are used for the treatment of different conditions including atrial fibrillation (A.Fib), acute coronary syndrome (ACS), deep venous thrombosis (DVT) and pulmonary embolism (PE). Close monitoring of the activated partial thromboplastin time (aPTT) and continuous infusion adjustments are crucial for patient therapeutic outcomes and safety. Studies have shown that reaching a therapeutic aPTT level within the first 24 hours of UFH infusion correlates to reduced risk of thrombotic event recurrence.²

OBJECTIVE

To evaluate the time needed to reach a therapeutic aPTT with the current heparin infusion protocol implemented at a large community hospital

METHODS

This is an IRB approved retrospective medication use analysis. All data was collected retrospectively from the patients' electronic medical records. All patients ≥ 18 years old who were admitted to any non-intensive care area at Community Medical Center between March 1, 2019 and April 30, 2019 who were administered the standard dose or low dose UFH infusion were included in the study. Patients were excluded if admitted to an intensive care unit (ICU) or if patients experienced any active bleeding.

RESULTS

Table 1. Population Baseline Characteristics

Characteristic	N=75
Age – yr (\pm SD)	71 (14.4)
Sex—no. (%)	
Male	37 (49.3)
Indications—no. (%)	
A.Fib	27 (36)
ACS	24 (32)
DVT	13 (17.3)
PE	11 (14.7)

Figure 1. Primary Endpoint

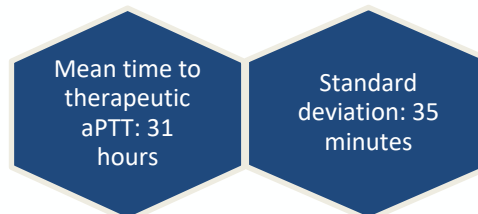
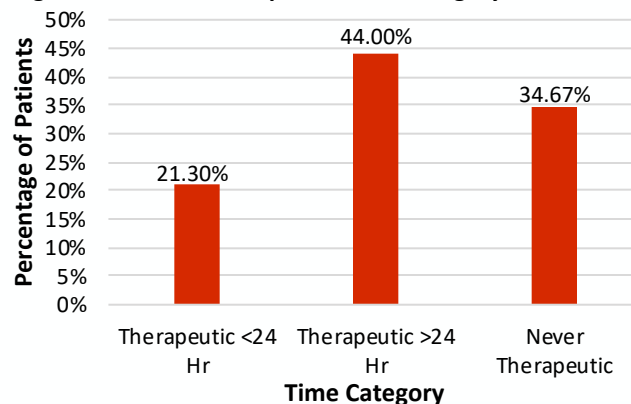


Figure 2. Time to Therapeutic aPTT Category



RESULTS

Bolus Dose Given

- 14.67% (n=11) did not receive a bolus dose
- 5.33% (n=4) received the wrong bolus

First aPTT Draw Time

- Average draw time: 6:39 hours
- 25.33% (n=19) were above 6 (+1) hour interval
- 14.67% (n=11) were below 6 (-1) hour interval

First Infusion Rate Adjustment

- 25.33% (n=19) of the first rate adjustments were inappropriate

Period of Time Infusion is Held

- 34.67% (n=26) did not appropriately hold infusion for an aPTT >100 secs

Therapeutic aPTT Order Timing

- 75.51% (n=37) did not have the aPTT level drawn at the appropriate 24 hour interval once therapeutic

CONCLUSION

The mean time to therapeutic aPTT of 31 hours found in this patient population did not correlate with the recommended time of 24 hours or less. According to these findings, there are opportunities to improve the protocol compliance, specifically with infusion rate adjustments.

REFERENCES

1. Hirsh J, Anand SS, Halperin JL, Fuster V. AHA Scientific Statement: Guide to anticoagulant therapy: heparin: a statement for healthcare professionals from the American Heart Association. *Arteriosclerosis, Thrombosis, and Vascular Biology*. 2001;21(7):E9. Accessed July 3, 2019.
2. Tahir R. A Review of unfractionated heparin and its monitoring. *US Pharm*. 2007;32(7):HS-26-HS-36. Accessed August 20, 2019.
3. Raschke RA, Reilly BM, Guidry JR, et al. The weight-based heparin dosing nomogram compared with a "standard care" nomogram. *Ann Intern Med*. 1993;119:874-881. Accessed August 20, 2019.
4. Aarab R, van Es J, de Pont ACJM, Vroom MB, Middeldorp S. Monitoring of unfractionated heparin in critically ill patients. *The Netherlands Journal Of Medicine*. 2013;71(9):466-471. Accessed July 16, 2019.
5. Alsulaiman D, Sylvester K, Stevens C, Carter D. Comparison of time to therapeutic aPTT in patients who received continuous unfractionated heparin after implementation of pharmacy-wide intervention alerts. *Hospital Pharmacy*. 2016;51(8):656-661. Accessed July 16, 2019.