

# Evaluating the appropriateness and compliance of heparin infusion protocols in an acute care hospital



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## Background

- Unfractionated heparin is a parenteral anticoagulant used for the treatment and prevention of thromboembolic events.
- Healthcare facilities maintain standardized protocols used to titrate and monitor heparin infusions. MountainView Hospital utilizes standardized nursing-driven heparin infusion protocols.
- A study by Schurr et al. demonstrated that a weight-based, nurse-driven heparin nomogram reduced time to therapeutic anticoagulation without an increase in the proportion of patients with a critically supratherapeutic aPTT.<sup>1</sup>
- It is crucial that these protocols are followed to ensure efficacious treatment while preventing serious adverse effects, such as bleeding.

## Objective

The purpose of this medication use evaluation is to assess the appropriateness and compliance to nursing-driven heparin infusion protocols.

## Methods

Single-center retrospective medication utilization evaluation

### Study Period:

January 1<sup>st</sup> to June 14<sup>th</sup>, 2022

### Inclusion Criteria:

At least 18 years of age who started at least one infusion of heparin

### Method:

Patients were randomly selected from a clinical support software generated list

- Demographic data collected included age, gender, weight, and level of care in which heparin was administered.
- Appropriateness and compliance to heparin protocols were evaluated by:
  - Appropriate heparin protocol chosen based on diagnosis
  - Actual versus estimated weight documented at the time of heparin initiation
  - Time between order entry and heparin initiation
  - Time between heparin administration and first non-baseline activated partial thromboplastin time (aPTT)
  - Time between first non-baseline aPTT and heparin infusion rate titration

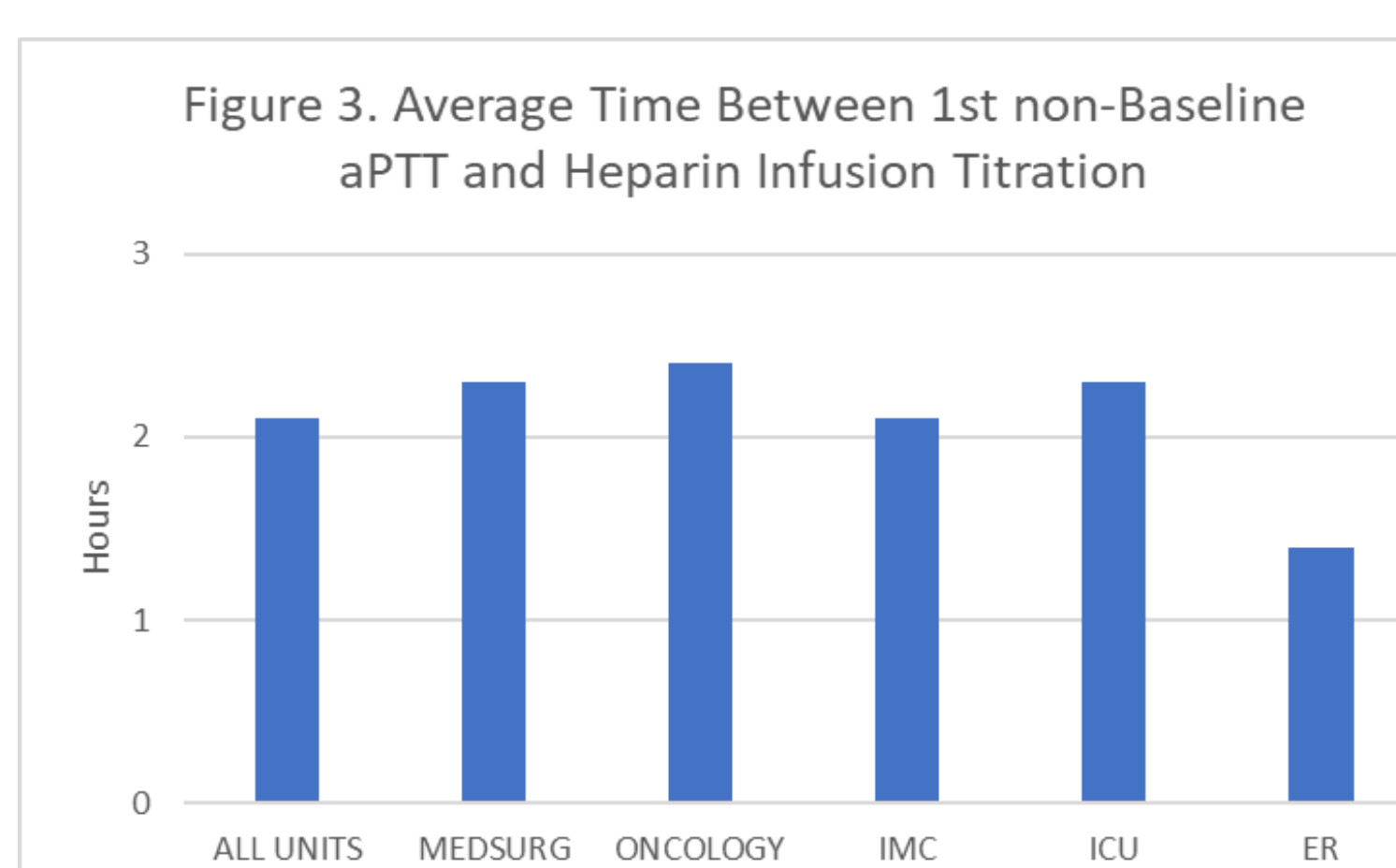
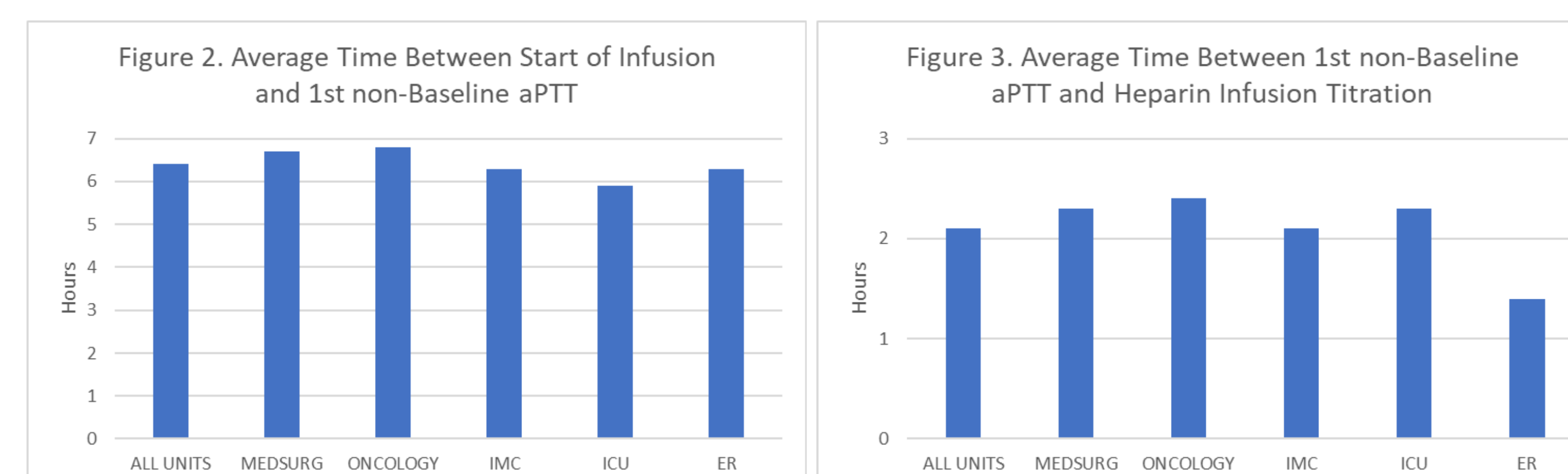
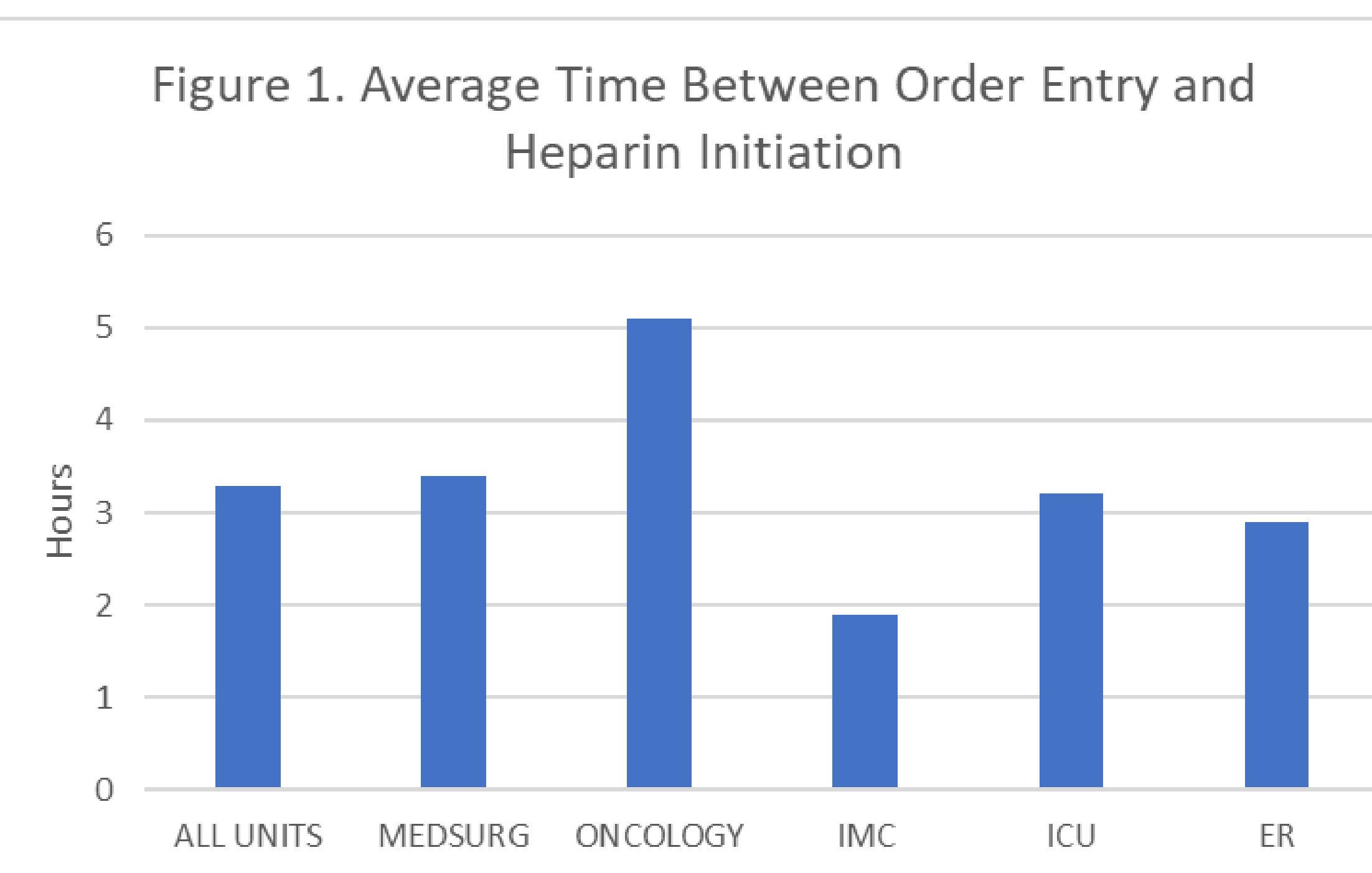
## Results

Table 1. Demographics

Characteristics	Analysis Group
Mean age (years)	66
Female (%)	43 (43)

Table 2. Compliance to Standardized Heparin Infusion Protocols

Level of Care	Measured Weight Used (%)	1 <sup>st</sup> non-baseline aPTT within 6 hours (%)	Appropriate Protocol Used (%)
All Units	18	60	88
Medical Surgical (MedSurg)	10	65	90
Oncology	15	55	85
Intermediate Care Unit (IMC)	35	80	85
Intensive Care Unit (ICU)	20	50	85
Emergency Department (ED)	10	50	95



## Discussion

- Overall, 18% of patients had a documented measured weight at the time of heparin initiation. To specify by level of care, 10% of patients in MedSurg and ER units and 35% of patients in IMC units had a documented measured weight at the time of heparin initiation (Table 2).
- The appropriate protocol was used in 88% of all patients based on diagnosis and was similar between all levels of care (Table 2).
- On average, oncology units had the longest time between order entry and initiation of heparin infusions (about 5 hours), while IMC units had the shortest time (about 2 hours) (Figure 1).
- The average time between the start of heparin infusion and the first non-baseline aPTT drawn was approximately 6.5 hours and was similar across all levels of care (Figure 2).
- The time between the first non-baseline aPTT drawn and heparin infusion titration was approximately 2 hours. This happened, on average, more quickly in the ER units (approximately 1.5 hours) (Figure 3).
- One limitation of this evaluation is that the study sample did not meet power requirements.

## Conclusion

Across all units, only 18% of patients had a documented measured weight prior to initiating heparin infusion. Pharmacists can provide hospital-wide education on the importance of complying to nursing-driven heparin infusion protocols and specifically focus on weighing the patient prior to initiating the heparin infusion. This can be done through a newsletter to provide guidance on each heparin protocol and a periodic in-service at the nursing station for each level of care.

## References

1. Schurr J, Stevens C, Bane A, et al. Description and evaluation of the implementation of a weight-based, nurse-driven heparin nomogram in a tertiary academic medical center. *Clinical and Applied Thrombosis/Hemostasis*. 2018;24(2):248-253.

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