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Comparison of Standard Dose vs Higher Dose Low Molecular Weight Heparin and Unfractionated Heparin for DVT Prophylaxis in COVID-19 Patients

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Comparison of Standard Dose vs Higher Dose Low Molecular Weight Heparin and Unfractionated Heparin for DVT Prophylaxis in COVID-19 Patients

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OBJECTIVE

- To evaluate whether higher dose VTE prophylaxis results in a significant reduction in VTE events without significant increase in bleeding risk when compared to standard dose VTE prophylaxis in patients with COVID-19 infection.

BACKGROUND

- A high incidence of DVT and PE has been reported among COVID patients with rates from 8-20% depending on patient population.^{2,3,4}
- There is currently no consensus for the most appropriate dosing regimen of pharmacologic VTE prophylaxis:
 - Helms et al described significantly more thrombotic complications in COVID-19 patients and suggested that higher doses of anticoagulation should be used in critically ill patients.¹
 - The INSPIRATION trial found that, among patients admitted to the ICU with COVID-19, intermediate dose prophylaxis (enoxaparin 1 mg/kg daily) did not result in a significant difference in VTE compared to standard dose (enoxaparin 40 mg daily).⁶
 - Most recently, the HEP-COVID trial showed therapeutic-dose LMWH reduced major thromboembolism and death compared to standard dose heparin thromboprophylaxis among COVID-19 patients.⁵

METHODS

Design

- Observational, retrospective cohort study of adult patients with confirmed COVID-19 infection to evaluate VTE occurrence rates stratified by pharmacologic VTE prophylaxis agents received.

Methods

- Data was collected on any adult patient admitted to Parkview Regional Medical Center or Parkview Randallia Hospital between March 11, 2020 and December 31, 2020.

Study Interventions

- 'High Dose'
 - UFH 7500 units SQ TID
 - Enoxaparin 40 mg SQ BID
- 'Standard Dose'
 - UFH 5000 units SQ TID
 - Enoxaparin 40 mg SQ QD

Primary Outcome Measures

- VTE (defined as upper/lower extremity DVT and PE)
- Identified via imaging results and notes in patient charts

Secondary Outcome Measures

- Clinically Relevant Bleeding (explicitly noted in patient chart)
- Arterial Events (including acute stroke and myocardial infarction)
- Onset of anemia
- Discharge Disposition

RESULTS

Table 1. Baseline Characteristics

	High Dose Prophylaxis (n=827)	Standard Dose Prophylaxis (n=166)
Age (Median, IQR)	67.0 (55.0-76.0)	66.5 (57.5-74.5)
Sex - Female (n, %)	398 (48)	83 (50)
BMI (Median, IQR)	31.7 (27.3-37.7)	31.2 (26.2-37.7)
PMH (n, %)		
Cancer/Malignancy	51 (6.1)	23 (13.9)
Stroke	0 (0)	0 (0)
HTN	15 (1.8)	3 (1.8)
DM	44 (5.3)	12 (7.2)
CAD	1 (0.1)	1 (0.6)
CHF	1 (0.1)	1 (0.6)
Bleed	6 (0.7)	2 (1.2)
PTA Meds (n, %)		
Aspirin	30 (3.6)	5 (3.0)
P2Y12 Inhibitor	27 (3.3)	7 (4.2)
Anticoagulant	15 (1.8)	7 (4.2)
Labs (Median, IQR)		
Hemoglobin	13.1 (11.8-14.3)	12.6 (11.2-13.9)
Platelets	209 (158-269)	204 (162-262)
Serum Creatinine	0.91 (0.5-1.76)	1.0 (0.77-1.59)
D-Dimer	0.94 (0.76-1.29)	1.24 (0.7-2.83)

Figure 1. Primary Outcome and Safety Outcomes

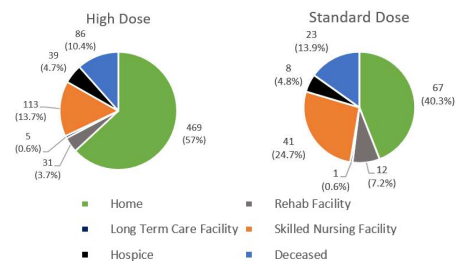
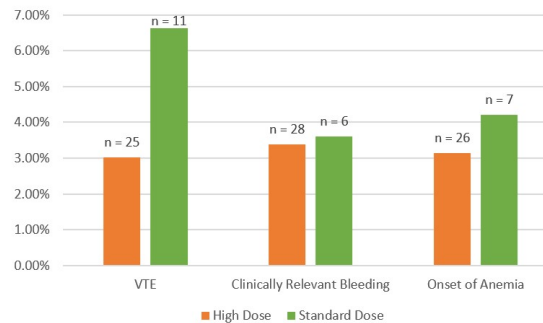


Figure 2. Discharge Disposition by Group

DISCUSSION & CONCLUSIONS

Discussion

- Baseline characteristics between groups were similar. Of note, there were a higher percentage of patients with a history of cancer and malignancy in the standard dose group (13.9% v 6.1%).
- Higher incidence of VTE (6.6% v 3.0%) was seen in patients receiving standard dose VTE prophylaxis compared to those that received alternate higher dosing strategies. This is consistent with the results of HEP-COVID that showed patients receiving therapeutic LMWH experienced significantly less VTE events compared to a standard regimen, but conflicts with results from the INSPIRATION trial.
- Similar rates of clinically relevant bleeding (3.6% v 3.4%) were seen in each group. This helps highlight the weight of risk versus benefit of high dose prophylaxis in COVID-19 patients. This study showed that there was no additional bleeding risk in the high dose group.
- A higher percentage of patients in the high dose group were discharged home (57% v 40.3%). A slightly higher number of patients in the standard dose group died during admission (13.9% v 10.4%).

Limitations

- Retrospective chart-review.
- Lower VTE incidence rate than has been described in literature or seen in other studies of COVID-19 patients.

Conclusions

- Patients receiving high dose VTE prophylaxis experienced lower incidence of VTE compared to standard dose regimens without increasing the risk of bleeding events.
- The authors of this poster intend to expand the date range of collected patients to identify more patients for the standard dose prophylaxis group with the intent of running statistical analyses to determine if the difference observed between groups was statistically significant.

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Disclosure

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