

A Weight-based Approach to Thromboprophylaxis Dosing for Medical Inpatients with COVID-19

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Background: COVID-19 is associated with a higher risk of venous thromboembolism (VTE). There is no consensus on the optimum dose of thromboprophylaxis.

Aims: To assess the effectiveness of weight-based thromboprophylaxis dosing.

Methods: This is a retrospective cohort study of all medical patients at a large UK-based teaching hospital, between April 1st and 15th May 2020. Electronic medical records were reviewed. People who were PCR positive for SARS-CoV-2 (COVID-19 positive) received a weight-based thromboprophylactic dose of enoxaparin (Table 1). Those PCR negative for SARS-CoV-2 (COVID-19 negative) received a standard dose (enoxaparin 40mg daily). Chi square and Fisher's exact test were used for categorical variables, unpaired t test for continuous.

Weight (kg)	Crcl \geq 30	Crcl 15-29
\leq 49	20mg OD	Consider the use of unfractionated heparin
50 – 99	40mg OD	20mg OD
100 – 149	40mg OD	40mg OD
\geq 150	60mg OD	40mg OD

Weight-based dosing of thromboprophylaxis with enoxaparin for COVID-19 positive patients. (kg- kilogram, CrCL – creatinine clearance, OD – once daily)

Results:

569 cases (179 COVID-19 positive, 390 COVID-19 negative) were identified. The COVID-19 positive group had a significantly higher average age, a similar proportion of males and a greater average weight (Table 2). 86% of the COVID-19 positive group received the correct thromboprophylaxis dose for their weight. Most receiving an incorrect dose weighed >100 kg (54%) and received a lower dose than recommended. The incidence of new VTE was similar in the COVID-19 positive group (12, 7%) compared to those in the COVID-19 negative (16, 4%, $p=0.18$). Most VTE events were proven

radiologically apart from two COVID-19 positive patients diagnosed by clinical suspicion alone. Eight cases (67%) of VTE in patients with COVID-19 were pulmonary thrombosis, compared to twelve (75%) in patients without (p=0.69). Two cases of VTE occurred in the COVID-19 positive group whilst they were therapeutically anticoagulated compared to none in the COVID-19 negative group. Two major bleeding episodes occurred in the COVID-19 positive group and one in the COVID-19 negative (p=0.23).

	COVID-19 positive	COVID-19 negative	<i>p</i> value
Number	179	390	
Median age, years (range)	74 (19-101)	66 (17-99)	<0.00001
Male	96 (54%)	208 (53%)	0.947
Median weight, kg (range)	74 (38-155)	70 (33-241)	0.602
VTE	12 (7%)	16 (4%)	0.18
Pulmonary thrombosis	8 (67%)	12 (75%)	0.69
Major bleeding	2 (1%) (upper GI bleed, 1; upper and lower GI bleed, 1)	1 (1%) (upper GI bleed, 1)	0.23

Comparison of the COVID-19 positive and COVID-19 negative groups. (GI – gastrointestinal, %- percentage)

Conclusions: There was a similar incidence of VTE in medical patients with COVID-19 compared to those without. Weight-based thromboprophylaxis was not associated with an increased rate of bleeding.

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