Evaluation of Venous Thromboembolism Prophylaxis Outcomes in Morbid Obesity

Authors: Rachel Gustafson, PharmD (rlgustafson@carilionclinic.org), Carilion Clinic; Jennifer Wright, PharmD, BCPS, Carilion Clinic; Jonathan Dubyk, PharmD, BCPS, Carilion Clinic; Mimi Liu, PharmD, MBA/HAS, Carilion Clinic; Jonathan Zalman, PharmD, Carilion Clinic

**Abstract**

Purpose: The purpose of this study is to evaluate the rate of bleeding and venous thromboembolism (VTE) in patients with a body mass index (BMI) >/= 40 kg/m2 compared with patients with a BMI < 40 kg/m2 receiving VTE prophylaxis.

Methods: This retrospective-cohort study (IRB exempted) evaluated hospitalized medically ill patients at least 18 years old who received VTE prophylaxis therapy with either subcutaneous (SQ) heparin or enoxaparin from January 1, 2019, to December 31, 2019. Included were patients who received either standard dosing used in patients with a BMI < 40 kg/m2 versus weight-adjusted dosing used for patients with a BMI >/= 40 kg/m2. Exclusion criteria included patients who were receiving both heparin and enoxaparin during the same admission, pregnant or post-partum, receiving therapeutic anticoagulation, and those with an epidural in-place. The primary outcome was a composite of the incidence of major and minor bleeding or incidence of VTE. Results were analyzed using a Chi Square test for nominal variables, student t-test for parametric data, and Mann-Whitney U test for nonparametric data.

Results: A total of 229 patients were included with 125 in the standard dosing group and 104 in the weight-adjusted dosing group. There were no events reported in either the primary safety or efficacy endpoints. The median BMI in the standard dose group was 27 kg/m2versus 46 kg/m2in the weight-adjusted group (p<0.001). The majority of patients received enoxaparin in both groups (73.6% vs 70.2%).

Conclusion: There was no difference in the composite outcome of recurrent VTE and bleeding between the two groups, though the study was not adequately powered to detect a statistical difference. Future research should evaluate optimal BMI ranges for using weight-adjusted VTE prophylaxis in a larger study population.