

To DOAC or NOT: Treatment of VTE in Patients with Morbid Obesity

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Presenter: Heting Zhang, PharmD., MBA

PGY-1 Pharmacy Resident – HSPAL

UPMC Presbyterian

Abstract

Venous thromboembolism (VTE) includes deep venous thrombosis (DVT) and pulmonary embolism (PE) and affects approximately 900,000 individuals annually in the United States.²¹ Of these individuals, over 70,000 are severely obese patients, and these numbers are expected to increase.¹³ Direct oral anticoagulants (DOACs) have been increasingly replacing vitamin K antagonists in patients with venous thromboembolism due to fewer food and drug interactions, fixed dosing, and no requirements for constant lab monitoring. Findings from some clinical trials in patients with acute venous thromboembolism have shown that DOACs have similar efficacy compared with vitamin K antagonists in prevention of venous thromboembolism recurrence and systemic embolism, and similar or lower bleeding risk.¹⁴ However, the low representation of obese patients in these studies has raised questions about the efficacy, adequacy of fixed dosing, and safety of direct oral anticoagulants. Furthermore, the limited information and lack of large randomized clinical trials to assess the appropriateness of DOACS therapy in morbid obesity population have raised concerns in healthcare practitioners about whether the use of DOACs can maintain an adequate efficacy with no significant safety side effects in this patient population.

Audience Questions

1. Based on the PK/PD studies of DOACs in morbid obesity patients we evaluated, which one of the following parameters did not show a correlation with body weight?
 - a. Peak Drug Concentration (C_{max})
 - b. Plasma anti-factor Xa activity
 - c. Area Under the Curve (AUC)
 - d. Volume of distribution (V_d)
2. Which of the following treatment options was not recommended for treating VTE in patients with morbid obesity based on 2021 ISTH guidelines?
 - a. Apixaban
 - b. Rivaroxaban
 - c. Warfarin
 - d. Edoxaban
3. A 80yr patient with body weight 285kg, BMI of 56 kg/m² and Crcl of 55ml/min was hospitalized for pulmonary embolism and received intravenous heparin for treatment. The patient has been stable and therapeutic x2 while on heparin treatment, now the

medical team is seeking recommendation of anticoagulant therapy for discharge. Which of the following would you recommend?

- a. Apixaban 2.5 mg by mouth twice daily
- b. Edoxaban 60 mg by mouth daily
- c. Rivaroxaban 15 mg by mouth twice daily with food for 3 weeks, then 20 mg by mouth daily
- d. Enoxaparin 1 mg/kg subcutaneous twice daily

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