Venous Thromboembolism and Major Bleeding Risk in Hospitalized Obese Patients receiving Thromboprophylaxis with Enoxaparin

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INTRODUCTION

- Patients hospitalized for acute medical illness and those undergoing surgery are at increased risk of venous thromboembolism (VTE) events. Obesity is an additional and independent risk factor for the risk of VTE in this population
- There remains uncertainty concerning optimal VTE prophylaxis, such as the dose and duration of low molecular weight heparin (LMWH) therapy, in obese patients in this setting and in particular in patients who are morbidly obese

AIM

To describe the event rates and risk factors for VTE and major bleeding (MB) in hospitalized obese patients with acute medical illness or surgery receiving enoxaparin prophylaxis.

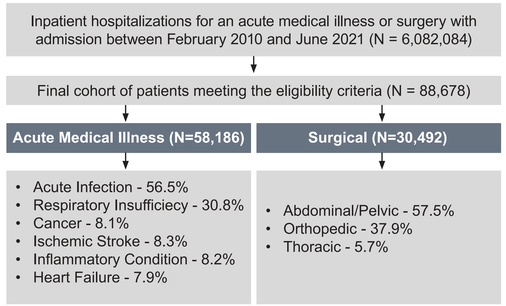
METHOD

- **Design:** Patients with body mass index (BMI) ≥30 Kg/m^2 hospitalized with acute medical illness or surgery between 28th February 2010 and 30th June 2021 who received thromboprophylaxis with enoxaparin were selected from the Optum database, which represents linked claims and electronic health records (EHR) information for individuals enrolled in a health plan in the USA.
- ***Inclusion***: Age ≥18 years, one year of continuous enrolment in a health plan before the index date* and initiation enoxaparin prophylaxis.
- ***Exclusion***: VTE, MB, or surgery 90-days prior to index, ongoing anticoagulant or dual antiplatelet therapy (medication supply within [-2,-32] days from index), atrial fibrillation, chronic kidney disease (stages IV and V)[$], or dialysis.
- **Assessments:** Cumulative incidence of VTE and MB events over time via the Kaplan-Meier (KM) method. Risk factors for VTE and MB events identified via Cox proportional hazard models.

*The **index date** was the start of inpatient enoxaparin prophylaxis. [$]Identified through diagnoses codes or estimated glomerular filtration rate (eGFR)<30.

RESULTS CONT.

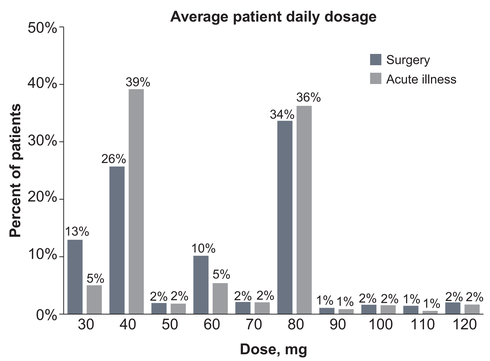
Figure 1: Cohort attrition and reasons for hospitalization



Enoxaparin dose and duration

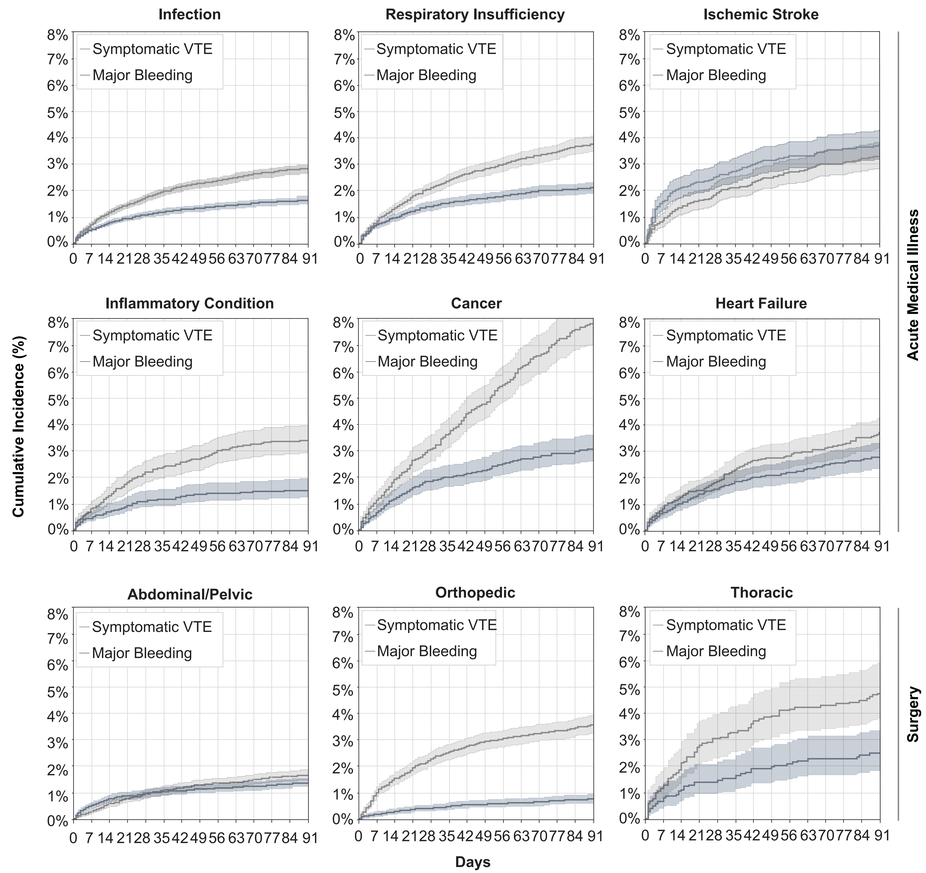
- The median duration of hospitalization was 5 days (interquartile range [IQR] 3-7 days) for acutely ill and 3 days (IQR 2-5 days) for surgical groups
- The median duration of enoxaparin prophylaxis was 3 days (IQR 2-5) in acutely ill and 2 days (IQR 2-4) in surgical groups

Figure 2: Enoxaparin average daily dose distribution



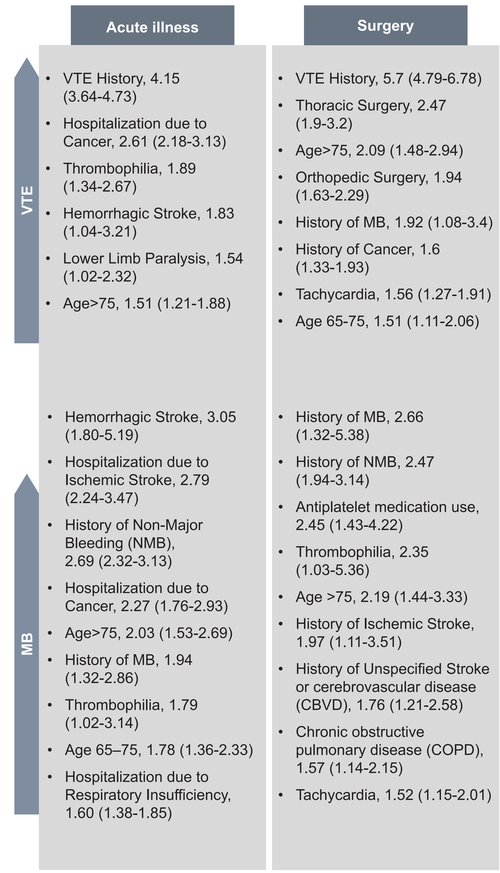
Cumulative incidence of VTE and MB events

Figure 3: VTE and MB event rates over time, by subgroups



Clinical risk factors

Figure 4: Risk factors for VTE and MB; Hazard Ratio (95% CI)



RESULTS

Demographics

- Acute medical patients had a higher median age (58 vs 55 years) and were less likely to be female (55.2 vs 67.6%) as compared with surgical patients
- Approximately 30.0% of patients with acute illness and 40.9% of surgical patients had BMI ≥40. Similarly, a larger proportion of patients with BMI between 30-35 were hospitalized for acute illness (44.7%) vs surgery (35.0%)

STRENGTHS AND LIMITATIONS

- The strengths of this study include large cohort and contemporary (2010-2021) population studied in usual clinical settings. Reporting of event rates, and analysis of risk factors may prove useful to regulatory authorities, clinicians, payers and clinical guidelines committees to identify patients at the highest risk of adverse events
- However, the study has few limitations, including the use of retrospective data, and results representative of only insured populations in commercial and Medicare Advantage health plans in the USA

CONCLUSIONS

- The rates of symptomatic VTE are non-negligible in obese patients with acute medical illness or undergoing surgery receiving thromboprophylaxis with enoxaparin. Individual risk stratification is warranted to identify optimal doses and duration of pharmacologic prophylaxis in this population
- In the study population representing a usual clinical practice setting, the duration of thromboprophylaxis with enoxaparin was short, and less than the minimum duration investigated in randomized controlled trials (RCTs) for VTE prophylaxis with LMWHs in this population. 40 mg and 80 mg enoxaparin were most common daily doses for both surgical and acutely ill medical patients

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