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SHORT COMMUNICATION:

VENOUS THROMBOEMBOLISM PROPHYLAXIS IN GERIATRICS INPATIENTS

Running Title: **Venous thromboembolism prophylaxis Geriatrics**

SUPRIANTO SURYONO AND SHYH POH TEO

Department of Internal Medicine, RIPAS Hospital, Brunei.

***Corresponding Author**: shyhpoh.teo@moh.gov.bn

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ABSTRACT:
Venous thromboembolism (VTE) is one of the significant causes of morbidity and mortality for hospital inpatients. The use of VTE prophylaxis in high-risk patients admitted under Geriatric Medicine in RIPAS Hospital, Brunei was evaluated. The electronic medical records of all patients admitted under Geriatric Medicine between 1st February 2022 and 28th February 2022 were reviewed. For these patients, the risk of developing VTE, bleeding risk and whether they were prescribed VTE prophylaxis were assessed. There were 34 patients identified, of which 20 (58.8%) were female. Median age was 81 years, ranging from 64 to 93 years. There were 13 (38.2%) COVID-positive patients, of which 9 (69.2%) were considered high VTE risk. Among these 9 patients, 4 (44.4%) were low bleed risk; of these 4 patients only two were prescribed VTE prophylaxis. Among the 21 non-COVID patients, 17 (80.9%) were high VTE risk. There were 11 (64.7%) with low bleed risk among the 17 patients in the group. Of the 11 patients only 3 (27.3%) were prescribed VTE prophylaxis. The use of VTE prophylaxis among Geriatric Medicine inpatients could be improved. Use of the VTE prophylaxis protocol should be emphasised to clinicians and re-audited to ensure compliance.

Keywords: COVID-19, geriatrics, prophylaxis, risk assessment, venous thromboembolism

INTRODUCTION:

The risk of venous thromboembolism (VTE) increases with age and hospitalisation [1]. Hospital-acquired VTE contributes to significant morbidity and mortality, and cost to the healthcare system[2]. When a VTE risk assessment tool was implemented in England in 2010, there was an associated reduction in VTE-related secondary diagnoses, readmissions to hospital and VTE-related mortality [3]. While this supports the importance of screening and preventing VTE in hospitals, the Epidemiologic International Day for the Evaluation of Patients at Risk for Venous Thromboembolism in the Acute Hospital Care Setting (ENDORSE) study showed that only 58.5% of high-risk surgical

inpatients and 39.5% of medical inpatients were prescribed thromboprophylaxis [4]. The International Medical Prevention Registry on Venous Thromboembolism (IMPROVED) study also showed a similar trend, with only 60% of acutely ill medical patients receiving VTE prophylaxis [5].

COVID-19 infections are known to cause a systemic inflammatory response, leading to a hypercoagulable state and an increased risk of VTE. Anticoagulant treatment has been shown to reduce mortality rate by 60% compared to those without VTE prophylaxis [6]. While studies on VTE prophylaxis in COVID-19 patients remain limited, a systematic review and meta-analysis highlighted the under-prescribing of VTE prophylaxis in admitted patients [7].

Raja Isteri Pengiran Anak Saleha (RIPAS) Hospital is an 880-bedded tertiary hospital in Brunei. Patients aged 70 years and older with 'geriatric syndromes' and complex medical issues are admitted under geriatric medicine. These patients are high-risk of developing VTE, as about half the patients are bedbound or transfers only [8]. As VTE prophylaxis is an important consideration in high-risk patients particularly during the COVID-19 pandemic, its use in patients admitted under Geriatric Medicine in RIPAS Hospital, Brunei was evaluated.

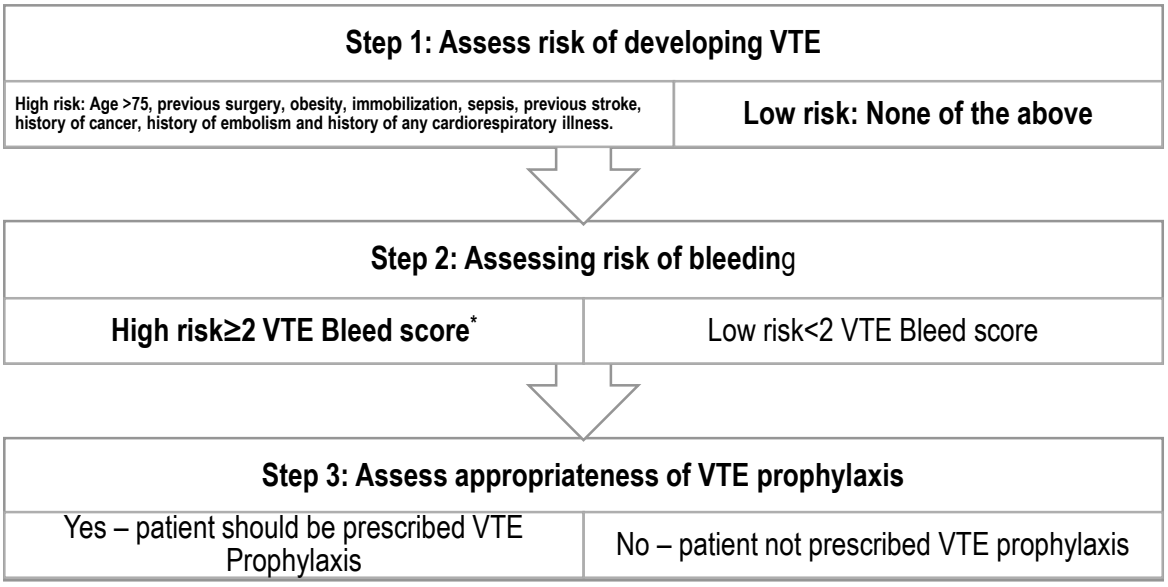
METHODS:

The electronic medical records of all patients admitted under Geriatric Medicine between 1st February 2022 and 28th February 2022 were reviewed. For these patients, the risk of developing VTE based on risk factors [2], bleeding risk using the VTE Bleed score [9], and whether they were prescribed VTE prophylaxis were assessed. The approach of determining whether a patient should be given VTE prophylaxis is summarized in Figure 1. Some patients are high-risk for VTE and bleeding; as the decision of appropriateness is left at the clinician's discretion, compliance with VTE prophylaxis was not reviewed for these patients.

RESULTS:

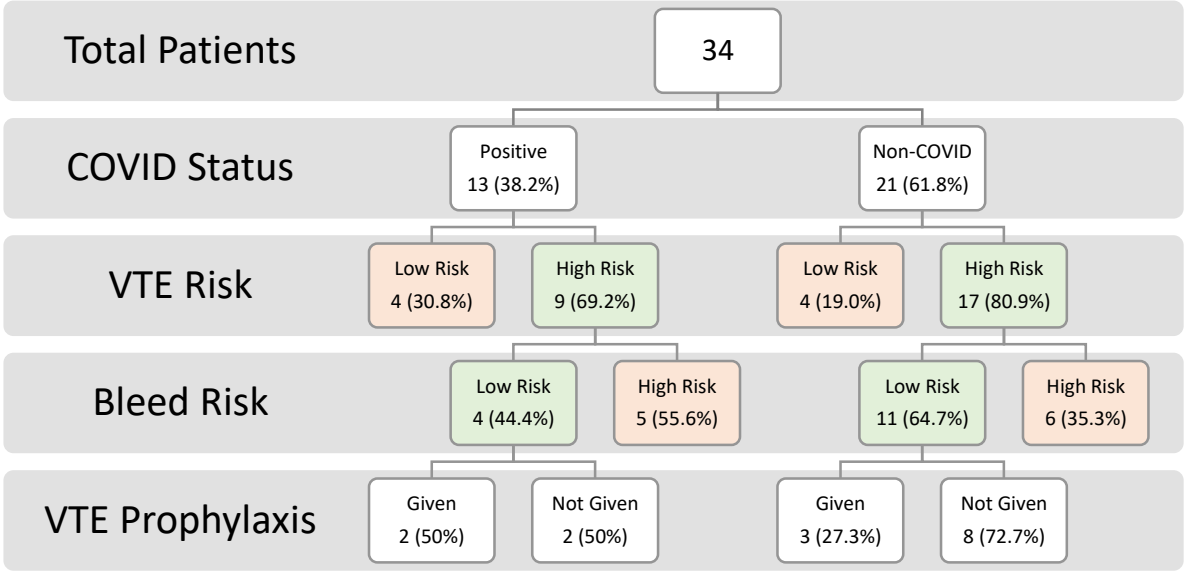
There were 34 patients admitted under Geriatric Medicine in February 2022. There were 20 (58.8%) females. The median age was 81 years, ranging from 64 to 93 years. There were 13 (38.2%) COVID-positive patients, of which 9 (69.2%) were considered high VTE risk. Among these 9 patients 4 (44.4%) were low bleed risk. Two of the 4 patients only were prescribed VTE prophylaxis. Among the 21 (61.8%) non-COVID patients, 17 (80.9%) were high VTE risk. There were 11 (64.7%) with low bleed risk among the 17 patients in this group. Of the 11 patients only 3 (27.3%) were prescribed VTE prophylaxis. The breakdown of patients is summarised in Figure 2.

Figure 1: Decision-making tool to determine appropriateness of VTE prophylaxis



*VTE Bleed Score: Active cancer, male with uncontrolled hypertension, anaemia, bleeding history, renal dysfunction, age ≥60 years [9]

Figure 2: Patients based on COVID status, risk of VTE and bleeding, and whether VTE prophylaxis was prescribed



DISCUSSION:

When Geriatric patients admitted to RIPAS Hospital during the month of February 2022 were audited, it was found that almost three-quarters of the non-COVID patients who were high risk for VTE and low risk of bleeding were not prescribed VTE prophylaxis. This suggests that there is a need to improve this aspect of inpatient management. The CURVE study from Canada showed that among the 90% of acutely unwell patients that should receive VTE prophylaxis, only 16% did [10]. The multinational IMPROVE study showed that almost half the patients were eligible for VTE prophylaxis, but this was prescribed in only 60% of these patients [5].

For COVID-19 geriatrics patients, 50% of those with high VTE risk but low bleed risk were given prophylaxis. While these numbers are small, this still indicates significant room for improvement, given the pro-thrombotic state of COVID-19 infections and associated inflammation [7]. The main limitation of this audit is the small number of patients, which precludes further analysis of local factors which are associated with higher risk of VTE or bleeding. This may offer further information regarding prevention or risk modification, and should be considered for future studies.

Based on these findings, the following action steps are recommended: to raise awareness of VTE risk-stratification and prophylaxis, develop flow-chart or checklist to decide which geriatric patient should be prescribed VTE prophylaxis, and to assess whether there is improvement in VTE prophylaxis prescriptions with these interventions.

CONCLUSION:

The use of VTE prophylaxis among Geriatric Medicine inpatients could be improved. Use of the VTE prophylaxis protocol should be emphasised to clinicians and re-audited to ensure compliance.

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