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Adherence to Thromboprophylaxis Guidelines in Acutely ill and Immobilized patients: A Clinical Audit

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ABSTRACT

Background: Thromboprophylaxis is a proven and safe strategy for hospitalized patients. However, many hospitals still don't use these preventive measures enough, despite their benefits.
Objective: To evaluate the risk and adoption of thromboprophylaxis guidelines in acutely ill and immobilized patients in a tertiary care hospital.
Method: This prospective observational study was conducted in the medical wards of Hayatabad Medical Complex (HMC), Peshawar from April 2021 to September 2022. A total of 4260 patients were hospitalized in medical wards during the study period. The simple random sampling technique allowed the inclusion of 600 patients with equal representation from all the three medical units of HMC.
Results: Among the admitted patients**,** 336 (56%) were females while 264 (44%) were males. Patients stratified as High Risk were 435 (72%) while the remaining 165 (28%) were in Low-risk group. Total 345 (57.5%) patients received Venous thromboembolism (VTE) prophylaxis with 187 (31.2%) in the High-Risk group while 158 (26.4%) in the low-risk group. Amongst these74 (12.3%) patients received both the modalities Thromboembolic Deterrent (TED) Stockings and anticoagulation therapy while remaining 173 (28.6%) received TED Stockings alone, and 101 (16.7%) received anticoagulation therapy alone. Implementation of VTE prophylaxis is estimated to be 31.2% in high-risk group and 26.4% in low-risk group patients.
Conclusion: Present investigation revealed substantial underutilization of venous thromboembolisms prophylaxis to seriously ill medical ward patients and emphasize the urgent requirement for amended implementation of current guidelines in hospitals, so as to ensure optimal venous thromboprophylaxis practices and prevent avoidable cases of venous thromboembolism.
Keywords: Venous Thromboembolism, Thromboprophylaxis, Medical Ward, Evidence based guidelines

INTRODUCTION: Venous thromboembolism (VTE) continues to pose a significant threat to public health, with a substantial mortality rate and a high risk of recurrence. Approximately one-third of patients who experience VTE will have another episode at some point in their life. The condition is responsible for an estimated 1000,000 deaths annually. Notably, nearly half of all cases are linked to hospitalization [1]. Several research have confirmed that practicing thromboprophylaxis in hospitalized patients who are at danger of developing VTE is an efficient and safe approach [2,3]. Despite the benefits, prophylactic remedies for VTE remain underused in many hospital setups [4,5]. In view of VTE prophylaxis, the general practitioners should take interest in the relative risks of VTE, potential benefits of accessible prophylactic agents, plausible complications (the risk of bleeding) and expenditures [6]. For more than 15 years, there have been consensus guidelines

based on evidence for VTE prophylaxis. In 1986, the American College of Chest Physician published consensus guidelines for prevention of VTE, which were updated in 2021 [7,8].

Existing guidelines emphatically recommend the use of VTE prophylaxis in medically ill patients; however, the rate of prophylaxis practice remains disconcertingly low. Despite concerted efforts to develop and enhance strategies for improving adherence to prophylaxis regimens, the gap between recommendation and reality persists [9]. However, adequate VTE prophylaxis should consider not just correct dosing, but also appropriate patient selection, avoidance of contraindications, and minimization of unnecessary use. Optimizing thromboprophylaxis strategies through improved risks assessment could lead to better patient outcomes, reduced complications, and more effective prevention of both bleeding and thrombosis [10,11]. Several anticoagulants have been investigated up-till now such as heparin, warfarin and recently fondaparinux in preventing VTE in orthopedic surgery patients [12]. The current study was planned to evaluate number of patients at risk of developing venous thromboembolism and that at what extent VTE prophylaxis is applied in acutely ill and immobilized hospitalized patients at Hayatabad Medical Complex, Peshawar, that can be further improved through multifocal educational programs regarding VTE prophylaxis.

METHOD: This clinical audit was conducted in Hayatabad Medical Complex (HMC), Peshawar from April 2021 to September 2022 to evaluate the number of seriously ill and immobilized patients (at risk of venous thromboembolism) receiving adequate VTE prophylaxis according to established guidelines. IRB permission was acquired before the conduct of study (Ref No: CPSP/REU/MED-2018-021-14082). The simple random sampling technique was used to include 600 patients with equal representation from all the three medical units of HMC. All the included patients were stratified into low risk and high-risk groups according to the ANZ WP (Australia and New Zealand Working party) recommendations which categorize patients into these two groups based on medical history (presence of risk factors, old age, history of previous thromboembolic events), current health status and treatment plans [13]. Main objective was to evaluate whether patients were being adequately managed according to their risk profiles, categorizing them into high-risk and low-risk groups to ensure tailored care. The patients were audited on the basis of the need for the VTE prophylaxis and the modalities used for prevention including TED Stockings alone, anticoagulation alone or use of both modalities Frequencies and percentages were calculated for the variables.

RESULTS: A total of 4260 patients were hospitalized in medical wards during the study period. A total of 600 patients with equal representation from all the three medical units of HMC. 56% (336) were females while 44% (264) were males. Patients stratified as High Risk were 72% (435) while remaining 28% (165) were in the Low-risk group. Detailed demographic characteristics of patients are shown in table 1.

Table 1: Demographic characteristics of included patients (N=600)

Patient Characteristics	Values
Female	336 (56 %)
Male	264 (44%)
Age (years)	Mean age 57 (range: 52-79)
Weight (kg)	Mean weight 66 (range:59-81)
BMI (kg/$m^{2)}$	25 (22-30)
Median duration of immobility (days)	6 (3-13)

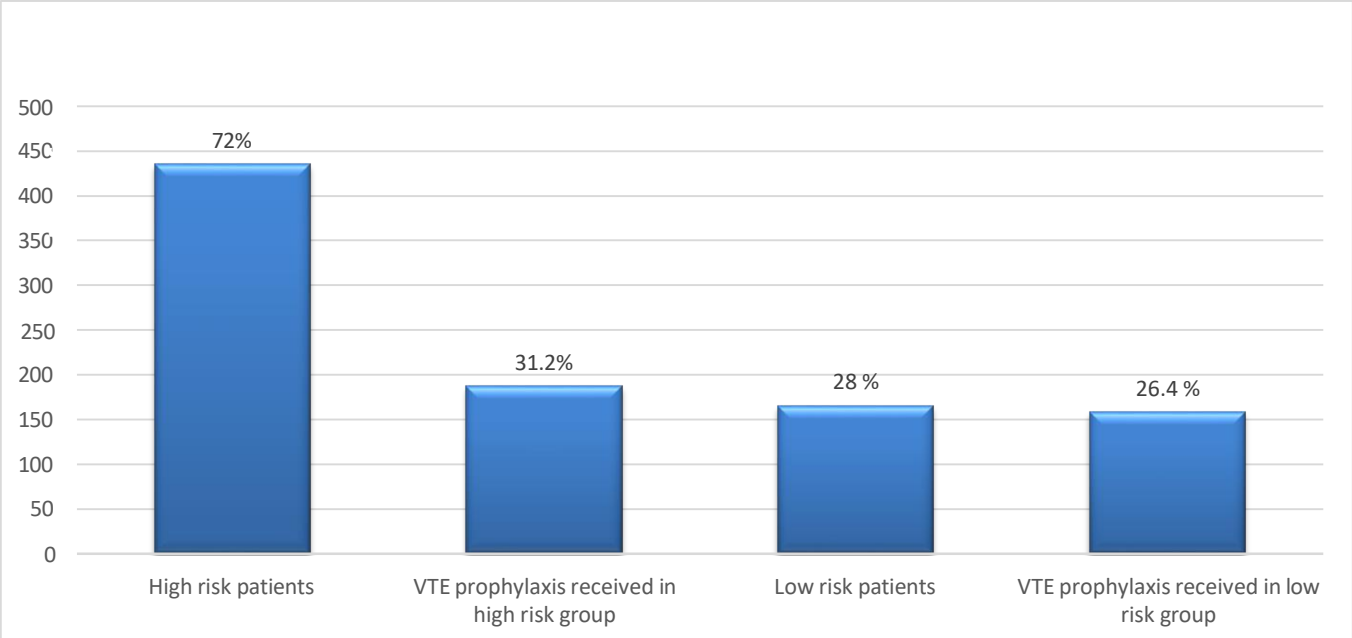
Highest risk factors of VTE identified in admitted patients were found to be: infection (39.84%), respiratory failure (24.16%) and cancer (4.5%). Whereas the risk factors observed in the High-risk groups were age >60 years, past history of stroke with resultant neurological deficits, admission with acute lung conditions on the background of previous known chronic lung disorders, and active cancers. (Table 2).

Table 2: Risk factors associated with admitted patients

Risk factor	No of Patients	Percentage (%)
Infection	239	39.84
Respiratory failure	145	24.16
Cancer	27	4.5
Stroke	23	3.9
Ischemic heart disease	22	3.67
Congestive heart failure	11	1.84
Other cardiogenic conditions	14	2.34
Severe renal failure	13	2.17
Rheumatic disease	7	1.17
Prior VTE	7	1.17
Lower extremity paralysis	3	0.5
Other diseases	49	8.17

A total of 57.5% (345) were found to be receiving VTE prophylaxis with 31.2% (187) in the High-Risk group while 26.4% (158) in the low-risk group. Amongst the patients receiving the VTE prophylaxis, it was observed that 12.3% (74) patients were receiving both the modalities while the remaining 28.6% (173) were having TED Stockings alone besides 16.7% (101) were receiving anticoagulation alone. (Graph 1)

Figure 1: Outcome of high and low risk patients versus VTE prophylaxis received



DISCUSSION: This clinical audit of VTE patients hospitalized in Hayatabad Medical Complex, Peshawar confirm the underuse of VTE prophylaxis which is estimated to be 31.2% in high-risk group and 26.4% in low-risk group. Recently Naseema Ambra investigated incidence and practice of thromboprophylaxis in hospitalized patients at Qatar hospital and revealed annual incidence of venous thromboembolism of 32.55 per 100,000 admissions (0.032%) [14]. Among the patients, 64.7% underwent risk evaluation and 69.7% received VTE prophylaxis as per established guidelines. It was concluded that physicians require further education and training on VTE evaluation and prophylaxis to accurately identify and manage risk factors in all patients at admission, despite the relatively low incidence of VTE [14]. A study conducted in Saudi Arabia

exposed that while 60.5% of the study participants got some form of VTE prophylaxis, only 38.4% received VTE prophylaxis that was in line with the recommended guidelines from the American College of Chest Physicians (ACCP) [15]. Hameed *etal* reported a comparable percentage (40.9%) of VTE prophylaxis in a study conducted in 7 hospitals of Saudi Arabia [16]. Results from ENDORSE conducted in three Gulf countries discovered that 40.2% of the research participants got ACCP guidelines- compliant VTE prophylaxis, highlighting a significant gap in adherence to recommended practices [17]. The continuing IMPROVE study has reported that 60% of the patients who are at risk are receiving VTE prophylaxis consistent with ACCP guidelines [18]. A notable discrepancy was observed in the CURVE study in Canada, where a significantly lower proportion of eligible patients (16%) received VTE prophylaxis [19]. Although the scientific results confirm the advantages of routine VTE evaluation and thromboprophylaxis of eligible patients, the practice of these measures remains inconsistent all over the world [20]. Although current research demonstrates a promising trend of increased compliance to ACCP guidelines for thromboprophylaxis during hospital stays.

However, this progress is offset by a significant decline in overall adherence to prophylaxis regimens after patients are discharged, highlighting the need for more effective strategies to ensure continued implementation of guidelines beyond the hospital setting [21]. Haris Shah *etal* also recognized patients at risk of VTE and implemented prophylaxis measures at Northwest General Hospital and Research Centre, Peshawar, and indicated suboptimal adherence to established guidelines for VTE risk assessment and prophylaxis. However, educational programs yielded substantial improvement in patient health related to VTE, amplifying the effectiveness of targeted interventions in driving quality improvement [22]. These results align with the outcomes of another study in Gaza which also revealed suboptimal adherence to VTE prophylaxis, reinforcing the notion of a widespread issue [23]. A notable disparity exists in the adoption of VTE prophylaxis guidelines in developing and developed countries, with the former demonstrating markedly higher rates of adoption, highlighting the need to targeted support and resource allocation to bridge this gap [24]. The prevention of VTE should be the focus of a formal strategy that should be created by each hospital. In general, a written prophylactic policy should be used, particularly in patients who are at high risk of developing DVT. Implementing a preventive treatment approach might be made easier with the aid of a computerized system. Susan's review of RCTs revealed that hospital-wide initiatives, including alerts and interventions, significantly improved thromboprophylaxis in hospitalized patients, leading to increased prescription of prophylactic measures [25].

CONCLUSION: Findings of present study indicated substantial underutilization of venous thromboembolisms prophylaxis to acutely ill hospitalized medical ward patients and underscore the crucial requirement for revised implementation of prevailing evidence-based guidelines in hospitals, to guarantee optimal venous thromboprophylaxis practices and prevent avoidable cases of venous thromboembolism.

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