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Compliance with Venous Thromboembolism Prophylaxis Documentation and Prescribing Guidelines: A Clinical Audit at University Hospital Kerry

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Abstract
Venous thromboembolism (VTE), including deep vein thrombosis and pulmonary embolism, remains a leading cause of preventable morbidity and mortality among hospitalized patients. Evidence-based clinical guidelines recommend systematic risk assessment and appropriate thromboprophylaxis to reduce the incidence of hospital-acquired thrombosis.

Objective: To evaluate compliance with thromboprophylaxis documentation and prescribing practices according to local Kardex guidelines at University Hospital Kerry.

Method: A retrospective clinical audit was conducted reviewing 60 inpatient Kardex records from medical and surgical wards at University Hospital Kerry between February and March 2026. Data collected included documentation of VTE risk assessment, indication for pharmacological prophylaxis, bleeding risk assessment, dosing appropriateness of low molecular weight heparin (LMWH), documentation of patient weight, renal function review, timing and duration of prophylaxis, and use of mechanical prophylaxis when anticoagulation was contraindicated. Results were compared against predefined audit standards of ≥90%.

Results: Sixty patient records were reviewed. VTE risk assessment was documented in 50% of patients. Appropriate pharmacological prophylaxis was prescribed in 50% of cases. Bleeding risk assessment was documented in 60% of patients. Standard LMWH dosing was observed in 30% of cases, with appropriate dose adjustment in 20%. Patient weight was not documented in 55% of records, and renal function review was documented in 45%. Timing and duration of prophylaxis were documented in only 3% of cases. Mechanical prophylaxis was prescribed in 10% of patients where anticoagulation was contraindicated.

Conclusion: Significant gaps were identified in thromboprophylaxis documentation and prescribing practices at University Hospital Kerry. Targeted educational interventions, standardized documentation processes, and electronic prescribing prompts may improve compliance and enhance patient safety.

Keywords: Venous Thromboembolism, Thromboprophylaxis, LMWH, Clinical Audit, Patient Safety

Introduction

Venous thromboembolism (VTE), comprising deep vein thrombosis (DVT) and pulmonary embolism (PE), is a major cause of preventable morbidity and mortality among hospitalized patients. Hospital-acquired thrombosis accounts for a substantial proportion of VTE cases, with studies suggesting that up to 60% of VTE events occur during hospitalization or shortly after discharge [1].

The pathophysiology of VTE is explained by Virchow's triad, consisting of venous stasis, endothelial injury, and hypercoagulability [2]. Hospitalized patients are particularly vulnerable due to immobility, acute illness, surgery, malignancy, and inflammatory conditions.

If untreated, DVT may progress to pulmonary embolism, which carries a mortality rate of up to 30% in untreated cases [3]. However, appropriate thromboprophylaxis significantly reduces this risk.

In Ireland, prevention of hospital-acquired thrombosis has been identified as a key patient safety priority by the Health Service Executive. Irish hospitals are encouraged to align with international guidelines such as those published by the National

Institute for Health and Care Excellence and the American College of Chest Physicians, which recommend systematic VTE risk assessment for all hospitalized patients within 24 hours of admission.

Despite the availability of clear guidelines, several studies have demonstrated suboptimal adherence to thromboprophylaxis recommendations in hospital settings. The multinational ENDORSE study reported that only approximately 50% of at-risk hospitalized patients receive appropriate thromboprophylaxis [4].

Clinical audit provides an important mechanism for evaluating adherence to these guidelines and identifying opportunities to improve patient safety. This study therefore aimed to evaluate compliance with thromboprophylaxis documentation and prescribing practices at University Hospital Kerry.

Methods Study Design

A retrospective clinical audit was conducted at University Hospital Kerry.

Study Population

Sixty adult inpatient Kardex records were reviewed from medical and surgical wards between February and March 2026.

Inclusion Criteria

Adult patients admitted to medical or surgical wards during the study period.

Audit Standards: Audit standards were based on local hospital guidelines and international recommendations from the National Institute for Health and Care Excellence and the American College of Chest Physicians. The expected compliance target for each parameter was **≥90%**.

Data Analysis: Data were analyzed using descriptive statistics and reported as frequencies and percentages.

Results

Table 1: Documentation of VTE Risk Assessment

Response	Number	Percentage
Yes	30	50%
No	3	5%
Not documented	27	45%

Table 2: Indication for Pharmacological Prophylaxis

Response	Number	Percentage
Appropriate indication	30	50%
No indication	3	5%
Not documented	27	45%

Table 3: Bleeding Risk Assessment

Response	Number	Percentage
High bleeding risk	33	55%
Low bleeding risk	3	5%
No documentation	15	25%
Receiving DOAC therapy	9	15%

Table 4: LMWH Dose Appropriateness

Response	Number	Percentage
Standard prophylactic dose	18	30%
Correct dose adjustment	12	20%
Dose not clearly documented	30	50%

Table 5: Patient Weight Documentation

Response	Number	Percentage
Weight documented	27	45%
Weight not documented	33	55%

Table 6: Renal Function Consideration

Response	Number	Percentage
Renal function reviewed	27	45%
Renal function not documented	33	55%

Table 7: Timing and Duration of Prophylaxis

Response	Number	Percentage
Correctly documented	2	3%
Not documented	58	97%

Table 8: Mechanical Prophylaxis

Response	Number	Percentage
Prescribed	6	10%
Not prescribed	6	10%
Not applicable	48	80%

Discussion

This clinical audit identified substantial deficiencies in thromboprophylaxis documentation and prescribing practices at University Hospital Kerry. Across all measured parameters, compliance fell considerably below the predefined audit standard of ≥90%.

The most notable finding was the low rate of documented VTE risk assessment, observed in only 50% of patient records. International guidelines emphasize that systematic risk assessment should be completed for all hospitalized patients within 24 hours of admission. Similar compliance rates have been reported in previous studies. The ENDORSE study, which included more than 60,000 patients from 32 countries, found that only 50% of medical patients at risk of VTE received appropriate thromboprophylaxis [4]. Comparable findings have also been reported in national hospital audits across Europe and the United Kingdom.

Another major concern identified in this audit was inadequate documentation of patient weight and renal function, both of which are essential for safe LMWH prescribing. In this study, patient weight was not documented in 55% of records. Previous research has demonstrated that incorrect LMWH dosing in obese or underweight patients can significantly increase the risk of thrombotic or bleeding complications [5].

Similarly, renal function was documented in only 45% of cases. Because LMWH is primarily eliminated via renal excretion, failure to adjust dosing in patients with impaired renal function may lead to drug accumulation and increased bleeding risk. Studies have shown that careful monitoring of renal function is critical to ensure safe anticoagulant use in hospitalized patients [6].

The documentation of prophylaxis timing and duration was particularly poor, with only 3% of cases meeting documentation standards. Failure to document the timing of prophylaxis initiation may increase the risk of delayed treatment or missed doses, potentially compromising patient safety.

Mechanical prophylaxis was prescribed in only 10% of cases. Evidence suggests that intermittent pneumatic compression devices can reduce VTE incidence by approximately 60% in high-risk patients who cannot receive pharmacological prophylaxis [7].

Several system-level factors may explain these findings. The continued use of paper-based Kardex prescribing systems may contribute to incomplete documentation compared with electronic prescribing systems that incorporate standardized order sets and automated prompts. Previous studies have demonstrated that electronic VTE risk assessment tools can significantly improve compliance with thromboprophylaxis guidelines and reduce hospital- acquired thrombosis by up to 40% [8].

Implementing structured admission checklists, electronic prescribing prompts, and targeted educational interventions may therefore improve compliance with thromboprophylaxis guidelines and enhance patient safety.

Limitations

This study has several limitations. First, the audit was conducted at a single center with a relatively small sample size, which may limit generalizability. Second, the retrospective design relied on documentation within medical records; therefore, some clinical assessments may have been performed but not documented. Finally, the audit focused on documentation and prescribing practices rather than clinical outcomes such as incidence of hospital-acquired VTE.

Action Plan

Based on the findings of this audit, several targeted interventions are proposed to improve compliance with thromboprophylaxis documentation and prescribing practices at University Hospital Kerry.

First, educational sessions will be delivered to junior doctors, nursing staff, and pharmacists to reinforce the importance of appropriate VTE risk assessment and adherence to thromboprophylaxis guidelines.

Re-Audit Plan

A re-audit will be conducted three to four months following implementation of the proposed interventions in order to assess their effectiveness in improving thromboprophylaxis practices.

Conclusion

This clinical audit identified significant gaps in thromboprophylaxis documentation and prescribing practices at University Hospital Kerry. Improved adherence to guideline- recommended practices is required to enhance patient safety and reduce the risk of hospital- acquired thrombosis.

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