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How good are we at determining risk? Quantifying the accuracy of clinician determined risk for VTE prophylaxis

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How good are we at determining risk?
Quantifying the accuracy of clinician determined risk for VTE prophylaxis

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Introduction

- Venous Thromboembolism (VTE), inclusive of deep vein thrombosis (DVT) and pulmonary embolism (PE), is the most common preventable cause of death in hospital admissions.
- Hospital acquired VTE is used as a quality metric, publicly reported and used in value based purchasing models.
- Thomas Jefferson University Hospital (TJUH) uses an electronic medical record (EMR) decision support tool based on a modified Caprini risk assessment model (RAM) to risk stratify patients and to prescribe recommended prophylaxis depending on the risk.
- Epic implementation required for development of a new strategy for clinical decision support with VTE risk stratification.

Objectives

- Create and validate a simple tool for concurrent audits of risk stratification, compliance and documentation.
- Evaluate accuracy of clinician risk stratification and prophylactic ordering practice compared with a standardized Caprini RAM across different assigned risk categories.
- Provide recommendations for Epic VTE Prophylaxis CDS Development

Methods

- Audit tool was developed in REDCap—a HIPPA compliant, cloud based, data management platform—through review of current standard of care and local expert consensus of best practices.
- Institutional data was reviewed to identify three nursing units with the highest rates of VTE.
- Trained medical students performed random concurrent audit of 100 patients across the three units using the previously developed REDCap audit tool, which included chart review or patient/clinician interviews.
- Clinician risk assessment accuracy was determined by an independent application of the Caprini RAM (Figure 1) and recommendations (Table 1).

Results

- The low/very low and high/very high Caprini risk categories were combined in our analysis.
- In the Caprini RAM, please see Figure 1 replicated directly from our audit tool.
- The objective was to compare the clinician’s assigned risk category with the independently calculated Caprini RAM.
- Figure 2 shows the agreement between clinician risk assessment and Caprini RAM stratification.
- Table 2 provides a summary of the agreement between the clinician’s assigned risk category with the independently calculated Caprini RAM.

Table 1: Caprini RAM recommendations. Published recommendations for prophylaxis regimen according to the score calculated according to the Caprini RAM. For items included in the Caprini RAM, please see Figure 1 replicated directly from our audit tool.

Table 2: Metrics for data collection duration using the DVT audit tool. Time includes duration of training and data entry per patient. Medical students were trained by residents to obtain consent for participation and training for use of EMR.

Audit Time Requirements for Medical Students

<table>
<thead>
<tr>
<th>Task</th>
<th>Required time</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td>Training for audit tool use</td>
<td>2 hours</td>
<td>Familiarization with EMR, training to obtain consent and to perform interviews.</td>
</tr>
<tr>
<td>Data entry requirement (per patient)</td>
<td>20 minutes</td>
<td>Includes chart review, required interviews (i.e., patient, nurse, etc.), and data entry.</td>
</tr>
<tr>
<td>Project duration</td>
<td>33 hours</td>
<td>100 patient chart reviews were performed, 76% of patients agreed to participate in a bedside interview.</td>
</tr>
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Figure 1: REDCap Audit Tool Independent Caprini RAM factors. Screenshot from audit tool used to capture patient risk factors from chart review and patient interview and calculate the Caprini RAM.

Figure 2: REDCap Audit Tool Questions Related to Clinician Risk Assessment and Ordering of Prophylaxis Options.

Figure 3: Agreement between Clinician Risk Assessment and Caprini RAM stratified by Clinician Risk Assessment.

Figure 4: Ordering Compliance with Caprini Recommended Prophylaxis based on independently calculated Caprini RAM.

Conclusions and Recommendations

- A simple concurrent audit tool that is HIPAA compliant can be used successfully to perform DVT risk assessment and to assess prescriber prophylaxis compliance in real time.
- The rates of agreement among clinician determined risk and the independently determined Caprini RAM was poor for low and moderate risk.
- CDS must provide clearer criteria and recommendations for moderate and low risk groups that complies with current evidence.
- In spite of incorrect risk stratification, the recommended prophylactic regimen was still ordered.

References