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

Katerina Dukleska, MD  
*Thomas Jefferson University*

Adam P. Johnson, MD, MPH  
*Thomas Jefferson University*

Tyler M. Bauer  
*Thomas Jefferson University*

Myles Dworkin  
*Thomas Jefferson University*

Johanna Beck  
*Thomas Jefferson University*

Follow this and additional works at: [https://jdc.jefferson.edu/patientsafetyposters](https://jdc.jefferson.edu/patientsafetyposters)

Part of the *Medicine and Health Sciences Commons*

See next page for additional authors

**Recommended Citation**

[https://jdc.jefferson.edu/patientsafetyposters/58](https://jdc.jefferson.edu/patientsafetyposters/58)

This Article is brought to you for free and open access by the Jefferson Digital Commons. The Jefferson Digital Commons is a service of Thomas Jefferson University's Center for Teaching and Learning (CTL). The Commons is a showcase for Jefferson books and journals, peer-reviewed scholarly publications, unique historical collections from the University archives, and teaching tools. The Jefferson Digital Commons allows researchers and interested readers anywhere in the world to learn about and keep up to date with Jefferson scholarship. This article has been accepted for inclusion in House Staff Quality Improvement and Patient Safety Conference (2016-2019) by an authorized administrator of the Jefferson Digital Commons. For more information, please contact: JeffersonDigitalCommons@jefferson.edu.
Authors
Katerina Dukleska, MD; Adam P. Johnson, MD, MPH; Tyler M. Bauer; Myles Dworkin; Johanna Beck; Kamini D. Patel, RN; Geno J. Merli, MD; and Scott W. Cowan, MD

This poster is available at Jefferson Digital Commons: https://jdc.jefferson.edu/patientsafetyposters/58
How good are we at determining risk?
Quantifying the accuracy of clinician determined risk for VTE prophylaxis

Katerina Dukleska, MD; Adam P Johnson, MD, MPH; Tyler Bauer; Myles Dworkin; Johanna Beck; Kamini Patel, RN; Geno J. Merli, MD; Scott W. Cowan, MD
Department of Surgery, Thomas Jefferson University Hospitals, Philadelphia, PA

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 HIPAA 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).
- The low/very low and high/very high Caprini risk categories were combined in our analysis.

Results

Figure 1: REDCap Audit Tool Independent Caprini RAM factors. Screen shot from audit tool used to capture patient risk factors from chart review and patient interview and calculate the 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.

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

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.

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

<table>
<thead>
<tr>
<th>Risk Level</th>
<th>Task</th>
<th>Required time</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low</td>
<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></td>
<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></td>
<td>Project duration</td>
<td>33 hours</td>
<td>76% of patients agreed to participate in a bedside interview.</td>
</tr>
</tbody>
</table>

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

- One hundred patients were included – 43% were male and 45% were on a surgical service. Seventy six (76%) were able to complete a bedside interview to independently determine their Caprini RAM.
- Clinician assignment of moderate and low risk categories was significantly less accurate than high risk category (Figure 3).
- Patients identified as high risk by independent Caprini RAM were prescribed appropriate VTE prophylaxis 95% of the time, even though they might have been stratified into a moderate/low risk category.

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, calling into question the benefit or utility of formalized risk stratification.

References