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Venous Thromboembolism Risk Stratification via Electronic Medical Record Classification

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Hospital acquired venous thromboembolism (HA-VTE) is associated with significant morbidity and mortality. VTE prevention strategies include increasing mobility, optimizing the use of sequential compression devices (SCD), and prophylactic anticoagulation. Appropriate application of preventive strategies requires accurate and timely risk stratification.

To identify and stratify pediatric inpatients at risk for HA-VTE and offer recommendations for intervention.

Operational definitions were developed to identify components for each risk factor. All components were generated from the electronic medical record (EMR) and include power plans, current and past diagnosis codes, patient locations, history, problem lists, procedures, consults, and various pieces of EMR documentation (Table 1).

<table>
<thead>
<tr>
<th>Risk Factor</th>
<th>Components</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>0-14 Yes 14-45 No 48-96</td>
</tr>
<tr>
<td>Obesity</td>
<td>Patients 0-18 BMI &gt; 95th percentile Patients 19-65 BMI &gt; 30 Patients 66+ BMI &gt; 40</td>
</tr>
<tr>
<td>Active Cancer/Malignancy</td>
<td>Active at time of risk assessment or a Trauma Admission Notification</td>
</tr>
<tr>
<td>Presence of a surgery start time in the previous 30 days</td>
<td></td>
</tr>
<tr>
<td>Presence of a Consult to Trauma or a Trauma Admission Notification</td>
<td></td>
</tr>
<tr>
<td>Protein losing disorder</td>
<td>Documented history of Protein losing disorder (27 SNOMED codes)</td>
</tr>
<tr>
<td>Severe dehydration</td>
<td>Documented history of Severe dehydration (27 SNOMED codes)</td>
</tr>
<tr>
<td>Anticoagulation</td>
<td>Documented history of Anticoagulation (27 SNOMED codes)</td>
</tr>
<tr>
<td>Thrombophilia</td>
<td>Documented history of Thrombophilia in lifetime (27 SNOMED codes)</td>
</tr>
</tbody>
</table>

The presence of active SCD orders and/or active anticoagulation orders is also included on the risk stratification. Pharmacists review the risk stratification (Table 2) daily and engage in discussions with medical teams to communicate risk and make recommendations for prophylaxis for patients as appropriate.

Multiple PDSA cycles were conducted to develop, implement, and spread the risk stratification.

Pediatric providers may be unaware of the risk of HA-VTE. An electronic medical record based tool identifies at-risk patients and provides opportunity to recommend appropriate preventive measures. A multi-disciplinary approach leverages expertise of all team members. A multi-faceted approach is beneficial to increase awareness of HA-VTE in pediatrics.