Impact of Implementation of a Standardized Peri-Procedural Process on Compliance with Evidence-Based Bridging Practices in an Anticoagulation Service

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**Background**
- Decision to interrupt warfarin therapy for medical and surgical procedures is dependent upon patient and procedural bleeding risk
- Decision to utilize bridging anticoagulation must weigh the risk of thromboembolism, which is increased during warfarin interruption, against the risk of bleeding
- Peri-procedural bridging anticoagulation includes the use of a short-acting anticoagulant during interruption of warfarin therapy
- Overuse of bridging anticoagulation can lead to bleeding complications without a reduction in risk of thromboembolism

**Purpose**
- This study assessed compliance with a recently developed standardized peri-procedural evidence-based best practice guideline
- The purpose was to ensure prescribing of enoxaparin for peri-procedural bridging is indicated and appropriate

**Primary Outcome**
- Percentage of patients with enoxaparin prescriptions bridged in full compliance with the standardized peri-procedural evidence-based best practice guideline

**Secondary Outcomes**
- Percentage of documentations with each of the following:
  - Indication, patient bleeding risk, procedural bleeding risk, patient thromboembolic risk, comprehensive medication review, patient weight, and appropriate labs (SCR, CBC) within 30 days prior to bridging
  - Number of minor or major bleeding events and thromboembolic events occurring between 7 days prior to and 21 days following a planned procedure

**Methods**
- Approved by Institutional Review Board
- Patients will be identified by enoxaparin prescriptions on after-visit summary reports
- Retrospective chart review to collect prespecified data

**Results**

<table>
<thead>
<tr>
<th>Baseline Characteristics</th>
<th>Pre-Intervention (n=12)</th>
<th>Post-Intervention (n=7)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age: years (range)</td>
<td>61 (38-78)</td>
<td>65 (41-88)</td>
</tr>
<tr>
<td>Female: n (%)</td>
<td>7 (58.3)</td>
<td>6 (85.7)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Percentage of patients bridged in full compliance with peri-procedural evidence-based best practices</th>
<th>Pre-Intervention (n=12)</th>
<th>Post-Intervention (n=7)</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary</td>
<td>0 0%</td>
<td>3 43%</td>
<td>0.036</td>
</tr>
<tr>
<td>Number of major or non-major bleeding events 7 days prior to a patient procedure through 21 days post-procedure (as defined by ISTH criteria)</td>
<td>1 8%</td>
<td>0 0%</td>
<td>-</td>
</tr>
</tbody>
</table>

| Number of documented thromboembolic events 7 days prior to a patient procedure through 21 days post-procedure | 0 0%                    | 0 0%                    | -       |

**Patient Criteria**

**Inclusion**
- Enoxaparin prescription for bridging anticoagulation ordered by a provider in the Anticoagulation Service
- 18-89 years old

**Exclusion**
- Enoxaparin prescriptions ordered as maintenance anticoagulation therapy

**Standardized Bridging Guideline Overview**
- Step 1: Assess current anticoagulation therapy
  - Patients on DOAC therapy should not be bridged
- Step 2: Does warfarin need to be interrupted?
  - Assess patient bleed risk
  - Assess procedural bleed risk
- Step 3: If warfarin is determined to need interruption, assess patient thromboembolic risk to determine need for bridging anticoagulation

**Conclusion**
- Creation and implementation of a standardized peri-procedural guideline for anticoagulation management in the anticoagulation service significantly increases the service’s compliance with peri-procedural evidence-based best practices.

**Disclosure**

Authors of this project have the following to disclose concerning possible financial or personal relationships with commercial entities that may have a direct or indirect interest in the subject matter of this project:
- Jordan Siembor, PharmD: Nothing to disclose
- Jillian Barrack, PharmD: Nothing to disclose
- Dora Wiskirchen, PharmD, BCIDP: Nothing to disclose
- Amanda Williams, PharmD, BCACP: Nothing to disclose
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