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**Heparin Induced Thrombocytopenia (HIT) Treatment**

**Department of Clinical Effectiveness**

**V6**

**Approved by the Executive Committee of Medical Staff on 10/27/2015**

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**Non-Acute Coronary Syndrome (ACS)**

1. **with Normal liver function**
2. **Hepatic dysfunction with total bilirubin greater than 1.5 mg/dL**
3. **Patient with ACS with/without Percutaneous Coronary Intervention**

- **Consult Benign Hematology**
  - Discontinue all subcutaneous heparin/heparin flushes, low molecular weight heparins, and warfarin
  - Discontinue the following new oral anticoagulant medications: dabigatran, edoxaban, rivaroxaban, and apixaban
  - If patient on warfarin, consider reversing with vitamin K 10 mg PO or 5-10 mg IV
  - Check heparin antibody (Plt Hep AB)
  - **DO NOT use prophylactic platelet transfusions until HIT is ruled out**

- **Estimate probability of HIT using the “Four T’s”¹**
  - **Consult Benign Hematology**
  - **Discontinue all subcutaneous heparin/heparin flushes, low molecular weight heparins, and warfarin**
  - **Discontinue the following new oral anticoagulant medications: dabigatran, edoxaban, rivaroxaban, and apixaban**
  - **If patient on warfarin, consider reversing with vitamin K 10 mg PO or 5-10 mg IV**
  - **Check heparin antibody (Plt Hep AB)**
  - **DO NOT use prophylactic platelet transfusions until HIT is ruled out**

- **Document:**
  - Place “NO HEPARIN – HIT” sign clearly visible above patient’s bed and
  - Document HIT in medical record and in allergies

<table>
<thead>
<tr>
<th>2</th>
<th>1</th>
<th>0</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Thrombocytopenia</strong></td>
<td>Greater than 50% platelet fall and nadir greater than or equal to 20 K/microliter</td>
<td>30-50% platelet fall (or greater than 50% platelet fall due to surgery), or nadir 10-19 K/microliter</td>
</tr>
<tr>
<td><strong>Timing</strong> of onset of platelet fall</td>
<td>Days 5-10 or less than or equal to day 1 with recent heparin (past 30 days)</td>
<td>Greater than day 10 or timing unclear, or less than day 1 with recent heparin (past 31-100 days)</td>
</tr>
<tr>
<td><strong>Thrombosis or other sequelae</strong></td>
<td>Proven new thrombosis, skin necrosis; or acute anaphylactoid reaction after IV heparin bolus</td>
<td>Progressive or recurrent thrombosis, erythematous skin lesions, suspected thrombosis (not proven), asymptomatic upper-limb DVT</td>
</tr>
<tr>
<td><strong>Other causes</strong>²</td>
<td>None evident</td>
<td>Possible</td>
</tr>
</tbody>
</table>

¹ The Four T’s – add the values from each “T” category based on presence of criteria

² Use of Bivalirudin for non-ACS is not an FDA approved indication

³ Examples of other causes include but are not limited to: chemotherapy, drug-related, sepsis, disseminated intravascular coagulation (DIC)

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Heparin Induced Thrombocytopenia (HIT) Treatment

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**Transition from bivalirudin (Angiomax®) to warfarin**

- **Preferred**
  - **Patient’s platelet count recovered to at least 150 K/microliter**
  - **Method to transition from argatroban to warfarin**
    - Begin warfarin¹ 2.5-5mg PO daily
    - Turn argatroban infusion off and begin fondaparinux² at treatment doses
      - Less than 50 kg: 5 mg; Between 50-100 kg: 7.5 mg; Greater than 100 kg: 10 mg
    - After a minimum 5-day overlap of fondaparinux and warfarin discontinue fondaparinux when the INR is between 2-3 and continue with warfarin monotherapy³

- **Alternative**
  - Transition from bivalirudin (Angiomax®) to warfarin
    - Begin warfarin¹ 2.5-5mg PO daily and overlap with argatroban for a minimum of 5 days
    - If argatroban rate less than 2 mcg/kg/minute and International Ratio (INR) greater than 4 then stop infusion and obtain INR 4 hours after stopping infusion
      - INR 2-3: continue with warfarin monotherapy
      - INR less than 2: restart argatroban and repeat above steps the following day
    - If argatroban rate greater than or equal to 2 mcg/kg/minute then reduce dose to 2 mcg/kg/minute for 4 hours and obtain INR. (infusion rate can return to baseline after INR drawn)
      - If INR less than 4 continue concomitant therapy
      - If INR greater than 4 stop argatroban and obtain another INR 4 hours after stopping infusion
        - INR 2-3: continue with warfarin monotherapy
        - INR less than 2: restart argatroban and repeat above steps the following day

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¹ When initiating the transition to warfarin therapy DO NOT use a loading dose. The recommended maximum initial dose of warfarin is 5 mg.
² Overlap warfarin therapy with direct thrombin inhibitor continuous infusion for at least 5 days
³ In patients with normal renal function
⁴ See Adult Venous Thromboembolism (VTE) Treatment for Cancer Patients Algorithm for standard dosing for new oral anticoagulants: apixaban, dabigatran, edoxaban, and rivaroxaban.
⁵ Treat with warfarin for 4 weeks, unless there is an indication for long-term anticoagulation (eg. active VTE or chronic atrial fibrillation)
### APPENDIX A: DIRECT THROMBIN INHIBITOR (DTI) DOSING AND MONITORING

<table>
<thead>
<tr>
<th>Direct Thrombin Inhibitor (DTI)</th>
<th>Special Dosing Parameters</th>
<th>Dose</th>
<th>Monitoring</th>
<th>Notes and Special Considerations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Argatroban</td>
<td>Normal dosage</td>
<td>2 mcg/kg/minute</td>
<td>aPTT 2 hours after initiation and dose change</td>
<td>- Use of this medication, causes significant elevation of PT/INR results due to interference with testing</td>
</tr>
<tr>
<td></td>
<td>Reduced dosage</td>
<td>0.5 mcg/kg/minute</td>
<td></td>
<td>- Do not discontinue this medication based on an elevated INR value. Continue to monitor the patient for signs and symptoms of bleeding</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bivalirudin (Angiomax®)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Dose for Heparin-Induced Thrombocytopenia</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Normal Renal Function</td>
<td>0.15 mg/kg/hour</td>
<td>aPTT 2 hours after initiation and dose change</td>
<td>- Use of this medication, causes mild elevation of PT/INR results due to interference with testing</td>
</tr>
<tr>
<td></td>
<td>- Creatinine clearance less than 30 mL/min</td>
<td>0.08 mg/kg/hour</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Patient on dialysis</td>
<td>0.02 mg/kg/hour</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Dose for Acute Coronary Syndrome with or without Percutaneous Coronary Intervention</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Normal Renal Function</td>
<td>Bolus dose 0.75 mg/kg, followed by 1.75 mg/kg/hour</td>
<td>aPTT 2 hours after initiation and dose change</td>
<td>- Use of this medication, causes mild elevation of PT/INR results due to interference with testing</td>
</tr>
<tr>
<td></td>
<td>- Creatinine clearance less than 30 mL/min</td>
<td>Bolus dose 0.75 mg/kg, followed by 1 mg/kg/hour</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Patient on dialysis</td>
<td>Bolus dose 0.75 mg/kg, followed by 0.25 mg/kg/hour</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**NOTE:** Use of Bivalirudin for non-ACS is not an FDA approved indication

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1 See Appendix B for Child-Turcotte-Pugh (CTP) Scoring System
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### APPENDIX B: Child-Turcotte-Pugh (CTP) Scoring System

<table>
<thead>
<tr>
<th>Chemical and Biochemical Parameters</th>
<th>Scores (Points) for Increasing Abnormality</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Encephalopathy</td>
<td>None</td>
</tr>
<tr>
<td>Ascites</td>
<td>None</td>
</tr>
<tr>
<td>Albumin</td>
<td>Greater than 3.5 g/dL</td>
</tr>
<tr>
<td>Bilirubin</td>
<td>1 – 2 mg/dL</td>
</tr>
<tr>
<td>For primary biliary cirrhosis</td>
<td>1 – 4 mg/dL</td>
</tr>
<tr>
<td>Prothrombin time prolonged or</td>
<td>1-4 seconds</td>
</tr>
<tr>
<td>International Normalized Ratio</td>
<td>Less than 1.7</td>
</tr>
</tbody>
</table>

*CTP score is obtained by adding the score for each parameter.

CTP class:
Class A = 5 to 6 points
Class B = 7 to 9 points
Class C = 10 to 15 points
SUGGESTED READINGS


This practice consensus statement is based on majority opinion of the anticoagulant experts at the University of Texas MD Anderson Cancer Center for the patient population. These experts included:

Parvaneh Erfan, BS, AS  
Shuwei Gao, MD  
Xin Han, MD  
Wendy D. Heck, PharmD  
Cheryl F. Hirsch-Ginsburg, MD  
Sandra B. Horowitz, PharmD  
Michael Kroll, MD†  
Laura L. Michaud, PharmD  
Katy M. Toale, PharmD  
Mary Lou Warren, DNP, RN, CNS-CC, CCNS  
Ali Zalpour, PharmD

† Team Lead

DEVELOPMENT CREDITS

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