**INITIATION OF THROMBOEMBOLISM PROPHYLAXIS**  
**CLINICAL PRACTICE GUIDELINE FOR PATIENTS ADMITTED TO THE HEART CENTER**

### STANDARD RISK – LOW DOSE HEPARIN

**Post-Op Prophylaxis for Shunted Patients**

Start Heparin drip at 20 units/kg/hr
- Check heparin assay x 1
- Obtain post-op AT3
- Stop Heparin 2 hrs. before discontinuing intrathoracic lines
- Transition to Aspirin when feeds are started
  - <4kg – 20.25 mg
  - 4kg – 10kg - 40.5 mg
  - >10kg – 81 mg
- Verify Now (platelet reactivity to aspirin)
  - <550: Adequate platelet inhibition (consistent with aspirin-induced inhibition of platelet

**At Risk Patients for Prophylactic Heparin**
- Presence of CVL/PICC and:
  - Neonate < 28 days
  - Any Single Ventricle Patient
  - History or Thrombosis/DVT/PE/Stroke
  - Inherited thrombophilia including Antiphospholipid syndrome
  - Chronic Immobilization
  - Paralyzed > 24 hrs
  - Acute Infection/Sepsis
  - PLE/Chylos effusion
  - DCM EF < 40%
  - LV Noncompaction
  - Obesity

### MODERATE RISK – THERAPEUTIC ANTICOAGULATION

**Inclusion:**
Patients with Clinical indications for therapeutic heparin or enoxaparin (known thrombus, mechanical valve, etc.)
- Follow CICU/CTS Therapeutic Unfractionated Heparin Dosage Titration (page 2)
- Heparin Assays per Guidelines, See page 2

### HIGH RISK: DIRECT VERBAL COMMUNICATION WITH CICU & CICU ATTENDING IS REQUIRED AND DOCUMENTED

**Inclusion**
- Shunted with high risk for thrombosis
- Mechanical valve with high risk for thrombosis
- History of clotted shunts

**Assessment Labs & Radiology**
- Baseline Head US (if open fontanelle)
- CBC
- PT/PTT
- Fibrinogen
- Heparin Assay
- AT3 (goal is 80 -130)
- ACT

**Intervention**
- Initial Heparin Bolus 50 units-100 units/kg x 1
- Q 1 hr ACT checks for first 6 hrs post-operative using bedside POC cartridges
- Titrate Heparin per ACT
- Bolus Heparin 25-50 units/kg to achieve goal ACT
- Keep bolusing until ACT is achieved
- After 6 hrs transition to Heparin Assay
- Manage per CICU/CSU Heparin Order Set (see pg. 2).

- Need to have CTS Attending identify patient as High Risk & document

**Exclusion Criteria**
- Ongoing or uncontrolled bleeding
- Uncorrected coagulopathy (PLT<50,000; INR>1.5; or PTT>2x control)
- <1 year since acute stroke
- Suspected or known paraspinal hematoma
- Major allergy to pork products
- History of heparin induced thrombocytopenia
- Intracranial monitoring (EVD/Bolt)
- CNS drain (epidural catheter/other)
- Risk for major surgical bleeding

**Pre-Op Labs**
- Stat AT3
  - Baseline range should be between 80-130
  - All neonates (< 28 days) and shunted patients should have the AT3 drawn pre-op
  - AT3 will be repeated in the OR at discretion of anesthesiologist & cardiac surgeon

**Monitoring for patients requiring therapeutic dosing**
- Obtain Daily Heparin Assay and 4hrs after any dosing change
  - Therapeutic Goal for Heparin assay goal should be 0.35-0.7
- Consulting pharmacy
- Consult Hematology for all patients with KNOWN thrombus

**Patient should receive standard intervention based on risk level on admission**

**Use the order set for CICU/CACU Heparin Orders in EPIC**

- VAD
- ECMO
- IVH > Grade 1
- Other Bleeding Complications (GI Bleeding, etc.)
- Contraindication to Pharm. Prophylaxis

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<table>
<thead>
<tr>
<th>Hep Assay (Units/mL)</th>
<th>Dosage Adjustment</th>
<th>Time to Repeat Heparin Assay (Anti-Xa)</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;0.2</td>
<td>Give 50 units/kg bolus and increase infusion rate by 15%</td>
<td>4 hours after rate change</td>
</tr>
<tr>
<td>0.21 - 0.35</td>
<td>Increase infusion rate by 10%</td>
<td>4 hours after rate change</td>
</tr>
<tr>
<td>0.35 - 0.7</td>
<td>Keep rate the same</td>
<td>Daily after 2 levels 4 hours apart are in goal range</td>
</tr>
<tr>
<td>0.71 - 0.79</td>
<td>Decrease infusion by 10%</td>
<td>4 hours after rate change</td>
</tr>
<tr>
<td>0.8 - 0.89</td>
<td>Hold infusion for 60 minutes then decrease infusion rate by 10%</td>
<td>4 hours after infusion resumes</td>
</tr>
<tr>
<td>≥0.9</td>
<td>Hold infusion for 120 minutes then decrease infusion rate by 15%</td>
<td>4 hours after infusion resumes</td>
</tr>
</tbody>
</table>