

### Procedure

<b>Target Group:</b> All Physician and Nurse Caregivers treating DVT/PE, ACS, stroke patients, or others on heparin infusion and require anti-Xa monitoring	<b>Original Date of Issue:</b> Not Set	<b>Date of Last Review:</b> 01/05/2019	<b>Publication Date:</b> 01/05/2019
<b>Approved by:</b> Madhu Sasidhar, MD, Chief Medical Officer	<b>Date Last Approved:</b> 01/05/2019	<b>Document Owner:</b> Antoine Cherfan (Senior Director, Pharmacotherapy Services)	<b>Version Number: 1</b>

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#### **Purpose**

To provide physicians and nurses at Cleveland Clinic Abu Dhabi (CCAD) with a standard protocol for using antifactor Xa levels to monitor and adjust unfractionated heparin in cases where activated partial thromboplastin time (aPTT) monitoring is not feasible/reliable such as those with antiphospholipid syndrome with deranged baseline coagulation parameters. This should be prescribed with the approval of Hematology, otherwise the use of aPPT driven heparin protocols are the ones recommended.

#### **Procedure**

1. Ordering
  - 1.1. This protocol will be initiated by a physician order with the approval of hematology.
  - 1.2. Subsequent orders specified by the protocol will be entered by a nurse as 'per protocol'.
  - 1.3. Subsequent orders not specified in the protocol will require a physician order.
2. Heparin Protocol
  - 2.1. This protocol should only be used in cases where aPTT monitoring is not reliable/feasible.
  - 2.2. Obtaining baseline coagulation values.
    - 2.2.1. STAT anti Xa level prior to initiation (if not available within the previous 24 hours).
    - 2.2.2. Anti-Xa levels every 6 hours after ANY dosage change (can be monitored every 24 hours once two therapeutic anti-Xa levels are achieved consecutively).
  - 2.3. Initial bolus and infusion are weight based and according to indication
    - 2.3.1. Deep venous thrombosis (DVT)/pulmonary embolism (PE):
      - 2.3.1.1. Use for patients with or with suspected DVT or PE.
      - 2.3.1.2. Initial bolus is 80 units/kg to a maximum of 10,000 units.
      - 2.3.1.3. Initial infusion is 18 units/kg/hour to a maximum of 2,000 units/hour.
    - 2.3.2. Low Dose/ACS
      - 2.3.2.1. Use with or without thrombolytics or glycoprotein IIb/IIIa agents and when lower range anticoagulation desired.
      - 2.3.2.2. Initial bolus is 60 units/kg to a maximum of 4,000 units.
      - 2.3.2.3. Initial infusion is 12 units/kg/hour to a maximum of 1,000 units/hour.
    - 2.3.3. Stroke/No Bolus

## Heparin Protocol by Antifactor Xa Monitoring in Cases where aPTT Monitoring is Not Feasible/Reliable Procedure

- 2.3.3.1. Use for stroke patients when lower range anticoagulation is desired.
- 2.3.3.2. For stroke patients, no initial bolus is used.
- 2.3.3.3. Initial infusion is weight-based and is 12 units/kg/hour to a maximum of 1,000 units/hour.

### 2.4. Adjustment Tables

Bolus Adjustment Table:

Anti-Xa (units/mL)	Hold Heparin	Bolus	Rate Change (round to nearest 100 units)
< 0.2	No	Bolus 26 units/kg	Increase infusion by 4 units/kg/hr
0.2 – 0.29	No	None	Increase infusion by 2 unit/kg/hr
0.3 – 0.7	No	None	No change; therapeutic
0.71 – 0.8	No	None	Reduce infusion by 1 unit/kg/hr
0.81 – 0.99	No	None	Reduce infusion by 2 units/kg/hr
≥ 1	Hold for 1 hour	None	After holding for 1 hour, Reduce the infusion by 3 units/kg/hr

No Bolus Adjustment Table:

Anti-Xa (units/mL)	Hold Heparin	Bolus	Rate Change (round to nearest 100 units)
< 0.2	No	None	Increase infusion by 4 units/kg/hr
0.2 – 0.29	No	None	Increase infusion by 2 unit/kg/hr
0.3 – 0.7	No	None	No change; therapeutic
0.71 – 0.8	No	None	Reduce infusion by 1 unit/kg/hr
0.81 – 0.99	No	None	Reduce infusion by 2 units/kg/hr
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### Oversight and Responsibility

1. Quality & Patient Safety Institute
2. Pharmacy Services Department
3. Heart & Vascular Institute
4. Critical Care Institute
5. Neurologic Institute

### Definitions

1. None

### References

1. Cleveland Clinic Unfractionated Heparin Adult Patients
2. Cleveland Clinic Low Dose/ACS Unfractionated Heparin Adult Patients

### Institute / Department / Committee Involved in Procedure Development / Revision

1. Quality & Patient Safety Institute
2. Department of Pharmacy Services Pharmacy
3. Heart & Vascular Institute

## **Heparin Protocol by Antifactor Xa Monitoring in Cases where aPTT Monitoring is Not Feasible/Reliable Procedure**

4. Critical Care Institute
5. Neurologic Institute

### **Contact for Questions / Clarifications**

1. Institute Chair, Critical Care Institute
2. Director, Pharmacotherapy Services

### **Related or Supporting Documents**

1. None

### **Abbreviations**

1. Anti-Xa – antifactor Xa
2. aPTT - Activated Partial Thromboplastin Time
3. CCAD - Cleveland Clinic Abu Dhabi
4. DVT - Deep Venous Thrombosis
5. PE - Pulmonary Embolism
6. VA-ECMO - Veno-Arterial Extracorporeal Membrane Oxygenation