



Laboratory/Point of Care Monitoring of Anticoagulant Therapy

Drug Name	Indication	Lab/POC Monitoring Test	Therapeutic Range
Heparin (unfractionated)	<ul style="list-style-type: none"> Anticoagulation (Adults/Pediatrics) Stroke/Post-Thrombolytic⁴ 	<ul style="list-style-type: none"> APTT 	<ul style="list-style-type: none"> 54-80 seconds 54-70 seconds⁴
	<ul style="list-style-type: none"> Vascular/Trauma (Ranges established by LHS Vascular-Trauma departments) 	<ul style="list-style-type: none"> APTT APTT APTT 	<ul style="list-style-type: none"> 40-60 seconds 50-70 seconds 60-80 seconds
Heparin (unfractionated)	<ul style="list-style-type: none"> Prolonged baseline APTT (LA present) Prophylaxis 	<ul style="list-style-type: none"> Anti-heparin Xa (if LA present) Anti-heparin Xa 	<ul style="list-style-type: none"> 0.35-0.70 IU/mL 0.10-0.30 IU/mL
Heparin (unfractionated)	<ul style="list-style-type: none"> PTCA patients Post-angioplasty Cardiopulmonary bypass 	<ul style="list-style-type: none"> ACT-low range ACT-low range ACT-high range 	<ul style="list-style-type: none"> ACT 300-340 CE ACT 180-200 CE ACT >500 CE
Low Molecular Weight Heparin (Enoxaparin)	<ul style="list-style-type: none"> VTE Treatment¹ VTE Treatment¹ VTE Prophylaxis¹ 	<ul style="list-style-type: none"> Anti-heparin Xa Anti-heparin Xa Anti-heparin Xa 	<ul style="list-style-type: none"> 0.6-1.0 IU/mL (1 mg/kg BID)¹ 1.0-2.0 IU/mL (1.5 mg/kg daily)¹ 0.2-0.6 IU/mL¹
Pentasaccharide (Fondaparinux)	<ul style="list-style-type: none"> VTE Treatment VTE Prophylaxis 	<ul style="list-style-type: none"> Anti-heparin Xa Anti-heparin Xa 	<ul style="list-style-type: none"> Refer to Report.
Oral Anticoagulant Therapy (Coumadin)	<ul style="list-style-type: none"> Low intensity: e.g., VTE treatment/prophylaxis atrial fibrillation High intensity: prosthetic heart valves 	PT-INR	<ul style="list-style-type: none"> Low intensity: INR 2.0-3.0 High intensity: INR 2.5-3.5
Direct Thrombin Inhibitors (Lepirudin, Bivalirudin)	Anticoagulation in patients with HIT and associated thromboembolism (kidney required for excretion)	APTT	54-80 seconds
Direct Thrombin Inhibitors (Argatroban)	Anticoagulation in patients with HIT and associated thromboembolism (cleared by hepatic metabolism and renal excretion)	APTT	54-80 seconds

APTT: Activated Partial Thromboplastin Time
 LA: Lupus Anticoagulant
 ACT: Activated Clotting Time
 PTCA: Percutaneous Transluminal Coronary Angioplasty

CE: Celite Equivalents
 DVT: Deep Venous Thrombosis
 PT-INR: Prothrombin Time-International Normalized Ratio
 HIT: Heparin Induced Thrombocytopenia

NOTES:

- For specimen collection information, please refer to the Coagulation Specimen Collection Guidelines located in the Legacy Laboratory Services Test Table.
- APTT unfractionated heparin range for pediatric patients is extrapolated from adult data as supported by the June 2008 AACC Chest Supplement. Refer to references.
- Therapeutic ranges are subject to update. Refer to patient chart/report for the most current ranges at the time of testing.**

For further information contact:

Ann Smith Sehdev, MD, Coagulation Medical Director
Char Morishita, MS, MT(ASCP) SH, Hematology Technical Specialist
Legacy Health System Pharmacy Protocols

telephone (503)413-4562, pager (503)938-7112
telephone (503)413-5033, pager (503)938-8251

References:

1. Chest Supplement, ACCP, Volume 133, No. 6, June 2008.
2. JD Olson, CF Arkin, JT Brandt, et al. College of American Pathologists conference XXXI on laboratory monitoring of anticoagulant therapy, Laboratory monitoring of unfractionated heparin therapy. *Arch Pathol Lab Med* 122:782-798, 1998.
3. J Hirsh, JE Dalen, D Deykin, L Poller, Oral anticoagulants, Mechanism of action, clinical effectiveness, and optimal therapeutic range. *Chest* 102: 312S-326S, 1992.
4. Legacy Health System Stroke Program Protocol for Heparin, May 16, 2006.
5. M Laposata, D Green, EM Van Cott, et al. College of American Pathologists conference XXXI on laboratory monitoring of anticoagulant therapy. The clinical use and laboratory monitoring of low-molecular-weight heparin, danaparoid, hirudin and related compounds, and argatroban. *Arch Pathol Lab Med* 122:799-807, 1998.
6. RA Marlar, ASCP Teleconference, Coagulation Questions and Concerns: December 1996, p 4.

Revision 9/2009