



AT THE FOREFRONT  
**UChicago**  
**Medicine**

**TO:** Medical Staff, House Staff, Patient Care Centers,  
and Outpatient Clinics

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**DATE:** 3/1/2021

**RE:** - New Prothrombin time (PT) Reference Range

- New Activated Partial Thromboplastin time (aPTT) Heparin Therapeutic Range

- New aPTT Critical Value Trigger

The UCM Coagulation Laboratory has verified a new lot of prothrombin time (PT) reagent.

**As of 3/2/2021 at 00:01,**

- **The prothrombin time (PT) reference range at UCM will change to 12.0-14.0 seconds**
- **The international normalized ratio (INR) reference range at UCM will remain 0.9-1.1**

The UCM Coagulation Laboratory has verified a new lot of activated partial thromboplastin time (aPTT) reagent.

The aPTT reference range is unchanged at 25.0-34.0 sec.

**As of 3/2/2021 at 00:01, the heparin therapeutic range will change.**

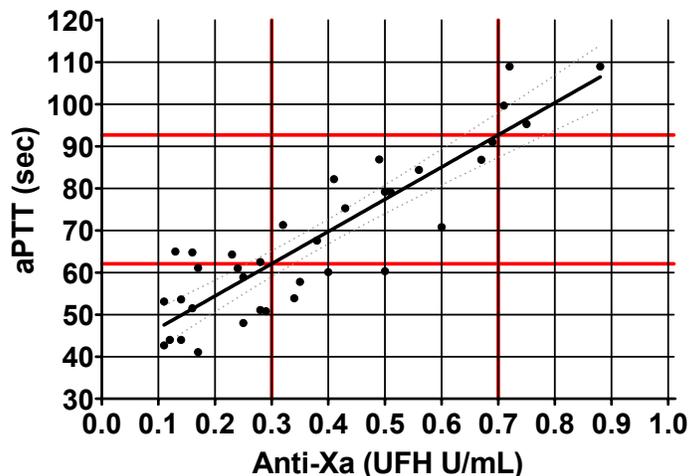
**New relationships between aPTT and anti-Xa levels:**

Anti-Xa (U/mL)	aPTT (sec)
0.3-0.7	62-93 sec
0.35	66 sec

aPTT (sec)	Anti-Xa (U/mL)
50-70 sec	0.14-0.40

Using a new reagent lot for the aPTT, for 36 patients currently receiving unfractionated heparin, we determined the population relationship between aPTT and heparin activity as determined by the “gold standard” of anti-factor Xa activity.

An anticoagulation intensity goal range of 0.3-0.7 anti-Xa units will now correspond to aPTTs of 62-93 seconds with this reagent lot. However, as is readily apparent from the graph below, for any *individual patient*, simply using an aPTT value directly obtained from the *population* linear regression relationship between aPTT and anti-Xa activity can potentially lead to under- or over-anticoagulation.



Accordingly, consideration should be given to performing an initial anti-Xa measurement in parallel with an aPTT measurement following heparin initiation, to verify that the desired intensity of heparin anticoagulation has been achieved. Moreover, for the occasional patient with a lupus anticoagulant (LA) interfering with aPTT measurements, or a deficiency of an aPTT-dependent “contact factor” such as factor XII, the patient’s pre-heparin baseline aPTT may simply be too elevated to permit the aPTT to be used to follow heparin treatment. In such instances, the anti-Xa level may actually be required in order to follow heparin levels.

We recommend referring to UCM Policy PGP-23 (Adult Continuous Infusion Unfractionated Heparin (UFH)), for the details of heparin dosing and monitoring recommendations from UCM Pharmacy.

**aPTT values over 120 seconds will be called as critical values.**

This is a modification from the prior trigger of 100 seconds.

This change has been discussed at Anticoagulation Quality and Safety Committee 1/28/2021 and added to Appendix of UCM policy PC115.

For questions, please contact Krzysztof Mikrut, Laboratory Manager, at 773-702-1315, or Geoffrey Wool, MD PhD, Medical Director, at 773-926-1455.