

<b>DATE:</b>	2021 June 14
<b>TO:</b>	UAH, CCI & SGH – Physicians, Nurses, Laboratory Directors, and Managers
<b>FROM:</b>	Alberta Precision Laboratories (APL)
<b>RE:</b>	<b>Tube shortage necessitates complete switch from PTT to Anti-Xa Heparin Level based Heparin monitoring at UAH, SGH and CCI</b>

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## PLEASE POST OR DISTRIBUTE AS WIDELY AS APPROPRIATE

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### Key Message

- Anti-Xa based Patient Care Orders (Nomograms) must be used for all Unfractionated Heparin (UFH) monitoring at **UAH, SGH & CCI**. PTT-based monitoring can no longer be supported due to a manufacturing cessation of glass sodium citrate tubes.
- Collect all routine and special coagulation tests into PLASTIC sodium citrate tubes.

### Background

- Our blood collection tube manufacturer (BD) has permanently halted production of 4.5mL BD369714 Glass Citrate Tubes.
- Glass sodium citrate tubes are essential for PTT-based monitoring of UFH in the Edmonton Zone. Anti-Xa based heparin monitoring can be performed using glass or plastic tubes. Anti-Xa based Patient Care Orders are already available in EPIC, were developed with extensive stakeholder input and are widely considered superior for UFH monitoring (see previously published attachment below). The Anti-Xa Heparin Level is available for use 24/7 at all of the hospitals listed above.
  - RAH, GNH, and MIS hospitals were transitioned to exclusive anti-Xa based monitoring in early 2021.
- Glass citrate tubes must be conserved for UFH monitoring at smaller sites without the Anti-Xa Heparin Levels assay on site. For all other routine and special coagulation tests PLASTIC citrate tubes should be used.
- PTT is still available for all other indications, but the results CANNOT be used for heparin monitoring.

### How this will impact you

- Use Anti-Xa based Patient Care Orders for all NEW patients to be started on unfractionated heparin IMMEDIATELY. There are just enough glass tubes available to allow patients currently being monitored using PTT to complete therapy.
- Continue to order PTT for all non-heparin related indications (eg. coagulopathy, hemophilia) as usual.
- Provincially, warehouses will have BD363083 Plastic 2.7mL citrate tubes available. BD363080 Plastic 1.8 mL citrate tubes will also be available but should only be used for infants. If you do not have either of the Plastic citrate tubes on your site, please contact your local Site Services rep for arrangements.

### Resources

- Epic AHS sites (UAH, SGH): Use the Heparin infusion (Anti-Xa based) order in Epic:  
<https://insite.albertahealthservices.ca/Main/assets/cistr/tms-cis-tr-heparin-infusion.pdf>



- Non-Epic sites (CCI): Order the paper based forms from DATA group “Heparin Infusion for VTE or ACS Adult Patient Care Orders (form 21020)” and “Continuous Intravenous Heparin Flow Sheet (form 21169)”. The former can be printed from Insite at either of:  
<https://insite.albertahealthservices.ca/Main/assets/frm/frm-21020.pdf>  
<https://insite.albertahealthservices.ca/tools/frm/Page10173.aspx>
- Heparin Infusion Anti-Xa Protocol Educational Presentation:  
<https://insite.albertahealthservices.ca/Main/assets/tms/uah/tms-uah-vlc-heparin-level-anti-xa-no-voice.pdf>

**Effective**      June 28, 2021

**Inquiries and feedback may be directed to**

- General laboratory questions: Dr. E. Turley: [Elona.Turley@aplabs.ca](mailto:Elona.Turley@aplabs.ca)
- Nursing questions relating to anti-Xa monitoring (AHS): [Dawn.Kingham@ahs.ca](mailto:Dawn.Kingham@ahs.ca)
- Your clinical site anti-Xa monitoring champion (see attachment below)

**This bulletin has been reviewed and approved by**

- Artur Szkotak, MD FRCPC, Hematopathology Section Chief, North Sector, APL



# HEPARIN LEVEL (ANTI-Xa) FOR IV CONTINUOUS INFUSION

for Heparin Therapy Monitoring

**OUR GOAL:** *To replace PTT testing with Heparin level (anti-Xa) testing for monitoring heparin infusions while using a single order set.*

## WHY CHANGE?

Though used historically, there are many problems associated with using **PTT** to monitor heparin therapy:

- The PTT therapeutic target range is dependent on the reagent batch which results in establishing the treatment nomogram and updating order sets annually. The gold standard used to establish the PTT heparin nomogram is the heparin level (anti-Xa).
- If a mismatched order set and heparin lot are used, patient harm may occur from over or under treatment.
- PTT is affected by multiple factors:
  - Tube type (glass versus plastic)
  - Lupus anticoagulant and other factors
  - Tube agitation (transport via tube system)

### Heparin level (anti-Xa):

- Is not impacted by tube type, lupus anticoagulant, or tube agitation and has the same turn around as PTT when done on site.
- Published nomograms for managing therapy are available that does not change with reagent batch.
- Patients reach therapeutic range more rapidly with this approach.

Switching to the use of the **heparin level (anti-Xa)** for monitoring therapy will result in more effective and safer therapy for patients. The use of a single order set for therapy for VTE, ACS and arterial thrombosis will simplify care for the providers and support transitions for Connect Care. Finally, the change made in our Zone will now be shared provincially.

## WHAT'S NEW?

Changes to the way we practice:

- Provincial Standardized Dosing Units to be used – unit/kg/hour
- Pump programming using the dosing units
- Removal of most Dose Caps **\*\* except** for the ACS 60 unit/kg loading dose (max 4000 units remains)

## WHEN AND HOW?

Goal: Zone wide education with launch of new tools  
June 2019

- Heparin Anti –Xa levels have the same turn around as PTT when done on site.
- Clinical Nurse Educators will participate in Train-the-Trainer sessions, supporting nursing practice change.
- Alaris pump library Version 21 alignment for ease of administration of continuous infusion and loading/bolus dosing within.
- Identified physician champions to support local work and communicate with working group should any concerns arise.

Anti-Xa for Continuous Heparin Infusions: Champions

Roles	EZ Working Group	RAH/CK Hui	UAH/MAZ	SCH	Suburban	MCH	GNH
Lab Medicine	Dr. Art Szkotak	Dr. Melanie Bodnar	Dr. Elona Turley	Steven Choi/Kevin Nguyen	n/a	Dr. Bryony Walker	Dr. Dean Tung
IQM	Dr. Dawn Hartfield	n/a	n/a	n/a	n/a	n/a	n/a
Pharmacy	Kelly Olstad	Jennifer Vu	Gord Bell/ Rita Pon	Kim Fitzgerald		Vaninder Sidhu	Angela Hanson
Cardiac Sciences	Dr. Wayne Tymchak	Dr. Ben Tyrrell Dr. Neil Brass	Dr. Wayne Tymchak Dr. Gurmeet Singh	n/a		Dr. John Dimitry	Dr. Sanjay Sharma
Critical Care	Dr. Shelley Duggan	Dr. Jon Davidow	Dr. D Townsend	Dr. Gabe Suen		Dr. Ella Rokosh	Dr. Dom Carney
Internal Medicine	Dr. Narmin Kassam	Dr. Rshmi Khurana	Dr. Narmin Kassam	Dr. Cesarz		Dr. Benjamin Sugars	Dr. Greg Hrynchyshyn
Emergency	Dr. Kirstie McLelland				Dr. Kirstie McLelland		
Women's Health	Dr. Rshmi Khurana			Dr. Nadia Jilwah			
Vascular Surgery	n/a	n/a	n/a	n/a	n/a	n/a	Dr. Winkelaar
Educators	Dawn Kingham	Jennifer Brouwer	Cassie Waters	Krista Nunes	Ellen Elliot	Tracey Clare	
Operations	Vanessa Moorgen			Shirley Baumgartner	Heather Durstling	Carrie Waggot	