ALBERTA PRECISION LABORATORIES

Leaders in Laboratory Medicine

Laboratory Bulletin

Date: **February 16, 2021**
To: **RAH, GNH, MCH-Physicians, Nurses, Laboratory Directors and Managers**
From: **Alberta Precision Laboratories (APL)**
Re: **Nomogram changes necessitate complete switch from PTT to Anti-Xa Heparin Level based Heparin monitoring and transition to plastic citrate collection tubes at RAH, GNH and MCH**

PLEASE POST OR DISTRIBUTE AS WIDELY AS APPROPRIATE

Key Message:

- **Effective February 25, 2021**, Anti-Xa based Patient Care Orders (Nomograms) must be used for all Unfractionated Heparin (UFH) monitoring at **RAH, GNH, & MCH**. Impending changes to the Provincial PTT-based monitoring nomogram are not supported by the current Laboratory Information System (LIS) in place at these hospitals.
- All routine and special coagulation testing will transition to PLASTIC sodium citrate tube collections at these sites.

Background:

- Pharmacy is implementing province-wide changes to the PTT-based heparin nomogram. The changes require LIS functionality not available at the RAH, GNH, and MCH (as these sites are not yet live with ConnectCare).
- Anti-Xa based Patient Care Orders are already available in the Edmonton zone, 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.
- Anti-Xa heparin monitoring can be performed using plastic or glass tubes. For simplicity and to manage supply chain issues (worldwide glass tube shortage), RAH, GNH, and MCH will transition to collect all routine & special coagulation testing into PLASTIC citrate tubes.
    - Note: Due to the concurrent glass citrate tube shortage, the switch to Anti-Xa based Heparin Monitoring is anticipated to last long-term/indefinitely.
- 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. This will prevent patients from having to be transitioned from a PTT-based order set to an Anti-Xa based order set on Feb. 25.
- Continue to order PTT for all non-heparin related indications (eg. coagulopathy, hemophilia) as usual.
- Glass citrate tubes will be phased out of the RAH, GNH, and MCH sites. Provincially, warehouses will have BD363083 Plastic 2.7mL citrate tubes available. A limited supply of BD363080 Plastic 1.8 mL citrate tubes will also be available but should only be used for infants due to manufacturer shortage. Warehouses will NOT automatically send plastic tubes in place of glass. If you do not have either of the Plastic citrate tubes on your site, please contact your local Site Services rep for arrangements.

Resources:

- Non-Epic sites (RAH, MCH, GNH): 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
- Covenant sites (MCH, GNH): can also access all information at:
  https://covenant.sabacloud.com/Saba/Web_spf/PRODTNT038/app/shared;spf-url=pages%2Fpagedetailview%2Fspage000000000023037%2Froll-outs%2Fanti-xa-implementation-2019
- 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: *February 25, 2021*

Inquiries and feedback may be directed to:

- General laboratory questions: Dr. E. Turley: Elona.Turley@aplabs.ca
- Nursing questions relating to anti-Xa monitoring (AHS): Dawn.Kingham@ahs.ca
- Nursing questions relating to anti-Xa monitoring (Covenant): Chantelle.Kuny@covenanthealth.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

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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	Kristina Dover		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		Cassie Waters	Krista Nunes	Ellen Elliot	Tracey Clare	
Operations	Vanessa Moorgen	Eliza Lo	Mary Mark	Shirley Baumgartner	Heather Durstling	Carrie Waggot	