Laboratory Memorandum

Date: 2023-09-05
To: Vancouver General Hospital, BC Cancer Agency Clinical Staff
From: Division of Clinical Chemistry, Vancouver General Hospital
Re: NEW CHEMISTRY ANALYSER IMPLEMENTATION AT VGH

On September 12 2023 at 10:00 AM, the core clinical chemistry laboratory at Vancouver General Hospital will transition testing from the current Siemens Vista/Centaur platforms to the new Siemens Atellica Chemistry and Immunoassay platform. The new instruments will replace aging equipment and will help to improve efficiency and turnaround times for lab results.

Summary of changes:

- High Sensitivity Troponin I 99th percentiles and suggested rule in/rule out criteria will change to reflect the new assay configuration and detection method used for the Siemens Atellica assay. See appendix for details.
- Results from the new Atellica High Sensitivity Troponin I are not directly comparable to results from the EXL High Sensitivity Troponin I assay run at VCH regional sites.
- The performance of the majority of tests run in the core laboratory will not change (see Table 1, Table 2)
- Adult reference intervals for tests transitioning to the new Atellica platform have been reviewed and adjusted to account for local population specific data. Please refer to test results for the updated reference intervals. All test results should be interpreted in relation to the associated test specific reference intervals.
- Pediatric reference intervals, where available, have been aligned with those used at BC Children's Hospital and are primarily based on the Canadian Pediatric Reference Intervals cohort (CALIPER).
- Test specific reporting of sample quality indicators that can affect test interpretation (hemolysis, icterus and lipemia) will be automated. These can be found in the "comments" tab of the specific lab result in CST Cerner.

Summary of lab tests migrating to the Atellica Platform on September 12 2023

Table 1: Tests with notable changes compared to the current method:

Test	Notes
Acetaminophen	NAC may interfere with this method when blood sampling occurs close to the time of NAC administration.
Amylase	Results are ~25% higher than previous method
Creatinine, Plasma and Urine	Analytical method will change to enzymatic measurement, which is much less susceptible to interferences than the current Jaffe method. Results are expected to be comparable to the current method.
High Sensitivity Troponin I	As described in the appendix.
NT-proBNP	On average, results are 16-20% higher than the method used in the literature to establish cut-offs. A similar bias was observed in comparison to current NT-proBNP method at VGH.
Plasma Magnesium	Results are ~20% lower than previous method.
Urine Albumin	Results are ~23% lower than previous method.

Table 2: Tests with no significant changes compared to the current method:

Albumin – plasma	Complement C3	Iron	Salicylate
ALP	Complement C4	TIBC	SHBG
Alpha 1 Antitrypsin	Cortisol – serum	Lactate	Sodium – plasma
ALT	Creatine Kinase	LDH	Sodium – urine
Amikacin	CRP (high sensitivity)	LDL cholesterol (calc.)	Testosterone
Ammonia	DHEAS	Lipase	Theophylline
Anti-TPO	Digoxin	Lithium	Total protein – serum
AST	Ethanol	LH	Total protein – CSF
Bilirubin, Direct	Ferritin	Magnesium – urine	Total protein – urine
Bilirubin, Total	Free T3	Oxalate – urine	Tobramycin
Beta HCG	Free T4	Phenobarbital	Total CO2
Beta hydroxybutyrate	FSH	Phenytoin	Triglyceride
Calcium – plasma	Gentamicin	Phosphate – plasma	TSH
Calcium – urine	Glucose – plasma	Phosphate – urine	Urea – plasma
Carbamazepine	Glucose – CSF	Potassium – plasma	Urea – urine
Ceruloplasmin	GGT	Potassium – urine	Uric acid – plasma
Cholesterol, Total	Haptoglobin	Prealbumin	Uric acid – urine
Chloride – plasma	HDL Cholesterol	Procalcitonin	Urine drug screen
Chloride – urine	Hemoglobin A1c	Prolactin	Valproic Acid
Citrate – urine	Homocysteine	PTH	Vancomycin
Cobalamin (Vit. B12)	IgA, IgE, IgG, IgM	Rheumatoid Factor	

What is not changing at this time:

- No changes to blood gas, urinalysis, osmolality, free light chains, IgD, serum and urine protein electrophoresis, protein immunofixation, oligoclonal banding, alkaline phosphatase isoenzymes, immunosuppressant testing (tacrolimus, cyclosporine, mycophenolate, sirolimus), salivary cortisol, urine cortisol, urine 5-HIAA, urine catecholamines and metanephrines, urine HVA/VMA, copper, zinc, kidney and gallstone analysis.

Please do not hesitate to contact the biochemist on call should you have any questions.

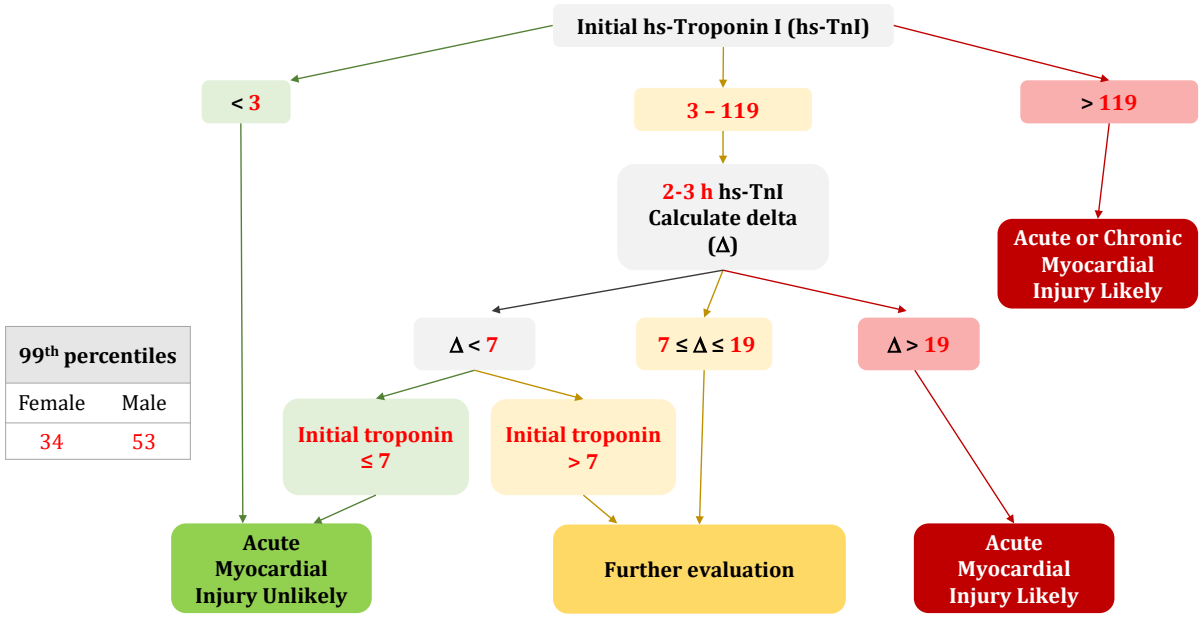
Sincerely,

Dr. Catherine Cheng, Dr. Amir Karin, Dr. Junyan Shi and Dr. Kazem Nouri
On behalf of the Division of Clinical Chemistry, Department of Pathology and Laboratory Medicine, Vancouver General Hospital.
Non urgent enquiries only: *VGHChemistry@vch.ca*

Appendix - Changes expected with the transition from Vista High Sensitivity Troponin I to Atellica High Sensitivity Troponin I:

- With the transition to the Siemens Atellica platform, the assay architecture of the high sensitivity troponin I test will change, resulting in different 99th percentiles and interpretive guidance.
- The new 99th percentiles will be: **Adult Females: 34 ng/L**, **Adult Males: 53 ng/L**. Pediatric cutoffs and interpretive guidance have not been established.
- The interpretive comments and delta cutoffs appended to results are based on the **HIGH-US** study[1] which specifically examined the performance of the Atellica High Sensitivity Troponin I assay rule in/out algorithm in a United States Emergency Department (ED) population.
- The interpretive guidance for the use of Atellica high sensitivity Troponin I in the context of suspected Acute Coronary Syndrome is presented in Figure 1. In this algorithm, subsequent troponins ordered ***2 to 3*** hours after an initial troponin can be used to interpret the delta. Troponin results and deltas should always be interpreted in the context of the patient presentation.
    - Although the published study includes early presenters, it is still recommended to perform troponin testing at both time points (0 and 2-3 hour) if the patient presents < 3 hours from symptom onset.
- Troponin measurement may be subject to various interferences, including **macro-troponin**. If a result is not consistent with the clinical picture, please do not hesitate to contact the laboratory to arrange for investigations as needed.

Figure 1: Atellica High Sensitivity Troponin I Algorithm (HIGH-US)



99th percentiles	
Female	Male
34	53

[1]Nowak, RM, et. al. Ann Emerg Med. 2020 Jul 1;76(1):1-3