

PROVINCIAL LABORATORY SERVICES COMMUNIQUÉ

<http://www.healthpei.ca/laboratoryservices>

TO: Physicians, Nurse Practitioners, Directors of Nursing, Nurse Managers, Clinical Instructors/Educators
FROM: Clinical Chemistry Services QEH
DATE: January 7, 2016
RE: **BEGINNING JANUARY 13TH, 2016: A HIGH-SENSITIVITY CARDIAC TROPONIN I ASSAY & GENDER SPECIFIC THRESHOLDS FOR MYOCARDIAL INFARCTION PATIENTS AT THE QEH**

WHAT IS CARDIAC TROPONIN I USED FOR?

- Troponin is used to help diagnose non ST elevation myocardial infarction (NSTEMI).
- Distinguish acute from chronic Troponin elevations. Elevated Troponin indicates cardiac damage and may occur in many clinical settings where myocardial ischemia is absent such as renal failure, heart failure and pulmonary embolism.¹

WHAT IS HIGH SENSITIVITY CARDIAC TROPONIN?

For an assay to be considered as high sensitivity two conditions must apply:^{2,3}

- It must be possible to measure Troponin at the 99th percentile of the normal population with an imprecision below 10%.
- It must be possible to measure Troponin in ≥ 50% of healthy subjects.
- The high-sensitivity assay has improved precision and allows measurement of cTnI at lower concentrations than previous assays.⁴

CHANGES TO CARDIAC TROPONIN I REPORTING:

1. The **assay name will change from Troponin I to Troponin I-hs**
2. The **reporting units will change from µg/L to ng/L**
3. There will be **new gender-specific diagnostic thresholds for myocardial infarction.**
4. The only acceptable specimen is **Lithium Plasma/Green-top tube.**

UNITS OF MEASUREMENT:

- As part of the harmonization of laboratory reporting units, cTnI results will be reported in **ng/L**. For clarity, a value of 0.05 µg/L will now be reported as **50 ng/L**.
- The enhanced precision of the high-sensitivity assay allows lower levels of cTnI to be reported, such that Troponin is measurable in the majority of healthy individuals.
- The analytical measuring range will be from 10 ng/L to 50,000 ng/L.

A. UNIVERSAL DEFINITION OF MYOCARDIAL INFARCTION⁵

Detection of a rise and/or fall of cardiac biomarker values with at least one value above the 99th upper reference limits (URL) and with at least one of the following:

- Symptoms of ischemia
- New or presumed new significant ST-segment-T wave (ST-T) changes or new left bundle branch block (LBBB)
- Development of pathological Q-waves
- Imaging evidence of new loss of viable myocardium or new regional wall motion abnormality
- Identification of intracoronary thrombus by angiography or autopsy

PROVINCIAL LABORATORY SERVICES COMMUNIQUÉ

High Sensitive Troponin I - continued

B. DIAGNOSTIC THRESHOLDS

The improved precision of the high-sensitivity cTnI assay means that the 99th percentile URL is defined at a lower level than previously, with clear differences between cTnI levels in men and women.

This supports lower, gender-specific diagnostic thresholds for diagnosis of myocardial infarction, with a raised cTnI defined as:⁶

- **>15.6 ng/L in women**
- **>34.2 ng/L in men**

Although cTnI is highly specific for myocardial injury, there are many mechanisms and disease states other than coronary heart disease lead to myocardial injury with small increases in cTnI found in both acute and chronic illness (e.g. septicemia, chronic renal disease, congestive heart failure). It is therefore important the test is **only requested in patients with a presentation suggestive of acute coronary syndrome** and that it is not requested as part of a routine screen.

C. SUMMARY

From **Wednesday January 13th 2016**, a high-sensitivity cardiac Troponin I assay will be introduced. Results will be reported in **ng/L** and a raised Troponin I concentration will be defined as more than **15.6 ng/L in women, and more than 34.2 ng/L in men. Troponin should only be requested in patients with suspected acute coronary syndrome.**

FOR MORE INFORMATION PLEASE CONTACT:

Dr. Mohamed Abouelhassan
Head, Clinical Chemistry Division
Provincial Laboratory Services
Queen Elizabeth Hospital
902-894-2303 maabouelhassan@ihis.org

Louise Farrar BSc MLT
Chief Technologist Clinical Chemistry
Queen Elizabeth Hospital
902-894-2317
lafarrar@ihis.org

REFERENCES:

1. Thygesen K, Mair J, Giannitsis E, Mueller C, Lindahl B, Blankenberg S et al. How to use high-sensitivity cardiac troponins in acute cardiac care
Eur Heart J 2012;33:2252-7.
2. Apple FS, Collinson PO. Analytical characteristics of high-sensitivity cardiac troponin assays
Clin Chem 2012;58:54-61.
3. Apple FS, Jaffe AS, Collinson P, Mockel M, Ordonez-Llanos J, Lindahl B et al. IFCC educational materials on selected analytical and clinical applications of high sensitivity cardiac troponin assays. Clin Biochem 2015;48:201-3.
4. Apple FS, Ler R, Murakami MM. Determination of 19 cardiac troponin I and T assay 99th percentile values from a common presumably healthy population. Clin Chem 2012;58:1574-81.
5. Thygesen K, Alpert JS, Jaffe AS, Simoons ML, Chaitman BR, White HD et al. Third Universal Definition of Myocardial Infarction. J Amer Coll Cardiol 2012;60:1581-98.
6. Abbott ARCHITECT STAT High Sensitive Troponin-I. Package insert. G1-0139/R02. 2013.