



Capital Health

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MEMORANDUM

To: All Capital District Health Authority (CDHA) Physician Offices and Nursing Units

From: Bassam A. Nassar, PhD, MB BCH, FRCPC, FCACB
Chief of Service

Ms. Shauna Thompson
Technical Manager

Subject: Introduction of High Sensitivity Troponin T Testing Starting February 8, 2012

Date: January 26, 2012

Clinical Background

Our Troponin (TnT) assay Provider, Roche Diagnostics, have replaced our current assay with a new high sensitivity assay (hsTnT) which is 10 times more sensitive than the method presently in place. Our Division will hence be changing to the new assay effective Wednesday, February 8, 2012.

In the new assay, the limit of the 99th percentile on normal is 0.014 µg/L or 14 ng/L. This applies to ambulatory persons without vascular or cardiac injury, hypertension, diabetes mellitus or renal insufficiency. Troponin T levels tend to increase with age.

In a study carried on 3679 patients with stable coronary artery disease and a mean age of 63.3 years, observed values higher than 14 ng/L were seen in 11% of patients, essentially between 14-50 ng/L (PEACE Study). However, additional studies have demonstrated an acquired long-term cardiovascular risk when hsTnT level exceeds 14 ng/L.

New Report

In order to avoid using decimals in reporting our results, we will change the units of measurement to ng/L, a factor of 1000 change from the old units (µg/L). Hence, a patient who showed a TnT of 5.0 µg/L will now show a result of 5000 ng/L.

Additionally, while the units have changed, the high values have not changed. What has changed is the interpretation of the low values.

Clinical Impact

A result of 50 ng/L corresponds approximately to 0.04 µg/L with the old method. Below 50 ng/L, a variation of 20 ng/L has been reported as significant in one evaluation. For example, a value measuring 10 ng/L that increases to 38 ng/L is judged to have significantly changed. However, the clinical picture should always be taken into consideration.

Repeatedly, patients could be presenting with values higher than 14 ng/L, without acute ischemic events/acute coronary syndromes. It is therefore important to consider these variations when doing consecutive measurements.

High Sensitivity Troponin T (hsTnT) Normal Values	Suggested Time Intervals for Serial Testing
14 ng/L	0, 3, 6 hours

Rule-in Acute Myocardial Infarction	Rule-out Acute Myocardial Infarction
Result > 50 ng/L or ≥ 20 ng/L change in results during serial sampling* plus signs of ischemia	Two (2) results with a difference of < 15 ng/L at least six (6) hours apart

*Example: a patient showing signs of ischemia with a first Troponin T value of 18 ng/L and a second value of 40 ng/L three hours later should be ruled in.

References

1. Clerico A, Giannoni A, Prontera C, Giovannini S. High-sensitivity troponin: a new tool for pathophysiological investigation and clinical practice. *Adv Clin Chem.* 2009;49:1-30.Review.
2. deLemos JA, Drazner MH, Omland T, et al. Association of troponin T detected with a highly sensitive assay and cardiac structure and mortality risk in the general population. *JAMA* 2010;304:2503-12.
3. Hsieh BP, Rogers AM, Na B, et al. Prevalence and prognostic significance of incidental cardiac troponin T elevation in ambulatory patients with stable coronary artery disease: data from the heart and Soul study. *Am Heart J* 2009; 158:673-9.
4. Omland T, de Lemos JA, Sabatine MS, et al. Prevention of events with angiotensin converting enzyme inhibition (PEACE) trial investigators. A sensitive cardiac troponin T assay in stable coronary artery disease. *N Engl J Med* 2009;361:2538-47
5. Hoiseith AD, Neukamm A, Karlsson BD, et al. Elevated high-sensitivity cardiac troponin T is associated with increased mortality after acute exacerbation of chronic obstructive pulmonary disease. *Thorax* 2011;66:775-81.
6. Kavsak PA, Walsh M, Srinathan S, et al. High sensitivity troponin T concentrations in patients undergoing noncardiac surgery: A prospective cohort study. *Clin Biochem* 2011;44:1021-4.
7. Ndrepepa G, Braun S, Mehilli J, Birkmeier et al. Prognostic value of sensitive troponin T in patients with stable and unstable angina and undetectable conventional troponin. *Am Heart J* 2011;161:68-75.
8. Lavoie R and Douville P. Troponine T haute sensibilité. Laboratory introduction document. November 2011.
9. Reichlin T, Iffran A, Twerenhold R et al. Utility of absolute and relative changes in cardiac troponin concentrations in the early diagnosis of acute myocardial infarction. *Circulation* 2011;124:136-45.

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