



## CHANGES TO TROPONIN I TESTING

In the first week of September Pathlab are changing to a high sensitivity Troponin I. The new assay has markedly improved sensitivity in the low range and provides clinically usable results from 2-2000 ng/L. This will have a number of consequences.

1. Most people will have a measurable Troponin value.
2. There is a different reference interval for men and women. The upper limit of normal will be 20 ng/L for men and 10 ng/L for women. There is no lower limit and a non-detectable Troponin is not abnormal, but we will report very low levels as < 2 ng/L. Over 99% of fit and healthy individuals will have a value within the reference interval. (1)
3. This means values previously reported as <10ng/L will now be reported as a numeric value. This gives a new range of values between 11 and 40 ng/L for women and 21 and 40 for men previously reported as normal. A value in this range does not automatically mean a myocardial infarct, but in the correct clinical setting and/or with ECG changes of ischaemia, the result would be supportive of a diagnosis of Type 1 myocardial infarction. Confirmation of acute myocardial damage is by 2 hour repeat Troponin. If this shows a change in value of greater than 40% difference from the original measurement this is abnormal and warrants cardiologic referral.
4. A high Troponin >100 ng/L in the setting of chest pain is usually an indication for immediate cardiologic referral.

The consequence of increasing the sensitivity of Troponin I is a significant improvement in negative predictive value. A stable normal value is reliable evidence to exclude significant myocardial damage.

The converse is a decrease in specificity of the test, we expect to see a number of people in the 20-40 ng/L range for men and 10-40 ng/L range for women, some of whom will have had a type 1 myocardial infarct as evidenced by a significant rise in the 2 hour Troponin or ECG evidence, but many will have other causes, some cardiac, including type 2 myocardial infarction and some non-cardiac, this is why the clinical context is extremely important.

**Cardiac causes of a raised Troponin include (this is not an exhaustive list):** Congestive heart failure, myocarditis, atrial fibrillation, tachycardia and cardiomyopathy.

**Non-cardiac causes include:** Acute pulmonary embolism, severe sepsis, end stage renal disease, autoimmune disease. Hypo and hypervolemia, intense exercise. (2)

An elevated Troponin in a patient who fails to meet criteria for a Type 1 myocardial infarct still warrants workup to exclude other causes. There is some work suggesting elevated Troponin may be an indicator of poor long-term survival in acute sepsis. (3)

IT IS CRITICAL TO BE VERY CLEAR WHY YOU ARE ORDERING A TROPONIN - please document this on the request form. Is it part of acute chest pain workup or for other reasons?

Note this is a new assay and the clinical applications and pathways that will be stimulated by it are still a work in progress.

1. Available online [hsTNI Assay information](#)
2. Allen Jeremias, MD, and C. Michael Gibson, MS, MD, Narrative Review: Alternative Causes for Elevated Cardiac Troponin Levels when Acute Coronary Syndromes Are Excluded *Ann Intern Med.* 2005;142:786-791.
3. Vestjens SM, Spoorenberg SM, Rijkers GT, et al; Ovidius Study Group. High-sensitivity cardiac troponin T predicts mortality after hospitalization for community-acquired pneumonia [published online February 21, 2017]. *Respirology.* doi:10.1111/resp.12996

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CLINICAL UPDATE

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