

Date: December 22, 2011

To: South Zone – East:
All Physicians, All Programs and Services

From: AHS Laboratory Services – South Zone (East)

Re: New Troponin T-High Sensitive Test

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Key Messages:

In early January 2012, Medicine Hat Regional Hospital Laboratory will shift from the current troponin T assay to a new high sensitive assay. In South Zone this change affects only the assay performed in Medicine Hat Regional Hospital. The troponin T assays in Brooks, Bassano, Bow Island and Oyen are unaffected.

Why this is important:

The new high sensitive troponin T test meets the sensitivity criteria required by the European Society of Cardiology/American College of Cardiology in the redefinition of myocardial infarction. (Heart 2008;94:1335-1341) This definition states that acute myocardial infarction has occurred when cardiac troponin is present in the blood at a level above the 99th percentile for the normal population of a patient **who also exhibits signs and symptoms of myocardial infarction**. This new high sensitive troponin T test is sensitive enough and precise enough to identify the 99th percentile for the normal population as being 0.014 micrograms/litre.

Action Required:

The introduction of this test requires that physicians interpret high sensitive troponin T values differently from the current troponin T values. The changes are as follows:

1. In order to make the units more intuitive to evaluate, the units are being changed to nanograms per litre, ng/L (from the current micrograms per litre, ug/L). With the new units, the cut-off will be 14 ng/L instead of 0.014 ug/L.
2. Many patients who previously had an undetectable level of cardiac troponin T will now have detectable levels but these should be below the 14 ng/L cut-off limit.
3. Some patients, particularly those with chronic cardiac failure or those with chronic renal failure will have cardiac troponin levels above the 14 ng/L cut-off limit. If these

patients are not experiencing myocardial infarction, their cardiac troponin T level will remain approximately the same (less than a 50% change). Dynamic changes (ie changes between repeated samples are an important feature of evolving ischemic damage).

4. Some patients presenting with pulmonary embolism, recent history of cardiotoxic medication use, or cardiac trauma will have elevated troponin T levels, hence it is important to interpret the troponin T levels in the patient's clinical context (i.e. the patient should also exhibit signs, symptoms, ECG or imaging findings suspicious for myocardial infarction).
5. Because this test is more sensitive, it is likely that patients will have detectable cardiac troponin T levels earlier after infarction. Ultimately this means that patients may be discharged if their troponin T level is normal at three hours, rather than having to wait six hours. Initially, the recommendation is to keep the testing interval at six hours.
6. Also because this test is more sensitive there will be patients who present with levels above 14 ng/L who would have values in the current assay of less than 0.03 ug/L (0.03 ug/L in the current assay translates to about 50 ng/L in the new assay). This will produce a population of patients who have troponin levels in a "grey zone", of abnormal but non-diagnostic. The appropriate management of these patients should be dictated by evaluation of the clinical context and the results of repeat troponin testing. Acute myocardial infarction is unlikely if the troponin result has not changed at 3 to 6 hours after the first troponin. The exact management of these patients should become clearer once there is further experience with this assay.
7. Cardiac troponin testing in the Calgary region (performed by Calgary Laboratory Services) will also be shifting to this high sensitive assay. Therefore, the results of Medicine Hat Regional Hospital troponin testing should be equivalent to testing performed in Calgary and will be easily interpretable by the referral cardiologist in Calgary.
8. New cardiac troponin T report formats are being developed which will include the new units, the revised cut-off limit, and interpretive guides.

Inquiries and feedback may be directed to:
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This bulletin has been reviewed and approved by:
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