

October 5, 2026

CLINICAL BIOCHEMISTRY

iSTAT Troponin I: New High-Sensitivity assay

Date effective: October 20, 2026

Background Information:

The i-STAT system is used at low-volume rural sites in Manitoba to perform Troponin I testing as part of the assessment of patients presenting with chest pain suggestive of a cardiac etiology. While elevated cardiac troponin indicates myocardial injury, it is not specific for ischemic damage and may be observed in a range of clinical conditions associated with cardiac injury. As such, Troponin results should always be interpreted within the broader clinical context.

Change in Test Procedure:

- The iSTAT conventional Troponin I assay is being discontinued.
- The iSTAT high-sensitivity Troponin I (hsTnI) assay will be replacing the conventional assay.
- The hsTnI assay has different units of measurement (nanograms per litre (ng/L)) and reference values.
- **Critical results will not be called for hsTnI.**
- The hsTnI is for acute use at sites without high sensitivity Troponin T (hsTnT) onsite. For outpatient testing/monitoring of non-acute indications, hsTnT can be ordered (will be referred out).

Assay Interpretation:

- High sensitivity assays may be used as part of evidence based rapid-rule out strategies in selected patients at less than 2 hours from symptom onset. Maximum safety is achieved with a 3 hour time from symptom onset. If greater than 3 hours from symptom onset, a single iSTAT hsTnI measurement of less than 2.9 ng/L, can be used to rule-out myocardial infarction (MI).
- Reference values are the 99th percentile of a healthy population:
 - Adult female ≤ 13 ng/L
 - Adult male ≤ 28 ng/L
 - Reference values have not been established in pediatric patients
- Some patients who are having an MI will have an initial result that is below the 99th percentile, while a second measurement, 2 or more hours later will show a significant increase.
- Approximately 18% of patients presenting for assessment of chest pain, will have an iSTAT hsTnI above the reference value due to pre-existing conditions. In these patients, a second hsTnI measurement 2 or more hours later should be evaluated; for a rising pattern, if within 24 hours of symptom onset, or a falling pattern in patients presenting later.
- When assessing patients for possible Non-ST-Segment Elevation Myocardial Infarction (NSTEMI), two measurements, one at presentation and a second 2 or more hours later, are recommended if the initial iSTAT hsTnI result is above 2.9 ng/L and the TIMI score is 2 or less.

- As the new hsTnI assay is more analytically sensitive than the conventional assay, it is more susceptible to interferences.
 - Patients may have autoantibodies that cause falsely low results.
 - Conversely, some patients may develop macro-troponin complexes (immunoglobulin + troponin I) that can cause false elevations.
 - Bilirubin above 475 micromoles per litre ($\mu\text{mol/L}$) will cause falsely decreased results.
 - Methyldopa can lead to increased results.
- The patient's clinical presentation, including history, risk factors, physical exam, EKG findings, and a dynamic rise and or fall pattern in hsTnI results should be considered in the diagnostic evaluation of suspected MI.
- Good sample collection is needed for acceptable results. Poor mixing after collection may cause falsely low results due to the presence of fibrinogen.

Patient Impact/System Improvements:

- Potential for earlier diagnosis or rule out of myocardial infarction
- Facilitates harmonized care pathways which use high-sensitivity Troponin

More Information:

Wu AHB, et al. [Clinical Performance of a Novel Point-of-Care High-Sensitivity Cardiac Troponin I Assay | The Journal of Applied Laboratory Medicine | Oxford Academic](#) 2026 Jan 5;11(1):98-112. doi: 10.1093/jalm/jfaf152. PMID: 41146629

[Chest Pain with Cardiac Features](#) Algorithm, Manitoba ACS Network

High-Sensitivity Troponin I (i-STAT) - (B) [Lab Information Manual](#)

High-Sensitivity Troponin: Know Your Assay (document attached)

Authorship/Endorsements:

Dr. Laurel Thorlacius, PhD, FCACB, Medical Director, Clinical Biochemistry | Diagnostic Services Laboratory Medicine
lthorlacius@sharedhealthmb.ca

Dr. Natalie Landry, PhD, FCACB, Clinical Biochemist, Medical Lead for Point-of-Care Testing & Rural Core Laboratory Medicine | Diagnostic Services Laboratory Medicine nlandry2@sharedhealthmb.ca

Dr. Paul Ratana, Head, Department of Emergency Medicine | University of Manitoba
Provincial Specialty Lead, Emergency Medicine | Shared Health

Dr. Anita Soni, Medical Specialty Lead, Cardiac Sciences SBH: Cardiology, Cardiac Surgery, Cardiac Anesthesia & Cardiac Critical Care

Dr. Davinder Jassal, Medical Lead of Cardiology, and Co-Chair of the Cardiology subcommittee PCT

Dr. Shuangbo Liu, Medical Director, Manitoba ACS Network