Lab Dept: Chemistry

Test Name: HIGH SENSITIVITY TROPONIN I LEVEL

*General **Information***

Lab Order Codes:	**HSTNI**
Synonyms:	HSTNI, HS TNI, Troponin, Troponin I, HS Troponin, cTNI, Cardiac Troponin I
CPT Codes:	84484 – Troponin, quantitative
Test Includes:	HS Troponin I level reported in ng/L.

Logistics

Test Indications:	HS-TnI may be ordered in pediatric patients for evaluation of suspected myocardial injury, including suspected myocarditis or pericarditis, cardiomyopathy or acute cardiac dysfunction, chest pain with concerning clinical features, arrythmia associated myocardial injury, post-viral or inflammatory cardiac involvement, or cardiac injury related to trauma.[3]
Lab Testing Sections:	Chemistry
Phone Numbers:	MIN Lab: 612-813-6280 STP Lab: 651-220-6550
Test Availability:	Daily, 24 hours
Turnaround Time:	30 minutes from receipt in lab
Special Instructions:	N/A

Specimen

Specimen Type:	Blood
Container:	Green top (Li Heparin) tube Also accepted: Green (Lithium Heparin, no gel)
Draw Volume:	2.0 mL preferred, 1.0 mL minimum
Processed Volume:	0.6 mL plasma preferred, 0.3 mL minimum
Collection:	Routine venipuncture, send to lab immediately
Special Processing:	Centrifuge specimen, remove serum/plasma aliquot into a screw-capped round bottom plastic vial. Store and ship at ambient temperatures. Forward promptly. **Test within 8 hours of collection.**
Patient Preparation:	None
Sample Rejection:	Mislabeled or unlabeled specimens

Interpretive:

High sensitivity assays can detect elevated levels of cTnI (above the 99th percentile of an apparently healthy reference population) within 3 hours after the onset of chest pain. Cardiac troponin I reaches peak concentrations in approximately 8 to 28 hours and remains elevated for 3 to 10 days following MI. Cardiac troponin is the preferred biomarker for the detection of myocardial infarction based on improved sensitivity and superior tissue-specificity compared to other available biomarkers of necrosis, including CK-MB, myoglobin, lactate dehydrogenase, and others. The high tissue specificity of cTnI measurements is beneficial for identifying myocardial infarction in clinical conditions involving skeletal muscle injury resulting from surgery, trauma, extensive exercise, or muscular disease. High tissue specificity of cTnI, however, should not be confused with the specificity for the mechanism of injury (e.g., MI versus myocarditis). When an increased value for cTnI is encountered (e.g., exceeding the 99th percentile of a reference control population) in the absence of evidence of myocardial ischemia, other etiologies for cardiac damage should be considered.[1]

In the pediatric population, myocardial infarction and acute coronary syndrome are extremely rare events. Troponin I levels can help diagnose myocarditis and pericarditis in patients presenting with chest pain and a history of infectious symptoms. They can also be helpful in patients presenting exertional chest pain that may have congenital abnormalities of the coronary arteries, severe aortic stenosis, or abnormal myocardium such as those with hypertrophic cardiomyopathy. Elevated high sensitivity troponin I in an acute setting may help detect heart failure due to an unknown cardiac disorder or worsening heart failure, particularly in combination with other biomarkers such as B-type natriuretic peptides. Serum troponin levels may be obtained in patients with history of drug use (especially methamphetamine or cocaine) presenting with acute chest pain to evaluate for myocardial ischemia caused by coronary artery spasm. Troponin levels may be helpful in evaluating abnormal EKG showing elevated ST or pathologic Q-waves. Troponin levels are frequently elevated in carbon monoxide poisoning related to myocardial injury due to cellular hypoxia.[4]

Reference Range:

HS Troponin I	**99th percentile (ng/L)**
0 to <6 months[2]	55.8
6 months to <19 years[2]	5.5
Female, adult[1]	14
Male, adult[1]	35
Adult, overall[1]	27

Critical Values: N/A

Limitations: Decreased values occur in grossly hemolyzed samples and rare antibodies to troponin.

Specimens from individuals with elevated levels of fibrinogen may demonstrate falsely elevated values.

The Alinity i STAT High Sensitivity Troponin-I assay is susceptible to interference effects from total protein > 8.8 g/dL. Total protein from 9.0 to 12.0 g/dL decreased troponin values at 500 ng/L by up to -16.3%.

The Alinity i STAT High Sensitivity Troponin-I assay is susceptible to interference effects from RF > 1200 IU/mL. RF at 1495 IU/mL decreased troponin values up to -18.9%.

Methodology: Abbott Diagnostics Alinity i, STAT High Sensitivity Troponin-I, by chemiluminescent microparticle immunoassay (CMIA) technology.

References:

1. STAT High Sensitivity Troponin-I Reagent Package Insert, Abbott Laboratories Diagnostics Division, Abbott Park, IL 60064, May 2023
2. Mary Kathryn Bohna,b and Khosrow Adelia. Comprehensive Pediatric Reference Limits for High-Sensitivity Cardiac Troponin I and NT-proBNP in the CALIPER Cohort, JALM May 2023:443-456
3. McEvoy JW, Want D, Brady TM, Tang O, Ndumele CE, Coresh J, Christenson RH, Selvin E. Myocardial Injury Thresholds for Four High-sensitivity Troponin Assays in a Population-Based Sample of US Children and Adolescents. Circulation. 2023 Apr20;148(1):7-16. Doi:10.1161/CIRCULATIONAHA.122.063281. PMID:37078280; PMCID: PMC10330102
4. Johnson J, Lacks J. Troponin in Pediatric Patients with Chest Pain Clinical Pathway

Updates: 3/10/2026: New assay replaced iSTAT Troponin I.