Test Definition: HSTNI

Troponin I, High Sensitivity, Plasma

Overview

Useful For

Excluding the diagnosis of acute coronary syndromes

Explaining troponin T elevations related to skeletal myopathy and/or assay interferences

Method Name

Electrochemiluminescence Immunoassay

NY State Available

Yes

Specimen

Specimen Type

Plasma

Specimen Required

Collection Container/Tube:

Preferred: Mint green top (lithium heparin gel)

Acceptable: Green top (lithium heparin)

Submission Container/Tube: Plastic vial

Specimen Volume: 1 mL

Collection Instructions:

1. Plasma gel tube should be centrifuged within 2 hours of collection.
2. Green-top tube should be centrifuged, and the plasma aliquoted into a plastic vial within 2 hours of collection.

Forms

If not ordering electronically, complete, print, and send a Cardiovascular Test Request Form (T724) with the specimen.

Specimen Minimum Volume

0.5 mL

Reject Due To

Gross hemolysis	Reject

Specimen Stability Information

Specimen Type	Temperature	Time	Special Container
Plasma	Frozen (preferred)	180 days	
	Ambient	4 hours	
	Refrigerated	48 hours	

Clinical & Interpretive

Clinical Information

Troponin is a complex that regulates the contraction of striated muscle. It consists of 3 subunits (C, T, and I) that are located periodically along the thin filament of the myofibrils. Troponin I inhibits actomyosin ATPase.

Troponin I is an inhibitory protein and exhibits in 3 isoforms: cardiac muscle, slow-twitch skeletal muscle, and fast-twitch skeletal muscle. The cardiac form of troponin I has 31 amino acid residues on its N-terminal, which allow for specific polyclonal and monoclonal antibody development, as they are not present in the skeletal forms. The cardiac specificity of this isoform improves the accuracy of diagnosis in patients with acute or chronic skeletal muscle injury and possible concomitant myocardial injury.

Troponin I is the only troponin isotope present in the myocardium and is not expressed during any developmental stage in skeletal muscle. Troponin I is released into the bloodstream within hours of the onset of symptoms of myocardial infarction or ischemic damage. It can be detected at 3 to 6 hours following onset of chest pain, with peak concentrations at 12 to 16 hours, and remains elevated for 5 to 9 days.

Reference Values

Males > or =18 years: < or =20 ng/L
Females > or =18 years: < or =15 ng/L

Reference values have not been established for patients younger than 18 years old.

Interpretation

Elevations in cardiac troponin T (cTnT) can be due to skeletal muscle disease and not cardiac disease in certain circumstances. One way to unmask such elevations is to measure cardiac troponin I (cTnI), which will be normal in that situation. In addition, at times there are interferences that can cause spurious increases or decreases in cTnT values. Conceptually, these same interferences can occur with cTnI but in any given case, the likelihood of having both assays be confounded in that way is highly unusual. Thus, potential false-positive results would be unmasked by a normal cTnI and false-negative results by an elevated value.

Cautions

A troponin value above the upper reference limit (99th percentile) value is not always indicative of myocardial infarction. Other conditions resulting in myocardial cell damage can contribute to elevated cardiac troponin I levels. These conditions include, but are not limited to, myocarditis, cardiac surgery, angina, unstable angina, congestive heart failure, and noncardiac-related causes, such as, kidney failure and pulmonary embolism.

Clinical Reference

Apple FS, Wu AHB, Sandoval Y, et al. Sex-specific 99th percentile upper reference limits for high sensitivity cardiac troponin assays derived using a universal sample bank. Clin Chem. 2020;66(3):434-444

Performance

Method Description

The Access hsTnI (high sensitivity troponin I) assay is a two-site immunoenzymatic (sandwich) assay. Monoclonal anti-cTnI (cardiac troponin I) antibody conjugated to alkaline phosphatase is added to a reaction vessel along with a surfactant-containing buffer and sample. After a short incubation, paramagnetic particles coated with monoclonal anti-cTnI antibody are added. The human cTnI binds to the anti-cTnI antibody on the solid phase, while the anti-cTnI antibody-alkaline phosphatase conjugate reacts with different antigenic sites on the cTnI molecules. After incubation in a reaction vessel, materials bound to the solid phase are held in a magnetic field while unbound materials are washed away. Then, the chemiluminescent substrate is added to the vessel and light generated by the reaction is measured with a luminometer. The light production is directly proportional to the concentration of cTnI in the sample. The amount of analyte in the sample is determined from a stored, multi-point calibration curve.(Package insert: ACCESS hsTnI. Beckman Coulter; 10/2021)

PDF Report

No

Day(s) Performed

Monday, Wednesday, Friday

Report Available

2 to 3 days

Specimen Retention Time

7 days

Performing Laboratory Location

Mayo Clinic Laboratories - Rochester Main Campus

Fees & Codes

Fees

- Authorized users can sign in to Test Prices for detailed fee information.
- Clients without access to Test Prices can contact Customer Service 24 hours a day, seven days a week.
- Prospective clients should contact their account representative. For assistance, contact Customer Service.

Test Classification

This test has been cleared, approved, or is exempt by the US Food and Drug Administration and is used per manufacturer's instructions. Performance characteristics were verified by Mayo Clinic in a manner consistent with CLIA requirements.

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CPT Code Information

84484

LOINC® Information

Test ID	Test Order Name	Order LOINC® Value
HSTNI	Troponin I, High Sensitivity, P	89579-7

Result ID	Test Result Name	Result LOINC® Value
HSTNI	Troponin I, High Sensitivity, P	89579-7