Clinical Policy: Cardiac Biomarker Testing

Reference Number: LA.CP.MP.156 Coding Implications
Date of Last Revision: 10/23 Revision Log

See Important Reminder at the end of this policy for important regulatory and legal information.

Description

The release of cardiac biomarkers is among the cascade of events that occur during acute coronary syndromes and cardiac ischemia.[1] This policy discusses the medical necessity requirements for testing of these cardiac biomarkers.

Policy/Criteria

I. It is the policy of Louisiana Healthcare Connections that troponin I or T testing is **medically necessary** and the appropriate cardiac biomarker for evaluating for suspected acute myocardial infarctions (AMI) or myocardial injury due to other mechanisms.

II. It is the policy of Louisiana Healthcare Connections that creatine kinase myocardial isoenzyme (CK-MB) and myoglobin testing are **not medically necessary** in the evaluation for suspected AMI because troponin is the recommended biomarker due to its superior sensitivity and accuracy.

Background

Detection of specific cardiac biomarkers in blood serum is a useful clinical indication of acute myocardial infarctions (AMI), myocarditis, or heart failure.[2] Cardiac troponins I and T have become the preferred biomarkers used for diagnoses of acute coronary syndromes due to their high specificity and sensitivity and because these subunits are expressed in the myocardium.[1-7] Furthermore, troponin levels are also elevated for acute and chronic decompensated heart failure in instances of myocyte injury and/or necrosis.[7-8]

Other cardiac peptides that were previously assessed for AMI include creatine kinase myocardial isoenzyme (CK-MB) and myoglobin.[1] However, recent evidence suggests that the sensitivity and specificity of these biomarkers are inferior compared to the troponins, suggesting that troponins are a more accurate biomarker of myocardial injury.[1-2,7] According to the 2014 American College of Cardiologists/American Heart Association (ACC/AHA) clinical practice guidelines, CK-MB and myoglobin are no longer necessary for acute coronary syndrome diagnosis as a result of the advent of troponin assays.[2] CK-MB detection is comparatively less sensitive and less specific.[1-7] A 2010 retrospective cohort study was performed in an emergency department over a 12 month period examining patients who had troponin testing.[9] The study included 11,092 visits where at least one troponin test was ordered, and 97.9% of these patients also had a CK-MB ordered.[9] The authors concluded that CK-MB testing can be omitted during the initial screening of AMIs since the study showed a 0% rate of positive CK-MB index with negative troponin.[9] Eggers et al. evaluated the role of myoglobin with troponin I to detect AMI in a sample of 197 patients and determined that neither myoglobin nor CK-MB added clinical diagnostic value.[10] Of note, Singh et al. measured CK-MB testing from 2007 to 2013 and found a dramatic decrease from 12,057 tests in 2007 to 36 tests in 2013.[11]

Coding Implications

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Table 1: CPT codes not medically necessary when billed with CPT 84484 Troponin

CPT Codes	Description
82553	Creatine kinase (CK), (CPK); MB fraction only
83874	Myoglobin

Reviews, Revisions, and Approvals	Revision Date	Approval Date
Converted corporate to local policy.	08/15/2020	
Added "or myocardial injury due to other mechanisms" in addition to acute myocardial infarction for approval in criteria I. References reviewed and updated. Coding reviewed. Changed "review date" in the header to "date of last revision" and "date" in the revision log header to "revision date." Added "and may not support medical necessity" to coding implications. Reviewed by specialist.	2/22	4/14/22
Annual review. Background updated with no impact on criteria.	10/22	1/14/23
Annual review. Background updated with no impact on criteria. Coding reviewed. References reviewed and updated. Reviewed by external specialist.	10/23	1/5/23

References

1. Jaffe AS, Morrow DA. Biomarkers of myocardial injury other than troponin. UpToDate. www.uptodate.com. Published February 15, 2021. Accessed August 10, 2023.
2. Amsterdam EA, Wenger NK, Brindis RG, et al. 2014 AHA/ACC guideline for the management of patients with non-ST-elevation acute coronary syndromes: a report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines [published correction appears in Circulation. 2014 Dec 23;130(25):e433 to 4. Dosage error in article text]. *Circulation.* 2014;130(25):e344 to e426. doi:10.1161/CIR.0000000000000134
3. Neumann JT, Sörensen NA, Schwemer T, et al. Diagnosis of Myocardial Infarction Using a High-Sensitivity Troponin I 1-Hour Algorithm. *JAMA Cardiol* 2016;1(4):397 to 404. doi:10.1001/jamacardio.2016.0695
4. Reeder GS, Kennedy HL. Diagnosis of acute myocardial infarction. UpToDate. www.uptodate.com. Published October 5, 2022. Accessed August 10, 2023.

5. deFilippi C, Henrich WL. Cardiac troponins in patients with kidney disease. UpToDate. www.uptodate.com. Published June 09, 2022. Accessed August 10, 2023.
6. Jaffe AS, Morrow DA. Troponin testing: Clinical use. UpToDate. www.uptodate.com. Published April 06, 2022. Accessed August 10, 2023.
7. Local coverage determination: Troponin (L33974). Centers for Medicare and Medicaid Services Web site. http://www.cms.hhs.gov/mcd/search.asp. Published October 01, 2015 (revised October 01, 2019). Accessed August 10, 2023.
8. Yancy CW, Jessup M, Bozkurt B, et al. 2017 ACC/AHA/HFSA Focused Update of the 2013 ACCF/AHA Guideline for the Management of Heart Failure: A Report of the American College of Cardiology/American Heart Association Task Force on Clinical Practice Guidelines and the Heart Failure Society of America. *Circulation*. 2017;136(6):e137 to e161. doi:10.1161/CIR.0000000000000509
9. Volz KA, McGillicuddy DC, Horowitz GL, Sanchez LD. Creatine kinase-MB does not add additional benefit to a negative troponin in the evaluation of chest pain. *Am J Emerg Med* 2012;30(1):188 to 190. doi:10.1016/j.ajem.2010.10.016
10. Eggers KM, Oldgren J, Nordenskjöld A, Lindahl B. Diagnostic value of serial measurement of cardiac markers in patients with chest pain: limited value of adding myoglobin to troponin I for exclusion of myocardial infarction. *Am Heart J*. 2004;148(4):574 to 581. doi:10.1016/j.ahj.2004.04.030
11. Singh G, Baweja PS. Creatine kinase–MB: the journey to obsolescence. *Am J Clin Pathol* 2014;141(3):415 to 419. doi:10.1309/AJCPBIK3G4BWEJKO

Important Reminder

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