Clinical Policy: Cardiac Biomarker Testing

Reference Number: CP.MP.156
Date of Last Revision: 09/23

Coding Implications
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 health plans affiliated with Centene Corporation® 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 health plans affiliated with Centene Corporation 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
Policy developed	12/17	12/17
Deleted Table 2, diagnosis code list. Clarified in criteria point II that CK-MB and myoglobin are not medically necessary *when billed with 84484* troponin. Specialist reviewed	03/18	03/18
References reviewed and updated.	02/19	02/19
References reviewed and updated. Coding reviewed.	01/20	01/20
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. Replaced "member" with "member/enrollee" in all instances.	12/20	01/21
Annual review. Changed "review date" in the header to "date of last revision" and "date" in the revision log header to "revision date." References reviewed and updated. Reviewed by specialist.	10/21	10/21
Annual review. Background updated with no impact on criteria. References reviewed and updated.	09/22	09/22
Annual review. Background updated with no impact on criteria. Coding reviewed. References reviewed and updated. Reviewed by external specialist.	09/23	09/23

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.
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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
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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

This clinical policy has been developed by appropriately experienced and licensed health care professionals based on a review and consideration of currently available generally accepted standards of medical practice; peer-reviewed medical literature; government agency/program approval status; evidence-based guidelines and positions of leading national health professional organizations; views of physicians practicing in relevant clinical areas affected by this clinical policy; and other available clinical information. The Health Plan makes no representations and accepts no liability with respect to the content of any external information used or relied upon in developing this clinical policy. This clinical policy is consistent with standards of medical practice current at the time that this clinical policy was approved. "Health Plan" means a health plan that has adopted this clinical policy and that is operated or administered, in whole or in part, by Centene Management Company, LLC, or any of such health plan's affiliates, as applicable.

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This clinical policy is effective as of the date determined by the Health Plan. The date of posting may not be the effective date of this clinical policy. This clinical policy may be subject to applicable legal and regulatory requirements relating to provider notification. If there is a discrepancy between the effective date of this clinical policy and any applicable legal or regulatory requirement, the requirements of law and regulation shall govern. The Health Plan retains the right to change, amend or withdraw this clinical policy, and additional clinical policies may be developed and adopted as needed, at any time.

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Note: For Medicaid member/enrollees, when state Medicaid coverage provisions conflict with the coverage provisions in this clinical policy, state Medicaid coverage provisions take precedence. Please refer to the state Medicaid manual for any coverage provisions pertaining to this clinical policy.

Note: For Medicare member/enrollees, to ensure consistency with the Medicare National Coverage Determinations (NCD) and Local Coverage Determinations (LCD), all applicable NCDs, LCDs, and Medicare Coverage Articles should be reviewed prior to applying the criteria set forth in this clinical policy. Refer to the CMS website at http://www.cms.gov for additional information.