Clinical Policy: Cardiac Biomarker Testing for Acute Myocardial Infarction

Reference Number: CP.MP.156
Effective Date: 12/17
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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. 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** for suspected acute myocardial infarctions (AMI).

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** for suspected AMI because these tests have not been demonstrated to have a clear clinical benefit.

Background

Detection of specific cardiac biomarkers in blood serum is a useful clinical indication of AMI, myocarditis, or heart failure. According to the 2014 clinical practice guideline of the American College of Cardiologists / American Heart Association, (ACC/AHA) cardiac troponins have become the main biomarkers used for the diagnoses of acute coronary syndromes, specifically troponins I and T because these subunits are expressed in the myocardium.[1,2] Furthermore, troponin levels are also elevated for acute and chronic decompensated heart failure in instances of myocyte injury and/or necrosis.[3]

Other cardiac peptides that were previously assessed for AMI include CK-MB and myoglobin. 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] According to the 2014 ACC/AHA clinical practice guideline, CK-MB and myoglobin are no longer necessary for acute coronary syndrome diagnosis as a result of the advent of troponin assays.[1] CK-MB detection is comparatively less sensitive and less specific. Voltz et al. performed a retrospective cohort study across 55,000 emergency department visits for AMI and examined their CK-MB and troponin levels with screenings; the authors concluded that CK-MB can be omitted during the initial screening of AMIs.[6] 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.[4] Aviles et al analyzed AMI amongst patients with elevated cardiac troponins in a prospective cohort and noted that at least 20% of patients had normal CK-MB levels, thereby further questioning the validity of CK-MB as a valuable cardiac biomarker.[7] 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.[5]

Coding Implications

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Table 1: CPT codes not medically necessary when billed with a corresponding ICD-10CM in Table 2

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

Table 2: ICD-10-CM diagnosis codes not medically necessary when billed with a corresponding CPT code in Table 1.

ICD-10-CM Code	Description
I20.0	Unstable angina
I20.1	Angina pectoris with documented spasm
I20.8	Other forms of angina pectoris
I20.9	Angina pectoris, unspecified
I21.01	ST elevation (STEMI) myocardial infarction involving left main coronary artery
I21.02	STEMI myocardial infarction involving left anterior descending coronary artery
I21.09	STEMI myocardial infarction involving other coronary artery of anterior wall
I21.11	STEMI myocardial infarction involving right coronary artery
I21.19	STEMI myocardial infarction involving other coronary artery of inferior wall
I21.21	STEMI myocardial infarction involving left circumflex coronary artery
I21.29	STEMI myocardial infarction involving other sites
I21.3	STEMI myocardial infarction of unspecified site
I21.4	Non-ST elevation (NSTEMI) myocardial infarction
I21.9	Acute myocardial infarction, unspecified
I21.A1	Myocardial infarction type 2
I21.A9	Other myocardial infarction type
I22.0	Subsequent STEMI myocardial infarction of anterior wall
I22.1	Subsequent STEMI myocardial infarction of inferior wall
I22.2	Subsequent NSTEMI myocardial infarction
I22.8	Subsequent STEMI myocardial infarction of other sites
I22.9	Subsequent STEMI myocardial infarction of unspecified site

ICD-10-CM Code	Description
I23.7	Postinfarction angina
I24.0	Acute coronary thrombosis not resulting in myocardial infarction
I24.8	Other forms of acute ischemic heart disease
I24.9	Acute ischemic heart disease, unspecified
I25.10	Atherosclerotic heart disease of native coronary artery without angina pectoris
I25.110	Atherosclerotic heart disease of native coronary artery with unstable angina pectoris
I25.111	Atherosclerotic heart disease of native coronary artery with angina pectoris with documented spasm
I25.118	Atherosclerotic heart disease of native coronary artery with other forms of angina pectoris
I25.119	Atherosclerotic heart disease of native coronary artery with unspecified angina pectoris
I25.2	Old myocardial infarction
I25.41	Coronary artery aneurysm
I25.42	Coronary artery dissection
I25.5	Ischemic cardiomyopathy
I25.6	Silent myocardial ischemia
I25.700	Atherosclerosis of coronary artery bypass graft(s), unspecified, with unstable angina pectoris
I25.701	Atherosclerosis of coronary artery bypass graft(s), unspecified, with angina pectoris with documented spasm
I25.708	Atherosclerosis of coronary artery bypass graft(s), unspecified, with other forms of angina pectoris
I25.709	Atherosclerosis of coronary artery bypass graft(s), unspecified, with unspecified angina pectoris
I25.710	Atherosclerosis of autologous vein coronary artery bypass graft(s) with unstable angina pectoris
I25.711	Atherosclerosis of autologous vein coronary artery bypass graft(s) with angina pectoris with documented spasm
I25.718	Atherosclerosis of autologous vein coronary artery bypass graft(s) with other forms of angina pectoris
I25.719	Atherosclerosis of autologous vein coronary artery bypass graft(s) with unspecified angina pectoris
I25.720	Atherosclerosis of autologous artery coronary artery bypass graft(s) with unstable angina pectoris
I25.721	Atherosclerosis of autologous artery coronary artery bypass graft(s) with angina pectoris with documented spasm
I25.728	Atherosclerosis of autologous artery coronary artery bypass graft(s) with other forms of angina pectoris
I25.729	Atherosclerosis of autologous artery coronary artery bypass graft(s) with unspecified angina pectoris

ICD-10-CM Code	Description
I25.730	Atherosclerosis of nonautologous biological coronary artery bypass graft(s) with unstable angina pectoris
I25.731	Atherosclerosis of nonautologous biological coronary artery bypass graft(s) with angina pectoris with documented spasm
I25.738	Atherosclerosis of nonautologous biological coronary artery bypass graft(s) with other forms of angina pectoris
I25.739	Atherosclerosis of nonautologous biological coronary artery bypass graft(s) with unspecified angina pectoris
I25.750	Atherosclerosis of native coronary artery of transplanted heart with unstable angina
I25.751	Atherosclerosis of native coronary artery of transplanted heart with angina pectoris with documented spasm
I25.758	Atherosclerosis of native coronary artery of transplanted heart with other forms of angina pectoris
I25.759	Atherosclerosis of native coronary artery of transplanted heart with unspecified angina pectoris
I25.760	Atherosclerosis of bypass graft of coronary artery of transplanted heart with unstable angina
I25.761	Atherosclerosis of bypass graft of coronary artery of transplanted heart with angina pectoris with documented spasm
I25.768	Atherosclerosis of bypass graft of coronary artery of transplanted heart with other forms of angina pectoris
I25.769	Atherosclerosis of bypass graft of coronary artery of transplanted heart with unspecified angina pectoris
I25.790	Atherosclerosis of other coronary artery bypass graft(s) with unstable angina pectoris
I25.791	Atherosclerosis of other coronary artery bypass graft(s) with angina pectoris with documented spasm
I25.798	Atherosclerosis of other coronary artery bypass graft(s) with other forms of angina pectoris
I25.799	Atherosclerosis of other coronary artery bypass graft(s) with unspecified angina pectoris
I25.810	Atherosclerosis of coronary artery bypass graft(s) without angina pectoris
I25.811	Atherosclerosis of native coronary artery of transplanted heart without angina pectoris
I25.812	Atherosclerosis of bypass graft of coronary artery of transplanted heart without angina pectoris
I25.82	Chronic total occlusion of coronary artery
I25.83	Coronary atherosclerosis due to lipid rich plaque
I25.84	Coronary atherosclerosis due to calcified coronary lesion
I25.89	Other forms of chronic ischemic heart disease
I25.9	Chronic ischemic heart disease, unspecified
R07.0	Pain in throat

ICD-10-CM Code	Description
R07.1	Chest pain on breathing
R07.2	Precordial pain
R07.81	Pleurodynia
R07.82	Intercostal pain
R07.89	Other chest pain
R07.9	Chest pain, unspecified

Reviews, Revisions, and Approvals	Date	Approval Date
Policy developed	12/17	12/17

References

1. Amsterdam, Ezra A., et al. "2014 AHA/ACC guideline for the management of patients with non-ST-elevation acute coronary syndromes." *Circulation* (2014):
2. Neumann, Johannes Tobias, et al. "Diagnosis of myocardial infarction using a high-sensitivity troponin I 1-hour algorithm." *JAMA Cardiology* 1.4 (2016): 397-404.
3. Yancy, Clyde W., et al. "2017 ACC/AHA/HFSA focused update of the 2013 ACCF/AHA guideline for the management of heart failure." *Journal of cardiac failure* 23.8 (2017): 628-651.
4. Eggers, Kai Marten, et al. "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." *American heart journal* 148.4 (2004): 574-581.
5. Singh, Gurmukh, and Paramdeep S. Baweja. "Creatine Kinase–MB: The Journey to Obsolescence." *American journal of clinical pathology* 141.3 (2014): 415-419.
6. Volz, Kathryn A., et al. "Creatine kinase-MB does not add additional benefit to a negative troponin in the evaluation of chest pain." *The American journal of emergency medicine*30.1 (2012): 188-190.
7. Aviles, Ronnier J., et al. "Long-term prognosis of patients with clinical unstable angina pectoris without elevation of creatine kinase but with elevation of cardiac troponin i levels." *The American journal of cardiology* 90.8 (2002): 875-878.

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.

The purpose of this clinical policy is to provide a guide to medical necessity, which is a component of the guidelines used to assist in making coverage decisions and administering benefits. It does not constitute a contract or guarantee regarding payment or results. Coverage decisions and the administration of benefits are subject to all terms, conditions, exclusions and limitations of the coverage documents (e.g., evidence of coverage, certificate of coverage, policy, contract of insurance, etc.), as well as to state and federal requirements and applicable Health Plan-level administrative policies and procedures.

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.

This clinical policy does not constitute medical advice, medical treatment or medical care. It is not intended to dictate to providers how to practice medicine. Providers are expected to exercise professional medical judgment in providing the most appropriate care, and are solely responsible for the medical advice and treatment of members. This clinical policy is not intended to recommend treatment for members. Members should consult with their treating physician in connection with diagnosis and treatment decisions.

Providers referred to in this clinical policy are independent contractors who exercise independent judgment and over whom the Health Plan has no control or right of control. Providers are not agents or employees of the Health Plan.

Note: For Medicaid members, 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 members, 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.