

## Clinical Policy: Cardiac Biomarker Testing

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### Description

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

### Policy/Criteria

- I. It is the policy of PA Health & Wellness (PHW) 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 PHW 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.<sup>2</sup> 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.<sup>1-7</sup> Furthermore, troponin levels are also elevated for acute and chronic decompensated heart failure in instances of myocyte injury and/or necrosis.<sup>7-8</sup>

Other cardiac peptides that were previously assessed for AMI include creatine kinase myocardial isoenzyme (CK-MB) and myoglobin.<sup>1</sup> 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.<sup>1-2,7</sup> 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.<sup>2</sup> CK-MB detection is comparatively less sensitive and less specific.<sup>1-7</sup> A 2010 retrospective cohort study was performed in an emergency department over a 12 month period examining patients who had troponin testing.<sup>9</sup> 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.<sup>9</sup> 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.<sup>9</sup> 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.<sup>10</sup> 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.<sup>11</sup>

### Coding Implications

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2022, American Medical Association. All rights reserved. CPT codes and CPT descriptions are from the current manuals and those included herein are not intended to be all-inclusive and are included for informational purposes only. Codes referenced in this clinical policy are for informational purposes only. Inclusion or exclusion of any codes does not guarantee coverage. Providers should reference the most up-to-date sources of professional coding guidance prior to the submission of claims for reimbursement of covered services.

**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	04/18	06/18
References reviewed and updated.	03/19	
References reviewed and updated. Coding reviewed.	06/2020	8/7/2020
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.	8/31/2021	
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.	8/31/2022	
Annual review. Background updated with no impact on criteria. Coding reviewed. References reviewed and updated. Reviewed by external specialist.	09/2023	

## References

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