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## Medical Policy



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**Joint Medical Policies are a source for BCBSM and BCN medical policy information only. These documents are not to be used to determine benefits or reimbursement. Please reference the appropriate certificate or contract for benefit information.**

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**Category: Laboratory/Pathology**

**\*Current Policy Effective Date: 11/01/06**

**Title: Troponins and Creatine Kinase Isoforms**

**Procedure Code(s):  
82550, 82552, 82553,  
82554, 84484, 84512**

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### Description/Background

Troponin is an intracellular muscle protein involved in the actin-myosin muscle contraction mechanism. The “I” and the “T” isoforms are found in cardiac muscle. Troponins are bound to muscle and are not usually found in the circulation of healthy individuals.

Cardiac-specific Troponin I and Troponin T are highly sensitive and specific serum markers for acute myocardial necrosis, and may be detected in the peripheral circulation even when the CPK-MB serum marker is not elevated. The level detected correlates with the degree of acute myocardial necrosis present, may be identified as early as three hours following myocardial injury, peak in twelve to sixteen hours, and can remain elevated for up to seven days. Cardiac Troponin I and cardiac Troponin T levels may be used to not only detect the presence of recent myocardial damage during the evaluation and management of a chest pain complaint with suspected acute myocardial insult, but may also be used to predict mortality following an acute myocardial infarction.

Creatine phosphokinase is found predominately in the heart muscle, skeletal muscle and brain. Serum CPK levels are elevated when there is injury to these muscle cells.

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(\*See policy history boxes for any previous effective dates, if applicable)

**CPT/HCPSC Level II Codes and Description** *(Note: The inclusion of a code in this list is not a guarantee of coverage. Please refer to the medical policy statement to determine the status of a given procedure)*

**Established codes:**

82550	Creatine kinase (CK), (CPK); total
82552	Creatine kinase (CK), (CPK); isoenzymes
82553	Creatine kinase (CK), (CPK); MB fraction only
82554	Creatine kinase (CK), (CPK); isoforms
84484	Troponin, quantitative
84512	Troponin, qualitative

**Other codes (investigational, not medically necessary, etc.):**

N/A

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**Diagnoses/Medical Conditions**

- Acute myocardial infarction of anterolateral wall
  - True posterior wall infarction
  - Subendocardial infarction
  - Acute myocardial infarction of unspecified sites
  - Postmyocardial infarction syndrome
  - Intermediate coronary syndrome
  - Angina decubitus
  - Prinzmetal angina
  - Other than unspecified angina pectoris
  - Chest pain, unspecified
  - Precordial pain
  - Amyotrophic lateral sclerosis
  - Polymyositis
  - Myotonic dystrophy
  - Thermal and electrical burns
  - Rhabdomyolysis
  - Familial hypokalemic periodic paralysis
  - Cocaine use
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**Medical Policy Statement**

The safety and effectiveness of Testing for troponin and creatine kinase isoform levels have been established. It may be considered a useful diagnostic tool when indicated to detect the presence of recent myocardial damage or striated muscle injury.

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## Rationale

Monitoring of troponin when there is a suspicion of cardiac damage has become the standard test in the diagnosis of acute cardiac disease as well as cardiac muscle injury. Measurement of creatine kinase isoform levels is an important test in the evaluation of cardiac muscle injury and numerous striated muscle disorders. Studies in clinical trial populations have demonstrated that patients presenting with baseline positive troponin results have a higher risk of mortality compared with patients with later positive troponin results. Results in an unselected, contemporary population of high-risk non–ST-segment elevation acute coronary syndromes patients are similar. Results also suggest that baseline positive troponin results are associated with a greater likelihood of high-risk features on presentation (e.g., signs of congestive heart failure, renal insufficiency, increased age) and with larger-sized infarcts that result in a greater likelihood of cardiogenic shock, findings that likely contribute to the increased risk of mortality in these patients.

Serial electrocardiogram recordings and troponin I assessments may be proposed for initial screening in high-risk trauma patients to detect anatomical cardiac injuries through the time course of circulating protein. Troponin I release does not have a prognosis value in trauma patients.

## Medical Policy Position Summary (Non-clinical summary statement for customer use)

When the muscle of the heart is damaged secondary to an event like a heart attack or a crushing injury to the chest, certain chemicals are released into the bloodstream. These chemicals, also called cardiac enzymes, are proteins from cardiac tissue that can be measured in the blood. Until the 1980s, the enzymes SGOT (serum glutamic-oxaloacetic transaminase) and LDH (lactate dehydrogenase) were used to assess cardiac injury. Unfortunately, these enzymes could be released into the bloodstream due to injury from other types of muscles. Creatinine phosphokinase (CPK) is an enzyme found predominantly in the heart, brain and skeletal muscle. When the total CPK level is substantially elevated, it usually indicates injury or stress to one or more of these areas. Through research it was found that an elevation in the *MB subtype* of the CPK enzyme was very specific for myocardial injury.

More recently, troponin isoenzymes have been identified and are thought to rise *before* permanent injury develops. Increased concentrations of cardiac troponin I (cTnI) have been shown to be highly specific for myocardial (heart muscle) damage and to have sensitivity comparable with that of creatine kinase MB isoenzyme for detecting cardiac injury. In addition, increases of cTnI persist in the blood plasma for several days.

A positive troponin level in a patient experiencing chest pain accurately predicts a high likelihood of a myocardial infarction (heart attack). Measurement of cardiac enzymes has become so reliable that enzyme elevations alone are considered reliable measures of cardiac injury. Instead of relying on electrocardiograms (ECGs) to determine *if* cardiac

injury has occurred, ECGs now serve to determine where in the heart the damage has occurred.

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**Inclusionary and Exclusionary Guidelines (Clinically based guidelines that may support individual consideration and pre-authorization decisions)**

N/A

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**Related Policies**

N/A

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**Medicare Information**

Medicare has no national coverage policy in effect for Troponin testing. However, in the absence of a national coverage policy, Medicare covers the following diagnosis codes for this test.

Indications and Limitations of Coverage for Troponin Levels

Troponin levels are considered medically reasonable and necessary to rule out myocardial injury only under the following conditions:

- The patient presents with signs and symptoms of an acute myocardial infarction (prolonged chest pain often described as squeezing, choking, stabbing, etc., usually spreading across the left arm; dyspnea, diaphoresis) which is confirmed by an electrocardiogram (EKG, ECG).
- The patient presents with vague or atypical symptoms suggestive of a cardiac origin, which is not confirmed by an electrocardiogram.
- The patient presents with the diagnosis of unstable angina and a non Q-wave myocardial infarction with no ST elevation on the EKG.

The quantitative test is normally performed every 8-12 hours the first 24 hours. Once the determination is made whether myocardial injury has occurred, it is expected that a troponin level will be performed only when the results are to be used in the active treatment of the patient. It is not necessary to use troponin in addition to creatine kinase in the management of patients with myocardial infarction.

**ICD-9 codes that Support Medical Necessity:**

388.70	Otalgia unspecified
410.00 - 410.92	Acute myocardial infarction
411.1	Intermediate coronary syndrome
413.0 - 413.9	Angina code range
427.0 - 427.9	Acute systolic heart failure

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428.1	Left heart failure
428.21	Acute systolic heart failure
428.31	Acute diastolic heart failure
428.41	Acute combined systolic and diastolic heart failure
526.9	Unspecified disease of the jaws
719.41	Pain in joint involving shoulder region
723.1	Cervicalgia
729.5	Pain in limb
780.01 - 780.09	Coma code range
780.2	Syncope and collapse
780.8	Generalized hyperhidrosis
785.0	Tachycardia unspecified
786.03 - 786.09	Respiratory distress code range
786.50 - 786.59	Chest pain code range
787.01	Nausea with vomiting
787.02	Nausea alone
787.03	Vomiting alone
789.06	Abdominal pain epigastric
794.31	Nonspecific abnormal electrocardiogram (ECG) (EKG)
861.00 - 861.01	Injury to the heart and lung (code range)
922.1	Contusion of chest wall

**Reason for Denial:**

Troponin levels are not a covered service when performed as a routine screening procedure or in the absence of a documentation of clinical findings in the patients' medical record indicating suspected myocardial injury.

*(The above Medicare information is current as of the review date for this policy. However, the coverage issues and policies maintained by the Centers for Medicare & Medicare Services [CMS, formerly HCFA] are updated and/or revised periodically. Therefore, the most current CMS information may not be contained in this document. For the most current information, the reader should contact an official Medicare source.)*

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**References**

- Blue Cross Blue Shield of Tennessee, "LCD for TROPONIN," *Riverbend Government Benefits Administrator (with secondary geographic jurisdiction in Michigan) Local Medical Review Policy*, L1686, 7/24/02.
- Henrikson, Charles A., MD, MPH, et al., "Prognostic usefulness of marginal troponin T elevation," *The American Journal of Cardiology*, Volume 93, Number 3, February 1, 2004.
- Landesberg, Giora, MD, DSc, et al, "Myocardial ischemia, cardiac troponin, and long-term survival of high-cardiac risk critically ill intensive care unit patients," *Critical Care Medicine*, Volume 33, Number 66, June 2005.

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- Rao, Sunil V. MD, “Prognostic value of isolated troponin elevation across the spectrum of chest pain syndromes,” The American Journal of Cardiology, Volume 91, Number 8, April 15, 2003.
- Roe, Matthew T., MD, MHS, et al., “Influence of Timing of Troponin Elevation on Clinical Outcomes and Use of Evidence-Based Therapies for Patients With Non–ST-Segment Elevation Acute Coronary Syndromes,” Annals of Emergency Medicine, Volume 45, Number 4, April 2005.
- Sabatine, Marc S., MD, MPH, “Combination of quantitative ST deviation and troponin elevation provides independent prognostic and therapeutic information in unstable angina and non–ST-elevation myocardial infarction,” American Heart Journal, Volume 151, Number 1, January 2006.

*The articles reviewed in this research include those obtained in an Internet based literature search for relevant medical references through May 19, 2006, the date the literature search was completed.*

### Joint BCBSM/BCN Medical Policy History

Policy Effective Date	BCBSM Signature Date	BCN Signature Date	Comments
4/11/03	4/11/03	1/17/03	Joint medical policy established
11/1/06	8/28/06	08/06/06	Policy updated and retired

Next Review: This is an established policy and no longer subject to periodic review

### Pre-Consolidation Medical Policy History

Original Policy Date	Comments
BCN N/A	Revised: N/A
BCBSM N/A	Revised: N/A

# **BLUE CARE NETWORK**

## **BENEFIT INFORMATION: TROPONINS AND CREATINE KINASE ISOFORMS**

### **I. Coverage Determination:**

BCN will cover troponins and creatine kinase isoforms for all certificates according to medical policy criteria.

### **II. Limitations:**

N/A

### **III. Exclusions:**

N/A

### **IV. Administrative Guidelines:**

- The member's contract must be active at the time the service is rendered.
- The service must be authorized by the member's PCP except for Self-Referral Option (SRO) members seeking Tier 2 coverage.
- Services must be performed by a BCN-contracted provider, if available, except for Self-Referral Option (SRO) members seeking Tier 2 coverage.
- Appropriate copayments will apply
- CPT - HCPCS codes are used for descriptive purposes only and are not a guarantee of coverage.
- Payment is based on BCN payment rules, individual certificate benefits and certificate riders.

### **V. Effective Date:**

Policy updated and retired: 11/01/06