

Contractor Name

Wisconsin Physicians Service (WPS)

Contractor Number

00951, 00952, 00953, 00954

Contractor Type

Carrier

LCD Database ID Number

Wisconsin	L17678
Illinois	L17684
Michigan	L17685
Minnesota	L17686

LCD Version Number

LCD Title

Myocardial Perfusion Imaging

Contractor's Determination Number

CV-017

AMA CPT/ ADA CDT Copyright Statement

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Primary Geographic Jurisdiction

Wisconsin, Illinois, Michigan, Minnesota

Oversight Region

Region V

CMS Consortium

Midwest

Original Determination Effective Date

Wisconsin:	10/01/1993
Illinois:	04/15/2004
Michigan:	04/15/2004
Minnesota:	04/15/2004

Revision Effective Date

*10/01/2006

Indications and Limitations of Coverage and/or Medical Necessity

LCD Description

Myocardial perfusion imaging utilizes an intravenously administered radiopharmaceutical to depict the distribution of nutritional blood flow in the myocardium. It requires highly specialized equipment, certified technologists, properly trained physicians and computer-enhanced image analysis. Perfusion imaging is useful to identify areas of relatively or absolutely reduced myocardial blood flow associated with ischemia or scar. The relative regional distribution of perfusion can be assessed at rest, with cardiovascular stress or both. Perfusion images can be recorded with planar or tomographic single photon or tomographic positron imaging techniques, utilizing radiopharmaceuticals that are extracted and retained for a variable period of time by the myocardium. The data can be analyzed utilizing visual inspection and/or by quantitative techniques. Patients with significant coronary artery stenosis due to abnormal coronary vasoreactivity or obstructive coronary disease have a zone of diminished radiopharmaceutical concentration in the area of decreased perfusion. If this area of decreased tracer concentration is worse when the tracer is administered during stress than when the tracer is administered at rest, the zone of decreased tracer concentration is most likely due to ischemia. If the area of diminished tracer concentration remains unchanged, even after injection after rest, the lesion most likely represents scar.

When technetium-based perfusion imaging agents are used, the perfusion imaging may also be linked to acquisition of first-pass radionuclide angiographic data. The radionuclide angiographic procedure typically called “first-pass” and performed prior to the myocardial perfusion imaging procedure with gated tomography using currently available FDA-approved software. The image is acquired as the bolus of radiopharmaceutical makes its first pass through the right heart, lungs and left heart. The blood flow, pulmonary vasculature and the outline of vessels and heart chambers are visualized during transit of the radiopharmaceutical. Diagnostic information can be determined about cardiac chamber shunts, wall motion (especially the left ventricle), cardiac output measurements, ejection fraction, left ventricular volume and valvular regurgitation. Nuclear medicine imaging may be performed under the general supervision of a qualified physician. Quality control must be rigorously maintained. Radiation safety for both patients and personnel is essential. The testing site and its policies and procedures must be licensed by the Nuclear Regulatory Commission.

Indications and Limitations of Coverage and/or Medical Necessity

A. Myocardial Perfusion Imaging Indications (CPT codes 78460-78465, 78478, 78480):

Patient selection should be based on clinical grounds. Patients with a high pretest probability of disease are not usually candidates for the study unless the size and reversibility of a defect are required for clinical decision making. Patients with a moderate probability of disease benefit the most from the study when the diagnosis is in question. Patients with a low pretest probability of disease are not usually studied except in the situation of a presumed false-positive prior exercise stress test. Location of perfusion defects in the coronary myocardium distribution provides information that is useful in the following covered indications which are based on the 2003 American College of Cardiology/American Heart Association Guidelines for the Clinical Use of Cardiac Radionuclide Imaging:

1. Acute Syndromes

In selected patients, imaging is appropriate in the assessment of:

- a. Patients presenting with chest pain to the Emergency Department;
- b. Detection of acute myocardial infarction when conventional measures are non-diagnostic;

- c. Prognosis and assessment of therapy after ST segment elevation myocardial infarction (STEMI);
 - d. Prognosis and assessment of therapy after non-ST segment elevation myocardial infarction (NSTEMI) or unstable angina;
2. Chronic Syndromes
- a. Detection (diagnosis) of coronary artery disease (CAD):
Myocardial perfusion imaging is most useful in patients with an intermediate likelihood of angiographically significant CAD based on age, sex, symptoms, risk factors, and the results of stress testing (for patients who have undergone prior stress testing.)
Management of patients with known or suspected chronic CAD: Many of the major determinants of prognosis in CAD can be assessed by measurements of stress-induced perfusion and function. These include the amount of infarcted myocardium, the amount of jeopardized myocardium and the degree or severity of ischemia. Rest LV EF is universally recognized as one of the most important determinants of long-term prognosis in patients with chronic stable CAD. If patients develop new signs or symptoms that suggest a worsened clinical state, repeat testing at the time of worsening would be appropriate. A stepwise strategy is generally recommended in which an exercise ECG, and not a stress imaging procedure, is performed as the initial step in patients with an intermediate pretest likelihood of CAD who are not taking digoxin, have a normal resting ECG and are able to exercise. A stress imaging technique should be used for patients with widespread rest ST depression (more than 1 mm), complete left bundle branch block (LBBB), ventricular paced rhythm, pre-excitation, or LVH. In patients unable to exercise, pharmacologic stress testing with myocardial perfusion
 - b. Myocardial perfusion imaging has been shown to be highly effective in diagnosis and risk stratification. Other indications include prior to revascularizations procedures where there is uncertainty regarding the appropriate choice of therapy after coronary angiography, to evaluate symptoms after percutaneous coronary intervention or CABG, and for evaluation of suspected or known CAD prior to high-risk surgical procedures.
3. Heart Failure
- a. Assessment of LV systolic and diastolic dysfunction;
 - b. Detection of CAD in heart failure patients;
 - c. Assessing myocardial viability;
 - d. Diagnosis, risk stratification and prognosis of dilated cardiomyopathy;
 - e. Diagnosis, risk stratification, prognosis and assessment of therapy in dilated cardiomyopathy due to Doxorubicin/Anthracycline cardiotoxicity;
 - f. Diagnosis, risk stratification, prognosis and assessment of therapy in dilated cardiomyopathy due to myocarditis, sarcoid heart disease and cardiac amyloidosis;
 - g. Diagnosis, risk stratification, prognosis and assessment of therapy of hypertrophic cardiomyopathy;
 - h. Diagnosis, risk stratification and evaluation of therapy of hypertensive heart disease;
 - i. Echocardiography studies have become the modality of choice for diagnosing valvular heart disease. Myocardial perfusion imaging has

been used to examine for the presence of flow-limiting coronary disease, especially in aortic stenosis;

4. **Congenital Heart Disease**
Echocardiography is typically the imaging method of choice for evaluating patients with known or suspected congenital heart disease. However, selected patients benefit from myocardial perfusion imaging for the assessment of the following:
 - a. Diagnosis of anomalies of the coronary circulation;
 - b. Kawasaki's disease.

 5. **Posttransplant Cardiac Disease**
 - a. Assessment of coronary arteriopathy;
 - b. Evaluation for ventricular dysfunction with post-transplant rejection.

 6. **Silent Ischemia**
 - a. To evaluate patients with previously documented silent ischemia where further therapeutic or clinical management decisions are expected.
 - b. To evaluate patients in whom silent ischemia is considered highly probable (i.e. a diabetic patient with neuropathic interference with normal sensation of pain).
- B. Pharmacologic ECG stress testing is indicated only when the patient is unable to exercise adequately. See documentation requirements.

Coverage Topic

Diagnostic Tests, X-Rays and Lab Services

CPT/HCPCS Section & Benefit Category

Radiology/Nuclear Medicine; Administrative, Miscellaneous and Investigational; Drugs Administered Other Than Oral Method

CPT/HCPCS Codes

- | | |
|-------|---|
| 78460 | Myocardial perfusion imaging; (planar) single study, at rest or stress (exercise and/or pharmacologic), with or without quantification |
| 78461 | Myocardial perfusion imaging; multiple studies, (planar) at rest and/or stress (exercise and/or pharmacologic), and redistribution and/or rest injection, with or without quantification |
| 78464 | Myocardial perfusion imaging; tomographic (SPECT), single study at rest or stress (exercise and/or pharmacologic), with or without quantification |
| 78465 | Myocardial perfusion imaging; tomographic (SPECT), multiple studies, at rest and/or stress (exercise and/or pharmacologic) and redistribution and/or rest injection, with or without quantification |
| 78466 | Myocardial imaging, infarct avid, planar; qualitative or quantitative |
| 78468 | Myocardial imaging, infarct avid, planar; qualitative or quantitative, with ejection fraction by first pass technique |
| 78469 | Myocardial imaging, infarct avid, planar; qualitative or quantitative, tomographic SPECT with or without quantification |
| 78478 | Myocardial perfusion study with wall motion, qualitative or quantitative study (list separately in addition to code for primary procedure) (Use only for codes 78460, 78461, 78464, 78465) |

78480	Myocardial perfusion study with ejection fraction (list separately in addition to code for primary procedure) (Use only for codes 78460, 78461, 78464, 78465)
A9500	(formerly Q0143) Supply of radiopharmaceutical diagnostic imaging agent, Technetium -99m (Tc 99m) Sestamibi, per dose [Not to be confused with A9503, which is a bone imaging agent]
A9502	Supply of radiopharmaceutical diagnostic imaging agent, Technetium Tc, tetrofosmin, per unit dose
A9505	(formerly Q0142) Supply of radiopharmaceutical diagnostic imaging agent, Thallous Chloride TL 201, per mCi
J0150	Injection, adenosine, 6 mg (Adenocard)
J0152	Injection, adenosine, adenosine, 30 mg
J1245	Injection, dipyridamole, per 10 mg (Persantine IV)
J1250	Injection, dobutamine HCL, per 250 mg (Dobutrex)

Not Otherwise Classified (NOC)

NA

Does the CPT 30% Rule Apply

No

ICD-9 Codes that Support Medical Necessity*Note: ICD-9 codes must be coded to the highest level of specificity.*

(CPT codes 78460-78465, 78478, 78480)

250.60-250.63	Diabetes with neurological manifestations
250.90-250.93	Diabetes with unspecified complication
394.0-394.9	Diseases of mitral valve
395.0-395.2	Diseases of aortic valve
396.0-396.3	Disease of mitral and aortic valve
396.8	Multiple involvement of mitral and aortic valves
410.02-410.82	Myocardial Infarction
411.0	Postmyocardial Infarction syndrome
411.1	Intermediate coronary syndrome
411.81	Coronary occlusion without MI
411.89	Coronary insufficiency
413.0-413.9	Angina
414.00-414.05	Atherosclerosis
414.8	Specified chronic ischemic disease
414.9	Chronic ischemic heart disease, unspecified
424.0-424.3	Valve disorders
425.0-425.9	Cardiomyopathy
426.10-426.9	Conduction disorders
427.0-427.89	Cardiac dysrhythmias
428.0-428.9	Heart failure
429.0	Myocarditis, unspecified
429.1	Myocardial degeneration
429.2	Cardiovascular disease, unspecified
429.3	Cardiomegaly
429.4	Disturbances following cardiac surgery
*429.83	Takotsubo syndrome
433.10	Occlusion/stenosis carotid artery

433.11	Occlusion/stenosis carotid artery
440.20-440.9	Atherosclerosis of extremities
441.00-441.9	Aortic aneurysm
745.2-745.5	Tetralogy of Fallot, Common ventricle, Ventricular septal defect ASD
746.00-746.7	Congenital anomalies of heart
746.81	Subaortic stenosis
746.85	Coronary artery anomaly
780.2	Syncope
785.1	Palpitations
786.02	Orthopnea
786.05	Shortness of breath
786.09	Dyspnea
786.50	Chest pain, unspecified
786.51	Precordial pain
786.59	Other chest pain
794.30	Abnormal cardiovascular function study
794.31	Abnormal EKG
*995.20	Adverse effect of drug
996.03	Mechanical complication due to coronary bypass graft
996.1	Mechanical complication of graft
996.71	Complications to heart valve prosthesis
996.72	Complication due to cardiac graft
996.83	Complication due to heart transplant
V15.1	Surgery to heart and great vessels
V42.1	Heart transplant
V42.2	Heart valve replacement
V43.3	Heart valve replaced by other means
V45.81	Aorto-coronary bypass, post surgical status
V58.69	Aftercare for long-term high-risk drugs currently used
V67.51	Follow-up care for treatment with high-risk medications
V72.81	Preoperative cardiovascular exam

Diagnoses that Support Medical Necessity

ICD-9 Codes that DO NOT Support Medical Necessity

Any diagnosis not listed above.

Diagnoses that DO NOT Support Medical Necessity

Any diagnosis not listed above.

Documentation Requirements

Documentation supporting the medical necessity of this item, such as ICD-9 codes, must be submitted with each claim. Claims submitted without such evidence will be denied as being not medically necessary

Documentation in the patient's record must clearly indicate that the patient is unable to exercise, as well as the reason(s) why the patient cannot undergo exercise stress testing. (A review of records may be performed to determine if stress agents are being used appropriately.)

Utilization Guidelines

Sources of Information and Basis for Decision

CAC 07/16/93, 03/21/97; II Program Memorandum A-95-4-60 (6-14-95); Other Carrier Policies; Practical Reporting of Cardiovascular Services and Procedures, The American College of Cardiology Guide to CPT 1996, 1995;

Steven C. Port, MD, et. al., Clinical Application of Radionuclide Angiography, Journal of Nuclear Cardiology, November/December 1995;

Guidelines for Clinical Use of Cardiac Radionuclide Imaging, Report of the American College of Cardiology/American Heart Association Task Force on Assessment of Diagnostic and Therapeutic Cardiovascular Procedures (Committee on Radionuclide Imaging), Developed in Collaboration With the American Society of Nuclear Cardiology, JACC Vol. 25, No. 2, February 1995:521-47;

Datz, Handbooks in Radiology; Nuclear Medicine, Year Book Medical Publisher Inc., 1988;

Vansant, Myocardial Perfusion Imaging Clinical Applications, Applied Radiology, June 1995, pp. 11-14;

Myocardial Perfusion Imaging, Nuclear Medicine Update, Jan/Feb 1995;

Logistical Reference Guide, Dupont Pharma Radipharmaeaceuticals;

Acute Cardiac Team, Medical College of Virginia (MCV);

AHA Medical/Scientific Statement, Guidelines for Clinical Exercise Testing Laboratories, American Heart Association, 1995.

Federal Register Final Rule 10/31/97

Society of Nuclear Medicine Procedure Guideline for Myocardial Perfusion Imaging 2.0

ACC/AHA/ASNC Guidelines for the Clinical Use of Cardiac Radionuclide Imaging, A Report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines (ACC/AHA/ASNC Committee to Revise the 1995 Guidelines for the Clinical Use of Cardiac Radionuclide Imaging), 2003.

Advisory Committee Notes

Meeting Date:

Wisconsin:	07/02/1993; 01/17/2003
Illinois:	01/29/2003
Michigan:	01/08/2003
Minnesota:	01/09/2003

Start Date of Comment Period

Wisconsin:	07/02/1993; 01/29/2003
Illinois:	01/29/2003
Michigan:	01/29/2003
Minnesota:	01/29/2003

End Date of Comment Period

Wisconsin:	09/15/1993; 03/15/2003
Illinois:	03/15/2003
Michigan:	03/15/2003
Minnesota:	03/15/2003

Start Date of Notice Period

Wisconsin:	10/01/1993; 06/01/1997; 02/01/1998; Article 08/01/1998; Article 09/01/1999; 10/01/2000; 01/01/2002; 02/01/2004; *09/01/2006, Article
Illinois:	02/01/2004; *09/01/2006, Article
Michigan:	02/01/2004; *09/01/2006, Article
Minnesota:	02/01/2004; *09/01/2006, Article

Revision History

Wisconsin: *10/01/2006 (2007 ICD-9 update); 11/01/04, addition of ICD-9 codes and LCD reformat, nine; 01/01/2002, eight; 09/01/2000, seven; 07/22/1999, six (code update); 06/17/1998, five; 01/01/1998, four; 12/30/1996, three; 08/15/1996, two (reformatted); 09/01/1993, one (addition)

Illinois: *10/01/2006 (2007 ICD-9 update); 11/01/04, addition of ICD-9 codes and LCD reformat

Michigan: *10/01/2006 (2007 ICD-9 update); 11/01/04, addition of ICD-9 codes and LCD reformat

Minnesota: *10/01/2006 (2007 ICD-9 update); 11/01/04, addition of ICD-9 codes and LCD reformat

This policy does not reflect the sole opinion of the contractor or Contractor Medical Director. Although the final decision rests with the contractor, this policy was developed in cooperation with advisory groups, which includes representatives from Cardiology, Nuclear Medicine and Radiology.

Last Reviewed On

09/01/2006

Notes

[See associated billing and coding guidelines.](#)

Replaces MN policy CV 93-07

Does this LCD contain a "Least Costly Alternative" Provision?

No