Cardiovascular Nuclear Stress Testing-
Myocardial Perfusion Imaging
Policy Number: PG0479
Last Review: 07/12/2021

GUIDELINES

- This policy does not certify benefits or authorization of benefits, which is designated by each individual policyholder terms, conditions, exclusions and limitations contract. It does not constitute a contract or guarantee regarding coverage or reimbursement/payment. Self-Insured group specific policy will supersede this general policy when group supplementary plan document or individual plan decision directs otherwise.
- Paramount applies coding edits to all medical claims through coding logic software to evaluate the accuracy and adherence to accepted national standards.
- This medical policy is solely for guiding medical necessity and explaining correct procedure reporting used to assist in making coverage decisions and administering benefits.

SCOPE

X Professional outpatient/office services only
X Facility outpatient services only
  - Does not apply to Emergency Room place-of-service

DESCRIPTION

Nuclear stress test is an imaging method that uses radioactive material to show how well blood flows into the heart muscle, both at rest and during activity. Cardiovascular nuclear imaging employs non-invasive techniques to assess alterations in coronary artery flow, and ventricular function. The nuclear stress test uses radioactive dye and an imaging machine to create pictures showing coronary artery flow, myocardial perfusion and ventricular function. The test measures blood flow while at rest and at exertion, showing the size of the heart’s chambers, how well the heart is pumping blood, and whether the heart has any damaged or dead muscle.

A nuclear myocardial perfusion scan generated images showing segmental and global myocardial blood flow through radioisotope uptake. Abnormalities in the imaging may indicate myocardial scaring and ischemia, most commonly caused by coronary atherosclerosis.

Nuclear ventricular function testing provides an outline of the ventricular endocardium and identifies the ventricular blood pool. The motion of the left ventricle, synchronized with an electrocardiogram, is used to calculate wall motion and ejection fraction measurements.

Cardiovascular nuclear stress testing is performed at rest, during exercise, or with pharmacologic intervention to mimic exercise in less active patients. Images acquired and evaluated may be spatially oriented in planar (single plane) or multiple planes utilizing computer integration, such as dingle-photon emission computer tomography (SPECT).

Nuclear stress tests can also provide information about the arteries and whether they might be narrowed or blocked because of coronary artery disease.
POLICY

HMO, PPO, Individual Marketplace, Elite/ProMedica Medicare Plan

Effective 9/1/2020: Providers must obtain prior authorization for Cardiovascular Nuclear Stress Testing, procedures 78451, 78452, 78453 and 78454.

Advantage

Prior authorization is not required for Cardiovascular Nuclear Stress Testing, procedures 78451, 78452, 78453 and 78454.

HMO, PPO, Individual Marketplace, Elite/ProMedica Medicare Plan, Advantage

Effective 08/01/2021, an additional option for outpatient imaging prior authorization requests from Paramount participating in-plan providers; Paramount is recognizing the Protecting Access to Medicare Act (PAMA) scores greater than or equal to a score of 8, for administrative approvals across all product lines. The request form can be located at: https://www.paramounthealthcare.com/assets/documents/provider/Fax-Request-Form-imaging.pdf

COVERAGE CRITERIA

HMO, PPO, Individual Marketplace, Elite/ProMedica Medicare Plan, Advantage

Paramount utilizes InterQual® criteria. InterQual® criteria is derived from the systematic, continuous review and critical appraisal of the most current evidence-based literature and includes input from an independent panel of clinical experts. A Comprehensive literature review of the clinical evidence is conducted.

Coverage Criteria:

- Cardiovascular nuclear testing must be ordered by a physician or a qualified non-physician provider.
- Medical Necessity should be based upon the presence of multiple clinical risk factors, the level of functional capacity, the risk of the surgery, and the testing will immediately be relevant to the management of the patient’s clinical condition,

Indications:

- Assessment of the functional and prognostic importance of angina;
- Assess for myocardial ischemia with culprit vessel
  - Stenosis > 50% by angiogram
  - Culprit lesion amenable to percutaneous coronary intervention (PCI)
  - Resting electrocardiogram interpretable
- Diagnostic evaluation of patients with chest pain and uninterpretable or equivocal ECG changes caused by drugs, bundle branch block, or left ventricular hypertrophy;
- Assessment of congenital anomalies of coronary arteries;
- Risk assessment or re-evaluation of disease in patients who are asymptomatic or have stable symptoms, with known atherosclerotic heart disease on catheterization or SPECT perfusion imaging, who have not had a revascularization procedure within the past two years;
- Detection of coronary artery disease in patients, without chest pain syndrome, with new onset of diagnosed heart failure or left ventricular systolic dysfunction;
- Evaluation of ischemic versus non-ischemic cardiomyopathy when cardiac catheterization / coronary angiography are not planned;
- Evaluation of myocardial perfusion and/or function before and after coronary artery bypass surgery or other re-perfusion procedures;
- Quantification and surveillance of myocardial infarction and prognostication in patients with infarction;
- Assessment of congenital anomalies of coronary arteries;
- Preoperative assessment for non-cardiac surgery, when used to determine risk for surgery and/or perioperative management in:
  - patients with poor functional capacity (less than 4 METS (exercise capacity measured in metabolic equivalents-unit of basal O2 consumption equal to 3.5ml/kg/min) and minor or intermediate clinical risk predictors, as follows:
History of ischemic heart disease;
History of compensated or prior heart failure;
History of cerebrovascular disease;
Diabetes mellitus;
Renal insufficiency.
  - patients with intermediate or high likelihood of coronary heart disease, or patients with poor functional capacity (less than 4 METS) undergoing high risk non-cardiac surgery, where:
  - High-risk surgery: aortic and peripheral vascular surgery;
  - Intermediate risk surgery: intraperitoneal and intrathoracic surgery, carotid endarterectomy, head & neck surgery, orthopedic surgery, prostate surgery;
  - Low risk surgery: endoscopic procedures, superficial surgery, cataract surgery, breast surgery, ambulatory surgery.
  - Decision-making for testing should be made based upon the presence of multiple clinical risk factors, the level of functional capacity, the risk of the surgery (if applicable) and the likelihood that the results of the cardiac testing would change the management.

- Evaluation of ventricular function in patients with non-ischemic myocardial disease;
- Evaluation of patients in whom an accurate measure of the ejection fraction is needed to make a determination of whether to implant a defibrillator or biventricular pacemaker;
- Evaluation of a patient receiving chemotherapeutic drugs that are potentially cardiotoxic (e.g., adriamycin).
- First pass studies will be considered medically necessary only when information sought is immediately relevant to the management of the patient’s clinical condition, and has not been previously obtained or likely to be obtained from other planned tests such as echocardiography or equilibrium gated blood pool studies. First pass studies may be indicated for the assessment and identification of shunts.

Selection of tests should be made within the context of other tests, scheduled and previously performed, so that the anticipated information obtained is unique and not redundant

**Non-Covered Services:**
- Myocardial perfusion imaging is not appropriate for general screening or routine testing to rule out disease.
- Myocardial perfusion studies performed based on the presence of risk factors in the absence of cardiac symptoms, cardiac abnormalities on physical examination, or abnormalities on cardiac testing (e.g., electrocardiographic tests, echocardiography, etc.).
- Tests that are anticipated to provide information duplicative of another test already performed.
- Tests performed when the results would not be anticipated to influence medical management decisions.
- Myocardial perfusion studies performed subsequent to a diagnostic myocardial PET scan.
- Infarct avid scintigraphy if the diagnosis of myocardial infarction has already been confirmed by enzymes and/or ECG.
- Tests performed unrelated to changes in a patient’s signs or symptoms, or for immediate pre-operative evaluation.
- Tests performed for risk assessment prior to high-risk non-cardiac surgery in asymptomatic patients within one year following normal catheterization or non-invasive test.
- Tests performed for preoperative evaluation in patients undergoing low-risk surgery

**Appropriate Use Criteria Program:** The Protecting Access to Medicare Act (PAMA) of 2014, Section 218(b), established a new program to increase the rate of appropriate advanced diagnostic imaging services provided to Medicare beneficiaries. Examples of such advanced imaging services include:
- computed tomography (CT)
- positron emission tomography (PET)
- nuclear medicine, and
- magnetic resonance imaging (MRI)

PAMA scores are validation of medical necessity to reduce unnecessary costs, poor patient experience, and operational inefficiency is a top priority for hospital leaders. Appropriate use criteria (AUC) programs exist to help ensure that appropriate medical procedures, where the anticipated health benefits exceed potential health risks to the patient, are performed.

Effective 08/01/2021, an additional option for outpatient imaging prior authorization requests from Paramount participating in-plan providers; Paramount is recognizing the Protecting Access to Medicare Act (PAMA) scores
greater than or equal to a score of 8, for administrative approvals across all product lines. The request form can be located at: [https://www.paramounthealthcare.com/assets/documents/provider/Fax-Request-Form-imaging.pdf](https://www.paramounthealthcare.com/assets/documents/provider/Fax-Request-Form-imaging.pdf)

**CODING/BILLING INFORMATION**

The inclusion or exclusion of a code in this section does not necessarily indicate coverage. Codes referenced in this clinical policy are for informational purposes only.

*Codes that are covered may have selection criteria that must be met.*

Payment for supplies may be included in payment for other services rendered.

<table>
<thead>
<tr>
<th>CPT CODES</th>
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<tbody>
<tr>
<td>78451 MYOCARDIAL PERFUSION IMAGING, TOMOGRAPHIC (SPECT) (INCLUDING ATTENUATION CORRECTION, QUALITATIVE OR QUANTITATIVE WALL MOTION, EJECTION FRACTION BY FIRST PASS OR GATED TECHNIQUE, ADDITIONAL QUANTIFICATION, WHEN PERFORMED); SINGLE STUDY, AT REST OR STRESS (EXERCISE OR PHARMACOLOGIC)</td>
</tr>
<tr>
<td>78452 MYOCARDIAL PERFUSION IMAGING, TOMOGRAPHIC (SPECT) (INCLUDING ATTENUATION CORRECTION, QUALITATIVE OR QUANTITATIVE WALL MOTION, EJECTION FRACTION BY FIRST PASS OR GATED TECHNIQUE, ADDITIONAL QUANTIFICATION, WHEN PERFORMED); MULTIPLE STUDIES, AT REST AND/OR STRESS (EXERCISE OR PHARMACOLOGIC) AND/OR REDISTRIBUTION AND/OR REST REINJECTION</td>
</tr>
<tr>
<td>78453 MYOCARDIAL PERFUSION IMAGING, PLANAR (INCLUDING QUALITATIVE OR QUANTITATIVE WALL MOTION, EJECTION FRACTION BY FIRST PASS OR GATED TECHNIQUE, ADDITIONAL QUANTIFICATION, WHEN PERFORMED); SINGLE STUDY, AT REST OR STRESS (EXERCISE OR PHARMACOLOGIC)</td>
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<td>78454 MYOCARDIAL PERFUSION IMAGING, PLANAR (INCLUDING QUALITATIVE OR QUANTITATIVE WALL MOTION, EJECTION FRACTION BY FIRST PASS OR GATED TECHNIQUE, ADDITIONAL QUANTIFICATION, WHEN PERFORMED); MULTIPLE STUDIES, AT REST AND/OR STRESS (EXERCISE OR PHARMACOLOGIC) AND/OR REDISTRIBUTION AND/OR REST REINJECTION</td>
</tr>
</tbody>
</table>

Related procedure codes: no prior authorization required.

| 78466 MYOCARDIAL IMAGING, INFARCT AVID, PLANAR; QUALITATIVE OR QUANTITATIVE |
| 78468 MYOCARDIAL IMAGING, INFARCT AVID, PLANAR; WITH EJECTION FRACTION BY FIRST PASS TECHNIQUE |
| 78469 MYOCARDIAL IMAGING, INFARCT AVID, PLANAR; TOMOGRAPHIC SPECT WITH OR WITHOUT QUANTIFICATION |
| 78472 CARDIAC BLOOD POOL IMAGING, GATED EQUILIBRIUM; PLANAR, SINGLE STUDY AT REST OR STRESS (EXERCISE AND/OR PHARMACOLOGIC), WALL MOTION STUDY PLUS EJECTION FRACTION, WITH OR WITHOUT ADDITIONAL QUANTITATIVE PROCESSING |
| 78473 CARDIAC BLOOD POOL IMAGING, GATED EQUILIBRIUM; MULTIPLE STUDIES, WALL MOTION STUDY PLUS EJECTION FRACTION, AT REST AND STRESS (EXERCISE AND/OR PHARMACOLOGIC), WITH OR WITHOUT ADDITIONAL QUANTIFICATION |
| 78481 CARDIAC BLOOD POOL IMAGING (PLANAR), FIRST PASS TECHNIQUE; SINGLE STUDY, AT REST OR WITH STRESS (EXERCISE AND/OR PHARMACOLOGIC), WALL MOTION STUDY PLUS EJECTION FRACTION, WITH OR WITHOUT QUANTIFICATION |
| 78483 CARDIAC BLOOD POOL IMAGING (PLANAR), FIRST PASS TECHNIQUE; MULTIPLE STUDIES, AT REST AND WITH STRESS (EXERCISE AND/OR PHARMACOLOGIC), WALL MOTION STUDY PLUS EJECTION FRACTION, WITH OR WITHOUT QUANTIFICATION |
| 78494 CARDIAC BLOOD POOL IMAGING, GATED EQUILIBRIUM, SPECT, AT REST, WALL MOTION STUDY PLUS EJECTION FRACTION, WITH OR WITHOUT QUANTITATIVE PROCESSING |
| 78496 CARDIAC BLOOD POOL IMAGING, GATED EQUILIBRIUM, SINGLE STUDY, AT REST, WITH RIGHT VENTRICULAR EJECTION FRACTION BY FIRST PASS TECHNIQUE (LIST SEPARATELY IN ADDITION TO CODE FOR PRIMARY PROCEDURE) |
| 93015 CARDIOVASCULAR STRESS TEST USING MAXIMAL OR SUBMAXIMAL TREADMILL OR BICYCLE EXERCISE, CONTINUOUS ELECTROCARDIOGRAPHIC MONITORING, AND/OR PHARMACOLOGICAL STRESS; WITH SUPERVISION, INTERPRETATION AND REPORT |
| 93016 CARDIOVASCULAR STRESS TEST USING MAXIMAL OR SUBMAXIMAL TREADMILL OR BICYCLE EXERCISE, CONTINUOUS ELECTROCARDIOGRAPHIC MONITORING, AND/OR PHARMACOLOGICAL STRESS; SUPERVISION ONLY, WITHOUT INTERPRETATION AND REPORT |
CARDIOVASCULAR STRESS TEST USING MAXIMAL OR SUBMAXIMAL TREADMILL OR BICYCLE EXERCISE, CONTINUOUS ELECTROCARDIOGRAPHIC MONITORING, AND/OR PHARMACOLOGICAL STRESS; TRACING ONLY, WITHOUT INTERPRETATION AND REPORT

CONTINUOUS ELECTROCARDIOGRAPHIC MONITORING, AND/OR PHARMACOLOGICAL STRESS; INTERPRETATION AND REPORT ONLY

HCPCS CODES

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
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<tbody>
<tr>
<td>A9500</td>
<td>TECHNETIUM TC-99M SESTAMIBI, DIAGNOSTIC, PER STUDY DOSE</td>
</tr>
<tr>
<td>A9501</td>
<td>TECHNETIUM TC-99M TEBOROXIME, DIAGNOSTIC, PER STUDY DOSE</td>
</tr>
<tr>
<td>A9502</td>
<td>TECHNETIUM TC-99M TETROFOSMIN, DIAGNOSTIC, PER STUDY DOSE</td>
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<tr>
<td>A9505</td>
<td>THALLIUM TL-201 THALLOUS CHLORIDE, DIAGNOSTIC, PER MILLCURIE</td>
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<tr>
<td>A9512</td>
<td>TECHNETIUM TC-99M PERTECHNETATE, DIAGNOSTIC, PER MILLCURIE</td>
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<tr>
<td>A9538</td>
<td>TECHNETIUM TC-99M PYROPHOSPHATE, DIAGNOSTIC, PER STUDY DOSE, UP TO 25 MILLCURIES</td>
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<tr>
<td>A9560</td>
<td>TECHNETIUM TC-99M LABELED RED BLOOD CELLS, DIAGNOSTIC, PER STUDY DOSE, UP TO 30 MILLCURIES</td>
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<tr>
<td>J0153</td>
<td>INJECTION, ADENOSINE, 1 MG (NOT TO BE USED TO REPORT ANY ADENOSINE PHOSPHATE COMPOUNDS)</td>
</tr>
<tr>
<td>J1245</td>
<td>INJECTION, DIPYRIDAMOLE, PER 10 MG</td>
</tr>
<tr>
<td>J1250</td>
<td>INJECTION, DOBUTAMINE HYDROCHLORIDE, PER 250 MG</td>
</tr>
<tr>
<td>J2785</td>
<td>INJECTION, REGADENOSON, 0.1 MG</td>
</tr>
<tr>
<td>J3490</td>
<td>UNCLASSIFIED DRUGS</td>
</tr>
</tbody>
</table>

Paramount reserves the right to review and revise our policies periodically when necessary. When there is an update, we will publish the most current policy to [https://www.paramounthealthcare.com/services/providers/medical-policies/](https://www.paramounthealthcare.com/services/providers/medical-policies/).

<table>
<thead>
<tr>
<th>Date</th>
<th>Explanation &amp; Changes</th>
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<tbody>
<tr>
<td>12/07/2020</td>
<td>• Medical policy placed on the new Paramount Medical Policy Format</td>
</tr>
<tr>
<td>06/01/2021</td>
<td>• Corrected a typo error: Advantage - Prior authorization is not required for Cardiovascular Nuclear Stress Testing, procedures 78541, 78451, 78452, 78453 and 78454.</td>
</tr>
<tr>
<td>07/12/2021</td>
<td>• As a secondary option for prior authorization requests, Paramount is including PAMA scores, greater than or equal to a score of 8, to submit a High Dollar Imaging requests for administrative approvals across all product lines.</td>
</tr>
</tbody>
</table>

REFERENCES/RESOURCES

Centers for Medicare and Medicaid Services, CMS Manual System and other CMS publications and services

Ohio Department of Medicaid


Centers for Medicare and Medicaid Services, Healthcare Common Procedure Coding System, HCPCS Release and Code Sets

Hayes, Inc.

Industry Standard Review