

Cardio Policy:

Pharmacological Nuclear Stress Test/Myocardial Perfusion Imaging (MPI)

POLICY NUMBER UM CARDIO_1119	SUBJECT Pharmacological Nuclear Stress Test/Myocardial Perfusion Imaging (MPI)		DEPT/PROGRAM UM Dept	PAGE 1 OF 5
DATES COMMITTEE REVIEWED 07/22/11, 12/12/12, 03/10/14, 05/21/14, 05/15/15, 08/12/15, 11/28/16, 12/21/16, 10/10/17, 02/13/19, 03/08/19, 04/23/19, 07/30/19, 12/11/19, 05/13/20, 01/13/21, 03/10/21, 05/12/21, 07/14/21, 08/12/21, 11/10/21, 07/13/22, 02/01/23, 05/10/23, 12/20/23	APPROVAL DATE December 20, 2023	EFFECTIVE DATE December 22, 2023	COMMITTEE APPROVAL DATES 07/22/11, 12/12/12, 03/10/14, 05/21/14, 05/15/15, 08/12/15, 11/28/16, 12/21/16, 10/10/17, 02/13/19, 03/08/19, 04/23/19, 07/30/19, 12/11/19, 05/13/20, 01/13/21, 03/10/21, 05/12/21, 07/14/21, 08/12/21, 11/10/21, 07/13/22, 02/01/23, 05/10/23, 12/20/23	
PRIMARY BUSINESS OWNER: UM		COMMITTEE/BOARD APPROVAL Utilization Management Committee		
URAC STANDARDS HUM v8: UM 1-2; UM 2-1	NCQA STANDARDS UM 2		ADDITIONAL AREAS OF IMPACT	
CMS REQUIREMENTS	STATE/FEDERAL REQUIREMENTS		APPLICABLE LINES OF BUSINESS Commercial, Exchange, Medicaid	

I. PURPOSE

Indications for determining medical necessity for Pharmacological Nuclear Stress Test/MPI/

II. DEFINITIONS

Myocardial perfusion imaging is used primarily for the evaluation of coronary artery disease and determining prognosis. Myocardial perfusion imaging is a cardiac radionuclide imaging procedure that evaluates blood flow to the cardiac muscle during rest or stress. Stress may be provided by exercise or with pharmacologic agents. A variety of radionuclides may be used, including Technetium tc-99M sestamibi, thallium201 and Technetiumtc-99M tetrofosmin.

For those patients who are unable to complete the exercise protocol without achieving 75-100%of predicted maximal heart rate a pharmacological nuclear stress test is recommended. This testing method uses a drug to mimic the response of the cardiovascular system to exercise. Adenosine, Persantine, Dobutamine, or Regadenoson are vasodilators used in pharmacological nuclear stress testing. A gamma camera is used to record images in planar or tomographic (single photon emission computed tomography, SPECT) projections.

High global CAD risk is defined as 10-year CAD risk of greater than 20%. CAD equivalent (e.g., DM, PAD) can also define high-risk.

10-year CAD risk (%) is defined based on the risk factors: sex, age, race, total cholesterol, HDL-cholesterol, systolic blood pressure, and treatment for high blood pressure, diabetes mellitus, and smoker.

An appropriate diagnostic or therapeutic procedure is one in which the expected clinical benefit exceeds the risks or negative consequences of the procedure by a sufficiently wide margin such that the procedure is generally considered acceptable or reasonable care. The ultimate objective of AUC is to improve patient care and health outcomes in a cost-effective manner but is not intended to ignore ambiguity and nuance intrinsic to clinical decision making.

Appropriate Care- Median Score 7-9

May be Appropriate Care- Median Score 4-6

Rarely Appropriate Care- Median Score 1-3

III. POLICY

Indications for approving a request for medical necessity are:

Pharmacological Stress Imaging can be performed when patient is unable to walk on treadmill and/or has uninterpretable EKG and on maximally tolerated GDMT when applicable, for below indications.

- A. Evaluation of a patient who has chest pain, other symptoms, or signs suggestive of coronary artery disease, or is on a cardiac glycoside (Digoxin) or other medication and the patient has an abnormal baseline EKG (RBBB, LBBB, IVCD, LVH, atrial fibrillation, marked resting ST segment changes) which would make interpretation of a standard exercise test inaccurate. No imaging stress test performed within the last 6 months. **(AUC Score 8)**^{1,2,3,4,5}
- B. Evaluation of a patient with an abnormal or non-diagnostic standard exercise test (i.e., unable to reach 75-100% of their age predicted maximal heart rate by physiologic exercise) or has ventricular wall motion abnormality demonstrated by another imaging modality and myocardial perfusion imaging is being performed to determine if the patient has myocardial ischemia. No imaging stress test within the last 6 months. **(AUC Score 8)**^{1,2,3,4,5}
- C. MPI is appropriate in patients with symptoms and findings suggestive of ASCAD and a high global CAD risk. No imaging stress test within the last 12 months. **(AUC Score 7)**^{3,4,5}
- D. MPI is appropriate in patients with high global CAD risk and known or suspected to have exercise induced arrhythmias, sustained VT, frequent PVC's, syncope and prior to initiation of antiarrhythmic therapy. No imaging stress test within the last 6 months **(AUC Score 7)**^{1,2,3,4,5}
- E. MPI is being done to determine the functional significance of/or the extent of myocardial ischemia (or scar) resulting from coronary artery disease or to assess myocardial viability in a patient, with recent diagnosis of coronary artery disease or history of recent myocardial infarction with evidence of hemodynamically non-significant CAD or intermediate stenosis of coronary arteries on recent cardiac catheterization within the last 3 months. No prior imaging stress test done within the last 3 months. **(AUC Score 9)**^{1,2,3,4,5}
- F. MPI is being done to evaluate the effectiveness of the intervention in a high-risk patient who has undergone cardiovascular re-perfusion (CABG or Percutaneous Coronary Intervention, PCI) with suboptimal and/or incomplete revascularization results. No imaging stress test has been done within the last 3 months. **(AUC Score 7)**^{1,2,3,4,5}

- G. Evaluation with a nuclear stress test may be considered in an asymptomatic patient who has had CABG greater than or equal to 5 years with a stress test performed greater than or equal to 2 years **(AUC Score 7)**^{1,2,3} or had PCI greater than or equal to 3 years with stress test performed greater than or equal to 2 years. **(AUC Score 6)**^{1,2,3,4,5}
- H. MPI can be performed for evaluation of a patient with known CAD treated medically or by revascularization and new signs and symptoms suggestive of progression of CAD. No imaging stress test within the last 6 months. **(AUC Score 8)**^{1,2,3,4,5}
- I. MPI can be performed in asymptomatic high global CAD risk patient or with stable symptoms with a prior (greater than 90 days) Coronary Calcium Agatston Score of 100-400. No prior MPI done within the last 6 months **(AUC Score 7)**^{1,2,3,4,5}
- J. MPI can be performed as a follow up testing in asymptomatic patient with prior (less than 90 days) abnormal Coronary Calcium Agatston Score greater than 100 to rule out CAD. No prior MPI done within the last 6 months. **(AUC Score 7)**^{3,4,5}
- K. Testing with MPI is appropriate in a patient with non-diagnostic (prior less than 90 days) Coronary CTA results with a high degree suspicion for obstructive CAD. **(AUC Score 7)**^{1,2,3,4,5}
- L. MPI can be performed for evaluation of patient with recent diagnosis of compensated CHF with a high degree of suspicion for underlying CAD. No imaging stress test done within the last 3 months. **(AUC Score 8)**^{1,2,3,4,5}
- M. MPI can be performed to rule out underlying significant CAD, as a pre-op assessment in a patient (unable to exercise) prior to peripheral vascular disease intervention. No imaging stress test done within the last 6 months **(AUC Score 8)**^{1,2,3,4,5}
- N. MPI can be performed as a preoperative cardiac risk evaluation of patients with significant moderate to high risk for CAD and are planning to have high risk non-cardiac surgery (thoracic, major abdominal or for organ transplant). No imaging stress test done within the last 6 months. **(AUC Score 8)**^{1,2,3,4,5}
- O. Dual Isotope Imaging can be used to assess myocardial viability and should be considered in patients with prior MI or heart failure only. No imaging stress test done within the last 12 months. **(AUC Score 7)**^{1,2,3,4,5}
- P. Pharmacological MPI is indicated in asymptomatic patient with abnormal EKG suggestive for ischemia and is unable to exercise. **(AUC Score 7)**^{1,2,3,4,5}
- Q. Apart from the specific scenarios indicated above, stress testing of asymptomatic individuals is reasonable when there are other signs of cardiac pathology e.g., new EKG abnormalities, new wall motion abnormalities on an echo, or a new decrease in LVEF as detected by another modality. **(AUC Score 7)**^{1,2,3,4,5}
- R. Please refer to *UM_1175 Perioperative Cardiovascular Evaluation and Care Before Non-Cardiac Surgery* if a request is received for pre-operative cardiac clearance prior to non-cardiac and cardiovascular related surgery.

Limitations:

- A. Before Pharmacological Nuclear Stress Testing can be performed in a patient with CAD following must be considered: Predicted or observed lack of adequate response to maximally tolerated GDMT^{6,7,8,9,10,11,12,13}

- B. Requests for services that are part of a surveillance protocol for patients who are involved in a clinical trial are considered out of scope (OOS) for New Century Health and cannot be reviewed.

IV. PROCEDURE

- A. To review a request for medical necessity, the following items must be submitted for review:
 - 1. Progress note that prompted request
 - 2. Recent EKG (within 10 days), if available
 - 3. Most recent stress test report
 - 4. Recent Echocardiogram (if applicable)
- B. Primary codes appropriate for this service:
 - 78451, 78452, 78453, 78454, 78466, 78468, 78469 - (Myocardial Perfusion Imaging)
 - 93015 – Cardiovascular Stress test (Supervision, Tracing, Interpretation and Report)
 - 93016 (Supervision only), 93017 (Tracing only), 93018 (Interpretation and Report only),
 - Medication codes: A9505/A9502/A9500, J1245/J0153/J2785
 - CPT codes for Dual Isotope: A9505, A9502 or A9505, A9500

V. APPROVAL AUTHORITY

- A. Review – Utilization Management Department
- B. Final Approval – Utilization Management Committee

VI. ATTACHMENTS

- A. None

VII. REFERENCES

1. Centers for Medicare and Medicaid Services. Florida. Local Coverage Determination (LCD) (L38396). Cardiology – non-emergent outpatient testing. Retrieved from <https://www.cms.gov> [Accessed December 19, 2023].
1. Centers for Medicare and Medicaid Services. Illinois. Local Coverage Determination (LCD) (L33560). Cardiology – non-emergent outpatient testing. Retrieved from <https://www.cms.gov> [Accessed December 19, 2023].
2. Ralph G. Brindis MD, MPH (FACC), et al. ACCF/ASNC Appropriateness Criteria for Single-Photon Emission Computed Tomography Myocardial Perfusion Imaging (SPECT MPI): A Report of the American College of Cardiology Foundation Quality Strategic Directions Committee Appropriateness Criteria Working Group and the American Society of Nuclear Cardiology Endorsed by the American Heart Association. *Journal of the American College of Cardiology*. October 2005. Volume 46, Issue 8, Pages 1587-1605.
3. Wolk MJ, et al. ACCF/AHA/ASE/ASNC/HFSA/HRS/SCAI/SCCT/SCMR/STS 2013 multimodality appropriate use criteria for the detection and risk assessment of stable ischemic heart disease: a report of the American College of Cardiology Foundation Appropriate Use Criteria Task Force, American Heart Association, American Society of Echocardiography, American Society of Nuclear Cardiology, Heart Failure Society of America, Heart Rhythm Society, Society for Cardiovascular Angiography and Interventions, Society of Cardiovascular Computed Tomography, Society for Cardiovascular Magnetic Resonance, and Society of Thoracic

Surgeons. Journal of the American College of Cardiology. Feb 2014, Volume 63, Issue, Pages 380-406.

4. Robert C. Hendel MD, FACC, FAHA, et al. Appropriate use of cardiovascular technology: 2013 ACCF appropriate use criteria methodology update: a report of the American College of Cardiology Foundation appropriate use criteria task force. Journal of the American College of Cardiology. March 2013, Volume 61, Issue 12, Pages 1305-1317.
5. Hideyuki Kawashima, et.al. Impact of Optimal Medical Therapy on 10-Year Mortality After Coronary Revascularization. On behalf of the SYNTAX Extended Survival Investigators. J Am Coll Cardiol. 2021 Jul, 78 (1) 27–38.
6. Fihn SD, et al. 2012 ACCF/AHA/ACP/AATS/PCNA/SCAI/STS guideline for the diagnosis and management of patients with stable ischemic heart disease. Circulation. 2012 Dec 18;126(25):3097-137. 3.
7. Amsterdam EA, et al. 2014 AHA/ACC Guideline for the Management of Patients with Non-ST-Elevation Acute Coronary Syndromes: a report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines. J Am Coll Cardiol. 2014 Dec 23;64(24):e139-e228.
8. Levine GN, et al. 2016 ACC/AHA Guideline Focused Update on Duration of Dual Antiplatelet Therapy in Patients with Coronary Artery Disease. Circulation. 2016 Sep 6;134(10):e123-55.
9. David J. Maron, M.D., Judith S. Hochman, M.D et.al- ISCHEMIA Research Group. Initial Invasive or Conservative Strategy for Stable Coronary Disease- N Engl J Med 2020; 382:1395-407. DOI: 10.1056/NEJMoa1915922.
10. William E. Boden, M.D. et. Al; Optimal Medical Therapy with or without PCI for Stable Coronary Disease. Clinical Outcomes Utilizing Revascularization and Aggressive Drug Evaluation – COURAGE. N Engl J Med 2007; 356:1503-1516. DOI: 10.1056/NEJMoa070829.
11. Natasha K Wolfe et.al. The independent reduction in mortality associated with guideline-directed medical therapy in patients with coronary artery disease and heart failure with reduced ejection fraction. European Heart Journal - Quality of Care and Clinical Outcomes, qcaa032. <https://doi.org/10.1093/ehjqcco/qcaa032>.
12. Pinho-Gomes et al. Guideline Compliance in Contemporary Coronary Revascularization Trials. JACC VOL. 71, NO. 6, 2018. FEBRUARY 13, 2018:591 – 602.
13. NCQA UM 2023 Standards and Elements.