UM-CDG-079 Cardiac Radionuclide Imaging	Approved By: Director, Health Services	Effective Date: 10/20/2025

This Policy applies to all SECUR affiliates, associates, and subsidiaries.

Approved by Courtney Gonzales, Director of Health Services on behalf of the Utilization Management Committee.

PURPOSE

This coverage determination guideline serves to address cardiac radionuclide imaging. The 2 types of radionuclide studies commonly used for cardiac evaluation are myocardial perfusion imaging (MPI) and cardiac blood pool imaging (multiple gated acquisition scanning (MUGA) ventriculography). MPI is used primarily for the evaluation of coronary artery disease (CAD). Ventriculography is sometimes referred to as MUGA or cardiac blood pool imaging and is primarily used to evaluate valvular disease and cardiomyopathies. Either type of study may be obtained at rest or with stress. Stress may be provided by exercise or pharmacologically.

MPI is a diagnostic procedures that evaluates blood flow to cardiac muscle using radionuclides. A gamma camera is used to record images in planar or tomographic (single photon emission computed tomography (SPECT)) projections. Use of dual radiopharmaceuticals permit concurrent studies at rest and after stress, which are then compared and interpreted by a nuclear physician. Since the radiopharmaceutical accumulates in the myocardium in relation to blood flow, ischemic and infarcted myocardium can be detected.

With the use of technetium based radiopharmaceuticals, the perfusion imaging may be linked to acquisition of "first pass" data to visualize blood flow through the right heart, lungs and left heart giving diagnostically useful information about cardiac chamber shunts, wall motion, cardiac output, ejection fraction (EF), left ventricular volume, shunt fraction and valvular regurgitation.

For SECUR Health Plan members, National Coverage Determinations (NCD) and Local Coverage Determinations (LCD) will be applied to requests when applicable. SECUR Health Plan Coverage Determination Guidelines (CDG) will be utilized in the absence of an appropriate NCD and/or LCD.

DEFINITIONS

None

POLICY

For PET for Perfusion of the Heart, SECUR Health Plan will use the guidance in National Coverage Determination Guideline, 220.6.1.

For Single Photon Emission Computed Tomography (SPECT), SECUR Health Plan will use the guidance in National Coverage Determination Guideline, 220.12.

Positron emission tomography (PET) scans performed for the diagnosis and management of members with known or suspected CAD using the US Food and Drug Administration (FDA) approved Rubidium 82 (Rb 82), are covered when the following conditions are met:

1. The PET scan (at rest or with stress) is performed in place of SPECT, or
2. The PET scan is performed following an inconclusive SPECT.

In such cases, the PET scan must have been determined as medically necessary to guide further treatment of the member.

When a PET scan is performed as an additional diagnostic test in the instance of an equivocal SPECT, the reason for performance of the PET scan must be clearly documented in the supporting documentation provided.

SECUR Health Plan does not cover the following, which are considered to be investigational:

- Ambulatory radionuclide cardiac monitoring
- Monoclonal anti-myosin imaging
- Radionuclide imaging of thrombi
- Radionuclide imaging of cardiac adrenergic nerves

Myocardial Perfusion Imaging

Members with a high pretest probability of disease are usually not candidates for this study unless determination of the size and reversibility of a defect are required for clinical decision making. Members whose diagnosis is in question benefit most from this study. Members with a low pretest probability of disease are usually not studied except when a prior exercise stress test by treadmill electrocardiogram (ECG) or echocardiogram (echo) is a presumed false positive. Stress MPI, preceded by satisfactory stress echo, is not considered medically necessary by SECUR Health Plan.

Indications for Myocardial Perfusion Imaging:

1. Acute myocardial infarction (AMI). MPI is not typically performed during the acute period of myocardial infarction (MI), if the diagnosis is established by other means. In selected members, imaging is appropriate in the assessment of:
   - Disease severity
   - Risk assessment and/or prognosis
   - Efficacy of acute reperfusion therapy
   - Evidence of myocardial salvage
   - Suspected infarction when the combination of history and other tests is not diagnostic.

2. Unstable Angina. MPI may be useful as an adjunct to other tests in the diagnosis or treatment of unstable angina only when the combination of history and other testing is not diagnostic. In selected members, imaging is appropriate for:
   - Identification of ischemia in the distribution of a known lesion or in remote areas
   - Identification of the severity/extent of disease in members with medically unstable angina or ongoing ischemia
   - Measurement of left ventricular function (LVF)

3. Chronic ischemic heart disease. The use of MPI is well established in the diagnosis and management of

CAD and is considered medically necessary in:

- Diagnosis of CAD, especially in members with atypical chest pain
- Evaluation of abnormal or suspected false positive stress ECG
- Evaluation of other symptoms suspicious for the diagnosis of CAD such as syncope or ventricular arrhythmia
- Planning percutaneous transluminal coronary angioplasty (PTCA) to identify lesions causing ischemia, if unknown
- Evaluation of suspected or known CAD prior to high risk surgical procedures
- Assessment of drug therapy
- Identification of the presence, location, extent, and/or severity of myocardial ischemia
- Assessment of symptoms suggesting restenosis following PTCA
- Assessment of symptoms suggestive of ischemia following coronary artery bypass grafting (CABG)
- Follow up of symptomatic ischemic heart disease

4. Congenital Heart Disease (CHD). Echo is the method of choice for evaluating members with known or suspected CHD. Selected members may benefit from MPI when assessing for diagnosis of anomalies of the coronary circulation or for Kawasaki's disease.

5. Post-transplant Cardiac Disease.
   - Assessment of coronary arteriopathy
   - Evaluation for ventricular dysfunction with post-transplant rejection

Cardiac Blood Pool Imaging (MUGA, Ventriculography)
These services are allowed for the evaluation of ventricular size, wall motion, stroke volume, and EF when this information is medically necessary to direct further evaluation and management of the cardiac condition.

Indications for Cardiac Blood Pool Imaging (MUGA, Ventriculography)
1. Cardiomyopathy - Cardiac blood pool imaging (MUGA, ventriculography) is covered for:

- Diagnosis of hypertrophic cardiomyopathy and/or myocardial ischemia
- Differentiation of ischemic from non-ischemic cardiomyopathy

2. Post-transplant cardiac disease

- Assessment of coronary arteriopathy
- Evaluation for ventricular dysfunction with post-transplant rejection

3. Assessment of cardiac function for cardiotoxic chemotherapy

- A. One baseline study is considered medically necessary prior to the initiation of cardiotoxic chemotherapy when 1 of the following conditions is met:
  1. No echo is planned or performed
  2. Prior echo is uninterpretable due to poor visualization window

- B. Cardiac function monitoring during or at the completion of cardiotoxic chemotherapy. Cardiotoxic chemotherapy includes any of the following medications:
  · 5-FU (5 fluorouracil)
  · Adriamycin® (doxorubicin)
  · Avastin® (bevacizumab)
  · Cerubidine® (daunorubicin)
  · Clolar® (clofarabine)
  · Cytoxan® (cyclophosphamide)
  · Epirubicin (Pharmorubicin®)
  · Gleevec® (imatinib)
  · Herceptin® (trastuzumab)
  · Ifex® (ifosfamide)
  · Mutamycin® (mitomycin)
  · Nexavar® (sorafenib)
  · Novantrone® (mitoxantrone)
  · Sutent® (sunitinib)
  · Taxol® (paclitaxel)
  · Taxotere® (docetaxel)
  · Tykerb® (lapatinib)
  · Valstar® (valrubicin)
  · Xeloda® (capecitabine)
  · Zavedos® (idarubicin)

Pharmacologic Stress Agents
For those members who are unable to reach 75-100% of their age predicted maximum heart rate by physiologic exercise, vasodilation can be achieved with the use of either dipyridamole or adenosine. Use of pharmacologic agents in MPI is not a standard of care and is not medically necessary unless exercise is not possible. In some cases dobutamine may be used to effect stress through its inotropic effect.

1. Dipyridamole is typically administered intravenously (IV) at 0.57 mg/kg over a 4-minute period. The maximum dose should not exceed 60 mg. Since the dilation effect persists, after injection of the radiopharmaceutical, its effect is typically reversed with IV aminophylline, which must be available to reverse ischemia when it occurs. Dipyridamole is relatively contraindicated in members with:

- Known bronchospastic lung disease (asthma)
- Systemic hypotension (systolic blood pressure (BP) below 100 mm Hg.)
- AMI less than 48 hours old
- Unstable angina

2. Adenosine is administered IV at 0.14 mg/kg/min over 6 minutes (0.84mg/kg). The vasodilation effect is short

lived. Adenosine is contraindicated in members with:

- Second or third degree atrioventricular (AV) block
- Sinus node disease, except for those with a functioning pacemaker
- Known or suspected bronchoconstrictive or bronchospastic lung disease
- Known hypersensitivity to adenosine

3. Dobutamine is administered IV, starting at 0.5-1.0 mcg/kg/min and titrated to reach the maximum heart rate for 2-5 minutes. The maximum dose is 40 mcg/kg/min. Atropine may be added in appropriate doses IV. Dobutamine is contraindicated in members with:

- Idiopathic subaortic stenosis
- AMI

Physician Supervision Requirements
MPI and blood pool imaging require general supervision by a qualified physician licensed to administer radioactive materials. Cardiology stress procedures performed in conjunction with nuclear MPI studies are covered by Medicare only when performed under the direct supervision of a qualified physician, who provides:

- Medical expertise required for performance of the test
- Medical treatment for complications and side effects of the test
- Medical services required as part of the test such as injections of medications
- Medical expertise in the interpretation of the cardiovascular stress test component, some of which has to be provided during the test and before the member is discharged from the testing suite

Services performed for excessive frequency are not considered medically necessary by SECUR Health Plan. Frequency is considered when services are performed more frequently than generally accepted by peers and the reason for additional services is not justified by documentation.

References:

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3. Heo J, Iskandrian AS. Technetium-labeled myocardial perfusion agents. *Cardiol Clin*. 1994;12(2):187-98.
4. Ritchie JL, Bateman TM, Bonow RO, et al. Guidelines for clinical use of cardiac radionuclide imaging: A report of the American Heart Association/American College of Cardiology task force on assessment of diagnostic and therapeutic cardiovascular procedures, committee on radionuclide imaging, developed in collaboration with the American Society of Nuclear Cardiology. *Circulation*. 1995;91(4):1278-303.
5. Watson NE Jr, Cowan RJ, Ball JD. Conventional radionuclide cardiac imaging. *Radiol Clin North Am*. 1994;32(3):477-500.
6. Zaret BL, Wackers FJ. Nuclear cardiology (first of two parts). *N Engl J Med*. 1993;329(11):775-83.

7. Zaret BL, Wackers FJ. Nuclear cardiology (second of two parts). *N Engl J Med*. 1993;329(12):855-63.
8. Local Coverage Determination Guideline (LCD) L33457, Cardiac Radionuclide Imaging, https://www.cms.gov/medicare-coverage-database/view/lcd.aspx?lcdId=33457&ver=61