

Subject: Nuclear Stress Test (MPI), Stress Echo (78451, 78452, 78453, 78454, 78466, 78468, 78469, 78481, 78483)		Original Effective Date: 12/13/17
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DESCRIPTION OF PROCEDURE/SERVICE/PHARMACEUTICAL

Myocardial perfusion scan (also referred to as **MPI**) is a nuclear medicine procedure that illustrates the function of the heart muscle. Single-photon emission computed tomography (SPECT) imaging is used and can often be completed in less than 10 minutes. With SPECT, interior and posterior abnormalities and small areas of infarction can be identified, as well as the occluded blood vessels and the mass of infarcted and viable myocardium. The usual isotopes for such studies are either Thallium-201 or Technetium-99m.

Stress echocardiography is an ultrasound procedure that illustrates the function of heart muscle. It shows your heart function at rest and then if any changes occur during exercise. During a stress test it shows changes before EKG changes or chest pain develops.

RECOMMENDATIONS

Below are recommendations for performing **Cardiac Stress Imaging**. Echo Cardiography Stress test (**Stress Echo**) or Nuclear Myocardial Perfusion Imaging (**Nuclear Stress**) are frequently both capable of evaluating the heart function. Only for situations where **Cardiac Stress Imaging** is recommended do we then consider if **Stress Echo** or **Nuclear Stress** is the best test. **Stress Echo** is always recommended instead of **Nuclear Stress** except in specific situations that are listed at the end of these recommendations.

Stress Imaging (Stress Echo test or Nuclear Stress test)

❖ **Suspected CAD:**

- Symptomatic: Except atypical chest pain in low risk patients (one risk factor or less)
- Repeat Stress testing for similar symptoms or high risk
 - signs or symptoms of NEW Disease
 - 5 YEARS since last test.
- Asymptomatic High Global Risk -20% coronary event rate over next 10 years

- Strong history of peripheral arterial disease or history of stroke or TIA
 - Clearly pathologic Q waves on the EKG
 - Marked ST-segment and/or T wave abnormalities of myocardial ischemia without symptoms
 - Clear regional wall motion abnormalities of the left ventricle
 - Reduced ejection fraction below 50% with contraindication to CATH
 - Based upon Framingham-ATP IV, ACC/AHA Risk Calculator, or very similar risk calculator
 - Coronary Calcium Scores over 400
- EKG changes that make (non-imaging) stress EKG uninterpretable
 - ST depression on the rest EKG: May be due to Digitalis Effect, LVH, or Ischemia
 - T wave inversion. Minor ST and T abnormalities are not indications for MPI, but deep T inversion is an indication for MPI

❖ **Known CAD:**

- New, Recurrent, or Worsening symptoms
- High Risk - ASYMPTOMATIC OR WITH STABLE symptoms **2 years** since last test
 - Stenosis known 70+% in major vessel
 - Left main coronary artery (LM) disease after a stent is placed
 - Ejection Fraction less than 50% (note: if less than 40% Nuclear Stress is best test)
 - Severe Multi-vessel Disease
 - High Risk occupations or hobbies e.g. bus driver, scuba diver
- Ischemia Persists after Revascularization
- Myocardial Viability testing -Resting myocardial perfusion imaging prior to coronary revascularization
- After Myocardial Infarction or Acute Coronary Syndrome and no CATH has been done
- Indeterminate or Positive Exercise Stress test or CCTA and a specific reason that noninvasive approach is preferred to CATH

❖ **New Cardiac Concerns**

- Non-Coronary Cardiac Diagnoses. (Any of these)
 - New Heart Failure
 - Episode of Ventricular Tachycardia (> 100 bpm), or Ventricular Fibrillation
 - Frequent PVCs (over 30 per hour),
 - New antiarrhythmic drug (AAD) therapy
 - New onset Atrial Fibrillation within two years.
- Syncope in intermediate or high risk patient (not lightheadedness or vasovagal syncope)
- New Left Bundle Branch Block
- Kawasaki disease and CCTA not available

❖ **Pre-Op non-cardiac surgery**

- Thoracoabdominal Aortic - No Stress Test or CATH in the past year
AND one of the following:

- Known coronary artery disease
- Cerebrovascular disease
- Insulin requiring diabetes
- History of CHF
- Ejection fraction less than 40%
- Creatinine greater than 2
- Organ Transplantation

❖ **Cardiac Transplantation**- F/U every 1-2 years

- First 5 Years- only if CATH not safe, (e.g. GFR less than 40)
- After 5 Years- yearly Nuclear Stress
- Bariatric surgery is not an indication for MPI or Stress Echo in

NUCLEAR STRESS RECOMMENDED OVER ECHO STRESS

This section only applies if it has already been **determined from the above** categories that **stress imaging is recommended**. These are the situations where **Nuclear Stress** is recommended instead of **Echo Stress**.

- EKG abnormalities:
 - LBBB - left bundle branch block
 - WPW – Wolf Parkinson White syndrome
 - PVC's - frequent PVC'S, interfering with wall motion evaluation
 - Atrial Fibrillation or Flutter poorly controlled
 - Established history of a rate related LBBB, even if the rest EKG displays normal intraventricular conduction
 - Electronic pacemaker
 - Regional wall motion abnormalities on resting Echo or MUGA.
 - Any prior open chest surgery. Past CABG, valve surgery, or other cardiac surgery requiring sternotomy.
 - Compromised left ventricular function. An EF of 40% or less
 - Echo imaging of heart is known or expected to be poor quality (egBMI >40 or very large breasts).
 - Inability to exercise on a treadmill: e.g. Use of a cane or walker. Claudication with exercise. Severe deconditioning. Past stroke with hemiparesis. Severe hip or knee OA. Severe back pain.
 - Severe COPD. Records must show COPD is limiting.
 - Organ transplantation
 - Severe Aortic Valve dysfunction.
 - Any prior history of Ventricular tachycardia, or Ventricular Fibrillation
 - Before Type 1C Antiarrhythmic drugs started and again once after started. Flecainide and Propafenone.

ADDITIONAL INFORMATION

The above medical necessity recommendations are used to determine the best diagnostic study based on a patient's specific clinical circumstances. The recommendations were developed using evidence based studies and current accepted clinical practices. Medical necessity will be determined using a combination of these recommendations as well as the patient's individual clinical or social circumstances.

- Tests that will not change treatment recommendations should not be approved.
- Tests completed recently need a specific reason for repeat

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CPT	Description
78451	Heart Muscle Image SPECT, Single
78452	Nuclear Cardiology Stress Test
78453	Heart Muscle Image, Planar, Sing
78454	Heart Muscle Image, Planar, Multiple
78466	Myocardial Imaging Planar: Quality/Quantity
78468	Myocardial Image: With Ejection Fraction
78469	Myocardial Image; Tomograph Spectroscopy
78481	Cardiac Blood Pool 1 st Pass; single
78483	Cardiac Blood Pool Image 1 st Pass; mix

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