Effective Date: Mar 20, 2015

Nevada Health Solutions LLC

NHS MEDICAL POLICY

Myocardial Positron Emission Tomography (PET)
Procedure 2015-003

Myocardial Positron Emission Tomography (PET) may be indicated when any ONE of the following is present:

1	The provider needs to determine myocardial viability with Myocardial Positron Emission Tomography (PET). A nuclear SPECT myocardial perfusion imaging has shown a nonreversible defect in patient who is being considered for revascularization.
2	The provider needs to determine myocardial perfusion with Myocardial Positron Emission Tomography (PET). There is an equivocal result from a myocardial perfusion (SPECT) imaging with a radioisotope (nuclear material) like Thallium, Myoview (Tc-99m tetrofosmin) or Cardiolite (Tc-99m Sestamibi).
3	The provider needs to determine myocardial perfusion with Myocardial Positron Emission Tomography (PET). The clinical diagnosis, EKG and myocardial perfusion (SPECT) results are discordant (do not match) in a patient with high clinical suspicion of coronary artery disease.
4	The provider needs to determine myocardial perfusion with Myocardial Positron Emission Tomography (PET). The patient is obese and his/her weight is equal to or more than 250 pounds or the BMI is equal to or more than 35, the SPECT images will be of poor quality with or without attenuation correction. Or the patient is a large breasted woman where the SPECT nuclear myocardial perfusion images are likely to produce false perfusion defects (attenuation artifacts).
5	The provider needs to determine myocardial perfusion with Myocardial Positron Emission Tomography (PET). The patient has cardiac sarcoidosis.

BACKGROUND

Introduction:
Positron Emission Tomography (PET) has a vital role in the diagnosis and treatment of cardiac disease. It can be a very useful tool in detecting significant coronary artery disease. Clinical studies have shown PET cardiac perfusion scan being more accurate in detecting significant coronary artery disease than electrocardiogram stress testing or single photon emission computed tomography (SPECT). PET cardiac perfusion scan has about 95% diagnostic accuracy in identifying significant coronary artery disease. Image uniformity is by far the most important property of PET cardiac imaging. Non uniform attenuation in the chest may result in multiple different patterns of SPECT imaging. Current attenuation correction software algorithms for SPECT imaging offer only a partial correction of the problem and sometimes can result in a greater error. A real perfusion defect may be exaggerated in size and severity or sometimes can be hidden within an area of apparent attenuation. PET cardiac imaging corrects this problem by using transmission scan in addition to emission scan. PET scan has higher spatial and temporal resolution with relatively lower radiation dose. It also has a potential for absolute quantification of myocardial blood flow.

Types Cardiac PET Scans:
PET scan can determine myocardial viability (F-18-FDG) or myocardial perfusion (rubidium-82).

A metabolic PET imaging uses Fluorodeoxyglucose (FDG), which combines the natural body compound glucose with the radioisotope Fluorine-18. This radioactive tracer measures the metabolic reaction to FDG. The metabolic activity is impaired in damaged cardiac muscle or ischemic (decreased blood flow lacking sufficient oxygen to sustain function) myocardium. The impaired metabolic action is shown on PET scan images. These images can determine viable or non-viable myocardium.

Another type is PET cardiac perfusion scan, which produces images of blood flow in the myocardium during rest and chemical stress. The difference in blood flow during these two states points towards significant blockage in the coronaries, usually more than 50% which exhibits a diminished capacity of increasing blood flow during cardiac stress as compared to normal coronary arteries.

SOURCES

1. SNMMI/ASNC/SCCT Guidelines for Cardiac SPECT/CT and PET/CT. Sharmila Dorbala, Marcelo F. Di Carli, Dominique Delbeke et al. The Journal of Nuclear Medicine. Vol. 54. No. 8. August 2013.
2. PET Myocardial Perfusion Imaging (MPI). American Society of Nuclear Cardiology. www.asnc.org.
3. www. radiology–info.org.
4. Bateman TM, Heller GV, McGhie et al. Diagnostic accuracy of rest/stress ECG gated Rb-82 myocardial perfusion PET: comparison with ECG-gated Tc-99m sestamibi SPECT. J Nucl Cardiol 2006; 13(1):24-33.
5. Bateman TM, McGhie AI, O'Keefe JH et al. High clinical value of follow up myocardial perfusion PET in patients with a diagnostically indeterminate myocardial perfusion SPECT study. Circulation. 2003; 108;IV-454.

CODE REFERENCE (This may not be a comprehensive list of codes to apply to this policy.)

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HCPCS: A9552

POLICY HISTORY/REVISION INFORMATION

Date	Action/Description
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12/16/2015	Annual review and approval by UM Committee
12/14/2016	Annual review and approval by UM Committee
12/13/2017	Annual review and approval by UM Committee
12/13/2018	Annual review and approval by UM Committee
12/12/2019	Annual review and approval by UM Committee
12/10/2020	Annual review and approval by UM Committee
12/10/2021	Annual review and approval by UM Committee
12/20/2022	Annual review and approval by UM Committee
12/20/2023	Annual review and approval by UM/QM Committee
12/23/2024	Annual review and approval by UM/QM Committee