



**POSITRON EMISSION TOMOGRAPHY (PET)  
FOR CARDIAC APPLICATIONS  
HS-119**



*Harmony Behavioral Health, Inc.*

*Harmony Behavioral Health of Florida, Inc.*

*Harmony Health Plan of Illinois, Inc.*

*HealthEase of Florida, Inc.*

*'Ohana Health Plan, a plan offered by  
WellCare Health Insurance of Arizona, Inc.*

*WellCare Health Insurance of Illinois, Inc.*

*WellCare Health Insurance of New York, Inc.*

*WellCare Health Plans of New Jersey, Inc.*

*WellCare of Florida, Inc.*

*WellCare of Connecticut, Inc.*

*WellCare of Georgia, Inc.*

*WellCare of Kentucky, Inc.*

*WellCare of Louisiana, Inc.*

*WellCare of New York, Inc.*

*WellCare of Ohio, Inc.*

*WellCare of Texas, Inc.*

*WellCare Prescription Insurance, Inc.*

**Positron Emission  
Tomography (PET) for  
Cardiac Applications**

**Policy Number: HS-119**

**Original Effective Date: 8/6/2009**

**Revised Date(s): 8/20/2010; 8/2/2011;  
5/3/2012 RETIRED**

**DISCLAIMER**

The Clinical Coverage Guideline is intended to supplement certain standard WellCare benefit plans. The terms of a member's particular Benefit Plan, Evidence of Coverage, Certificate of Coverage, etc., may differ significantly from this Coverage Position. For example, a member's benefit plan may contain specific exclusions related to the topic addressed in this Clinical Coverage Guideline. When a conflict exists between the two documents, the Member's Benefit Plan always supersedes the information contained in the Clinical Coverage Guideline. Additionally, Clinical Coverage Guidelines relate exclusively to the administration of health benefit plans and are NOT recommendations for treatment, nor should they be used as treatment guidelines. The application of the Clinical Coverage Guideline is subject to the benefit determinations set forth by the Centers for Medicare and Medicaid Services (CMS) National and Local Coverage Determinations and state-specific Medicaid mandates, if any.

**APPLICATION STATEMENT**

The application of the Clinical Coverage Guideline is subject to the benefit determinations set forth by the Centers for Medicare and Medicaid Services (CMS) National and Local Coverage Determinations and state-specific Medicaid mandates, if any.

## **BACKGROUND**

In the United States, coronary artery disease (CAD) is the most common cardiac disorder, currently affecting approximately 7 million persons. CAD is a condition in which fatty deposits accumulate in the cells lining the wall of one or more coronary arteries, progressively obstructing blood flow to the heart muscle, or myocardium. Inadequate myocardial blood supply, or ischemia, may lead to angina or myocardial infarction (MI). Infarction or prolonged ischemia results in myocardial scarring or stunning, which impairs the ability of ventricular myocardium to contract and pump blood. Uninjured myocardium may stretch to compensate for lost pumping action but, if compensation is inadequate, dilated cardiomyopathy (DCM) develops. Over time, DCM leads to further abnormalities in cardiac function and, ultimately, to congestive heart failure (CHF), in which blood pumped by the heart is insufficient to meet the body's needs. As CHF develops, compensatory neurohormonal mechanisms are activated in an attempt to maintain cardiac function but lead to progressively abnormal cardiovascular autonomic control. Angina, MI, DCM, and CHF each also may be caused by conditions other than CAD. Disease management may consist of lifestyle changes, drugs, and/or revascularization, depending on disease severity, for CAD, and aims at identifying and treating the underlying cause of disease for DCM. CHF may be treated with drugs and/or pacemaker but likely will be fatal unless the specific cause for DCM is treated successfully or the patient is eligible for and receives cardiac transplantation. Cardiac transplantation itself is associated with complete denervation of the donor heart, although partial reinnervation can occur over time.

The gold standard for diagnosing and evaluating CAD involves invasive cardiac catheterization with coronary angiography and ventriculography. However, this usually is preceded and, sometimes, obviated by noninvasive tests, which may include electrocardiography (ECG), echocardiography, planar scintigraphy, and/or single photon emission computed tomography (SPECT) at rest and/or during exercise- or pharmacologically induced stress, as well as standard computed tomography (CT), electron beam CT (EBCT), magnetic resonance imaging (MRI), or radionuclide or magnetic resonance angiography and ventriculography. Each of these strategies can detect 1 characteristics of CAD such as ischemia, stenosis, reduced myocardial blood flow (MBF), or left ventricular dysfunction (LVD). However, it is abnormality in myocardial metabolism, whether due to diminished blood flow or other causes that leads to ventricular dysfunction. Revascularization can improve ventricular function only if sufficient unscarred, or viable, myocardium remains. Further, the neurohormonal environment of the heart influences cardiac functions and is altered in the presence of ischemia or DCM and in cardiac transplant recipients.

Positron emission tomography (PET) is a three-dimensional imaging technique that provides data on biochemical and physiological activity. To measure such activity, a positron-emitting radionuclide is incorporated into an organic molecule or compound of interest to form the appropriate radiotracer. After administering the radiotracer, its concentration in tissue and organs is detected by a PET scanner and constructed into an image by a computer. By comparing the radiotracer concentration in target areas with that expected or imaged in normal tissue, it is possible to determine whether the imaged function is normal or abnormal. For cardiac applications, PET has been used for assessing MBF to determine the presence and severity of CAD, for assessing myocardial metabolism or viability to predict treatment-induced improvement in LVD or other health variables, for assessing myocardial neuronal function to determine the severity of CHF or detect potential reinnervation in cardiac transplant recipients, and for assessing myocardial perfusion, metabolism, or neuronal function to determine the effects of treatment for heart disorders. For these purposes, the most commonly used PET radiotracers include rubidium-82-labeled chloride ( $^{82}\text{Rb}$ ) or nitrogen-13-labeled ammonia ( $^{13}\text{NH}_3$ ) to assess MBF, fluorine-18-labeled fluorodeoxyglucose ( $^{18}\text{F}$ -FDG) to assess myocardial viability, and carbon-11-labeled hydroxyephedrine to assess myocardial neuronal function (Hayes, 2003).

## **POSITION STATEMENT**

1. Positron Emission Tomography (PET) **is considered medically necessary** as a primary or initial diagnostic tool for the determination of myocardial viability prior to revascularization if ALL of the following criteria are met:

- PET used following an inconclusive SPECT test\*; **AND**,
- Member has severe left ventricular dysfunction (LVEF < 35%)

\*NOTE: A SPECT test following an inconclusive PET is considered NOT medically necessary, given the greater specificity of PET compared to the SPECT test.

NOTE: Studies performed by full and partial ring scanners are covered.

2. Positron Emission Tomography (PET) using Rubidium 82 or Nitrogen N-13 Ammonia **is considered medically necessary** to assess myocardial perfusion performed at rest or with pharmaceutical stress to determine the severity of coronary artery disease if ANY of the following criteria are met:

- The PET scan is used in place, but not in addition to, a SPECT test\*; **OR**,
- The PET scan is used following an inconclusive SPECT test (i.e. the results of the SPECT are equivocal, technically uninterpretable, or discordant with a member's other clinical data)\*.

\*NOTE: PET scans are may be used if the following issues are present: 1) inconclusive SPECT, as noted above, 2) body habitus or other conditions cause SPECT attenuation problems (e.g., obesity, large breasts, left mastectomy, breast implant, chest wall deformity, left pleural or pericardial effusion, circulatory problems in inferior-septal area of the heart) or other technical difficulty (extensive prior myocardial infarction), or 3) conditions for which angiography may be technically challenging (e.g., low to intermediate probability of CAD, borderline stenosis) or associated with high risk for morbidity (allergy to contrast medium, poor arterial access, renal dysfunction for which angiography increases the likelihood of renal failure).

## **CODING**

### **Covered CPT® Codes**

**78459\*** Myocardial imaging, positron emission tomography (PET), metabolic evaluation; heart  
\*The applicable radiopharmaceutical imaging agent is F-18 FDG (A9552).

**78491\*** Myocardial imaging, positron emission tomography (PET), perfusion; single study at rest or stress  
\*The applicable radiopharmaceutical imaging agents are Rb-81 (A9555) or N-13 (A9526).

**78492\*** Myocardial imaging, positron emission tomography (PET), perfusion; multiple studies at rest and/or stress  
\*The applicable radiopharmaceutical imaging agents are Rb-81 (A9555) or N-13 (A9526).

### **ICD-9-CM Procedure Codes**

**92.19** Radioisotope Scan of Other Sites

### **Applicable HCPCS Level II ® Codes**

**A9526\*** Nitrogen N-13 Ammonia, diagnostic, per study does, up to 40 millicuries (Tracer used for 78491 or 78492)

**A9552\*** Fluorodeoxyglucose F-18 FDG, diagnostic, per study dose, up to 45 millicuries (Tracer used for 78459)

**A9555\*** Rubidium Rb-82, diagnostic, per study dose, up to 60 millicuries (Tracer used for 78491 or 78492)

\* Note: PET Scan service codes 78459, 78491 and 78492 require a radiopharmaceutical diagnostic imaging agent (tracer). Therefore, the applicable tracer code A9526, A9552 or A9555 should always be used when billing for a PET scan. (Refer to CMS MLN Matters Number: MM5665)

**Covered ICD-9-CM Diagnosis Codes** – This list may not be all inclusive.

- 411.0 - 411.89** Other acute and subacute forms of ischemic heart disease
- 413.0 - 413.9** Angina Pectoris; decubitus; nocturnal, Prinzmetal, other
- 414.00 - 414.04** Coronary Atherosclerosis of native coronary artery or grafts; CAD, ASHD
- 414.8 - 414.9** Chronic Ischemic Heart Disease, unspecified
- 425.4** Other Primary Cardiomyopathy
- 426.0 - 426.6** Conduction disorders; AV Blocks, LBBB, RBBB
- 428.0 - 428.9** Heart failure; congestive, left, systolic, diastolic or combined
- 429.9** Left Ventricular Dysfunction; Heart Disease (organic) NOS

\*Current Procedural Terminology (CPT) 2010 American Medical Association: Chicago, IL.®©

## REFERENCES

### Peer Reviewed

1. Hayes Directory. Positron Emission Tomography (PET) for Assessing Myocardial Metabolism. June 30, 2005.
2. Hayes Directory. Positron Emission Tomography (PET) for Cardiac Applications. May 27, 2003.

### Government Agencies, Professional and Medical Organizations

1. Centers for Medicare and Medicaid Services (CMS) National Coverage Determination for PET (FDG) for Myocardial Viability (220.6.8). April 18, 2005.
2. Centers for Medicare and Medicaid Services (CMS) National Coverage Determination for PET for Perfusion of the Heart (220.6.1). April 18, 2005.

## HISTORY AND REVISIONS

<b>Date</b>	<b>Action</b>
5/3/2012	<ul style="list-style-type: none"><li>• Retired by MPC; covered by CareCore criteria.</li></ul>
12/1/2011	<ul style="list-style-type: none"><li>• New template design approved by MPC.</li></ul>
8/2/2011	<ul style="list-style-type: none"><li>• Approved by MPC. No changes.</li></ul>