

04-78000-18

Original Effective Date: 09/15/01

Reviewed: 02/27/20

Subject: Positron Emission Tomography (PET) Miscellaneous Applications

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DESCRIPTION:

Positron emission tomography (PET) is an imaging technique that uses radioactive substances injected into individuals to provide images of the body using specialized scanners. These PET images provide information about the function and metabolism of the body's organs, in contrast to computed tomography (CT) or magnetic resonance imaging (MRI), which show the body's anatomy and structure.

Fluorodeoxyglucose (FDG) is used in PET. This is a radionuclide combined with glucose, which is the currency of metabolism for malignant and benign cells. Because malignant cells tend to grow and metabolize glucose faster than healthy tissue, malignant cells use more of the tracer. PET uses the difference in metabolism to differentiate normal from abnormal tissue.

POSITION STATEMENT:

NOTE: PET imaging addressed in this guideline requires medical review. The physician history and physical, and physician plan of treatment are required documentation for medical review.

Indications for Brain PET imaging (using FDG (fluorodeoxyglucose))

Epileptic Seizures

Positron emission tomography (PET) imaging using fluorodeoxyglucose (FDG) **meets the definition of medical necessity** to determine the operability of refractory seizures.

Brain Tumor or Cancer

Positron emission tomography (PET) using *Fluorodeoxyglucose (FDG) of the brain **meets the definition of medical necessity** for the following:

- Staging and restaging of brain cancer.
- To differentiate radiation necrosis or post treatment change from residual/recurrent tumor on magnetic resonance imaging (MRI).

*Also known as fluorodeoxyglucose F 18, fluorodeoxyglucose ([F18] FDG, 18F-FDG or FDG.

Post-operative/procedural evaluation

A follow-up study may be needed for evaluation of a member's progress after treatment, procedure, intervention or surgery. Documentation requires a medical reason that indicates why additional imaging is needed for the type and area(s) of requested imaging.

Mild Cognitive Impairment or **Dementia**

Positron emission tomography (PET) imaging using fluourodeoxyglucose (FDG) **meets the definition of medical necessity** when the following have been met:

- Objective cognitive impairment on longitudinal assessment (i.e., historical or observed evidence of decline over time)
 - Mini Mental Status Evaluation (MMSE) or Montreal Cognitive Assessment (MoCA) less than 26; **OR**
 - Formal neuropsych testing showing mild cognitive impairment.
- Potential treatable causes assessed and addressed
 - Metabolic, such as thyroid or vitamin deficiency, anemia or chemical encephalopathy.
 - Medication side effects.
 - Medical causes, such as vascular, traumatic or inflammatory. rain MRI (to rule out structural causes) or brain CT if MRI is contraindicated.

Chronic Osteomyelitis

Positron emission tomography (PET) using 2-[fluorine-18]-fluoro-2-deoxy-D-glucose (FDG) **meets the definition of medical necessity** in the diagnosis of chronic osteomyelitis.

Other Indications

The use of PET imaging for screening and **ALL** other indications is considered **experimental or investigational**. There is insufficient evidence to determine the role of PET imaging for screening and all other indications.

BILLING/CODING INFORMATION:

CPT Coding

78608	Brain imaging, positron emission tomography (PET); metabolic evaluation
78609	Brain imaging, positron emission tomography (PET); perfusion evaluation

HCPCS Coding

G0235	PET imaging, any site, not otherwise specified
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LOINC Codes

The following information may be required documentation to support medical necessity: physician history and physical, physician progress notes, plan of treatment and reason for positron emission tomography (PET) imaging.

Documentation Table	LOINC Codes	LOINC Time Frame Modifier Code	LOINC Time Frame Modifier Codes Narrative
Physician history and physical	28626-0	18805-2	Include all data of the selected type that represents observations made six months or fewer before starting date of service for the claim
Attending physician progress note	18741-9	18805-2	Include all data of the selected type that represents observations made six months or fewer before starting date of service for the claim
Plan of treatment	18776-5	18805-2	Include all data of the selected type that represents observations made six months or fewer before starting date of service for the claim
Physician history and physical	28626-0	18805-2	Include all data of the selected type that represents observations made six months or fewer before starting date of service for the claim

REIMBURSEMENT INFORMATION:

PET scans are performed using a camera that has either been approved or cleared for marketing by the Food and Drug Administration (FDA) to image positron annihilation gamma photons in the body.

PET scans are performed using FDA approved radiotracer (e.g., Nitrogen -13 (as ammonia), oxygen-15 as H₂O, carbon-11) or radiopharmaceutical. The radiopharmaceutical may be manufactured on site, or manufactured at a regional delivery center with delivery to the institution performing the PET scan. When the radiopharmaceutical is provided by an outside distribution center, there may be a separate charge for both the radiopharmaceutical and transportation of the radiopharmaceutical.

PROGRAM EXCEPTIONS:

Coverage for the radiology services referenced in this guideline performed and billed in an outpatient or office location will be handled through the BCBSF Radiology Management program for select products. The National Imaging Associates (NIA) will determine coverage for these services for select products. Refer to member's contract benefits.

Federal Employee Plan (FEP): FEP is excluded from the National Imaging Associates (NIA) review; follow FEP guidelines.

Medicare Advantage products:

No Local Coverage Determination (LCD) was found at the time of the last guideline reviewed date.

The following National Coverage Determinations (NCDs) were reviewed on the last guideline reviewed date: Positron Emission Tomography (PET) Scans (220.6-220.6.19), FDG PET for Refractory Seizures (220.6.9), FDG PET for Dementia and Neurodegenerative Diseases (220.6.13), FDG PET for Brain (220.6.13) and FDG PET for Infection and Inflammation (220.6.16) located at cms.gov.

DEFINITIONS:

Epilepsy: Any of a group of syndromes characterized by paroxysmal transient disturbances of the brain function that may be manifested as episodic impairment or loss of consciousness, abnormal motor phenomena, psychic or sensory disturbances, or perturbation of the autonomic nervous system.

RELATED GUIDELINES:

[Positron Emission Tomography \(PET\) Cardiac Applications, 04-78000-16](#)

[Positron Emission Tomography \(PET\) Oncologic Applications, 04-78000-17](#)

OTHER:

Other names used to report positron emission tomography (PET):

Positron emission transverse tomography (PETT)

Positron emission coincident imaging (PECI)

REFERENCES:

1. Agency for Healthcare Research and Quality Evidence Report/Technology Assessment Number 57- Diagnosis and Treatment of Parkinson's Disease: A Systematic Review of the Literature, 06/03.
2. Agency for Healthcare Research and Quality Technology Assessment Number 7 – Use of Positron Emission Tomography and other Neuro-imaging Techniques in the Diagnosis and Management of Alzheimer's Disease and Dementia, 12/14/01.
3. Blue Cross Blue Shield Association Evidence Positioning System®. 6.01.06 Miscellaneous (Noncardiac, Nononcologic) Applications of Fluorine 18 Fluorodeoxyglucose Positron Emission Tomography, 10/19
4. De Winter F, van de Wiele C, Vogelaers D et al. Fluorine-18 fluorodeoxyglucose-positron emission tomography: a highly accurate imaging modality for the diagnosis of chronic skeletal infections. *The Journal of Bone and Joint Surgery* 2001; 83-A (5): 651-660.
5. Delbeke D, Coleman RE, Guiberteau MJ et al. Society of Nuclear Medicine-Procedure Guidelines for Tumor Imaging with F-FDG PET/CT 1.0, 03/10/06.
6. Galvin JE, Sadowsky CH. Practical guidelines for the recognition and diagnosis of dementia. *Journal of the American Board of Family Medicine* 2012; 25(3): 367-382.
7. Guhlmann A, Brecht-Krauss D, Suger G et al. Fluorine-18-FDG PET and technetium-99m antigranulocyte antibody scintigraphy in chronic osteomyelitis. *Journal of Nuclear Medicine* 1998; 39(12): 2145-2152.
8. Knopman DS, DeKosky ST, Cummings JL et al. Practice parameter: Diagnosis of dementia (an evidence-based review): Report of the quality standards subcommittee of the American Academy of Neurology. *Neurology* 2001; 6: 1143-1153.
9. Meller J, Koster G, Liersch T et al. Chronic bacterial osteomyelitis: prospective comparison of (18)F-FDG imaging with a dual-head coincidence camera and (111) In-labelled autologous leucocyte scintigraphy. *European Journal of Nuclear Medicine and Molecular Imaging*. 2002; 29(1): 53-60.

10. Mosconi L, Tsui WH, Herholz K et al. Multicenter standardized 18F-FDG PET diagnosis of mild cognitive impairment, Alzheimer's disease, and other dementias. The Journal of Nuclear Medicine 2008; 49(3): 390-398.
12. National Comprehensive Cancer Network (NCCN) Clinical Practice Guidelines in Oncology. Central Nervous System Cancers. Version 3.2019. nccn.org.
11. National Imaging Associates, Inc. Brain PET Scan Clinical Guideline, 2019.
12. Stumpe K, Strobel K. FDG-PET imaging in musculoskeletal infection. The Quarterly Journal of Nuclear Medicine and Molecular Imaging. 2006; 50: 131-142.
13. Termaat MF, Raijmakers PG, Scholten HJ et al. The accuracy of diagnostic imaging for the assessment of chronic osteomyelitis: a systematic review and meta-analysis. The Journal of Bone and Joint Surgery. 2005; 87(11): 2464-2471.
14. Turlakow A, Yeung H, Pui J et al. Fluorodeoxyglucose positron emission tomography in the diagnosis of giant cell arteritis. Archives of Internal Medicine 2001; 161(7): 1003-1007.

COMMITTEE APPROVAL:

This Medical Coverage Guideline (MCG) was approved by the BCBSF Medical Policy & Coverage Committee on 02/27/20.

GUIDELINE UPDATE INFORMATION:

10/15/03	Annual review. Developed separate policy for PET Miscellaneous Applications.
12/15/04	Reviewed; added musculoskeletal diseases (investigational) to when services are not covered. Added G0336 to HCPCS coding. Added G0336 to program exception for Medicare and coverage criteria for G0336 (PET imaging; brain imaging for the differential diagnosis of Alzheimer's disease with aberrant features vs. frontotemporal dementia), and updated references.
03/15/05	Added program exception for Health Options, Blue Care, and Medicare Advantage products.
01/01/06	Scheduled review. No change in coverage and investigational statements, and updated references. HCPCS update; added G0235.
03/15/06	HCPCS update, deleted G0229 and G0336. Revised Medicare Advantage products program exception.
06/15/06	Added A9552. Revised reimbursement information section. Updated references.
10/15/06	Added coverage statement for follow-up of known brain tumor to WHEN SERVICES ARE COVERED section. Revised Medicare Advantage products program exception, and updated references. Added statement regarding radiopharmaceutical.
07/01/07	Reformatted guideline. Maintain coverage statement for epileptic seizures and brain tumor. Maintain investigational statement for all other PET indications (CNS diseases, pulmonary diseases, musculoskeletal diseases), considered investigational. Revised reimbursement statement. Revised Medicare Advantage products program exception, and updated references.
01/21/08	Updated Program Exceptions.
07/15/08	Annual review. Added chronic osteomyelitis (meets the definition of medical necessity) and giant cell arteritis (considered experimental or investigational) to position statements. Added definition for giant cell arteritis to definitions section, and updated references.
05/21/09	Removed Federal Employee Plan (FEP) from BCBSF Radiology Management program exception statement. Added FEP program exception statement: FEP is excluded from

	the National Imaging Associates (NIA) review; follow FEP guidelines.
07/01/09	Updated BCBSF Radiology Management program exception; added BlueSelect. Added program exception for Medicare Advantage products for dementia (Alzheimer's disease and fronto-temporal dementia).
10/15/09	Updated description section. Added, "if the diagnosis cannot be determined by a bone scan" for chronic osteomyelitis, and updated references.
01/01/10	Revised BCBSF Radiology Management program exception section.
10/01/11	Revision; formatting changes.
10/15/11	Revision; formatting changes.
02/15/13	Scheduled review; added inflammatory bowel disease and mycobacterium infection (experimental or investigational). Added coverage statement for Medicare Advantage; FDG PET for: seizures and infection and inflammation. Updated references.
01/01/14	Annual HCPCS coding update; added A9599.
05/11/14	Revision: Program Exceptions section updated.
06/15/15	Revision; added "or Cancer to Brain Tumor, when used to differentiate between treatment induced (radiation) tumor necrosis and brain tumor recurrence, post-operative/procedural evaluation (brain PET imaging), and dementia.
01/01/17	Annual HCPCS code update. Revised A9599 code descriptor.
04/15/17	Code update; deleted A9552, revised G0235 descriptor.
01/01/18	Annual HCPCS code update. Deleted A9599.
09/15/18	Revision; revised position statement. Updated references.
11/15/18	Revision; Added staging or restaging of brain cancer. Updated references.
03/15/20	Review/revision. Revised criteria for: epileptic seizures, brain tumor or cancer., dementia, chronic osteomyelitis and other indications. Deleted pre-operative evaluation. Revised position statement, definitions and format. Updated description and references.