

Medical Policy



Title: PET Scanning- Oncologic Applications (Brain, Melanoma, Unknown Primary)

Related Policies:	<ul style="list-style-type: none"> ▪ <i>PET Scanning- Oncologic Applications (Bone and Sarcoma)</i> ▪ <i>PET Scanning- Oncologic Applications (Brain, Melanoma, Unknown Primary)</i> ▪ <i>PET Scanning- Oncologic Applications (Breast and Gynecologic)</i> ▪ <i>PET Scanning- Oncologic Applications (Gastrointestinal and Pancreatic)</i> ▪ <i>PET Scanning- Oncologic Applications (Hematologic)</i> ▪ <i>PET Scanning- Oncologic Applications (Lung)</i> ▪ <i>PET Scanning: Miscellaneous (Non-cardiac, Non-oncologic) Applications of Fluorine 18 Fluorodeoxyglucose</i> ▪ <i>PET Scanning- Oncologic (Thyroid, Neuroendocrine, Head and Neck)</i>
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Professional / Institutional
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Current Effective Date: January 13, 2026

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Populations	Interventions	Comparators	Outcomes
Individuals: <ul style="list-style-type: none"> • With diagnosed brain tumor and in need of staging or restaging information 	Interventions of interest are: <ul style="list-style-type: none"> • 18F-FDG-PET • 18F-FET-PET • 11C-methionine PET 	Comparators of interest are: <ul style="list-style-type: none"> • Conventional imaging techniques 	Relevant outcomes include: <ul style="list-style-type: none"> • Test validity
Individuals: <ul style="list-style-type: none"> • With suspected brain tumor or who are asymptomatic after completing brain tumor treatment 	Interventions of interest are: <ul style="list-style-type: none"> • 18F-FDG-PET • 18F-FET-PET • 11C-methionine PET 	Comparators of interest are: <ul style="list-style-type: none"> • Conventional imaging techniques 	Relevant outcomes include: <ul style="list-style-type: none"> • Test validity
Individuals: <ul style="list-style-type: none"> • With suspected or diagnosed stage I or II melanoma and in need of staging or restaging information 	Interventions of interest are: <ul style="list-style-type: none"> • ¹⁸F-FDG-PET or ¹⁸F-FDG-PET/CT 	Comparators of interest are: <ul style="list-style-type: none"> • Conventional imaging techniques 	Relevant outcomes include: <ul style="list-style-type: none"> • Test validity
Individuals: <ul style="list-style-type: none"> • With diagnosed advanced melanoma (stage III or IV) and in need of staging or restaging information 	Interventions of interest are: <ul style="list-style-type: none"> • ¹⁸F-FDG-PET or ¹⁸F-FDG-PET/CT 	Comparators of interest are: <ul style="list-style-type: none"> • Conventional imaging techniques 	Relevant outcomes include: <ul style="list-style-type: none"> • Test validity
Individuals: <ul style="list-style-type: none"> • Who are asymptomatic after completing melanoma treatment 	Interventions of interest are: <ul style="list-style-type: none"> • ¹⁸F-FDG-PET or ¹⁸F-FDG-PET/CT 	Comparators of interest are: <ul style="list-style-type: none"> • Conventional imaging techniques 	Relevant outcomes include: <ul style="list-style-type: none"> • Test validity
Individuals: <ul style="list-style-type: none"> • With cancer of unknown primary and single-site metastatic disease 	Interventions of interest are: <ul style="list-style-type: none"> • ¹⁸F-FDG-PET or ¹⁸F-FDG-PET/CT 	Comparators of interest are: <ul style="list-style-type: none"> • Conventional imaging techniques 	Relevant outcomes include: <ul style="list-style-type: none"> • Test validity

DESCRIPTION

Positron emission tomography (PET) is a nuclear imaging technique that uses positron-emitting tracers attached to molecules like glucose or water to create 3D images of metabolic activity. In cancer care, tracer choice depends on tumor type and cancer stage under evaluation.

The utility of PET scanning for the diagnosis, staging and restaging, and surveillance of malignancies varies by type of cancer. In general, PET scanning can distinguish benign from malignant masses in certain circumstances and improve the accuracy of staging by detecting additional disease not detected by other imaging modalities. Therefore, PET scanning for diagnosis and staging of malignancies can be considered medically necessary when specific criteria are met for specific cancers, as outlined in the policy statements. For follow-up, after initial diagnosis and staging have been performed, there are clinical scenarios in which PET can improve detection of recurrence, and lead to changes in management that improve the net health outcome

OBJECTIVE

The objective of this evidence review is to examine whether the use of positron emission tomography for the diagnosis, staging and restaging, and/or surveillance of various carcinomas improves the net health outcome in individuals with brain cancer, melanoma, cancer of unknown primary, and single-site metastatic disease.

BACKGROUND

Positron emission tomography (PET) is a nuclear imaging technique that uses positron-emitting tracers attached to molecules like glucose or water to create 3D images of metabolic activity. In cancer care, tracer choice depends on tumor type and cancer stage under evaluation.

REGULATORY STATUS

In 2000, Fluorine 18 fluorodeoxyglucose (FDG) was approved as a radiotracer for use in positron emission tomography (PET) imaging. It is used for evaluating, staging, and monitoring treatment for cancers such as non-small cell lung cancer, lymphomas, colorectal carcinoma, malignant melanoma, esophageal carcinoma, head and neck cancer, thyroid carcinoma, and breast cancer. As a glucose analogue it accumulates in most tumors in a greater amount than it does in normal tissue.

POLICY

A. Brain Cancer

1. FDG-PET or FDG-PET/CT (positron emission tomography (PET)) scanning may be considered **medically necessary** in the staging or restaging of brain cancer.

B. Melanoma

1. FDG-PET or FDG-PET/CT scanning may be considered **medically necessary** as a technique for assessing extranodal spread of malignant melanoma at initial staging or at restaging during follow-up treatment for advanced disease (stage III or IV).
2. FDG-PET or FDG-PET/CT scanning is considered **experimental / investigational** in managing stage 0, I, or II melanoma.
3. FDG-PET or FDG-PET/CT scanning is considered **experimental / investigational** as a technique to detect regional lymph node metastases in individuals with clinically localized melanoma who are candidates to undergo sentinel node biopsy.

C. Cancer of Unknown Primary

1. FDG-PET or FDG-PET/CT scanning may be considered **medically necessary** in individuals with a cancer of unknown primary who meet **ALL** of the following criteria:
 - a. In individuals with a single site of disease outside the cervical lymph nodes;
AND
 - b. Individuals is considering local or regional treatment for a single site of metastatic disease; **AND**
 - c. After a negative workup for an occult primary tumor; **AND**
 - d. PET scan will be used to rule out or detect additional sites of disease that would eliminate the rationale for local or regional treatment.
2. FDG-PET or FDG-PET/CT scanning is considered **experimental / investigational** for other indications in individuals with a cancer of unknown primary, including, but not limited to the following:
 - a. As part of the initial workup of an unknown primary, and
 - b. As part of the workup of individuals with multiple sites of disease

D. Cancer Surveillance

1. FDG-PET or FDG-PET/CT scanning is considered **experimental / investigational** when used as a surveillance tool for individuals with cancer or with a history of cancer. A scan is considered surveillance if performed more than 6 months after completion of cancer therapy (12 months for lymphoma) in individuals without objective signs or symptoms suggestive of cancer recurrence (see Policy Guidelines section).

POLICY GUIDELINES

A. For this policy, PET scanning is discussed for the following 4 applications in oncology.

1. Diagnosis
Diagnosis refers to use of PET as part of the testing used in establishing whether a patient has cancer.
2. Staging

Staging refers to use of PET to determine the stage (extent) of the cancer at the time of diagnosis before any treatment is given. Imaging at this time is generally to determine whether the cancer is localized. This may also be referred to as initial staging.

3. Restaging

Restaging refers to imaging after treatment in 2 situations.

- a. Restaging is part of the evaluation of a patient in whom a disease recurrence is suspected based on signs and/or symptoms.
- b. Restaging also includes determining the extent of malignancy after completion of a full course of treatment.

4. Surveillance

Surveillance refers to the use of imaging in asymptomatic patients (patients without objective signs or symptoms of recurrent disease). This imaging is completed 6 months or more (≥ 12 months for lymphoma) after completion of treatment.

Please refer to the member's contract benefits in effect at the time of service to determine coverage or non-coverage of these services as it applies to an individual member.

RATIONALE

This evidence review was created using searches of the PubMed database. The most recent literature update was performed through October 2, 2025.

The review has been informed by multiple evaluations of positron emission tomography (PET), including systematic reviews, meta-analyses, and decision analyses.

Evidence reviews assess whether a medical test is clinically useful. A useful test provides information to make a clinical management decision that improves the net health outcome. That is, the balance of benefits and harms is better when the test is used to manage the condition than when another test or no test is used to manage the condition.

The first step in assessing a medical test is to formulate the clinical context and purpose of the test. The test must be technically reliable, clinically valid, and clinically useful for that purpose. Evidence reviews assess the evidence on whether a test is clinically valid and clinically useful. Technical reliability is outside the scope of these reviews, and credible information on technical reliability is available from other sources.

POSITRON EMISSION TOMOGRAPHY AND POSITRON EMISSION TOMOGRAPHY PLUS COMPUTED TOMOGRAPHY

Clinical Context and Test Purpose

PET and PET combined with CT or MRI are used in oncology for diagnosis, staging, restaging, and surveillance. Diagnostic use of PET aids in distinguishing between benign and malignant processes. Initial staging assesses the extent and location of cancer before treatment. Restaging reevaluates cancer after treatment typically after 3-6 months (depending on tumor and treatment approach) to establish a post-treatment baseline, or over time when recurrence is suspected. Surveillance involves imaging patients without objective signs or symptoms of recurrent disease (altered symptoms) or with stable symptoms, generally six months or more after treatment.

The following PICO was used to select literature to inform this review.

Populations

The relevant populations of interest are:

- Individuals who are suspected of having brain cancer, melanoma, cancer of unknown primary, and single-site metastatic disease.
- Individuals diagnosed with brain cancer, melanoma, cancer of unknown primary, and single-site metastatic disease and need information on the extent of cancer (initial staging upon diagnosis confirmation or restaging following treatment).
- Individuals with brain cancer, melanoma, cancer of unknown primary, and single-site metastatic disease. who have completed a round of treatment and may be at risk of recurrence.

Interventions

The test being considered is PET or PET/CT. A PET scan is a nuclear medicine 3-dimensional imaging technique. Radioactive tracers are ingested or injected, and radioactive emissions are detected by an imaging device, allowing observations on blood flow, oxygen use, and metabolic processes around the lesions. When CT is added to PET, the images are superimposed, providing additional anatomic information. The most common radioactive tracer used for oncologic applications is fluorine 18 (^{18}F) fluorodeoxyglucose (FDG). Radiation exposure from PET and PET/CT is considered moderate to high.

Comparators

The comparators of interest are conventional imaging techniques such as ultrasound, magnetic resonance imaging (MRI), and x-rays.

Outcomes

The general outcomes of interest are related to the clinical validity of PET, PET/CT, or PET/MRI in (1) diagnosing suspected cancer, (2) providing staging or restaging information, and (3) detecting recurrence following cancer treatment. Clinical validity is most often measured by sensitivity, specificity, positive predictive values (PPV), and negative predictive values (NPV). For the clinical utility of PET, PET/CT, or PET/MRI to be demonstrated, the tests would need to inform treatment decisions that would improve survival and quality of life.

Study Selection Criteria

Methodologically credible studies were selected using the following principles:

- To assess the clinical validity of PET and PET/CT, studies should report sensitivity, specificity, PPV, and NPV. Additionally, studies reporting false-positive rates and false-negative rates are informative.
- To assess the clinical utility of PET and PET/CT, studies should demonstrate how results of these imaging techniques impacted treatment decisions and overall management of the patient.

Clinically Valid

A test must detect the presence or absence of a condition, the risk of developing a condition in the future, or treatment response (beneficial or adverse).

Clinical validity can be measured by comparing results from PET, PET/CT, or PET/MRI with results from conventional imaging techniques.

Clinically Useful

A test is clinically useful if the use of the results informs management decisions that improve the net health outcome of care. The net health outcome can be improved if individuals receive correct therapy or more effective therapy, avoid unnecessary therapy, or avoid unnecessary testing.

Ideally, outcomes for clinical utility would reflect long-term patient status, which, depending on the type of cancer, can range from months to years. To practically assess the clinical utility of PET, PET/CT or PET/MRI, studies should demonstrate how results of these imaging techniques impacted treatment decisions and overall management of the patient.

Direct Evidence

Direct evidence of clinical utility is provided by studies that have compared health outcomes for individuals managed with and without the test. Because these are intervention studies, the preferred evidence would be from randomized controlled trials (RCTs).

Chain of Evidence

Indirect evidence on clinical utility rests on clinical validity. If the evidence is insufficient to demonstrate test performance, no inferences can be made about clinical utility.

PET scan research in oncology primarily addresses sensitivity and specificity through reviews and meta-analyses. Studies on changes to staging or treatment are limited but do report improved tumor type specific health outcomes. Following evidence-based clinical guidelines may enhance net health outcomes by improving therapeutic effectiveness, reducing unnecessary tests, treatments, or adverse events.

REVIEW OF EVIDENCE

BRAIN TUMORS

FDG-PET AND ¹⁸F-FET PET

Systematic Reviews

A systematic review and meta-analysis by Dunet et al (2016) included studies published through January 2015 in which individuals with suspected primary or recurrent brain tumors underwent both fluorine 18 fluoro-ethyl-tyrosine PET (¹⁸F-FET-PET) and FDG-PET.¹ Four studies (N =109) met the inclusion criteria. All 4 studies included in the meta-analysis had scores greater than 10 in the 15-point QUADAS tool. The ¹⁸F-FET PET (pooled sensitivity, 94%; 95% CI, 79% to 98%; pooled specificity, 88%; 95% CI, 37% to 99%) performed better than FDG-PET (pooled sensitivity, 38%; 95% CI, 27% to 50%; pooled specificity, 86%; 95% CI, 31% to 99%) in the diagnosis of brain tumors. Target to background ratios of both FDG and FET were similar in detecting low- and high-grade gliomas.

A systematic review and meta-analysis by Dunet et al (2012) included studies published through January 2011 and assessed the use of ^{18}F -FET PET in detecting primary brain tumors.² Thirteen studies (N=462) were included in the systematic review and 5 (n=224) were included in the meta-analysis. All 5 studies in the meta-analysis had scores above 10 on the 14-point QUADAS scale. The pooled sensitivity for ^{18}F -FET PET in detecting primary brain tumors was 82% (95% CI, 74% to 88%) and pooled specificity was 76% (95% CI, 44% to 92%). Other imaging modalities for diagnosing brain tumors were not included in this analysis, so no conclusions could be made about comparative effectiveness.

FDG-PET AND ^{11}C -METHIONINE PET

Systematic Reviews

A meta-analysis by Zhao et al (2014) compared the diagnostic performance of FDG-PET with carbon 11 (^{11}C) methionine PET in the detection of suspected primary brain tumors and suspected recurrence of brain tumors following treatment.³ The literature search included studies published through February 2013. A total of 24 studies provided data on the use of FDG-PET and 11 studies reported on the use of ^{11}C -methionine PET. The pooled sensitivity and specificity of FDG-PET in detecting primary or recurrent brain tumors were 71% (95% CI, 63% to 78%) and 77% (95% CI, 67% to 85%), respectively. Diagnostic performance was better with ^{11}C -methionine PET, with a pooled sensitivity and specificity of 91% (95% CI, 85% to 94%) and 86% (95% CI, 78% to 92%), respectively.

In another meta-analysis, Deng et al (2013) assessed the ability of ^{11}C -methionine PET and MRI to detect glioma recurrence.⁴ The literature search included articles through March 2012. All selected studies were retrospective cohorts, 11 using ^{11}C -methionine PET (n=244) and 7 using MRI (n=214). Meta-analyses found that the dynamic susceptibility contrast-enhanced MRI (pooled sensitivity, 88%; 95% CI, 82% to 93%; pooled specificity, 85%; 95% CI, 75% to 92%) performed similarly to ^{11}C -methionine PET (pooled sensitivity, 87%; 95% CI, 81% to 92%; pooled specificity, 81%; 95% CI, 72% to 89%) in glioma recurrence detection, with ^{11}C -methionine being slightly less specific.

Guidelines

Current NCCN guidelines for central nervous system cancers (v.2.2025) include these statements:⁵

- PET can assess metabolism within the tumor and normal tissue by using radio-labeled tracers, which may be useful in differentiating tumor from radiation necrosis, may correlate with tumor grade, or provide an optimal area for biopsy.
- Limitations include the accuracy of interpretations.
- Close follow-up imaging, MR perfusion, MR spectroscopy, PET/CT imaging, and repeat surgery may be necessary if clinically indicated. Educate patients on the uncertainty of imaging as a whole, and the potential need for corollary testing to interpret scans.

Section Summary: Brain Tumors

Evidence for the use of PET to diagnose and stage brain cancer consists of several systematic reviews and meta-analyses. The diagnostic capabilities of PET vary by radiotracer used. There was a direct comparison of radiotracers, with ^{18}F -FET-PET showing better diagnostic accuracy than FDG-PET. An indirect comparison between FDG-PET and ^{11}C -methionine PET showed that ^{11}C -methionine PET performed better, and another indirect comparison of ^{11}C -methionine

PET and MRI showed a comparable diagnostic capability between methods. The evidence supports the use of FDG-PET, ^{18}F -FET-PET, and ^{11}C -methionine PET for the diagnosis and staging and restaging of brain tumors.

The evidence does not support the use of FDG-PET, ^{18}F -FET-PET, and ^{11}C -methionine PET for surveillance of brain tumors.

Melanoma

Surgical resection for melanoma is limited to those with local disease. Individuals with widespread disease are not candidates for resection. Frequently, there is a microscopic spread of cancer cells to the proximal lymph nodes. Therefore, individuals with a high-risk of nodal spread, as assessed by the thickness of the primary melanoma, may be candidates for lymph node sampling, termed *sentinel node biopsy*. Use of PET scanning has been investigated both as a technique to detect the widespread disease as part of an initial staging procedure and to evaluate the status of local lymph nodes to determine the necessity of sentinel node biopsy.

To consider PET as a useful alternative to sentinel node biopsy, it must have high sensitivity and specificity when sentinel node biopsy or lymph node dissection serves as the reference standard.

Systematic Reviews

In a meta-analysis of 9 studies (N=623), Rodriquez Rivera et al (2014) reported pooled sensitivity and specificity of FDG-PET for detecting systemic metastases in individuals with stage III cutaneous melanoma of 89% (95% CI, 65% to 98%) and 89% (95% CI, 77% to 95%), respectively.⁶

In a systematic review of 17 diagnostic studies (N=1155), Schröer-Günther reported a sensitivity ranging between 68% to 87% and specificity ranging between 92% to 98% for stage III and IV melanoma.⁷ In contrast, for stage I and II melanoma, sensitivity ranged between 0% and 67% and specificity ranged from 77% to 100%, highlighting the limited clinical validity in early-stage disease.

Guidelines

Current NCCN guidelines for cutaneous melanoma (v.2.2025) indicate that PET/CT can be used at baseline in stage IV disease to evaluate for distant metastases.⁸ For stage III disease, cross-sectional imaging, including PET/CT can be consider at baseline (category 2B) or to assess specific signs and symptoms (category 2A). Use of PET/CT is not recommended for stage I or II diseases. Also, PET/CT is listed as an option for surveillance screening for recurrence every 3 to 12 months (category 2B) at the physician's discretion. Because most recurrences occur within the first 3 years, routine screening for asymptomatic recurrence is not recommended beyond 3 to 5 years. The guidelines note that the safety of PET/CT is of concern due to cumulative radiation exposure.

Section Summary: Melanoma

Evidence for the use of FDG-PET/CT in the management of individuals with melanoma consists of a meta-analysis and systematic review. In individuals with melanoma, PET can provide information for staging or restaging in individuals with more advanced disease (stage III or higher). The evidence supports the use of FDG-PET and FDG-PET/CT for the diagnosis and staging and restaging of stage III or IV melanoma.

The evidence does not support the use of FDG-PET and FDG-PET/CT for the diagnosis or staging and restaging of stage I or II melanoma.

The evidence supports the use of FDG-PET and FDG-PET/CT for surveillance of melanoma.

Cancer of Unknown Primary

Burglin et al (2017) conducted a systematic review and meta-analysis on the use of PET/CT for the detection of the primary tumor in individuals with extra cervical metastases.⁹ The literature search identified 20 studies (N=1942) published between 2005 and 2016 for inclusion. The QUADAS tool was used to assess the risk of bias. In regard to patient selection and reference standard, the risk of bias was low; however, the risk of bias was high or unclear for most studies in regard to flow and timing of the index test. The pooled detection rate was 41% (95% CI, 39% to 43%), with large heterogeneity among the studies.

A larger (N=2795) systematic review conducted by Woo et al (2021) included 38 cohort studies (29 of which were retrospective) published through February 2021 assessing the effect of FDG-PET or FDG-PET/CT on patient management.¹⁰ Study quality was assessed using the QUADAS-2 tool; no studies were judged low risk of bias for all QUADAS-2 domains. A funnel plot analysis did not reveal publication bias (Egger's test $p=.98$). In pooled analysis, 35% (95% CI 31% to 40%) of individuals undergoing FDG-PET or FDG-PET/CT imaging had a change in management, although the proportions among the individual studies ranged widely from 0% to 73%, and heterogeneity was high when pooled ($I^2=82\%$). The reason for change in management was detection of the primary cancer site in 22% (95% CI, 19% to 28%) of individuals undergoing imaging, and detection of metastatic site(s) in 14% (95% CI 10% to 19%).

No evidence was identified that evaluated the use of FDG-PET for surveillance of individuals with cancer of unknown primary.

Guidelines

Current NCCN guidelines for occult primary cancers (v.1.2026) state that PET has been useful in the diagnosis, staging, and restaging of many malignancies, so it may be warranted in some situations for cancers of unknown primary.^{6,11} However, the exact role of PET/CT remains undetermined. The guideline does not recommend PET/CT for the initial evaluation of cancers of unknown primary individuals, but notes that it can be useful in certain cases, especially when considering local or regional therapy. NCCN also notes that FDG-PET/CT is an alternative in patients with a contraindication to contrast enhancement.

Section Summary: Cancer of Unknown Primary

The evidence supports the use of FDG-PET and FDG-PET/CT for the diagnosis, staging, and restaging of cancer of unknown primary.

SUMMARY OF EVIDENCE

Brain Tumors

For individuals who have diagnosed brain tumors and in need of staging or restaging information or who have suspected brain tumor who receive FDG-PET, ¹⁸F fluoro-ethyl-tyrosine PET, or carbon 11 (¹¹C) methionine PET, the evidence includes several systematic reviews and meta-

analyses. Relevant outcome is test validity. Pooled analyses have shown that PET or PET/CT can be effective in distinguishing brain tumors from normal tissue. Indirect comparisons between the radiotracers ^{11}C -methionine and FDG have shown that ^{11}C -methionine may have better diagnostic performance. Clinical guidelines include PET to inform management decisions that may offer clinical benefit. The evidence is sufficient to determine that the technology results in an improvement in the net health outcome.

For individuals who are asymptomatic after completing brain cancer treatment who receive FDG-PET, ^{18}F fluoro-ethyl-tyrosine-PET, or ^{11}C -methionine PET, the evidence includes systematic reviews and meta-analyses. Relevant outcome is test validity. Pooled analyses did not support the use of PET for surveillance of brain cancer following treatment. The evidence is insufficient to determine that the technology results in an improvement in the net health outcome.

Melanoma

For individuals who have suspected or diagnosed stage I or II melanoma and in need of staging or restaging information who receive FDG-PET or FDG-PET/CT, the evidence includes a meta-analysis and systematic review. Relevant outcome is test validity. Evidence has shown PET and PET/CT are not as beneficial as the reference standard (sentinel node biopsy) for assessing regional lymph nodes. The evidence is insufficient to determine that the technology results in an improvement in the net health outcome.

For individuals who have diagnosed advanced melanoma (stage III or IV) and in need of staging or restaging information who receive FDG-PET or FDG-PET/CT, the evidence includes a meta-analysis and systematic review. Relevant outcome is test validity. Evidence has shown PET and PET/CT can detect systemic metastases in individuals with advanced melanoma. Clinical guidelines include PET/CT for staging or restaging stage III or IV disease and for surveillance. The evidence is sufficient to determine that the technology results in an improvement in the net health outcome.

For individuals who are asymptomatic after completing melanoma treatment who receive FDG-PET or FDG-PET/CT, the evidence includes retrospective and observational studies. Relevant outcome is test validity. At the discretion of the physician, imaging surveillance can be considered every 3 to 12 months. Because recurrences usually occur within 3 years, screening asymptomatic individuals beyond 3 to 5 years is not recommended. The evidence is sufficient to determine that the technology results in an improvement in the net health outcome.

Cancer of Unknown Primary and Single-Site Metastatic Disease

For individuals with cancer of unknown primary and single-site metastatic disease who receive FDG-PET or FDG-PET/CT, the evidence includes a meta-analysis and systematic review. Relevant outcome is test validity. Studies reviewed in the assessment showed that PET identified previously undetected metastases confirmed by biopsy. Additionally, PET can contribute to the management of individuals with cancer of unknown primary. Clinical guidelines include PET/CT to inform management decisions that may offer clinical benefit. The evidence is sufficient to determine that the technology results in an improvement in the net health outcome.

SUPPLEMENTAL INFORMATION

The purpose of the following information is to provide reference material. Inclusion does not imply endorsement or alignment with the evidence review conclusions.

Practice Guidelines and Position Statements

Guidelines or position statements will be considered for inclusion in 'Supplemental Information' if they were issued by, or jointly by, a US professional society, an international society with US representation, or National Institute for Health and Care Excellence (NICE). Priority will be given to guidelines that are informed by a systematic review, include strength of evidence ratings, and include a description of management of conflict of interest.

Current National Comprehensive Cancer Network and other relevant U.S.-based guidelines are summarized in each section of the Rationale.

U.S. Preventive Services Task Force Recommendations

Not applicable.

Table 1. National FDG PET Coverage for Oncologic Conditions

FDG PET for Cancers by Tumor Type	Initial Treatment Strategy (formerly "diagnosis" & "staging")	Subsequent Treatment Strategy (formerly "restaging" & "monitoring response to treatment")
Colorectal	Cover	Cover
Esophagus	Cover	Cover
Head and Neck (not thyroid, CNS)	Cover	Cover
Lymphoma	Cover	Cover
Non-small cell lung	Cover	Cover
Ovary	Cover	Cover
Brain	Cover	Cover
Cervix	Cover with exceptions *	Cover
Small cell lung	Cover	Cover
Soft tissue sarcoma	Cover	Cover
Pancreas	Cover	Cover
Testes	Cover	Cover
Prostate	Non-cover	Cover
Thyroid	Cover	Cover
Breast (male and female)	Cover with exceptions *	Cover
Melanoma	Cover with exceptions *	Cover
All other solid tumors	Cover	Cover
Myeloma	Cover	Cover
All other cancers not listed	Cover	Cover

*Cervix: Nationally non-covered for the initial diagnosis of cervical cancer related to initial anti-tumor treatment strategy. All other indications for initial anti-tumor treatment strategy for cervical cancer are nationally covered.

*Breast: Nationally non-covered for initial diagnosis and/or staging of axillary lymph nodes. Nationally covered for

initial staging of metastatic disease. All other indications for initial anti-tumor treatment strategy for breast cancer are nationally covered.

*Melanoma: Nationally non-covered for initial staging of regional lymph nodes. All other indications for initial anti-tumor treatment strategy for melanoma are nationally covered.

Ongoing and Unpublished Clinical Trials

Some currently ongoing and unpublished trials that might influence this review are listed in Table 2.

Table 2. Summary of Key Trials

NCT No.	Trial Name	Planned Enrollment	Completion Date
<i>Ongoing</i>			
NCT03116412	A Prospective Randomized Multicenter Trial to Assess the Role of Imaging During Follow up After Radical Surgery of Stage IIb-c and III Cutaneous Malignant Melanoma (TRIM)	1300	Dec 2028

NCT: national clinical trial.

CODING

The following codes for treatment and procedures applicable to this policy are included below for informational purposes. This may not be a comprehensive list of procedure codes applicable to this policy.

Inclusion or exclusion of a procedure, diagnosis or device code(s) does not constitute or imply member coverage or provider reimbursement. Please refer to the member's contract benefits in effect at the time of service to determine coverage or non-coverage of these services as it applies to an individual member.

The code(s) listed below are medically necessary ONLY if the procedure is performed according to the "Policy" section of this document.

CPT/HCPCS	
78608	Brain imaging, positron emission tomography (PET); metabolic evaluation
78609	Brain imaging, positron emission tomography (PET); perfusion evaluation
78811	Positron emission tomography (PET) imaging; limited area (e.g. Chest, head/neck)
78812	Positron emission tomography (PET) imaging; skull base to mid-thigh
78813	Positron emission tomography (PET) imaging; whole body
78814	Tumor imaging, positron emission tomography (PET) with concurrently acquired computed tomography (CT) for attenuation correction and anatomical localization; limited area (e.g. chest, head/neck)
78815	Tumor imaging, positron emission tomography (PET) with concurrently acquired computed tomography (CT) for attenuation correction and anatomical localization; skull base to mid-thigh
78816	Tumor imaging, positron emission tomography (PET) with concurrently acquired computed tomography (CT) for attenuation correction and anatomical localization; whole body
A9515	Choline C-11 injection, diagnostic, per study dose up to 20 millicuries
A9552	Fluorodeoxyglucose F-18 FDG, diagnostic, per study dose, up to 45 millicuries
A9580	Sodium fluoride F-18, diagnostic, per study dose, up to 30 millicuries
A9597	Positron emission tomography radiopharmaceutical, diagnostic, for tumor identification, not otherwise classified
A9598	Positron emission tomography radiopharmaceutical, diagnostic, for non-tumor identification, not otherwise classified
G0235	PET imaging, any site not otherwise specified

REVISIONS	
Posted 01-28-2025 Effective 02-27-2025	Oncologic Applications Brain, Melanoma, Unknown Primary was originally part of the Positron Emission Tomography (PET) Scanning: Oncologic Applications medical policy. Oncologic Applications for Brain, Melanoma, Unknown Primary has been pulled out and placed into a separate medical policy, Positron Emission Tomography (PET) Scanning: Oncologic Applications (Brain, Melanoma, Unknown Primary). The medical policy language was unchanged.
01-13-2026	Updated Description Section
	Updated Policy Section

REVISIONS	
	<ul style="list-style-type: none"> Changed A1: From PET to FDG-PET or FDG-PET/CT (positron emission tomography (PET)) Changed B1, B2, B3, C1, C2, D1: From PET to FDG-PET or FDG-PET/CT
	<p>Updated Policy Guidelines Section</p> <ul style="list-style-type: none"> Removed: Patient Selection <p>As with any imaging technique, the medical necessity of positron emission tomography (PET) scanning depends in part on what imaging techniques are used before or after the PET scanning. Due to its expense, PET scanning is typically considered after other techniques, such as computed tomography (CT), magnetic resonance imaging (MRI), or ultrasonography, provide inconclusive or discordant results. Thus, PET should be considered for the medically necessary indications above only when standard imaging (eg, CT, MRI) is inconclusive or not indicated.</p> <p>Patient selection criteria for PET scanning may also be complex. Due to the complicated hierarchy of imaging options in individuals with malignancy and complex patient selection criteria, a possible implementation strategy for this policy is its use for retrospective review, possibly focusing on cases with multiple imaging tests, including PET scans.</p> <p>Use of PET scanning for surveillance as described in the policy statement and policy rationale refers to the use of PET to detect disease in asymptomatic individuals at various intervals. This is not the same as the use of PET for detecting recurrent disease in symptomatic individuals; these applications of PET are considered within tumor-specific categories in the policy statements.</p>
	Updated Rationale Section
	Updated Reference Section

REFERENCES

1. Dunet V, Pomoni A, Hottinger A, et al. Performance of 18F-FET versus 18F-FDG-PET for the diagnosis and grading of brain tumors: systematic review and meta-analysis. *Neuro Oncol*. Mar 2016; 18(3): 426-34. PMID 26243791
2. Dunet V, Rossier C, Buck A, et al. Performance of 18F-fluoro-ethyl-tyrosine (18F-FET) PET for the differential diagnosis of primary brain tumor: a systematic review and Metaanalysis. *J Nucl Med*. Feb 2012; 53(2): 207-14. PMID 22302961
3. Zhao C, Zhang Y, Wang J. A meta-analysis on the diagnostic performance of (18)F-FDG and (11)C-methionine PET for differentiating brain tumors. *AJNR Am J Neuroradiol*. Jun 2014; 35(6): 1058-65. PMID 24029389
4. Deng SM, Zhang B, Wu YW, et al. Detection of glioma recurrence by ¹¹C-methionine positron emission tomography and dynamic susceptibility contrast-enhanced magnetic resonance imaging: a meta-analysis. *Nucl Med Commun*. Aug 2013; 34(8): 758-66. PMID 23670103
5. National Comprehensive Cancer Network (NCCN). Clinical Practice Guidelines in Oncology: Central Nervous System Cancers. Version 2.2025. https://www.nccn.org/professionals/physician_gls/pdf/cns.pdf. Accessed October 2, 2025.
6. Rodriguez Rivera AM, Alabbas H, Ramjaun A, et al. Value of positron emission tomography scan in stage III cutaneous melanoma: a systematic review and meta-analysis. *Surg Oncol*. Mar 2014; 23(1): 11-6. PMID 24556310
7. Schröer-Günther MA, Wolff RF, Westwood ME, et al. F-18-fluoro-2-deoxyglucose positron emission tomography (PET) and PET/computed tomography imaging in primary staging of

- patients with malignant melanoma: a systematic review. *Syst Rev*. Dec 13 2012; 1: 62. PMID 23237499
8. National Comprehensive Cancer Network (NCCN). Clinical Practice Guidelines in Oncology: Melanoma: Cutaneous. Version 2.2025.
https://www.nccn.org/professionals/physician_gls/pdf/cutaneous_melanoma.pdf. Accessed October 1, 2025.
 9. Burglin SA, Hess S, Høilund-Carlsen PF, et al. 18F-FDG PET/CT for detection of the primary tumor in adults with extracervical metastases from cancer of unknown primary: A systematic review and meta-analysis. *Medicine (Baltimore)*. Apr 2017; 96(16): e6713. PMID 28422888
 10. Woo S, Becker AS, Do RKG, et al. Impact of 18 F-Fluorodeoxyglucose positron emission tomography on management of cancer of unknown primary: systematic review and meta-analysis. *Eur J Cancer*. Dec 2021; 159: 60-77. PMID 34742159
 11. National Comprehensive Cancer Network (NCCN). Clinical Practice Guidelines in Oncology: Occult Primary (Cancer of Unknown Primary [CUP]). Version 1.2026.
https://www.nccn.org/professionals/physician_gls/pdf/occult.pdf. Accessed October 30, 2025.
 12. Centers for Medicare & Medicaid Services (CMS). 2013. Pub 100-03 National Coverage Determination (NCD) for Positron Emission Tomography (FDG) for Oncologic Conditions (220.6.17); <https://www.cms.gov/medicare-coverage-database/view/ncd.aspx?NCIDId=331>. Accessed October 2, 2025.

OTHER REFERENCES

1. MCMC, Medical Care Ombudsman Program (MCOP), August 11, 2006, MCOP ID 1071-0720.
2. Considine oncology consultant (#372), January 23, 2007, Reference: *Semin Nucl Med*. 2006 Jan;36(1):93-104. Links Positron emission tomography in gynecologic cancer. Yen TC, Lai CH.
3. Blue Cross and Blue Shield of Kansas, Oncology Liaison Committee meeting, February 2003, February 2004, June 2022, July 2023, July 2025.
4. Blue Cross and Blue Shield of Kansas, Radiology Liaison Committee meeting, February 2002, February 2003. February 2009, January 2018, May 2019.
5. Blue Cross and Blue Shield of Kansas Urology Liaison Committee August 2018, June 2020.