Cohere Medical Policy -
Positron Emission Tomography (PET), Brain

Clinical Policy for Medical Necessity Review

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Important Notices

Notices & Disclaimers:

GUIDELINES ARE SOLELY FOR COHERE'S USE IN PERFORMING MEDICAL NECESSITY REVIEWS AND ARE NOT INTENDED TO INFORM OR ALTER CLINICAL DECISION-MAKING OF END USERS.

Cohere Health, Inc. ("**Cohere**") has published these clinical guidelines to determine the medical necessity of services (the "**Guidelines**") for informational purposes only, and solely for use by Cohere's authorized "**End Users**". These Guidelines (and any attachments or linked third-party content) are not intended to be a substitute for medical advice, diagnosis, or treatment directed by an appropriately licensed healthcare professional. These Guidelines are not in any way intended to support clinical decision-making of any kind; their sole purpose and intended use is to summarize certain criteria Cohere may use when reviewing the medical necessity of any service requests submitted to Cohere by End Users. Always seek the advice of a qualified healthcare professional regarding any medical questions, treatment decisions, or other clinical guidance. The Guidelines, including any attachments or linked content, are subject to change at any time without notice.

Other Notices:

Policy Information:

Specialty Area: Diagnostic Imaging
Policy Name: Cohere Medical Policy**-** Positron Emission Tomography (PET), Brain
Type: [**X**] Adult (18+ yo) | [**X**] Pediatric (0-17 yo)

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Medical Necessity Criteria

Service: Positron Emission Tomography (PET), Brain

Cohere Health takes an evidence-based approach to reviewing imaging and procedure requests, meaning that sufficient clinical information must be provided at the time of submission to determine medical necessity. Documentation must include a recent and detailed history, physical examination related to the onset or change in symptoms, relevant lab results, prior imaging, and details of previous treatments. Advanced imaging or procedures should be requested after a clinical evaluation by the treating provider, which may include a referral to a specialist.

- When a specific clinical indication is not explicitly addressed in the Cohere Health medical policy, medical necessity will be determined based on established clinical best practices, as supported by evidence-based literature, peer-reviewed sources, professional society guidelines, and state or national recommendations, unless otherwise directed by the health plan.
- Requests submitted without clinical documentation, or those that do not align with the provided clinical information—such as mismatched laterality, body part, or CPT code—may be denied for lack of medical necessity due to insufficient or inconsistent clinical information.
- Repeat diagnostic testing due to technical issues—such as patient motion, incomplete exams, or incorrect imaging sequences—may not be considered medically necessary, as it is the responsibility of the imaging center to deliver appropriate, high-quality studies as originally authorized. Similarly, repeat imaging requested at a different facility based solely on provider preference may not be approved for medical necessity.
- When there are multiple diagnostic or therapeutic procedures requested simultaneously or within the past three months, each will be reviewed independently. Clinical documentation must clearly justify all of the following:
    - The medical necessity of each individual request

    - Why prior imaging or procedures were inconclusive or why additional/follow-up studies are needed
    - How the results will impact patient management or treatment decisions
- Requests involving adjacent or contiguous body parts may be considered not medically necessary if the documentation demonstrates that the patient's primary symptoms can be adequately assessed with a single study or procedure.
- Cohere Health evaluates imaging exams based on medical necessity, regardless of contrast use. If an initial non-contrast study is completed and the radiologist later determines that contrast is needed to clarify a finding, the original authorization number may be used—provided the contrast-enhanced exam is performed at the same imaging center and within the original request's validity period, unless otherwise directed by the health plan.

Description

^{18}FDG (fluorodeoxyglucose) PET/CT imaging allows for the assessment of metabolic activity and cerebral function. Specifically, ^{18}F-FDG brain imaging proves valuable across a spectrum of clinical scenarios, such as dementia, seizure disorders, and the detection of new or recurring brain tumors.[1] FDG-PET imaging reveals regional variations in glucose metabolism, serving as a marker for neurodegeneration. These patterns not only signify the existence of neurological decline but also offer insight into the specific cerebral regions and pathways affected by the condition.[2]

Medical Necessity Criteria

Indications

Positron emission tomography (PET), brain is considered appropriate if **ANY** of the following is **TRUE**:

- **Fluorodeoxyglucose (FDG) PET brain,** is considered appropriate if the patient has **ANY** of the following exam findings[3]:
  - Cognitive impairment or suspected diagnosis of dementia with **ANY** of the following that require evaluation[1,2,4]:
    - Progressive dementia and the age of onset was atypically early[5]; **OR**
    - Differentiation of Alzheimer's dementia and frontotemporal dementia, and the patient has had **ALL** of the following:
      - Evaluation by a physician experienced in neurodegenerative disease; **AND**
      - Abnormal cognitive status testing according to objective screening tool including **ANY** of the following[3,4,6]:
        - Montreal cognitive assessment (MoCA) less than 26; **OR**
        - Mini-mental state examination (MMSE) score less than 23[6]; **OR**
        - Saint Louis University mental status (SLUMS) score less than 19[7]; **OR**,
        - Informant questionnaire on cognitive decline in the elderly (IQCODE) score greater than or equal to 3.4[8]; **OR**
        - Mini-cog score less than 3; **OR**
        - Formal neuropsychological testing; **AND**
      - Nondiagnostic structural imaging of the brain (computed tomography [CT] or magnetic resonance imaging [MRI]); **AND**
      - Relevant lab values are normal or nondiagnostic (B12, thyroid stimulating hormone [TSH]); **OR**
  - Seizure disorder (epilepsy), known, with **ANY** of the following[1,9]:
    - Change in seizure presentation; **OR**
    - New neurologic deficit; **OR**
    - Refractive to medical therapy with no return to previous neurologic baseline; **OR**
    - History of medically-refractory epilepsy for which invasive treatment is considered; **OR**
    - The patient is a surgical candidate (including surgical planning); **OR**
  - Tumor, suspected or known, and **ALL** of the following are **TRUE**[10,11]:
    - MRI is contraindicated or inconclusive; **AND**

        - Evaluation of **ANY** of the following:
            - Differentiation of radiation necrosis versus previously-treated tumor recurrence[1]; **OR**
            - Guiding biopsy and radiation therapy planning[1]; **OR**
            - Evaluation of a primary brain tumor; **OR**
- **Single amyloid PET** is considered appropriate for differentiation of Alzheimer's dementia and frontotemporal dementia when the patient has had **ALL** of the following[12]:
    - Evaluation by a physician experienced in neurodegenerative disease; **AND**
    - Abnormal cognitive status testing according to objective screening tool including **ANY** of the following[3,4,6]:
        - Montreal cognitive assessment (MoCA) less than 26; **OR**
        - Mini-mental state examination (MMSE) score less than 23[6]; **OR**
        - Saint Louis University mental status (SLUMS) score less than 19[7]; **OR**,
        - Informant questionnaire on cognitive decline in the elderly (IQCODE) score greater than or equal to 3.4[8]; **OR**
        - Mini-cog score less than 3; **OR**
        - Formal neuropsychological testing; **AND**
    - Nondiagnostic structural imaging of the brain (computed tomography [CT] or magnetic resonance imaging [MRI]); **AND**
    - Relevant lab values are normal or nondiagnostic (B12, thyroid stimulating hormone [TSH]); **OR**
- **Dotatate PET** for meningioma when prior MRI or CT is indeterminate[13-16]; **OR**
- Repeat imaging (defined as a repeat request following recent imaging of the same anatomic region with the same or similar modality) will be considered reasonable and necessary if **ALL** of the following are **TRUE**:
    - There are no established guidelines; **AND**
    - **ANY** of the following:
        - There are new or worsening symptoms not addressed in the guidelines, such that repeat imaging would influence treatment; **OR**
        - There is need for a one-time clarifying follow-up of a prior indeterminate finding; **OR**
        - In the absence of change in symptoms, there is an established need for monitoring which would influence management.

* NOTE: MRI is the preferred imaging modality for follow-up imaging following an initial amyloid PET scan.

Non-Indications

Positron emission tomography (PET), brain is not considered appropriate for **ANY** of the following:

- The patient has undergone advanced imaging of the same body part within 3 months, without being on treatment or developing new or worsening symptoms[17].

*NOTE: PET in pregnant patients should be requested at the discretion of the ordering provider and obstetric care provider.
**NOTE: PET scans should be scheduled at least 4–6 weeks after radiation therapy or surgery to avoid false positives due to inflammation from recent treatments.

Disclaimer on Radiation Exposure in Pediatric Population

Due to the heightened sensitivity of pediatric patients to ionizing radiation, minimizing exposure is paramount. At Cohere, we are dedicated to ensuring that every patient, including the pediatric population, has access to appropriate imaging following accepted guidelines. Radiation risk is dependent mainly on the patient's age at exposure, the organs exposed, and the patient's sex, though there are other variables. The following technical guidelines are provided to ensure safe and effective imaging practices:

Radiation Dose Optimization: Adhere to the lowest effective dose principle for pediatric imaging. Ensure that imaging protocols are specifically tailored for pediatric patients to limit radiation exposure.[18,19]

Alternative Modalities: Prioritize non-ionizing imaging options such as ultrasound or MRI when clinically feasible, as they are less likely to expose the patient to ionizing radiation. For instance, MRI or ultrasound should be considered if they are more likely to provide an accurate diagnosis than CT, fluoroscopy, or radiography.[18,19]

Cumulative Dose Monitoring: Implement systems to track cumulative radiation exposure in pediatric patients, particularly for those requiring multiple imaging studies. Regularly reassess the necessity of repeat imaging based on clinical evaluation.[18,19]

CT Imaging Considerations: When CT is deemed the best method for

achieving a correct diagnosis, use the lowest possible radiation dose that still yields reliable diagnostic images.[18,19]

Cohere Imaging Gently Guideline

The purpose of this guideline is to act as a potential override when clinically indicated to adhere to Imaging Gently and Imaging Wisely guidelines and As Low As Reasonably Possible (ALARA) principles.

Level of Care Criteria

Outpatient

Procedure Codes (CPT/HCPCS)

CPT/HCPCS Code	Code Description
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 (eg, chest, head/neck)
78814	Positron emission tomography (PET) with concurrently acquired computed tomography (CT) for attenuation correction and anatomical localization imaging; limited area (eg, chest, head/neck)

Medical Evidence

Spano et al. (2023) analyzed the efficacy of PET imaging in cases of cognitive decline, specifically its significance in diagnosing Alzheimer's disease (AD). While FDG PET remains the predominant PET tracer in clinical use, several PET radiotracers enable the observation of underlying pathophysiological processes in AD, including Aβ deposition, tau deposition, synaptic density loss, neuroinflammation, cholinergic cell death, and reduced monoamine neurotransmission. Three FDA-approved 18F-labeled radiopharmaceuticals exist, including florbetaben (NeuraCeq), florbetapir (Amyvid), and flutemetamol (Vizamyl). These assess Aβ deposition, predominantly utilized in clinical trials with limited reimbursement for diagnostic purposes. The advancement of PET radiotracers in routine practice allows clinicians to diagnose and intervene in neurodegenerative diseases effectively.[20]

Quigg et al. (2022) report on using positron emission tomography with fluorine-18 fluorodeoxyglucose (^{18}F-FDG-PET) to map brain glucose metabolism patterns. This imaging modality aids in assessing normal brain function and identifying metabolic abnormalities in various brain disorders. Traditional PET methods cannot distinguish normal from pathological tissue, particularly in conditions such as brain neoplasms or focal epilepsy. The aim is to enhance the functional mapping of metabolic activity within the target organ. Recent technological advancements may broaden dynamic PET across various clinical settings.[21]

Rabinovici et al. (2019) conducted a single-group, multi-center longitudinal study called Imaging Dementia-Evidence for Amyloid Scanning (IDEAS) (ClinicalTrials.gov Identifier: NCT02420756). The study assessed whether amyloid PET scans influence the subsequent management decisions for patients diagnosed with mild cognitive impairment (MCI) or dementia of uncertain origin. Participants (n=11409) at 343 imaging centers underwent amyloid PET. Within 90 days of evaluation, participants diagnosed with MCI or dementia of uncertain origin who underwent amyloid PET scans exhibited alterations in clinical management. Further research is needed to ascertain whether amyloid PET correlates with enhanced clinical outcomes.[22]

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Policy Revision History/Information

Original Date: April 8, 2022		
Review History		
Version 2	08/15/2024	Annual review and policy restructure.
Version 3	10/30/2024	Edited repeat imaging criteria language.
Version 4	08/28/2025	Annual review Updated content layout to align with revised template, including repeat imaging criteria Dementia criteria added; for amyloid imaging, criteria added for dementia screening and scores (MMSe, MoCA, SLUMS) and for lab testing requirements