

2011 Imaging Criteria

Positron Emission Tomography (PET), Chest^(1, 2*RIN, 3, 4)

ICD-9-CM: 92.15
CPT: 78599, 78811
I/O Setting: Outpatient

INDICATION(S)

100 New solitary pulmonary nodule by CXR

100 New solitary pulmonary nodule by CXR **[Both]**^(5*MDR, 6, 7, 8)
110 CT nondiagnostic for malignancy^(9, 10, 11)
120 Size \geq 1 cm^(12, 13)

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Notes

(1)

These criteria include the following procedure:
PET/CT Fusion, Chest

(2)-RIN:

PET scanning of the chest is limited to evaluation of solitary pulmonary nodules. For evaluation of metastatic disease, see "Positron Emission Tomography (PET), Whole Body" in the *General* category.

(3)

While CT or MRI provides anatomic information that is helpful in the evaluation of cancer, the utility of these studies is often limited by scarring or benign postoperative changes that can be difficult to differentiate from tumor. PET scans image metabolic function and can distinguish between benign and malignant changes by utilizing a radiolabeled tracer, most commonly ¹⁸F-fluorodeoxyglucose (FDG), which is incorporated into tumor cells more avidly because of higher metabolic rates. PET is appropriate to determine management for biopsy proven cancer; it is not used to establish a diagnosis of cancer (Podoloff et al., J Natl Compr Canc Netw 2009; 7 Suppl 2: S1-26). The National Oncologic PET Registry (NOPR) has recently assessed how FDG-PET affects care decisions and reports that PET results alter management in over 36% of cases and enable physicians to avoid additional tests and procedures (Hillner et al., J Clin Oncol 2008; 26(13): 2155-2161).

(4)

Virtually all newly installed PET systems in the U.S. are PET/CT systems, rather than dedicated stand-alone PET units. PET/CT is increasingly used to diagnose suspected cancer, for initial staging, for restaging after completion of therapy, and for suspected recurrence (Blodgett et al., Radiology 2007; 242(2): 360-385). Therefore, PET/CT may be utilized for any oncological indication where PET scanning is considered appropriate.

(5)-MDR:

These criteria address newly diagnosed solitary pulmonary nodules. Known benign nodules should be followed with CXR. Biopsy or CT may be performed for changes or equivocal findings on CXR. Requests for PET scans for changes noted on CXR require secondary medical review.

(6)

Solitary pulmonary nodules are identified in approximately 150,000 patients each year in the U.S. and are usually incidental findings on CXR performed for another reason (e.g., rule out PE, preoperative evaluation) (Kim et al., J Nucl Med 2007; 48(2): 214-220).

(7)

PET provides metabolic information that is helpful in characterizing solitary pulmonary nodules. Malignant cells avidly accumulate radiotracer (e.g., ¹⁸F-fluorodeoxyglucose) because of their rapid metabolism. PET has an overall sensitivity of 88% to 96% and specificity of 70% to 90% for detecting malignancy in pulmonary nodules (Jeong et al., AJR Am J Roentgenol 2007; 188(1): 57-68).

(8)

PET scan is warranted only when test results will impact clinical decision-making. In a patient with a low probability of malignancy and equivocal findings by CT, PET may be indicated. A negative PET would support observation with serial CXR or CT scan; positive results require follow-up with biopsy or surgery (Gould et al., Chest 2007; 132(3 Suppl): 108S-130S).

(9)

CT is the preferred imaging study to further evaluate a patient found to have a solitary pulmonary nodule on CXR (Klein and Braff, Clin Chest Med 2008; 29(1): 15-38).

(10)

Approximately 35% of solitary pulmonary nodules are due to primary malignancy, with an additional 23% diagnosed as pulmonary metastasis. Most nodules > 3 cm are malignant (Tan et al., Chest 2003; 123(1 Suppl): 89S-96S). Criteria for a benign nodule include (Kim et al., J Nucl Med 2007; 48(2): 214-220; Hartman, Radiol Clin North Am 2005; 43(3): 459-465, vii):

- A benign pattern of calcification in the nodule
- Stability of size over the preceding 2 years

(11)

If the CT is equivocal, additional testing is required. PET scanning is helpful in characterizing a benign from a malignant lesion.

(12)

PET is performed for solitary pulmonary nodules that are ≥ 1 cm in diameter, because it is more sensitive for detecting nodules of that size (Klein and Braff, Clin Chest Med 2008; 29(1): 15-38; Gould et al., Chest 2007; 132(3 Suppl): 108S-130S).

(13)

With advances in technology, PET is becoming more accurate; there are recent guidelines that suggest PET is sensitive in evaluating nodules as small as 8 mm in diameter (Gould et al., Chest 2007; 132(3 Suppl): 108S-130S).