

Evidence Discussion (CH 16.4)

PET/CT may be performed for evaluation of a solid lung nodule greater than or equal to 8 mm on chest CT.(1,2,3) PET/CT has good sensitivity and moderate specificity for detecting malignancy in patients with a high risk of cancer and a nodule greater than or equal to 10 mm.(4) Consensus opinion is that nodules < 8 to 10 mm are not reliably characterized by PET/CT.(2,4) The false negative rate of PET/CT is higher for nodules < 8 mm and for malignancies with low metabolic activity, such as adenocarcinoma in situ or well differentiated carcinoid tumor. PET/CT has a lower sensitivity and higher false negative rate for ground glass or part solid nodules.(2,4) Infections and inflammatory disorders may cause false positive results.

Repeating a PET/CT is discouraged. If there is a high pretest probability of cancer, a negative PET/CT does not reliably rule out cancer and either continued surveillance for at least 2 years or tissue sampling is advised.(2,5). If a solid nodule shows clear growth on serial CT's, a non-surgical biopsy or surgical resection is recommended unless there are specific contraindications.(2) A surgical diagnosis is recommended if the nodule is hypermetabolic on PET/CT.(2)

PET/CT may be indicated for the pre-treatment staging of patients with confirmed or strongly suspected lung cancer, as detailed in the oncology guidelines.(2,3)

1. 1. MacMahon G, Naidich DP, Goo JM, et al. Guidelines for Management of Incidental Pulmonary Nodules Detected on CT Images: From the Fleischner Society 2017. *Radiology*. 2017 Jul;284(1):228-243.
2. Gould MK, Donington J, Lynch WR, et al. Evaluation of individuals with pulmonary nodules: when is it lung cancer? Diagnosis and management of lung cancer, 3rd ed: ACCP evidence-based clinical practice guidelines. *Chest*. 2013 May;143(5 Suppl):e93S-e120S.
3. NCCN Guidelines Version 6.2024. Non-Small Cell Lung Cancer. Incidental finding of nodule suspicious for lung cancer. *need correct format of reference.
4. Callister ME, Baldwin DR, Akram AR, et al. British Thoracic Society guidelines for the investigation and management of pulmonary nodules. *Thorax*. 2015 Aug;70 Suppl 2:ii1-ii54.
5. Maiga AW, Pinkerman R, Lambright ES, et al. Assessment of FDG F18-Labeled PET for Diagnosis of High-Risk Lung Nodules. *JAMA Surgery*. 2018 Apr 1;153(2): 137-142.