

Evidence Discussion Non-Small Cell Lung Cancer (ONC-8.0 through ONC-8.5)

Suspected NSCLC and Initial Staging

For patients with suspected lung cancer and an abnormal chest x-ray or a high suspicion for lung cancer with symptoms of lung cancer, a CT chest is indicated, with or without contrast. If a PET/CT is performed in the workup of a pulmonary nodule and is positive, it qualifies as the initial staging PET. The radiotracer supported for PET/CT for lung cancer is 18-FDG (NCI 2024, MacMahon 2017). Lesions 31mm or greater are considered masses rather than nodules (MacMahon 2017). There is no clear evidence for PET-CT over biopsy in this case. Generally, masses should be biopsied rather than re-imaged. PET/CT is supported if definitive treatment with resection or radiation will be utilized instead of biopsy (if PET confirms limited disease), or if multiple biopsy sites are present within the chest and PET findings will be used to determine the most favorable biopsy site. This maximizes patient safety when making decisions regarding invasive procedures.

CT chest and upper abdomen to the level of the adrenals is supported for initial staging, as liver and adrenal metastatic disease are common in NSCLC. Pelvic disease is rare and imaging of the pelvis without pelvic symptoms is not recommended by NCCN (Riely 2024). FDG PET-CT is supported in most patients, with the exception of those with obvious multi-site metastatic disease on conventional imaging who are not eligible for treatment with curative intent. PET-CT does not change management nor provide prognostic value in this setting (Riely 2024, Ravenel 2014, Ravenel 2012).

Over 10% of patients with stage III or IV disease present with metastatic disease to the brain, and 4-5% of patients with stage II disease. MRI brain with and without contrast has a higher detection rate for metastatic disease to the brain than CT, and is indicated in all patients with stage II-IV disease (Yokoi 1999, Riely 2024). For patients with stage I disease considering resection as primary therapy, MRI brain with and without contrast is indicated to prevent under-staging and under-treatment, since a small number of patients with apparent stage I disease and no CNS symptoms will have occult brain lesions (Riely 2024, NCI 2024) and will require additional therapies.

For patients with superior sulcus (Pancoast) tumor, MRI chest and MRI cervical and thoracic spine with and without contrast have higher specificity for chest wall invasion, neurologic involvement, and fibrosis than CT alone, and are supported in addition to the imaging stated above (Unal 2024, Riely 2024).

Restaging

In alignment with the NCCN, CT chest and abdomen with contrast are supported every two cycles, with pelvic imaging only for a history of pelvic disease or new pelvic

symptoms. These are also supported at any time for clinically suspected recurrence. MRI brain with and without contrast is supported every 2 cycles for patients with known brain metastases being treated with systemic therapy, or at any time for patients with new neurologic symptoms or documented systemic progression (Riely 2024). An additional CT chest is supported if requested after neoadjuvant therapy to evaluate for resectability, in the interest of safe resection. CT is also supported post-operatively to assess baseline prior to starting adjuvant therapy, in alignment with NCCN (Riely 2024).

Surveillance

Both ASCO and NCCN recommend CT chest with or without contrast every 6 months for 3 years and then annually for patients with stage I or II disease. To prevent undertreatment, patients treated with radiation who have residual abnormalities on imaging may undergo more frequent imaging every 3 months for the first year then every 6 months for 2 years, then annually thereafter (Riely 2024, Schneider 2020). Patients with stage II disease or definitively treated metastatic disease are at higher risk for relapse particularly in the first 2 years, and both NCCN and ASCO recommend CT chest every 3 months for 2 years, every 6 months for 3 years, then annually. (Riely 2024, Schneider 2020). Asymptomatic abdominal and pelvic imaging exposes to radiation with low-yield for metastatic disease detection and is not supported (Riely 2024, Schneider 2020). FDG-PET is not supported for surveillance due to excessive false positive rates, radiation exposure, and increased risk of unnecessary procedures for incidental false positive findings (ASCO 2021, ACR 2024, Schneider 2020, Riely 2024). MRI brain for asymptomatic surveillance is low yield in asymptomatic NSCLC surveillance and is not routinely recommended (Schneider 2020, Riely 2024).

References:

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