PET and PET•CT in Lung Cancer

1. **Are PET and/or PET•CT useful in the evaluation of patients with lung cancer and/or solitary pulmonary nodules?**

   Yes. FDG PET and PET•CT are useful for the initial evaluation, staging and re-staging of lung cancer as well as for the evaluation of solitary pulmonary nodules.

2. **What is the smallest pulmonary nodule that can be detected on PET or PET•CT?**

   It depends on the scanner being used and the type of lesion being imaged. Most PET and PET•CT scanners have an absolute level of resolution around 6mm. However, newer high-resolution scanners can detect lesions as small as 3-4mm in size as long as the lesion is relatively metabolically active.

3. **What qualifies for a "solitary pulmonary nodule"?**

   Any patient with a nodule or mass in the lung that is considered to be "indeterminate" for cancer on other imaging modalities can be sent for evaluation by PET or PET•CT. However, patients with micronodules (<4mm) generally should not be sent for PET or PET•CT evaluation because they are below the levels of resolution of current PET scanners.

4. **Are there any lung malignancies with little or no FDG uptake?**

   Yes, there are a few relatively or absolutely non-FDG avid lung malignancies, including bronchioloalveolar cell carcinoma, some other well-differentiated adenocarcinomas and carcinoid tumors.

5. **Is FDG PET and/or PET•CT better than CT for evaluating the mediastinum?**

   Yes, several studies, including three metaanalyses have all shown FDG PET to be superior to CT in evaluating mediastinal lymph nodes.

6. **Why is combined PET•CT better for patients who may undergo radiation therapy?**

   Traditionally, radiation oncologists have used CT performed on an immobilization palate to do their planning and contouring. Most of the software programs now have fusion capabilities and can import both PET and CT data sets to get a more accurate assessment (both anatomical and functional) of tumor extent and location.

7. **How long should I wait to rescan a patient that has had radiation therapy to the lung for lung cancer?**

   There are no studies that have determined the absolute appropriate time for reevaluating these patients. However, the lung parenchyma is very sensitive to the effects of radiation and if a patient is sent for reevaluation early after therapy (generally before 3 months), there may be increased FDG uptake in the radiated portion of lung and mediastinum due to radiation pneumonitis (inflammation).

Source: Data courtesy of Dr. Todd Blodgett, University of Pittsburgh Medical Center