

# Clinical Indications - Adult

April 17, 2013, Saskatchewan Provincial PET Program:

## Approved Indications for FDG PET-CT in the Clinical Management of Adults

### Cardiac: [Deployment in phase 2]

#### **Viability**

1. Evaluation of scar vs. viable myocardium in the setting of abnormal MIBI results or equivocal cardiac MRI. Imaging is only to be performed in patients who are candidates for revascularization.

#### **Cardiac Sarcoidosis**

1. Determination of active cardiac sarcoid in patients with pulmonary/ systemic sarcoidosis or patients who have unexplained heart block, ventricular arrhythmias, non-ischemic causes of congestive heart failure; and evaluation of cardiac sarcoidosis therapy response if disease is shown to be active on prior scans. Cardiac MR imaging may be considered initially to determine the presence of cardiac sarcoid granuloma.

### Neurology: [Deployment in phase 2]

1. Pre-surgical evaluation for the purpose of localization of a focus of refractory seizure activity.
2. Investigational for Alzheimer's disease (including the use of florbetapir-PET for imaging beta-amyloid), dementia, Huntington disease, Parkinson's disease, or for other neurologic indications.

### Oncology:

Except in special circumstances all patients should have a pathologic proven diagnosis of malignancy before a PET-CT request is made. As a standard for adult patients, it is expected that a formal diagnostic CT be performed within 4-6 weeks prior to the PET-CT for comparison purposes.

#### **Brain**

1. Evaluation of recurrent brain tumor versus post-treatment necrosis after equivocal MR evaluation. Patients should be imaged at a minimum 4 but preferably 8- 12 weeks after radiation therapy.

### **Breast Cancer**

1. Evaluation of possible metastases when it cannot otherwise be confirmed and patient management would be significantly influenced. Scenarios could include equivocal radiologic imaging / nuclear medicine studies or high clinical suspicion or laboratory evidence of recurrence with negative conventional / nuclear medicine imaging studies.
2. Evaluation of response to therapy if it cannot be determined by other means and would significantly alter patient management.

**Note: At this time there is no defined indications in screening, routine evaluation of primary breast cancer, initial staging of axillary lymph nodes, or in the routine assessment of response.**

### **Gastrointestinal**

#### 1. Colon / Rectal Cancer

- a. Staging in patients with potentially resectable recurrence.

#### 2. Esophageal Carcinoma

- a. Baseline evaluation of medically fit patient considered eligible for esophagectomy.
- b. Restaging after neoadjuvant chemotherapy and/or radiation for patient deemed eligible for radical resection of residual disease.
- c. Delineation of gross tumor volume in patients receiving radiation therapy.

### **Gynecologic Cancer**

#### 1. Cervical

- a. Staging of locally advanced cervical cancer.
- b. Staging of recurrent disease in patients being considered for pelvic exenteration.

Note: For cervical cancer MRI is considered the imaging modality of choice for local extension and primary tumor evaluation.

No defined indications in endometrial or vulvar cancers. These cases can be discussed on an individual basis.

### **Head and Neck Cancer**

1. Diagnosis of primary site in patients presenting with squamous cell carcinoma metastatic to cervical lymph nodes with no obvious primary site on conventional work up (contrast enhanced CT or MRI).
2. Staging with nasopharyngeal carcinoma and N2 or N3 disease.
3. Staging in patients with level IV cervical lymph node metastases.
4. Diagnosis of suspected recurrence in the absence of other definitive evidence in patients being considered for salvage therapy.
5. Evaluation of cervical lymph nodes in patients for whom radical neck dissection is part of the treatment plan for advanced primary disease.

Note: In the initial workup of occult primary cancer, nasopharyngolaryngoscopy, chest imaging, and contrast enhanced CT or MRI cervical imaging should be performed. PET-CT (preferably before biopsy) may be considered but should only be done if other test do not reveal a primary site.

PET-CT should not be performed sooner than 12 weeks after radiotherapy. Post radiotherapy patients may also be considered for imaging with CT IV contrast at the time of PET imaging. Cases to be discussed individually.

### **Lung (non-small cell lung cancer)**

1. Staging of patients with clinical stage I and IIa lesions.
2. Staging of potentially resectable stage IIb and III disease.

3. Planning for radical radiotherapy – delineation of gross tumor volume.
4. Staging prior to resection of solitary lung metastasis.

Note: PET-CT not recommended in the routine staging of SCLC / Bronchial carcinoid / suspected bronchoalveolar carcinoma.

### **Lymphoma**

1. Initial staging for Hodgkin's lymphoma and curable aggressive\* non-Hodgkin's- lymphoma (NHL).
2. Post chemotherapy for patients with advanced stage curable aggressive\* non-Hodgkin's lymphoma and Hodgkin lymphoma with residual CT abnormalities >2cm to assess need for radiation therapy.
3. Limited stage (IA or IIA, non-bulky) Hodgkin lymphoma following 2 cycles of ABVD to plan remaining treatment.
4. Limited stage (IA or IIA, non-bulky) diffuse large B-cell lymphoma (all subtypes, including primary mediastinal B-Cell lymphoma) following 3 cycles of R-CHOP to plan remaining treatment.

\*Aggressive NHL considered:

- Diffuse large B-Cell lymphoma, all sub-types including primary mediastinal B-cell lymphoma.
- Peripheral T-Cell lymphoma, including specified and unspecified subtypes.

Note: No defined indication in the routine evaluation of low grade lymphomas.

### **Melanoma**

1. Evaluation of patients with Stage III (any T, N1-3, M0) disease in cases where radical surgery is planned.

2. Evaluation of patients with Stage IV disease (initial or recurrent) in cases where surgery for limited metastatic disease is planned.

Note: No defined indication in patients with Stage I or II melanoma

### **Sarcoma**

1. Evaluation of primary soft tissue mass prior to biopsy to identify high grade areas and guide biopsy.
2. Staging of locally advanced (10cm or greater in maximum dimension) high grade soft tissue sarcomas.
3. Staging of Ewing's sarcoma and rhabdomyosarcoma in adults.
4. Detection of suspected local recurrence of soft tissue sarcoma after definitive treatment.
5. Evaluating early response of gastrointestinal stromal tumors (GIST) to treatment with targeted therapy.

### **Solitary Pulmonary Nodules\***

1. To aid in characterization of SPNs in patients at high risk and contraindication to transthoracic biopsy.

Note: Lesions should be > 10mm in size.

### **Testicular Carcinoma (germ cell)**

1. As an adjunct to initial staging of patients with Stage II seminomatous and non-seminomatous germ cell tumors.
2. Post treatment evaluation of residual masses
3. Detection of recurrent disease in the setting of rising tumor markers and absence of radiologic evidence of disease.

Note: No defined indications in prostate, renal, or bladder carcinoma.

### **Thyroid Carcinoma**

1. Detection of suspected recurrence post-definitive therapy based on rising thyroglobulin levels in the circumstances of a negative radio-iodine study (papillary and follicular carcinomas).

Note: No defined indication in the evaluation of anaplastic thyroid carcinoma or routine papillary and follicular carcinomas.

## Cases for which the Indication for PET CT is less well defined:

### **Gynecologic Cancer**

1. Ovarian - Evaluation of recurrent disease in the setting of equivocal MRI or CT examination. The lesion in question is not easily amenable to percutaneous biopsy. Cases to be discussed on individual basis.

### **Lung**

1. Small Cell - Can be considered for select cases of suspected limited stage SCLC after conventional work up is performed (Contrast enhanced CT Neck -> pelvis + bone scan). Cases to be discussed on individual basis.

### **Multiple Myeloma**

1. Evaluation of patients newly diagnosed with solitary plasmocytoma to exclude additional site of disease or upstaging to multiple myeloma.

**Other cancers given specific clinical indications as jointly approved by Med/Rad Oncology or Related Oncologic Surgery with Nuclear Medicine physician, on an individual basis.**

## Inflammatory Imaging / Infection Imaging: [Deployment in phase 2]

Considered investigational for atypical features / work up of aortic/large-vessel vasculitis, chronic osteomyelitis, coccidioidomycosis fever of unknown origin, hepatic encephalopathy, infection of prostheses, sarcoid/sarcoidosis

**In clinical practice there may be scenarios that do not meet specific guidelines. If expert opinion indicates the study could have a major impact on patient management, PET requests in these cases will be reviewed on an individual basis by the Nuclear Medicine imaging team.**