Extracted from: A Report of the Intercollegiate Standing Committee on Nuclear Medicine, "***Positron emission tomography – A strategy for provision in the UK" January 2003*** (pages 21-26)

Clinical indications for positron emission tomography

	Indicated	**Not indicated routinely (but may be helpful)**	**Not indicated**
Oncology applications			
Brain and spinal cord	► Suspected tumour recurrence when anatomical imaging is difficult or equivocal and management will be affected. Often a combination of methionine and FDG PET scans will need to be performed. (B) ► Benign versus malignant lesions, where there is uncertainty on anatomical imaging and a relative contraindication to biopsy. (B) ► Investigation of the extent of tumour within the brain or spinal cord. (C)	► Secondary tumours in the brain. (C) ► Assess tumour response to therapy. (C) **<u>Note</u>: See key at end of document for grade of evidence (A) (B) and (C)**	
Parotid	► Identification of metastatic disease in the neck from a diagnosed malignancy. (C)		► Differentiation of Sjogrens Syndrome from malignancy in the salivary glands. (C) ► Primary tumour of the parotid to distinguish benign from malignant disease. (C)
Malignancies of the oropharynx	► Identify extent of the primary disease with or without image registration. (C) ► Identify tumour recurrence in previously treated carcinoma. (C)	► Preoperative staging of known oropharyngeal tumours. (C) ► Search for primary with nodal metastases. (C)	
Larynx	► Identify tumour recurrence in previously treated carcinoma. (C)	► Staging known laryngeal tumours. (C) ► Identification of metastatic disease in the neck from a diagnosed malignancy. (C)	

Extracted from: A Report of the Intercollegiate Standing Committee on Nuclear Medicine, "***Positron emission tomography – A strategy for provision in the UK" January 2003*** (pages 21-26)

	Indicated	**Not indicated routinely (but may be helpful)**	**Not indicated**
Thyroid	► Assessment of patients with elevated thyroglobulin and negative iodine scans for recurrent disease. (B)	► Assessment of tumour recurrence in medullary carcinoma of the thyroid. (C)	► Routine assessment of thyroglobulin positive recurrence with radioactive uptake. (C)
Parathyroid		► Localisation of parathyroid adenomas with methionine when other investigations are negative. (C).	
Lung	► Differentiation of benign versus malignant lesions where anatomical imaging or biopsy are inconclusive or there is a relative contraindication to biopsy. (A) ► Preoperative staging of non small cell primary lung tumours. (A) ► Assessment of recurrent disease in previously treated areas where anatomical imaging is unhelpful. (C)	► Assessment of response to treatment. (C)	
Oesophagus	► Staging of primary cancer. (B) ► Assessment of disease recurrence in previously treated cancers. (C).	► Assessment of neoadjuvant chemotherapy. (C)	
Stomach	► No routine indication. (C)	► Assessment of gastro-oesophageal malignancy and local metastases. (C)	
Small bowel	► No routine indication. (C)	►Proven small bowel lymphoma to assess extent of disease. (C)	
Breast cancer	► Assessment & localisation of brachial plexus lesions in breast cancer. (Radiation effects versus malignant infiltration.) (C) ► Assessment of the extent of disseminated breast cancer. (C)	► Axillary node status where there is a relative contraindication to axillary dissection. (C) ► Assessment of multifocal disease within the difficult breast (dense breast or equivocal radiology). (C) ► Suspected local recurrence. (C) ► Assessment of chemotherapy response. (C)	► Routine assessment of primary breast cancer. (C)

Extracted from: A Report of the Intercollegiate Standing Committee on Nuclear Medicine, "***Positron emission tomography – A strategy for provision in the UK" January 2003*** (pages 21-26)

	Indicated	**Not indicated routinely (but may be helpful)**	**Not indicated**
Liver: primary lesion			► Routine assessment of hepatoma. (C)
Liver: secondary lesion	► Equivocal diagnostic imaging (CT, MRI, ultrasound). (C) ► Assessment pre and post therapy intervention. (C) ► Exclude other metastatic disease prior to metastectomy. (C)		
Pancreas		► Staging a known primary. (C) ► Differentiation of chronic pancreatitis from pancreatic carcinoma. (C) ► Assessment of pancreatic masses to determine benign or malignant status. (C)	
Colon and rectum	► Assessment of recurrent disease. (A) ► Prior to metastectomy for colorectal cancer. (C)	► Assessment of tumour response. (C) ► Assessment of a mass that is difficult to biopsy. (C)	► Assessment of polyps (C) ► Staging a known primary. (C)
Renal and adrenal	►Assessment of possible adrenal metastases. (C)	► Paraganglionomas or metastatic phaeochromocytoma to identify sites of disease. (C)	► Assessment of renal carcinoma. (C) ► Phaeochromocytoma – MIBG scanning is usually superior. (C)
Bladder	► No routine indication. (C)	► Staging a known primary in selected cases. (C) ► Recurrence with equivocal imaging. (C)	
Prostate			► FDG in prostate cancer assessment. (C)
Testicle	► Assessment of recurrent disease from seminomas and teratomas. (B) ► Assessment of residual masses. (B)	► Assessment of primary tumour staging. (C)	
Ovary	► In difficult management situations to assess local and distant spread. (C)		

Extracted from: A Report of the Intercollegiate Standing Committee on Nuclear Medicine, "***Positron emission tomography – A strategy for provision in the UK" January 2003*** (pages 21-26)

	Indicated	**Not indicated routinely (but may be helpful)**	**Not indicated**
Uterus: cervix	► No routine indication. (C)	► In difficult situations to define the extent of disease with accompanying image registration. (C)	
Uterus: body	► No routine indication. (C)		
Lymphoma	► Staging of Hodgkin's lymphoma. (B) ► Staging of non-Hodgkin's lymphoma. (B) ► Assessment of residual masses for active disease. (B) ► Identification of disease sites when there is suspicion of relapse from clinical assessment. (C) ► Response to chemotherapy. (C)	► Assessment of bowl lymphoma. (C) ► Assessment of bone marrow to guide biopsy. (C) ► Assessment of remission from lymphoma. (C)	
Musculoskeletal tumours	► Soft tissue primary mass assessment to distinguish high grade malignancy from low or benign disease. (B) ► Staging of primary soft tissue malignancy to assess nonskeletal metastases. (B) ► Assessment of recurrent abnormalities in operative sites. (B) ► Assessment of osteogenic sarcomas for metastatic disease. (C) ► Follow up to detect recurrence of metastases. (B)	► Image registration of the primary mass to identify optimum biopsy site. (C)	
Skin tumours	► Malignant melanoma with known dissemination to assess extent of disease. (B) ► Malignant melanoma in whom a sentinel node biopsy was not or can not be performed in stage II. (AJCC updated classification.) (C)	► Staging of skin lymphomas. (C)	► Malignant melanoma with negative sentinel node biopsy. (B)
Metastases from unknown primary	► Determining the site of an unknown primary when this influences management. (C)		► Widespread metastatic disease when the determination of the site is only of interest. (C)

Extracted from: A Report of the Intercollegiate Standing Committee on Nuclear Medicine, "***Positron emission tomography – A strategy for provision in the UK" January 2003*** (pages 21-26)

	Indicated	**Not indicated routinely (but may be helpful)**	**Not indicated**
Cardiac applications			
	►Diagnosis of hibernating myocardium in patients with poor left ventricular function prior to revascularisation procedure. (A) ► Patients with a fixed SPET deficit who might benefit from revascularisation. (B) ► Prior to referral for cardiac transplantation. (B)	► Diagnosis of coronary artery disease or assessment of known coronary stenosis where other investigations (SPECT, ECG, etc) remain equivocal. (B) ► Differential diagnosis of cardiomyopathy (ischaemic versus other types of dilated cardiomyopathy). (C) ► Medical treatment of ischaemic heart disease in high risk hyperlipidemic patients. (C)	► Patients with confirmed coronary artery disease in whom revascularization is not contemplated or indicated. (C) ► Routine screening for coronary artery disease. (C)
Neuropsychiatry applications			
	► Presurgical evaluation of epilepsy. (B) ► Suspected recurrence or failed primary treatment of primary malignant brain tumours. (Most of these patients will have had MRI and CT with equivocal results). (B) ► Early diagnosis of dementia (especially younger patients and Alzheimer's disease) when MRI or CT is either normal, marginally abnormal or equivocally abnormal. (B)	► The grading of primary brain tumour. (B) ► Localisation of optimal biopsy site (either primary or recurrent brain tumour). (C) ► Differentiating malignancy from infection in HIV subjects where MRI is equivocal. (C)	► Diagnosis of dementia where MRI is clearly abnormal. (C) ► Most instances of stroke. (C) ► Most psychiatric disorders other than early dementia. (C) ► Pre-symptomatic or at risk Huntingdon's disease. (C) ► Diagnosis of epilepsy. (C)

Extracted from: A Report of the Intercollegiate Standing Committee on Nuclear Medicine, "***Positron emission tomography – A strategy for provision in the UK" January 2003*** (pages 21-26)

	Indicated	**Not indicated routinely (but may be helpful)**	**Not indicated**
Miscellaneous applications			
Disease assessment in HIV and other immunosuppressed patients	► Identification of sites to biopsy in patients with pyrexia. (C) ► Differentiating benign from malignant cerebral pathology. (B)	► Routine assessment of weight loss where malignancy is suspected. (C)	
Assessment of bone infection		► Assessment of bone infection associated with prostheses. (C) ► Assessment of spinal infection or problematic cases of infection. (C)	
Assessment of bone metastases		► When bone scan or other imaging is equivocal. (C)	
Assessment of tumour recurrence in the pituitary		► Identifying recurrent functional pituitary tumours when anatomical imaging has not been successful. (C)	
Fever of unknown origin		► Identifying source of the fever of unknown origin. (C)	

The strength of the evidence is classified as:

A. Randomised controlled clinical trials, meta-analysis, systematic reviews.

B. Robust experimental or observational studies.

C. Other evidence where the advice relies on expert opinion and has the endorsement of respected authorities.