



- Title**      **Positron Emission Tomography (PET) for a Number of Services, August 2001**
- Agency**    **MSAC, Medical Services Advisory Committee**  
Commonwealth Department of Health and Aged Care, GPO Box 9848, Canberra ACT 2601 Australia;  
tel: +61 2 6289 6811, fax: +61 2 62 6289 8799, msac.secretariat@msac.gov.au, www.msac.gov.au
- Reference**   **MSAC application 1027. Assessment report, ISSN 1443-7120.**

## Aim

To assess the safety and effectiveness of the services and under what circumstances such services should be supported with public funding.

## Conclusions and results

*Safety:* PET is non-invasive and generally accepted as a safe diagnostic procedure. A large US study found no adverse reactions to over 80 000 doses of positron emitting radiopharmaceuticals.

*Effectiveness:* PET has improved diagnostic accuracy over conventional imaging for several indications:

- Staging, restaging, and assessment of residual mass in patients with lymphoma (Hodgkin's disease and non-Hodgkin's lymphoma),
- Evaluation of primary and nodal metastatic involvement in the pretreatment staging of patients with squamous cell carcinoma (SCC) of the head and neck; assessment of residual and recurrent disease for patients with SCC of the head and neck; and detection of occult squamous cell primary tumors in patients diagnosed with SCC cervical node metastases, and
- Detection of visceral metastases in patients with soft tissue sarcoma and assessment of locally recurrent disease in patients with sarcoma.
- However, as with other imaging modalities, PET still has low sensitivity for the detection of early (ie, low volume or microscopic) metastatic disease.

*Cost-effectiveness:* There are documented examples of where the results of PET have led to changes in patient management in these indications. It is difficult to establish long-term clinical effectiveness due to lack of direct evidence on consequent improved health outcomes for patients. In the clinical scenarios evaluated in this review, PET is used to provide incremental information over conventional imaging. At present, there is insufficient evidence of the impact of PET on long-term clinical outcomes to be able to provide any reliable estimates of cost effectiveness.

## Recommendations

There is currently insufficient evidence on the clinical and cost effectiveness of PET to warrant unrestricted funding. Despite this, the evidence suggests that PET is safe, potentially clinically effective, and potentially cost effective for the indications reviewed. As such, interim funding was recommended for:

1. Staging of newly diagnosed or previously untreated disease, evaluation of residual mass after treatment and restaging of suspected recurrent/residual Hodgkin's and non-Hodgkin's lymphoma,
2. Primary staging, suspected residual or recurrent SCC of the head and neck and evaluation of metastatic SCC involving cervical nodes from an unknown primary site, and
3. Guiding biopsy of suspected bone or soft tissue sarcomas where structural imaging suggests lesion heterogeneity, staging of biopsy-proven bone or soft tissue sarcoma being considered for resection of the primary or limited metastatic disease, evaluation of suspected residual or recurrent sarcoma on the structural imaging after definitive therapy.

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## **Method**

The National Health and Medical Research Council (NHMRC) Clinical Trials Centre at the University of Sydney conducted a systematic review of the literature (with eligibility criteria defined a priori) on the role of FDG PET. The following sources were searched from commencement to March 2001: MEDLINE, PreMedline, National Library of Medicine Health Services Research Databases, CINAHL, Australian Medical Index, Biological Abstracts, Best Evidence, Current Contents, EmBase, the Cochrane Library, ISTAHC, and the NHS Databases, DARE, EED and HTA. Internet and health technology assessment agency sources were searched and studies were also identified from MSAC applications and members of the Supporting Committee.