



Title	Positron Emission Tomography (PET) Imaging in Cancer Management
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Aim

- To determine the role of fluorine-18 deoxyglucose (FDG)-PET imaging in cancer management by evaluating clinical and cost effectiveness in terms of impact on patient morbidity and mortality.
- To consider the best configuration of PET facilities and cyclotrons to serve Scotland, if PET was found to be clinically and cost effective.

This assessment focused primarily on non-small cell lung cancer (NSCLC) and lymphoma.

Results and conclusions

An economic model indicates that FDG-PET imaging is cost effective compared with computed tomography (CT) in restaging Hodgkin's disease at the completion of induction chemotherapy, saving up to 30% of patients from unnecessary radiotherapy. FDG-PET is also potentially cost effective in NSCLC if used before mediastinoscopy in CT-negative patients. Information from other INAHTA-published HTAs indicates evidence of clinical effectiveness in solitary pulmonary nodule, malignant melanoma, recurrent head and neck cancer and lymphoma. From a patient perspective it was found that communication of the process and possible outcomes could be improved, but some patients valued the reassurance offered by the PET image compared with other diagnostic techniques.

Recommendations

- A PET imaging facility including a cyclotron, dedicated to clinical use and specific health services research, should be set up in Scotland and linked to a specialist cancer center.
- All patients who require restaging of Hodgkin's disease should receive FDG-PET imaging to select those for surveillance or radical radiotherapy.
- PET research should be undertaken in other cancers, eg, lung cancer (NSCLC and single pulmonary nodule), malignant melanoma and recurrent head and neck cancer, to inform economic modeling and patient outcome.
- All patients undergoing FDG-PET should have their outcomes recorded, either through participation in a national or international trial to confirm and extend current applications of FDG-PET imaging or through health services research designed to allow costs and patient outcomes to be recorded for economic modeling.

In the 2 years anticipated to build a PET facility, the Scottish Executive Health Department and NHSScotland will work together to consider interim solutions for provision of PET imaging services from current research facilities in the UK.

Methods

The scientific literature was searched systematically to identify published evidence. Experts, professional groups, patient groups, manufacturers, and other interested parties were invited to submit evidence. Clinical effectiveness evidence was critically appraised, economic evaluations were performed, and a review of evidence on patient and organizational issues was carried out. Patient needs' and preferences were also considered focus group work.