

<b>Title:</b>	<b>Positron emission tomography (PET) for recurrent colorectal cancer</b>
<b>Agency:</b>	<b>Medical Services Advisory Committee (MSAC) Mail Drop Point 106 Commonwealth Department of Health and Ageing GPO Box 9848 Canberra ACT 2601 Australia <a href="http://www.msac.gov.au">http://www.msac.gov.au</a></b>
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### **The procedure**

Positron emission tomography (PET) is a minimally invasive nuclear medicine imaging technique that provides information about function and metabolism that is complementary to the structural information provided by computed tomography (CT). PET/CT machines combine both systems.

### **Aim**

To assess the safety, effectiveness and cost-effectiveness of the addition of PET/CT to the assessment of a) patients with pulmonary or hepatic metastatic disease, following previous therapy for colorectal carcinoma, that is apparently resectable and potentially curable as determined by conventional staging; and b) patients with suspected locoregional recurrence of colorectal cancer, that is potentially resectable as determined by conventional staging.

### **Results and conclusions**

**Safety:** PET and PET/CT are considered safe procedures.

**Effectiveness:** No direct evidence was found reporting the health outcomes of patients with recurrent colorectal cancer, assessed with and without FDG-PET. Therefore, evidence for accuracy, change in management and the expected benefit of changes in treatment on health outcomes was considered to evaluate the effectiveness of PET using a linked evidence approach.

PET has greater diagnostic accuracy than conventional imaging in staging patients with potentially resectable colorectal liver metastases (CLM) and in detecting recurrent colorectal cancer, and is considered accurate at detecting additional sites of disease. PET leads to changes in patient management, most commonly the avoidance of surgery. PET is considered to improve patient outcomes in patients who avoid open-and-close or exploratory laparotomy procedures. PET also leads to avoidance of surgical morbidity and mortality in patients who avoid radical surgery. Expert opinion is that this leads to improved patient outcomes in terms of quality of life, but definitive evidence for whether this outweighs any potential benefit of surgery is lacking.

**Economic considerations:** Analysis of costs and consequences (changes in management; health outcomes) over 3 months found PET is likely to be cost saving in patients planned for surgery (CLM: mean cost savings/100 patients: \$203,332 [95% confidence limits [CL]: \$555,215 to additional \$45,744]; locoregional recurrence: mean cost savings: \$464,096/100 patients [95% CL: \$192,374 to \$824,079]). The overall health outcomes associated with this are not known.

### **Recommendation**

MSAC found that PET and PET/CT for metastatic and recurrent colorectal cancer provide incremental accuracy over conventional staging alone; are likely to improve patient outcomes through the avoidance of radical surgery which is unlikely to provide long-term benefit; are likely to be cost-saving for patients who are considered for surgery with curative intent after conventional staging. MSAC recommends that public funding is supported for this procedure when referred by a specialist.

### **Methods**

This report updates a previous MSAC review from 2000. A recent high quality health technology assessment (HTA) report from the National Coordinating Centre for HTA (NCCHTA)-United Kingdom (Facey et al, 2007) was used as the basis of this assessment. A systematic review to December 2006 was undertaken to include more recent studies. In the absence of an overall measure of health outcome (eg life-years saved), modeled cost consequence analyses, including probabilistic sensitivity analyses, were conducted to explore short-term economic implications.