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PET Recommendation Report 3

PET Imaging in Melanoma

T Petrella and C Walker-Dilks

Report Date: January 19, 2009

PET Recommendation Report 3 is comprised of 2 sections and is available on the CCO Web site (https://www.cancercare.on.ca)
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Section 1: Recommendations
Section 2: Evidentiary Base

For further information about this report, please contact:

Dr. Teresa Petrella, Medical Oncologist, Odette Cancer Centre,
Assistant Professor, University Of Toronto
2075 Bayview Avenue, Toronto, Ontario, Canada M4N 3M5
Phone: (416) 480-5248; Fax: (416) 480-6002
E-mail: teresa.petrella@sunnybrook.ca

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Phone: 905-527-4322 ext. 42822 Fax: 905-526-6775 E-mail: ccopgi@mcmaster.ca

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PET Recommendation Report 3: Section 1

PET Imaging in Melanoma: Recommendations

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QUESTIONS

- What benefit to clinical management does positron emission tomography (PET) or positron emission tomography/computed tomography (PET/CT) contribute to the diagnosis or staging of melanoma?
- What benefit to clinical management does PET or PET/CT contribute to the assessment of treatment response for melanoma?
- What benefit to clinical management does PET or PET/CT contribute when recurrence of melanoma is suspected but not proven?
- What benefit to clinical management does PET or PET/CT contribute to restaging at the time of documented recurrence for melanoma?
- What is the role of PET when a solitary metastasis is identified at the time of recurrence and a metastectomy is being contemplated?

TARGET POPULATION

Patients with melanoma.

INTENDED PURPOSE

- This recommendation report is primarily intended to guide the Ontario PET Steering Committee in their decision making concerning indications for the use of PET imaging.
- This recommendation report may also be useful in informing clinical decision making regarding the appropriate role of PET imaging and in guiding priorities for future PET imaging research.

RECOMMENDATIONS AND KEY EVIDENCE

These recommendations are based on an evidentiary foundation consisting of one recent high-quality U.K. Health Technology Assessment (HTA) systematic review (1) that included systematic review and primary study literature for the period from 2000 to August 2005 and an update of that systematic review undertaken to retrieve the same level of evidence for the period from August 2005 to June 2008.

Diagnosis/Staging

PET is recommended for staging of high-risk patients with potentially resectable disease.
One study (Brady et al [2]) evaluated the additive benefit of PET to CT as a preoperative imaging technique. The combination of PET and CT had higher sensitivity than either technique alone. Information from the preoperative imaging results of PET plus CT led to treatment change in 35% of patients. Another study (Strobel et al [3]) showed a sensitivity, specificity, and accuracy of 85%, 96%, and 91%, respectively, for the depiction of metastases in high-risk melanoma.

Qualifying Statement

- Criteria for high risk include lymph node metastases, deep head and neck melanoma, and evidence of satellitosis or in-transit metastases. These include patients with American Joint Committee on Cancer (AJCC) stage IIC and III disease.

PET is not recommended for the diagnosis of sentinel lymph node micrometastatic disease or for staging of I, IIa, or IIb melanoma.
Nine primary studies in the HTA review (1) and three primary studies from the 2005-2008 update (Kell et al [4], Maubec et al [5], Cordova et al [6]) evaluated PET or PET/CT as a useful adjunct to lymphatic staging in patients with primary melanoma. The sensitivity of PET was too low to detect sentinel node metastases in early-stage melanoma (sensitivity range 0% to 22%).

Qualifying Statement

None.

The routine use of PET or PET/CT is not recommended for the diagnosis of brain metastases.
A limitation of PET is the normal uptake of fleurodeoxyglucose (FDG) into the brain, leading to uncertainty in the detection of cerebral metastases. Several small studies have confirmed this, showing low sensitivity of PET for the detection of brain metastases. One study (Pfannenberg et al [7]) showed that MRI was superior to PET in detecting brain metastases.

Qualifying Statement

None.

The routine use of PET is not recommended for the detection of primary uveal malignant melanoma.
One primary study (Kato et al [8]) showed that single photon emission computed tomography (SPECT) was superior to PET for detection of uveal melanoma. The sensitivity of PET was 11%.

Qualifying Statement

None.

Assessment of Treatment Response

A recommendation cannot be made for or against the use of PET for the assessment of treatment response in malignant melanoma due to insufficient evidence.
No prospective studies exist that examine PET or PET/CT in the assessment of treatment response for melanoma.

Qualifying Statement

None.

Recurrence/Restaging

A recommendation cannot be made for or against the use of PET for routine surveillance due to insufficient evidence.
No prospective studies exist that examine PET in the assessment of recurrence.

Qualifying Statement

None.

Solitary Metastasis Identified at Time of Recurrence

PET is recommended for isolated metastases at time of recurrence or when contemplating metastectomy.
There is some evidence showing change in patient management with the use of PET or PET/CT prior to metastectomy (HTA review [1], Koskivuo et al [9]). However, prospective studies assessing isolated metastases alone have not been conducted.

Qualifying Statement

None.

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Contact Information

For further information about this report, please contact:
Dr. Teresa Petrella, Medical Oncologist, Odette Cancer Centre, Assistant Professor, University Of Toronto, 2075 Bayview Avenue, Toronto, Ontario, Canada M4N 3M5, telephone (416) 480-5248, fax (416) 480-6002,
e-mail teresa.petrella@sunnybrook.ca

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