SNMMI AUC Factsheet for FDG PET/CT in Restaging and Treatment Response Assessment in Colorectal Cancer

EXECUTIVE SUMMARY

Nuclear medicine imaging studies are essential for the diagnosis and management of many diseases, including cancer. The ready availability of medical imaging studies in conjunction with concerns about missed diagnoses has, at times, resulted in inappropriate use and overuse of medical imaging technology, including nuclear imaging. The overuse may have resulted in an unnecessary financial burden on the health-care system and in some cases unnecessary exposure to ionizing radiation. Overuse and inconsistent use of imaging procedures has prompted a push for multi-stakeholder consensus documents outlining the most appropriate and cost-effective use of advanced medical imaging studies.

Precision medicine is evolving to include a variety of data to optimize patient care and improve outcome. Multimodality imaging is paving the way toward this goal. PET/CT with ^{18}F-FDG is now established as an important imaging modality in many clinical conditions, particularly in oncology. Many tumors demonstrate high glucose metabolism as one of the hallmarks of cancer. PET/CT provides combined anatomic and physiologic (glucose metabolism) information that may be used for initial diagnosis, staging, restaging, treatment response assessment, and prognosis in patients with cancer. Moreover, PET information can contribute significantly when other imaging modalities are equivocal.

AUC INTRODUCTION

The purpose of this document is to describe the appropriate use criteria (AUC) of PET/CT in the response assessment and restaging of patients with cancer. For the purposes of this work, the term *assessment of response* is taken to mean the period in which the intended target of the therapeutic regimen is being evaluated, whereas the term *restaging of disease* is taken to mean the period in which there is concern for new or progressive disease after completion of prior therapy. Moreover, this document excludes “initial staging” and “surveillance.”

CLINICAL SCENARIOS FOR COLORECTAL CANCER

Colorectal cancer is the third most commonly diagnosed cancer and the third leading cause of cancer death in both men and women in the United States.

Because of the high-risk recurrence of metachronous metastasis in patients with colorectal carcinoma, there is great interest in noninvasive restaging and therapy monitoring. Currently, PET/CT is not routinely used for initial staging, other than to evaluate indeterminate findings from other modalities. This document focuses on restaging and treatment response assessment in patients with colorectal cancer.

Clinical Scenarios for Colorectal Cancer

Scenario no.	Description	Appropriateness	Score
1	Restaging for detection of local recurrence	Appropriate	7
2	Restaging for detection of metastases	Appropriate	8
3	Detection of local recurrence or metastasis in the case of rising tumor markers with negative or equivocal first-line imaging (e.g., contrast-enhanced CT or MRI)	Appropriate	8
4	Treatment response evaluation	May be Appropriate	6
5	Assessment of response of metastases after chemotherapy	May be Appropriate	6
6	Early assessment of metastases during chemotherapy	May be Appropriate	6
7	Assessment of efficacy of neoadjuvant therapy for advanced rectal carcinoma	May be Appropriate	6
8	Assessment of efficacy of localized minimally invasive therapy	May be Appropriate	6

Rating and Scoring

The scenarios are scored as “appropriate,” “may be appropriate,” or “rarely appropriate” on a scale from 1 to 9. Scores 7–9 indicate that the use of the procedure is appropriate for the specific scenario and is generally considered acceptable. Scores 4–6 indicate that the use of the procedure may be appropriate for the specific scenario. This implies that more research is needed to classify the scenario definitively. Scores 1–3 indicate that the use of the procedure is rarely appropriate for the specific scenario and generally is not considered acceptable.

This AUC was developed by the Society of Nuclear Medicine and Molecular Imaging with participation from experts affiliated with the following organizations: European Association of Nuclear Medicine; American Society of Clinical Oncology; American College of Nuclear Medicine; Society for Pediatric Radiology; and Canadian Association of Nuclear Medicine.

For the complete manuscript and listing of references, visit: http://snmmi.files.cms-plus.com/Quality/jnm197988_v1.pdf