

SNMMI AUC Factsheet for FDG PET/CT in Restaging and Treatment Response Assessment in Breast 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 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 ¹⁸F-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 treatment 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 BREAST CANCER

In the United States, breast cancer is the most common nonskin cancer and the second leading cause of cancer-related death in women (after lung cancer). Initial diagnosis and staging is essential in determining the choice of therapy, as well as the patient’s prognosis and chances for survival.

PET/CT has a limited role in the diagnosis of breast cancer, but it is important in detecting local, regional and distant disease, in helping to plan surgical and medical treatment, in monitoring response to treatment, and in finding recurrence. PET also has the potential to evaluate novel treatment agents by detecting their effects on specific receptors and has been shown to improve prediction of clinical outcome in previously treated breast cancer patients.

Clinical Scenarios for Breast Cancer

| Scenario no. | Description | Appropriateness | Score |
|--------------|---|-----------------|-------|
| 1 | Restaging for detection of local recurrence | Appropriate | 8 |
| 2 | Restaging for detection of metastases | Appropriate | 7 |
| 3 | Treatment response evaluation | Appropriate | 7 |

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.

Methodology

The process for AUC development was modeled after the RAND/ UCLA Appropriateness Method for AUC development. It included identifying a list of relevant clinical scenarios, a systematic review of evidence, and a systematic synthesis of available evidence, while adhering to the Institute of Medicine’s standards for developing trustworthy clinical guidance.

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

JNM Reference

Jadvar H, et al. Appropriate Use Criteria for ¹⁸F-FDG PET/CT in Restaging and Treatment Response Assessment of Malignant Disease: J Nucl Med 2017; 58:2026-2037 (10.2967/jnumed.117.197988).