



Special Symposium 2

EARL

Sunday, October 18, 09:45–11:15

Session Title

Clinical Implications of EARL PET/CT Accreditation Standards 3, LAFOV Brain and a ¹⁷⁷Lu SPECT/CT Accreditation for NaI and CZT: Results, Specifications, and Future Directions

Chairpersons

John Dickson (London, United Kingdom)

Rachele Danieli (Brussels, Belgium)

Programme

- 09:45–10:10 **Ronald Boellaard** (Amsterdam, Netherlands): EARL PET/CT Accreditation Standards 3 and LAFOV Brain: Enhancing Diagnostic Quality and Patient Outcomes
- 10:10–10:35 **Lenka Vávrová** (Würzburg, Germany): ¹⁷⁷Lu SPECT/CT Accreditation for Scintillation Scanners: Results, Specifications, and Points of Learning
- 10:35–11:00 **Laetitia Imbert** (Vandoeuvre les Nancy, France): ¹⁷⁷Lu SPECT/CT Accreditation for CZT Scanners: Initial Results and Future Directions

Educational Objectives

1. Understand EARL PET/CT Accreditation Standards 3 and LAFOV Brain accreditation, including their clinical significance in ensuring quality PET/CT imaging and their impact on diagnostic accuracy and patient outcomes.
2. Gain insight into the latest ¹⁷⁷Lu SPECT/CT accreditation specifications and results for both NaI and CZT systems, including their clinical utility, workflow integration, and quality assurance.
3. Explore future directions, emerging technologies, and challenges in PET/CT and ¹⁷⁷Lu SPECT/CT accreditation, identifying practical solutions for maintaining high-quality patient care.

Summary

Standardisation of imaging procedures and imaging system performance is essential for the use of quantitative PET, e.g., for diagnosis, prognosis, and response prediction, as well as for the use of quantitative SPECT/CT for personalised dosimetry in radionuclide therapy. Any quantitative imaging biomarker must be reproducible, i.e., it should provide the same readout if a patient is scanned on different systems and at different sites.

The aim of the EARL accreditation programmes is to ensure sufficient imaging system performance reproducibility, allowing data to be pooled in multicentre studies and/or translated into clinical research and care. These accreditation programmes go hand in hand with published EANM guidelines to ensure that standardised imaging procedures are followed.

The accreditation programmes and EANM guidelines therefore guarantee robustness and confidence that nuclear medicine studies are performed in a quantitative and reproducible manner, enabling the development and application of diagnostic, prognostic, and predictive statistical models using quantitative metrics such as SUV, total metabolic tumour volume, or extensive radiomic features.

Reproducibility is also key for establishing quantitative criteria to identify patients eligible for radionuclide therapy and/or to verify and optimise the dose delivered to organs and tumours based on ¹⁷⁷Lu SPECT/CT imaging.

In this session, we will address the importance of imaging system performance harmonisation and how EARL has set up and deployed accreditation programmes.



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Key Words

Imaging Biomarkers, PET/CT, EARL, CZT, Quantitative SPECT/CT, ^{177}Lu , Dosimetry, Accreditation, Standards