Special Symposium 3

EARL

Monday, October 19, 09:45–11:15

Session Title

Unlock Precision in Imaging – Discover the Clinical Benefits of EARL PET Accreditation

Chairpersons

Ronald Boellaard (Amsterdam, Netherlands)
Ana Denis-Bacelar (Teddington, United Kingdom)

Programme

09:45–10:00 **Ronald Boellaard** (Amsterdam, Netherlands): The Reliability of Centiloids in Non-Harmonised versus Harmonised Datasets: Enhancing Diagnostic Quality and Patient Outcomes

10:00–10:15 **Elsmarieke van der Giessen** (Amsterdam, Netherlands): Clinical and Research Benefits of the EARL Brain Accreditation

10:15–10:30 **Anne Segolene Cottereau** (Paris, France): PET Data Harmonisation and Standardisation in the Context of Total Metabolic Tumour Volume (TMTV)

10:30–10:45 **Anastasiia Nikiforuk** (Moscow, Russian Federation): Which SUV is More Stable for PSMA-Positivity Thresholding? EARL-Harmonised Lesional SUV versus Reference Tissue SUV

10:45–11:00 **Aleksandr Khalimon** (Moscow, Russian Federation): Impact of EARL Harmonisation on Inter-Scanner Variability of MTV and TLG

Educational Objectives

1. Understand the reliability of quantitative metrics (Centiloids) in harmonised versus non-harmonised datasets and the clinical implications for brain PET imaging.
2. Explore the clinical and research benefits of EARL Brain accreditation, including its role in multicentre reproducibility and longitudinal studies.
3. Assess PET data harmonisation for tumour burden quantification, with a focus on standardisation of TMTV, MTV, and TLG metrics.
4. Analyse the impact of EARL harmonisation on inter-scanner variability of MTV and TLG in both phantom and patient studies.
5. Evaluate EARL-harmonised SUV metrics for PSMA positivity thresholding and compare them with reference tissue-based approaches.

Summary

Standardisation and harmonisation of quantitative PET imaging are essential to ensure reliable biomarkers for diagnosis, prognosis, and therapy guidance across centres. In particular, metrics such as Centiloids, standardised uptake values (SUV), total metabolic tumour volume (TMTV), metabolic tumour volume (MTV), and total lesion glycolysis (TLG) must remain consistent despite differences in scanners, reconstruction protocols, and clinical environments. Without harmonisation, variability may compromise clinical decision-making and limit the comparability of multicentre data.

The European Association of Nuclear Medicine Research Ltd. (EARL) accreditation framework plays a central role in reducing inter-scanner variability and improving reproducibility in both clinical and research settings. The EARL Brain accreditation supports the robust application of Centiloid scaling, while whole-body PET harmonisation ensures consistency in oncological metrics such as TMTV, MTV, and TLG. These efforts enable reliable pooling of datasets and strengthen the translation of quantitative imaging biomarkers into clinical practice.

This session will highlight the importance of harmonised imaging in improving diagnostic accuracy and patient outcomes, including the evaluation of Centiloid reliability in harmonised versus non-harmonised datasets, and the clinical value of EARL Brain accreditation.

Furthermore, the session will address the role of PET data standardisation in quantifying tumour burden, as well as the impact of EARL harmonisation on inter-scanner variability in both phantom and patient studies.
Finally, the session will explore quantitative challenges in therapy-related imaging, focusing on PSMA PET and the identification of robust SUV-based thresholds. Comparisons between EARL-harmonised lesional SUV metrics and reference tissue approaches will be discussed, with the aim of identifying the most stable and clinically applicable methods for defining PSMA positivity.
Overall, the session will emphasise how harmonisation frameworks enhance confidence in quantitative imaging and support precision medicine.

Key Words
Imaging Biomarkers, TMTV, MTV, TLG, Centiloids, PSMA, Prostate Cancer, PET/CT, Accreditation, Standards