CTE Session 2
Technologists Committee
Sunday, October 16, 09:45-11:15

Session Title
Technologist Involvement in Research Imaging

Chairpersons
Andrea Santos (Lisbon, Portugal)
Giorgio Testanera (London, United Kingdom)

Programme

09:45 - 10:15 **Ronald Boellaard** (Amsterdam, Netherlands): EARL Harmonisation of PET/CT Systems - Why, How, When and Next Steps

10:15 - 10:45 **Jana Kim** (London, United Kingdom): Technicalities in Pre-Clinical SPECT-CT and PET-CT Imaging

10:45 - 11:15 **Shawna Kinsella** (London, United Kingdom): PET-MRI in Research - Phantom Scanning and Healthy Volunteers

Educational Objectives

1. Overview EANM Forschungs GmbH (EARL) objectives and which role Nuclear Medicine Technologists (NMT) may have in accreditation of scanners.
2. Discuss the role of NMTs in PET-MRI phantom and healthy volunteer scanning to validate protocols for research
3. Assess the role of NMT in Animal PET for Research, including ethics connected to scanning mice and challenges in realizing quality images
4. Identify education and training for Nuclear Medicine Technologist involved in both research and accreditation

Summary

In 2010, the European Association of Nuclear Medicine (EANM) initiated a programme for the accreditation of PET/CT scanners using [18F]fluorodeoxyglucose (FDG) in order to support compliance with requirements regarding quality control and quality assurance of PET/CT systems. The programme, run within the scope of EANM Research Limited (EARL) activities, is based on the FDG-PET and PET/CT: EANM procedure guidelines for tumour PET imaging: version 1.0, published in the European Journal of Nuclear Medicine and Molecular Imaging (EJNMMI) in the same year (Boellaard et al. 2010). This widely accepted guideline aims to provide a minimum standard for the acquisition and interpretation of PET and PET/CT scans obtained with FDG. The FDG-PET/CT accreditation ensures harmonised quantitative performance of PET/CT systems within a multicentre setting through the standardisation of acquisition and processing of PET/CT scans. This rigorous harmonisation of the imaging systems enables PET/CT

sites to compare, exchange and combine FDG PET/CT findings as data are collected and processed. Standardised uptake values (SUVs) can also be reliably used owing to the resultant reduction in inter-/intrainstitute variability (Boellaard et al. 2013). Starting from an update on EARL activity, the session will open up to other topics related to Nuclear Medicine Technologists (NMTs) involvement in research. The second talk will not only cover theoretically the role of Animal PET in pre-clinical studies, but also cover the importance of accurate scanning and managements of rat an mice to be successful in research experiments. NMTs skillset is very much at stake in this setting, considering the uncollaborative nature of animals. The discussion will also cover ethics of animal management together with possible challenges and artefacts of imaging. Similar approach will also be followed in the last talk, in which we will cover the role of PET-MRI for research in humans. NMTs are strongly involved with Principal Investigators and Physics team to build dedicated protocols for research. The work include a path to assess feasibility of the research study on the specific scanner, and includes training, multiple phantom scanning and Healthy volunteers to validate the MRI sequences needed. The speaker will lead the audience through this path, to understande the importance of accurate work previous to the Research scanning and how to address potential issues arising.

Key Words
EARL, Accreditation, PET-CT, PET MRI, Pre-clinical, Phantom scanning, Animal PET, Healthy Volunteers