

Joint Symposium 5

Physics + Oncology & Theranostics Committee / European Society for Radiotherapy and Oncology ([ESTRO](#))

Tuesday, October 18, 09:45-11:15

Session Title

Imaging for Radiotherapy Applications

Chairpersons

Dimitris Visvikis (Brest, France)

Esther Troost (Dresden, Germany / ESTRO)

Programme

09:45 - 10:15 **Esther Troost** (Dresden, Germany / ESTRO): Advances of PET Combined with Anatomical Imaging in Radiation Oncology

10:15 - 10:45 **Flemming Littrup Andersen** (Copenhagen, Denmark): Practical Implementation of Nuclear Medicine Imaging in Radiotherapy

10:45 - 11:15 **Julie Constanzo** (Montpellier, France): Challenges of Combining Molecular Radiotherapy and External Beam Radiation Therapy

Educational Objectives

1. Understand the role of nuclear medicine imaging in radiation oncology.
2. Learn about the practical aspects of introducing new imaging techniques within routine radiotherapy.
3. Learn about the challenges of combining external and internal radiation treatment modalities.

Summary

Nuclear medicine imaging, and in particular positron emission tomography (PET), has multiple roles which are key to improving patient outcomes in modern radiotherapy. It supports the diagnosis and staging of disease which determine the eligibility of patients for radiation therapy, the assessment of response for monitoring treatment, the provision of adaptive treatment planning by guiding the dose delivery and optimization of target volumes making use of novel radiopharmaceuticals, etc. Accurate knowledge of the absorbed doses delivered to targets and organs at risk are needed to understand the impact of any radiation therapy. With a growing interest in the potential to combine radionuclide and external beam radiation therapies, it is important to understand the synergies and differences in these two modalities, which can lead to different biological outcomes.

This session provides a general overview of the current and future roles of PET/CT or -MRI in radiation oncology, the practical aspects of introducing nuclear medicine imaging within a routine radiotherapy service, as well as the challenges and radiobiological aspects of combining internal and external radiation therapies.

Key Words

Molecular imaging, PET/CT and -MRI, radiotherapy, oncology, treatment planning, radionuclide therapy, radiobiology