

Barcelona, Spain

CME 3

Radiation Protection + Dosimetry Committee

Sunday, October 13, 14:30-16:00

Session Title

Metrological Aspects on the Implementation of Dosimetry in Radionuclide Therapy

Chairpersons

Michael Lassmann (Würzburg, Germany)

Katarina Sjögreen Gleisner (Lund, Sweden)

Programme

14:30 - 14:35 Katarina Sjögreen Gleisner (Lund, Sweden): Introduction

14:35 - 15:05 Jonathan Wadsley (Sheffield, United Kingdom): Requirements for the dosimetry-guided, multi-center clinical trial SELIMETRY

15:05 - 15:35 Carlo Chiesa (Milan, Italy): Priorities of Dosimetry in Clinical Radionuclide Therapy – The Italian Agreement Between National Nuclear Medicine and Medical Physics Associations

15:35 - 16:00 Michael Lassmann (Würzburg, Germany): European initiatives to ensure traceable dosimetry across countries and centers

Educational Objectives

After completion the listener will be able to:

1. Understand the need for establishing traceability for dosimetry
2. Suggest methods for the establishment of traceability in absorbed dose, and how they are being developed in European projects.
3. Provide examples of metrological chains for dosimetry in multi-center clinical trials and in established clinical procedures.

Summary

In nuclear medicine therapy, there is currently a growing interest in personalized therapy based on an individual-patient dosimetry, both for multi-center clinical trials and for established therapy procedures. Dosimetry based on imaging, following a tracer administration or a previous treatment cycle, allows for the planning of the therapeutic activity for a prescribed absorbed dose level. Post-therapeutic dosimetry enables verification of the absorbed doses to organs at risk, and, if applicable, to lesions. As with other uses of radiotherapy, individual planning and verification of the absorbed doses delivered is a requirement in nuclear-medicine therapy (Council Directive, 2013/59/Euratom).

The basis for dosimetry is measurement of the bio-kinetics of the radiopharmaceutical in the patient, using imaging or probe-detector measurements at one or multiple time points after administration. From the measured data the activity distribution is calculated and forms a basis for internal dose calculation. Dosimetry involves several measurement techniques and calculation methods which all need to be validated and when possible cross-calibrated against metrology standards. Establishment of traceability in this metrological chain will allow for a reliable dosimetry and comparisons and pooling of dosimetric data obtained at different centers. This is particularly important in multi-center clinical trials that involve dosimetry-guided treatment, and for the establishment of dose-effect relationships.

Key Words

Nuclear medicine therapy, Dosimetry, Metrological traceability