

*Barcelona, Spain*

### Mini Course 3

Technologist Committee

**Sunday, October 13, 17:00-18:00**

### Session Title

**Theranostics – Fundamental**

### Chairpersons

Sonja Rac (Rijeka, Croatia)

Sebastijan Rep (Ljubljana, Slovenia)

### Programme

17:00 - 17:25 Siroos Mirzaei (Vienna, Austria): General Aspects of Theranostics in Nuclear Medicine

17:30 - 17:55 Nick Gulliver (London, United Kingdom): Theranostics for Technologists in the Context of NET

### Educational Objectives

1. To understand the concept of theranostics, clinical indications and multidisciplinary approach
2. To get acquainted with already established and emerging radiopharmaceuticals used for diagnostic in therapy in the scope of theranostics
3. To define the role of technologist in diagnostic and therapeutic procedures involved in theranostics

### Summary

Theranostics is a fast growing field in nuclear medicine which aim is to target disease by applying a specific therapy based on the precise diagnostic tests. This approach moves away from a conventional medicine platform to a personalised patient care.

The term stands for **therapeutic** and **diagnostic**, because the idea beyond theranostics is to visualize specific biological pathways in the human body by the acquisition of diagnostic images, and then to use the same pathways in therapy, but changing the radionuclide from diagnostic to therapeutic. This increases the probability that the therapeutic radiation dose will precisely target the disease site and limit the damage of the surrounding tissue. In other words, using a specific diagnostic test enables identification of a particular molecular configuration on the tumor cells, allowing the choice of a specific therapeutic agent, which then binds to the same receptor sites and takes effect only on the tumour volume.

The theranostic concept can be traced back to its roots in the middle of the past century when radioactive iodine-131, used for diagnostics, was for the first time applied for the therapy. This radioisotope became the gold standard in the diagnosis and treatment of thyroid cancer and hyperthyroidism in nuclear medicine departments throughout the world. In the near past, a similar model has been developed and established for diagnostic and treatment of neuroendocrine tumors and prostate carcinoma.

During the past decade, a fast development of radiopharmaceuticals and imaging techniques induced expansion of new tools for the visualisation of other potential tumor targets in order to achieve individually tailored molecular diagnosis and treatment in accordance with personalized patient care.

### Key Words

Theranostics, tumor target, personalized care