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Annual Congress of the  
European Association of Nuclear Medicine

October 21 –25, 2017  
Vienna, Austria

## **CTE 7 – Interactive (Technologists/Paediatrics)**

**Wednesday, October 25, 10:00-11:30**

### **Session Title**

**Practical and Technical Aspects of Paediatric Nuclear Medicine**

### **Chairs**

Sonja Rac (Rijeka)

Pietro Zucchetta (Padova)

### **Programme**

- |               |   |
|---------------|---|
| 10:00 - 10:30 | Zvi Bar-Sever (Petach-Tikva): How to Set Up a Paediatric Nuclear Medicine Department                                  |
| 10:30 - 11:00 | Svjetlana Grbac-Ivanković (Rijeka): Paediatric Nephrology – What Do We Do With Infants?                               |
| 11:00 - 11:30 | Antonija Balenović (Zagreb): Paediatric Imaging Methods in Oncology - The Key is in Dosimetry, Do We Have a Solution? |

### **Summary**

Paediatric nuclear medicine is a very interesting dynamic and exciting field, and contributes to the diagnosis of many diseases in children. Different procedures and strategies are needed for paediatric nuclear medicine. As compared with adult, nuclear medicine recognizes the physiologic differences between children and adults. It has been said that children are not small adults, and even in nuclear medicine “one size does not fit all”. Nuclear medicine in paediatric patient provide unique information about the patient’s condition that cannot be obtained easily with other diagnostic methods.

There are no two examination which are the same in children age and its depend on the condition of each patient, ability to cooperate, the parents, the demands of the nuclear medicine procedures and combine to create unique situation.

Therefore, when setting a paediatric nuclear medicine department, or when there is an intention to dedicate a part of the department for nuclear medicine procedures in children, it is of great importance to anticipate all steps and possible requirements needed for optimal approach to diseased children and their parents.

When it comes to particular procedures, dynamic kidney scintigraphy is one of the most used procedures in paediatric nuclear medicine, well established and very useful for paediatricians and paediatric surgeons. It provides unique information on child’s condition that cannot be obtained with other diagnostic methods. However, the quality of the performed study has to

be high, otherwise some of the data can be misinterpreted. The role of the nuclear medicine technologist is crucial to obtain a high standard procedure.

In PET/CT, one of the most demanding procedures in paediatric oncology imaging, there are some additional challenges, making the role of the technologist even more important: dealing with distressed child, sometimes in pain, and their parents. Also, it is important to have enough knowledge on the procedure itself, being acquainted with radiation protection issues and adjusting radiation burden according to the patient age.

In conclusion, one has to set rules and imaging protocols, but should also aim to a personalized approach to every patient/child. Every child is different, with different condition, ability to cooperate, parents, and demands of the nuclear medicine procedures which combined create the unique situation.

Nuclear medicine technologist must be ready, providing alternatives and options for every step in protocol and alert to make quick assessment of a changing situation during nuclear medicine procedure concerning physiological, mental and emotional condition of the child and sometimes parents.

### **Educational Objectives**

- be aware of the nuclear medicine department specificities for paediatric population care
- to improve understanding of stochastic risks from ionizing radiation in children and young adults
- better understanding of the role of technologist in conducting NM diagnostic procedures
- better understanding and consideration of CT doses in hybrid imaging
- to improve dose reduction strategies - instrumentation or software based
- better understanding the limitations of the effective dose concept in medical dosimetry of the patient
- be aware of the nuclear medicine department specificities for paediatric population
- get acquainted with different radiopharmaceuticals used for kidney scintigraphy
- understanding clinical indication and importance of follow up

### **Keywords**

Paediatric, Imaging, diagnostic, radiation protection, dose optimisation, paediatric patient care.

### **Take Home Message**

Paediatric population's special needs, depending on the patient's age, have to be correctly assessed in order to provide the best practice to this population. Matters like dose optimization, patient comfort and ability to cooperate are essential to achieve a good quality procedure.