

A SOFTWARE FOR AUTOMATIC CALCULATION OF EANM 2007 PAEDIATRIC DOSAGE CARD

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Introduction: Jacobs *et al.* proposed the use of three tracer-dependent dosage cards for paediatric nuclear medicine (Optimised tracer-dependent dosage cards to obtain weight-independent effective doses. *Eur J Nucl Med Mol Imaging* 2005;32:581-8). Based upon this work, the EANM dosimetry and paediatrics committees introduced a condensed and revised version of this dosage card (*Eur J Nucl Med Mol Imaging* 2007;34:796-798) for major nuclear medicine paediatric diagnostic procedures, replacing the previous card by Piepsz *et al.* and including a set of minimum activities. The disadvantage of this approach is an increased complexity concerning the activity calculations.

Objective: To overcome the complexity of the new EANM paediatric dosage card by developing a software, where the user could enter the patient weight and the radiopharmaceutical for automatic calculation of paediatric dosage of radiopharmaceuticals, according to EANM 2007 paediatric dosage card.

Materials and methods: Briefly, the new EANM dosage card calculates the administered activity to multiplying a baseline activity by different multiples for the three clusters A, B and C (the recommended radiopharmaceutical class):

$$A[\text{MBq}]_{\text{Administered}} = \text{Baseline Activity} \times \text{Multiple}$$

where $A[\text{MBq}]_{\text{Administered}}$ denotes the activity to be administered (in MBq), and Baseline Activity and Multiple are weight- and radiopharmaceutical-dependent factors to be used for the calculation of the activity to administered. The baseline activity equals the activity to be administered to a child weighing 3 kg. If the resulting calculated activity is smaller than the minimal recommended activity, the minimum activity should be administered.

For developing a software incorporating the features of this new EANM paediatric dosage card we have used Visual Basic. The following examples illustrate the use of this software:



Results: We have developed a new software to calculate paediatric dosage of radiopharmaceuticals according to the latest EANM paediatric dosage card, with an easy-to-use interface that makes the calculation complexity completely hidden for the user, saving you the time that you previously spent on these laborious calculations and reducing the risk of error.

This software is available at: www.radiofarmacia.org/dosimetria

Conclusion: As a result of this new software, the user will get the activity to be administered easily according to the latest EANM paediatric dosage recommendation. In addition, the introduction of minimum activities guarantees a minimum standard of image quality throughout Europe, thus avoiding a variety of administered activities in children of the same weight in different countries, which was the case when using the previous EANM dosage card.