3rd HERCA

MS-Meeting on the optimized use of CT scanners

at IAEA, Wien, on March 6, 2017

EANM progress of self-commitments

Søren Holm, M.Sc., Ph.D., MPE

Member of EANM Physics and RP Committees

HERCA

Meeting on the optimized use of CT scanners

In 2016, the EANM board approved **two** specific voluntary self-commitments aimed at optimising CT-use.

1) New and revised guidelines will include, where relevant, specific suggestions on the optimized use of CT

2) EANM will include, in future congresses, relevant education to support the optimized use of CT in hybrid modalities

HERCA

Meeting on the optimized use of CT scanners

Regarding 1) – Guidelines

- The following guideline has been finalized early in 2016.
- Oncology committee: EANM practice guideline bone scintigraphy (uses SPECT/CT)

- Guidelines currently in revision:
- The SNMMI and EANM practice guideline for renal scintigraphy in adults

  (CT not relevant)

EANM guideline for palliative radionuclide treatment of bone metastases

(CT not relevant)

1) New and revised guidelines will include, where relevant, specific suggestions on the optimized use of CT

HERCA

Meeting on the optimized use of CT scanners

Eur J Nucl Med Mol Imaging (2016) 43:1723–1738
DOI 10.1007/s00259-016-3415-4

GUIDELINES

The EANM practice guidelines for bone scintigraphy

T. Van den Wyngaert[1,2] · K. Strobel[3] · W. U. Kampen[4] · T. Kuwert[5] ·
W. van der Bruggen[6] · H. K. Mohan[7] · G. Gnanasegaran[8] ·
R. Delgado-Bolton[9] · W. A. Weber[10] · M. Beheshti[11] ·
W. Langsteger[11] · F. Giammarile[12] · F. M. Mottaghy[13,14] · F. Paycha[15] ·
On behalf of the EANM Bone & Joint Committee and the Oncology Committee.

SPECT/CT images are acquired using a multimodality camera that combines a gamma camera and a multislice spiral or flat panel/cone beam CT scanner (currently with 1, 2, 4, 6 or 16 slices). The CT scan is performed immediately before or after the SPECT acquisition. The acquisition protocols are specific to each type of machine. The CT component can be performed either for attenuation correction and anatomical localization or as an optimized diagnostic CT scan [53]. If the CT scan is obtained for attenuation correction and anatomical localization only, the use of a low milliampere-seconds setting is recommended to decrease the radiation dose to the patient. However, there are significant differences in operating characteristics between types of scanner, hampering recommendations on absolute values of milliampere-seconds. Operators should be aware of the characteristics particular to their scanner and understand the range of settings that are consistent with meeting the required image quality and reference dose values. The use of intravenous iodinated contrast material is generally not required, and MRI is preferred to assess soft tissue disease.

The image matrix size is 512 × 512, with a tube voltage of 80–130 kV and intensity–time product of 2.5 to 300 mAs, depending on the anatomical region being scanned and the dose reduction software used. The pitch can range from 1 to 2 and the slice thickness is generally 0.33–2.0 mm for scanning the extremities and 0.33 to 5 mm for the spine (Table 2). The final image is obtained after applying a high-resolution filter. The SPECT/CT acquisition may span a single FOV, usually covering a region of 40 cm, or can include multiple contiguous or separate FOVs.

HERCA

Meeting on the optimized use of CT scanners

Eur J Nucl Med Mol Imaging (2016) 43:1723–1738
DOI 10.1007/s00259-016-3415-4

GUIDELINES

The EANM practice guidelines for bone scintigraphy

T. Van den Wyngaert[1,2] · K. Strobel[3] · W. U. Kampen[4] · T. Kuwert[5] ·
W. van der Bruggen[6] · H. K. Mohan[7] · G. Gnanasegaran[8] ·
R. Delgado-Bolton[9] · W. A. Weber[10] · M. Beheshti[11] ·
W. Langsteger[11] · F. Giammarile[12] · F. M. Mottaghy[13,14] · F. Paycha[15] ·
On behalf of the EANM Bone & Joint Committee and the Oncology Committee.

4. Multimodality SPECT/CT imaging is indicated for the assessment of lesions equivocal on planar bone scintigraphy or localized pain syndromes with normal findings on planar scintigraphy, in particular in the staging of malignancies that have a tendency to metastasize to bone [54]. SPECT/CT can also be used in patients with multiple equivocal benign lesions in the axial or appendicular skeleton to increase specificity and diagnostic certainty.

HERCA

Meeting on the optimized use of CT scanners

Regarding 1) – Guidelines

- The largest volume of CT-demanding examinations are found in oncology PET/CT
- The current guideline for FDG scanning is from 2015:

Eur J Nucl Med Mol Imaging (2015) 42:328–354
DOI 10.1007/s00259-014-2961-x

GUIDELINES

FDG PET/CT: EANM procedure guidelines for tumour imaging: version 2.0

Ronald Boellaard · Roberto Delgado-Bolton · Wim J. G. Oyen · Francesco Giammarile · Klaus Tatsch · Wolfgang Eschner · Fred J. Verzijlbergen · Sally F. Barrington · Lucy C. Pike · Wolfgang A. Weber · Sigrid Stroobants · Dominique Delbeke · Kevin J. Donohoe · Scott Holbrook · Michael M. Graham · Giorgio Testanera · Otto S. Hoekstra · Josee Zijlstra · Eric Visser · Corneline J. Hoekstra · Jan Pruim · Antoon Willemsen · Bertjan Arends · Jörg Kotzerke · Andreas Bockisch · Thomas Beyer · Arturo Chiti · Bernd J. Krause

1) New and revised guidelines will include, where relevant, specific suggestions on the optimized use of CT

HERCA

Meeting on the optimized use of CT scanners

Regarding 2) – Education at EANM Congress:

- For the EANM congress 2017 in Vienna, 2 sessions are planned:
- One “symposium“ proposed by the Radiation Protection Committee, and
- One “Joint EANM-EFOMP“ session proposed by the Physics Committee

2) EANM will include, in future congresses, relevant education to support the optimized use of CT in hybrid modalities

Committee Symposium (Radioprotection)
Monday, October 23, 16:30-18:00

Topic
CT-Optimisation of Hybrid Imaging

Chairs
Michael Lassmann (Wurzburg)
Kristoff Muylle (Ostend)

Programme

16:30 - 16:50	Klaus Bacher (Ghent): Technical Optimisation
16:50 - 17:10	Patrick Veit-Haibach (Zurich): Optimisation in Oncology
17:10 - 17:30	Pedro Almeida (Lisbon): Optimisation in Paediatric Nuclear Medicine
17:30 - 17:50	Steve Ebdon-Jackson (Oxfordshire): The View of HERCA on Optimisation
17:50 - 18:00	Discussion

Session Coordinator : Bernhard Sattler / EANM Physics Committee

Session Name : Joint Symposium 9 (EANM / EFOMP)

Day, Date, Time : Tuesday, October 24, 2017, 08:00-09:30

Session Title : New Developments in CT technology

Chairs

Marco Brambilla (EFOMP) Novara / Italy
Bernhard Sattler (EANM) Leipzig / Germany

Programme

Time	Speaker	Title
08:00 – 08:20	Marc Kachelriess (Heidelberg)	Dual energy CT
08:20 – 08:40	Mika Kortesniemi (Helsinki)	CT dose optimization techniques
08:40 – 09:00	Marco Brambilla (Novara)	CT in hybrid imaging systems
09:00 – 09:20	Marc Kachelriess (Heidelberg)	Motion compensation in CT
09:20 – 09:30	All Speakers	Panel Discussion, Questions