

Report of the ad-hoc working group on hybrid imaging systems

January 25, 10h-12h, Marie Curie II meeting room, FANC

Present:

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Background:

The advent of hybrid systems in medical imaging poses new issues in medical physics, also from a legal point of view. There is already an important installed base of hybrid systems in nuclear medicine (NM) departments. In the near future, we can also expect that hybrid systems will be installed in radiotherapy (RT) departments when replacing simulators.

For SPECT/CT or PET/CT systems, up to now, the NM/RT medical physicists are not granted for performing the legal medical physics tasks on the CT part of these systems. Some NM/RT medical physicists wondered how to become also legally granted to perform medical physics on CT.

This matter was discussed at the Medical Jury in 2010. In a first advice, the Medical Jury suggested that obtaining an extra certificate for CT medical physics should at least involve both an 8hrs theoretical course as well as a practical training on 5 CT systems. Within the BHPA working group on medical physics in radiology, some criticism was formulated on this approach.

Objective and methodology of the ad-hoc working group on hybrid imaging systems:

The BHPA set-up an ad-hoc working group to discuss the particular matter of the multi-disciplinary aspects of medical physics of hybrid imaging systems. Chair of the working group was Klaus Bacher (UGent). All BHPA members were invited by email to participate in this working group.

The aim was to answer the questions *"Who can/should perform the medical physics tasks of hybrid systems? What are the specific requirements with respect to education/training of these medical physicists?"*.

The standpoint of the working group was presented to all members at the General Assembly of the BHPA Annual Symposium (Charleroi, 4-5 February 2011) and was approved. This final document was sent to the Medical Jury and the FANC.

BHPA advice with respect to medical physics in hybrid systems:

It is important to state that "medical physics" is *not* only restricted to quality control alone, but also include patient dosimetry, image quality assessment, scan protocol optimization, application optimization (e.g. CT cardiac imaging, CT oncology imaging with perfusion),... Moreover, CT's in hybrid imaging systems are becoming complex/sophisticated instruments. In most situations these CT's can/will be used for full diagnostic radiology purposes as well. Therefore, an appropriate education/training within this matter is necessary to be able to perform all tasks of a medical physicist, related to CT.

For many years, there is the option that a medical physicist can be trained within a second specialization field. Within this context, colleagues with only one (NM or RT) recognition can obtain the recognition in the radiology field after an extra training period of six months.

Creating the opportunity to have a limited recognition restricted to CT's in hybrid imaging systems is, according to the BHPA, *not* a good option.

- As mentioned above, CT's of hybrid imaging systems have currently full diagnostic possibilities, so there should be no reason to restrict an expertise in CT to hybrid imaging systems alone.
- A CT is one of the most complex instruments within the field of radiology. The suggested theoretical and practical training is (in comparison with the six months training for a full radiology recognition) *not* sufficient to be able to perform *all* medical physics tasks related to CT.
- CT technology is evolving very rapidly, so an appropriate continuing education within the field of CT is very important. Especially for those having a combined recognition in both NM and RT, keeping the level of knowledge within the CT domain will be difficult: "you can't be specialist in everything".
- Creating a limited recognition for CT, will possibly result in "split recognitions", where a physicist can ask for a dental, mammography,... recognitions separately. This will not be beneficial for the quality/level of medical physics.
- If extra recognitions for CT would be available, an extra recognition for PET or SPECT should also be possible for medical physicists in the field of radiology.
- If a PET/CT is installed in a radiotherapy department, there would be a need a separate recognition for both PET and CT!

The BHPA advises to keep the recognition structure as it is. Hence, at least once a year, a medical physicist with a full recognition in radiology should check technical performance, image quality and patient doses of the CT's used in hybrid imaging systems. These measurements can be performed in close collaboration with the NM or RT physicists. Specific measurements such as attenuation correction accuracy and tests for the purpose of treatment planning should remain the responsibility of the NM or RT physicists. If needed, the radiology physicist can assist with the latter measurements.

The BHPA will nevertheless set up a continuing education in the field of CT in order to provide NM/RT physicists information on the last technological developments and to introduce them in the QC, image quality analysis and patient dosimetry in that field.