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ANNOUNCEMENTS

An insight into the EANM technologist committee benchmark document on nuclear medicine technologists' competencies

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Introduction

Defining the scope and roles of the young profession of the Nuclear Medicine Technologist (NMT) is not an easy task. The EANM and IAEA have previously agreed on use of this terminology when referring to a health care professional who has contact with patients (as opposed to technicians) and is able to undertake the whole range of nuclear medicine diagnostic and therapeutic procedures, under the direction of a nuclear medicine physician [1, 2].

Since its inception, the EANM Technologist Committee (EANM-TC) has prioritised educational activities and the setting of standards in pursuit of improved delivery of patient care and the highest technical methodologies corresponding to current technological developments in the field of nuclear medicine.

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As a scientific body of experts and the representative of NMTs in Europe, the EANM-TC has the duty to remain alert to European legislative demands within the field of radiation protection. As is stated in the recently published Council Directive 2013/59/Euratom [3]:

> A high level of competence and a clear definition of responsibilities and tasks among all professionals involved in medical exposure is fundamental to ensure adequate protection of patients undergoing medical radiodiagnostic and radiotherapeutic procedures. This applies to medical doctors, dentists and other health professionals entitled to take clinical responsibility for individual medical exposures, to medical physicists and to other professionals carrying out practical aspects of medical radiological procedures, such as radiographers and technicians in radiodiagnostic medicine, nuclear medicine and radiotherapy.

Previous members of the EANM-TC had already addressed this topic, by publishing the "Competencies for the European Nuclear Medicine Technologist" in 1998 [2]. While this document still serves as a reference in many educational institutions, it has become outdated and does not offer any insight into the latest nuclear medicine technological developments in hybrid imaging, such as the PET/CT revolution.

Education, recognition and certification of NMTs in Europe is still governed locally, and there are no international agents, or platforms, that can provide accreditation across borders. However, the implementation of the European Qualification Framework (EQF) in 2008 delivered a new tool to tackle the challenges presented by the recognition of diplomas and certificates issued in the different national education and training systems of the EU Member States [4]. Europe-wide acceptance of the EQF model provided the main

motivation to develop an EQF level 6 for NMTs. Although regional accreditation dictates the professionalisation process for NMTs, the description of outcomes following the Knowledge/Skill/Competency model can be adapted without prejudice regarding the educational path practiced in the different countries of Europe. This first step in adapting to current trends in professional qualifications will provide the basis for clearer delineation of NMT competencies and also offer the perfect opportunity to translate recent developments in nuclear medicine technologies into competencies in the clinical practice, research and education of NMTs.

The authors consider that it is fundamental to keep the original structure presented in the 1998 document, with EANM-TC authorship. However, the time interval between the "old" and the "new" document has given rise to conceptual gaps, in terms of NMT competencies, that need to be filled. The real challenge and innovation was the adjustment of the document with respect to the increased standards of autonomy of NMTs in daily practice and the extended competencies that have developed with the emergence of new technologies.

Methodology

In order to define the set of competencies for the NMT, we have adopted the EQF formalism referring to the sixth level of qualification (Table 1).

Structure of the document

The core competencies of the NMT following the EQF model were divided into 13 groups:

Table 1 EQF Level 6 equivalent to a Bachelor academic degree [5]

Level	Knowledge	Skill	Competency
Level 6	Advanced knowledge of a field of work or study, involving a critical understanding of theories and principles	Advanced skills, demonstrating mastery and innovation, required to solve complex and unpredictable problems in a specialised field of work or study	Manage complex technical or professional activities or projects, taking responsibility for decision-making in unpredictable work or study contexts; take responsibility for managing professional development of individuals and groups

1. Establishment of a nuclear medicine department and equipment installation
2. Departmental organisation
3. Patient care and welfare
4. Instrumentation quality assurance (imaging, non-imaging and radiation protection instruments)
5. Radiopharmacy (PET and SPECT)
6. Performance of imaging, including PET and SPECT
7. Hybrid imaging
8. Performance of in vitro tests
9. Radiopharmaceutical therapy procedures
10. Radiation protection
11. Occupational health and safety
12. Research
13. Education

These 13 items were conceptually considered to cover the whole range of tasks relevant to the competencies of contemporary NMTs. It is important to mention that certain competencies that are considered fundamental and basic in this document can form part of advanced practice in certain EU Member States. This has been consciously addressed and our review is the result of a careful, evidence-based analysis, which, therefore, suggests that measures are taken to integrate the above-mentioned competencies into the daily practice of NMTs in Europe. It was a deliberate choice of the authors to adopt a point of view that is realistic yet optimistic in defining basic level practice.

Peer review

The current document has been peer reviewed by all members of the EANM-TC, who represent the following countries:

- Austria
- Belgium
- Denmark
- Germany
- Holland
- Italy
- Portugal
- Romania
- Slovenia

Furthermore, overseas peer review was performed by representatives of the Canadian Association of Medical Radiation Technologists (CAMRT) and the Australian and New Zealand Society of Nuclear Medicine (ANZSNM).

Following the memorandum of understanding with the European Federation of Radiographers (EFRS), the EANM-TC has conducted an ongoing discussion with the EFRS

nuclear medicine group, which also peer reviewed the present document.

Conclusion

The EANM Technologist Committee Benchmark Document on NMT Competencies provides a comprehensive description of the contemporary NMT basic scope of practice. Using the EQF methodology will pave the way for optimal harmonisation of the basic competencies across Europe. Such harmonisation is considered mandatory in order to achieve a general improvement in nuclear medicine procedures in the competitive field of diagnostic imaging and radiotherapy. Hybrid imaging must be approached by competent professionals able to deal with technological advances, patient and staff safety, clinical requests and quality assurance.

The EANM-TC remains consistent with previous works and consultations, both internally and with international partners, in updating the educational standards for technologists and radiographers operating in nuclear medicine.

References

1. IAEA. International Atomic Energy Agency: Nuclear medicine resources manual. Vienna; 2006.
2. EANM Technologist Committee: Competencies for the European Nuclear Medicine Technologist. 1998. http://www.eanm.org/committees/technologist/tech_eurocom.pdf
3. European Council Directive 2013/59/Euratom on basic safety standards for protection against the dangers arising from exposure to ionising radiation and repealing Directives 89/618/Euratom, 90/641/Euratom, 96/29/Euratom, 97/43/Euratom and 2003/122/Euratom. Official Journal of the European Union; 2014 L13:1–17.
4. Explaining the European Qualifications Framework for Lifelong Learning. Luxembourg: European Commission; 2008. https://ec.europa.eu/ploteus/sites/eac-eqf/files/brochexp_en.pdf
5. Descriptors defining levels in the European Qualifications Framework (EQF). European Commission. https://ec.europa.eu/ploteus/en/content/descriptors-page