

## **A NEW MILESTONE IN THE DEVELOPMENT OF THE MEDICAL PHYSICS PROFESSION: THE EFOMP POLICY STATEMENT ON MEDICAL PHYSICS EDUCATION AND TRAINING IN EUROPE 2014**

Caruana, C.J.

Past-Chair, Education and Training Committee, EFOMP.

EFOMP Lead for Education and Training and Role Development, 'European Guidelines on the Medical Physics Expert' Project.  
Head, Medical Physics Department, Faculty of Health Sciences, University of Malta.

The European Federation of Organizations for Medical Physics (EFOMP) has just published an updated policy statement on Education and Training, the "European Federation of Organizations for Medical Physics (EFOMP) Policy Statement 12.1: Recommendations on Medical Physics Education and Training in Europe 2014". In 2010, EFOMP had issued Policy Statement No. 12: "The present status of Medical Physics Education and Training in Europe. New perspectives and EFOMP recommendations". At the same time, new recommendations regarding qualifications frameworks were published by the European Parliament and Council which introduced a new European qualifications framework - the European Qualifications Framework (EQF) for lifelong learning. Moreover, a new European all-encompassing directive involving the use of ionizing radiations (including medical) was being developed. The latter has now been realized as Council Directive 2013/59/Euratom of 5 December 2013 and has superseded all previous directives concerning ionizing radiation. A European Commission financed project "Guidelines on the Medical Physics Expert (MPE)" (henceforth referred to as the 'Guidelines') was subsequently published which took into consideration these developments. The Guidelines are very comprehensive and include a mission statement, key activities and qualification framework for the MPE and curricula in the specialty areas of Medical Physics relating to radiological devices and protection from ionizing radiation, namely Diagnostic and Interventional Radiology, Radiation Oncology and Nuclear Medicine. These developments necessitated a revision of PS12 and Policy Statement 12.1 provides the necessary update. The new policy statement departs from previous formats as it is more strategic with respect to role development and provides an intimate link between the professional role of the Medical Physicist / Medical Physics Expert and education and training policy.

The main elements of the Guidelines with a direct impact on the present EFOMP policy statement are the mission statement, key activities, qualification framework and curriculum framework. The new policy statement incorporates these four elements and generalizes them to make them applicable to *all* specialties of Medical Physics, that is to not only those specialties of Medical Physics involving radiological medical devices and ionizing

radiation (addressed in the Guidelines) but also to those specialties involving non-radiological medical devices (such as physiological measurement, neurology, audiology) and protection from other physical agents (such as electromagnetic static and RF fields, ultrasound, optical radiation, vibration). In those states where the scope of the roles of the Medical Physicist (MP) and Medical Physics Expert (MPE) are presently delimited to radiological medical devices and ionizing radiation, the policy statement may if so desired may be amended simply by replacing 'medical devices' with 'radiological medical devices' and 'physical agents' by 'ionising radiations'.

The new mission statement for medical physicists and medical physics experts is as follows: "Medical Physicists and Medical Physics Experts will contribute to maintaining and improving the quality, safety and cost-effectiveness of healthcare services through patient-oriented activities requiring expert action, involvement or advice regarding the specification, selection, acceptance testing, commissioning, quality assurance/control and optimized clinical use of medical devices and regarding patient risks from associated physical agents including protection from such physical agents, installation design and surveillance, and the prevention of unintended or accidental exposures to physical agents; all activities will be based on current best evidence or own scientific research when the available evidence is not sufficient. The scope includes risks to volunteers in biomedical research and carers and comforters". The purpose for the formulation of this mission statement is to make the role of the MP and MPE more understandable to policy makers and the management of healthcare organizations.

This mission is expressed in many aspects of medical physics practice and the following key activities of the Medical Physicist have been identified and defined in the policy statement: scientific problem solving service, dosimetry measurements (*all* physical agents e.g., effective dose in ionising radiation, SAR in MRI, thermal and mechanical indices in ultrasound), patient safety / risk management (including volunteers in biomedical research, carers, comforters and persons subjected to non-medical procedures using medical devices), occupational and public safety / risk management when there is an impact on

medical exposure or own safety, clinical medical device management, clinical involvement, development of service quality and cost-effectiveness, expert consultancy, education of healthcare professionals (including medical physics trainees), health technology assessment (HTA) and innovation.

The development of the qualification framework for the MP and MPE was guided by the following principles:

1. All qualification frameworks in Europe should be referred to the EQF. *Henceforth the MPE is defined as a clinically qualified MP who has reached the highest EQF level (level 8) in his/her own specialty of clinical Medical Physics* (e.g., Diagnostic and Interventional Radiology, Radiation Oncology, Nuclear Medicine, Physiological Measurement, Neurology, Audiology).
2. The qualification framework would make it possible for more individuals to achieve clinically qualified MP and MPE status through its flexibility, cost-effectiveness and lifelong learning approach.
3. The qualification framework would facilitate the mobility of the clinically qualified MP and MPE in Europe through an agreed set of minimum criteria for achievement of such status.
4. Owing to the rapid expansion of medical device technology and physical agent research publication, it is becoming increasingly difficult for a MP and MPE to become competent in more than one specialty of medical physics; therefore, early specialization has become a necessity and the MP and MPE should be independently recognised in each specialty of medical physics.

Explanatory notes to the qualification framework plus associated rationales are presented.

The curriculum framework is based on the concept of learning outcomes expressed in terms of knowledge, skills and competence (KSC) as specified and defined in the EQF. The curriculum framework was designed with a core medical physics KSC and specialty KSC structure. By emphasizing areas of commonality in the various specialties within the core KSC the framework makes it easier for MP and MPE in different specialties to cooperate in the interest of the patient and also makes it possible to avoid undue fragmentation of the profession. The new curriculum framework is expressed as a structured inventory of required KSC underpinning the above key activities of the

MP and MPE. In addition, the KSC are classified in two categories, Generic and Subject Specific skills as specified in the documents of the European Higher Education Area:

1. *Generic skills* consist of transferable skills which are expected of all professionals at a particular level of the EQF.
2. *Subject specific* KSC are specific to a profession. These are further classified into sub-categories as determined by the particular profession. In the case of Medical Physics the sub-categories are:

*Medical Physics core* KSC: these KSC are expected of all MP/MPEs irrespective of their specialty:

- KSC for the MP/MPE as physical scientist: these are fundamental physics KSC expected of all physical scientists
- KSC for the MP/MPE as healthcare professional: these are KSC expected of all healthcare professionals
- KSC for the MP/MPE as expert in the clinical use of medical devices and protection from associated physical agents: these represent medical device and safety KSC required by all specialties of medical physics.

*Medical Physics Specialty* KSC: these KSC are highly specific to each specialty of medical physics

A candidate seeking recognition as an MP and MPE in a given specialty of medical physics should reach the corresponding level (level 7+ of the EQF if a Medical Physicist and level 8 of the EQF if Medical Physics Expert) in the core KSC of medical physics and the KSC specific to that particular specialty.

*The full policy statement can be found in Physica Medica – the European Journal of Medical Physics (Elsevier) which is the official journal of the European Federation of Organizations for Medical Physics (EFOMP). It can be downloaded freely from the following link: <http://www.physicamedica.com/article/S1120-1797%2814%2900103-3/fulltext>*