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ROLE OF MPE/QE/RPE IN HOSPITALS A EUROPEAN PROSPECTIVE

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European Federation of Organisations for Medical Physics
(EFOMP)

European Federation of Organisations for Medical Physics (EFOMP)

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- Founded in London 1980
- 35 National Member Organisations (NMO)
- 3 Affiliated Organisations
- Representing approximately 5000 medical physicists in Europe

The mission of the Federation is

- To harmonise and advance medical physics both in its professional clinical and scientific expression throughout Europe
- To strengthen and make more effective the activities of the NMOs by bringing about and maintaining systematic exchange of professional and scientific information, by the **formulation of common policies, and by promoting education and training programmes.**

The objectives for accomplishing the mission are

- Fostering and coordinating the activities of National Member Organisations in the field of Medical Physics and collaborating, ..with national and international organisations, particularly the International Organisation for Medical Physics;
- Encouraging exchanges between the National Member Organisations and disseminating professional and scientific information through **publications and meetings;**
- Encouraging scholarship and the exchange of Medical Physicists between countries;
- **Proposing guidelines for education, training and accreditation programmes** including cooperation with institutions active in this field.
- **Making recommendations** on the appropriate general responsibilities, organisational relationships and roles of workers in the field of Medical Physics.

Main areas of activity

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Diagnostic & Interventional Radiology (D&IR) e.g.

- ▣ CT
- ▣ Interventional cardiology

Nuclear Medicine (NM) e.g.

- ▣ PET/CT
- ▣ Radionuclide therapy e.g. I-131

Radiation Oncology (RO) e.g.

- ▣ Intensity Modulated Radiotherapy (IMRT)
- ▣ Brachytherapy e.g. I-125, Ir-192

MPEs also provide services in other areas of medicine ranging from dentistry to neurology.

IRCP 1990 Publication 60

International *recomm*endations

European Council Directive 96/29/EURATOM

- *Basic safety standards for the protection of*
 - workers
 - general public
- ***Defines Qualified Expert***

European Council Directive 97/43/EURATOM Medical Exposures Directive

- Health protection of individuals
in relation to medical exposure*
- ***Defines Medical Physics Expert***

National Legislation
e.g. U.K. law

Ionising Radiation Regulations 1999
IRR99

- came into force 1st Jan 2000

National Legislation
e.g. U.K. law

Ionising Radiation (Medical Exposure)
Regulations 2000 ***IR(ME)2000***
came into force
13th May 2000 and 1st January 2001

Definition of Qualified Expert in EURATOM 96/29

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*“Persons having the **knowledge and training** needed to carry out physical, technical or radiochemical tests enabling doses to be assessed and to give advice in order to ensure effective protection of individuals and the correct operation of protective equipment, whose capacity to act as a **qualified expert** is recognised by the competent authorities. A **qualified expert** may be assigned the technical responsibility for the tasks of **radiation protection of workers and members of the public.**”*

Definition of Medical Physics Expert MPE from 97/43/EURATOM

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The 97/43/EURATOM Medical Directive on health protection of individuals against the dangers of ionising radiation in relation to medical exposure, defines the **Medical Physics Expert** as:

“an expert in radiation physics or radiation technology applied to exposure, with responsibility for the radiation protection of patients.”

EFOMP's Position of Medical Physics in Europe. Malaga Declaration (2006)

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EFOMP adopted the following position regarding the responsibility of Medical Physicists in the field of Radiation Protection in Hospitals:

“The Medical Physics Expert as defined in the directive 97/43 must be the professional to supervise and assume the responsibilities of the Radiation Protection activities in Hospitals, including patients, working staff, members of the public and visitors to the Hospitals”.

Council of NMO's Delegates, EFOMP meeting, Malaga (Spain), October 2006.

Malaga Declaration (2006)

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- 1) Medical Physicists have a **formal education and training in Radiation Protection** as applied to medical activities.
- 2) Medical Physicists have the necessary skills to **manage the equipment used in hospital to produce and detect radiation.**
- 3) Medical Physicists have a relatively **long practical training in Hospitals.**
- 4) Clinical professionals regard medical physicists as invaluable specialists who **facilitate the safe use of radiation in hospitals.**
- 5) **The Radiation Protection of patients, staff and hospital visitors is interconnected.** For that reason, in many European Hospitals, the responsibility for the Radiation Protection of patients, staff and visitors is a medical physicist's responsibility.
- 6) Quality Assurance and Quality Control in Radiotherapy, Nuclear Medicine and X-Ray diagnosis is, carried out or under the supervision of medical physicists. **The results of these activities have clear implications in Radiation Protection.**

Council of NMO's Delegates, EFOMP meeting, Malaga (Spain), October 2006.

IRCP 2007 Publication 103

ICRP recommendations on eye doses (2011)

International recommendations



Draft Euratom Basic Safety Standards Directive (BSS)

- Incorporates (amongst other directives)
Council Directive 96/29 (public and workers)
Council Directive 97/43 (medical exposures)
- ***Defines Radiation Protection Expert (RPE)***
Medical Physics Expert (MPE)



European Council commissioned project to develop

“Guidelines on Medical Physics Expert”

Current status (May 2012)

With Article 31 Euratom Treaty Group of Experts

Future national Legislation

Draft BSS Definitions

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- **Medical physics expert (MPE)**: an individual having the **knowledge, training and experience** to act or give advice on matters relating to radiation physics applied to medical exposure, whose competence to act is recognised by the competent authorities.

- **Radiation protection expert (RPE)**: an individual having **knowledge, training and experience** needed to give radiation protection advice in order to ensure effective protection of individuals, whose capacity to act is recognised by the competent authorities.

Draft BSS Medical Physics Expert (MPE)



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..the medical physics expert shall take responsibility for dosimetry,, give advice on medical radiological equipment, and contribute in particular to the following:

- (a) optimisation of the **radiation protection** of patients and other individuals subjected to medical exposure, including the application and use of diagnostic reference levels;
- (b) the definition and performance of quality assurance of the medical radiological equipment
- (c) the preparation of technical specifications for medical radiological equipment and installation design
- (d) the surveillance of the medical radiological installations with regard to **radiation protection**;
- (e) the selection of equipment required to perform **radiation protection** measurements;
- (f) the training of practitioners and other staff in relevant aspects of **radiation protection**.

Draft BSS Radiation Protection Expert (RPE)

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The advice of the radiation protection expert shall cover but not be limited to the following:

- (a) plans for new installations and the acceptance into service of new or modified radiation sources in relation to engineering controls, design features, safety features and warning devices relevant to radiation protection
- (b) the categorisation of controlled and supervised areas;
- (c) the classification of workers;
- (d) the content of workplace and individual monitoring programmes;
- (e) the appropriate radiation monitoring instrumentation to be used;
- (f) the appropriate methods of personal dosimetry;
- (g) the optimisation and establishment of appropriate dose constraints;
- (h) quality assurance
- (i) the environmental monitoring programme
- (j) radioactive waste disposal;
- (k) the arrangements for prevention of accidents and incidents
- (l) preparedness and response in emergency exposure situations
- (m) training and retraining programmes for exposed workers

□.

MPE Project



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- EU commissioned project
- Produce guidelines for:
 - Improved implementation of the provisions of the Medical Exposures Directives (97/43/EURATOM and new BSS) related to the MPE
 - Facilitate the harmonisation of the MPE among the Member States.
 - Support the EC in its activities relating to the optimisation of medical exposures.

Mission Statement



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- “Medical Physics Services 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 including quality control, and optimised clinical use of the medical devices used in **Diagnostic and Interventional Radiology, Nuclear Medicine and Radiation Oncology** and regarding risks from associated Physical Agents (particularly though not exclusively ionising radiation); 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, workers and public (when associated with patient safety and including carers and comforters)”

- Nuclear Medicine
 - ▣ Proposed change in clinical protocols affecting workload e.g. PET-CT
 - ▣ Introduction of new radionuclides; liquid/gas
- Radiotherapy
 - ▣ Radiobiological changes in fractionation regimes
 - ▣ High dose rate technologies e.g. FFF, CyberKnife
 - ▣ Brachytherapy changes in clinical protocols
- Diagnostic & Interventional Radiology (D&IR)
 - ▣ Cardiology change in technique/workload/equipment

Education and Training



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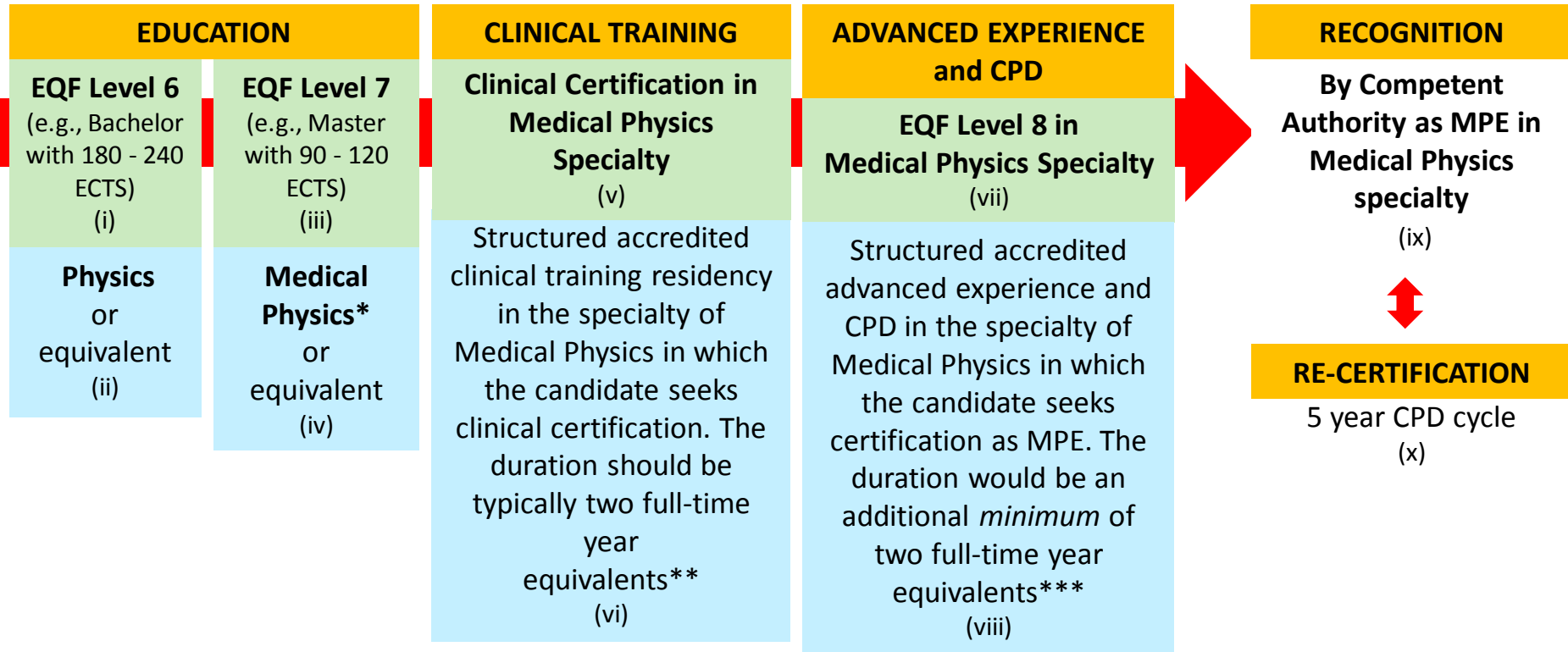
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- Harmonisation of Education and Training
 - European Qualification Framework for Lifelong Learning(EQF)
 - The MPE has been defined as a high level Medical Physicist.
 - A Medical Physicist becomes an MPE after **further advanced education, training and experience**.
 - The MPE has been defined as an EQF level 8 professional.

Qualification Framework for the Medical Physics Expert (MPE) in Europe

MPE: “An individual having the knowledge, training and experience to act or give advice on matters relating to radiation physics applied to medical exposure, whose competence to act is recognized by the Competent Authorities” (Recast BSS)

The Qualifications Framework is based on the European Qualifications Framework (EQF). In the EQF Learning Outcomes are defined in terms of Knowledge, Skills, Competences (KSC) (European Parliament and Council 2008/C 111/01)



* Should include as a minimum the educational components of the Core KSC of Medical Physics and the educational components of the KSC of the specialty of Medical Physics (i.e., Diagnostic & Interventional Radiology or Nuclear Medicine or Radiation Oncology) for which the candidate seeks clinical certification. When this element of specialization is not included it must be included in the residency.

** The EQF level of the residency is intermediate between EQF levels 7 and 8.

*** In states where the MPE is required to be certified in more than one specialty of Medical Physics the number of years would need to be extended such that the MPE will achieve level 8 in each specialty.

Education and Training



- Curricula have been developed for MPE, which include all elements of radiation protection related to the medical environment
- ENETRAP II: development of the European training schemes for RPEs and RPOs
<http://www.irpa2010europe.com/proceedings/S07/S07-09.pdf>
- “Challenges on the radiation protection optimisation of medical staff in interventional radiology and nuclear medicine: the ORAMED project”
- <http://www.irpa2010europe.com/proceedings/S08/S08-02.pdf>

Professional Registration



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- EFOMP has guidelines for each NMO to set up a national registration system in which MPEs have to have some formal accreditation or registration. This could generally be achieved in one of three ways
 - ▣ a requirement to have a recognised qualification
 - ▣ to be a member of a particular professional body
 - ▣ to be registered with a government department (e.g. Ministry of Health).
- Best practice would logically involve all three
- EFOMP accredits NMO's registration schemes

Continuing Professional Development (CPD)



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- Once MPE/RPE status is achieved through education, training and experience the next step is maintenance of competence
- Many national registration schemes include CPD as a requirement for renewal of registration
- MPE project recommends that CPD should be included as a requirement for all national schemes
- The Qualification Framework for the MPE in Europe specifies the re-certification of the MPE by a CPD cycle.

Finally...



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“Medical Physics Services 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”



Thank you.



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"Judging by your X-rays, I'd say you've been exposed to too much radiation."